Base Load Power Hub (BLPH)

Technical Data Sheet (TDS) for DC UPS System

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Data Sheet for DC Uninterruptible Power Systems (UPS) (IEC 62040-5-3)

JIP33
JOINT INDUSTRY PROGRAMME

Revision history

VERSION	DATE	PURPOSE
1,0	August 2020	Issued for Use

Acknowledgements

This IOGP Specification was prepared by a Joint Industry Programme 33 Standardization of Equipment Specifications for Procurement organized by IOGP with support by the World Economic Forum (WEF).

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Data Sheet for
DC Uninterruptible Power Systems (UPS) (IEC 62040-5-3)

Foreword

This specification was prepared under Joint Industry Programme 33 (JIP33) "Standardization of Equipment Specifications for Procurement" organized by the International Oil & Gas Producers Association (IOGP) with the support from the World Economic Forum (WEF). Companies from the IOGP membership participated in developing this specification to leverage and improve industry level standardization globally in the oil and gas sector. The work has developed a minimized set of supplementary requirements for procurement, with life cycle cost in mind, resulting in a common and jointly agreed specification, building on recognized industry and international standards.

Recent trends in oil and gas projects have demonstrated substantial budget and schedule overruns. The Oil and Gas Community within the World Economic Forum (WEF) has implemented a Capital Project Complexity (CPC) initiative which seeks to drive a structural reduction in upstream project costs with a focus on industry-wide, non-competitive collaboration and standardization. The CPC vision is to standardize specifications for global procurement for equipment and packages. JIP33 provides the oil and gas sector with the opportunity to move from internally to externally focused standardization initiatives and provide step change benefits in the sector's capital projects performance.

This specification has been developed in consultation with a broad user and supplier base to realize benefits from standardization and achieve significant project and schedule cost reductions.

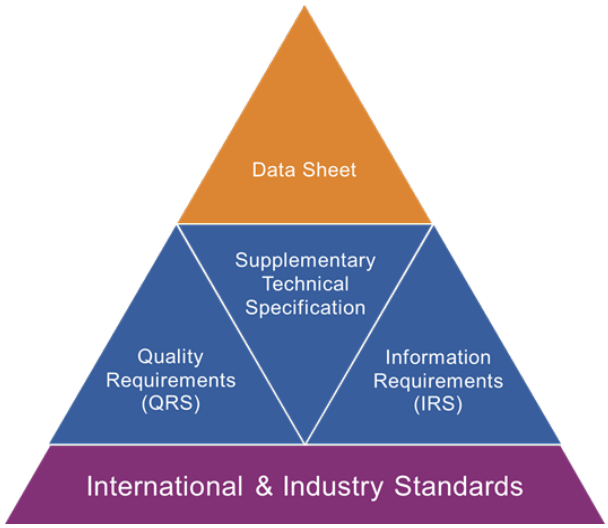
The JIP33 work groups performed their activities in accordance with IOGP's Competition Law Guidelines (November 2014).

Data Sheet for
DC Uninterruptible Power Systems (UPS) (IEC 62040-5-3)

Introduction

The purpose of this equipment data sheet is to define buyer specific requirements for the procurement of DC uninterruptible power systems (UPS) in accordance with IOGP S-702, for application in the petroleum and natural gas industries. The data sheet provides project specific requirements where the supplementary specification and its parent standard require the purchaser to define an application specific requirement. It also includes information required by the purchaser for technical evaluation purposes. Additional purchaser supplied documents are also listed in the data sheets, to define scope and technical requirements for enquiry and purchase of the equipment.

This data sheet shall be used in conjunction with the supplementary requirements specification IOGP S-702, information requirements specification IOGP S-702L and quality requirements specification IOGP S-702Q which together comprise the full set of specification documents. The Introduction section in the supplementary requirements specification provides further information on the purpose of each of these documents and the order of precedence for their use.



