

Technical Specifications (In-Cash Procurement)

Technical Specification for Investment Protection Distribution boards in Building 74.

This specification outlines the minimum requirements for the Construction design, supply, packing and testing of the Steady State Electrical Network LV Distribution Boards equipment for the ITER project for Building-74 Investment Protection Electrical distribution boards.

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1 Preamble

The ITER project aims to build a fusion device, twice the size of the largest current devices, with the goal of demonstrating the scientific and technical feasibility of fusion power. It is a joint project among the European Union, China, India, Japan, South Korea, the Russian Federation, and the USA. ITER will be constructed in Europe, at Cadarache in the south of France.

This Technical Specification is to be read in combination with the General Management Specification for Service and Supply (GM3S) – Ref [RD1] that constitutes a full part of the technical requirements. In case of conflict, the content of the Technical Specification supersedes the content of Ref [RD1].

2 Purpose

This specification outlines the minimum requirements for the Construction design, supply, packing and testing of the Steady State Electrical Network LV Distribution Boards equipment for the ITER project for Building-74 Investment Protection Electrical distribution boards.

All documents or information attached to this specification are considered part of it and must be complied with by the prospective Supplier.

All deviations from this specification shall be clearly identified as such in a single document entitled “Exceptions to the Technical Specification”.

3 Acronyms & Definitions

3.1 Acronyms

The following acronyms are the main ones relevant to this document.

Abbreviation	Description
CRO	Contract Responsible Officer
GM3S	General Management Specification for Service and Supply
IO	ITER Organization
PRO	Procurement Responsible Officer
PBS	Plant Breakdown System
IP	Investment Protection
SSEN	Steady State Electric Network
PA	Procurement Arrangement
DC	Direct Current

3.2 Definitions

Contractor: the economic operator who have signed the Contract in which this document is referenced, as defined in the Special Conditions of the said Contract.

Subcontractor: shall mean an economic operator who is under contract to a Contractor providing supplies, services or works to the IO, being understood that the subcontractor shall perform, under

responsibility of the Contractor, with independence and free from any subordination, a specific part of the obligations of the Contract.

Supplier: shall mean a legally registered entity, that can provide standard / catalogue goods or material, or standard services to a Contractor, or a subcontractor, that will enable the performance of the scope of work to be provided by the Contractor or subcontractor.

4 Applicable Documents & Codes And Standards

4.1 Applicable Documents

This is the responsibility of the Contractor to identify and request for any documents that would not have been transmitted by IO, including the below list of reference documents.

This Technical Specification takes precedence over the referenced documents. In case of conflicting information, this is the responsibility of the Contractor to seek clarification from IO.

Upon notification of any revision of the applicable document transmitted officially to the Contractor, the Contractor shall advise within 4 weeks of any impact on the execution of the contract. Without any response after this period, no impact will be considered.

Title	No.	Version
RD1]. General Management Specification for Service and Supply (GM3S)	ITER_D_82MXQK	v1.4
RD2]. Systems Requirement Document (SRD) Steady State Power Supply and Distribution PBS 43	ITER_D_28B6Y9	v3.6
RD3]. Electrical Design Handbook Part 3: Codes and standards	ITER_D_2E8DLM	v1.3
RD4]. Electrical Design Handbook: Part 4, Electromagnetic Compatibility	ITER_D_4B523E	v3.0
RD5]. EDH Part 2: Terminology & Acronyms	ITER_D_2E8QVA	v1.5
RD6]. Electrical Design Handbook: Part 5, Earthing and Lightning Protection	ITER_D_4B7ZDG	V3.0
RD7]. Electrical Design Handbook Guide A: Electrical Installations for SSEN Client Systems	ITER_D_2EB9VT	v2.7
RD8]. IO_cabling_rules	ITER_D_335VF9	v3.3

Title	No.	Version
[RD9]. ITER Procurement Quality Requirements	ITER_D_22MFG4	V6.4
[RD10]. Human Factors Integration Plan	ITER_D_2WBVKU	V3.0
[RD11]. Colour Code for Electrical Components	ITER_D_3E5XP2	v1.2
[RD12]. ITER numbering system (for parts/components)	ITER_D_28QDBS	v5.1
[RD13]. SSEN Input Data for the RAMI Analysis	ITER_D_4EQDJL	v1.1
[RD14]. Instructions for Seismic Analyses	ITER_D_VT29D6	v2.1
[RD15]. Plant system I&C Integration plan	ITER_D_3VVU9W	v4.6
[RD16]. Siemens S7 PLC Catalogue	ITER_D_333J63	V6.4
[RD17]. Plant Control Design Handbook	ITER_D_27LH2V	v7.1
[RD18]. Plant Systems Factory Acceptance Plan for I&C Systems	ITER_D_3VVU9W	v4.6
[RD19]. SSEN and PPEN Factory Acceptance Plan Test	ITER_D_3ZS356	1.0
[RD20]. Specification for Labelling of Equipment on ITER Project	ITER_D_TL25DK	v3.3
[RD21]. PBS-43 NON-PIC LV Typical Schematics and Wiring Diagram for SDB	<u>ITER_D_7V5JLS</u>	<u>V3.0</u>
[RD22]. Schneider Component List for the Electrical Power Distribution Design in ITER	<u>ITER_D_7XCC4B</u>	<u>v1.11</u>
[RD23]. Electrical Load List for Class-II and Class-III IP loads	ITER_D_3GV53Z	<u>V8.2</u>
[RD24]. ITER Abbreviations	ITER_D_2MU6W5	v1.19
[RD25]. Protection Important Functions and Components Classification Criteria and Methodology	ITER_D_347SF3	V2.0
[RD26]. ITER_430000_SLD_000: ITER SSEN One Line General Diagram	ITER_D_RH3V2M	V8.0

Title	No.	Version
[RD27]. PBS-43 System Load Specifications	ITER_D_XANCBT	V2.0
[RD28]. Report of IP MDB and SDB Load Flow in B46&47	ITER_D_56BZ6S	V7.8
[RD29]. Calculation report of Bldg.47 Transformer-1 for Class II & Class III IP Tr B Loads in Bldg. 11,14 & 74	ITER_D_63EAAQ	V9.14
[RD30]. Calculation report of Bldg.47 Transformer-2 for Class II & Class III IP Tr B Loads in Bldg. 11,14 & 74	ITER_D_63MGSW	V7.4
[RD31]. Calculation report of Bldg.47 Transformer-3 for Class II & Class III IP Tr B Loads in Bldg. 11,14 & 74	ITER_D_66XK4V	V7.3
[RD32]. Calculation report of Bldg.47 Transformer-4 for Class II & Class III IP Tr B Loads in Bldg. 11,14 & 74	ITER_D_66XN7K	V9.12
[RD33]. ITER_43BMTB_SLD_121: SSEN LV Distribution Class III IP BD-1210 (74-B1-03)	ITER_D_5AC4TV	v2.2
[RD34]. ITER_43BMTB_SLD_151: SSEN LV Distribution Class III IP BD-1510 (74-L3-03)	ITER_D_5AC4WB	v2.3
[RD35]. ITER_43BRTB_SLD_111: SSEN Distribution LV Class II IP-B BD-1110 (74-B2-03)	ITER_D_4WF97C	v2.2
[RD36]. ITER_43BRTB_SLD_1110: SSEN Distribution LV Class II IP BP-1110 (74-B2-01)	ITER_D_6D22Y4	v2.3
[RD37]. ITER_43BRTB_SLD_112: SSEN Distribution LV Class II IP-B BD-1120 (74-B2-07)	ITER_D_4WG878	v2.2
[RD38]. ITER_43BRTB_SLD_121: SSEN Distribution LV Class II IP-B BD-1210 (74-B1-03)	ITER_D_4WFX6A	v2.3
[RD39]. ITER_43BRTB_SLD_122: SSEN Distribution LV Class II IP-B BD-1220 (74-B1-04)	ITER_D_4WFFZN2	v2.4
[RD40]. ITER_43BRTB_SLD_131: SSEN Distribution LV Class II IP-B BD-1310 (74-L1-03)	ITER_D_4WETA7	v2.5

