Base Load Power Hub (BLPH)

INSTRUMENT CABLES

EQUIPMENT MANUFACTURERS RECORD BOOK (FINAL DOSSIER) COMPLETE

Document Number: 1724001170-QC-DB-00007

Document Class: 2

03	16/04/2025	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
02	14/03/2025	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
01	24/02/2025	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
00	06/02/2025	Issue for Review (IFR)	FUMAGALLI	CUCINOTTA	MASSA
Rev.	Date	Description	Prepared	Reviewed	Approved

FLEI s.r.l.

File: 1724001170-QC-DB-00007 Rev.03

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00	01	02	03				
1	Cover	X	X	X	X				
2	Table of Contents	X	X	X	X				
3	Revision / Change Log / Hold List	X	X	X	X				
4	MRB	X	X	X	X				

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
02	Accepted for Construction (AFC)
03	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Base Load Power Hub (BLPH)

INSTRUMENT CABLES

EQUIPMENT MANUFACTURERS RECORD BOOK (FINAL DOSSIER) INDEX

Document Number: 1724001170-QC-LIS-00006

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
ROSETTI MARINO SpA Technical Dept Quality Control Dept	04/02/2025

Document Class: 2

03	23/01/2025	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
02	21/10/2024	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
01	19/09/2024	Issue for Review (IFR)	FUMAGALLI	CUCINOTTA	MASSA
00	02/07/2024	Issue for Review (IFR)	FUMAGALLI	CUCINOTTA	MASSA
Rev.	Date	Description	Prepared	Reviewed	Approved

FLEI s.r.l.

File: 1724001170-QC-LIS-00006 Rev.03

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00	01	02	03				
1	Cover	X	X	X	X				
2	Table of Contents	X	X	X	X				
3	Revision / Change Log / Hold List	X	X	X	X				
4	INDEX	X	X	X	X				

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Issue for Review (IFR)
02	Accepted for Construction (AFC)
03	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

PART 1 - DESIGN DOSSIER

LIST

- document register 1724001170-MD-LIS-00001 PAGE 9
- cable drums schedule - electrical cales 1724001170-IN-LIS-00004 PAGE 14
- ITP 1724001170-QC-ITP-00002 PAGE 18
- Packing, Transportation Handling and Storage procedure 1724001170-QC-PRO-00008 PAGE 22

PROJECT PROCEDURES AND SPECIFICATION

- Manufacturing and Testing procedures (FAT) 1724001170-QC-PRO-00005 PAGE 27

- Test Report - Material Certificate - packing list - traceability row material with shipping document of all the row material (original language) PAGE 45

PART 2 - CERTIFICATION DOSSIER

TEST RECORD

PAGE 120

- FAT report (see test Record)

- IRN

PART 1 - DESIGN DOSSIER

Base Load Power Hub (BLPH)

INSTRUMENT CABLES

SUPPLIER MASTER INFORMATION REGISTER

Document Number: 1724001170-MD-LIS-00001

Document Class: 3

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
V. Barratta	10-07-2024

00	21/06/2024	Issue for Information (IFI)	FUMAGALLI	CUCINOTTA	MASSA
Rev.	Date	Description	Prepared	Reviewed	Approved

FLEI s.r.l.

File: 1724001170-MD-LIS-00001 Rev.00

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00							
1	Cover	X							
2	Table of Contents	X							
3	Revision / Change Log / Hold List	X							
4	References	X							
5	SMIR	X							

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	Issue for Information (IFI)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as “NOT CONTROLLED“ copy

SMIR - REGISTRO DOCUMENTI / *SMIR - SUPPLIER MASTER INFORMATION REGISTER*

	Ordine n°/*order nr.*	1724001170		Fornitore/*Supplier* :	FLEI SRL	
	data / *dated:*	07/06/2024		Codice F./ *S. Code:*		
	Commessa / *Job:*	123A90A		Indirizzo/ *address* :	VIA DE GASPERI, 82 20864 AGRATE BRIANZA (MB) MB	
	Descrizione / *Description*	INSTRUMENT CABLES		Persona di riferim./ *contact person:*	stefania.fumagalli@flei.it	
	Macrofase / *Phase*					

Pos.	Document nr. Client (1)	Doc Client Rev. (1)	Document nr. Internal	Document nr. Internal Rev. (2)	Document nr. Supplier (3)	Doc Supplier Rev. (3)	Titolo Documento / *Document title* (4)	Disciplina / *Discipline* (5)	Blocco Classe / *Class Block (6)*	Docum. Format (7)	first issue date (8)	Third Party Approval (I/A)	Design KEY Document	Document subject to liquidated damages	Document Approval (I/A)
							CONTROL DOCUMENTS								
1	1724001170-MD-LIS-00001	00	1724001170-MD-LIS-00001	00	SMIR01	00	SUPPLIER MASTER INDEX REGISTER (SMIR)-INSTRUMENT CABLES	INS		A4	21/06/2024				I
							QUALITY DOCUMENTS								
2	1724001170-QC-ITP-00002	00	1724001170-QC-ITP-00002	00	ITP01	00	INSPECTION AND TEST PLAN-INSTRUMENT CABLES	QUA		A4	21/06/2024				A
							ENGINEERING DOCUMENTS								
3	1724001170-IN-DS-00003	00	1724001170-IN-DS-00003	00	DATA01	00	CABLE DATA SHEETS-INSTRUMENT CABLES	INS		A4	21/06/2024		Y		I
4	1724001170-IN-LIS-00004	00	1724001170-IN-LIS-00004	00	SCHEDULE01	00	CABLE DRUMS SCHEDULE-INSTRUMENT CABLES	INS		A4	21/06/2024				A
5	1724001170-QC-PRO-00005	00	1724001170-QC-PRO-00005	00	FAT01	00	FAT PROCEDURE-INSTRUMENT CABLES	QUA			30/06/2024				A
6	1724001170-QC-LIS-00006	00	1724001170-QC-LIS-00006	00	INDEX01	00	EQUIPMENT MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - INDEX-INSTRUMENT CABLES	QUA		A4	30/06/2024				A
							CERTIFICATES (ref. to notes in the RDDS)								
7	1724001170-QC-DB-00007	00	1724001170-QC-DB-00007	00	BOOK01	00	EQUIPMENT MANUFACTURERS RECORD BOOK – COMPLETE -INSTRUMENT CABLES	CERT		A4	30/08/2024				A
							HANDLING, SHIPPING & SITE INSTALLATION								
8	1724001170-QC-PRO-00008	00	1724001170-QC-PRO-00008	00	HANDLING01	00	PACKING SHIPPING HANDLING AND STORAGE PROCEDURES -INSTRUMENT CABLES	EXP		A4	20/07/2024				I

Notes:

(1) Numero documento Cliente
Document number assigned by final Client
(2) Numero documento interno
Document number internal
(3) Numero documento Fornitore (assegnato dal Fornitore)
Document number assigned by Supplier
(4) Assegnare il Titolo del documento (assegnato dal Fornitore)
Fill in the document title (to be assigned by Vendor)

(5) Specific are la disciplina (compilato da Rosetti)
Process, Piping; Electrical, Expediting, Inspection, Commissioning, Quality, ecc (to be filled by Rosetti)
(6) Blocco Classe: Specifica, Disegno, Report, Data Sheet, etc. (compilato da Rosetti)
Procedure, list, drawing, data sheet, etc. (to be filled by Rosetti)
(7) A4, A3, A1 (compilato dal Fornitore)
A4, A3, A1 (Supplier)
(8) Data prevista per l'emissione del documento (compilato dal Fornitore)
Foreseen date for the first issue (Supplier)

Base Load Power Hub (BLPH)

INSTRUMENT CABLES

DRUM SCHEDULE -INSTRUMENT CABLE

Document Number: 1724001170-IN-LIS-00004

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
V. Barratta	04-09-2024

Rev.	Date	Description	Prepared	Reviewed	Approved
03	29/08/2024	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
02	05/08/2024	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
01	12/07/2024	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
00	21/06/2024	Issue for Review (IFR)	FUMAGALLI	CUCINOTTA	MASSA

FLEI s.r.l.

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00	01	02	03				
1	Cover	X	X	X	X				
2	Table of Contents	X	X	X	X				
3	Revision / Change Log / Hold List	X	X	X	X				
4	DRUM SCHEDULE	X	X	X	X				

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
02	Accepted for Construction (AFC)
03	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Item	Quantity	Description	Insulation Color	Tag No.
10	2,700	CU CL2/XLPE/OS/LSZH/SWB/LSZH 1X2X0,75 150/250V GREY	WH/BK	SMICV01-1X2X0,75
20	0,700	CU CL2/XLPE/IS/OS/LSZH/SWB/LSZH 2X2X0,75 150/250V GREY	WH/BK NUMB.	SMICV02-2X2X0,75
30	0,300	CU CL2/XLPE/IS/OS/LSZH/SWB/LSZH 6X2X0,75 150/250V GREY	WH/BK NUMB.	SMICV03-6X2X0,75
40	0,900	CU CL2/XLPE/IS/OS/LSZH/SWB/LSZH 12X2X0,75 150/250V GREY	WH/BK NUMB.	SMICV04-12X2X0,75
50	0,500	CU CL2/XLPE/OS/LSZH/SWB/LSZH 2X2,5 150/250V GREY	BK NUMB	SMICV05-2X2,5
60	0,300	CU CL2/XLPE/OS/LSZH/SWB/LSZH 12X2,5 150/250V GREY	BK NUMB	SMICV06-12X2,5
70	0,300	CU CL2/XLPE/OS/LSZH/SWB/LSZH 24X2,5 150/250V GREY	BK NUMB	SMICV07-24X2,5
80	1,700	CU CL2/MGT/XLPE/OS/LSZH/SWB/LSZH 1X2X0,75 150/250V ORANGE	WH/BK	SMICV08-1 1X2X0,75
80	1,700	CU CL2/MGT/XLPE/OS/LSZH/SWB/LSZH 1X2X0,75 150/250V ORANGE		SMICV08-2 1X2X0,75
90	0,600	CU CL2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 2X2X0,75 150/250V ORANGE	WH/BK NUMB	SMICV09-2X2X0,75
100	0,600	CU CL2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 6X2X0,75 150/250V ORANGE	WH/BK NUMB	SMICV10-6X2X0,75
110	0,400	CU CL2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 12X2X0,75 150/250V ORANGE	WH/BK NUMB	SMICV11-12X2X0,75
120	3,200	CU CL2/MGT/XLPE/OS/LSZH/SWB/LSZH 2X2,5 150/250V ORANGE	BK NUMB	SMICV12-2X2,5
130	0,800	CU CL2/MGT/XLPE/OS/LSZH/SWB/LSZH 12X2,5 150/250V ORANGE	BK NUMB	SMICV13-12X2,5
140	2,500	CU CL2/MGT/XLPE/OS/LSZH/SWB/LSZH 1X3X2,5 150/250V ORANGE	RED/WH/BK	SMICV14-1X3X2,5
150	0,600	CU CL2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 6X3X2,5 150/250V ORANGE	RED/WH/BK NUMB	SMICV15-6X3X2,5
160	0,300	CU CL2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 12X3X2,5 150/250V ORANGE	RED/WH/BK NUMB	SMICV16-12X3X2,5
170	0,300	CU CL2/MGT/XLPE/OS/LSZH/SWB/LSZH 24X2,5 150/250V ORANGE	BK NUMB	SMICV17-24X2,5
180	0,550	CU CL2/MGT/XLPE/OS/LSZH/SWB/LSZH 1X2X0,75 LIGHT BLUE	WH/BK	SMICV18-1X2X0,75
190	0,300	CU CL2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 6X2X0,75 LIGHT BLUE	WH/BK NUMB	SMICV19-6X2X0,75
200	0,200	FIBRE OPTIC CABLE 12X50/125 OM2 ORANGE	**	TELCV01-12FO
210	0,200	FIBRE OPTIC CABLE 12X9/125 OS2 YELLOW	**	TELCV02-12FO
220	1,000	CAT.6A S7FTP ARMOURED LSZH GREY	BL/WH-OR/WH-GR/WH/BR/WH	TELCV03-4X2X23AWG
230	1,000	CAT.6A S7FTP ARMOURED LSZH GREY	BL/WH-OR/WH-GR/WH/BR/WH	TELCV03-4X2X23AWG

** RED /GREEN/BLUE/YELLOW/WHITE/GREY/BROWN/VIOLET/TURQUOISE/BLACK/ORANGE/PINK

Base Load Power Hub (BLPH)

INSTRUMENT CABLES

INSPECTION AND TEST PLAN -INSTRUMENT CABLE

Document Number: 1724001170-QC-ITP-00002

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
ROSETTI MARINO SpA	26-09-2024

Rev.	Date	Description	Prepared	Reviewed	Approved
03	05/09/2024	Accepted for Construction (AFC)	CUCINOTTA	MESSA	BERETTA
02	23/07/2024	Accepted for Construction (AFC)	CUCINOTTA	MESSA	BERETTA
01	04/07/2024	Accepted for Construction (AFC)	CUCINOTTA	MESSA	BERETTA
00	21/06/2024	Issue for Information (IFI)	FUMAGALLI	CUCINOTTA	MASSA

FLEI s.r.l.

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00	01	02	03				
1	Cover	X	X	X	X				
2	Table of Contents	X	X	X	X				
3	Revision / Change Log / Hold List	X	X	X	X				
4	ITP	X	X	X	X				

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
02	Accepted for Construction (AFC)
03	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Via Alcide De Gasperi 82,
20864 Agrate Brianza (MB) - Italy
Phone 039 65 32 51 mail : shipping@flei.it

ISO 9001: 2015

Customer	ROSETTI MARINO	PO No.1724001170 123A90A	ITP No.: 13/2024 Rev.1	Date : 04 July 2024
Project	123A90A - Base Load Power Hub Platform			

INSPECTION TEST PLAN - Cables 150/250 V (300 v) - Design Guidelines : iec 60092.376

SL. No	Test Characteristics	Sampling Plan	Type of Test	Ref. Doc. 1724001170-QC-ITP-00002	Instrument name	SUP	CTR	CPY	CA
						FLEI	ROSETTI MARINO	CROSSWIND	CERTIFYNG AUTHORITY
1	**GENERAL**								
1.1	Review of the purchase oredr	\	visual	Oredr	Document	T	R	R	
1.2	Data Sheets,Procedures approval check	\	visual	Data Sheets,Procedures	Document	T	R	R	
2	**CHECK OF MATERIAL**								
2.1	Review of certificates,visual/dimensional & electrical properties: Dielectric test between conductors , Dielectric test between conductors and screen , Conductors resistance , Insulation resistance , Capacitance core-core , Inductance	\	visual	Data Sheets,test report including the real measure of external diameter value1,value 2	Data Sheets,test report	C	N	R	
2.2	Declaration of Conformity in accordance to IEC standard applicable	\	visual	Declaration of Conformity	Declaration of Conformity	C	N	R	
3	**FINAL DOCUMENTATION - MBR & CERTIFICATIONS**								
3.1	Manufacturer Data Book Preparation Review	10% OF THE ORDER	visual	Cover of project	Cover of project	Post inspection	N	R	
4	**PACKING & SHIPPING**								
4.1	Handling and storage of cables	\	non-Electrical	Handling and storage of cables by Flei	Handling and storage of cables by Flei	C	W	R	
4.2	Issuing of Release Note for shipping	\	non-Electrical	Release Note	Release Note	Post inspection	C	R	

Type of Action :	
T	TEST
R	REVIEW
W	WITNESS POINT
H	HOLD POINT
M	MONITORING
C	CHECK PERFORMED AND CERTIDICATES/DOCUMENTS ISSUED
N	CHECK PERFORMED BUT NO CERTIDICATES/DOCUMENTS HAS BEEN ISSUED

Testing Authorities :
SUP → SUPPLIER
CTR → CONTRACTOR
CPY → COMPANY
CA → CERTIFYNG AUTHORITY

Issued by : Quality Manager ,Giovanni Cucnotta	Approved By :
FLEI S.r.l. Quality Control	

Base Load Power Hub (BLPH)

PACKING, TRANSPORTATION, HANDLING, LAYING AND STORAGE OF CABLES

INSTRUMENT CABLES

Document Number: 1724001170-QC-PRO-00008

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
Vincent Zwaan	02/09/2024

Document Class: 3

03	28/08/2024	Issue for Information (IFI)	Fumagalli	Cucinotta	Messa
02	05/08/2024	Issue for Information (IFI)	Fumagalli	Cucinotta	Messa
01	04/07/2024	Issue for Information (IFI)	Fumagalli	Cucinotta	Messa
00	02/07/2024	Issue for Information (IFI)	Fumagalli	Cucinotta	Messa
Rev.	Date	Description	Prepared	Reviewed	Approved

FLEI s.r.l.

This document undergoes an issuance cycle within EDMS Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	Issue for Information (IFI)
01	Issue for Information (IFI)
02	Issue for Information (IFI)
03	Issue for Information (IFI)

HOLDS LIST

No.	Description
1	
2	
3	
4	

Table of contents

1 TRANSPORTATION, HANDLING, AND STORAGE OF THE DRUMS 4

1.1 STORAGE 4

1.2 TRANSPORTATION AND HANDLING 4

1.3 ROLLING DIRECTION 4

2 LAYING FO THE CABLES 4

2.1 LAYING TEMPERATURE 4

2.2 BENDING RADIUS 4

2.3 PULLING STRENGHT 5

2.4 CABLE UNREELING 5

3 ANNEXE1 5

PACKING, TRANSPORTATION, HANDLING, LAYING AND STORAGE OF CABLES

The cables, whether they are armoured or unarmoured , are manufactured with some high quality materials allowing long storage handling transport and unreeling subject to the following recommendations.

1 – TRANSPORTATION HANDLING AND STORAGE OF THE DRUMS

1.1 – Storage

Cables can be stored, in usual, on site temperature limits: -15°C to +60°C. The cables drums must be appropriately wedged and stored in a vertical position (never laid on flange) on a flat, dry and solid ground and in a covered place (applicable only for export project). They must be protected to avoid any mechanical risk and exterior shocks.
The original wooden lags have to be kept until the cable unreeling to ensure a good protection of the cable. The both ends of the cable (inner and outer end) have to be watertight in order to avoid penetration of water or humidity inside the cables. Thermo retractable polyethylene caps must be installed on the both ends.

1.2 – Transportation and handling

The wooden drums must be always carried vertically. They must be fixed and properly chocked with care on the vehicle, on the wagon and on the ship, in order to avoid any exterior chocs.
The unloading and the different handling will be done carefully with lifting equipments.

- In case of handling with a crane, an axle is used in crossing the drum center, lifted from both ends by two slings. It must have a length equal, at least, to the width of the drum. It is prohibited to put the slings on the lags,
- In case of handling with a forklift truck, the drum is put vertically with care on the forks,

Never let a drum fall during all kind of unloading and do not place any weight on the drums.
When the cables drums are arriving on site, they must be properly checked. The good order of the lagging and of the ends caps of the cables (a breaking of a wooden lag could tear the outer sheath of the cable).

1.3 – Rolling direction

If a drum has to be rolled, for transportation, it must be rolled “only” in the direction indicated by an arrow pointed on the flange of the drum: “do not roll the drum in the opposite direction arrow of the drum”.

2 – LAYING OF THE CABLES

2.1 – Laying temperature

The cables can be pulled at a minimum outer temperature of: -5°C, but with a slow and regular speed (about 20 m/mm) without shock. It is always necessary, before unreeling, to store the cables for at least 24 hours in a warmed room (about +10°).

2.2 – Bending radius

During the unreeling, the bending radius shall be, at least, “twice the static bending radius (as specified in our technical data sheets)”

2.3 – **Pulling strength**

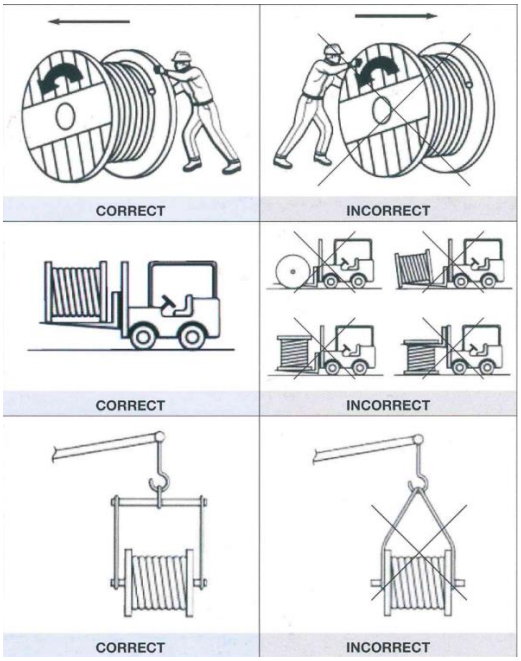
The pulling strengths exerted directly on the copper or aluminium cores of the cables should not exceed the values:

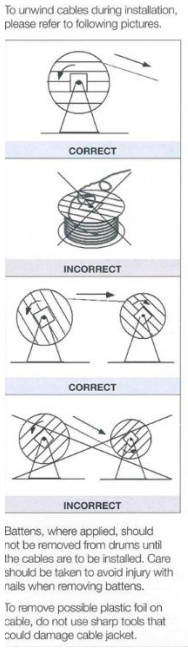
- 5 daN/mm² of cross section for copper conductors.
- 3 daN/mm² of cross section for aluminium conductors.

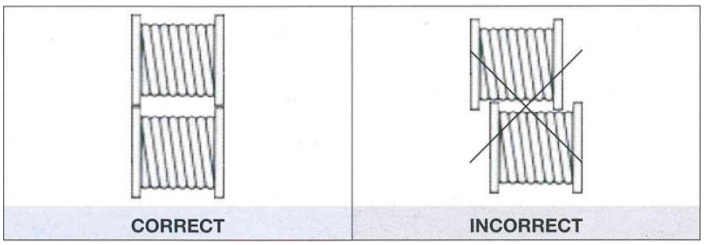
The pulling must be regular without shock and continuously checked by a dynamometer (especially in case of using a winch).

2.4 – **Cables unreeling**

The drum shall be settled on jacks by using a spindle through the central hole of the drum. The unreeling speed shall be monitored at a moment.
The cables must be unreeled "only in the opposite direction of the one indicated by an arrow" painted on the flange of the drum ("do not unreel the cable in the same direction of the arrow"). While unreeling, the cables shall not be twisted, waved or buckled.
The label, sticked on the flange, indicates the "correct unreeling method".
ANNEXE 1







Base Load Power Hub (BLPH)

INSTRUMENT CABLES

FAT PROCEDURE -INSTRUMENT CABLE

Document Number: 1724001170-QC-PRO-00005

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
V. Barratta	25-10-2024

03	09/10/2024	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
02	04/09/2024	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
01	17/07/2024	Accepted for Construction (AFC)	FUMAGALLI	CUCINOTTA	MASSA
00	21/06/2024	Issue for Review (IFR)	FUMAGALLI	CUCINOTTA	MASSA
Rev.	Date	Description	Prepared	Reviewed	Approved

FLEI s.r.l.

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00	01	02	03				
1	Cover	X	X	X	X				
2	Table of Contents	X	X	X	X				
3	Revision / Change Log / Hold List	X	X	X	X				
4	FAT PROCEDURE	X	X	X	X				

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
02	Accepted for Construction (AFC)
03	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

This document undergoes an issuance cycle within EDMS "Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

FACTORY TEST PROCEDURES

Low Voltage Instrument Cables

CONTENTS	TITLE N.
Test procedure for High Voltage Test	1
Test procedure for Conductor Resistance	2
Test procedure for Insulation Resistance	3
Test procedure for Mutual Capacitance (pairs/triples)	4
Test procedure for Inductance (pairs/triples)	5
Determination Value of L/R ratio adiacent cores	6
Test procedure for Conductor Examination	7
Test procedure for Measurement of Thickness of Insulation and Sheaths	8
Test procedure for Armour Wire / Tape Measurement	9
Test Procedure of diameter under armour and overall	10
Test procedure for Hot Set Test	11
Fire Resistant & Flame Retardant	12

1 . Test Procedure for High Voltage test

1 SCOPE OF THE TEST

This test procedure details the test methods to verify the dielectric strength of the insulation of the finished instrumentation cables

2 NORMATIVE REFERENCES

IEC 60092-376

3 TEST EQUIPMENT

a. HV transformer 15Kv ac/100KVA Manuf. VNZ SIF MODEL 001/2011

b. Timer Chronometer Manuf. GEONAUTE SERIAL N° 13101

4 METHOD OF TESTING

4.1Method of Testing

The testing shall be carried out at ambient temperature.

Remove sufficient length of the outer jacket, armour and inner sheath from both end of the cable.

Connect the high voltage source to the conductor.

Connect amour, metallic screen to the ground.

Test voltage shall be applied between each conductor and the metallic sheath & the armour, if any.

4.2 Low Voltage cables

4.2.1 High voltage Test

Apply the 1.5 kV a.c. between each conductor and metallic screen & armour for 1 minutes.

4.2.1.1 Requirements

No breakdown of the insulation shall occur during the testing period.

(POINT 4 of the STANDARD IEC 60092-376)

4 Rated voltage

The standard rated voltage U_o/U (U_m) is as follows:

$$U_o/U\ (U_m) = 150\ V/250\ V\ (300\ V)\ a.c.$$

In the voltage designation of cables

U_o is the rated power-frequency voltage between the conductor and the earth or metallic covering for which the cable is designed;

U is the rated power-frequency voltage between conductors for which the cable is designed.

U_m is the maximum value of the highest system voltage for which the equipment may be used.

A d.c. voltage up to a maximum of 1,5 times the a.c. voltage may be used, provided that the voltage to earth does not exceed 250 V.

2. Test Procedure for Conductor Resistance

1 SCOPE OF THE TEST

This test procedure details the test methods to determine the DC resistance characteristics of the conductors and screens of the finished instrumentation cables

2 NORMATIVE REFERENCES

IEC 60092-376

3 TEST EQUIPMENT

Resistance measuring equipment - Manufacturer FLUKE Model 8840A Serial 5256028. Cert. Calibration N. 262675 ARO –

4 METHOD OF TESTING

Remove sufficient length of the outer jacket, armour and inner sheath from both end of the cable.

The insulation of the conductor has to be removed about 30mm from the end of the cable.

Connect the testing clamp of the resistomat to the both ends of the conductor.

Adjust suitable range for the same required value.

Adjust the cable temperature on the resistance-measuring unit for compensation at 20°C for manual measurement or connect the temperature sensor to the measuring unit for auto compensation.

Calculate the observed resistance value per kilometers by using the following formula:

$$R = \frac{R_1 \times 1000}{L} \text{ (ohm/Km)}$$

Where : R = Resistance per kilometers

R_1 = Measured Resistance

L = Length of the cable

5 REQUIREMENTS

As per relevant specifications.

Table 6 – Electrical resistance of conductors

	Class 2 Stranding		Class 5 Stranding	
Nominal cross-section	DC resistance of plain copper conductors	DC resistance of tinned copper conductors	DC resistance of plain copper conductors	DC resistance of tinned copper conductors
mm^2	Ω/km at 20°C	Ω/km at 20°C	Ω/km at 20°C	Ω/km at 20°C
0,50	40,4	41,6	41,4	42,5
0,75	26,0	26,3	27,6	28,3
1,00	19,2	19,3	20,7	21,2
1,50	12,8	12,9	14,1	14,5
2,50	7,86	8,02	8,47	8,71

3. Test Procedure for Insulation Resistance

1. TEST EQUIPMENT

1 . Megger

2. METHOD OF TESTING

→ Connect the ' + ' lead of the megger to core and ' - ' lead to all other cores, metallic screen & armour.

→ Apply 500 V DC for 1 minute and measure the reading.

→ Calculate the observed insulation resistance value per kilometers by using the Following formula:

$$Ri = R1 \times L \quad (MohmxKm)$$

Where Ri : Insulation resistance x kilometers
R1: Measured resistance Megaohm
L : Length of the cable kilometers

3. REQUIREMENT

→ Insulation resistance as per data sheet

Note: In the case of manual measurement, to calculate resistance at 20 deg.C, measured insulation resistance at ambient temperature shall be multiplied by the temperature correction factor of insulation material

Table 3 – Electrical requirements of insulation compounds

Designation of the insulating compound	EPR	HEPR	XLPE	HF90	S 95
Insulation resistance constant Ki (MΩ.km) (see 7.2 of IEC 60092-350:—)					
– at 20 °C, minimum,	3 670	3 670	3 670	550	1 850
– at maximum operating temperature, minimum.	3,67	3,67	3,67	0,55	1,85
Volume resistivity ρ(Ω.cm) (see 7.2 of IEC 60092-350:—)					
– at 20 °C, minimum,	$1,0 \times 10^{15}$	$1,0 \times 10^{15}$	$1,0 \times 10^{15}$	$1,5 \times 10^{14}$	$5,0 \times 10^{13}$
– at maximum operating temperature, minimum.	$1,0 \times 10^{12}$	$1,0 \times 10^{12}$	$1,0 \times 10^{12}$	$1,5 \times 10^{11}$	$5,0 \times 10^{10}$

4. Test procedure for mutual capacitance (Pairs/Triples)

1 SCOPE OF THE TEST

This test procedure details the test methods to determine the mutual capacitance characteristics of the finished instrumentation cables.