JIP33 Specification for Procurement Documents
Data Sheet

Row		S-702D Data Sheet for DC Uninterruptible Power Systems (UPS) (IEC 62040-5-3)					Issue
2	Tag No. :	*Insert Tag Number*					
3	Service :	*Insert Service Description*					
4	Ref. Clause	Description	**UP-200E1**	Manufacturer Declared Values		Additional notes	
5		**GENERAL**					
6	5.1.2	Vendor :	Input Data				
7	5.1.2	Order status :	Select				
8	5.1.2	Purchase order number, date :	Input Data				
9	5.1.2	Manufacturer :	Input Data				
10	5.1.2	Model number :	Input Data				
11	5.1.2	Serial number :	Input Data				
12	5.2.3	Application :	Industrial - Offshore				
13	5.3.2	Purchaser specified rated output power :	10		kVA		
14	5.1.1	Quantity :	1				
15		Conformity assessment system (CAS) level :	D				
16		**CONFIGURATION**					
17	5.1.1, A.1, Figure A.1, Figure A.3, Figure A.5	DC UPS configuration :	Two (2) 100% rated rectifiers connected to a common (shared) battery rated for the full rated load for the autonomy time				
18	A.2.2	Blocking diode required at output of single DC UPS :	Yes				
19	A.2.3	Scalability :	manufacturer standard				
20	5.1.1	DC UPS topology :	direct energy storage connect				
21	B.2.3	Series converter connect option :	manufacturer standard				
22	5.4.2.3	Battery configuration :	1 x 100%				
23	5.3.2, 5.3.4	Performance classification :	manufacturer standard	Select			
24	8.1.1.3	Bi-directional rectifier :	No				
25	8.2.2.11	Remote access required :	Yes (read only)				
26	8.2.2.11	Hardware (adapters, connectors, cables, etc.) required for remote monitor :	Yes				
27	8.1.1.5, 8.1.1.6	On-line battery monitoring facility required :	string monitoring				
28	8.1.1.4	On-line battery testing feature required :	No				
29	8.1.1.4	Battery test load interface :	No				
30	5.4.2.3	DC earth leakage monitoring required :	Yes			change respect rev.00	01
31	7.4.14	Single line diagram and status display :	on HMI				
32	8.1.2.11	Black Start feature required :	Yes				
33	8.1.1.1	Earth screen required for isolation transformer:	manufacturer to advise				
34		**PHYSICAL ASPECTS**					
35	7.2.1	Mounting :	floor mounting				
36	7.2.1	Overall cabinet dimensions - length :	Input Data	Input Data	mm		
37	7.2.1	Overall cabinet dimensions - depth :	Input Data	Input Data	mm		
38	7.2.1	Overall cabinet dimensions - height :	Input Data	Input Data	mm		
39	7.2.1	Reference Outline Drawing number :	Input Data				
40	7.2.1	Total DC UPS cabinet mass :	Input Data		kg		
41	7.2.1	Total DC UPS mass with batteries (if integrated) :	Input Data		kg		
42	7.2.4, 7.2.5	Cable entry location :	top				
43	7.2.4, 7.2.5	Cable entry type :	removable - undrilled plate				
44	7.2.4, 7.2.5	Gland plate material :	manufacturer standard				
45	7.2.1	Paint colour :	supplier standard				
46	7.2.1	Canopy for cabinet required :	No				
47	7.3.5	Document holder :	Yes				
48		**INSTALLATION**					
49	4,1	Site :	offshore - fixed				
50	4,1	Location of DC UPS cabinet installation :	indoor				
51	7.3.1, 7.3.2	Front access clearance dimensions for operation and maintenance :	800		mm		
52	7.3.2	Side clearance for ventilation (if required) :	manufacturer to advise		mm		
53	7.3.2	Rear clearance for ventilation (if required) :	manufacturer to advise		mm		
54	7.2.3, 7.9.3	Installed location of battery :	inside DC UPS enclosure				
55	7.2.3	Maximum battery assembly dimensions (L x D x H) :	Input Data		mm		
56		**SAFETY**					
57	5.1.1	Accessibility :	operator access area				
58	5.1.1	Key required for cabinet :	Yes				
59	7.2.2	Degree of protection (with closed doors) :	IP31	IP31			
60	7.2.2	Degree of protection (with open doors) :	IP2X	IP2X			
61	4.3.2	Area classification :	safe				
62	4.3.2	Hazardous area certification required :	none				
63	4.3.2	Level of protection :	N/A				
64	4.3.2	Gas group :	manufacturer to advise	Select			
65	4.3.2	Temperature class :	manufacturer to advise	Select			
66	4.3.2	Equipment protection level :	manufacturer to advise	Select			
67	7.7.5	Cooling fan replacement while DC UPS in service:	No				
68	5.1.2	Local language for caution/danger/warning labels:	English				
69		**ELECTROMAGNETIC COMPATIBLITY**					
70	5.1.4	Emission :	UPS Cat C3				
71	5.1.4	Immunity :	UPS Cat C3				
72		**ENVIRONMENTAL CONDITIONS**					
73	4.2.1.1	Minimum ambient temperature (operation) :	-8,4		°C		
74	4.2.1.1	Maximum ambient temperature (operation) :	40		°C		
75	4.2.1.1	Maximum relative humidity (operation) :	95		%		
76	4.2.1.1	Temperature at which relative humidity is specified (operation) :	Input Data		°C		
77	4.2.1.2	Maximum altitude (operation) :	Sea Level		m		
78	4.2.2	Minimum ambient temperature (storage and transportation) :	-5		°C		
79	4.2.2	Maximum ambient temperature (storage and transportation) :	40		°C		
80	4.2.2	Maximum relative humidity (storage and transportation) :	85		%		