Title	No.	Version
[RD41]. ITER_43BRTB_SLD_132: SSEN Distribution LV Class II IP-B BP-1320 (74-L1-04)	ITER_D_4WG8KJ	v2.3
[RD42]. ITER_43BRTB_SLD_141: SSEN Distribution LV Class II IP-B BD-1410 (74-L2-03)	ITER_D_4WFTHW	v2.4
[RD43]. ITER_43BRTB_SLD_142: SSEN Distribution LV Class II IP-B BD-1420 (74-L2-04)	ITER_D_4WFC44	v2.4
[RD44]. ITER_43BRTB_SLD_151: SSEN Distribution LV Class II IP-B BD-1510 (74-L3-01)	ITER_D_4WFCSP	v2.4
[RD45]. ITER_43BRTB_SLD_152: SSEN Distribution LV Class II IP-B BD-1520 (74-L3-07)	ITER_D_4WEG4X	v2.4
[RD46]. ITER_43BRTB_SLD_251: SSEN Distribution LV Class II IP-B BD-2510 (74-L3-01)	ITER_D_4WE7X4	v2.3
[RD47]. ITER_43BMTB_CBD_121: SSEN LV Distribution Class III IP BD-1210 (74-B1-03)	ITER_D_QTKJYA	v2.3
[RD48]. ITER_43BMTB_CBD_151: SSEN LV Distribution Class III IP BD-1510 (74-L3-03)	ITER_D_54QR9S	v2.2
[RD49]. ITER_43BRTB_CBD_111: SSEN Distribution LV Class II IP-B BD-1110 (74-B2-03)	ITER_D_3GSPAW	v2.2
[RD50]. ITER_43BRTB_CBD_1110: SSEN Distribution LV Class II IP-B BP-1110 (74-B2-01)	ITER_D_6CWJG7	v2.2
[RD51]. ITER_43BRTB_CBD_112: SSEN Distribution LV Class II IP-B BD-1120 (74-B2-07)	ITER_D_WNB4PU	v2.2
[RD52]. ITER_43BRTB_CBD_121: SSEN Distribution LV Class II IP-B BD-1210 (74-B1-03)	ITER_D_54D4YU	v2.2
[RD53]. ITER_43BRTB_CBD_122: SSEN Distribution LV Class II IP-B BD-1220 (74-B1-04)	ITER_D_2MFT5L	v2.4

Title	No.	Version
[RD54]. ITER_43BRTB_CBD_131: SSEN Distribution LV Class II IP-B BD-1310 (74-L1-03)	ITER_D_2MG8LD	v2.5
[RD55]. ITER_43BRTB_CBD_132: SSEN Distribution LV Class II IP-B BP-1320 (74-L1-04)	ITER_D_2MGCH2	v2.4
[RD56]. ITER_43BRTB_CBD_141: SSEN Distribution LV Class II IP-B BD-1410 (74-L2-03)	ITER_D_2MK2SL	v2.3
[RD57]. ITER_43BRTB_CBD_142: SSEN Distribution LV Class II IP-B BD-1420 (74-L2-04)	ITER_D_2MK6AB	v2.3
[RD58]. ITER_43BRTB_CBD_151: SSEN Distribution LV Class II IP-B BD-1510 (74-L3-01)	ITER_D_2MZ7S4	v2.4
[RD59]. ITER_43BRTB_CBD_152: SSEN Distribution LV Class II IP-B BD-1520 (74-L3-07)	ITER_D_2MZ7VK	v2.5
[RD60]. ITER_43BRTB_CBD_251: SSEN Distribution LV Class II IP-B BD-2510 (74-L3-01)	ITER_D_2MM8ZE	v2.4
[RD61]. ITER_53PTCP_CBD_001 Cabling diagram TKM	ITER_D_7EB9DT	v1.6
[RD62]. ITER_430000_SLD_009 UTIL-LV in LC01, LC02, LC07, LC08, B74, B14 and B11: Architecture Diagram	ITER_D_WNT8XX	v1.12
[RD63]. - ITER_43CCLV_CBD_003 NON-SIC SDB I&C Cabling in B74	ITER_D_852F32	v1.7
[RD64]. LAYOUT_WITH_PLC_SDBs_PBS_43 in Tokamak complex	ITER_D_9ELX9G	v2
[RD65]. PBS43 I&C signals list for NON-SIC SDBs for B11, B14, B74.	ITER_D_5NHMH3	v1.9

4.2 Applicable Codes and Standards

This is the responsibility of the Contractor to procure the relevant Codes and Standards applicable to that scope of work.

Title	Doc Ref.
[CS1]. Instrument transformers - Part 2: Additional requirements for current transformers	IEC 60044-2
[CS2]. Environmental testing	IEC 60068
[CS3]. Low-voltage fuses	IEC 60269
[CS4]. Insulation coordination-Part 2: Application guide	IEC 60071-2
[CS5]. Test on electric and optical fibre cables under fire conditions	IEC 60332
[CS6]. Degrees of protection provided by enclosures (IP Code)	IEC 60529
[CS7]. Low-voltage switchgear and control gear.	IEC 60947
[CS8]. Low-Voltage switchgear and control gear. Part 3: Switches, disconnect, switch-disconnector and fuse-combination units.	IEC 60947-3
[CS9]. Low-Voltage switchgear and control gear. Part 4-1: Contactors, motor-starters- Electromechanical contactors, and motor starters.	IEC 60947-4-1
[CS10]. Electromagnetic compatibility	IEC 61000
[CS11]. Low-voltage switchgear and control gear assemblies.	IEC 61439
[CS12]. Enclosed low-voltage switchgear and control gear assemblies Guide for testing under conditions of arcing due to an internal fault.	IEC 61641
[CS13]. Instrument transformer – Part 3: Additional requirements for inductive voltage transformers	IEC 61869-3
[CS14]. Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code).	IEC 62262
[CS15]. Low voltage electrical installation	NFC 15-100
[CS16]. Low-voltage switchgear and control gear assemblies IS Code (IS)	UTE C63-429
[CS17]. Electromagnetic compatibility (EMC) - Product standard for measuring relays and protection equipment	EN 50263
[CS18]. Electromagnetic Compatibility	2014/30/EU
[CS19]. Low Voltage Equipment	2014/35/EU
[CS20]. Hazardous Substances	2006/66/EC

Title	Doc Ref.
[CS21]. Noise Emission	2003/10/EC
[CS22]. Waste of Electrical and Electronic Equipment	2002/96/EC
[CS23]. Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)	2002/95/EC

The applicable editions of these codes and standards will be the last ones published, included the corresponding modifications, in the date of award of the order.

5 Scope of Work

This section defines the specific scope of work, in addition to the contract execution requirement as defined in Ref [RD1].

5.1 Equipment And Components

5.1.1 LV main distribution board

The following equipment with main parameters shall be supplied, which shall be in accordance with the design requirements set forth in section 5 also refer document [RD29] to [RD61]. See chapter 5.1.5

MDB tag	Safety Class	Quality class	Seismic classification	Rated Voltage	Voltage Class	Short Circuit Current(1s RMS kA)	Rated main busbar current (PH+N)	Number of the phase	Rated frequency(Hz)	Room number
43BMTB-BD-1210	Non-SIC	QC2	NSC	400 V AC	Class III IP	40	160A	3Ph+N+PE	50HZ	74-B1-03
43BMTB-BD-1510	Non-SIC	QC2	NSC	400 V AC	Class III IP	40	160A	3Ph+N+PE	50HZ	74-L3-03
43BRTB-BD-1110	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	400A	3Ph+N+PE	50HZ	74-B2-03
43BRTB-BP-1110	Non-SIC	QC2	NSC	400 V AC	Class II IP	25	100A	3Ph+N+PE	50HZ	74-B2-01
43BRTB-BD-1120	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	400A	3Ph+N+PE	50HZ	74-B2-07
43BRTB-BD-1210	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	250A	3Ph+N+PE	50HZ	74-B1-03
43BRTB-BD-1220	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	160A	3Ph+N+PE	50HZ	74-B1-04
43BRTB-BD-1310	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	400A	3Ph+N+PE	50HZ	74-L1-03
43BRTB-BP-1320	Non-SIC	QC2	NSC	400 V AC	Class II IP	25	160A	3Ph+N+PE	50HZ	74-L1-04
43BRTB-BD-1410	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	160A	3Ph+N+PE	50HZ	74-L2-03
43BRTB-BD-1420	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	400A	3Ph+N+PE	50HZ	74-L2-04
43BRTB-BD-1510	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	400A	3Ph+N+PE	50HZ	74-L3-01
43BRTB-BD-1520	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	630A	3Ph+N+PE	50HZ	74-L3-07
43BRTB-BD-2510	Non-SIC	QC2	NSC	400 V AC	Class II IP	40	250A	3Ph+N+PE	50HZ	74-L3-01
53PTCP-BD-0001	Non-SIC	QC2	NSC	400 V AC	Class II IP	25	100A	3Ph+N+PE	50HZ	74-L3-03