2 NORMATIVE REFERENCES

BS EN 50288.7
BS EN 50288.1
BS EN 50289.1.5 par. 4.3.2.1

3 TEST EQUIPMENT

Capacitance measuring equipment – LCR bridge 1KHZ Manufact. LEADER Model 7455 serial 0100392. Cert. Calibration N° CA26946 Aviatronic –

4 METHOD OF TESTING

Remove sufficient length of the outer sheath, armour and inner sheath from both the end of the cable

The insulation of the conductors of the pairs/triples have to be removed about 30mm from the end of the cable

Connecting testing clamp at one pair/triple to one end of the cable, all others conductors and screen, if any, connected to earth .

Adjust suitable range for the same required value

Calculate the observed mutual capacitance value per kilometers by using the following

Formula:

$$C = \frac{Cm \times 1000}{L} \quad (\mu F/Km)$$

Where

C= mutual capacitance

Cm= measured capacitance in µF

L= Length of the cable in meters

5 REQUIREMENTS As per relevant specifications (APPROVED SPECIFICATION TO BE AVAILABLE DURING FAT)

Data Sheets approved available during FAT.

Note The value of mutual capacitance measured at ambient temperature shall be multiplied by the temperature correction factor

5. Test Procedure for Inductance (Pairs/Triples)

1 SCOPE OF THE TEST

This test procedure details the test methods to determine the inductance characteristics of the finished instrumentation cables.

2 NORMATIVE REFERENCES

BS EN 50288.7
BS EN 50288.1
BS EN 50289.1.12

3 TEST EQUIPMENT

Inductance measuring equipment – LRC bridge 1KHZ Manufact. LEADER Model 7455 serial 0100392. Cert. Calibration N° CA26946 Aviatronic –

4 METHOD OF TESTING

Remove sufficient length of the outer sheath, armour and inner sheath from both the end of the cable.

The insulation of the conductors of the pairs/triples has to be removed about 30mm from both ends of the conductor.

Connecting testing clamp at one pair/triple to one end of the cable, on the other end the conductor are placed in short circuit .

Adjust suitable range for the same required value

Calculate the observed inductance value per kilometers by using the following Formula

$$L = \frac{Lm \times 1000}{Le} \quad (\text{Mh/Km})$$

Where L = Inductance

Lm= measured inductance in Mh

Le= Length of the cable in meters

5 REQUIREMENTS (APPROVED SPECIFICATION TO BE AVAILABLE DURING FAT)
Data Sheets approved available during FAT.

(POINT 7.6 of the standard IEC 60092-350)

7.6 Inductance to resistance ratio (control and instrumentation cables only)

The inductance-to-resistance ratio (L/R ratio) shall be calculated from measurements of inductance (L) made at 1 kHz on a total of at least two pairs, triples or quads that have been selected at random from the inner and outer layers and the d.c. resistance measured at 20 °C. The values obtained shall be recorded in the cable type-test report.

6. Determination Value of L/R Ratio Adjacent Cores

1 SCOPE OF THE TEST

This test procedure details the test methods to determine the value of the inductance to resistance ratio of adiacent cores (pais/triple) of the finished instrumentation cables.

2 NORMATIVE REFERENCES

IEC 60092-350

3 TEST EQUIPMENT

Inductance and resistance measuring equipment – LCR bridge 1 KHZ Manufact. LEADER Model 7455 serial 0100392. Cert. Calibration N° CA26946 Aviatronic –

4 METHOD OF TESTING

As per inductance and conductor resistance (Loop) of the pairs/triple

* Calculate the observed L/R ratio value

Formula $L/R = \frac{Lm \times 1000}{R1X2}$ (µH/ohm)

5 REQUIREMENTS (APPROVED SPECIFICATION TO BE AVAILABLE DURING FAT)

Data Sheets approved available during FAT. (POINT 7.6 of the standard IEC 60092-350)

7.6 Inductance to resistance ratio (control and instrumentation cables only)

The inductance-to-resistance ratio (L/R ratio) shall be calculated from measurements of inductance (L) made at 1 kHz on a total of at least two pairs, triples or quads that have been selected at random from the inner and outer layers and the d.c. resistance measured at 20 °C. The values obtained shall be recorded in the cable type-test report.

7. Test Procedure for Conductor examination

1. SCOPE OF THE TEST

This test procedure details the test methods to determine the diameter and number of copper wire in the conductors

2. NORMATIVE REFERENCE

IEC 60228

3 TEST EQUIPMENT

3. Vernier Caliper-> (digital 0÷150) Man. Mytutoyo Model 500-181U Serial 206522 ID 123
Cert. Calibration N° RT07640 –

4 METHOD OF TESTING

Take a sample have length of 30 cm approximately.
The average of two measurements taken at right angles shall be taken as the diameter.
Average of three measurements at different places shall be considered as the diameter.
Measurement must be taken up to two decimal places to avoid any over usage of material
Count the number of wires / strands in the conductor

5 REQUIREMENTS

As per IEC 60092-350 (SEE POINT 4.2.3)

4.2.3 Class and form

The conductors considered in this standard are intended only for fixed installations and shall comply with class 2 or class 5 of IEC 60228. The minimum nominal conductor size depends on the voltage rating of the cable and shall be in accordance with Table 1.

Stranded copper class 2 conductors are recommended for general fixed-installation systems.

To aid installation, a conductor of class 5 may be used. Cables using class 5 conductors should not be regarded as suitable for repeated flexing in service.

Stranded circular non-compacted or compacted conductors are permitted for all cross-sections. Sector-shaped conductors are permitted for cross-sections of 10 mm^2 and above.

Table 1 – Minimum size of conductors

U	Nominal cross-sectional area (Minimum) mm^2
250 V	0,5
1 000 V	1,0
3 kV	10
6 kV	10
10 kV	16
15 kV	25
20 kV	35
30 kV	50

8. Test Procedure for Measurement of Thickness of Insulation and Sheaths

1 SCOPE OF THE TEST

This test procedure details the test methods to determine the insulation and the sheath thickness.

2. NORMATIVE REFERENCE

IEC 60811-201

3. TEST EQUIPMENT

3. Profile Projector –> Optical Englander (20x) manuf. JVC Alpa TK-C700 E N° 1553454
Digital micrometers 0÷25 DIGITRIX N°399968-399978
Cert. Calibration N° RT02658 MTA
Vernier caliper -> (digital 0÷150) Man. Mytutoyo Model 500-181U Serial 206522 ID 123
Cert. Calibration N° RT07640 –

4 METHOD OF TESTING

Prepare each test piece of insulation and sheaths in the form of a thin slice along a place perpendicular to the axis of the conductor or cable.
Place the test piece under the measuring equipment with the plane of the cut, perpendicular to the optical axis.
Make six measurements at 60° to each other.
If the inner profile of the sample is irregular or uneven take six readings radically at a position where the thickness is thinnest.
Take the reading in millimeter to two decimal places if the thickness is greater than 0.50 mm and to three decimal places if the thickness is less than 0.50 mm.
For the sheath direct over the insulation cores the number of readings shall be the same number of cores but limited to six measurements points.

5 REQUIREMENTS

As per IEC 60092-350(SEE POINT 4.3.3)

4.3.3 Insulation thickness

The thickness of insulation is specified for each size and type of cable in the applicable product standard.

For single core or multi-core cables, the thickness at any point may be less than the specified value, provided the difference does not exceed 0,1mm + 10 % of the specified value.

For single-unit or multi-unit cables, the thickness at any point may be less than the specified value, provided the difference does not exceed 0,1mm + 20 % of the specified value.

The thickness of any separator, screen or inorganic tape(s) applied over the conductor or over the insulation shall not be included in the thickness of insulation.

9. Test Procedure for Armour Wire / Tape Measurement

1. SCOPE OF THE TEST

This test procedure details the test methods to determine the diameter of galvanized steel wire for armour and thickness of aluminum/polyester tape.

2. NORMATIVE REFERENCE

BS EN 608111-1-1
BS EN 50288.7
BS EN 50288.1

3 TEST EQUIPMENT

Y Micrometer digital 0÷25 Man. Mytutoyo Model 293.265 Serial 6099146 ID 120
Cert. Calibration N° RT07641 MTA –

4 METHOD OF TESTING

Take a sample have length of 30 cm approximately.
The average of two measurements taken at right angles shall be taken as the diameter of wire / width & thickness of tape.
Average of three measurements at different places shall be considered as the diameter of wire / width & thickness of tape.
Measurement must be taken up to two decimal places to avoid any over usage of material

5 REQUIREMENTS

As per relevant specifications (APPROVED SPECIFICATION TO BE AVAILABLE DURING FAT)
Data Sheets approved available during FAT.

10 – Title: Test Procedure of diameter under armour and overall

1. TEST EQUIPMENT

1. Vernier caliper

2. METHOD OF TESTING

→ Take a sample have length of 30 cm approximately.
→ The average of two measurements taken at right angles shall be taken as the diameter
→ Average of three measurements at different places shall be considered as the diameter
→ Measurement must be taken up to two decimal places to avoid any over usage of material

3. REQUIREMENT

→ As per relevant specification and data sheet.
Data Sheets approved available during FAT.(SEE BELOW POINTS of THE STANDARD IEC 60092-350

4.9 Outer sheath

4.9.1 Material

The sheath shall be selected from one of those listed in IEC 60092-360. The sheathing compound selected shall be compatible with the cable components with which it is in contact and compatible with the operating temperature of the cable.

4.9.2 Application

The outer sheath shall be extruded in one or more closely adherent layers. The outer sheath shall form a compact and homogeneous body and shall be so applied that it fits closely onto the underlying components.

It shall be possible to remove the outer sheath without damaging the underlying insulation and/or screen(s).

4.9.3 Thickness of outer sheath

The thickness of sheath for each size and type of cable shall be as specified in the applicable product standard.

Unless specified in the applicable product standard, the thickness at any point may be less than the specified value if any, providing the difference does not exceed 0,1 mm + 15 % of the specified value for sheaths applied on a smooth cylindrical surface, or 0,2 mm + 20 % of the specified value for sheaths applied on an irregular cylindrical surface.

11. Test Procedure for Hot Set Test

1. SCOPE OF THE TEST

This test procedure details the test methods to determine the max elongation under load and max permanent elongation after cooling of XLPE insulation.

2. NORMATIVE REFERENCE

IEC 60811-507

IEC 60092-360

IEC 60092-350

3 TEST EQUIPMENT

a. Heating Oven. 30°C ÷300°C Manuf. GALLI Model 2100 Serial N°2123
b. Calibrated weights Manuf. CIBE Serial N° B5608÷B5612 – Cert. Calibration N°041/10÷045/10
c. Sample holding fixture
d. Vernier Calliper (digital 0÷150) Man. Mytutoyo Model 500-181U Serial 206522 ID 123 Cert. Calibration N° RT07640 –e. Timer Chronometer Manuf. GEONAUTE SERIAL N° 13101
Cert. Calibration N° RT07564 MTA –
f. Temperature thermometer 0÷300°c – manuf. KAYE model Pt 50.4 Serial N°910908
Certificate Calibration EMITLAS LAT024 0414T12 –

4 METHOD OF TESTING

Prepare dumbbell test pieces from XLPE insulation with thickness 0.8 to 2.00 mm.
Mark 20 mm gauge length in the center of the dumbbell. (L_1)
Suspend the sample in the oven with a weight of 20 N/cm2 at 200^0C for 15 minutes.
After the test duration of 15 minutes measure the length between the marks. (L_2)

Calculate the elongation, in percentage, under load as follows

$$\frac{L_2 - L_1}{L_1} \times 100$$

Remove the load from the test piece and keep in oven at same temperature for 5 minutes.
After 5 minutes, remove the sample from oven and allow to cool to room temperature.
After the sample attained to room temperature measure the lengths between the marks. (L3)
Calculate the elongation, in percentage, without load as follows

$$\frac{L_3 - L_1}{L_1} \times 100$$

5 REQUIREMENTS

The elongation under load shall not be more than 175%
The elongation without load shall not be more than 15%

12. Test Procedure for Flame Retardant & Fire Resistant

1 SCOPE OF TEST

This test procedure details the test methods to check if cable will pass test for Flame retardant & or Fire Resistant

2. NORMATIVE REFERENCE

IEC 60332.1.2 **-** IEC 60332.3.22 Flame retardant
IEC 60331.21 Fire Resistant

3. TEST EQUIPMENT

According to IEC 60332.1.2 for Flame Retardant

TEST EQUIPMENT

- A suitable three-sided metallic screen, with open front and closed top and bottom. The base shall be non-metallic
- A clamp suitable to fix the test sample of cables
- One gas burner

TEST SAMPLE

The test sample shall be a piece of the finished cable of cable 600 + - 25 mm long

FLAME CONDITION

When propane is used, the burner being regulated to give a flame approximately 175 mm Long with an inner blue cone approximately 55 mm long

TEST PROCEDURE

The sample shall be clamped at each end to position it vertically in the middle of a three-sided metallic screen and shall be adjusted so that the bottom of sample is approximately 50 mm from the base of the metallic screen.
The axis of the burner shall be at an angle of 45° to the axis of the sample.
The flame is applied for a continuos period of T seconds derived from Table 1:

Table 1 – Time for flame application

Overall diameter of test piece [a] mm	Time for flame application [b] s
$D \leq 25$	60 ± 2
$25 < D \leq 50$	120 ± 2
$50 < D \leq 75$	240 ± 2
$D > 75$	480 ± 2

[a] Where non-circular cables (for example, flat-form constructions) are to be tested, the circumference shall be measured and used to calculate an equivalent diameter, as if the cable were circular.

[b] For flat cables having a ratio of major to minor axis greater than 17:1, the flame application time remains under consideration.

TEST EVALUATION CRITERIA

After the burning has ceased, the surface of sample shall be wiped clean and the charred of affected portion shall not have reached 50 mm of the lower edge of the top clamp.

According to IEC 60331.21 For Fire Resistant

TEST EQUIPMENT

- A suitable chamber, of minimum volume 10 m^3
- A source of heat comprising a horizontally mounted ribbon burner
- A sample supporting systems
- A test wall equipped with thermocouples for verification of the source of heat
- A continuity checking arrangement
- Fuses

TEST SAMPLE

A cable sample at least 4.5m long shall be available from the cable length for test. Each individual test specimen to be tested shall be a piece of cable, taken from the cable sample,
not less than 1200 mm long shall have approximately 100 mm of sheath or outer coverings removed at each end.
At each end of the cable, each conductor shall be suitably prepared for electrical connections, and the exposed conductors shall be spread apart to avoid contact with each other.

TEST CONDITIONS

- Flow rate (at reference conditions of 1 bar and 20°C)
- Propane: (5,0 ± 0,25) litres/minute
- Air: (80 ± 5) litres/minute
- Test temperature: 750 °C
- Voltage applied between the cores: 250 (300) V a.c.

TEST PROCEDURE

The test specimen shall be held horizontally by means of suitable supports at each end and securely clamped to prevent movement.
The middle portion of the test specimen shall be supported by two metal rings placed approximately 300 mm; these, as well as any other metal parts of the supporting systems, shall be earthed.
At the transformer end of the test sample, ground the neutral conductor and any protective conductors. Any metal screens, drain wire or metallic layer shall be interconnected and grounded. Where a metallic sheath, armour or screen acts as a neutral or protective conductor, it shall be connected as for a neutral or protective conductor.
Each phase conductor is connected to a separate phase of the transformer output by a 2A fuse.
For multicores ≥4, multipairs, and multitriads cables, the conductors have to be divided in groups and each group has to be connected to a separate phase of the transformer output with a 2 A fuse or circuit-breaker with equivalent characteristics in each phase.

Ignite the burner and adjust the propane and air flow rates to those obtained during the verification procedure (see IEC 60331-11).
Switch on the electricity supply and adjust the voltage to the rated voltage of the cable (subject to a minimum voltage of 100 V a.c.), i.e. the test voltage between conductors shall equal the rated voltage between conductors and the test voltage from conductors to earth shall equal the rated voltage from conductor to earth. In the case of single-core cables the voltage shall be applied between the conductor and the earthed supporting apparatus and earthed metallic covering, if present.
The test shall continue for the flame application for 3 hours, if not otherwise specified. After that the flame shall be extinguished but the cable sample shall remain energized for a further 15 min. The total test duration shall be the flame application time together with the 15 min cooling period.

TEST EVALUATION CRITERIA

The criteria for determining the point of failure shall be as follows:

. the voltage is not maintained during the test duration, as indicated by fuse failure
. a conductor rupture during the test duration, as indicated by the lamp extinguishing

PART 2 - CERTIFICATION DOSSIER

- TEST RECORD - FAT REPORT
- IRN

FLEI s.r.l.
Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

DECLARATION OF CONFORMITY
DICHIARAZIONE DI CONFORMITA'
DÉCLARATION DE CONFORMITÉ

CLIENTE:
CUSTOMER :
KUNDE:
ACHETEUR:

ROSETTI MARINO

ORDINE:
PURCHASE ORDER :
AUFTRAG:
COMMANDE: 1724001170 123A90A

DESCRIZIONE CAVO:
CABLE DESCRIPTION :
BESCHREIBURG KABLE.
DESCRIPTION CABLE: SEE PACKING LIST

TIPO E QUANTITA':
TYPE AND QUANTITY :
MENGE:
TYPE ET QUANTITE': SEE PACKING LIST

Con il presente si attesta che sono state eseguite le prove di collaudo del materiale fornito a fronte dell'ordine di acquisto da Voi conferitoci. Visto l'esito delle prove suddette, si certifica che il materiale in oggetto è conforme alle seguenti prescrizioni:
We declare we tested the material we are supplying to you with reference to the purchase order You granted us. On the basis of the results of the tests, we are certifying that the material in object comply with the following regulations:
Wir erklären hiermit, dass die Prüfungen in Übereinstimmung mit den bestellten Waren durchgeführt wurden. Wir bescheinigen daher, dass die oben genannten Waren mit den folgenden Normen übereinstimmen:
Nous déclarons par la présente que des tests ont été effectués sur l'équipement fourni dans le cadre de votre bon de commande. Sur la base des résultats de ces essais, nous certifions que le matériel en question répond aux exigences suivantes :

[X] **VOSTRE SPECIFICHE**
YOUR SPECIFICATIONS
IHRE ANGABE
VOTRE SPECIFICATIONS
SPECIFICATIONS INCLUDED IN THE ORDER

[X] **NORME**
STANDARDS
NORME
STANDARDS
IEC 60092.376 – EN 50525.3.31
IEC 60331.21 – IEC 60332.1.2 – IEC 60332.3.22
IEC 60754.1/2 – IEC 61034.2 – IEC 60079.14 par.9.3.2a

[X] **ALLEGATI**
ATTACHEMENTS
ANLAGE
ANNEXES
TEST REPORT No.: 909÷929/2024

DATE 19/07/2024

ON BEHALF OF. Cucinotta
DATE 19/7/24 W R

Quality Control : Giovanni Cucinotta

FLEI s.r.l. Quality Control

Wednesday, 16th April 2025

Certificate of Conformity

It is certified that the products detailed herein have been inspected and tested in accordance with the conditions and requirements of this contract/Purchase Order and unless otherwise notified conform in all respects to the specifications relevant thereto.

Prysmian Kablo Part Number(s) with Description:

60071903 UCFIBRE I/O CT CST LSHF-FR B2 12 OM2B OR

The Quality Management System conforms to the requirements of:
ISO 9001: 2015.

Yours faithfully,

Samuel Krescanko

Quality Manager
Prysmian Kablo s.r.o.
Záborské 517
082 53 Záborské
Slovak Republic

Prysmian Kablo, s.r.o.
082 53 Záborské 517
IČO: 30 841 143
IČ DPH: SK2020300997
- 5 -

Wednesday, 16th April 2025

Certificate of Conformity

It is certified that the products detailed herein have been inspected and tested in accordance with the conditions and requirements of this contract/Purchase Order and unless otherwise notified conform in all respects to the specifications relevant thereto.

Prysmian Kablo Part Number(s) with Description:

60084725 UCFIBRE I/O CT CST LSHFFR B2 12 SM7A1 YL

The Quality Management System conforms to the requirements of:
ISO 9001: 2015.

Yours faithfully,

Samuel Krescanko

Quality Manager
Prysmian Kablo s.r.o.
Záborské 517
082 53 Záborské
Slovak Republic

Prysmian Kablo, s.r.o.
082 53 Záborské 517
IČO: 30 841 143
IČ DPH: SK2020300997
- 5 -

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 909 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	10

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 1X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	556/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	2733									
Drum No.	10-4943									

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black			Spessore Nominale Nominal Thickness	0,5 mm	0,6 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,0 mm	Diametro Diameter	tolerance ± 10%	mm	6,5	6,9
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,1 mm	1,1 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	9,5	9,6 ÷ 10,1
Marcatura Marking/Printing	FLEI - 1X2X0,75 SQMM - XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,8
Capacità Capacitance	nF/Km	≤	150	71,9
Induttanza Inductance	mH/Km	≤	0,9	0,63
L/R	µH/ohm	≤	25	16,6
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 21435

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
	x	CODIFICATION I 02	TYPE : MULTIMETER
	x	CODIFICATION I 03	TYPE : MEGAOHMETER
	x	CODIFICATION I 12	TYPE : LCR METER
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER
	x	CODIFICATION II 56	TYPE : PROFILE READER

CODIFICATION I 05

TYPE : HIGH VOLTAGE TEST BENCH

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF [illegible]
DATE 20/7/2024 W R

Foglio: Page: 1 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 910 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	20

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	557/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	714										
Drum No.	10-4938										

CARATTERISTICHE TECNICHE / CONSTRUCTION CHARACTERISTICS

							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,5 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,050 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,2 mm	Diametro Diameter	tolerance ± 10%	mm	11,4	10,5
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,3 mm	1,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	15,2	14,8 ÷ 15,4
Marcatura Marking/Printing	FLEI - 2X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE / ELECTRICAL CHARACTERISTICS

			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 24,2
Capacità Capacitance	nF/Km	≤	150	79,8
Induttanza Inductance	mH/Km	≤	0,9	0,64
L/R	µH/ohm	≤	25	14,9
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 50000

PROVE DI TENSIONE / VOLTAGE TEST

Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control: C. R.

ON BEHALF OF C.R.S.W. S.r.l.
DATE 20/12/2024 W R

Foglio: Page: 2

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 911 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	30
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 6X2X0,75 INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	558/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	302		
Drum No.	09-7184		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,6 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,050 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,3 mm	Diametro Diameter	tolerance ± 10%	mm	15,2	14,4
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,5 mm	2,1 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	19,4	19,9 ÷ 20,5
Marcatura Marking/Printing	FLEI - 6X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 24,9
Capacità Capacitance	nF/Km	≤	150	77,8
Induttanza Inductance	mH/Km	≤	0,9	0,8
L/R	µH/ohm	≤	25	16,9
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 55000

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF
DATE 30/7/2024

Foglio: Page: 3

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 912 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	40

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	559/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	906										
Drum No.	14-1107										

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,6 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,050 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,5 mm	Diametro Diameter	tolerance ± 10%	mm	20,2	19,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,7 mm	2,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	24,8	24,9 ÷ 25,6
Marcatura Marking/Printing	FLEI - 12X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 25,1
Capacità Capacitance	nF/Km	≤	150	77,2
Induttanza Inductance	mH/Km	≤	0,9	0,62
L/R	µH/ohm	≤	25	12,3
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 48500

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	12 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

L.S.
ON BEHALF OF ROSETTI MARINO
DATE 30/7/2024

Foglio: Page: 4

Mod. 8.2.8

REV.2 Data 13/03/18 Aggiornamento ISO 9001:2015
REV.3 Data 20/12/2023 Aggiornamento lista strumenti

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 913 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	50
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2,5 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	560/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	503		
Drum No.	07-588		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	XLPE	Colore Colour	Black NUMBERED (from 1 to 2)			Spessore Nominale Nominal Thickness	0,6 mm	0,7 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	8,9	8,7
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,2 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	12,1	12,5 ÷ 12,8
Marcatura Marking/Printing	FLEI - 2X2,5 SQMM - XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,53
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 22000

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

C.C. ON BEHALF OF CROMWELL
DATE 26/11/24 WR

Foglio: Page: 5 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 914 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	60
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X2,5 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	561/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	306									
Drum No.	09-7187									

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	XLPE	Colore Colour	Black NUMBERED (from 1 to 12)			Spessore Nominale Nominal Thickness	0,6 mm	0,7 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,4 mm	Diametro Diameter	tolerance ± 10%	mm	16,6	17,1
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,5 mm	1,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	20,8	21,2 ÷ 21,5
Marcatura Marking/Printing	FLEI - 12X2,5 SQMM - XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested	PROVE DI TENSIONE VOLTAGE TEST Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,38	Tra conduttori Between conductors	1,5x5	OK
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 63900	Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
					Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
					Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
					TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF C.I.

DATE 20/7/24 W R

Foglio: Page: 6 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 915 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	70
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 24X2,5 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	562/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	303		
Drum No.	10-4945		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	XLPE	Colore Colour	Black NUMBERED (from 1 to 24)			Spessore Nominale Nominal Thickness	0,6 mm	0,7 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,6 mm	Diametro Diameter	tolerance ± 10%	mm	23	22,5
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,8 mm	2,0 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	27,8	27,9 ÷ 28,1
Marcatura Marking/Printing	FLEI - 24X2,5 SQMM - XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,29
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 50000

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	13 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF. CROSS WIRES
DATE. 30/7/24 W R

Foglio: Page: 7 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 916 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	80

Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 1X2X0,75 - INSTRUMENT CABLE - Fire Resistant - Not I.S.							Job card	563/2024	
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22									
Length mt.	1715	1713								
Drum No.	10-4940	10-4941								

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black			Spessore Nominale Nominal Thickness	0,5 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	8,5	8,7
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,2 mm	1,3 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	11,7	12,0 ÷ 12,2
Marcatura Marking/Printing	FLEI - 1X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,7
Capacità Capacitance	nF/Km	≤	150	60
Induttanza Inductance	mH/Km	≤	0,9	0,79
L/R	µH/ohm	≤	25	17,0
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 21000

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result	
Tra conduttori Between conductors	1,5x5	OK	
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK	
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK	
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK	
TEST DI CONTINUITA' CONTINUITY TEST		OK	

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF...
DATE 30/7/24

Foglio: Page: 8 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 917 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	90

Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	564/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	606										
Drum No.	10-4942										

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS

							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,050 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,3 mm	Diametro Diameter	tolerance ± 10%	mm	15,1	14,8
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,5 mm	1,9 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	19,3	19,5 ÷ 20,0
Marcatura Marking/Printing	FLEI - 2X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS

			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,7
Capacità Capacitance	nF/Km	≤	150	59,1
Induttanza Inductance	mH/Km	≤	0,9	0,8
L/R	µH/ohm	≤	25	16,9
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 21200

PROVE DI TENSIONE VOLTAGE TEST

Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control: L. P.

ON BEHALF OF.. Rosetti Marino
DATE. 8/7/24 W R

Foglio: Page: 9

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 918 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	100
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 6X2X0,75 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	565/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	608		
Drum No.	12-1576		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,7 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,5 mm	Diametro Diameter	tolerance ± 10%	mm	20,6	19,1
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,7 mm	2,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	25,2	30,2 ÷ 30,8
Marcatura Marking/Printing	FLEI - 6X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 25,1
Capacità Capacitance	nF/Km	≤	150	56,3
Induttanza Inductance	mH/Km	≤	0,9	0,8
L/R	µH/ohm	≤	25	17,1
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 24000

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	12 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

L.P.
ON BEHALF OF. ROSETTI MARINO
DATE 30/7/24 W.R.

Foglio: Page: 10 / 58/158

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 919 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	110
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X2X0,75 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	566/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	404		
Drum No.	12-1577		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,8 mm	Diametro Diameter	tolerance ± 10%	mm	27,7	25,1
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	2,0 mm	2,1 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	32,9	30,2 ÷ 30,8
Marcatura Marking/Printing	FLEI - 12X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,9
Capacità Capacitance	nF/Km	≤	150	60,3
Induttanza Inductance	mH/Km	≤	0,9	0,79
L/R	µH/ohm	≤	25	17,1
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 21140

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	13 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
x	CODIFICATION I 03	TYPE : MEGAOHMETER	
x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ROSETTI MARINO
DATE 30/7/24 W.R.