Row							Issue
2	Tag No. :	*Insert Tag Number*					
3	Service :	*Insert Service Description*					
4	Ref. Clause	Description	**UP-200E1**	Manufacturer Declared Values		Additional notes	
81	4.2.2	Temperature at which relative humidity is specified (storage and transportation) :	Input Data		°C		
82	4.3.2	Seismic requirement data :	Zone 2				
83	4.2.2	Storage site of DC UPS :	indoor – natural ventilation				
84	4.3.2	Additional or unusual conditions (operation) :	Input Data				
85	4.3.3	Additional or unusual conditions (storage and transportation) :	Input Data				
86	5.1.5	Acoustic noise at 1 m - normal mode :	70		dBA		
87	5.1.5	Acoustic noise at 1 m - stored energy mode :	70		dBA		
88		**COMMUNICATION INTERFACE(S)**					
89	5,6	(1) Interface media for SCADA (ICSS / DCS) :	serial				
90	5,6	(1) Maximum allowable length of communication cable (for copper) :	25		m		
91	5,6	(1) Interface protocol for SCADA (ICSS / DCS) :	Modbus				
92	5,6	(2) Interface media for Electrical Management / Control System :	serial			Both, serial and hardwired discrete	
93	5,6	(2) Maximum allowable length of communication cable (for copper) :	25		m		
94	5,6	(2) Interface protocol for Electrical Management / Control System :	Modbus				
95	5,6	(3) Remote access / monitoring software required :	Yes				
96	5,6	(3) Interface media for Remote access / monitoring :	ethernet (fiber)				
97	5,6	(3) Maximum allowable length of communication cable (for copper) :	25		m		
98	5,6	(3) Interface protocol for Remote access / monitoring :	Modbus				
99		**AC INPUT SPECIFICATIONS**					
100	5.2.1	Voltage (steady state, R.M.S) - rated :	400		V		
101	5.2.1	Voltage (steady state, R.M.S - tolerance :	+/- 10		%		
102	5.2.1	Frequency - rated :	50 Hz				
103	5.2.1	Frequency - tolerance :	+/- 2		%		
104	5.2.2	Phases required :	3	Select			
105	5.2.2	Neutral required :	Yes	Select			
106	5.2.2	Current (R.M.S) - rated (with the energy storage device charged) :	manufacturer to advise		A		
107	5.2.2	Power factor :	manufacturer to advise	Input Data			
108	5.2.2	In-rush (% of rated current) :	manufacturer to advise	Input Data	%		
109	5.2.2	In-rush (time) :	manufacturer to advise	Input Data	s		
110	5.2.2	Maximum current (with low input volt and energy storage device charging) :	manufacturer to advise		A		
111	5.2.2	Time for overload (125 % of rated current) :	manufacturer to advise	Input Data	s		
112	5.2.2	Time for overload (150 % of rated current) :	manufacturer to advise	Input Data	s		
113	5.2.2	Total harmonic distortion (THD p.u.) :	8		%		