5.1.2 Other Components of the Supply

- Refer Clause number 5.4 for I&C requirements ;

- SPD Type I+II ;
- All internal wiring between the supplied equipment & components of each switchgear ;
- Spare parts and consumables necessary for equipment pre-commissioning, testing, commissioning and insurance ;
- One (1) set of special tools which the Supplier deems necessary for plant maintenance during operation or site erection

5.1.3 Services Included

- Supply of Spare parts and consumables necessary for equipment installation, testing, commissioning and insurance.
- Supply of Accessories and special tools necessary to carry out installation, operation and maintenance works (special tools, test and verification equipment, accessories, maintenance programs, etc)
- Packing and transport, in accordance with the requirements included in section 6.4 herein.
- Delivery of the documentation required 9 in both PDF, and the native formats.
- Technical services on-site or remote, for installation and commissioning guidance.
- Preparation of as-built documentation to include changes on site and/or drawings errors.
- Repairing or replace defective pieces supplied by the Contractor, that fail before the takeover of components.
- Propose and implement corrective actions to address non-conformities identified by Regulatory Authorities during inspections, which occurred during the design, fabrication, packing or transportation.

5.1.4 Equipment And Services Supplied By Others

- Foundations
- Unloading, storage and erection
- External wiring, including the feeder cable lugs
- Incoming busbar and tie busbar
- Power supplies :
 - 400 Vac $\pm 10\%$, 50 Hz power supply
 - 230 Vac Power for Main Distribution Board Lighting, Socket and Space heater.

5.1.5 Equipment And Services To Be Quoted As Optional

- Spare parts for five (5) years of operation, including one (1) full equipped feeder set of each different type, comprised of its circuit breaker and protection & control devices (CTs, VTs, protection relays...). However, if the Supplier justifies that, using spare components of the equipment the functionality of the whole unit can be recovered after a usual failure without the need to order a new one, There is no need to supply the whole device

- Spare parts necessary to carry out maintenance work (special tools, test and verification equipment, accessories, back-up copy of the programs, maintenance programmes, etc)

5.2 Design Requirements

5.2.1 General description

The equipment included in this specification shall comply with the design requirements described below.

This specification establishes the general criteria to be followed by the Supplier in their design.

The Supplier's final design and selection of equipment shall ensure an optimum solution is attained in terms of quality, safety, operating costs, maintenance facilities, etc. Preference will be given to simple designs with standardised, proven equipment.

Under the chapter Exceptions to the Specification, the Supplier shall include in his tender a detailed list of equipment, systems, works or services that are excluded, indicating the reason for exclusion with reference to the corresponding section of the specification.

5.2.2 Environmental Indoor Conditions At Site

Equipment included in the scope of supply of this specification are installed indoors.

The following are the enveloped ambient conditions in building 74, in normal and incidental/accidental conditions:

Ambient conditions in normal and incidental/accidental conditions, defined in PBS-43 System Load Specifications [RD27] and shall be referred for qualification.

5.2.3 Seismicity

The equipment included in this specification is classified as Non-Seismic Components (NSC).

The LV main distribution board in this specification is classified as Non-SIC, thus the seismic level is required to be SL1 as per PBS-43 System Load Specifications [RD27].

But the equipment manufacturer shall at least perform the analysis-based (static equivalent method) validation to prove that the fixation accessory can withstand the seismic acceleration value which is defined in 13 (Appendix-A).

5.2.4 Operation Requirements And Restrictions

The Manufacturer shall confirm that the equipment is able to withstand the operation requirements and restrictions described hereafter without any damage or malfunction.

➤ Voltage variations

The equipment shall be designed considering the following voltage variation:

Rated voltage	Rated voltage range	Rated voltage range
0.4 kV	±10%	360 V to 440 V

➤ Frequency variations

The equipment shall be designed to operate with a nominal grid frequency of 50 Hz with a daily and seasonal variation of $\pm 1\%$ corresponding to a nominal range of 49.5-50.5 Hz.

➤ Operating lifetime

The operating lifetime of the equipment must be longer than 20 years.

5.3 Technical Requirements

5.3.1 General description

The control and main components of the LV main distribution board are reflected in reference [RD21], & [RD26] of this specification.

5.3.2 400 V Distribution board

General

- This section is applicable for the column i.e. MCCB Incoming and outgoing feeders
- Refer document number for details [RD29]to [RD61].
- The feeder column type shall be made up of freestanding vertical sections to be assembled on the floor, joined to each other by means of screws. The feeder column type shall be designed to allow future extension by means of additional vertical sections.
- The feeder column type shall resist the conditions of arcing due to an internal fault.
- They shall be built of steel sheets at least 2 mm in thickness, completely closed, for indoor installation, with a degree of protection IP31 (as per IEC 60529).
- The vertical sections will be built and compartmentalized according to form 3b of IEC 61439-2.
- Each DB shall be equipped with:
 - Incoming circuit breaker for the incoming
 - Withdrawable moulded case circuit breakers (MCCB) or fixed mini circuit breakers (MCB) as specified in the [RD29]to [RD61].
 - The 3-phase indication lamps to be provided on the panel representing incoming voltage presence, placed before the incoming circuit breaker.
 - Incomer switch Open, Closed and TRIP indication
 - Emergency push button
 - Internal lighting and/or 16 A electric outlet(s) with appropriate protection
- Terminal block for signal wiring
- Each DB shall be equipped with digital power meter for voltage, current, voltage monitoring and power, with TCP/IP MODBUS capability.
- The Breaker will be provided with main terminals for busbar connection and auxiliary terminals for connection of the auxiliary contacts to the terminal block of the cubicle.
- The handles of the on load switch shall allow a lock to be placed so as to block them in the open position.

- Also the outgoing devices in distribution boards could be used as isolation devices for individual circuits, meaning those should have the provision of locking mechanism
- The supplier is responsible for defining the anchor bolts and supports.
- The rated current of the circuit breakers and the rest of the components shall be suitable considering the temperature rise inside the DBs at full load.
- A continuous copper earthing busbar shall be screwed to each vertical section of each switchgear unit and all non-live metal parts shall be electrically connected to it.
- To obtain good electrical contact, all paint shall be removed from areas of connection between the earthing busbar and the unit structure. There shall be at least two connection points.
- Cable ends shall be adequately identified with rings bearing indelible inscriptions with approved type ferrules, i.e. each end will bear the terminal block id. of the equipment to which it is connected and the terminal block id. of the device connected to it. Identification using adhesive tape is not permitted.
- The DBs shall be provided with appropriate gland plates for connecting incoming and outgoing cables.
- All the DBs shall include at least 20% of free space for future extension.
- All DBs shall be equipped with voltage indicator on the front door, internally equipped with top light, space heater, minimum 2 sockets, set of terminal blocks (with spares) and large earthing busbars.
- The rated current of the circuit breakers and the rest of the components shall be suitable for the services considering the temperature inside the feeder column type at full load and the reduction factors.
- The Supplier is responsible for defining the anchor bolts.
- The service factor of the LV distribution boards shall be at least 332, in accordance with SRD 43 [RD2].
- Each vertical section shall be supplied with internal lighting, a 10 A-socket outlet and space heaters to prevent condensation from humidity. These space heaters shall be fed at 230 Vac and protected by a combination of disconnecting switch and fuse. The socket outlet shall have also residual protection.