Foglio: Page: 11

Mod. 8.2.8
REV.2 Data 13/03/18
REV.3 Data 20/12/2023
Aggiornamento ISO 9001:2015
Aggiornamento lista strumenti

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 920 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	120
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	567/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	3255		
Drum No.	14-1109		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Black NUMBERED (from 1 to 2)			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	10,3	10,5
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,3 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	14,1	14,7 ÷ 15,1
Marcatura Marking/Printing	FLEI - 2X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,46
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 9589

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
	x	CODIFICATION I 02	TYPE : MULTIMETER
	x	CODIFICATION I 03	TYPE : MEGAOHMETER
	x	CODIFICATION I 12	TYPE : LCR METER
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER
	x	CODIFICATION II 56	TYPE : PROFILE READER
		CODIFICATION I 05	TYPE : HIGH VOLTAGE TEST BENCH

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ROSETTI MARINO
DATE 22/7/24

Foglio: Page: 12 / 21

FLEI s.r.l.

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 921 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	130
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	568/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	817		
Drum No.	14-1116		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Black NUMBERED (from 1 to 2)			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,5 mm	Diametro Diameter	tolerance ± 10%	mm	19,8	19,5
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,6 mm	1,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	24,2	23,7 ÷ 24,1
Marcatura Marking/Printing	FLEI - 12X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,44
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 8447

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	12 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
	x	CODIFICATION I 02	TYPE : MULTIMETER
	x	CODIFICATION I 03	TYPE : MEGAOHMETER
	x	CODIFICATION I 12	TYPE : LCR METER
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER
	x	CODIFICATION II 56	TYPE : PROFILE READER
		CODIFICATION I 05	TYPE : HIGH VOLTAGE TEST BENCH

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF CRONWIRE
DATE 22/7/24

Foglio: Page: 13 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 922 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	140
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 1X3X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	569/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	2556		
Drum No.	14-1108		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Red - White - Black			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	10,9	11,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,3 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	14,7	15,1 ÷ 15,6
Marcatura Marking/Printing	FLEI - 1X3X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,17
Capacità Capacitance	nF/Km	≤	150	71,5
Induttanza Inductance	mH/Km	≤	0,9	0,68
L/R	µH/ohm	≤	60	47,2
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 7379

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF...
DATE 26/7/24

Foglio: Page: 14 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 923 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	150
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 6X3X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	570/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	603		
Drum No.	14-1548		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Red - White - Black (each core NUMBERED for TRIAD identification)			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,8 mm	Diametro Diameter	tolerance ± 10%	mm	27,7	28,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	2,0 mm	2,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	32,9	33,2 ÷ 34,3
Marcatura Marking/Printing	FLEI - 6X3X2,5 SQMM - MGT/XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,39
Capacità Capacitance	nF/Km	≤	150	65,4
Induttanza Inductance	mH/Km	≤	0,9	0,71
L/R	µH/ohm	≤	60	41,4
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 10043

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	13 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF. ROSETTI MARINO
DATE. 18/12/24

Foglio: Page: 15

FLEI s.r.l.

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 924 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	160

Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X3X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.
Job card	571/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22

Length mt.	305									
Drum No.	14-1547									

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Red - White - Black (each core NUMBERED for TRIAD identification)			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	2,1 mm	Diametro Diameter	tolerance ± 10%	mm	37,3	37,0
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,4	0,4
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	2,4 mm	2,8 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	43,7	44,1 ÷ 44,8
Marcatura Marking/Printing	FLEI - 12X3X2,5 SQMM - MGT/XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,37
Capacità Capacitance	nF/Km	≤	150	68,6
Induttanza Inductance	mH/Km	≤	0,9	0,72
L/R	µH/ohm	≤	60	42,3
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 11329

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	16 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF CROSS WIND
DATE 9/7/24 W.R

Foglio: Page: 16

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 925 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	170
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 24X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	572/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	305		
Drum No.	12-1575		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Black NUMBERED (from 1 to 24)			Spessore Nominale Nominal Thickness	0,6 mm	0,8
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,8 mm	Diametro Diameter	tolerance ± 10%	mm	27,6	27,4
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	2,0 mm	2,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	32,8	33,6 ÷ 34,3
Marcatura Marking/Printing	FLEI - 24X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,11
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 8420

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	13 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF crossing
DATE 26/7/24 W R

Foglio: Page: 17 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 926 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	180
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 1X2X0,75 - INSTRUMENT CABLE - Fire Resistant - I.S. Circuits	Job card	573/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	566		
Drum No.	07-587		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black			Spessore Nominale Nominal Thickness	0,5 mm	0,7 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	8,5	8,8
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Light Blue	Spessore Medio Average Thickness	1,2 mm	1,4 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	11,7	12,3 ÷ 12,7
Marcatura Marking/Printing	FLEI - 1X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 25,1
Capacità Capacitance	nF/Km	≤	150	57,9
Induttanza Inductance	mH/Km	≤	0,9	0,83
L/R	µH/ohm	≤	25	17,3
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 11650

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
x	CODIFICATION I 03	TYPE : MEGAOHMETER	
x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF CROMWELL
DATE 30/7/24 W R

Foglio: Page: 18 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 927 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	190
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 6X2X0,75 - INSTRUMENT CABLE - Fire Resistant - I.S. Circuits	Job card	574/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	309		
Drum No.	10-4935		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black			Spessore Nominale Nominal Thickness	0,5 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,5 mm	Diametro Diameter	tolerance ± 10%	mm	20,6	18,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Light Blue	Spessore Medio Average Thickness	1,7 mm	2,8 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	25,2	25,2 ÷ 26,0
Marcatura Marking/Printing	FLEI - 6X2X0,75 SQMM - MGT/XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 25,3
Capacità Capacitance	nF/Km	≤	150	77,1
Induttanza Inductance	mH/Km	≤	0,9	0,65
L/R	µH/ohm	≤	25	14,4
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 41126

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	12 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ... DATE: 2024.7.14 W R

Foglio: Page: 19

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 928 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	220
Tipo di cavo e sezione Cable type and section	CAT. 6A S/FTP ARMOURED LSZH 4X2X23AWG - Based on Draka UC500 HS23	Job card	575/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	1010	1005
Drum No.	08-188	08-187

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	SOLID plain annealed copper wires		Classe Class	(AWG23)		Diametro Nominale Nominal Diameter	0,56 mm	0,55 mm
Isolamento Insulation	Foamskin PE		Colore Colour	blue/white; orange/white; green/white; brown/white		Diametro Nominale Nominal Diameter	1,38 mm	1,32 mm
Cordatura coppie Pair Assembling	Cores twisted in pairs							
Schermatura coppie Pair Shield	Al-laminated plastic foil					% copertura % coverage	100	> 100
Schermatura totale Collective screen	Tinned copper braid				Nominal Wire Diameter	mm	0,1	0,1
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound - Blue	Spessore Nominale Nominal Thickness	0,8 mm	Diametro Diameter	tolerance ± 10%	mm	7,5	7,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,2 mm	1,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	10,7	10,7 ÷ 11,2
Marcatura Marking/Printing	FLEI - 4X2X23AWG - CAT.6A S/FTP ARMOURED LSZH - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza Loop Loop resistance	Ω/km a 20°C	≤	154	< 148,06
Capacità Capacitance	nF/Km	nom.	43	48,6
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	2000	> 100000
Impedenza Caratteristica Characteristic Impedance		Ω	100 ± 5	93

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1x1	OK
Tra conduttori / Schermo Between Cores / Shield	1x1	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ... DATE 16/2/24

Foglio: Page: 20 / 68/158

FLEI s.r.l.
Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 929 / 2024

TEST REPORT: Testing document Nr.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev Tested	From 10 to 220

Norma di riferimento *Ref. Standard/customer spec:*	IEC 60502.1 / IEC 60092.360

MATERIAL CERTIFICATE

MECHANICAL TEST

INSULATION XLPE	REQUIRED	**TESTED**
TENSILE STRENGHT	>12,5 N/mm²	16 N/mm²
ELONGATION AT BREAK	> 200 %	474%
AFTER AGEING (135° C x 168 hours)		
TENSILE STRENGHT	+/- 25 %	14,75 N/mm² (-7,8%)
ELONGATION AT BREAK	+/- 25 %	-9% (431,3%)
HOT SET TEST (200°C x 15 min.)	175%	75%
OVERALL SHEATH LSZH type SHF1	REQUIRED	**TESTED**
TENSILE STRENGHT	>9 N/MMQ	12,5 N/mm²
ELONGATION AT BREAK	> 120 %	160%
AFTER AGEING (110° C x 168 hours)		
TENSILE STRENGHT	+/- 30 %	13,6% (+9%)
ELONGATION AT BREAK	+/- 30 %	145% (-9%)

TYPE TESTS	**TESTED**
FIRE RESISTANT TEST (IEC 60331.21)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.1.2)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.22)	COMPLIANCE DECLARATION
ACID GAS GENERATION (IEC 60754.1/2)	COMPLIANCE DECLARATION
SMOKE DENSITY/LIGHT TRANSMITTANCE (IEC 61034.2 LT ≥ 60%)	COMPLIANCE DECLARATION
UV RESISTANCE TEST UL 2556 ex UL 1581 section 1200	COMPLIANCE DECLARATION

L. C.
ON BEHALF OF CROSSWIND
DATE 26/7/24 W R

INSTRUMENT LIST	CODIFICATION I 04	TYPE : TENSOR CHECK PROFILE (DINAMOMETER)	
Data: 19/07/2024 Date:	Il collaudatore:Giovanni Cucinotta *Quality Control:*	Il Collaudatore: *Customer Quality Control:*	Foglio: Page: 21
	FLEI s.r.l. Quality Control		

Mod. 8.2.8	REV.2 Data 13/03/18	Aggiornamento ISO 9001:2015
	REV.3 Data 20/12/2023	Aggiornamento lista strumenti

Prysmian Group

ATTENUATION MEASUREMENT REPORT

FR0328-00

Product Code:	60071903	Batch:	1024283941	Measurement Date:	04/05/2023 23:53
Product Description:	UCFIBRE I/O CT CST LSHF-FR B2 12 OM2B OR	Drum Number:	DPV1001-47539	Instrument ID:	PRYSK-OTDR01
Specification:	C34	Cable Length:	2060	Measuring Device:	PhotonKinetics 8000i
Customer:		Printing Batch:	20107812	Fiber Length:	2063
Customer order:	50				

All OTDR traces have been checked as linear and with regular behavior.

Result:Pass

Wavelength (nm): 850

C34_OM2	
Tube | Fiber	**Atten. dB/Km**
Green | Red	2.330
Green | Green	2.367
Green | Blue	2.324
Green | Yellow	2.347
Green | White	2.409
Green | Grey	2.332
Green | Brown	2.311
Green | Violet	2.351
Green | Turquoise	2.341
Green | Black	2.339
Green | Orange	2.316
Green | Pink	2.329
Maximum	**2.409**
Avgerage	**2.341**
Limit	**3.500**

Wavelength (nm): 1300

C34_OM2	
Tube | Fiber	**Atten. dB/Km**
Green | Red	0.475
Green | Green	0.491
Green | Blue	0.441
Green | Yellow	0.446
Green | White	0.614
Green | Grey	0.517
Green | Brown	0.525
Green | Violet	0.479
Green | Turquoise	0.465
Green | Black	0.444
Green | Orange	0.457
Green | Pink	0.454
Maximum	**0.614**
Avgerage	**0.484**
Limit	**1.500**

ON BEHALF OF.....
DATE 20/7/24 W R

Production Operator: OLEJAROVA
Quality Inspector:

Quality Inspector
Igor Misencik

Quality Manager
Samuel Krescanko

Prysmian Group

ATTENUATION MEASUREMENT REPORT

FR0328-00

Product Code:	60071864	Batch:	1026634766	Measurement Date:	26/02/2024 14:06
Product Description:	UCFIBRE I/O CT CST LSHFFR B2 12 SM7A1 YL	Drum Number:	DW3110A-60063	Instrument ID:	PRYSK-OTDR02
Specification:	C03	Cable Length:	4120	Measuring Device:	PhotonKinetics 8000i
Customer:		Printing Batch:	20108676	Fiber Length:	4142
Customer order:	155				

All OTDR traces have been checked as linear and with regular behavior.

Result:Pass

Wavelength (nm): 1310

C17_G657A1	
Tube | Fiber	**Atten. dB/Km**
Green | Red	0.340
Green | Green	0.344
Green | Blue	0.343
Green | Yellow	0.343
Green | White	0.337
Green | Grey	0.349
Green | Brown	0.340
Green | Violet	0.339
Green | Turquoise	0.344
Green | Black	0.341
Green | Orange	0.341
Green | Pink	0.340
Maximum	**0.349**
Avgerage	**0.342**
Limit	**0.390**

Wavelength (nm): 1625

C17_G657A1	
Tube | Fiber	**Atten. dB/Km**
Green | Brown	0.199
Green | Violet	0.202
Green | Turquoise	0.200
Green | Black	0.199
Green | Orange	0.201
Green | Pink	0.195
Maximum	**0.211**
Avgerage	**0.199**
Limit	**0.390**

ON BEHALF OF.....
DATE 26/2/24 WR

Wavelength (nm): 1550

C17_G657A1	
Tube | Fiber	**Atten. dB/Km**
Green | Red	0.189
Green | Green	0.199
Green | Blue	0.191
Green | Yellow	0.189
Green | White	0.186
Green | Grey	0.192
Green | Brown	0.187
Green | Violet	0.193
Green | Turquoise	0.191
Green | Black	0.189
Green | Orange	0.190
Green | Pink	0.187
Maximum	**0.199**
Avgerage	**0.190**
Limit	**0.220**

Wavelength (nm): 1625

C17_G657A1	
Tube | Fiber	**Atten. dB/Km**
Green | Red	0.195
Green | Green	0.211
Green | Blue	0.200
Green | Yellow	0.198
Green | White	0.194
Green | Grey	0.198

Production Operator: KOSCOVA

Quality Inspector: Quality Inspector Igor Misencik

Quality Manager Samuel Krescanko

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 1511 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A REV.2
		Item/Rev	270
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	1029/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	360		
Drum No.	07-136		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Black numbered from 1 to 2			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	10,3	11,1
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,3 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	14,1	14,1 ÷ 14,7
Marcatura Marking/Printing	FLEI - 2X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested	PROVE DI TENSIONE VOLTAGE TEST Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,24	Tra conduttori Between conductors	1,5x5	OK
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 5907	Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
					Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
					Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
					TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION I 12	TYPE : LCR METER	
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 25/11/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

Foglio: Page: 1 / 2

FLEI s.r.l.
Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 1512 / 2024

TEST REPORT: Testing document Nr.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A REV.2
		Item/Rev	270

Norma di riferimento *Ref. Standard/customer spec:*	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.

MATERIAL CERTIFICATE

MECHANICAL TEST

INSULATION XLPE	REQUIRED	**TESTED**
TENSILE STRENGHT	>12,5 N/mm²	17,3 N/mm²
ELONGATION AT BREAK	> 200 %	525%
AFTER AGEING (135° C x 168 hours)		
TENSILE STRENGHT	+/- 25 %	16,26 N/mm² (-6%)
ELONGATION AT BREAK	+/- 25 %	-10% (472,5%)
HOT SET TEST (200°C x 15 min.)	175%	75%
OVERALL SHEATH LSZH type SHF1	REQUIRED	**TESTED**
TENSILE STRENGHT	>9 N/MMQ	12,9 N/mm²
ELONGATION AT BREAK	> 120 %	155%
AFTER AGEING (110° C x 168 hours)		
TENSILE STRENGHT	+/- 30 %	11,99% (-7%)
ELONGATION AT BREAK	+/- 30 %	141% (-9%)

TYPE TESTS	**TESTED**
FIRE RESISTANT TEST (IEC 60331.21)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.1.2)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.22)	COMPLIANCE DECLARATION
ACID GAS GENERATION (IEC 60754.1/2)	COMPLIANCE DECLARATION
SMOKE DENSITY/LIGHT TRANSMITTANCE (IEC 61034.2 LT ≥ 60%)	COMPLIANCE DECLARATION
UV RESISTANCE TEST UL 2556 ex UL 1581 section 1200	COMPLIANCE DECLARATION

INSTRUMENT LIST	CODIFICATION I 04	TYPE : TENSOR CHECK PROFILE (DINAMOMETER)	
Data: 25/11/2024 Date:	Il collaudatore:Giovanni Cucinotta *Quality Control:*	Il Collaudatore: *Customer Quality Control:*	Foglio: Page: 2 / 2

FLEI s.r.l.
Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 52 / 2025

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A REV.3
		Item/Rev	280
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	1094/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60092,376 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	300		
Drum No.	07-109		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,6 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,05 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60093.360 - Black	Spessore Medio Average Thickness	1,2 mm	Diametro Diameter	tolerance ± 10%	mm	11,4	11,4
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,3 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	15,2	15,5÷15,9
Marcatura Marking/Printing	FLEI - 2X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2025 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested	PROVE DI TENSIONE VOLTAGE TEST	KV x min.	Risultato Result
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,6	Tra conduttori Between conductors	1,5x5	OK
Capacità Capacitance	nF/Km	≤	150	77,2	Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Induttanza Inductance	mH/Km	≤	0,9	0,68	Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
L/R	µH/ohm	≤	25	12,8	Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 69000	**TEST DI CONTINUITA' CONTINUITY TEST**		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 20/01/2025
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

Foglio: Page:
1
2

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 53 / 2025

TEST REPORT: Testing document Nr.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A REV.3
		Item/Rev	280

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.

MATERIAL CERTIFICATE

MECHANICAL TEST

INSULATION XLPE	REQUIRED	**TESTED**
TENSILE STRENGHT	>12,5 N/mm²	18,1 N/mm²
ELONGATION AT BREAK	> 200 %	587%
AFTER AGEING (135° C x 168 hours)		
TENSILE STRENGHT	+/- 25 %	16,65 N/mm² (-8%)
ELONGATION AT BREAK	+/- 25 %	-12% (516,5%)
HOT SET TEST (200°C x 15 min.)	175%	75%
OVERALL SHEATH LSZH type SHF1	REQUIRED	**TESTED**
TENSILE STRENGHT	>9 N/MMQ	13,2 N/mm²
ELONGATION AT BREAK	> 120 %	168%
AFTER AGEING (110° C x 168 hours)		
TENSILE STRENGHT	+/- 30 %	12,14% (-8%)
ELONGATION AT BREAK	+/- 30 %	151,2% (-10%)

TYPE TESTS	**TESTED**
FLAME RETARDANT TEST (IEC 60332.1.2)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.22)	COMPLIANCE DECLARATION
ACID GAS GENERATION (IEC 60754.1/2)	COMPLIANCE DECLARATION
SMOKE DENSITY/LIGHT TRANSMITTANCE (IEC 61034.2 LT ≥ 60%)	COMPLIANCE DECLARATION

INSTRUMENT LIST	CODIFICATION I 04	TYPE : TENSOR CHECK PROFILE (DINAMOMETER)	
Data: 20/01/2025 Date:	Il collaudatore:Giovanni Cucinotta *Quality Control:*	Il Collaudatore: *Customer Quality Control:*	Foglio: Page: 2

COPPER CONDUCTOR

NUOVA SCET S.R.L.

RIF RINA

Sede legale: via San Siro 27, 20149 Milano
Sede operativa: strada per Lignana 6, 13040 Crova (VC)
CF / P.IVA / REA 06206010156 – Cap. versato € 45.600
Telefono 0161/970283 – email nuovascet@nuovascet.it – pec nuovascet@pec.it

SPETTABILE
AFFINAZIONE E TRAFILERIA DI ARLUNO SRL VIA MONTENERO, 39 20010 ARLUNO (MI)

DOC. DI TRASPORTO N°	215
DEL	18/03/2024

ORDINE N° IN CORSO

DESTINAZIONE MERCE
FLEI SRL VIA A. DE GASPERI, 82 20041 AGRATE BRIANZA (MB)

ASPETTO DEI BENI	CAUSALE DEL TRASPORTO	TRASPORTO A CURA DI	PORTO
A VISTA	C. LAVORAZIONE	VETTORE	ASS.TO

DESCRIZIONE MERCE		PESO LORDO KG.	TARA BANCALI KG.	TARA BOBINE KG.	PESO NETTO KG.
N°7 BF 630	RIG.BOB 0,67 RR	4430	35	799	3596
					0
					0
					0
					0
					0
TOT.		4430	35	799	3596

RIEPILOGO IMBALLI	Q.TA'
ROCCHETTO DIN250	
ROCCHETTO DIN160	
BOBINA 400/127	
BOBINA 630 SCET	7
BOBINA 800/127	
BANCALE SEMPLICE	7
EUROPALLET 800 X 1200	
CESTO FERRO	
BANCALE 800	
BANCALE FERRO PER ROCCHETTI	
BANCALE FERRO PER 8 BOB400	
BANCALE FERRO PER 4 BOB630	
BANCALE FERRO PER 2 BOB630	
BANCALE FERRO PER 2 BOB800	
BANCALE LEGNO DOPPIO	

VETTORE
GELMI & ROMELLI AUTOTRASPORTI DI TADDEI MARCO SNC VIA GENERALE GIUSEPPE TREBOLDI, 71 25048 EDOLO (BS)

DATA PARTENZA

18/03/2024

FIRMA MITTENTE

FIRMA CONDUCENTE

FIRMA VETTORE

FIRMA DESTINATARIO

FLEI s.r.l.
ACCETTATO CON RISERVA

DATA FIRMA

18/03/2024

COPPER CONDUCTOR

CAMBIAGO TRAFILERIE S.R.L.
Via Giovanni Pascoli 6, 20060 Basiano (MI) - Italy
Email: amministrazione@cambiagotrafilerie.it Pec: cambiagotrafilerie@legalmail.it

07/06/2024

DOCUMENTO DI TRASPORTO N. 345

Beni Viaggianti a Mezzo - Delivery or transport by
Mittente

Causale trasporto - Reason for Transport
Vendita

Spett.le - Messers
FLEI SRL

VIA DE GASPERI 82
20864 AGRATE BRIANZA (MB)

DESTINAZIONE MERCE - DESTINATION OF GOODS
FLEI SRL

VIA DE GASPERI 82
20864 AGRATE BRIANZA (MB)

Codice - Product Code	Descrizione Description	U.M.	Netti Net	Lordi Gross	N. Colli Pack
	-Ord. 240291 Vs Rif: 140 DEL 27/05/24				
7R037_17Z	TREFOLO RAME ROSSO SEZ. 0,75 MMQ BOBINA	KG	332	378	
BF630	BOBINA FERRO ø 630 MM	NR	1		

Aspetto Esteriore dei Beni Packing		N. Colli Package No	Peso KG Weight KG	Porto Delivery
A Vista		01	378	
Vettori - Forwarder	Data/Ora Ritiro-Departure Date and Time		Firma - Signatures	
			FLEI s.r.l. ACCETTATO CON RISERVA DATA 07 06 24 FIRMA	
Beni Viaggianti a Mezzo - Delivery or transport by	Data/Ora Ritiro-Departure Date and Time		Firma Conducente - Driver's Signature	
Mittente				
Annotazioni e Variazioni - Notes			Firma Destinatario - Consignee's Signature	

IMBALLI IN PRESTITO D'USO Vi preghiamo di prendere nota che verranno fatturati se danneggiati e/o non resi entro 120 giorni

COPPER CONDUCTOR

CAMBIAGO TRAFILERIE S.R.L.
Via Giovanni Pascoli 6, 20060 Basiano (MI) - Italy
Email: amministrazione@cambiagotrafilerie.it Pec: cambiagotrafilerie@legalmail.it

11/06/2024

DOCUMENTO DI TRASPORTO N. 348

Beni Viaggianti a Mezzo - Delivery or transport by
Vettore

Causale trasporto - Reason for Transport
Vendita

Spett.le - Messers
FLEI SRL

VIA DE GASPERI 82
20864 AGRATE BRIANZA (MB)

DESTINAZIONE MERCE - DESTINATION OF GOODS
FLEI SRL

VIA DE GASPERI 82
20864 AGRATE BRIANZA (MB)

Codice - Product Code	Descrizione Description	U.M.	Netti Net	Lordi Gross	N. Colli Pack
	-Ord. 240291 Vs Rif: 140 DEL 27/05/24				
'R037_17Z	TREFOLO RAME ROSSO SEZ. 0,75 MMQ BOBINA	KG	557	643	
3F630	BOBINA FERRO ø 630 MM	NR	2		
SELLEL630/800	SELLE IN LEGNO PER BOBINE 630-800	NR	1		

FLEI s.r.l.
ACCETTATO CON RISERVA
DATA 11-06-24 FIRMA

ispetto Esteriore dei Beni 'acking	N. Colli Package No	Peso KG Weight KG	Porto Delivery
Vista	01	643	

'ettori - Forwarder	Data/Ora Ritiro-Departure Date and Time	Firma - Signatures
SELMI E ROMELLI AUTOTRASPORTI		

eni Viaggianti a Mezzo - Delivery or transport by	Data/Ora Ritiro-Departure Date and Time	Firma Conducente - Driver's Signature
'ettore		

nnotazioni e Variazioni - Notes

Firma Destinatario - Consignee's Signature

MBALLI IN PRESTITO D'USO Vi preghiamo di prendere nota che verranno fatturati se danneggiati e/o non resi entro 120 giorni

INSULATION

padanaplast®
EXCELLENCE IN COMPOUNDING

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Sede legale, via San Gabriele, 96 - 62010 Morrovalle (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 5291 / Fax +39 0521 870427
info@padanaplast.com - www.padanaplast.com

Tel d'emergenza: +1-813-248-0585

DOCUMENTO DI TRASPORTO (D.P.R. 472/96 del 14/08/96) N. 1236 / DDT DEL 06-06-2024 Pag. 1

Consegnare a:	Spettabile:
FLEI S.R.L. VIA A.DE GASPERI,82 - AGRATE BRIANZA (MB) 20041 - AGRATE BRIANZA (MB) ITALIA	FLEI S.R.L. VIA A.DE GASPERI,82 20041 - AGRATE BRIANZA (MB) ITALIA

Informazioni aggiuntive Intestatario

Causale del trasporto	INCOTERM
Vendita	Trasp. pagato fino a ICC2020 AGRATE BRIANZA

Aspetto beni	Peso netto (kg)	Peso lordo (kg)	Colli	Shipping type
Visible	4200	4432,469	9	PARTIAL LOAD

U.M.	Quantità	Articolo	Vs. articolo	Nostro riferimento	Vostro riferimento	Scheda trasporto
KG	200	CATALYST MASTERBATCH CT/1 IN SACCHI DA 20 KG SU PALETTA DA 1000 KG	CATALYST CT/1 *RC S20 P1000	1107/ORD del 17-05-2024	128 del 17-05-2024	1279/TO del 31-05-2024

Data consegna 07-06-2024

Lotti: RC1201453013827 - 200.000 KG

U.M.	Quantità	Articolo	Vs. articolo	Nostro riferimento	Vostro riferimento	Scheda trasporto
KG	4.000	POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA	POLIDAN EC/110 *RC C500CNB8 SH P	1107/ORD del 17-05-2024	128 del 17-05-2024	1279/TO del 31-05-2024

Data consegna 07-06-2024

Lotti: RI2202453014056 - 4000.000 KG

FLEI s.r.l. Quality Control

Proprietario merce,Committente,Caricatore Finproject spa Documento valido ai sensi DM 30.6.09 n. 554 (G.U. N. 153 del 4.7.09) e scheda di trasporto.