114	5.2.3	Short circuit current of the input supply :	50		kA		
115	5.2.2	Minimum prospective short circuit current :	Input Data		kA		
116	5.2.2	Earth leakage current :	Input Data		mA		
117	5.2.2	AC power distribution system - compatibility :	TN-S				
118	5.2.3	Additional or unusual conditions :	Input Data				
119	5.2.3, 7.5.4	Cable Size (cross-section area) - input mains (Float) :	Input Data		sq.mm.		
120	7.5.4	Cable Size (cross-section area) - input mains (Boost) :	Input Data		sq.mm.		
121	7.4.8, 8.1.1.1	Input isolation transformer required :	Select				
122	7.4.10	Input isolation transformer winding :	copper or aluminum				
123		**DC AND BATTERY SPECIFICATIONS**					
124	5.4.2.2	DC voltage level :	110		V d.c.		
125	5.4.2.2	Design life :	5		years		
126	5.4.2.2	Float service life :	manufacturer to advise		years		
127	5.4.2.2	Shelf life of battery :	manufacturer to advise		months		
128	5.4.2.2	Quantity of cells and strings :	manufacturer to advise		nos.		
129	5.4.2.2	Nominal voltage (total) :	manufacturer to advise		V d.c.		
130	5.4.2.2	Battery technology :	sealed nickel cadmium			To offer as option "Sealed Gell Filled VRLA"	
131	5.4.2.2	Nominal AH capacity :	manufacturer to advise		AH		
132	5.4.2.2	Discharge rate (C-rate) :	manufacturer to advise				
133	5.4.2.2	Electrolyte fill status :	manufacturer standard	Select			
134	8.1.2.3	Purchaser's requirement (% of battery recharge level - 1) :	80		%		
135	8.1.2.3	Purchaser's requirement (time for battery recharge level - 1) :	10		Hours	possibility of 8 hours if the Vendor standard allows it	01
136	8.1.2.3	Purchaser's requirement (% of battery recharge level - 2) :	100		%		
137	8.1.2.3	Purchaser's requirement (time for battery recharge level - 2) :	24		Hours	possibility of 12 hours if the Vendor standard allows it	01
138	5.4.2.2	Stored energy time (back-up time at 100% rated load) :	60		min		
139	5.4.2.2	Restored energy time (recharge time to 80% capacity) :	manufacturer to advise		hours		
140	5.4.2.2	Ambient reference temperature :	40		°C		
141	5.4.2.2	Earth condition/isolation :	manufacturer to advise	Select			
142	5.4.2.2	Ripple current (R.M.S) :	manufacturer to advise		%		
143	5.4.2.2	Maximum discharge current :	manufacturer to advise		A		
144	5.4.2.2	DC Fault current rating :	manufacturer to advise		A d.c.		
145	5.4.2.2	Cable volt drop recommendation (≤ % at nominal discharge current) :	manufacturer to advise		%		
146	5.4.2.2	Charging regime :	manufacturer to advise				
147	5.4.2.2	Charge voltage (float) and tolerance band :	manufacturer to advise		V d.c.		