5.3.3 Busbars

- Three phases, one neutral and one earth protection (PE) busbar shall be provided in each LV distribution board.
- The main busbars and their derivations will be formed by high conductivity electrolytic copper conductors. The contact surfaces shall be silver-plated and conductive grease shall be used to prevent the connection from rusting.
- The distribution boards shall be equipped with auxiliary vertical busbars in those vertical sections that require it. The internal distribution for MCBs shall be Multiclip type (or equivalent) to allow replacement of MCBs or internal wiring without de-energization of the entire board.
- The insulating material shall be non-hygrosopic and will conserve its qualities throughout the life of the power plant. The bus supports shall be made of epoxy resin.

The insulating material shall support the contact between phases and from phase to earth. Nevertheless, the distance between busbars shall be the same as that of the busbars without insulation.

- The joints between bus sections shall be insulated with self-curing tape for full voltage.
- In sizing the busbars, consideration shall be given to an increase in temperature inside the cabinet of 15°C over the ambient temperature of 40°C.
- The busbars shall be identified by letters and colours.
- The phase sequence shall be R S T. The physical layout of the phase conductors shall be R S T from left to right, from top to bottom and from front to back, looking at the busbar from the back of the switchgear.

5.3.4 Connection of the LV distribution board

MDB tag	Incoming bus/cable entry	Feeder power cable entry	I&C cables entry
43BMTB-BD-1210	Top	Top	Top
43BMTB-BD-1510	Top	Top	Top
43BRTB-BD-1110	Top	Top	Top
43BRTB-BP-1110	Top	Top	Top
43BRTB-BD-1120	Top	Top	Top
43BRTB-BD-1210	Top	Top	Top
43BRTB-BD-1220	Top	Top	Top
43BRTB-BD-1310	Top	Top	Top
43BRTB-BP-1320	Top	Top	Top
43BRTB-BD-1410	Top	Top	Top
43BRTB-BD-1420	Top	Top	Top
43BRTB-BD-1510	Top	Top	Top
43BRTB-BD-1520	Top	Top	Top
43BRTB-BD-2510	Top	Top	Top
53PTCP-BD-0001	Top	Top	Top

- The power feeder cables terminals size shall match the selected cable type will be defined in each CBD. Details of Cables are included in [RD47] to [RD61].
- The rest of the power connections, as well as those for control, instrumentation and communications, shall also be via cabling through the bottom.
- The power cables terminals shall be supplied by others. Once awarded the order it will be coordinated the characteristics of the connection elements to the terminal of the switchgear.
- The number and sections of the connection cabling corresponding to the power circuit are referenced in the respective cabling diagrams.

5.3.5 Wiring

- The cabinets shall be delivered completely wired up to the terminal blocks for external connections. No more than two wires shall be connected at either terminal end.
- The measuring and control wires shall be connected to independent terminal blocks.
- The terminal blocks shall be furnished as screw type, single-storey terminals.
- The test terminal boards associated with the secondary winding of the current transformers shall be of the short-circuitable type.
- The test terminals shall not contain voltage and current circuits simultaneously.
- The terminal blocks shall be located at a minimum distance of 250 mm from the floor.
- Flexible copper cable shall be used for the internal wiring of the cabinets. Internal wiring shall have an insulation of 2500 V and be flame-retardant in accordance with IEC 60332-1 and 60332-3. It shall be of the “halogen-free” type.
- The control wires for internal connection shall have a minimum section of 1.5 mm², control wiring between columns (trips, interlocks, and so on) shall be of a minimum of 2.5 mm², VT wiring shall be of a minimum of 2.5 mm² and CT wiring shall be of a minimum of 4 mm².
- Sleeves made of rubber or other suitable material shall be used for the mechanical protection of wiring fed through orifices in metal panels.
- The equipment shall be connected to the terminals by means of linear terminals.
- Cable ends shall be adequately identified with rings bearing indelible inscriptions with approved type ferrules; i.e. each end will bear the terminal block id. of the equipment to which it is connected and the terminal block id. of the device connected to it. Identification using adhesive tape is not permitted.
- All the internal wiring shall be housed in wiring ducts. Communication wires between concentrators and relays shall be housed in a single duct.

5.3.6 Earthing of the LV Cabinets

- A continuous 120 mm² copper ground bus shall be screwed to distribution board and all non-conducting metal parts shall be electrically connected to it. A compression earth clamp shall be fitted to both ends of the ground bar for connecting one (1) 120 mm² copper cable. In order to obtain good electrical contact, all paint shall be removed from areas of connection between the ground bus and the unit structure. There shall be at least two connection points. The ground bus shall be green-yellow colour coded.
- The ground bus in each distribution boards units shall be equipped with connections for the earth contacts of the associated circuit breaker truck while they are inserted (if applicable). The power cable sheaths, component (current transformers, etc) supports and the earth wires indicated in the schemes shall be also be directly connected to the earth bus.

- The drawers trucks (if applicable) shall be suitably designed so that when they are inserted the first electrical contact shall be with earth, and when they are withdrawn the last electrical contact shall also be with earth.
- The doors shall be connected to earth using at least 6 mm² flexible or braided wire.
- The LV distribution board enclosure will be bonded with 120mm² bare copper cable to the building bonding grid. The supplier shall provide the connection point for the bonding cable lug. The 120mm² bonding cable is out of the supply scope.

5.3.7 Characteristics of the Distribution Boards

The main characteristics of the distribution boards shall be the following:

5.3.7.1 LV main distribution board

Quantity of switchgear assemblies	14
Manufacturing and testing standards	IEC 61439/60947
Service condition	Indoors
Rated operating voltage	400 V $\pm$ 10%
Number of phases	3PH+N+PE
Rated frequency	50 HZ $\pm$ 1%
Rated insulation voltage	690 V
Power frequency withstand voltage, 1 min	1890 V
Rated busbar current (I_n)	refer to appendix A(13)
Rated short time withstand current (1s) (I_{cw})	refer to appendix A (13)
Rated peak withstands current (I_{pk})	refer to appendix A (13)
Protection degree	IP31 (IEC 60529)
Form of compartmentalization	2b (IEC 61439-1)
System earthing	TN-S
Service factor	IS 223 (MCCB) and IS 211 (MCB)

5.3.7.2 Circuit Breakers (CB)

Manufacturing and testing standards	IEC 60947-2
Type:	
$I_n \leq 630$ A	Moulded-Case Circuit Breaker (MCCB) installed in Draw-out cubicles and Miniature Circuit Breakers (MCB)
Number of poles	3PH+N+PE (4 Poles)
Rated duty	Uninterrupted
Rated insulation voltage	690 V

Power frequency withstand voltage, 1min	1890 V
Rated ultimate short-circuit breaking capacity (I_{cu})	refer to appendix A (13)
Rated service short-circuits breaking capacity (I_{cs})	100% I_{cu}
Rated Short time withstand current (I_{cw}) (1 s)	refer to appendix A (13)
Rated Short-circuit making capacity (I_{cm})	refer to appendix A (13)
Rated current	As per Load List
Arc interruption medium	Air
Anti-pump device	Yes
Operating mechanism:	
SDBs/BPs all breakers	Manual
Utilisation category:	B
Rated operating sequence	0-3'-CO-3'-CO

5.4 Instrumentation Interface

5.4.1 Scope Of Supply

5.4.1.1 Applicable Standard

Control and Protection equipment.