Vettore 1 DSV SPA	Data inizio trasporto 06-06-2024 Ora 16:15	Firma conducente
Container ID Seal number	Iscr. Albo Trasp. P.IVA 00891230153	
	Targa ES060MZ Autista	Firma destinatario
Istruzioni per lo speditore Orari di scarico: Lun 08.00 - 12.30 13.30 - 16.30 Mar 08.00 - 12.30 13.30 - 16.30 Mer 08.00 - 12.30 13.30 - 16.30 Gio 08.00 - 12.30 13.30 - 16.30 Ven 08.00 - 12.30 13.30 - 16.30		Compilato da / firma jlenia.battagliola

INSULATION

padanaplast®
EXCELLENCE IN COMPOUNDING

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Sede legale, via San Gabriele, 96 - 62010 Morrovalle (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 5291 / Fax +39 0521 870427
info@padanaplast.com - www.padanaplast.com

Tel d'emergenza: +1-813-248-0585

DOCUMENTO DI TRASPORTO (D.P.R. 472/96 del 14/08/96) N. 996 / DDT DEL 06-05-2024 Pag. 1

Consegnare a:

FLEI S.R.L.
VIA A.DE GASPERI,82 - AGRATE BRIANZA (MB)
20041 - AGRATE BRIANZA (MB)

ITALIA

Spettabile:

FLEI S.R.L.
VIA A.DE GASPERI,82
20041 - AGRATE BRIANZA (MB)

ITALIA

Informazioni aggiuntive Intestatario

Causale del trasporto	INCOTERM
Vendita	Trasp. pagato fino a ICC2020 AGRATE BRIANZA

Aspetto beni	Peso netto (kg)	Peso lordo (kg)	Colli	Shipping type
Visible	8175	8450,666	10	PARTIAL LOAD

U.M.	Quantità	Articolo	Vs. articolo	Nostro riferimento	Vostro riferimento	Scheda trasporto
KG	1.525	POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA POLIDAN EC/110 *RC C500CNB8 SH P		846/ORD del 12-04-2024	ORDINE 89 del 12-04-2024	1034/TO del 29-04-2024
Data consegna		07-05-2024				
Lotti:		RI2200456013860 - 1525.000 KG				
KG	1.475	POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA POLIDAN EC/110 *RC C500CNB8 SH P		848/ORD del 12-04-2024	89 del 12-04-2024	1034/TO del 29-04-2024
Data consegna		07-05-2024				
Lotti:		RI2200456013860 - 1475.000 KG				
KG	5.175	COGEGUM GFR 1614 IN SACCHI DA 25 KG SU PALETTA DA 1375 KG OFF SPEC COGEGUM GFR 1614 *RC S25 P1375		848/ORD del 12-04-2024	89 del 12-04-2024	1034/TO del 29-04-2024
Data consegna		07-05-2024				
Lotti:		RBH5211324013318 - 5175.000 KG				

FLEI s.r.l. Quality Control

FLEI s.r.l.
ACCETTATO CON RISERVA
DATA 07-05-24 FIRMA

Proprietario merce,Committente,Caricatore Finproject spa Documento valido ai sensi DM 30.6.09 n. 554 (G.U. N. 153 del 4.7.09) e scheda di trasporto.

Vettore 1 DSV SPA	Data inizio trasporto 06-05-2024 Ora 14:00	Firma conducente
Container ID Seal number	Iscr. Albo Trasp. P.IVA 00891230153	
	Targa GG638MT Autista NICO	Firma destinatario

Istruzioni per lo speditore Orari di scarico:
Lun 08.00 - 12.30 13.30 - 16.30
Mar 08.00 - 12.30 13.30 - 16.30
Mer 08.00 - 12.30 13.30 - 16.30
Gio 08.00 - 12.30 13.30 - 16.30
Ven 08.00 - 12.30 13.30 - 16.30

Compilato da/ firma
ilenia.battagliola

FINPROJECT SPA
BU Compounding di Roccabianca
Strada Paganina, 3
43010 - Roccabianca (Parma) - Italia
C.F. - P.IVA 01744770437

INNER COVERING

VIBIPLAST SRL
VIA MODIGLIANI, 12
20022 CASTANO PRIMO (MILANO) ITALIA

Tel. +39-0331/88 03 54 Fax +39-0331/88 15 93
Cap. Soc. € 312.000,00 I.V.
R.E.A. N. 1103104 MI
REG. IMPR. MILANO - C. F. - P. IVA 06496850154
e-mail vibiplast@vibiplast.it sito http://www.vibiplast.it

SEDE LEGALE
SPETT.LE / MESSRS. COD. CL000720

FLEI SRL

VIA DE GASPERI, 82
20864 AGRATE BRIANZA (MB)
ITALIA

SPEDIZIONE MERCI

FLEI SRL

VIA A. DE GASPERI, 82
20864 AGRATE BRIANZA (MB)
ITALIA

DOCUMENTO
D.D.T.

Numero	Data	Pag.
977	11/06/2024	1 / 1

CAUSALE DEL TRASPORTO	RESA	IMBALLO	Nr. COLLI	PESO Kg.
C/Vendita	FRANCO DESTINO	SACCONI	3	3.104,00

Codice	Descrizione	U.M.	Quantità
HL312UVTB-NERO HL312UVTB-N	Ordine Cl. num. 868/2024/OR del 31/05/2024 Vs. num. 145 del 31/05/2024 Rif. Sig. Beretta HFFR TIPO: HL 312 / UV / TB Nero - LOTTO 162 HFFR TIPO: HL 312 / UV / TB Naturale - LOTTO 157 N.3 SACCONI A RENDERE N.3 BANCALI Chiusura per vacanze estive dal 08/08/2024 al 26/08/2024 compresi Closed for Summer Holiday from 08/08/2024 to 26/08/2024 including	 Kg Kg	 2.950,00 100,00

FLEI s.r.l. Quality Control

Informativa ETICHETTATURA AMBIENTALE DEGLI IMBALLAGGI: https://www.vibiplast.it/msdscertificates

NOTE

TRASPORTO A CURA	INIZIO TRASPORTO	FIRMA CONDUCENTE	FIRMA DESTINATARIO
☐ MITTENTE ☐ DESTINATARIO ☒ VETTORE	DATA _____ ORA: _____		FLEI s.r.l. ACCETTATO CON RISERVA DATA 12 06 24 FIRMA

VETTORI (DITTA - DOMICILIO O RESIDENZA)	RITIRO	FIRMA VETTORE
AUTOTRASPORTI VIOLA DOMENICO VIA MORONI, 45 20022 CASTANO PRIMO (MI) Tel. : 0331/880850 P. Iva : 02026240156 N° Iscr. Albo:	DATA 11/6/24 ORA: 15.40	

ARMOUR

Documento di Trasporto

(Art. 1, comma 3 DPR 14/08/96 n. 472)

8000368224

Data: 09.05.2024

Cliente: 101266
FLEI S.R.L.
VIA A. DE GASPERI 82
I-20864 AGRATE BRIANZA MB
Monza - Brianza - Italia
NIF: IT09912870152

Indirizzo di consegna: 101266
FLEI S.R.L.
VIA A. DE GASPERI 82
20864 AGRATE BRIANZA

Informazioni di Spedizione

Stabilimento:	VALLS
Mus. Trasp.:	Vendite Nazionali
Incoterms 2020:	C.P.T. - Agrate Brianza
Peso Totale:	1.103,760 KG
Peso Netto:	1.008,000 KG
N° Colli:	1
Doc. SAP:	4904355358

Vettore/Spedizioniere: 214868
BOSATRANS, S.A.
ESA65251902
Nr. Trasporto: 92634

Pos.	Materiale/Definizione	Quantità	UM	Quantità UF		N° Colli:	Peso Kg
	enviar copia albaran y certificado de calidad por email						
	Ordine: 3181425653 del 06.05.2024 **Vs. Riferimento 106 del 02.05.2024**						
000010	345883 FILO ZN. RICOTTO 0,24 MM SPL DIN200	1.008,000	KG	1.008,000	KG	1	1.008,000

FLEI s.r.l. Quality Control

Inizio trasporto (Data e Ora) 09.05.2024 - __:__:__

Firma del vettore:

Firma del destinatario: FLEI s.r.l. ACCETTATO CON RISERVA

Osservazioni del destinatario

DATA 15/05/2024 FIRMA

ARMOUR

Documento di Trasporto

(Art. 1, comma 3 DPR 14/08/96 n. 472)

8000365475

Data: 13.03.2024

Cliente: 101266
FLEI S.R.L.
VIA A. DE GASPERI 82
I-20864 AGRATE BRIANZA MB
Monza - Brianza - Italia
NIF: IT09912870152

Indirizzo di consegna: 101266
FLEI S.R.L.
VIA A. DE GASPERI 82
20864 AGRATE BRIANZA

Informazioni di Spedizione

Stabilimento:	VALLS
Caus. Trasp.:	Vendite Nazionali
Incoterms 2020:	C.P.T. - Agrate Brianza
Peso Totale:	2.179,728 KG
Peso Netto:	2.088,000 KG
N° Colli:	2
Doc. SAP:	4904289843

Vettore/Spedizioniere: 214868
BOSATRANS, S.A.
ESA65251902
Nr. Trasporto: 92135

Pos.	Materiale/Definizione	Quantità	UM	Quantità UF		N° Colli:	Peso Kg
	enviar copia albaran y certificado de calidad por email						
	Ordine: 3181425140 del 05.03.2024 **Vs. Riferimento 49 del 05.03.2024**						
000010	345823 FILO ZN. RICOTTO 0,20 MM SPL DIN200	1.008,000	KG	1.008,000	KG	1	1.008,000
000020	345752 FILO ZN. RICOTTO 0,30 MM SPL BB20	1.080,000	KG	1.080,000	KG	1	1.080,000

FLEI s.r.l. Quality Control

Inizio trasporto (Data e Ora) 13.03.2024 - __:__:__

FLEI s.r.l. ACCETTATO CON RISERVA

Firma del vettore:	**Firma del destinatario:** DATA 18/03/2024 FIRMA

Osservazioni del destinatario

OUTER SHEATH

VIBIPLAST SRL
VIA MODIGLIANI, 12
20022 CASTANO PRIMO (MILANO) ITALIA

Tel. +39-0331/88 03 54 Fax +39-0331/88 15 93
Cap. Soc. € 312.000,00 I.V.
R.E.A. N. 1103104 MI
REG. IMPR. MILANO - C. F. - P. IVA 06496850154
e-mail vibiplast@vibiplast.it sito http://www.vibiplast.it

SEDE LEGALE
SPETT.LE / MESSRS. COD. CL000720

FLEI SRL

VIA DE GASPERI, 82
20864 AGRATE BRIANZA (MB)
ITALIA

SPEDIZIONE MERCI

FLEI SRL

VIA A. DE GASPERI, 82
20864 AGRATE BRIANZA (MB)
ITALIA

DOCUMENTO
D.D.T.

Numero	Data	Pag.
1.070	26/06/2024	1 / 1

CAUSALE DEL TRASPORTO	RESA	IMBALLO	Nr. COLLI	PESO Kg.
C/Vendita	FRANCO DESTINO	SACCONI	4	4.072,00

Codice	Descrizione	U.M.	Quantità
	Ordine Cl. num. 967/2024/OR del 18/06/2024		
	Vs. num. 168 del 18/06/2024 Rif. Sig. Beretta		
HL312UVTB-A2003	HFFR TIPO: HL 312 / UV / TB Arancio 2003 - LOTTO 170-171	Kg	2.000,00
HL312UVTB-G7001	HFFR TIPO: HL 312 / UV / TB Grigio 7001 - LOTTO 170	Kg	2.000,00
	N.4 SACCONI A RENDERE		
	N.4 BANCALI		
	Chiusura per vacanze estive dal 08/08/2024 al 26/08/2024 compresi		
	Closed for Summer Holiday from 08/08/2024 to 26/08/2024 including		
	PER QUESTA FORNITURA VERRA' APPLICATO PAG + 30 GG		

Informativa ETICHETTATURA AMBIENTALE DEGLI IMBALLAGGI: https://www.vibiplast.it/msdscertificates

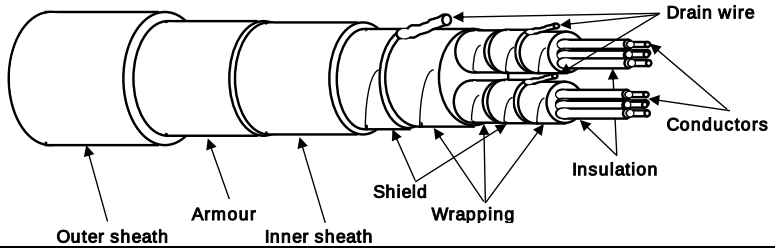
NOTE

TRASPORTO A CURA	INIZIO TRASPORTO	FIRMA CONDUCENTE	FIRMA DESTINATARIO
☐ MITTENTE ☐ DESTINATARIO ☒ VETTORE	DATA _____ ORA: _____		flei s.r.l. ACCETTATO CON RISERVA DATA 26/06/2024 FIRMA

VETTORI (DITTA - DOMICILIO O RESIDENZA)	RITIRO	FIRMA VETTORE
AUTOTRASPORTI VIOLA DOMENICO VIA MORONI, 45 20022 CASTANO PRIMO (MI) Tel. : 0331/880685 P. Iva : 02026240156 N° Iscr. Albo:	DATA 26/6/24 ORA: 9.15	

FLEI s.r.l.

Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V)
2X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.



TECHNICAL FEATURES

Conductors :	**7-STRANDED** plain/bare soft annealed copper wires **IEC 60228 Class 2**
Insulation :	XLPE, Nominal Thickness 0,5 mm
Cores colour code :	**White - Black (each core NUMBERED for PAIR identification)**
Pair Assembling :	13/1mt
Pair Wrapping:	by polyester-PET Minimum Thickness 0,010 mm tape helically wound (overlap ≥ 25%)
Drain wire :	7-Stranded **TINNED** annealed copper drain wire, **size 0,5 sqmm**, in continuous contact with the shield
Pair Shield :	by Aluminium-**Al** Minimum Thickness 0,008 mm / polyester-**PET** Minimum Thickness 0,010 mm tape helically wound (overlap ≥ 25%)
Shield Insulation :	by polyester-PET Minimum Thickness 0,010 mm tape helically wound (overlap ≥ 25%)
Total Assembling :	7/1mt
Overall Wrapping:	by polyester-PET Minimum Thickness 0,010 mm tape helically wound (overlap ≥ 25%)
Drain wire :	7-Stranded **TINNED** annealed copper drain wire, **size 0,5 sqmm**, in continuous contact with the shield
Overall Shield :	by Aluminium-**Al** Minimum Thickness 0,008 mm / polyester-**PET** Minimum Thickness 0,010 mm tape helically wound (overlap ≥ 25%)
Inner sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,2 mm
Inner sheath color code:	**Black**
Armour :	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, moisture/abrasion/UV Resistant, Average Thickness 1,3 mm
Outer sheath color code:	**Grey**
Outer printing (INKJET) :	**FLEI - 2X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 -**
(every 1000 mm)	**Year of Manufacture - CE + Meter Marking**
Under armour diameter :	(11,4 ± 10%) mm
Over armour diameter :	(12,6 ± 10%) mm
Outer diameter :	(15,2 ± 10%) mm
Bending radius :	cable outer diameter x 10 (in fixed installation)
Voltage Test :	1,5 kV a.c. for 5' (Between Cores) / 1,5 kV a.c. for 5' (Between Cores - Shield)
Conductors DC Resistance :	≤ 26 Ω/km (@ 20°C)
Insulation Resistance :	≥ 1000 MΩ x Km (@ 20°C)
Mutual Capacitance :	≤ 150 nF/km
L/R ratio :	≤ 25 µH/Ω
Inductance :	≤ 0,9 mH/km
Applicable Standards	
Design Guidelines :	**IEC 60092.376**
ON COMPLETE CABLE	
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22
Acid Gas generation :	IEC 60754.1/2
Smoke density/Light Transmittance :	IEC 61034.2 (LT ≥ 60%)
Hazardous Areas :	IEC 60079.14 par.9.3.2a
Temperature Range :	
ON INSULATION	(max +90°C) (max continuous operation temperature of conductors)
	(max +250°C) (max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE	
During Operation :	(-20°C up to +90°C) (in fixed installation)
During installation :	(- 5°C up to +50°C)
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Inner sheath together with correct ATEX approved equipment or accessories.**

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	04/04/2024	Messa			
Checked :	04/04/2024	Spaccasassi			
Approved :	04/04/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

All proprietary rights reserved according to law. This document shall be not reproduced without written permission. FLEI reserves the right to change characteristics and technical data of product shown at any time.

padanaplast®
EXCELLENCE IN COMPOUNDING

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Sede legale, via San Gabriele, 96 - 62010 Morrovalle (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 5291 / Fax +39 0521 870427
info@padanaplast.com - www.padanaplast.com

Tel d'emergenza: +1-813-248-0585

DOCUMENTO DI TRASPORTO (D.P.R. 472/96 del 14/08/96) N. 996 / DDT DEL 06-05-2024 Pag. 1

Consegnare a:	Spettabile:
FLEI S.R.L. VIA A.DE GASPERI,82 - AGRATE BRIANZA (MB) 20041 - AGRATE BRIANZA (MB) ITALIA	FLEI S.R.L. VIA A.DE GASPERI,82 20041 - AGRATE BRIANZA (MB) ITALIA

Informazioni aggiuntive Intestatario

Causale del trasporto	INCOTERM
Vendita	Trasp. pagato fino a ICC2020 AGRATE BRIANZA

Aspetto beni	Peso netto (kg)	Peso lordo (kg)	Colli	Shipping type
Visible	8175	8450,666	10	PARTIAL LOAD

U.M.	Quantità	Articolo	Vs. articolo	Nostro riferimento	Vostro riferimento	Scheda trasporto
KG	**1.525**	POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA POLIDAN EC/110 *RC C500CNB8 SH P		846/ORD del 12-04-2024	ORDINE 89 del 12-04-2024	1034/TO del 29-04-2024
Data consegna		07-05-2024				
Lotti:		RI2200456013860 - 1525.000 KG				
KG	**1.475**	POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA POLIDAN EC/110 *RC C500CNB8 SH P		848/ORD del 12-04-2024	89 del 12-04-2024	1034/TO del 29-04-2024
Data consegna		07-05-2024				
Lotti:		RI2200456013860 - 1475.000 KG				
KG	**5.175**	COGEGUM GFR 1614 IN SACCHI DA 25 KG SU PALETTA DA 1375 KG		848/ORD del 12-04-2024	89 del 12-04-2024	1034/TO del 29-04-2024
	OFF SPEC	COGEGUM GFR 1614 *RC S25 P1375				
Data consegna		07-05-2024				
Lotti:		RBH5211324013318 - 5175.000 KG				

FLEI S.r.l. Quality Control

FLEI s.r.l.
ACCETTATO CON RISERVA
DATA 07-05-24 FIRMA

Proprietario merce,Committente,Caricatore Finproject spa Documento valido ai sensi DM 30.6.09 n. 554 (G.U. N. 153 del 4.7.09) e scheda di trasporto.

Vettore 1 DSV SPA	Data inizio trasporto 06-05-2024 Ora 14:00	Firma conducente
Container ID Seal number	Iscr. Albo Trasp. P.IVA 00891230153	Firma destinatario
	Targa GG638MT Autista NICO	Compilato da / firma jlenia.battagliola

Istruzioni per lo speditore Orari di scarico:
Lun 08.00 - 12.30 13.30 - 16.30
Mar 08.00 - 12.30 13.30 - 16.30
Mer 08.00 - 12.30 13.30 - 16.30
Gio 08.00 - 12.30 13.30 - 16.30
Ven 08.00 - 12.30 13.30 - 16.30

FINPROJECT SPA
BU Compounding di Roccabianca
Strada Paganina, 3 (Parma) - Italia
43010 - Roccabianca
C.F. - P.IVA 01744770437

ORIGINAL

padanaplast®
EXCELLENCE IN COMPOUNDING

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico
Sede legale, via San Gabriele, 96 - 62010 Morrovalle (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 5291 / Fax +39 0521 870427
info@padanaplast.com - www.padanaplast.com

CERTIFICATE OF ANALYSIS

Insp. certificate "3.1" EN 10204

Customer	Customer Destination
FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA	FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA

Transport	1034 / TO	**Batch number**	RI2200456013860
Delivery note	996 / DDT	**Order**	846 / ORD
Shipping date	03-05-2024	**Customer ref.**	ORDINE 89

POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA

Batch number RI2200456013860 **/ Quantity** **1.525,000 KG**

Characteristics	Units	Value	Specification	Method
FI 190°C/2,16kg *	g/10min	0,8	0,4 - 0,8	MA01
Specific gravity *	g/cm3	0,922	0,900 - 0,940	ASTM D792
Tensile Strenght *	N/mm2	24,1	>= 12,5	EN 60811
Elongation at break *	%	495	>= 250	EN 60811
H.S.T.200°C 20 N/cm2 all% *	%	50	<= 100	EN 60811
H.S.T. 200°C res%	%	0	-10 - 10	EN 60811
Production date	-	06-05-2024		

* MFI 190°C/2,16kg - (a) Test made on granules during production, without catalyst
* Specific gravity - (b) Test made on pressed plate, without catalyst
* Tensile Strenght - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* Elongation at break - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* H.S.T.200°C 20 N/cm2 all% - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.

Apparent defects or non compliance with Padanaplast technical specifications, shall be communicated to Padanaplast within 8 days from receipt of the goods (ref. General conditions of sale)

FLEI s.r.l.
Quality Control

Supplier :

Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Strada Paganina 3, 43010 Roccabianca (Parma) - Italia
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.

1724001170-QC-DB-00007_02

Issued at ROCCABIANCA on 06-05-2024 14:51:51

Approved by

Stefania Bolgarani
#Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Quality Control Laboratory Manager
Strada Paganina, 3
43010 Roccabianca (PR) Italy

87/158

ORIGINAL

padanaplast®
EXCELLENCE IN COMPOUNDING

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Sede legale, via San Gabriele, 96 - 62010 Morrovalle (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 5251 / Fax +39 0521 870427
info@padanaplast.com - www.padanaplast.com

CERTIFICATE OF ANALYSIS

Insp. certificate "3.1" EN 10204

Customer	Customer Destination
FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA	FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA

Transport	1034 / TO	**Batch number**	RI2200456013860
Delivery note	996 / DDT	**Order**	848 / ORD
Shipping date	03-05-2024	**Customer ref.**	89

POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA

Batch number RI2200456013860 **/ Quantity** **1.475,000 KG**

Characteristics	Units	Value	Specification	Method
.FI 190°C/2,16kg *	g/10min	0,8	0,4 - 0,8	MA01
Specific gravity *	g/cm3	0,922	0,900 - 0,940	ASTM D792
Tensile Strenght *	N/mm2	24,1	>= 12,5	EN 60811
Elongation at break *	%	495	>= 250	EN 60811
H.S.T.200°C 20 N/cm2 all% *	%	50	<= 100	EN 60811
H.S.T. 200°C res%	%	0	-10 - 10	EN 60811
Production date	-	06-05-2024		

* MFI 190°C/2,16kg - (a) Test made on granules during production, without catalyst
* Specific gravity - (b) Test made on pressed plate, without catalyst
* Tensile Strenght - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* Elongation at break - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* H.S.T.200°C 20 N/cm2 all% - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.

Apparent defects or non compliance with Padanaplast technical specifications, shall be communicated to Padanaplast within 8 days from receipt of the goods (ref. General conditions of sale)

FLEI s.r.l.
Quality Control

Supplier :

Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Strada Paganina 3, 43010 Roccabianca (Parma) - Italia
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.

Approved by

Stefania Bolgarani
#Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Quality Control Laboratory Manager
Strada Paganina, 3
43010 Roccabianca (PR) Italy

VIBIPLAST SRL
VIA MODIGLIANI, 12
20022 CASTANO PRIMO (MILANO) ITALIA

Tel. +39-0331/88 03 54 Fax +39-0331/88 15 93
Cap. Soc. € 312.000,00 I.V.
R.E.A. N. 1103104 MI
REG. IMPR. MILANO - C. F. - P. IVA 06496850154
e-mail vibiplast@vibiplast.it sito http://www.vibiplast.it

SEDE LEGALE
SPETT.LE / MESSRS. COD. CL000720

FLEI SRL

VIA DE GASPERI, 82
20864 AGRATE BRIANZA (MB)
ITALIA

SPEDIZIONE MERCI

FLEI SRL

VIA A. DE GASPERI, 82
20864 AGRATE BRIANZA (MB)
ITALIA

DOCUMENTO
D.D.T.

Numero	Data	Pag.
1.070	26/06/2024	1 / 1

CAUSALE DEL TRASPORTO	RESA	IMBALLO	Nr. COLLI	PESO Kg.
C/Vendita	FRANCO DESTINO	SACCONI	4	4.072,00

Codice	Descrizione	U.M.	Quantità
	Ordine Cl. num. 967/2024/OR del 18/06/2024 Vs. num. 168 del 18/06/2024 Rif. Sig. Beretta		
HL312UVTB-A2003	HFFR TIPO: HL 312 / UV / TB Arancio 2003 - LOTTO 170-171	Kg	2.000,00
HL312UVTB-G7001	HFFR TIPO: HL 312 / UV / TB Grigio 7001 - LOTTO 170	Kg	2.000,00
	N.4 SACCONI A RENDERE N.4 BANCALI Chiusura per vacanze estive dal 08/08/2024 al 26/08/2024 compresi Closed for Summer Holiday from 08/08/2024 to 26/08/2024 including PER QUESTA FORNITURA VERRA' APPLICATO PAG + 30 GG		

Informativa ETICHETTATURA AMBIENTALE DEGLI IMBALLAGGI: https://www.vibiplast.it/msdscertificates

NOTE

TRASPORTO A CURA	INIZIO TRASPORTO	FIRMA CONDUCENTE	FIRMA DESTINATARIO
☐ MITTENTE ☐ DESTINATARIO ☒ VETTORE	DATA _____ ORA: _____		FLEI s.r.l. ACCETTATO CON RISERVA DATA 26/06/2024 FIRMA

VETTORI (DITTA - DOMICILIO O RESIDENZA)	RITIRO	FIRMA VETTORE
AUTOTRASPORTI VIOLA DOMENICO VIA MORONI, 45 20022 CASTANO PRIMO (MI) **Tel. :** 0331/880685 **P. Iva :** 02026240156 **N° Iscr. Albo:**	DATA 26/6/24 ORA: 9.15	

padanaplast®
EXCELLENCE IN COMPOUNDING

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Sede legale, via San Gabriele, 96 - 62010 Morrovalle (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 5291 / Fax +39 0521 870427
info@padanaplast.com - www.padanaplast.com

Tel d'emergenza: +1-813-248-0585

DOCUMENTO DI TRASPORTO (D.P.R. 472/96 del 14/08/96) N. 1236 / DDT DEL 06-06-2024 Pag. 1

Consegnare a:	Spettabile:
FLEI S.R.L. VIA A.DE GASPERI,82 - AGRATE BRIANZA (MB) 20041 - AGRATE BRIANZA (MB) ITALIA	FLEI S.R.L. VIA A.DE GASPERI,82 20041 - AGRATE BRIANZA (MB) ITALIA

Informazioni aggiuntive Intestatario

Causale del trasporto	INCOTERM
Vendita	Trasp. pagato fino a ICC2020 AGRATE BRIANZA

Aspetto beni	Peso netto (kg)	Peso lordo (kg)	Colli	Shipping type
Visible	4200	4432,469	9	PARTIAL LOAD

U.M.	Quantità	Articolo	Vs. articolo	Nostro riferimento	Vostro riferimento	Scheda trasporto
KG	**200**	CATALYST MASTERBATCH CT/1 IN SACCHI DA 20 KG SU PALETTA DA 1000 KG CATALYST CT/1 *RC S20 P1000		1107/ORD del 17-05-2024	128 del 17-05-2024	1279/TO del 31-05-2024
		Data consegna 07-06-2024				
		Lotti: RC1201453013827 - 200.000 KG				
KG	**4.000**	POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA POLIDAN EC/110 *RC C500CNB8 SH P		1107/ORD del 17-05-2024	128 del 17-05-2024	1279/TO del 31-05-2024
		Data consegna 07-06-2024				
		Lotti: RI2202453014056 - 4000.000 KG				

FLEI s.r.l. Quality Control

Proprietario merce,Committente,Caricatore Finproject spa Documento valido ai sensi DM 30,6.09 n. 554 (G.U. N. 153 del 4.7.09) e scheda di trasporto.

Vettore 1 DSV SPA	Data inizio trasporto 06-06-2024 Ora 16:15	Firma conducente
Container ID Seal number	Iscr. Albo Trasp. P.IVA 00891230153	
	Targa ES060MZ Autista	Firma destinatario
Istruzioni per lo speditore Orari di scarico: Lun 08.00 - 12.30 13.30 - 16.30 Mar 08.00 - 12.30 13.30 - 16.30 Mer 08.00 - 12.30 13.30 - 16.30 Gio 08.00 - 12.30 13.30 - 16.30 Ven 08.00 - 12.30 13.30 - 16.30		Compilato da / firma jlenia.battagliola

ORIGINAL

padanaplast

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Sede legale: via San Gabriele, 56 - 62012 Civitanova Marche (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 5251 / Fax +39 0521 870437
info@padanaplast.com - www.padanaplast.com

CERTIFICATE OF ANALYSIS

Insp. certificate "3.1" EN 10204

Customer	Customer Destination
FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA	FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA

Transport	1279 / TO	**Batch number**	RI2202453014056
Delivery note	1236 / DDT	**Order**	1107 / ORD
Shipping date	05-06-2024	**Customer ref.**	128

POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA

Batch number RI2202453014056 **/ Quantity** **4.000,000 KG**

Characteristics	Units	Value	Specification	Method
MFI 190°C/2,16kg *	g/10min	0,7	0,4 - 0,8	MA01
Specific gravity *	g/cm3	0,918	0,900 - 0,940	ASTM D792
Tensile Strenght *	N/mm2	23,8	>= 12,5	EN 60811
Elongation at break *	%	495	>= 250	EN 60811
H.S.T.200°C 20 N/cm2 all% *	%	45	<= 100	EN 60811
H.S.T. 200°C res%	%	0	-10 - 10	EN 60811
Production date	-	30-05-2024		

* MFI 190°C/2,16kg - (a) Test made on granules during production, without catalyst
* Specific gravity - (b) Test made on pressed plate, without catalyst
* Tensile Strenght - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* Elongation at break - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* H.S.T.200°C 20 N/cm2 all% - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.