Row		S-702D Data Sheet for DC Uninterruptible Power Systems (UPS) (IEC 62040-5-3)					Issue
2	Tag No. :	*Insert Tag Number*					
3	Service :	*Insert Service Description*					
4	Ref. Clause	Description	**UP-200E1**	Manufacturer Declared Values		Additional notes	
148	5.4.2.2	Charge voltage (boost) and tolerance band :	manufacturer to advise		V d.c.		
149	5.4.2.2	Charge voltage (equalising) and tolerance band :	manufacturer to advise		V d.c.		
150	5.4.2.2	Minimum end of discharge voltage :	manufacturer to advise		V d.c.		
151	5.4.2.2	Charge current limit (or range) :	manufacturer to advise		A d.c.		
152	5.4.2.2	Temperature compensated charging required :	Yes			for the option of VRLA batteries	
153	5.4.2.3	Battery isolation box required :	manufacturer standard				
154	5.4.2.3	Additional or unusual conditions :	Input Data				
155	5.4.2.3	Load profile for battery design, attached :	Yes				
156	5.4.2.3	Battery rack design :	Batteries integrated inside UPS Cabinet				
157		**BATTERY ROOM**					
158	4.2.1.1	Minimum ambient reference temperature :	Input Data		°C		
159	4.2.1.1	Maximum ambient reference temperature :	-8,4		°C		
160	5.4.2.1	Area classification :	safe				
161	5.4.2.1	Hazardous area classification :	N/A				
162	5.4.2.1	Minimum Gas Subdivision and Temperature Class (for equipment in Battery room) :	N/A				
163	8.1.2.10	Temperature sensor (for VRLA / partial gas recombination batteries) :	Yes			for the option of VRLA batteries	
164		**BATTERY ISOLATOR BOX SPECIFICATIONS**					
165	7.9.1	Enclosure material :	manufacturer standard	Select			
166	7.9.1	Mounting :	manufacturer standard				
167	7.9.1	Breathing valve required :	manufacturer to advise	Select			
168	7.9.1	Internal earth bar :	tinned copper				
169	7.9.3	Minimum design temperature :	-8,4		°C		
170	7.9.3	Maximum design temperature :	40		°C		
171	7.9.3	Maximum relative humidity :	95		%		
172	7.9.3	Temperature at which relative humidity is specified :	Input Data		°C		
173	7.9.4	Degree of protection :	IP 31				
174	7.9.5	Area classification :	safe				
175	7.9.5	Hazardous Area Certification required :	none				
176	7.9.5	Hazardous area classification :	N/A				
177	7.9.5	Hazardous area level of protection :	N/A				
178	7.9.6	Cable entry :	top				
179	7.9.6	Cable indirect entry via 'ex e' enclosure :	Select				
180	7.9.6	Battery cable size (cross-section area) :	No		sq.mm.		
181	7.9.6	Cable entry diameter in battery isolator box (ISO metric) :	Input Data				
182	7.9.7	Battery isolator type :	MCCB				
183	7.9.8	Rated current of breaker / switch fuse unit :	manufacturer to advise		A		
184	7.9.8	Rated breaking current (Icu) - (if breaker used) :	manufacturer to advise		kA		
185	7.9.10	Breaker status potential free contact (NO) :	two				
186	7.9.9	Under Voltage trip feature required :	Yes				
187	7.9.9	Under Voltage trip coil for :	black start reserve				
188	8.1.2.12	ESD trip required :	Yes - via shunt trip				
189	8.1.2.12	ESD override key switch :	key captive in overridden position and with status contact				
190	7.9.9	Over voltage trip required :	Yes				
191		**DC OUTPUT SPECIFICATIONS**					
192	5.3.2	DC power distribution system - compatibility :	IT				
193	5.3.2	Voltage (steady state) - rated :	110	Input Data	V d.c.		
194	5.3.2	Voltage - normal mode variation at no load :	manufacturer to advise	Input Data	%		
195	5.3.2	Voltage - normal mode variation at full load :	manufacturer to advise	Input Data	%		
196	5.3.2	Voltage - storage energy mode variation at no load :	manufacturer to advise	Input Data	%		
197	5.3.2	Voltage - storage energy mode variation at full load :	manufacturer to advise	Input Data	%		
198	5.3.2	% Voltage transient - transfer normal mode to storage energy mode :	manufacturer to advise		%		
199	5.3.2	Voltage transient time - transfer normal mode to storage energy mode :	manufacturer to advise		s		
200	5.3.2	% Voltage transient - transfer storage energy mode to normal mode :	manufacturer to advise		%		
201	5.3.2	Voltage transient time - transfer storage energy mode to normal mode :	manufacturer to advise		s		
202	5.3.2	% Voltage variation - normal mode at step load :	manufacturer to advise		%		
203	5.3.2	Duration of voltage variation - normal mode at step load :	manufacturer to advise		s		
204	5.3.2	% Voltage variation - storage energy mode at step load :	manufacturer to advise		%		
205	5.3.2	Duration of voltage variation - storage energy mode at step load :	manufacturer to advise		s		
206	5.3.2	Current - rated :	manufacturer to advise		A d.c.		
207	5.3.2	Current - overload capability (% of rated current for ten minutes) :	manufacturer to advise		%		
208	5.3.2	Current - overload capability (% of rated current for one minute) :	manufacturer to advise		%		
209	5.3.2	Current - short circuit capability (% of rated current) :	manufacturer to advise	Input Data	%		
210	5.3.2	Current - short circuit capability (time duration):	manufacturer to advise	Input Data	s		
211	5.3.2	Current - limitation (% of rated current) :	manufacturer to advise		%		
212	5.3.2	Current - limitation (time duration) :	manufacturer to advise		s		
213	5.3.2	Current - fault clearing capability (normal mode) :	manufacturer to advise		A		