IEC 61850	Communication networks and systems in substations
IEC 60255	Electrical relays
IEC 60447	Basic and safety principles for man-machine interface, marking and identification – Actuating principles
IEC 60073	Basic and safety principles for man-machine interface, marking and identification – Coding principles for indicators and actuators
IEC 60297	Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482.6 mm (19 in) series
IEC 60870	Telecontrol equipment and systems
IEC 61508	Functional Safety of Electrical/Electronic/Programmable Electronic Safety-related Systems
IEC 60044-8	Instrument transformers – Electronic current transformers
IEC 62053-22	Electricity metering equipment (AC) – Particular requirements – Static meters for active energy (classes 0.2 S and 0.5 S)
IEC 60529	Degrees of protection provided by enclosures (IP Code)

IEC 62262	Degrees of Protection Provided by Enclosures for Electrical Equipment Against External Mechanical Impacts (IK Code)
IEEE 829	Software test documentation
IEEE 1588	Standard for A Precision Clock Synchronisation Protocol for Networked Measurement and Control systems
EN 50173	Information technology – Generic cabling systems
EN 60793	Optical cables. Product specification
EN 60794	Optical fibre cables

In addition to the standards mentioned, the applicable standards in section 4.2 shall be considered.

5.4.1.2 I&C Architecture and Cabling Diagram

- The control for each breaker will be possible manually.

5.4.1.3 Control and monitoring functions

- List of Signals shall be considered as per [RD65].
- Each DB shall be equipped with digital power meter for voltage, current and power, with MODBUS TCP/IP capability.

No dedicated signal monitored for outgoing breakers, only the Common Fault Alarm

5.4.1.4 Bill of material

- For organisation of the monitoring from CODAC in the 43BRTB-BD-1410 installed the I&C components with PLC
- The SDBs with RIO are located in different corners of in each level the building 74 to collect hardwire signals
 - 43BRTB-BD-1120
 - 43BRTB-BD-1110
 - 43BRTB-BD-1210
 - 43BRTB-BD-1220
 - 43BRTB-BD-1310
 - 43BRTB-BD-1420
 - 43BRTB-BD-1510
 - 43BRTB-BD-1520
- The layout in building 74 with location and I&C components to be installed refer [RD64]
- Bill of material you can find in Appendix Q

5.5 Electromagnetic Compatibility

The control, protection and measurement equipment of the LV main distribution board shall comply with the European Directive of Electromagnetic Compatibility (EMC) 2004/108/CE and with standard IEC 61000.

Particularly, they shall comply with requirement IEC 62271-1, both with regard to emission and immunity.

The power quality, according to IEC 61000-2-4, at the electrical terminal blocks of the SSEN loads shall be better than:

- IEC Class 2, for the SSEN loads connected to the class IV voltage
- IEC Class 3, for the SSEN loads connected to the class III voltage

These components would be tested according to the following standards

- IEC 61000-4-11 for AC power supplied components (drop voltage)
- IEC 61000-4-14 for AC power supplied components (voltage fluctuations)
- IEC 61000-4-17 for DC power supplied components

Regarding immunity requirements, the following test standards shall be complied for all the electronics equipment in general:

- For all equipment:
 - IEC 61000-6-2
 - IEC 61000-4-16 (level 3, performance criterion A)

In addition, all equipment supplied shall comply with the immunity and emission requirements and tests indicated in IO Document, sections 6 and 7, “Electrical Design Handbook: Part 4, Electromagnetic Compatibility” [RD4]

6 Testing

The LV equipment shall be fully tested in accordance with the current edition of the relevant IEC standards, and the performance of the tests shall be witnessed by an IO/PBS43 representative (if requested).

The equipment manufacturer shall submit testing procedures, according to applicable IEC standards, for all the tests described in this section. In the event that one of the tests described in this section is not strictly covered by an IEC standard, the equipment manufacturer shall submit testing procedures with its proposal. All the test procedures shall be reviewed by IO for acceptance before being performed. For each equipment item, the equipment manufacturer shall provide the reports for type tests carried out on equipment similar to that of the supply and he shall carry out the routine tests indicated below. The type tests shall be carried out at reputed testing laboratory. The tests must have been carried out during the previous 5 years.

6.1 Tests

6.1.1 Routine Verifications

The low voltage switchgear to be supplied shall undergo the routine verifications indicated in IEC 61439-1. There is no need that supplied equipment undergo these tests if valid certificates are available

Constructions

- Degree of protection of the enclosures, in accordance with Section 11.2 of IEC 61439-1
- Clearances and creepage distances, in accordance with Section 11.3 of IEC 61439-1
- Protection against electric shock and integrity of protective circuit, in accordance with Section 11.4 of IEC 61439-1
- Incorporation of built-in components, in accordance with Section 11.5 of IEC 61439-1
- Internal electrical circuit and connections, in accordance with Section 11.6 of IEC 61439-1
- Terminals for external conductors, in accordance with Section 11.7 of IEC 61439-1
- Mechanical operation, in accordance with Section 11.8 of IEC 61439-1

Performance

- Dielectric properties, in accordance with Section 11.9 of IEC 61439-1
- Power-frequency withstand voltage according to IEC 61439-1, subclause 11.9
- Wiring, operational performance and function, in accordance with Section 11.10 of IEC 61439-1

6.1.2 Design Verifications

The low voltage switchgear to be supplied shall undergo the design verifications indicated in IEC 61439-1:

Constructions

- Strength of materials and parts, in accordance with Section 10.2 of IEC 61439-1
- Degree of protection of enclosures, in accordance with Section 10.3 of IEC 61439-1
- Clearances and creepage distances, in accordance with Section 10.4 of IEC 61439-1
- Protection against electric shock and integrity of protective circuit, in accordance with Section 10.5 of IEC 61439-1
- Incorporation of switching devices and components, in accordance with Section 10.6 of IEC 61439-1
- Internal electrical circuit and connections, in accordance with Section 10.7 of IEC 61439-1
- Terminals for external conductors, in accordance with Section 10.8 of IEC 61439-1

Performance

- Dielectric properties according to IEC 61439-1, subclause 10.9

- Power-frequency withstand voltage according to IEC 61439-1, subclause 10.9.2
- Impulse withstand voltage according to IEC 61439-1, subclause 10.9.3.2. Alternatively, this test could be carried out as described in IEC 61439-1, subclause 10.9.3.3 or 10.9.3.4 in accordance with subclause 10.9.3.1
- Verification of temperature rise according to IEC 61439-1, subclause 10.10 by at least one of the following methods :
 - Testing with current according to IEC 61439-1, subclause 10.10.2
 - Derivation of ratings for similar variants according to IEC 61439-1, subclause 10.10.3
 - Calculations according to IEC 61439-1, subclause 10.10.4
- Verification of short-circuit withstand strength according to IEC 61439-1, subclause 10.11 by at least one of the following methods :
 - Application of design rules according to IEC 61439-1, subclause 10.11.3
 - Comparison with a reference design according to IEC 61439-1, subclause 10.11.4
 - Test according to IEC 61439-1, subclause 10.11.5
- Electromagnetic compatibility according to IEC 61439-1, subclause 10.12
- Mechanical operation according to IEC 61439-1, subclause 10.13

6.1.3 Other components

The remaining components shall undergo the tests indicated in the applicable IEC standard.

Likewise, certificates of both type and routine test shall be provided with the remaining components: instrument transformers, thermal-magnetic circuit breakers, fuses, switch, etc.

6.2 Acceptance Criteria For Tests

6.2.1 Acceptance criteria for Shop Verifications and Tests

The acceptance criteria shall be in accordance with the values indicated in appendix B.

This criterion shall be in accordance with the corresponding standards and must not deviate from the data provided by the equipment manufacturer in the certified datasheets defined in appendix A. (13)

Meeting the criteria included in these acceptance criteria does not exempt the manufacturer from the full compliance with test requirements included in the referenced standards.

Moreover, the equipment manufacturer must send a list indicating all the tests to be performed, with a reference to each associated procedure, indicating the applicable standard and specifying the acceptance criteria, as indicated in Appendix B (13). This list must be reviewed and accepted by IO.

6.3 Quality Control Provisions

The IO shall ensure a close oversight of the production of its main Suppliers.

The Supplier shall submit a Manufacturing Inspection Plan for approval by the IO PBS-43. This programme explicitly and correlatively addresses each of the stages of procurement, manufacture and tests, and preparation for shipment, indicating the inspection points to be carried out by the Supplier.