Apparent defects or non compliance with Padanaplast technical specifications, shall be communicated to Padanaplast within 8 days from receipt of the goods (ref. General conditions of sale)

FLEI s.r.l.
Quality Control

Supplier :

Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Strada Paganina 3, 43010 Roccabianca (Parma) - Italia
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.

Approved by

Stefania Bolgarani
#Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Quality Control Laboratory Manager
Strada Paganina, 3
43010 Roccabianca (PR) Italy

ORIGINAL

padanaplast

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Sede legale: via San Gabriele, 66 - 62010 Morrovalle (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel +39 0521 5291 / Fax +39 0521 870437
info@padanaplast.com - www.padanaplast.com

CERTIFICATE OF ANALYSIS

Insp. certificate "3.1" EN 10204

Customer	Customer Destination
FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA	FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA

Transport	1279 / TO	**Batch number**	RC1201453013827
Delivery note	1236 / DDT	**Order**	1107 / ORD
Shipping date	05-06-2024	**Customer ref.**	128

CATALYST MASTERBATCH CT/1 IN SACCHI DA 20 KG SU PALETTA DA 1000 KG

Batch number RC1201453013827 **/ Quantity** **200,000 KG**

Characteristics	Units	Value	Specification	Method
bulk density *	kg/m3	532	400 - 600	ISO 60
Moisture content 90°C *	ppm	295	<= 500	MA30
Production date	-	13-05-2024		

* bulk density - (a) Test made on granules.
* Moisture content 90°C - (a) Test made on granules.

Apparent defects or non compliance with Padanaplast technical specifications, shall be communicated to Padanaplast within 8 days from receipt of the goods (ref. General conditions of sale)

FLEI s.r.l.
Quality Control

Supplier :

Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Strada Paganina 3, 43010 Roccabianca (Parma) - Italia
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.

Approved by

Stefania Bolgarani
#Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Quality Control Laboratory Manager
Strada Paganina, 3
43010 Roccabianca (PR) Italy

AFFINAZIONE E TRAFILERIA DI ARLUNO S.R.L.
Produzione e lavorazione filo, trefolo, corde, piatti e piattine di rame
Member of CISQ Federation
CERTIFIED MANAGEMENT SYSTEM ISO 9001

Via Montenero 39, 20004 Arluno (MI)
CF / P.IVA / REA 01831360159 – **Cap. versato** € 1.000.000
Telefono 02/9017557 - www.traf-arluno.it
email info@traf-arluno.it, **pec** affinazioneetrafileriadiarluno@pec.it

Spett.le Flei Srl

Arluno, 21/01/2025

Dichiarazione di conformità (EN 10204 2.2)

I semilavorati di rame CU-ETP da noi forniti con DDT 215 n° 18-03-24 del u.s. sono conformi alle caratteristiche definite dalle norme UNI EN 1977:2013 - ASTM B 49 17 e EN 13602:2013.

Resistività: Ω mm2/mm 0,01759 ASTM B 49 17
Conducibilità: 101% ASTM B 3 o 33 (per filo stagnato) temperatura max 150°
Carico rottura a trazione: Kg. 22/mm² circa ASTM B 49 17

Tabella allungamenti	filo rosso		filo stagnato	
da diam. 0,10 a 0,15	≥	18	≥	16
da diam. 0,151 a 0,20	≥	22	≥	20
da diam. 0,201 a 0,25	≥	24	≥	22
da diam. 0,251 a 0,40	≥	26	≥	24
da diam. 0,401 a 1,00	≥	28	≥	26
da diam. 1,01 a 3,00	≥	30	≥	28
superiore a diam. 3,00	≥	30	≥	28

Composizione chimica (dati comunicati dal produttore di vergella)
% Cu: 99,97
(ppm) Se 0,20 – Te 0,20 – Bi 0,20 – Co 0,20 – Mn 0,20 – Sb 0,70 – As 0,20 – Pb 1,00 – Cd 0,70
Sn 0,50 – Ni 0,50 – Fe 1,50 – Zn 0,50 – Ag 5,00 – S 1,50 – Cr 0,70 – P 0,70 – Si 1,00

NUOVA SCET S.R.L.

Sede legale: via San Siro 27, 20149 Milano
Sede operativa: strada per Lignana 6, 13040 Crova (VC)
CF / P.IVA / REA 06206010156 – Cap. versato € 45.600
Telefono 0161/970283 – email nuovascet@nuovascet.it – pec nuovascet@pec.it

SPETTABILE
AFFINAZIONE E TRAFILERIA DI ARLUNO SRL VIA MONTENERO, 39 20010 ARLUNO (MI)

DOC. DI TRASPORTO N°	215
DEL	18/03/2024

DESTINAZIONE MERCE
FLEI SRL VIA A. DE GASPERI, 82 20041 AGRATE BRIANZA (MB)

ORDINE N° IN CORSO

ASPETTO DEI BENI	CAUSALE DEL TRASPORTO	TRASPORTO A CURA DI	PORTO
A VISTA	C. LAVORAZIONE	VETTORE	ASS.TO

DESCRIZIONE MERCE		PESO LORDO KG.	TARA BANCALI KG.	TARA BOBINE KG.	PESO NETTO KG.
N°7 BF 630	RIG.BOB 0,67 RR	4430	35	799	3596
					0
					0
					0
					0
					0
TOT.		4430	35	799	3596

RIEPILOGO IMBALLI	Q.TA'
ROCCHETTO DIN250	
ROCCHETTO DIN160	
BOBINA 400/127	
BOBINA 630 SCET	7
BOBINA 800/127	
BANCALE SEMPLICE	7
EUROPALLET 800 X 1200	
CESTO FERRO	
BANCALE 800	
BANCALE FERRO PER ROCCHETTI	
BANCALE FERRO PER 8 BOB400	
BANCALE FERRO PER 4 BOB630	
BANCALE FERRO PER 2 BOB630	
BANCALE FERRO PER 2 BOB800	
BANCALE LEGNO DOPPIO	

DATA PARTENZA

18/03/2024

FIRMA MITTENTE

FIRMA CONDUCENTE

FIRMA VETTORE

FIRMA DESTINATARIO

FLEI s.r.l.
ACCETTATO CON RISERVA
DATA FIRMA

18/03/2024

VETTORE
GELMI & ROMELLI AUTOTRASPORTI DI TADDEI MARCO SNC VIA GENERALE GIUSEPPE TREBOLDI, 71 25048 EDOLO (BS)

CAMBIAGO TRAFILERIE S.R.L.
Via Giovanni Pascoli 6, 20060 Basiano (MI) - Italy
Email: amministrazione@cambiagotrafilerie.it Pec: cambiagotrafilerie@legalmail.it

07/06/2024

DOCUMENTO DI TRASPORTO N. 345

Beni Viaggianti a Mezzo - Delivery or transport by
Mittente
Causale trasporto - Reason for Transport
Vendita

Spett.le - Messers
FLEI SRL

VIA DE GASPERI 82
20864 AGRATE BRIANZA (MB)

DESTINAZIONE MERCE - DESTINATION OF GOODS
FLEI SRL

VIA DE GASPERI 82
20864 AGRATE BRIANZA (MB)

Codice - Product Code	Descrizione Description	U.M.	Netti Net	Lordi Gross	N. Colli Pack
	-Ord. 240291 Vs Rif: 140 DEL 27/05/24				
7R037_17Z	TREFOLO RAME ROSSO SEZ. 0,75 MMQ BOBINA	KG	332	378	
BF630	BOBINA FERRO ø 630 MM	NR	1		

Aspetto Esteriore dei Beni Packing		N. Colli Package No	Peso KG Weight KG	Porto Delivery
A Vista		01	378	
Vettori - Forwarder	Data/Ora Ritiro-Departure Date and Time		Firma - Signatures	
			FLEI s.r.l. ACCETTATO CON RISERVA DATA 07 06 24 FIRMA	
Beni Viaggianti a Mezzo - Delivery or transport by	Data/Ora Ritiro-Departure Date and Time		Firma Conducente - Driver's Signature	
Mittente				
Annotazioni e Variazioni - Notes			Firma Destinatario - Consignee's Signature	

IMBALLI IN PRESTITO D'USO Vi preghiamo di prendere nota che verranno fatturati se danneggiati e/o non resi entro 120 giorni

CAMBIAGO TRAFILERIE S.R.L.
Via Giovanni Pascoli 6, 20060 Basiano (MI) - Italy
Email: amministrazione@cambiagotrafilerie.it Pec: cambiagotrafilerie@legalmail.it

11/06/2024

DOCUMENTO DI TRASPORTO N. 348

Beni Viaggianti a Mezzo - Delivery or transport by
Vettore
Causale trasporto - Reason for Transport
Vendita

Spett.le - Messers
FLEI SRL

VIA DE GASPERI 82
20864 AGRATE BRIANZA (MB)

DESTINAZIONE MERCE - DESTINATION OF GOODS
FLEI SRL

VIA DE GASPERI 82
20864 AGRATE BRIANZA (MB)

Codice - Product Code	Descrizione Description	U.M.	Netti Net	Lordi Gross	N. Colli Pack
	-Ord. 240291 Vs Rif: 140 DEL 27/05/24				
'R037_17Z	TREFOLO RAME ROSSO SEZ. 0,75 MMQ BOBINA	KG	557	643	
3F630	BOBINA FERRO ø 630 MM	NR	2		
SELLEL630/800	SELLE IN LEGNO PER BOBINE 630-800	NR	1		

FLEI s.r.l.
ACCETTATO CON RISERVA
DATA 11-06-24 FIRMA

spetto Esteriore dei Beni 'acking	N. Colli Package No	Peso KG Weight KG	Porto Delivery
Vista	01	643	

'ettori - Forwarder	Data/Ora Ritiro-Departure Date and Time	Firma - Signatures
SELMI E ROMELLI AUTOTRASPORTI		

eni Viaggianti a Mezzo - Delivery or transport by	Data/Ora Ritiro-Departure Date and Time	Firma Conducente - Driver's Signature
'ettore		
nnotazioni e Variazioni - Notes		Firma Destinatario - Consignee's Signature

MBALLI IN PRESTITO D'USO Vi preghiamo di prendere nota che verranno fatturati se danneggiati e/o non resi entro 120 giorni

SCHEDA TECNICA ***Technical Data Sheet***	**TERMOPLASTICO ESENTE DA ALOGENI - *Halogens Free Thermoplastic*** **NOME - *Name* HL 312 / UV / TB** **Tipo – *Type* *Sheath / Insulation***

DESCRIZIONE PRODOTTO ***PRODUCT DESCRIPTION***	**Materiale termoplastico esente da alogeni, low smoke e antifiamma. Ottima lavorabilità. . Con additivo UV Resistant** ***Thermoplastic halogen-free, low smoke and flame retardant. Good processability. With UV Resistant additive.***

IMPIEGO ***APPLICATION***	**Il prodotto può essere utilizzato in accordo con le seguenti norme:** ***The product can be used as sheathing or insulation in accordance with the following rules:*** EN 50363-0 tipo **M1**, VDE 0207 part 24 tipo **HM2 e HM4, BS** 7655 tipo **LTS1 e LTS2** IEC 92-359 tipo **SHF1,** EN 50363-7 tipo **TI6 e TI7,** IEC 60502 Type **ST8,**

PROVA ***Test***	**METODO DI PROVA** ***Test Method***	**CONDIZIONI DI PROVA** ***Test Condition***	**UNITÀ DI MISURA** ***Unit of Measure***	**VALORE TIPICO** ***Typical Value***
PESO SPECIFICO *Specific Gravity*	CEI EN 60811-606	23°C ± 2	g/cm^3	**1.51**
DUREZZA *Hardness*	ASTM D 2240	23°C ± 2	Shore D	**53**
MELT FLOW INDEX	ISO 1133	21,6 Kg at 150 C°	g/10 min	**6**
INDICE DI OSSIGENO *Oxygen Index*	CEI 20-22/4	23°C ± 2	%	**35**
EMISSIONE DI ALOGENI *Halogen Emission*	CEI EN 50267-1 CEI EN 50267-2-1	800°C x 40’	%	**< 0.3**
INDICE DI TEMPERATURA *Temperature Index*	CEI 20-22/5		°C	**320**
INDICE DI TOSSICITÀ *Toxicity Index*	CEI 20-37/4-0		-	**< 2**
DENSITÀ OTTICA FUMI MASSIMO (DM) *Max. Optical Density of Smoke (DM)*	CEI 20-37/6		Dm	**≤ 250**
DENSITÀ OTTICA FUMI *Optical Density of Smoke*	CEI 20-37/6	dopo 4 minuti *after 4 minutes*	Ds	**≤ 50**
ACIDITÀ DEI FUMI *Smoke Acidity*	CEI EN 50267-2-2		pH	**≥ 4.5**
CARICO DI ROTTURA *Ultimate Tensile Strength*	CEI EN 60811-501	23°C ± 2	N/mm^2	**12**
ALLUNGAMENTO A ROTTURA *Elongation at Break*	CEI EN 60811-501	23°C ± 2	%	**170**
RESISTENZA ALLA LACERAZIONE *Tear Resistance*	BS 6469-99.1	23°C ± 2	N/mm	**6**
DOPO INVECCHIAMENTO IN STUFA: *After Aging in Air Oven:*	CEI EN 60811-401	110°C x 168 h		
Δ CARICO DI ROTTURA Δ *Ultimate Tensile Strength*		23°C ± 2	%	**± 10**
Δ ALLUNGAMENTO A ROTTURA Δ *Elongation at Break*		23°C ± 2	%	**- 15**

SCHEDA TECNICA ***Technical Data Sheet***	**TERMOPLASTICO ESENTE DA ALOGENI - *Halogens Free Thermoplastic*** **NOME - *Name* HL 312 / UV / TB** **Tipo – *Type* *Sheath / Insulation***

PROVA ***Test***	**METODO DI PROVA** ***Test Method***	**CONDIZ. DI PROVA** ***Test Condition***	**UNITÀ DI MISURA** ***Unit of Measure***	**VALORE TIPICO** ***Typical Value***
DOPO INVECCHIAMENTO IN OLIO 'IRM 902': *After Aging in 'IRM 902' Oil:*	CEI EN 60811-404	70°C x 4 h		
Δ CARICO DI ROTTURA Δ *Ultimate Tensile Strength*		23°C ± 2	%	**- 25**
Δ ALLUNGAMENTO A ROTTURA Δ *Elongation at Break*		23°C ± 2	%	**- 20**
DOPO INVECCHIAMENTO IN ACQUA: *After Water Immersion Test:*	BS 6469-99.1	70°C x 168 h		
Δ CARICO DI ROTTURA Δ *Ultimate Tensile Strength*		23°C ± 2	%	**- 30**
Δ ALLUNGAMENTO A ROTTURA Δ *Elongation at Break*		23°C ± 2	%	**- 30**
RESISTENZA AGLI IDROCARBURI *Hydrocarbon Resistance*	ENI 0181.00 - 0184.00	23°C ± 2 x 4 h 60°C X 24 h		
Δ CARICO DI ROTTURA Δ *Ultimate Tensile Strength*		23°C ± 2	%	**± 10**
Δ ALLUNGAMENTO A ROTTURA Δ *Elongation at Break*		23°C ± 2	%	**- 26**
PROVA DI ASSORBIMENTO D'ACQUA *Water Absorption Test*	CEI EN 60811-402	100°C x 24 h	mg/cm^2	**< 2**
TERMOPRESSIONE *Pressure Test*	CEI EN 60811-508	90°C x 4 h	%	**< 30**
COLPO DI CALORE *Heat Shock Test (Resistance to cracking)*	CEI EN 60811-509	150°C x 1 h	-	**Positivo** ***No Cracks***
PIEGATURA A FREDDO *Cold Bend Test*	CEI EN 60811-504	-25°C	-	**Ok**
ALLUNGAMENTO A FREDDO *Cold Elongation Test*	CEI EN 60811-505	-25°C	%	**Ok**
RESISTIVITÀ DI VOLUME *Volume Resistivity*	ASTM D 257	23°C ± 2	Ω . cm	**7 X 10^{13}**

SCHEDA TECNICA *Technical Data Sheet*	TERMOPLASTICO ESENTE DA ALOGENI - *Halogens Free Thermoplastic* NOME - *Name* **HL 312 / UV / TB** Tipo – *Type* ***Sheath / Insulation***

PROCESSABILITA' ***PROCESSABILITY***	**Il prodotto può essere utilizzato su estrusori dotati di viti a bassa compressione per PVC o Halogens Free. Ideale per l'estrusione a tubo.** ***The product can be use on extruders with a low compression screws for PVC or Halogens Free. Good for tube extrusion.***				
	T1	**T2**	**T3**	**T4**	**HEAD**
	130 ± 10 °C	145 ± 10 °C	155 ± 10 °C	160 ± 10 °C	170 ± 5 °C

IMBALLO ***PACKING***	**Il prodotto viene servito in sacchetti da 25 kg su pallet da 1000kg o sacconi da 1000-1300 kg** ***The product is served in 25 kg bags on pallets of 1000 kg or big bags of 1000-1300 kg***

STOCCAGGIO ***STORAGE***	**Grazie al tipo d'imballo protettivo il materiale non deve essere pre-essiccato, si consiglia di stoccare il prodotto in luogo asciutto al riparo da pioggia o sole diretto.** **Una volta compromessa l'integrità dell'imballo il prodotto va utilizzato entro tre giorni.** ***Thanks to the type of protective packaging, the materials should not be pre-dried; it is recommend storing the product in a dry place away from direct sunlight or rain.*** ***Once compromised the integrity of the packaging the product must be use within 3 days.***

REVISIONE - *Revision No*. 03 – 19/04/2019

DATA DI EMISSIONE - *Emission Date:* 18/10/2017

FIRMA D.G. - *General Manager:*

POLIDAN® EC/110

Low density polyethylene based compound crosslinkable by exposure to moisture for low voltage power and signal cable insulation

Polidan® EC/110 is a low density polyethylene based compound crosslikable by moisture; it consists of a silane pregrafted base compound (Sioplas® method) to be used with a catalyst masterbatch.

Standard complying: IEC 60502 XLPE, IEC 60092/351, CEI 18-16/351, BS 7655 GP8, VDE 0276 2XI1, HD 604 2XI1

In order to prevent prescorching the pregrafted compound and the catalyst masterbatch must be stored separately and mixed only when used.

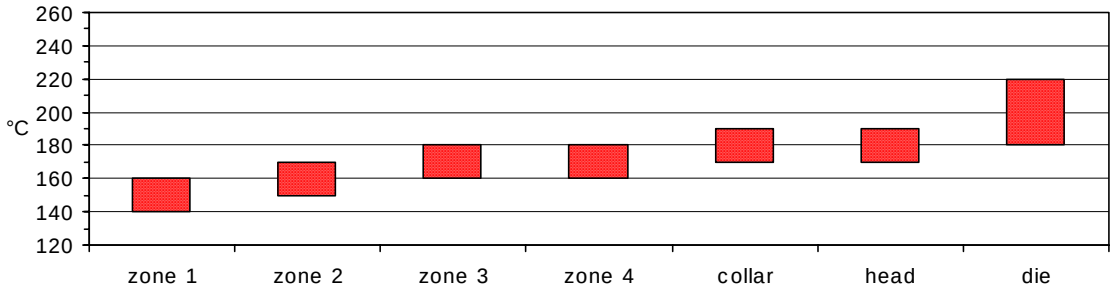
		typical value	unit	test method
physical and mechanical properties	- Density at 23°C	0.92	g/cm^3	ASTM D 792
	- Shore D hardness	51	-	ISO R 868
	- M.F.I., 190°C/2.16 kg	0.7	g/10'	Padanaplast
	- Unaged mechanical properties: tensile strength elongation at break	 21.6 500	 N/mm^2 %	IEC 60811
	- Mechanical properties after ageing in air oven, 168 hours at 135°C: variation on tensile strength variation on elongation at break	 +15 -8	 % %	IEC 60811
	- Mechanical properties after ageing in air oven, 240 hours at 150°C: bending test	 no cracks	 -	IEC 60811
	- Hot set test, 15' at 200°C, 0.2 N/mm^2: elongation under load permanent elongation after cooling	 70 0	 % %	IEC 60811
	- Water absorption, 24 hours at 100°C	0.5	mg/cm^2	IEC 60811
	- Water absorption, 336 hours at 85°C	0.5	mg/cm^2	IEC 60811
	- Shrinkage test, 1 hour at 130°C: maximum shrinkage	 < 4	 %	IEC 60811
electrical properties	- Volume resistivity at 20°C	4.1 E 15	ohm x cm	IEC 60502
	- Volume resistivity at 90°C	2.7 E 15	ohm x cm	IEC 60502
	- Insulation constant at 20°C	15000	Mohm x km	IEC 60502
	- Insulation constant at 90°C	10000	Mohm x km	IEC 60502

tests made on pressed plate or extruded specimen crosslinked in hot water after addition of 3% by weight of Catalyst CT/1

Processing

Polidan® EC/110 pregrafted base must be added with Catalyst CT/1 masterbatch at 3% by weight. Blending must be done just before use; dosing the two components directly in the extruder hopper is suggested.
The pregrafted base compound is sensible to moisture; open bags must be used within few hours.

Polidan® EC/110 can be processed with standard PVC extruders having a L/D ratio of 20-30 and an adequate barrel thermoregulation. The following temperature profile is suggested:



Curing can be done in the following ways:
- by immersion in hot water at 60-70°C
- by exposure to low pressure steam (about 0.15 bar)
- by exposure in ambient at 20-25°C, 50-70% R.H. for some days

In all cases curing time depends on insulation thickness; for 0.7-1.2 mm wall thickness 2-4 hours are generally necessary if forced curing is made; in case of self curing, time depends also on the specific ambient conditions.

Colouring can be made with PE based masterbatches by addition at 0.5-1% (approx.) by weight; predrying of colour masterbatch is suggested if moisture absorption occurred during storage.

Storage

The product should be stored under the following conditions:
- closed and unbroken bags
- ambient temperature not exceeding 30°C
- avoid direct exposure to sunlight and weathering

The product could undergo alterations due to extended period of storage. Padanaplast suggests using it within six months from the production date printed on the packaging.

Padanaplast accepts no liability of any kind in case the above mentioned conditions are not fulfilled.

Packaging

Polidan® EC/110 is available in 25 kg moisture resistant bags on 1375 kg pallet.

Our Technical Service is at your disposal for further information and advice upon the starting stage and also for any eventual necessity during the course of the product use.

Disclaimer

The data and numerical results contained in this document are provided for the sake of general information and are given in good faith. They reflect the state of our knowledge at the time of publication. Because the possibilities and application conditions of our product are many and varied, and lie beyond our control, we can in no event be held responsible if all the necessary information on planned applications have not been formally brought to our attention. The information presented here cannot be considered as a suggestion to use our products without taking into account existing patents, or legal provisions or regulations, whether national or local. The purchaser is obliged to verify whether the possession, use or marketing of our products is subject within his territory to particular rules, especially with respect to public health, hygiene and worker and/or consumer safety. The purchaser alone assumes the duties of information and advice for the ultimate user. Specifications reported on this datasheet can not be used as reference values in a technical or sales contract. Padanaplast can in no event be held responsible for a possible failure on the part of the purchaser to respect these regulations, provisions and duties.
This document replaces all previously published on the same compounds.

For further information please contact:

PADANAPLAST S.p.A. - Via Paganina 3, 43010 Roccabianca (Parma) - ITALY
Phone: +39-0521-5291 - Fax: +39-0521-870427
e-mail: info.padanaplast@solvay.com
Internet: http://www.padanaplast.com
http://www.solvayplastics.com

SOLVAY

a Passion for Progress®

february 05

List of Testing Equipment

Testing Equipment				
Description	Manufacturer/brand name	Model / Reference	Kind of tests performed / Validity	code
Dielectric Equipment ac 0 - 15KV 100KVA	VNZ Imp. SIF	001/2011	Voltage Test Validity 23/10/2026	I 05
Megahometro	Chauvin Arnoux	C.A 6543 N° 235837 CMH	Insulation Resistance Validity 25/07/2025	I 03
Multimeter	Fluke	8840 A N° 5256028	Conductor resistance up to 35 sqmm Validity 04/11/2027	I 02
Michroohmmeter	Cropico	D05 N° 056329	Conductor Resistance more than 35 sqmm Validity 23/10/2026	I 18
Centesimal Digital Sliding Gauge	Marcall	16ER -710105646J 0-150mm	Diameter Measurement Validity 17/04/2025	II 11
Optical Englander with Micrometer Digital Gauge	Jvc - Alpa	N.399978-N.399968	Thickness Measurement Validity 07/02/2025	II 56
LCR Meter	HIOKI	LCR METER IM3523	Mutual Capacitance – L/R Ratio Validity 03/03/2027	I 12
Digital Thermometer	Vemer	VE 305 K -50°C +1000°C N° 903788	Temperature Measurement Validity 08/02/2025	II 64
Testing Machines	Gibitre	Tensor check profile – TCC2018070	Tensile Strenght / Elongation at Break Validity 03/03/2028	I 04
Digital Tester	Vemer	VE 125 N° 803592	Continuity Test Conductors and Screen	N.A.
Oven Natural Air Flow	Galli	2100 20°C – 300°C N° 21023	Material Ageing Hot Set test – Heat Shock Test	N.A.
Apparatus For Fire Resistance Test IEC 60331	Galbusera Attrezzature Tecniche Spec.	Art. N. 06.18.F1 N° 002567/12	Apparatus For Fire Alone at a Flame Temperature at least of 750°C	N.A.
Issued by : Quality Department	FLEI s.r.l. Quality Control			

COPPER CONDUCTOR

AFFINAZIONE E TRAFILERIA DI ARLUNO S.R.L.

Produzione e lavorazione filo, trefolo, corde, piatti e piattine di rame

Member of CISQ Federation
RINA IQNET
CERTIFIED MANAGEMENT SYSTEM
ISO 9001

Via Montenero 39, 20004 Arluno (MI)
CF / P.IVA / REA 01831360159 – Cap. versato € 1.000.000
Telefono 02/9017557 - www.traf-arluno.it
email info@traf-arluno.it, pec affinazioneetrafileriadiarluno@pec.it

Spett.le Flei Srl

Arluno, 21/01/2025

Dichiarazione di conformità (EN 10204 2.2)

I semilavorati di rame CU-ETP da noi forniti con DDT 215 n° 18-03-24 del u.s. sono conformi alle caratteristiche definite dalle norme UNI EN 1977:2013 - ASTM B 49 17 e EN 13602:2013.