Row	S-702D Data Sheet for DC Uninterruptible Power Systems (UPS) (IEC 62040-5-3)						Issue
2	Tag No. :	*Insert Tag Number*					
3	Service :	*Insert Service Description*					
4	Ref. Clause	Description	**UP-200E1**	Manufacturer Declared Values		Additional notes	
214	5.3.2	Current - fault clearing capability (stored energy mode) :	manufacturer to advise		A		
215	5.3.2	AC / DC efficiency in normal mode - 100% load :	manufacturer to advise		%		
216	5.3.2	AC / DC efficiency in normal mode - 75% load:	manufacturer to advise		%		
217	5.3.2	AC / DC efficiency in normal mode - 50% load:	manufacturer to advise		%		
218	5.3.2	AC / DC efficiency in normal mode - 25% load:	manufacturer to advise		%		
219	5.3.2	No load losses :	manufacturer to advise		W		
220	7.1.6	Reference document to DC output distribution board :	To see Electical Load List				
221	5.3.3	Additional or unusual conditions :	Input Data				
222	5.3.3	Cable size (cross-section area) - output :	manufacturer to advise		sq.mm.		

Row	S-702D Data Sheet for DC Uninterruptible Power Systems (UPS) (IEC 62040-5-3)	Issue
2	Tag No. : *Insert Tag Number*	
3	Service : *Insert Service Description*	
4	**PURCHASE ORDER SPECIFIC REQUIREMENTS**	
5	Delete this sheet if not required	
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Data Sheet for
DC Uninterruptible Power Systems (UPS) (IEC 62040-5-3)

Guidance on the use of this data sheet

To be used in conjunction with :
IOGP S-702 Supplementary Specification to IEC 62040-5-3 DC Uninterruptible Power Systems (UPS).

This data sheet is set-up to be used in electronic format by both the purchaser/user and the supplier/manufacturer.

This data sheet provides reference back to the parent standard or the supplementary specification where relevant.

Default values (if applicable) have been set according to essential minimum requirements as an integral part of this specification and should only be changed where specific justification can be provided.

The Supplement sheet is provided in an open format sheet for application of specific items not covered in the main part of the data sheet. This sheet is not intended to modify requirements defined in the supplementary requirements specification.

The data sheet includes a revision (issue) column on the right hand side for use by the purchaser/user. After the first issue, for each subsequent revision of the data sheet that is issued to suppliers for enquiry or purchase, the purchaser/user should use the issue column to denote that the data on a specific row has been updated since the previous revision. This will enable the supplier to easily identify where changes have been made.

Legend		
	Select	Supplier/manufacturer completed, pick list of pre-defined values (may be pre-populated with a default value).
	Input data	Supplier/manufacturer completed data entry.
	Select	Purchaser/user completed, pick list of pre-defined values (may be pre-populated with a default value).
	Input data	Purchaser/user completed data entry.
	Select	Either supplier/manufacturer or purchaser/user completed, pick list of pre-defined values (may be pre-populated with a default value).
	Input Data	Either supplier/manufacturer or purchaser/user completed data entry.
	Select	Selection of units from a pre-defined pick list.

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