For each point, he shall indicate the internal procedure that will be applied and whether a report or other associated documentation will be generated (quality certificates, reception reports, etc).

With this programme, the IO shall select the points he or his representatives wish to witness or check: W(Witness), HP (Hold Points), NP (Notification Points) or R (Review).

A Notification Point (NP) is a milestone where the Supplier is required to notify the IO, that it has completed a specific task or a specific deliverable and is proceeding to the next task or to the next action on the specific deliverable. A NP is meant to enable the IO personnel to follow the progress of the Contract and possibly to witness a critical manufacturing step at the Supplier's premises. The Notification shall be sent by the Supplier to the IO at least 10 working days prior to the scheduled manufacturing step. The IO shall decide whether or not they want to attend. A NP shall not affect the production flow of the Supplier that shall continue the work even without a reply from the IO.

A Hold Point (HP) is a milestone where the Supplier is required to notify the IO, that it has completed a specific task or a specific deliverable and must stop the associated processes until a HP Clearance is issued. The HP Clearance shall be issued on the basis of clearly identified Quality Control and data and Acceptance test results to be provided to the IO at the time of the request. The IO shall have a maximum of 5 working days to review the Suppliers data and to notify the Supplier of its decision. In case of clearance the Supplier shall resume its activity. In case of rejection, the Supplier shall develop a recovery plan that shall be submitted and reviewed by the IO within 10 working days of submission.

A Witness Point (W) is a milestone which identifies an operation to be witnessed. Adequate notice shall be given to the IO, in order to allow the IO to participate to the operation.

Review (R) identifies a document or report to be reviewed.

IO will review the following control points:

- FAT (HP)
- Delivery report (before shipment) (HP)

The data generated during the execution of the present Contract shall be handled electronically and entered into the ITER IDM. The structure of this database shall be defined by the IO. The Supplier shall use this database to store information related to the Contract. All data entered in the database will be kept strictly confidential by the IO and, under no circumstances, shall be communicated or made accessible to other Suppliers or the DAs. Data consistency checks shall be implemented to facilitate IO oversight. Relevant data shall be made available by the Supplier to the IO through IDM each time a control point is requested, or a deviation request, a non-conformance report, or any other document which is part of the Contract deliverables is issued by the Supplier. This requirement does not apply for other documents and data files which are, for example, managed through specialized CAD software (e.g. CATIA, see System Design and others) and so undergo other requirements specified in separate documents.

The Supplier shall submit periodic reports to the IO, with a frequency depending on the progress of the works. Progress meetings shall be conducted at the IO or Supplier premises, as required by the IO.

The Supplier shall ensure that access rights are granted to IO personnel at all locations where ITER work is being performed.

In case of concerns regarding the quality of production, the IO reserves the right to perform unscheduled inspections in accordance with the ITER Procurement Quality Requirements. Planned and documented audits will be performed by the IO, and regulatory body representatives in France, to verify compliance with the technical and quality requirements of the Contract.

Moreover, the IO reserves the right to take photographs of the ITER equipment during the contract life.

6.4 Packing, Preservation & Shipping

- As a rule, the equipment Supplier shall transport the goods in compliance with the laws, directives and ordinances of France, and any applicable local, municipal or regional laws and regulations.
- A copy of the Certificate of Shipping Authorisation shall be shipped with the material so that the material can be unloaded at the site with proof that the material being received has been accepted.
- The equipment Supplier shall include an additional quantity for replacement of any materials that may suffer deterioration or breakage during transport or erection and shall submit detailed information concerning the storage.
- Supplier shall prepare all equipment covered by this specification in a manner that protects it from damage during shipment and storage prior to installation
- Prior to installation, equipment will be stored indoors with a temperature range of 5 to
- 30 Deg.C and an uncontrolled relative humidity
- All equipment cabinets shall be provided with features for protection and secure
- attachment to transport vehicle and with lifting features in place.
- Instruction for maximum storage conditions to avoid loss of warranty to be provided.
- All auxiliary components, spare parts, tools, accessories shall be packed in separate boxes and crates.
- Each package of the shipment shall be labelled on the outside with the appropriate handling instructions and with sufficient information for the identification of its contents, name of the plant, the unit to which it is assigned, manufacturer's name, Purchase Order number and total weight. The label shall be visible and there shall be no possibility of identification errors.
- Correct marking of the packages prevents losses and damage to the cargo and makes it easier to handle and erect on site. It is therefore an essential part requiring special attention.

The following information shall be marked:

- Shipping address and route
- Weight in kg. Mandatory whenever the weight exceeds 55 kg
- Dimensions

- City of origin
- Handling instructions, lifting points
- Equipment manufacturer and package number, for crosschecking with the Packing List
- Marks to indicate sealed inner packaging and revisions of the desiccants
- All materials and/or equipment shall be correctly packed for shipping, and the correct measures taken by utilizing anticorrosive protections, protections against high temperatures, protections against rough handling and blows originating in transport conditions.

6.5 Delivery Time

The maximum expected duration from the contract signature to the supply of the scope of work is 6 months and the maximum duration is 12 months. The contract shall be extended with the time required in case the site conditions are not ready to receive the distribution boards. The Supplier shall produce a Schedule showing all phases which comply with the required delivery date. This detailed Schedule shall be submitted to the IO for approval/acceptance, before starting any work in relation to the Contract.

The final delivery time for distribution board shall be agreed prior deliver with IO to minimize the storage time and reducing the risk of warranty loss.

7 Location For Scope Of Work Execution

The Supplier can perform the work at their own location.

8 IO Documents & Io Free Issue Items

8.1 IO Documents

Under this scope of work, IO will deliver the documents reference in [RD33] and [RD61] during contract signature by the stated date.

*latest version approved in IDM to be used.

8.2 Free issue items

No free issue item is expected from IO.

9 Deliverables and Schedule Milestones

The Supplier shall provide IO with the documents and data required in the application of this technical specification, the GM3S Ref [1] and any other requirement derived from the application of the contract.

Below is the minimum list of documents, but not limited to, that are required within the expected timing:

D#	Deliverable	Due date
D1	Certified Datasheets of the Proposal	T0* + 1 month
	List of documents with delivery date	

D#	Deliverable	Due date
	The Supplier shall include a “List of Exceptions” indicating the technical discrepancies between the characteristics of the equipment and services offered and those requested in this specification. All exceptions shall be included in the above-mentioned list, as well as their justification, and they shall be listed, signalling the corresponding section of the Specification	
	List of spare parts needed for the start-up and quality assurance tests	
	Certified drawings of the general layout and dimensions of the LV main distribution board assemblies, including shipping dimensions, plan views, front views with layout of instruments on the front of the switchgear, anchorage details, detail of openings for cable inlets and outlets, detail of busbar duct flange and connections, and total and shipping weight of the cabinets. The minimum space to be left at the front and back of the switchgear shall also be indicated	
	Sections of each of the cabinets, showing the layout of the components	
	Manufacturing programme and delivery date	
	General list of components of each compartment, indicating the manufacturer, type and characteristics of each component	
D2	Schematic and wiring diagrams	T0 + 2 months
	Internal wiring diagrams	
	Documentation required by the painting specification (painting procedures for approval)	
	Test procedures for approval	
	Manufacturing Inspection Programme (MIP) for approval	
	Equipment test certificates, reports and protocols	
	Temperature rise and derating factor calculations for all electrical components	
	Instruction, installation, operation and maintenance manuals and information brochures	
	Weights and dimensions for transport	
	Terminal connection drawings	
	Transport, handling and storage instruction	
D3	Final version of all drawings and all other technical information reflecting as-built configuration	T0 + 3 months
	Shipping instructions including drawings, dimensions, weights and instrumentation for transport of individual components	
D4	Packaging procedure (Distribution Boards)	T0 + 6 months**

D#	Deliverable	Due date
	Final version of all drawings and all other technical information reflecting as-built configuration As built Details -Installation, commissioning, operating and maintenance manuals -Manufacturing dossier -Certificate of conformity -Warranty certifications -Release for shipping form	

*T0 = Date of the entry into force of the Contract

**the expected timing may be delayed if a hold (maximum 12 months) in manufacturing of Distribution Boards is requested by IO.