Resistività: Ω mm2/mm 0,01759 ASTM B 49 17
Conducibilità: 101% ASTM B 3 o 33 (per filo stagnato) temperatura max 150°
Carico rottura a trazione: Kg. 22/mm² circa ASTM B 49 17

Tabella allungamenti	filo rosso		filo stagnato	
da diam. 0,10 a 0,15	≥	18	≥	16
da diam. 0,151 a 0,20	≥	22	≥	20
da diam. 0,201 a 0,25	≥	24	≥	22
da diam. 0,251 a 0,40	≥	26	≥	24
da diam. 0,401 a 1,00	≥	28	≥	26
da diam. 1,01 a 3,00	≥	30	≥	28
superiore a diam. 3,00	≥	30	≥	28

Composizione chimica (dati comunicati dal produttore di vergella)
% Cu: 99,97
(ppm) Se 0,20 – Te 0,20 – Bi 0,20 – Co 0,20 – Mn 0,20 – Sb 0,70 – As 0,20 – Pb 1,00 – Cd 0,70
Sn 0,50 – Ni 0,50 – Fe 1,50 – Zn 0,50 – Ag 5,00 – S 1,50 – Cr 0,70 – P 0,70 – Si 1,00

FLEI s.r.l.
Quality Control

COPPER CONDUCTOR

CAMBIAGO
TRAFILERIE

BOLLETTINO DI COLLAUDO
TEST REPORT

Ordine / Cliente: **FLEI S.R.L.**

Prodotto: **TREFOLO DI RAME ROSSO 7 X 0,37**
D.D.T.: **345** Del: **07/06/2024**
Norma Applicata: **EN60228 REV. 2005**
Materiale: **CU ETP – UNI 1977 REV. 2000**
Quantità: **1 BOBINE DIN 630**
Ord.: 140 DEL 27/05/24

PARAMETRO	MIN	MAX
TREFOLO RAME ROSSO 7 X 0,37	RILEVATO	RILEVATO
SEZIONE MMQ	0.7523	0.7523
RESISTENZA ELETTRICA	22.49	22.49
PESO LINEARE KG / KM	6.6952	6.6952
ALLUNGAMENTO	22%	23%

Responsabile Qualità:
GIANLUIGI BRUSAMOLINO

FLEI s.r.l.
Quality Control

COPPER CONDUCTOR

CAMBIAGO
TRAFILERIE

BOLLETTINO DI COLLAUDO
TEST REPORT

Ordine / Cliente: **FLEI S.R.L.**

Prodotto: **TREFOLO DI RAME ROSSO 7 X 0,37**
D.D.T.: **348** Del: **11/06/2024**
Norma Applicata: **EN60228 REV. 2005**
Materiale: **CU ETP – UNI 1977 REV. 2000**
Quantità: **2 BOBINE DIN 630**
Ord.: 140 DEL 27/05/24

PARAMETRO	MIN	MAX
TREFOLO RAME ROSSO 7 X 0,37	RILEVATO	RILEVATO
SEZIONE MMQ	0.7523	0.7523
RESISTENZA ELETTRICA	22.49	22.49
PESO LINEARE KG / KM	6.6952	6.6952
ALLUNGAMENTO	22%	23%

Responsabile Qualità:
GIANLUIGI BRUSAMOLINO

FLEI s.r.l.
Quality Control

INSULATION

ORIGINAL

padanaplast

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Strada Paganina 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 1681 / Fax +39 0521 870437
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 1681 / Fax +39 0521 870437
info@padanaplast.com - www.padanaplast.com

CERTIFICATE OF ANALYSIS

Insp. certificate "3.1" EN 10204

Customer	Customer Destination
FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA	FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA

Transport	1279 / TO	**Batch number**	RI2202453014056
Delivery note	1236 / DDT	**Order**	1107 / ORD
Shipping date	05-06-2024	**Customer ref.**	128

POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA

Batch number RI2202453014056 **/ Quantity** **4.000,000 KG**

Characteristics	Units	Value	Specification	Method
MFI 190°C/2,16kg *	g/10min	0,7	0,4 - 0,8	MA01
Specific gravity *	g/cm3	0,918	0,900 - 0,940	ASTM D792
Tensile Strenght *	N/mm2	23,8	>= 12,5	EN 60811
Elongation at break *	%	495	>= 250	EN 60811
H.S.T.200°C 20 N/cm2 all% *	%	45	<= 100	EN 60811
H.S.T. 200°C res%	%	0	-10 - 10	EN 60811
Production date	-	30-05-2024		

* MFI 190°C/2,16kg - (a) Test made on granules during production, without catalyst
* Specific gravity - (b) Test made on pressed plate, without catalyst
* Tensile Strenght - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* Elongation at break - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* H.S.T.200°C 20 N/cm2 all% - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.

Apparent defects or non compliance with Padanaplast technical specifications, shall be communicated to Padanaplast within 8 days from receipt of the goods (ref. General conditions of sale)

FLEI s.r.l.
Quality Control

Supplier :

Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Strada Paganina 3, 43010 Roccabianca (Parma) - Italia
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.

Approved by

Stefania Bolgarani
#Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Quality Control Laboratory Manager
Strada Paganina, 3
43010 Roccabianca (PR) Italy

INSULATION

ORIGINAL

padanaplast®
EXCELLENCE IN COMPOUNDING

Finproject S.p.A. Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico
Sede legale, via San Gabriele, 56 - 62010 Morrovalle (Macerata) - ITALIA
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.
BU Compounding - Stabilimento produttivo di Roccabianca
Strada Paganina, 3 - 43010 Roccabianca (Parma) - ITALIA - Tel. +39 0521 5291 / Fax +39 0521 870427
info@padanaplast.com - www.padanaplast.com

CERTIFICATE OF ANALYSIS

Insp. certificate "3.1" EN 10204

Customer	Customer Destination
FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA	FLEI S.R.L. VIA A.DE GASPERI , 82 20041 AGRATE BRIANZA MB ITALIA

Transport	1034 / TO	**Batch number**	RI2200456013860
Delivery note	996 / DDT	**Order**	846 / ORD
Shipping date	03-05-2024	**Customer ref.**	ORDINE 89

POLIDAN EC/110 IN OCTABIN DA 500 KG SU PALETTA

Batch number RI2200456013860 **/ Quantity** **1.525,000 KG**

Characteristics	Units	Value	Specification	Method
FI 190°C/2,16kg *	g/10min	0,8	0,4 - 0,8	MA01
Specific gravity *	g/cm3	0,922	0,900 - 0,940	ASTM D792
Tensile Strenght *	N/mm2	24,1	>= 12,5	EN 60811
Elongation at break *	%	495	>= 250	EN 60811
H.S.T.200°C 20 N/cm2 all% *	%	50	<= 100	EN 60811
H.S.T. 200°C res%	%	0	-10 - 10	EN 60811
Production date	-	06-05-2024		

* MFI 190°C/2,16kg - (a) Test made on granules during production, without catalyst
* Specific gravity - (b) Test made on pressed plate, without catalyst
* Tensile Strenght - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* Elongation at break - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.
* H.S.T.200°C 20 N/cm2 all% - (c) Test made on extruded cable (97% graft + 3% catalyst CT1) crosslinked in water 2 hours 95°C.

Apparent defects or non compliance with Padanaplast technical specifications, shall be communicated to Padanaplast within 8 days from receipt of the goods (ref. General conditions of sale)

FLEI s.r.l.
Quality Control

Supplier :

Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Società soggetta all'attività di direzione e coordinamento di Eni S.p.A.
Società con socio unico.
Strada Paganina 3, 43010 Roccabianca (Parma) - Italia
C.F. - P.IVA 01744770437 - Capitale Sociale 18.500.000,00 € i.v.

Approved by

Stefania Bolgarani
#Finproject S.p.A. - BU Compounding - Stabilimento di Roccabianca
Quality Control Laboratory Manager
Strada Paganina, 3
43010 Roccabianca (PR) Italy

INNER COVERING

VIBIPLAST S.R.L.

CERTIFICATO DI ANALISI
INSPECTION CERTIFICATE (EN 10204-3.1)

DATA COMPILAZIONE : *COMPILATION DATE :* 10/06/24

CLIENTE : *CUSTOMER :*
FLEI S.r.l.
VIA ALCIDE DE GASPERI, 82
20864 AGRATE BRIANZA (MB)

MATERIALE TIPO : *MATERIAL TYPE :* ***HL 312 / UV / TB***

COLORE : *COLOUR :* ***NERO***

LOTTO N° : *LOT No. :* ***1622024***

I VALORI RILEVATI DALLE NOSTRE PROVE DI CONTROLLO QUALITA' SONO I SEGUENTI :

THE VALUES MEASURED BY OUR QUALITY CONTROL TESTS ARE AS FOLLOWS :

PROVA TIPO *TEST*	METODO *METHOD*	UNITA' *UNIT*	PRESCRITTO / TOLLERANZA *VALUE / TOLERANCE*	RILEVATO *RESULT*	CONFORME A *IN ACCORDANCE WITH*
PESO SPECIFICO --- DENSITY	*CEI EN 60811-606*	*g/cm³*	*1.51 ± 0.03*	*1.53*	*Specifiche Vibiplast --- Vibiplast Specifications*

FLEI s.r.l. Quality Control

VIBIPLAST S.R.L.
CONTROLLO QUALITA' / *QUALITY CONTROL*

Vibiplast Laboratorio
Via Modigliani, 12 e 19
20022 - Castano Primo (MI) Italy
Tel. +39 0331 880354
E-mail : vibiplast@vibiplast.it

This is a computer-generated document. No signature is required.

Pensa all'ambiente prima di stampare questo documento.
Consider the environment before printing this document.

INNER COVERING

VIBIPLAST S.R.L.

CERTIFICATO DI ANALISI

INSPECTION CERTIFICATE (EN 10204-3.1)

DATA COMPILAZIONE : / *COMPILATION DATE :* 05/06/24

CLIENTE : / *CUSTOMER :*
FLEI S.r.l.
VIA ALCIDE DE GASPERI, 82
20864 AGRATE BRIANZA (MB)

MATERIALE TIPO : / *MATERIAL TYPE :* ***HL 312 / UV / TB***

COLORE : / *COLOUR :* ***NATURALE***

LOTTO N° : / *LOT No. :* ***1572024***

I VALORI RILEVATI DALLE NOSTRE PROVE DI CONTROLLO QUALITA' SONO I SEGUENTI :

THE VALUES MEASURED BY OUR QUALITY CONTROL TESTS ARE AS FOLLOWS :

PROVA TIPO / *TEST*	METODO / *METHOD*	UNITA' / *UNIT*	PRESCRITTO / TOLLERANZA / *VALUE / TOLERANCE*	RILEVATO / *RESULT*	CONFORME A / *IN ACCORDANCE WITH*
PESO SPECIFICO --- DENSITY	*CEI EN 60811-606*	*g/cm³*	*1.51 ± 0.03*	*1.54*	*Specifiche Vibiplast --- Vibiplast Specifications*

FLEI S.r.l. Quality Control

VIBIPLAST S.R.L.
CONTROLLO QUALITA' / *QUALITY CONTROL*

Vibiplast Laboratorio
Via Modigliani, 12 e 19
20022 - Castano Primo (MI) Italy
Tel. +39 0331 880354
E-mail : vibiplast@vibiplast.it

This is a computer-generated document. No signature is required.

Pensa all'ambiente prima di stampare questo documento.
Consider the environment before printing this document.

ARMOUR

BIANCHINI INGENIERO
MACCAFERRI
A. Bianchini Ingeniero S.A.
Gran Vial, 8 - Pol. Ind. C.I.V
08170 - MONTORNÉS DE VALLÈS
(BARCELONA) - ESPAÑA

DECLARACION DE CONFORMIDAD
DECLARATION OF COMPLIANCE

Tipo 2.1 s/EN 10204
Type 2.1 acc. EN 10204

AENOR ER Empresa Registrada ER-0185/1995 — IQNet

Cert. N°: 23543

Sold-to party	FLEI S.R.L.	Order	/ 3181425653 --- 106
Ship-to	FLEI S.R.L. VIA A. DE GASPERI 82 / 20864 AGRATE BRIANZA / IT	GI Doc. Date	8000368224 09/05/2024
Material	345883-WIRES ZND D0.24 SPL D200	Dlv.qty	1008-KG

Nombre de Producto/*Product Name*: **ALAMBRE / *WIRE* ZN**
Tipo de Producto/*Product Type*: **Clase D – RECOCIDO/ *Class D - ANNEALED***

Se declara que los productos entregados en este pedido son conformes con las siguientes características:
It is declared that the products delivered in this order are in conformity with the following characteristics:

Caracteristica / *Characteristic*	**Valores / *Values***	**Norma / *Standard***
Diámetro del alambre *Steel wire diameter*	0,24±0,015 mm	EN 10218-2
Resistencia a la tracción del alambre *Wire tensile strength*	330-450 MPa	EN 10218-1
Alargamiento *Elongation*	≥ 15 %	EN 10218-1
Protección a la corrosión del alambre *Wire corrosión protection*	Galvanizado/Galvanized	EN 10244-2
Masa de recubrimiento alambre *Wire mass coating*	≥ 15 g/m² (Clase / *Class D*)	EN 10244-2

Composición química según normas: EN 16120-1, -2
Chemical composition according to standards: EN 16120-1, -2

C %	Mn %	Si %	P %	S %		
≤ 0,1	0,30 - 0,60	≤ 0,30	≤ 0,035	≤ 0,035		

A. BIANCHINI INGENIERO S.A. · Gaviones Metálicos para Defensas Fluviales · Gran Vial, 8 (C.I.V) · MONTORNÉS DEL VALLÉS (BARCELONA)

Fdo. / *Sig.* Fortunato Nuño
Dpto. Calidad / *Quality Dept.*

ARMOUR

BIANCHINI INGENIERO
MACCAFERRI
A. Bianchini Ingeniero S.A.
Gran Vial, 8 - Pol. Ind. C.I.V
08170 - MONTORNÉS DE VALLÈS
(BARCELONA) - ESPAÑA

DECLARACION DE CONFORMIDAD
DECLARATION OF COMPLIANCE

Tipo 2.1 s/EN 10204
Type 2.1 acc. EN 10204

AENOR ER Empresa Registrada ER-0185/1995
CERTIFIED IQNet QUALITY SYSTEM

Cert. N°: 22831

Sold-to party	FLEI S.R.L.	Order	/ 3181425140 --- 49
Ship-to	FLEI S.R.L. VIA A. DE GASPERI 82 / 20864 AGRATE BRIANZA / IT	GI Doc. Date	8000365475 13/03/2024
Material	345823-WIRES ZND D0.20 SPL D200	Dlv.qty	1008-KG

Nombre de Producto/*Product Name*: **ALAMBRE / *WIRE* ZN**
Tipo de Producto/*Product Type*: **Clase D – RECOCIDO/ *Class D - ANNEALED***

Se declara que los productos entregados en este pedido son conformes con las siguientes características:
It is declared that the products delivered in this order are in conformity with the following characteristics:

Caracteristica / *Characteristic*	**Valores / *Values***	**Norma / *Standard***
Diámetro del alambre *Steel wire diameter*	0,20±0,015 mm	EN 10218-2
Resistencia a la tracción del alambre *Wire tensile strength*	330-450 MPa	EN 10218-1
Alargamiento *Elongation*	≥ 15 %	EN 10218-1
Protección a la corrosión del alambre *Wire corrosión protection*	Galvanizado/Galvanized	EN 10244-2
Masa de recubrimiento alambre *Wire mass coating*	≥ 15 g/m² (Clase / *Class D*)	EN 10244-2

Composición química según normas: EN 16120-1, -2
Chemical composition according to standards: EN 16120-1, -2

C %	Mn %	Si %	P %	S %		
≤ 0,1	0,30 - 0,60	≤ 0,30	≤ 0,035	≤ 0,035		

A. BIANCHINI INGENIERO S.A. · Alambres y sus derivados · Gaviones Metálicos para Defensas Fluviales · Gran Vial, 8 (C.I.V) · MONTORNES DEL VALLES (BARCELONA)

Fdo. / *Sig.* Fortunato Nuño
Dpto. Calidad / *Quality Dept.*

ARMOUR

BIANCHINI INGENIERO
MACCAFERRI
A. Bianchini Ingeniero S.A.
Gran Vial, 8 - Pol. Ind. C.I.V
08170 - MONTORNÉS DE VALLÈS
(BARCELONA) - ESPAÑA

DECLARACION DE CONFORMIDAD
DECLARATION OF COMPLIANCE

Tipo 2.1 s/EN 10204
Type 2.1 acc. EN 10204

AENOR ER Empresa Registrada ER-0185/1995 — IQNet CERTIFIED QUALITY SYSTEM

Cert. N°: 22832

Sold-to party	FLEI S.R.L.	Order	/ 3181425140 --- 49
Ship-to	FLEI S.R.L. VIA A. DE GASPERI 82 / 20864 AGRATE BRIANZA / IT	GI Doc. Date	8000365475 13/03/2024
Material	345752-WIRES ZND D0.30 SPL BB20	Dlv.qty	1080-KG

Nombre de Producto/*Product Name*: **ALAMBRE / *WIRE* ZN**
Tipo de Producto/*Product Type*: **Clase D – RECOCIDO/ *Class D - ANNEALED***

Se declara que los productos entregados en este pedido son conformes con las siguientes características:
It is declared that the products delivered in this order are in conformity with the following characteristics:

Caracteristica / *Characteristic*	**Valores / *Values***	**Norma / *Standard***
Diámetro del alambre *Steel wire diameter*	0,30±0,015 mm	EN 10218-2
Resistencia a la tracción del alambre *Wire tensile strength*	330-450 MPa	EN 10218-1
Alargamiento *Elongation*	≥ 15 %	EN 10218-1
Protección a la corrosión del alambre *Wire corrosión protection*	Galvanizado/Galvanized	EN 10244-2
Masa de recubrimiento alambre *Wire mass coating*	≥ 15 g/m² (Clase / *Class D*)	EN 10244-2

Composición química según normas: EN 16120-1, -2
Chemical composition according to standards: EN 16120-1, -2

C %	Mn %	Si %	P %	S %		
≤ 0,1	0,30 - 0,60	≤ 0,30	≤ 0,035	≤ 0,035		

A. BIANCHINI INGENIERO, S.A. · Alambres y sus Derivados · Gaviones Metálicos para Defensas Fluviales · Gran Vial, 8 (C.I.V) · MONTORNÉS DEL VALLÉS (BARCELONA)

Fdo. / *Sig.* Fortunato Nuño
Dpto. Calidad / *Quality Dept.*

OUTER SHEATH

VIBIPLAST S.R.L.

CERTIFICATO DI ANALISI

INSPECTION CERTIFICATE (EN 10204-3.1)

DATA COMPILAZIONE : / *COMPILATION DATE :* 19/06/24

CLIENTE : / *CUSTOMER :*
FLEI S.r.l.
VIA ALCIDE DE GASPERI, 82
20864 AGRATE BRIANZA (MB)

MATERIALE TIPO : / *MATERIAL TYPE :* *HL 312 / UV / TB*

COLORE : / *COLOUR :* ***ARANCIO 2003***

LOTTO N° : / *LOT No. :* ***1702024***

I VALORI RILEVATI DALLE NOSTRE PROVE DI CONTROLLO QUALITA' SONO I SEGUENTI :

THE VALUES MEASURED BY OUR QUALITY CONTROL TESTS ARE AS FOLLOWS :

PROVA TIPO *TEST*	METODO *METHOD*	UNITA' *UNIT*	PRESCRITTO / TOLLERANZA *VALUE / TOLERANCE*	RILEVATO *RESULT*	CONFORME A *IN ACCORDANCE WITH*
PESO SPECIFICO --- *DENSITY*	CEI EN 60811-606	g/cm³	1.51 ± 0.03	1.52	Specifiche Vibiplast --- *Vibiplast Specifications*

VIBIPLAST S.R.L.
CONTROLLO QUALITA' / *QUALITY CONTROL*

Vibiplast Laboratorio
Via Modigliani, 12 e 19
20022 - Castano Primo (MI) Italy
Tel. +39 0331 880354
E-mail : vibiplast@vibiplast.it

Mod. RQ-CQ-16/1 (15/02/21)

This is a computer-generated document. No signature is required.

Pensa all'ambiente prima di stampare questo documento.
Consider the environment before printing this document.

FLEI s.r.l. Quality Control

OUTER SHEATH

VIBIPLAST S.R.L.

CERTIFICATO DI ANALISI

INSPECTION CERTIFICATE (EN 10204-3.1)

DATA COMPILAZIONE : / *COMPILATION DATE :* 19/06/24

CLIENTE : / *CUSTOMER :*
FLEI S.r.l.
VIA ALCIDE DE GASPERI, 82
20864 AGRATE BRIANZA (MB)

MATERIALE TIPO : / *MATERIAL TYPE :* *HL 312 / UV / TB*

COLORE : / *COLOUR :* ***GRIGIO 7001***

LOTTO N° : / *LOT No. :* ***1702024***

I VALORI RILEVATI DALLE NOSTRE PROVE DI CONTROLLO QUALITA' SONO I SEGUENTI :

THE VALUES MEASURED BY OUR QUALITY CONTROL TESTS ARE AS FOLLOWS :

PROVA TIPO *TEST*	METODO *METHOD*	UNITA' *UNIT*	PRESCRITTO / TOLLERANZA *VALUE / TOLERANCE*	RILEVATO *RESULT*	CONFORME A *IN ACCORDANCE WITH*
PESO SPECIFICO --- DENSITY	*CEI EN 60811-606*	*g/cm³*	*1.51 ± 0.03*	*1.52*	*Specifiche Vibiplast --- Vibiplast Specifications*

VIBIPLAST S.R.L.
CONTROLLO QUALITA' / *QUALITY CONTROL*

Vibiplast Laboratorio
Via Modigliani, 12 e 19
20022 - Castano Primo (MI) Italy
Tel. +39 0331 880354
E-mail : vibiplast@vibiplast.it

This is a computer-generated document. No signature is required.

Pensa all'ambiente prima di stampare questo documento.
Consider the environment before printing this document.

FLEI s.r.l. Quality Control

OUTER SHEATH

VIBIPLAST S.R.L.

CERTIFICATO DI ANALISI

INSPECTION CERTIFICATE (EN 10204-3.1)

DATA COMPILAZIONE : *COMPILATION DATE :* 19/06/24

CLIENTE : *CUSTOMER :*
FLEI S.r.l.
VIA ALCIDE DE GASPERI, 82
20864 AGRATE BRIANZA (MB)

MATERIALE TIPO : *MATERIAL TYPE :* *HL 312 / UV / TB*

COLORE : *COLOUR :* ***ARANCIO 2003***

LOTTO N° : *LOT No. :* ***1712024***

I VALORI RILEVATI DALLE NOSTRE PROVE DI CONTROLLO QUALITA' SONO I SEGUENTI :

THE VALUES MEASURED BY OUR QUALITY CONTROL TESTS ARE AS FOLLOWS :

PROVA TIPO *TEST*	METODO *METHOD*	UNITA' *UNIT*	PRESCRITTO / TOLLERANZA *VALUE / TOLERANCE*	RILEVATO *RESULT*	CONFORME A *IN ACCORDANCE WITH*
PESO SPECIFICO --- *DENSITY*	CEI EN 60811-606	g/cm^3	1.51 ± 0.03	1.52	Specifiche Vibiplast --- *Vibiplast Specifications*

VIBIPLAST S.R.L.
CONTROLLO QUALITA' / *QUALITY CONTROL*

Vibiplast Laboratorio
Via Modigliani, 12 e 19
20022 - Castano Primo (MI) Italy
Tel. +39 0331 880354
E-mail : vibiplast@vibiplast.it

This is a computer-generated document. No signature is required.

Pensa all'ambiente prima di stampare questo documento.
Consider the environment before printing this document.

FLEI S.r.l. Quality Control

TEST UNDER FIRE CONDITIONS
Vertical Burning single Cable

STANDARD: IEC 60332.1.2

CUSTOMER:

ROSETTI MARINO

Order N. 1724001170 123A90A REV.3 - Item/Rev 280

TYPE OF CABLE:
Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.

JOB: 1094/2024

PROJECT:
123A90A - Base Load Power Hub Platform

20/01/2025
FLEI QUALITY CONTROL

FLEI s.r.l. Quality Control

TEST EQUIPMENT

- A suitable three-sided metallic screen, with open front and closed top and bottom. The base shall be non-metallic
- A clamp suitable to fix the test sample of cables
- One gas burner

TEST SAMPLE

The test sample shall be a piece of the finished cable of cable 600 + - 25 mm long

FLAME CONDITION

When propane is used, the burner being regulated to give a flame approximately 175 mm Long with an inner blue cone approximately 55 mm long

TEST PROCEDURE

The sample shall be clamped at each end to position it vertically in the middle of a three-sided metallic screen and shall be adjusted so that the bottom of sample is approximately 50 mm from the base of the metallic screen.
The axis of the burner shall be at an angle of 45° to the axis of the sample.
The flame is applied for a continuos period of T seconds derived from Table 1:

Table 1 – Time for flame application

Overall diameter of test piece [a] mm	Time for flame application [b] s
$D \leq 25$	60 ± 2
$25 < D \leq 50$	120 ± 2
$50 < D \leq 75$	240 ± 2
$D > 75$	480 ± 2

[a] Where non-circular cables (for example, flat-form constructions) are to be tested, the circumference shall be measured and used to calculate an equivalent diameter, as if the cable were circular.

[b] For flat cables having a ratio of major to minor axis greater than 17:1, the flame application time remains under consideration.

TEST EVALUATION CRITERIA

After the burning has ceased, the surface of sample shall be wiped clean and the charred of affected portion shall not have reached 50 mm of the lower edge of the top clamp.

CABLE DATA

Outer diameter: Required: 15.2 mm – Tested: 15.5 ÷ 15.9 mm

Printed Marking:
FLEI - 2X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2025 - CE+ meter marking

Weight of cable sample: 217,50 gr / 600 mm

Flame application time: 60 seconds

TEST DATA

Charred of affected portion: 281 mm

TEST RESULT

POSITIVE

END OF REPORT

VIBIPLAST S.R.L.

CERTIFICATO DI ANALISI
INSPECTION CERTIFICATE (EN 10204-3.1)

DATA COMPILAZIONE : *COMPILATION DATE :* 19/06/24

CLIENTE : *CUSTOMER :*
FLEI S.r.l.
VIA ALCIDE DE GASPERI, 82
20864 AGRATE BRIANZA (MB)

MATERIALE TIPO : *MATERIAL TYPE :* ***HL 312 / UV / TB***
COLORE : *COLOUR :* ***ARANCIO 2003***
LOTTO N° : *LOT No. :* ***1702024***

I VALORI RILEVATI DALLE NOSTRE PROVE DI CONTROLLO QUALITA' SONO I SEGUENTI :
THE VALUES MEASURED BY OUR QUALITY CONTROL TESTS ARE AS FOLLOWS :

PROVA TIPO *TEST*	METODO *METHOD*	UNITA' *UNIT*	PRESCRITTO / TOLLERANZA *VALUE / TOLERANCE*	RILEVATO *RESULT*	CONFORME A *IN ACCORDANCE WITH*
PESO SPECIFICO --- *DENSITY*	*CEI EN 60811-606*	*g/cm³*	*1.51 ± 0.03*	*1.52*	*Specifiche Vibiplast* --- *Vibiplast Specifications*

VIBIPLAST S.R.L.
CONTROLLO QUALITA' / *QUALITY CONTROL*

Vibiplast Laboratorio
Via Modigliani, 12 e 19
20022 - Castano Primo (MI) Italy
Tel. +39 0331 880354
E-mail : vibiplast@vibiplast.it

This is a computer-generated document. No signature is required.

Pensa all'ambiente prima di stampare questo documento.
Consider the environment before printing this document.

VIBIPLAST S.R.L.

CERTIFICATO DI ANALISI

INSPECTION CERTIFICATE (EN 10204-3.1)

DATA COMPILAZIONE : *COMPILATION DATE :* 19/06/24

CLIENTE : *CUSTOMER :*
FLEI S.r.l.
VIA ALCIDE DE GASPERI, 82
20864 AGRATE BRIANZA (MB)

MATERIALE TIPO : *MATERIAL TYPE :* ***HL 312 / UV / TB***

COLORE : *COLOUR :* ***GRIGIO 7001***

LOTTO N° : *LOT No. :* ***1702024***

I VALORI RILEVATI DALLE NOSTRE PROVE DI CONTROLLO QUALITA' SONO I SEGUENTI :

THE VALUES MEASURED BY OUR QUALITY CONTROL TESTS ARE AS FOLLOWS :

PROVA TIPO *TEST*	METODO *METHOD*	UNITA' *UNIT*	PRESCRITTO / TOLLERANZA *VALUE / TOLERANCE*	RILEVATO *RESULT*	CONFORME A *IN ACCORDANCE WITH*
PESO SPECIFICO --- *DENSITY*	*CEI EN 60811-606*	*g/cm³*	*1.51 ± 0.03*	*1.52*	*Specifiche Vibiplast* --- *Vibiplast Specifications*

VIBIPLAST S.R.L.
CONTROLLO QUALITA' / *QUALITY CONTROL*

Vibiplast Laboratorio
Via Modigliani, 12 e 19
20022 - Castano Primo (MI) Italy
Tel. +39 0331 880354
E-mail : vibiplast@vibiplast.it

This is a computer-generated document. No signature is required.

Pensa all'ambiente prima di stampare questo documento.

Consider the environment before printing this document.

VIBIPLAST S.R.L.

CERTIFICATO DI ANALISI

INSPECTION CERTIFICATE (EN 10204-3.1)

DATA COMPILAZIONE : *COMPILATION DATE :* 19/06/24

CLIENTE : *CUSTOMER :*
FLEI S.r.l.
VIA ALCIDE DE GASPERI, 82
20864 AGRATE BRIANZA (MB)

MATERIALE TIPO : *MATERIAL TYPE :* ***HL 312 / UV / TB***

COLORE : *COLOUR :* ***ARANCIO 2003***

LOTTO N° : *LOT No. :* ***1712024***

I VALORI RILEVATI DALLE NOSTRE PROVE DI CONTROLLO QUALITA' SONO I SEGUENTI :

THE VALUES MEASURED BY OUR QUALITY CONTROL TESTS ARE AS FOLLOWS :

PROVA TIPO *TEST*	METODO *METHOD*	UNITA' *UNIT*	PRESCRITTO / TOLLERANZA *VALUE / TOLERANCE*	RILEVATO *RESULT*	CONFORME A *IN ACCORDANCE WITH*
PESO SPECIFICO --- *DENSITY*	*CEI EN 60811-606*	*g/cm³*	*1.51 ± 0.03*	*1.52*	*Specifiche Vibiplast* --- *Vibiplast Specifications*

VIBIPLAST S.R.L.
CONTROLLO QUALITA' / *QUALITY CONTROL*

Vibiplast Laboratorio
Via Modigliani, 12 e 19
20022 - Castano Primo (MI) Italy
Tel. +39 0331 880354
E-mail : vibiplast@vibiplast.it

This is a computer-generated document. No signature is required.

Pensa all'ambiente prima di stampare questo documento.

Consider the environment before printing this document.

PART 2 - CERTIFICATION DOSSIER

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

DECLARATION OF CONFORMITY
DICHIARAZIONE DI CONFORMITA'
DÉCLARATION DE CONFORMITÉ

CLIENTE: CUSTOMER : KUNDE: ACHETEUR:	ROSETTI MARINO
ORDINE: PURCHASE ORDER : AUFTRAG: COMMANDE:	1724001170 123A90A
DESCRIZIONE CAVO: CABLE DESCRIPTION : BESCHREIBURG KABLE. DESCRIPTION CABLE:	SEE PACKING LIST
TIPO E QUANTITA': TYPE AND QUANTITY : MENGE: TYPE ET QUANTITE':	SEE PACKING LIST

Con il presente si attesta che sono state eseguite le prove di collaudo del materiale fornito a fronte dell'ordine di acquisto da Voi conferitoci. Visto l'esito delle prove suddette, si certifica che il materiale in oggetto è conforme alle seguenti prescrizioni:
We declare we tested the material we are supplying to you with reference to the purchase order You granted us. On the basis of the results of the tests, we are certifying that the material in object comply with the following regulations:
Wir erklären hiermit, dass die Prüfungen in Übereinstimmung mit den bestellten Waren durchgeführt wurden. Wir bescheinigen daher, dass die oben genannten Waren mit den folgenden Normen übereinstimmen:
Nous déclarons par la présente que des tests ont été effectués sur l'équipement fourni dans le cadre de votre bon de commande. Sur la base des résultats de ces essais, nous certifions que le matériel en question répond aux exigences suivantes :

[X]	**VOSTRE SPECIFICHE** YOUR SPECIFICATIONS IHRE ANGABE VOTRE SPECIFICATIONS	SPECIFICATIONS INCLUDED IN THE ORDER
[X]	**NORME** STANDARDS NORME STANDARDS	IEC 60092.376 – EN 50525.3.31 IEC 60331.21 – IEC 60332.1.2 – IEC 60332.3.22 IEC 60754.1/2 – IEC 61034.2 – IEC 60079.14 par.9.3.2a
[X]	**ALLEGATI** ATTACHEMENTS ANLAGE ANNEXES	TEST REPORT No.: 909÷929/2024

DATE 19/07/2024

ON BEHALF OF. Cucinotta
DATE 19/7/24 W R

Quality Control : Giovanni Cucinotta

FLEI s.r.l. Quality Control

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 909 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	10

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 1X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	556/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	2733									
Drum No.	10-4943									

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black			Spessore Nominale Nominal Thickness	0,5 mm	0,6 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,0 mm	Diametro Diameter	tolerance ± 10%	mm	6,5	6,9
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,1 mm	1,1 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	9,5	9,6 ÷ 10,1
Marcatura Marking/Printing	FLEI - 1X2X0,75 SQMM - XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,8
Capacità Capacitance	nF/Km	≤	150	71,9
Induttanza Inductance	mH/Km	≤	0,9	0,63
L/R	µH/ohm	≤	25	16,6
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 21435

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

LP
ON BEHALF OF
DATE 20/7/2024

Foglio: Page: 1 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 910 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	20

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	557/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	714										
Drum No.	10-4938										

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,5 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,050 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,2 mm	Diametro Diameter	tolerance ± 10%	mm	11,4	10,5
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,3 mm	1,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	15,2	14,8 ÷ 15,4
Marcatura Marking/Printing	FLEI - 2X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 24,2
Capacità Capacitance	nF/Km	≤	150	79,8
Induttanza Inductance	mH/Km	≤	0,9	0,64
L/R	µH/ohm	≤	25	14,9
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 50000

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control: C. R.

ON BEHALF OF C.R.S.W. S.r.l.
DATE 20/12/2024 W R

Foglio: Page: 2

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 911 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	30
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 6X2X0,75 INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	558/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	302		
Drum No.	09-7184		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,6 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,050 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,3 mm	Diametro Diameter	tolerance ± 10%	mm	15,2	14,4
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,5 mm	2,1 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	19,4	19,9 ÷ 20,5
Marcatura Marking/Printing	FLEI - 6X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 24,9
Capacità Capacitance	nF/Km	≤	150	77,8
Induttanza Inductance	mH/Km	≤	0,9	0,8
L/R	µH/ohm	≤	25	16,9
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 55000

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF

DATE 30/7/2024

Foglio: Page: 3

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 912 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	40

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	559/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	906										
Drum No.	14-1107										

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,6 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,050 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,5 mm	Diametro Diameter	tolerance ± 10%	mm	20,2	19,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,7 mm	2,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	24,8	24,9 ÷ 25,6
Marcatura Marking/Printing	FLEI - 12X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS					PROVE DI TENSIONE VOLTAGE TEST		
			Richiesto Required	Riscontrato Tested	Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 25,1	Tra conduttori Between conductors	1,5x5	OK
Capacità Capacitance	nF/Km	≤	150	77,2	Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Induttanza Inductance	mH/Km	≤	0,9	0,62	Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
L/R	µH/ohm	≤	25	12,3	Spark test guaina IEC 62230 Sheath Spark Test	12 KV	OK
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 48500	**TEST DI CONTINUITA' CONTINUITY TEST**		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

L.S.
ON BEHALF OF ROSETTI MARINO
DATE 30/7/2024

Foglio: Page: 4

Mod. 8.2.8

REV.2 Data 13/03/18 Aggiornamento ISO 9001:2015
REV.3 Data 20/12/2023 Aggiornamento lista strumenti

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 913 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	50
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2,5 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	560/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	503		
Drum No.	07-588		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	XLPE	Colore Colour	Black NUMBERED (from 1 to 2)			Spessore Nominale Nominal Thickness	0,6 mm	0,7 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	8,9	8,7
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,2 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	12,1	12,5 ÷ 12,8
Marcatura Marking/Printing	FLEI - 2X2,5 SQMM - XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,53
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 22000

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

C.C. ON BEHALF OF CROWN
DATE 26/11/24 WR

Foglio: Page: 5 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 914 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	60
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X2,5 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	561/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	306									
Drum No.	09-7187									

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	XLPE	Colore Colour	Black NUMBERED (from 1 to 12)			Spessore Nominale Nominal Thickness	0,6 mm	0,7 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,4 mm	Diametro Diameter	tolerance ± 10%	mm	16,6	17,1
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,5 mm	1,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	20,8	21,2 ÷ 21,5
Marcatura Marking/Printing	FLEI - 12X2,5 SQMM - XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested	PROVE DI TENSIONE VOLTAGE TEST Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,38	Tra conduttori Between conductors	1,5x5	OK
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 63900	Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
					Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
					Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
					TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF C.I.
DATE 20/7/24 W R

Foglio: Page: 6 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 915 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	70
Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 24X2,5 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	562/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	303		
Drum No.	10-4945		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	XLPE	Colore Colour	Black NUMBERED (from 1 to 24)			Spessore Nominale Nominal Thickness	0,6 mm	0,7 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,6 mm	Diametro Diameter	tolerance ± 10%	mm	23	22,5
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,8 mm	2,0 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	27,8	27,9 ÷ 28,1
Marcatura Marking/Printing	FLEI - 24X2,5 SQMM - XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,29
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 50000

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	13 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
x	CODIFICATION I 03	TYPE : MEGAOHMETER	
x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF. CROSS WIRES
DATE. 30/7/24 W R

Foglio: Page: 7 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 916 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	80
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 1X2X0,75 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	563/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	1715	1713								
Drum No.	10-4940	10-4941								

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black			Spessore Nominale Nominal Thickness	0,5 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	8,5	8,7
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,2 mm	1,3 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	11,7	12,0 ÷ 12,2
Marcatura Marking/Printing	FLEI - 1X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,7
Capacità Capacitance	nF/Km	≤	150	60
Induttanza Inductance	mH/Km	≤	0,9	0,79
L/R	µH/ohm	≤	25	17,0
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 21000

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result	
Tra conduttori Between conductors	1,5x5	OK	
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK	
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK	
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK	
TEST DI CONTINUITA' CONTINUITY TEST		OK	

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF...
DATE 30/7/24 W R

Foglio: Page: 8 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 917 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	90

Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	564/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	606										
Drum No.	10-4942										

CARATTERISTICHE TECNICHE — CONSTRUCTION CHARACTERISTICS

							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,050 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,3 mm	Diametro Diameter	tolerance ± 10%	mm	15,1	14,8
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,5 mm	1,9 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	19,3	19,5 ÷ 20,0
Marcatura Marking/Printing	FLEI - 2X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE — ELECTRICAL CHARACTERISTICS

			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,7
Capacità Capacitance	nF/Km	≤	150	59,1
Induttanza Inductance	mH/Km	≤	0,9	0,8
L/R	µH/ohm	≤	25	16,9
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 21200

PROVE DI TENSIONE — VOLTAGE TEST

Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control: L. P.

ON BEHALF OF.. Rosetti Marino
DATE. 8/7/24 W R

Foglio: Page: 9

Mod. 8.2.8

REV.2 Data 13/03/18 Aggiornamento ISO 9001:2015
REV.3 Data 20/12/2023 Aggiornamento lista strumenti

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 918 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	100
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 6X2X0,75 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	565/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	608		
Drum No.	12-1576		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,7 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,5 mm	Diametro Diameter	tolerance ± 10%	mm	20,6	19,1
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,7 mm	2,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	25,2	30,2 ÷ 30,8
Marcatura Marking/Printing	FLEI - 6X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 25,1
Capacità Capacitance	nF/Km	≤	150	56,3
Induttanza Inductance	mH/Km	≤	0,9	0,8
L/R	µH/ohm	≤	25	17,1
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 24000

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	12 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

L.P.
ON BEHALF OF. ROSETTI MARINO
DATE 30/7/24 W.R.

Foglio: Page: 10

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 919 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	110
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X2X0,75 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	566/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	404		
Drum No.	12-1577		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness	0,5 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,8 mm	Diametro Diameter	tolerance ± 10%	mm	27,7	25,1
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	2,0 mm	2,1 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	32,9	30,2 ÷ 30,8
Marcatura Marking/Printing	FLEI - 12X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,9
Capacità Capacitance	nF/Km	≤	150	60,3
Induttanza Inductance	mH/Km	≤	0,9	0,79
L/R	µH/ohm	≤	25	17,1
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 21140

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	13 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
x	CODIFICATION I 03	TYPE : MEGAOHMETER	
x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ...
DATE 30/7/24 W.R

Foglio: Page: 11

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 920 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	120
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	567/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	3255		
Drum No.	14-1109		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Black NUMBERED (from 1 to 2)			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	10,3	10,5
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,3 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	14,1	14,7 ÷ 15,1
Marcatura Marking/Printing	FLEI - 2X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,46
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 9589

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
	x	CODIFICATION I 02	TYPE : MULTIMETER
	x	CODIFICATION I 03	TYPE : MEGAOHMETER
	x	CODIFICATION I 12	TYPE : LCR METER
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER
	x	CODIFICATION II 56	TYPE : PROFILE READER
		CODIFICATION I 05	TYPE : HIGH VOLTAGE TEST BENCH

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ROSETTI MARINO
DATE 19/7/24

Foglio: Page: 12 / 21

FLEI s.r.l.

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 921 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	130
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	568/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	817		
Drum No.	14-1116		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Black NUMBERED (from 1 to 2)			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,5 mm	Diametro Diameter	tolerance ± 10%	mm	19,8	19,5
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,6 mm	1,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	24,2	23,7 ÷ 24,1
Marcatura Marking/Printing	FLEI - 12X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,44
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 8447

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	12 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
	x	CODIFICATION I 02	TYPE : MULTIMETER
	x	CODIFICATION I 03	TYPE : MEGAOHMETER
	x	CODIFICATION I 12	TYPE : LCR METER
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER
	x	CODIFICATION II 56	TYPE : PROFILE READER
		CODIFICATION I 05	TYPE : HIGH VOLTAGE TEST BENCH

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF CROMWIND
DATE 22/7/24

Foglio: Page: 13 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 922 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	140
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 1X3X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	569/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	2556		
Drum No.	14-1108		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Red - White - Black			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	10,9	11,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,3 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	14,7	15,1 ÷ 15,6
Marcatura Marking/Printing	FLEI - 1X3X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,17
Capacità Capacitance	nF/Km	≤	150	71,5
Induttanza Inductance	mH/Km	≤	0,9	0,68
L/R	µH/ohm	≤	60	47,2
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 7379

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result	
Tra conduttori Between conductors	1,5x5	OK	
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK	
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK	
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK	
TEST DI CONTINUITA' CONTINUITY TEST		OK	

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF... CROSS WIND
DATE 26/7/24 W R

Foglio: Page: 14 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 923 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	150
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 6X3X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	570/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	603		
Drum No.	14-1548		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Red - White - Black (each core NUMBERED for TRIAD identification)			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,8 mm	Diametro Diameter	tolerance ± 10%	mm	27,7	28,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	2,0 mm	2,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	32,9	33,2 ÷ 34,3
Marcatura Marking/Printing	FLEI - 6X3X2,5 SQMM - MGT/XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,39
Capacità Capacitance	nF/Km	≤	150	65,4
Induttanza Inductance	mH/Km	≤	0,9	0,71
L/R	µH/ohm	≤	60	41,4
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 10043

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	13 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ROSETTI MARINO
DATE 18/12/24

Foglio: Page: 15

FLEI s.r.l.

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 924 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	160

Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 12X3X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.
Job card	571/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22

Length mt.	305									
Drum No.	14-1547									

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Red - White - Black (each core NUMBERED for TRIAD identification)			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	2,1 mm	Diametro Diameter	tolerance ± 10%	mm	37,3	37,0
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,4	0,4
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	2,4 mm	2,8 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	43,7	44,1 ÷ 44,8
Marcatura Marking/Printing	FLEI - 12X3X2,5 SQMM - MGT/XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,37
Capacità Capacitance	nF/Km	≤	150	68,6
Induttanza Inductance	mH/Km	≤	0,9	0,72
L/R	µH/ohm	≤	60	42,3
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 11329

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	16 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
x	CODIFICATION I 03	TYPE : MEGAOHMETER	
x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF CROSS WIND
DATE 9/7/24 W.R

Foglio: Page: 16

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 925 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	170
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 24X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	572/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	305		
Drum No.	12-1575		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Black NUMBERED (from 1 to 24)			Spessore Nominale Nominal Thickness	0,6 mm	0,8
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,8 mm	Diametro Diameter	tolerance ± 10%	mm	27,6	27,4
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	2,0 mm	2,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	32,8	33,6 ÷ 34,3
Marcatura Marking/Printing	FLEI - 24X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,11
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 8420

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	13 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
x	CODIFICATION I 03	TYPE : MEGAOHMETER	TYPE : HIGH VOLTAGE TEST BENCH
x	CODIFICATION I 12	TYPE : LCR METER	
x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF crossing
DATE 19/7/24 W R

Foglio: Page: 17 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 926 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	180
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 1X2X0,75 - INSTRUMENT CABLE - Fire Resistant - I.S. Circuits	Job card	573/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	566		
Drum No.	07-587		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black			Spessore Nominale Nominal Thickness	0,5 mm	0,7 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	8,5	8,8
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Light Blue	Spessore Medio Average Thickness	1,2 mm	1,4 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	11,7	12,3 ÷ 12,7
Marcatura Marking/Printing	FLEI - 1X2X0,75 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 25,1
Capacità Capacitance	nF/Km	≤	150	57,9
Induttanza Inductance	mH/Km	≤	0,9	0,83
L/R	µH/ohm	≤	25	17,3
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 11650

PROVE DI TENSIONE VOLTAGE TEST			
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST			
x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
x	CODIFICATION I 03	TYPE : MEGAOHMETER	
x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF CROMWELL
DATE 30/7/24 W R

Foglio: Page: 18 / 21

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 927 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	190
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 6X2X0,75 - INSTRUMENT CABLE - Fire Resistant - I.S. Circuits	Job card	574/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	309		
Drum No.	10-4935		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	1,1 mm	1,1 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	White - Black			Spessore Nominale Nominal Thickness	0,5 mm	0,8 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,076 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,5 mm	Diametro Diameter	tolerance ± 10%	mm	20,6	18,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Light Blue	Spessore Medio Average Thickness	1,7 mm	2,8 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	25,2	25,2 ÷ 26,0
Marcatura Marking/Printing	FLEI - 6X2X0,75 SQMM - MGT/XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 25,3
Capacità Capacitance	nF/Km	≤	150	77,1
Induttanza Inductance	mH/Km	≤	0,9	0,65
L/R	µH/ohm	≤	25	14,4
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 41126

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	12 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ...
DATE: 2024.7.14 W R

Foglio: Page: 19

FLEI s.r.l. — IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015 — IQNET RECOGNIZED CERTIFICATION

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 928 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev	220
Tipo di cavo e sezione Cable type and section	CAT. 6A S/FTP ARMOURED LSZH 4X2X23AWG - Based on Draka UC500 HS23	Job card	575/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	1010	1005
Drum No.	08-188	08-187

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	SOLID plain annealed copper wires		Classe Class	(AWG23)		Diametro Nominale Nominal Diameter	0,56 mm	0,55 mm
Isolamento Insulation	Foamskin PE		Colore Colour	blue/white; orange/white; green/white; brown/white		Diametro Nominale Nominal Diameter	1,38 mm	1,32 mm
Cordatura coppie Pair Assembling	Cores twisted in pairs							
Schermatura coppie Pair Shield	Al-laminated plastic foil					% copertura % coverage	100	> 100
Schermatura totale Collective screen	Tinned copper braid				Nominal Wire Diameter	mm	0,1	0,1
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound - Blue	Spessore Nominale Nominal Thickness	0,8 mm	Diametro Diameter	tolerance ± 10%	mm	7,5	7,2
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,2	0,2
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness	1,2 mm	1,6 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	10,7	10,7 ÷ 11,2
Marcatura Marking/Printing	FLEI - 4X2X23AWG - CAT.6A S/FTP ARMOURED LSZH - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza Loop Loop resistance	Ω/km a 20°C	≤	154	< 148,06
Capacità Capacitance	nF/Km	nom.	43	48,6
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	2000	> 100000
Impedenza Caratteristica Characteristic Impedance		Ω	100 ± 5	93

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1x1	OK
Tra conduttori / Schermo Between Cores / Shield	1x1	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	9 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 19/07/2024
Date:

Il collaudatore: Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

ON BEHALF OF ...
DATE 16/7/24

Foglio: Page: 20

FLEI s.r.l.
IMQ CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2015
IQNET RECOGNIZED CERTIFICATION
Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 929 / 2024

TEST REPORT: Testing document Nr.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A
		Item/Rev Tested	From 10 to 220

Norma di riferimento *Ref. Standard/customer spec:*	IEC 60502.1 / IEC 60092.360

MATERIAL CERTIFICATE

MECHANICAL TEST

INSULATION XLPE	REQUIRED	**TESTED**
TENSILE STRENGHT	>12,5 N/mm²	16 N/mm²
ELONGATION AT BREAK	> 200 %	474%
AFTER AGEING (135° C x 168 hours)		
TENSILE STRENGHT	+/- 25 %	14,75 N/mm² (-7,8%)
ELONGATION AT BREAK	+/- 25 %	-9% (431,3%)
HOT SET TEST (200°C x 15 min.)	175%	75%
OVERALL SHEATH LSZH type SHF1	REQUIRED	**TESTED**
TENSILE STRENGHT	>9 N/MMQ	12,5 N/mm²
ELONGATION AT BREAK	> 120 %	160%
AFTER AGEING (110° C x 168 hours)		
TENSILE STRENGHT	+/- 30 %	13,6% (+9%)
ELONGATION AT BREAK	+/- 30 %	145% (-9%)

TYPE TESTS	**TESTED**
FIRE RESISTANT TEST (IEC 60331.21)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.1.2)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.22)	COMPLIANCE DECLARATION
ACID GAS GENERATION (IEC 60754.1/2)	COMPLIANCE DECLARATION
SMOKE DENSITY/LIGHT TRANSMITTANCE (IEC 61034.2 LT ≥ 60%)	COMPLIANCE DECLARATION
UV RESISTANCE TEST UL 2556 ex UL 1581 section 1200	COMPLIANCE DECLARATION

L. C.
ON BEHALF OF CROSSWIND
DATE 30/7/24 W R

INSTRUMENT LIST	CODIFICATION I 04	TYPE : TENSOR CHECK PROFILE (DINAMOMETER)	
Data: 19/07/2024 Date:	Il collaudatore:Giovanni Cucinotta *Quality Control:*	Il Collaudatore: *Customer Quality Control:*	Foglio: Page: 21
	FLEI s.r.l. Quality Control		

Prysmian Group

ATTENUATION MEASUREMENT REPORT

FR0328-00

Product Code:	60071903	Batch:	1024283941	Measurement Date:	04/05/2023 23:53
Product Description:	UCFIBRE I/O CT CST LSHF-FR B2 12 OM2B OR	Drum Number:	DPV1001-47539	Instrument ID:	PRYSK-OTDR01
Specification:	C34	Cable Length:	2060	Measuring Device:	PhotonKinetics 8000i
Customer:		Printing Batch:	20107812	Fiber Length:	2063
Customer order:	50				

All OTDR traces have been checked as linear and with regular behavior.

Result:Pass

Wavelength (nm): 850

C34_OM2	
Tube | Fiber	**Atten. dB/Km**
Green | Red	2.330
Green | Green	2.367
Green | Blue	2.324
Green | Yellow	2.347
Green | White	2.409
Green | Grey	2.332
Green | Brown	2.311
Green | Violet	2.351
Green | Turquoise	2.341
Green | Black	2.339
Green | Orange	2.316
Green | Pink	2.329
Maximum	**2.409**
Avgerage	**2.341**
Limit	**3.500**

Wavelength (nm): 1300

C34_OM2	
Tube | Fiber	**Atten. dB/Km**
Green | Red	0.475
Green | Green	0.491
Green | Blue	0.441
Green | Yellow	0.446
Green | White	0.614
Green | Grey	0.517
Green | Brown	0.525
Green | Violet	0.479
Green | Turquoise	0.465
Green | Black	0.444
Green | Orange	0.457
Green | Pink	0.454
Maximum	**0.614**
Avgerage	**0.484**
Limit	**1.500**

ON BEHALF OF... Crosland
DATE 20/7/24 W R

Production Operator: OLEJAROVA
Quality Inspector:

Quality Inspector
Igor Misencik

Quality Manager
Samuel Krescanko

Prysmian Group

ATTENUATION MEASUREMENT REPORT

FR0328-00

Product Code:	60071864	Batch:	1026634766	Measurement Date:	26/02/2024 14:06
Product Description:	UCFIBRE I/O CT CST LSHFFR B2 12 SM7A1 YL	Drum Number:	DW3110A-60063	Instrument ID:	PRYSK-OTDR02
Specification:	C03	Cable Length:	4120	Measuring Device:	PhotonKinetics 8000i
Customer:		Printing Batch:	20108676	Fiber Length:	4142
Customer order:	155				

All OTDR traces have been checked as linear and with regular behavior.

Result:Pass

Wavelength (nm): 1310

C17_G657A1	
Tube | Fiber	**Atten. dB/Km**
Green | Red	0.340
Green | Green	0.344
Green | Blue	0.343
Green | Yellow	0.343
Green | White	0.337
Green | Grey	0.349
Green | Brown	0.340
Green | Violet	0.339
Green | Turquoise	0.344
Green | Black	0.341
Green | Orange	0.341
Green | Pink	0.340
Maximum	**0.349**
Avgerage	**0.342**
Limit	**0.390**

Wavelength (nm): 1625

C17_G657A1	
Tube | Fiber	**Atten. dB/Km**
Green | Brown	0.199
Green | Violet	0.202
Green | Turquoise	0.200
Green | Black	0.199
Green | Orange	0.201
Green | Pink	0.195
Maximum	**0.211**
Avgerage	**0.199**
Limit	**0.390**

ON BEHALF OF.....

DATE 26/2/24 WR

Wavelength (nm): 1550

C17_G657A1	
Tube | Fiber	**Atten. dB/Km**
Green | Red	0.189
Green | Green	0.199
Green | Blue	0.191
Green | Yellow	0.189
Green | White	0.186
Green | Grey	0.192
Green | Brown	0.187
Green | Violet	0.193
Green | Turquoise	0.191
Green | Black	0.189
Green | Orange	0.190
Green | Pink	0.187
Maximum	**0.199**
Avgerage	**0.190**
Limit	**0.220**

Wavelength (nm): 1625

C17_G657A1	
Tube | Fiber	**Atten. dB/Km**
Green | Red	0.195
Green | Green	0.211
Green | Blue	0.200
Green | Yellow	0.198
Green | White	0.194
Green | Grey	0.198

Production Operator: KOSCOVA

Quality Inspector:

Quality Inspector
Igor Misencik

Quality Manager
Samuel Krescanko

FLEI s.r.l.

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 1511 / 2024

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A REV.2
		Item/Rev	270
Tipo di cavo e sezione Cable type and section	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.	Job card	1029/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22		
Length mt.	360		
Drum No.	07-136		

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS							Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter	2,0 mm	2,0 mm
Isolamento Insulation	Mica/Glass Tape (MGT) plus XLPE	Colore Colour	Black numbered from 1 to 2			Spessore Nominale Nominal Thickness	0,6 mm	0,8 mm
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage	100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360 - Black	Spessore Medio Average Thickness	1,1 mm	Diametro Diameter	tolerance ± 10%	mm	10,3	11,1
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm	0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Orange	Spessore Medio Average Thickness	1,3 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm	14,1	14,1 ÷ 14,7
Marcatura Marking/Printing	FLEI - 2X2,5 SQMM - MGT/XLPE/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60331.21 - IEC 60332.1.2 - IEC 60332.3.22 - 2024 - CE PROGRESSIVE METER LENGTH PRINTING							

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	7,86	< 7,24
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 5907

PROVE DI TENSIONE VOLTAGE TEST		
Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Tra conduttori Between conductors	1,5x5	OK
Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Spark Test Isolamento IEC 62230 Insulation Spark Test	6 KV	OK
Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
TEST DI CONTINUITA' CONTINUITY TEST		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION I 12	TYPE : LCR METER	
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 25/11/2024
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

FLEI s.r.l. Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

Foglio: Page:
1
2

FLEI s.r.l.
Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 1512 / 2024

TEST REPORT: Testing document Nr.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A REV.2
		Item/Rev	270

Norma di riferimento *Ref. Standard/customer spec:*	Cu Cl.2/MGT/XLPE/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2,5 - INSTRUMENT CABLE - Fire Resistant - Not I.S.

MATERIAL CERTIFICATE

MECHANICAL TEST

INSULATION XLPE	REQUIRED	**TESTED**
TENSILE STRENGHT	>12,5 N/mm²	17,3 N/mm²
ELONGATION AT BREAK	> 200 %	525%
AFTER AGEING (135° C x 168 hours)		
TENSILE STRENGHT	+/- 25 %	16,26 N/mm² (-6%)
ELONGATION AT BREAK	+/- 25 %	-10% (472,5%)
HOT SET TEST (200°C x 15 min.)	175%	75%
OVERALL SHEATH LSZH type SHF1	REQUIRED	**TESTED**
TENSILE STRENGHT	>9 N/MMQ	12,9 N/mm²
ELONGATION AT BREAK	> 120 %	155%
AFTER AGEING (110° C x 168 hours)		
TENSILE STRENGHT	+/- 30 %	11,99% (-7%)
ELONGATION AT BREAK	+/- 30 %	141% (-9%)

TYPE TESTS	**TESTED**
FIRE RESISTANT TEST (IEC 60331.21)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.1.2)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.22)	COMPLIANCE DECLARATION
ACID GAS GENERATION (IEC 60754.1/2)	COMPLIANCE DECLARATION
SMOKE DENSITY/LIGHT TRANSMITTANCE (IEC 61034.2 LT ≥ 60%)	COMPLIANCE DECLARATION
UV RESISTANCE TEST UL 2556 ex UL 1581 section 1200	COMPLIANCE DECLARATION

INSTRUMENT LIST	CODIFICATION I 04	TYPE : TENSOR CHECK PROFILE (DINAMOMETER)	
Data: 25/11/2024 Date:	Il collaudatore:Giovanni Cucinotta *Quality Control:*	Il Collaudatore: *Customer Quality Control:*	Foglio: Page: 2 / 2

FLEI s.r.l.