Supplier shall prepare their document schedule based on the above and using the template available in the GM3S [RD1] appendix II.

10 Quality Assurance Requirements

The equipment included in the scope of supply shall follow the quality standards corresponding to a Class 2 quality classification. The equipment shall comply with the section 8 of GM3S [RD1].

11 Safety Requirements

11.1 Nuclear class Safety

The nuclear safety class for the components to be procured under this specification are Non-SIC (non-PIC), non-PIA activities are foreseen as part of this specification

11.2 Seismic class

The equipment included in this specification is classified as Non-Seismic Components (NSC).

The Distribution board in this specification are classified as investment protection; thus, the seismic level is required to be SL1 (anchoring only).

The investment protection related equipment shall be able to restart after a defined seismic event without further testing and maintenance. The period of repair, testing and commissioning before restart has been fixed to 3 calendar months. The supplier shall guarantee this time limit before the restart after SL1 seismic event, then no seismic analysis or test is not needed for the equipment itself.

But the equipment Manufacturer shall at least perform the analysis-based (static equivalent method) validation to prove that the fixation accessory can withstand the seismic acceleration value which is defined in Appendix 13

12 Special Management requirements

Requirement for [RD1]GM3S section 6 applies completed/amended with the below specific requirements:

12.1 Work Monitoring

The Supplier shall submit periodic reports to the IO, with a frequency depending on the progress of the works. Progress meetings shall be conducted at the IO or Supplier premises, as required by the IO.

The Supplier shall ensure that access rights are granted to IO personnel at all locations where ITER work is being performed.

In case of concerns regarding the quality of production, the IO reserves the right to perform unscheduled inspections in accordance with the ITER Procurement Quality Requirements. Planned and documented audits will be performed by the IO, and regulatory body representatives in France, to verify compliance with the technical and quality requirements of the Contract.

Moreover, the IO reserves the right to take photographs of the ITER equipment during the contract life.

12.2 CAD design requirements

This contract requires for CAD activities, [RD1] GM3S section 6.2.2.2 applies

13 Appendices

Appendix Number	Appendix Name
Appendix A.1	Tender Technical Datasheets 43BMTB-BD-1210
Appendix A.2	Tender Technical Datasheets 43BMTB-BD-1510
Appendix A.3	Tender Technical Datasheets 43BRTB-BD-1110
Appendix A.4	Tender Technical Datasheets 43BRTB-BP-1110
Appendix A.5	Tender Technical Datasheets 43BRTB-BD-1120
Appendix A.6	Tender Technical Datasheets 43BRTB-BD-1210
Appendix A.7	Tender Technical Datasheets 43BRTB-BD-1220
Appendix A.8	Tender Technical Datasheets 43BRTB-BD-1310
Appendix A.9	Tender Technical Datasheets 43BRTB-BP-1320
Appendix A.10	Tender Technical Datasheets 43BRTB-BD-1410
Appendix A.11	Tender Technical Datasheets 43BRTB-BD-1420
Appendix A.12	Tender Technical Datasheets 43BRTB-BD-1510
Appendix A.13	Tender Technical Datasheets 43BRTB-BD-1520
Appendix A.14	Tender Technical Datasheets 43BRTB-BD-2510
Appendix A.15	Tender Technical Datasheets 53PTCP-BD-0001

13.1 Tender technical data sheets

The “**REQUIRED**” column sets out the main characteristics/requirements that the equipment must comply with. The equipment manufacturer (**the tenderer**) shall complete the “**OFFERED**” column without leaving any spaces blank and specifying their compliance against requirement

In the “REQUIRED” column, the acronym “TBDM” (To Be Defined by the Manufacturer) shall be used to indicate any values to be completed by the manufacturer and that do not have to comply with some specific requirements.

Appendix A.1 Tender Technical Datasheets 43BMTB-BD-1210

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
General Data				
1.	Equipment Tag	43BMTB-BD-1210		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction; 0.4g for vertical direction	only for the anchorage	
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class III IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-B1-03 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	1000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	160A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD33][RD47]		
64.	Circuit breakers	In≤630A		
65.	Rated operating voltage	400V ± 10%		
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.3		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.2 Tender Technical Datasheets 43BMTB-BD-1510

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
General Data				

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
1.	Equipment Tag	43BMTB-BD-1510		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction; 0.4g for vertical direction	only for the anchorage	
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class III IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-L3-03 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstands current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	From the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	1000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	160A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD34][RD48]		
64.	Circuit breakers	In≤630A		
65.	Rated operating voltage	400V ± 10%		
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.4		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required	Note	Offered
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.3 Tender Technical Datasheets 43BRTB-BD-1110

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
1.	Equipment Tag	43BRTB-BD-1110		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction; 0.4g for vertical direction	only for the anchorage	
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-B2-03 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER D 2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	2000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	400A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD35][RD49]		
64.	Circuit breakers	$I_n \leq 630A$		
65.	Rated operating voltage	$400V \pm 10\%$		
66.	Rated frequency (Hz)	$50 \pm 1\%$		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.5		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.4 Tender Technical Datasheets 43BRTB-BP-1110

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BP-1110		
2.	Type	LV distribution panel (SDP)		
3.	Mounting Type	Wall Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction;	only for the anchorage	
		0.4g for vertical direction		
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
Environment				
13.	Room	74-B2-01 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	25kA		
26.	Rated peak withstand current I _{pk}	52.5 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (HxWxD) in mm	1200x800x300	Bidder to follow the enveloped dimensions	

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	100A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	25kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD36][RD50]		
64.	Circuit breakers	In≤630A		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
65.	Rated operating voltage	400V $\pm$ 10%		
66.	Rated frequency (Hz)	50 $\pm$ 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed13.6		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.5 Tender Technical Datasheets 43BRTB-BD-1120

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BD-1120		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction;	only for the anchorage	
		0.4g for vertical direction		
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-B2-07 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
22.	Rated operating voltage	400V $\pm$ 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 $\pm$ 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	4000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	400A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD37][RD51]		
64.	Circuit breakers	In≤630A		
65.	Rated operating voltage	400V ± 10%		
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.7		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.6 Tender Technical Datasheets 43BRTB-BD-1210

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
1.	Equipment Tag	43BRTB-BD-1210		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction; 0.4g for vertical direction	only for the anchorage	
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-B1-03 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER D 2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Bidder to follow the enveloped dimensions	2000x600x2200	Enveloped Dimension (LxDxH) in mm	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	250A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD38][RD52]		
64.	Circuit breakers	$I_n \leq 630A$		
65.	Rated operating voltage	$400V \pm 10\%$		
66.	Rated frequency (Hz)	$50 \pm 1\%$		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.8		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.7 Tender Technical Datasheets 43BRTB-BD-1220

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BD-1220		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction;	only for the anchorage	
		0.4g for vertical direction		
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
13.	Room	74-B1-04 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	1000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	160A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD39][RD53]		
64.	Circuit breakers	$I_n \leq 630A$		
65.	Rated operating voltage	$400V \pm 10\%$		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.8		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.8 Tender Technical Datasheets 43BRTB-BD-1310

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BD-1310		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction;	only for the anchorage	
		0.4g for vertical direction		
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-L1-03 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	84kA		
26.	Rated peak withstand current I _{pk}	100 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	2000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	160A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD40][RD54]		
64.	Circuit breakers	In≤630A		
65.	Rated operating voltage	400V ± 10%		
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, Imin	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.10		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.9 Tender Technical Datasheets 43BRTB-BP-1320

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BP-1320		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
2.	Type	LV distribution Panel (SDP)		
3.	Mounting Type	Wall Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction;	only for the anchorage	
		0.4g for vertical direction		
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-L1-04 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	25kA		
26.	Rated peak withstand current I _{pk}	52.5 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	From the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (HxWxD) in mm	1200x800x300	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	160A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	25kA		
56.	Main busbar size	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD41][RD55]		
64.	Circuit breakers	In≤630A		
65.	Rated operating voltage	400V ± 10%		
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.11		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.10 Tender Technical Datasheets 43BRTB-BD-1410