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 52 / 2025

TEST REPORT: Testing document No.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A REV.3
		Item/Rev	280

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.	Job card	1094/2024
Norma di riferimento Ref. Standard/customer spec.	IEC 60092,376 - IEC 60332.1.2 - IEC 60332.3.22		

Length mt.	300										
Drum No.	07-109										

CARATTERISTICHE TECNICHE CONSTRUCTION CHARACTERISTICS								Richiesto Required	Riscontrato Tested
Conduttore Conductor	STRANDED plain/bare soft annealed copper wires	Classe Class	2	IEC 60228		Diametro Nominale Nominal Diameter		2,0 mm	2,0 mm
Isolamento Insulation	XLPE	Colore Colour	White - Black (each core NUMBERED for PAIR identification)			Spessore Nominale Nominal Thickness		0,5 mm	0,6 mm
Schermatura singola Individual screen	polyester tape helically wound Thickness 0,025 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,023 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,025 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage		100	> 100
Schermatura totale Collective screen	polyester tape helically wound Thickness 0,036 mm (overlap > 25%) plus Aluminium /polyester tape Thickness 0,05 mm helically wound (overlap > 25%) plus polyester tape helically wound Thickness 0,036 mm	Drenaggio Drain wire	STRANDED TINNED COPPER size 0,5 sqmm(7X0,30 mm), in continuous contact with the shield			% copertura % coverage		100	> 100
Guaina interna Inner Sheath	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60093.360 - Black	Spessore Medio Average Thickness	1,2 mm	Diametro Diameter	tolerance ± 10%	mm		11,4	11,4
Armatura Armouring	Galvanized Steel Wire Braid Armour (coverage ≥ 90%)				Nominal Wire Diameter	mm		0,3	0,3
Guaina esterna *Overall sheath*	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type SHF1 to IEC 60092.360, moisture/abrasion/UV Resistant			Colore Colour	Grey	Spessore Medio Average Thickness		1,3 mm	1,5 mm
Diametro esterno Overall Diameter				Diametro Diameter	tolerance ± 10%	mm		15,2	15,5÷15,9
Marcatura Marking/Printing	FLEI - 2X2X0,75 SQMM - XLPE/IS/OS/LSZH/SWB/LSZH - 150/250 V - IEC 60332.1.2 - IEC 60332.3.22 - 2025 - CE PROGRESSIVE METER LENGTH PRINTING								

CARATTERISTICHE ELETTRICHE ELECTRICAL CHARACTERISTICS			Richiesto Required	Riscontrato Tested	PROVE DI TENSIONE VOLTAGE TEST Test eseguito in C.A. a 50 Hz Test performed in A.C. at 50 Hz	KV x min.	Risultato Result
Resistenza conduttore Conductor resistance	Ω/km a 20°C	≤	26	< 23,6	Tra conduttori Between conductors	1,5x5	OK
Capacità Capacitance	nF/Km	≤	150	77,2	Tra conduttori / Schermo Between Cores / Shield	1,5x5	OK
Induttanza Inductance	mH/Km	≤	0,9	0,68	Spark Test Isolamento IEC 62230 Insulation Spark Test	5 KV	OK
L/R	µH/ohm	≤	25	12,8	Spark test guaina IEC 62230 Sheath Spark Test	10 KV	OK
Resistenza isolamento a 500V Insulation resistance at 500V	MΩ x km@20°C	≥	1000	> 69000	**TEST DI CONTINUITA' CONTINUITY TEST**		OK

INSTRUMENT LIST				
	x	CODIFICATION I 02	TYPE : MULTIMETER	CODIFICATION I 05
	x	CODIFICATION I 03	TYPE : MEGAOHMETER	
	x	CODIFICATION I 12	TYPE : LCR METER	TYPE : HIGH VOLTAGE TEST BENCH
	x	CODIFICATION II 11	TYPE : DIGITAL CALIPER	
	x	CODIFICATION II 56	TYPE : PROFILE READER	

Data: 20/01/2025
Date:

Il collaudatore:Giovanni Cucinotta
Quality Control

Il Collaudatore del Cliente:
Customer Quality Control:

FLEI s.r.l. Quality Control

Foglio: Page: 1 / 2

Via A. De Gasperi 82 Agrate Brianza – (MB) Italy

ATTESTATO DI COLLAUDO N° 53 / 2025

TEST REPORT: Testing document Nr.

Cliente Customer	ROSETTI MARINO	ORDINE N° Order No.	1724001170 123A90A REV.3
		Item/Rev	280

Tipo di cavo e sezione Cable type and section	Cu Cl.2/XLPE/IS/OS/LSZH/SWB/LSZH 150/250 V (300 V) 2X2X0,75 - INSTRUMENT CABLE - Flame Retardant - Not I.S.

MATERIAL CERTIFICATE

MECHANICAL TEST

INSULATION XLPE	REQUIRED	**TESTED**
TENSILE STRENGHT	>12,5 N/mm²	18,1 N/mm²
ELONGATION AT BREAK	> 200 %	587%
AFTER AGEING (135° C x 168 hours)		
TENSILE STRENGHT	+/- 25 %	16,65 N/mm² (-8%)
ELONGATION AT BREAK	+/- 25 %	-12% (516,5%)
HOT SET TEST (200°C x 15 min.)	175%	75%
OVERALL SHEATH LSZH type SHF1	REQUIRED	**TESTED**
TENSILE STRENGHT	>9 N/MMQ	13,2 N/mm²
ELONGATION AT BREAK	> 120 %	168%
AFTER AGEING (110° C x 168 hours)		
TENSILE STRENGHT	+/- 30 %	12,14% (-8%)
ELONGATION AT BREAK	+/- 30 %	151,2% (-10%)

TYPE TESTS	**TESTED**
FLAME RETARDANT TEST (IEC 60332.1.2)	OK : PASS
FLAME RETARDANT TEST (IEC 60332.22)	COMPLIANCE DECLARATION
ACID GAS GENERATION (IEC 60754.1/2)	COMPLIANCE DECLARATION
SMOKE DENSITY/LIGHT TRANSMITTANCE (IEC 61034.2 LT ≥ 60%)	COMPLIANCE DECLARATION

INSTRUMENT LIST	CODIFICATION I 04	TYPE : TENSOR CHECK PROFILE (DINAMOMETER)	
Data: 20/01/2025 Date:	Il collaudatore:Giovanni Cucinotta *Quality Control:*	Il Collaudatore: *Customer Quality Control:*	Foglio: Page: 2 / 2

ROSETTI MARINO	RELEASE NOTE	Nr. RN-1141-FLE-01	Sheet 1 of 1
		Date 17/09/2024	Rev. 00

PROGETTO *Project*	CLIENTE *Client*	COMMESSA *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	*123A90*

FORNITORE *Vendor*	NUMERO D' ORDINE *Purchase Order No.*
FLEI SRL	*1724001141*

Release Note	☐ FOR PAYMENT	☒ FOR SHIPMENT

RELEASE NOTE FOR PAYMENT

PO Art.	

RELEASE NOTE FOR SHIPMENT

POS. Item	Q.TA' Quantity	DESCRIZIONE Description	Nr. TAG TAG No.	TIPO DI ISPEZIONE / Kind of Inspection	ESITO / Result
400	300m	Electrical Cable	ELECV35-4X4	NA	Positive
410	300m	Electrical Cable	ELECV38-3G4	NA	Positive
420	300m	Electrical Cable	ELECV12-4G2,5_E	NA	Positive

Warehouse open Monday to Friday From 08.00 to12.00 and from 13.00 to 17.00.
Contact Mr Rota +39 3451608099

DOCUMENTI APPLICABILI / *APPLICABLE DOCUMENTS*

POSIZIONE *Items*	TIPO DI DOCUMENTO *Type of Document*	NUMERO DI DOCUMENTO *Document Number*	Rev.	COD. DI APPROV. *Approv. Code*

PUNCH LIST: ☐ SI / *YES* VEDI PUNCH LIST ALLEGATA N° / *REFER TO ATTACHED PUNCH LIST N°*
☒ NO/ *NO*

CONTROLLO VALIDITA' FIDEJUSSIONE ***/ PERFORMANCE or WARRANTY BOND expiration date check***
Estensione Fidejussione Richiesta *(Performance or Warranty Bond Extension of Validity required)*
☐ SI / *YES* ☐ NO/ *NO*
Acceptance Method: *Performance or Warranty Bond valid if actually delivery date it's not greater than two weeks from contractual delivery date.*

RELEASE NOTE

RISULTATO / *RESULT*	FORNITURA / *SUPPLY*	DISTRIBUZIONE A: / *DISTRIBUTION TO:*	
☒ POSITIVO / *POSITIVE*	☐ COMPLETA / *COMPLETE*	☒ Project Manager	☒ Administration
☐ NEGATIVO / *NEGATIVE*	☐ PARZIALE / *PARTIAL*	☒ Project Quality Manager	☒ Project Eng-/Procurement Coord
☐ PUNTI PENDENTI / *PUNCH-LIST*	☒ ULTIMA / *FINAL*	☐ Warehouse	☐ Supplier

NOTE / *NOTES*

Note:
Material related to Rev01 of subject PO, refer to PL SCAN_20240917_104205513

L' INCARICATO /*Person in charge* ROSETTI MARINO *Supply Management dept.*		IL RAPPR. DEL CLIENTE / *Client Representative*	IL FORNITORE /*Vendor*	CONSTRUCTION MANAGER *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Vincent Zwaan		N.A.	N.A.	N.A.

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*

ROSETTI MARINO	RELEASE NOTE	Nr. RN-1170-FLE-01	Sheet 1 of 2
		Date 19/07/2024	Rev. 00

PROGETTO *Project*	CLIENTE *Client*	COMMESSA *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	*123A90*

FORNITORE *Vendor*		NUMERO D' ORDINE *Purchase Order No.*	
	FLEI		*1724001170*

Release Note	☐ FOR PAYMENT	☒ FOR SHIPMENT

RELEASE NOTE FOR PAYMENT

PO Art.		

RELEASE NOTE FOR SHIPMENT

POS. Item	Q.TA' Quantity	DESCRIZIONE Description	Nr. TAG TAG No.	TIPO DI ISPEZIONE / Kind of Inspection	ESITO / Result
10	2700	Instrument cable	- TAG: 2,2		Positive
20	700	Instrument cable	- TAG: 2,3		Positive
30	300	Instrument cable	- TAG: 2,4		Positive
40	900	Instrument cable	- TAG: 2,5		Positive
50	500	Instrument cable	- TAG: 2,6		Positive
60	300	Instrument cable	- TAG: 2,7		Positive
70	300	Instrument cable	- TAG: 2,8		Positive
80	3400	Instrument cable	- TAG: 2,9		Positive
90	600	Instrument cable	- TAG: 2,10		Positive
100	600	Instrument cable	- TAG: 2,11		Positive
110	400	Instrument cable	- TAG: 2,13		Positive
120	3200	Instrument cable	- TAG: 2,14		Positive
130	800	Instrument cable	- TAG: 2,15		Positive
140	2500	Instrument cable	- TAG: 2,16		Positive
150	600	Instrument cable	- TAG: 2,17		Positive
160	300	Instrument cable	- TAG: 2,18		Positive
170	300	Instrument cable	- TAG: 2,19		Positive
180	550	Instrument cable	- TAG: 2,19A		Positive
190	300	Instrument cable	- TAG: 2,20		Positive
200	200	TELECOM CABLE ml	TAG: 2,22		Positive
210	200	TELECOM CABLE ml	TAG: 2,23		Positive
220	2000	TELECOM CABLE ml	TAG: 2,24		Positive

Warehouse open Monday to Friday From 08.00 to12.00 and from 13.00 to 17.00.
Contact Mr Rota +39 3451608099

DOCUMENTI APPLICABILI / *APPLICABLE DOCUMENTS*

POSIZIONE *Items*	TIPO DI DOCUMENTO *Type of Document*	NUMERO DI DOCUMENTO *Document Number*	Rev.	COD. DI APPROV. *Approv. Code*

L' INCARICATO */Person in charge* ROSETTI MARINO *Supply Management dept.*		IL RAPPR. DEL CLIENTE / *Client Representative*	IL FORNITORE */Vendor*	CONSTRUCTION MANAGER *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Vincent Zwaan		N.A.	N.A.	N.A.

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*

ROSETTI MARINO	RELEASE NOTE	Nr. RN-1170-FLE-01	Sheet 2 of 2
		Date 19/07/2024	Rev. 00

PROGETTO *Project*	CLIENTE *Client*	COMMESSA *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	*123A90*

FORNITORE *Vendor*		NUMERO D' ORDINE *Purchase Order No.*	
	FLEI		*1724001170*

PUNCH LIST: ☐ SI / *YES* VEDI PUNCH LIST ALLEGATA N° / *REFER TO ATTACHED PUNCH LIST N°*
☒ NO/ *NO*

CONTROLLO VALIDITA' FIDEJUSSIONE / *PERFORMANCE or WARRANTY BOND expiration date check*
Estensione Fidejussione Richiesta *(Performance or Warranty Bond Extension of Validity required)*
☐ SI / *YES* ☒ NO/ *NO*
Acceptance Method: *Performance or Warranty Bond valid if actually delivery date it's not greater than two weeks from contractual delivery date.*

RELEASE NOTE

RISULTATO / *RESULT*	FORNITURA / *SUPPLY*	DISTRIBUZIONE A: / *DISTRIBUTION TO:*	
☒POSITIVO / *POSITIVE*	☒COMPLETA / *COMPLETE*	☒Project Manager	☒Administration
☐ NEGATIVO / *NEGATIVE*	☐ PARZIALE / *PARTIAL*	☒ Project Quality Manager	☒ Project Eng-/Procurement Coord
☐PUNTI PENDENTI / *PUNCH-LIST*	☐ ULTIMA / *FINAL*	☐ Warehouse	☐ Supplier

NOTE / *NOTES*

Note:
Refer to PL SCAN_20240719_110324531

L' INCARICATO /*Person in charge* ROSETTI MARINO *Supply Management dept.*		IL RAPPR. DEL CLIENTE / *Client Representative*	IL FORNITORE /*Vendor*	CONSTRUCTION MANAGER *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Vincent Zwaan		N.A.	N.A.	N.A.

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*
MOD-PRO-18-Rev. 2016-02 Release Note Report

ROSETTI MARINO	RELEASE NOTE	Nr. RN-1170-FLE-02	Sheet 1 of 1
		Date 24/10/2024	Rev. 00

PROGETTO *Project*	CLIENTE *Client*	COMMESSA *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	*123A90*

FORNITORE *Vendor*	NUMERO D' ORDINE *Purchase Order No.*
FLEI	*1724001170*

Release Note	☐ FOR PAYMENT	☒ FOR SHIPMENT

RELEASE NOTE FOR PAYMENT

PO Art.	

RELEASE NOTE FOR SHIPMENT

POS. Item	Q.TA' Quantity	DESCRIZIONE Description	Nr. TAG TAG No.	TIPO DI ISPEZIONE / Kind of Inspection	ESITO / Result
240	300m	Instrument cable	SMICV01-1X2X0,75		Positive
250	300m	Instrument cable	SMICV05-2X2,5		Positive
260	300m	Instrument cable	SMICV14-1X3X2,5		Positive

Warehouse open Monday to Friday From 08.00 to12.00 and from 13.00 to 17.00.
Contact Mr Rota +39 3451608099

DOCUMENTI APPLICABILI / *APPLICABLE DOCUMENTS*

POSIZIONE *Items*	TIPO DI DOCUMENTO *Type of Document*	NUMERO DI DOCUMENTO *Document Number*	Rev.	COD. DI APPROV. *Approv. Code*

PUNCH LIST: ☐ SI / *YES* VEDI PUNCH LIST ALLEGATA N° / *REFER TO ATTACHED PUNCH LIST N°*
☒ NO/ *NO*

CONTROLLO VALIDITA' FIDEJUSSIONE / *PERFORMANCE or WARRANTY BOND expiration date check*
Estensione Fidejussione Richiesta *(Performance or Warranty Bond Extension of Validity required)*
☐ SI / *YES* ☒ NO/ *NO*
Acceptance Method: *Performance or Warranty Bond valid if actually delivery date it's not greater than two weeks from contractual delivery date.*

RELEASE NOTE

RISULTATO / *RESULT*	FORNITURA / *SUPPLY*	DISTRIBUZIONE A: / *DISTRIBUTION TO:*	
☒ POSITIVO / *POSITIVE*	☒ COMPLETA / *COMPLETE*	☒ Project Manager	☒ Administration
☐ NEGATIVO / *NEGATIVE*	☐ PARZIALE / *PARTIAL*	☒ Project Quality Manager	☒ Project Eng-/Procurement Coord
☐ PUNTI PENDENTI / *PUNCH-LIST*	☐ ULTIMA / *FINAL*	☐ Warehouse	☐ Supplier

NOTE / *NOTES*

Note:
Refer to PL SCAN_20241024_115727775

L' INCARICATO /*Person in charge* ROSETTI MARINO *Supply Management dept.*		IL RAPPR. DEL CLIENTE / *Client Representative*	IL FORNITORE /*Vendor*	CONSTRUCTION MANAGER *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Vincent Zwaan		N.A.	N.A.	N.A.

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*

ROSETTI MARINO	RELEASE NOTE	Nr. RN-1170-FLE-03	Sheet 1 of 1
		Date 05/11/2024	Rev. 00

PROGETTO *Project*	CLIENTE *Client*	COMMESSA *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	*123A90*

FORNITORE *Vendor*	NUMERO D' ORDINE *Purchase Order No.*
FLEI	*1724001170*

Release Note	☒ FOR PAYMENT	☐ FOR SHIPMENT

RELEASE NOTE FOR PAYMENT

PO Art.		Delivery installment
9.2.1	a)	**90% of the amount of each complete delivery lot of the PURCHASE ORDER, as defined under Art.13.2, at delivery of the GOODS, against presentation of supporting documentation (items i) through iii) above plus the release note of the GOODS certified by COMPANY's Supply Management Department).**

RELEASE NOTE FOR SHIPMENT

POS. Item	Q.TA' Quantity	DESCRIZIONE Description	Nr. TAG TAG No.	TIPO DI ISPEZIONE / Kind of Inspection	ESITO / Result

Warehouse open Monday to Friday From 08.00 to12.00 and from 13.00 to 17.00.
Contact Mr Rota +39 3451608099

DOCUMENTI APPLICABILI / *APPLICABLE DOCUMENTS*

POSIZIONE *Items*	TIPO DI DOCUMENTO *Type of Document*	NUMERO DI DOCUMENTO *Document Number*	Rev.	COD. DI APPROV. *Approv. Code*

PUNCH LIST: ☐ SI / *YES* VEDI PUNCH LIST ALLEGATA N° / *REFER TO ATTACHED PUNCH LIST N°*
☒ NO/ *NO*

CONTROLLO VALIDITA' FIDEJUSSIONE / *PERFORMANCE or WARRANTY BOND expiration date check*
Estensione Fidejussione Richiesta *(Performance or Warranty Bond Extension of Validity required)*
☐ SI / *YES* ☒ NO/ *NO*
Acceptance Method: *Performance or Warranty Bond valid if actually delivery date it's not greater than two weeks from contractual delivery date.*

RELEASE NOTE

RISULTATO / *RESULT*	FORNITURA / *SUPPLY*	DISTRIBUZIONE A: / *DISTRIBUTION TO:*	
☒ POSITIVO / *POSITIVE*	☒ COMPLETA / *COMPLETE*	☒ Project Manager	☒ Administration
☐ NEGATIVO / *NEGATIVE*	☐ PARZIALE / *PARTIAL*	☒ Project Quality Manager	☒ Project Eng-/Procurement Coord
☐ PUNTI PENDENTI / *PUNCH-LIST*	☐ ULTIMA / *FINAL*	☐ Warehouse	☐ Supplier

NOTE / *NOTES*

Note:
Payment shall refer to total amount of PO rev1, PO rev 2 position 270 payment shall be made upon delivery of item.

L' INCARICATO /*Person in charge* ROSETTI MARINO *Supply Management dept.*		IL RAPPR. DEL CLIENTE / *Client Representative*	IL FORNITORE /*Vendor*	CONSTRUCTION MANAGER *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Vincent Zwaan		N.A.	N.A.	N.A.

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*

ROSETTI MARINO	RELEASE NOTE	Nr. RN-1170-FLE-04	Sheet 1 of 1
		Date 29/11/2024	Rev. 00

PROGETTO *Project*	CLIENTE *Client*	COMMESSA *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	*123A90*

FORNITORE *Vendor*		NUMERO D' ORDINE *Purchase Order No.*	
	FLEI		*1724001170*

Release Note	☐ FOR PAYMENT	☒ FOR SHIPMENT

RELEASE NOTE FOR PAYMENT

PO Art.		

RELEASE NOTE FOR SHIPMENT

POS. Item	Q.TA' Quantity	DESCRIZIONE Description	Nr. TAG TAG No.	TIPO DI ISPEZIONE / Kind of Inspection	ESITO / Result
270	350m	INSTRUMENTAL CABLE ML	SMICV12-2X2,5		Positive

Warehouse open Monday to Friday From 08.00 to12.00 and from 13.00 to 17.00.
Contact Mr Rota +39 3451608099

DOCUMENTI APPLICABILI / *APPLICABLE DOCUMENTS*

POSIZIONE *Items*	TIPO DI DOCUMENTO *Type of Document*	NUMERO DI DOCUMENTO *Document Number*	Rev.	COD. DI APPROV. *Approv. Code*

PUNCH LIST: ☐ SI / *YES* VEDI PUNCH LIST ALLEGATA N° / *REFER TO ATTACHED PUNCH LIST N°*
☒ NO/ *NO*

CONTROLLO VALIDITA' FIDEJUSSIONE / *PERFORMANCE or WARRANTY BOND expiration date check*
Estensione Fidejussione Richiesta *(Performance or Warranty Bond Extension of Validity required)*
☐ SI / *YES* ☒ NO/ *NO*
Acceptance Method: *Performance or Warranty Bond valid if actually delivery date it's not greater than two weeks from contractual delivery date.*

RELEASE NOTE

RISULTATO / *RESULT*	FORNITURA / *SUPPLY*	DISTRIBUZIONE A: / *DISTRIBUTION TO:*	
☒ POSITIVO / *POSITIVE*	☒ COMPLETA / *COMPLETE*	☒ Project Manager	☒ Administration
☐ NEGATIVO / *NEGATIVE*	☐ PARZIALE / *PARTIAL*	☒ Project Quality Manager	☒ Project Eng-/Procurement Coord
☐ PUNTI PENDENTI / *PUNCH-LIST*	☐ ULTIMA / *FINAL*	☐ Warehouse	☐ Supplier

NOTE / *NOTES*

Note:
delivery related to PO 1724001170 - REV02

L' INCARICATO /*Person in charge* ROSETTI MARINO *Supply Management dept.*		IL RAPPR. DEL CLIENTE / *Client Representative*	IL FORNITORE /*Vendor*	CONSTRUCTION MANAGER *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Vincent Zwaan		N.A.	N.A.	N.A.

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*

ROSETTI MARINO	RELEASE NOTE	Nr. RN-1170-FLE-05	Sheet 1 of 1
		Date 17/01/2025	Rev. 00

PROGETTO *Project*	CLIENTE *Client*	COMMESSA *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	*123A90*

FORNITORE *Vendor*	FLEI	NUMERO D' ORDINE *Purchase Order No.*	*1724001170*

Release Note	☐ FOR PAYMENT	☒ FOR SHIPMENT

RELEASE NOTE FOR PAYMENT

PO Art.		

RELEASE NOTE FOR SHIPMENT

POS. Item	Q.TA' Quantity	DESCRIZIONE Description	Nr. TAG TAG No.	TIPO DI ISPEZIONE / Kind of Inspection	ESITO / Result
280	300m	INSTRUMENTAL CABLE ML	SMICV02-2X2X0,75		Positive

Warehouse open Monday to Friday From 08.00 to12.00 and from 13.00 to 17.00.
Contact Mr Rota +39 3451608099

DOCUMENTI APPLICABILI / *APPLICABLE DOCUMENTS*

POSIZIONE *Items*	TIPO DI DOCUMENTO *Type of Document*	NUMERO DI DOCUMENTO *Document Number*	Rev.	COD. DI APPROV. *Approv. Code*

PUNCH LIST: ☐ SI / *YES* VEDI PUNCH LIST ALLEGATA N° / *REFER TO ATTACHED PUNCH LIST N°*
☒ NO/ *NO*

CONTROLLO VALIDITA' FIDEJUSSIONE / *PERFORMANCE or WARRANTY BOND expiration date check*
Estensione Fidejussione Richiesta *(Performance or Warranty Bond Extension of Validity required)*
☐ SI / *YES* ☒ NO/ *NO*
Acceptance Method: *Performance or Warranty Bond valid if actually delivery date it's not greater than two weeks from contractual delivery date.*

RELEASE NOTE

RISULTATO / *RESULT*	FORNITURA / *SUPPLY*	DISTRIBUZIONE A: / *DISTRIBUTION TO:*	
☒ POSITIVO / *POSITIVE*	☒ COMPLETA / *COMPLETE*	☒ Project Manager	☒ Administration
☐ NEGATIVO / *NEGATIVE*	☐ PARZIALE / *PARTIAL*	☒ Project Quality Manager	☒ Project Eng-/Procurement Coord
☐ PUNTI PENDENTI / *PUNCH-LIST*	☐ ULTIMA / *FINAL*	☐ Warehouse	☐ Supplier

NOTE / *NOTES*

Note:
delivery related to PO 1724001170 - REV03

L' INCARICATO /*Person in charge* ROSETTI MARINO *Supply Management dept.*		IL RAPPR. DEL CLIENTE / *Client Representative*	IL FORNITORE /*Vendor*	CONSTRUCTION MANAGER *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Vincent Zwaan		N.A.	N.A.	N.A.

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*

ROSETTI MARINO	RELEASE NOTE	Nr. RN-1170-FLE-06	Sheet 1 of 1
		Date 20/02/2025	Rev. 00

PROGETTO *Project*	CLIENTE *Client*	COMMESSA *Job*
HOLLANDSE KUST NOORD WIND PARK	CROSSWIND	*123A90*

FORNITORE *Vendor*		NUMERO D' ORDINE *Purchase Order No.*	
	FLEI		*1724001170*

Release Note	☒FOR PAYMENT	☐ FOR SHIPMENT

RELEASE NOTE FOR PAYMENT

PO Art.		Delivery installment
9.2.1	a)	**- 10% of the PURCHASE ORDER TOTAL AMOUNT at delivery of the Final Technical Documentation (item iv) above)**

RELEASE NOTE FOR SHIPMENT

POS. Item	Q.TA' Quantity	DESCRIZIONE Description	Nr. TAG TAG No.	TIPO DI ISPEZIONE / Kind of Inspection	ESITO / Result

Warehouse open Monday to Friday From 08.00 to12.00 and from 13.00 to 17.00.
Contact Mr Rota +39 3451608099

DOCUMENTI APPLICABILI / *APPLICABLE DOCUMENTS*

POSIZIONE *Items*	TIPO DI DOCUMENTO *Type of Document*	NUMERO DI DOCUMENTO *Document Number*	Rev.	COD. DI APPROV. *Approv. Code*

PUNCH LIST: ☐ SI / *YES* VEDI PUNCH LIST ALLEGATA N° / *REFER TO ATTACHED PUNCH LIST N°*
☒ NO/ *NO*

CONTROLLO VALIDITA' FIDEJUSSIONE / *PERFORMANCE or WARRANTY BOND expiration date check*
Estensione Fidejussione Richiesta *(Performance or Warranty Bond Extension of Validity required)*
☐ SI / *YES* ☒ NO/ *NO*
Acceptance Method: *Performance or Warranty Bond valid if actually delivery date it's not greater than two weeks from contractual delivery date.*

RELEASE NOTE

RISULTATO / *RESULT*	FORNITURA / *SUPPLY*	DISTRIBUZIONE A: / *DISTRIBUTION TO:*	
☒POSITIVO / *POSITIVE*	☒COMPLETA / *COMPLETE*	☒Project Manager	☒Administration
☐ NEGATIVO / *NEGATIVE*	☐ PARZIALE / *PARTIAL*	☒ Project Quality Manager	☒ Project Eng-/Procurement Coord
☐PUNTI PENDENTI / *PUNCH-LIST*	☐ ULTIMA / *FINAL*	☐ Warehouse	☐ Supplier

NOTE / *NOTES*

Note:
Released payment for 10% of PO total amount

L' INCARICATO /*Person in charge* ROSETTI MARINO *Supply Management dept.*		IL RAPPR. DEL CLIENTE / *Client Representative*	IL FORNITORE /*Vendor*	CONSTRUCTION MANAGER *Only requested for Punch List to be closed at Yard*
Nome Cognome *Name Surname*	**Firma** *Signature*			
Vincent Zwaan		N.A.	N.A.	N.A.

QUESTO DOCUMENTO NON SOLLEVA IL FORNITORE DALLA RESPONSABILITA' DI EVENTUALI DIFETTI E/O MALFUNZIONAMENTI RILEVATI DURANTE L'USO / *The present RELEASE NOTE does not relieve the Supplier of the responsibility of any possible defects and/or malfunctioning arising during the utilisation.*