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BD-1410		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction; 0.4g for vertical direction	only for the anchorage	
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
Environment				
13.	Room	74-L2-03 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	2000x600x2200	Bidder to follow the enveloped dimensions	

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	160A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD42][RD56]		
64.	Circuit breakers	In≤630A		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
65.	Rated operating voltage	400V $\pm$ 10%		
66.	Rated frequency (Hz)	50 $\pm$ 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.12		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.11 Tender Technical Datasheets 43BRTB-BD-1420

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BD-1420		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction;	only for the anchorage	
		0.4g for vertical direction		
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-L2-04 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	1000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	400A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD43][RD57]		
64.	Circuit breakers	In≤630A		
65.	Rated operating voltage	400V ± 10%		
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, Imin	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.13		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.12 Tender Technical Datasheets 43BRTB-BD-1510

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BD-1510		
2.	Type	LV distribution board (SDB)		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction;	only for the anchorage	
		0.4g for vertical direction		
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-L3-01 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	2000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	400A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD44][RD58]		
64.	Circuit breakers	In≤630A		
65.	Rated operating voltage	400V ± 10%		
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.14		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	operating; test; withdrawn with door closed		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.13 Tender Technical Datasheets 43BRTB-BD-1520

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BD-1520		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction;	only for the anchorage	
		0.4g for vertical direction		
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-L3-07 with Ventilation		
14.	Elevation	<1000m		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	2000x600x2200	Bidder to follow the enveloped dimensions.	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	630A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD45][RD59]		
64.	Circuit breakers	$I_n \leq 630A$		
65.	Rated operating voltage	$400V \pm 10\%$		
66.	Rated frequency (Hz)	$50 \pm 1\%$		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.15		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.14 Tender Technical Datasheets 43BRTB-BD-2510

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	43BRTB-BD-2510		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction; 0.4g for vertical direction	only for the anchorage	
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-L3-01 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
25.	short circuit current (1s RMS)	40kA		
26.	Rated peak withstand current I _{pk}	84 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	2000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	400A		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	40kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD46][RD60]		
64.	Circuit breakers	In≤630A		
65.	Rated operating voltage	400V ± 10%		
66.	Rated frequency (Hz)	50 ± 1%		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.16		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

Appendix A.15 Tender Technical Datasheets 53PTCP-BD-0001

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
General Data				
1.	Equipment Tag	53PTCP-BD-0001		
2.	Type	LV distribution board (SDB)		
3.	Mounting Type	Floor Mounted		
4.	Reference standard	IEC 61439/60947		
5.	Service condition	Indoor		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
6.	Quality Class	QC2		
7.	Seismic Level	NSC		
8.	SL1 FRS Peak value	0.6g for horizontal direction; 0.4g for vertical direction	only for the anchorage	
9.	Safety Class	Non-SIC		
10.	Voltage Class	Class II IP		
11.	Design lifetime	20 years		
12.	Provision for expansion	yes		
Environment				
13.	Room	74-L3-03 with Ventilation		
14.	Elevation	<1000m		
15.	Temperature	18°C<T<35°C		
16.	Humidity	20%<PH<60%		
17.	Radiation	N/A		
18.	Degree of the pollution	1		
19.	Lightning Zone	LPZ 1 (indoor)		
Switchgear				
20.	MDB Manufacturer name or trademark	TBDM		
21.	Number of the phase	3PH+N+PE		
22.	Rated operating voltage	400V ± 10%		
23.	Power frequency withstand voltage, 1min	1890V		
24.	Rated insulation voltage	690 V		
25.	short circuit current (1s RMS)	25kA		
26.	Rated peak withstand current I _{pk}	52.5 kA peak		
27.	Rated frequency (Hz)	50 ± 1%		
28.	System Earthing	TN-S		
29.	Form of the compartmentalization	2b	IEC 61439-1	
30.	Service factor	IS 223 (MCCB) and IS 211 (MCB)	UTE 63429	
31.	Protection Degree	IP31	IEC 60529	
32.	IK code	IK 07	IEC 62262	
33.	Paint color	RAL 1013	UID: ITER_D_2EB9VT	
34.	MDB inside finishing	Galvanization		
35.	Minimum thickness of metal sheet	2mm		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
36.	Selectivity categories	Category B	IEC 60947	
37.	Clear space required	Front:	TBDM	
		Rear:		
		Side:		
38.	Heat Loss (kW)	TBDM		
39.	Enveloped Dimension (LxDxH) in mm	2000x600x2200	Bidder to follow the enveloped dimensions	
40.	Total Mass (with all components inside)	TBDM		
41.	Installation interface	Fixed on concrete plinth		
42.	Busbar/Cable connection	Refer to 5.3.3		
43.	SPD	Type I+II	IEC 61643 (as per Datasheet)	
44.	Space Heater	230 V AC, thermostat controlled		
45.	Cooling type	TBDM		
46.	Fitted Spare	TBDM		
47.	Not fitted spare (physical available space)	TBDM		
48.	Total Spare	TBDM		
49.	Lifting and handling provision	eyebolt		
Busbar				
50.	Manufacturer name or trademark	TBDM		
51.	Busbar type	copper		
52.	Rated main busbar current (PH+N)	400A		
53.	Rated insulation voltage of main busbar	1 kV		
54.	Rated impulse withstand voltage for main busbar	12 kV		
55.	Icw 1S	25kA		
56.	Main busbar size	TBDM		
57.	vertical secondary busbar size	TBDM		
58.	PE busbar size	TBDM		
59.	Hottest-spot temperature rise limit:	TBDM		
60.	Busbar support span	TBDM		
Circuit Breaker (MCCB) and MCB				

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
61.	Manufacturer name or trademark	TBDM		
62.	Product standard	IEC 60947-2		
63.	Feeder circuit breaker	refer Documents listed [RD46][RD60]		
64.	Circuit breakers	$I_n \leq 630A$		
65.	Rated operating voltage	$400V \pm 10\%$		
66.	Rated frequency (Hz)	$50 \pm 1\%$		
67.	Power frequency withstand voltage, 1min	2500V		
68.	Operating Mechanism	Manual Control.		
69.	Electronic trip device type for each circuit breaker	refer Documents listed 13.17		
70.	Rated duty	Uninterrupted duty		
71.	CB closing time (ms)(max)	TBDM		
72.	CB breaking time (ms)(max)	TBDM		
73.	Draw out position	Not Applicable		
74.	CB reliability:	TBDM		
Others				
75.	instrument transformer product standard	IEC60044-1		
76.	instrument transformer trademark	TBDM		
77.	Metering CT accuracy class	TBDM		
78.	I/O card	1 unit		
79.	selector switch(local/remote)	TBDM		
80.	selector switch(trip/close)	TBDM		
81.	limit switch if any	TBDM		
82.	indication lights trademark	TBDM		

Distribution Board Datasheet				
No	Parameter Description	Required Value	Note	Offered
83.	min wire size:			
	DC power circuit	6mm ²		
	CT	4 mm ²		
	VT (if applicable)	2.5 mm ²		
	control wire between different column	2.5 mm ²		
	control wire inside one column	1.5 mm ²		
84.	DC power circuit Terminal trademark	TBDM		
85.	Control circuit Terminal trademark	TBDM		
86.	Spare terminal	25%		
87.	Auxiliary contacts	Max number available;	TBDM	
		Max make rating, A;		
		Max break rating, A;		
		Max continuous rating, A		

13.2 APPENDIX B-LV SUB distribution board acceptance criteria test

400 V Sub DISTRIBUTION BOARDS				
TEST CLASSIFICATION	TEST DESCRIPTION	APPLICABLE STANDARD	TEST VALUES	ACCEPTANCE CRITERIA
DESIGN VERIFICATION				
Design verification: construction	Strength of material and parts	IEC 61439-1, subclause 10.2	---	The strength of material and parts shall be verified
Design verification: construction	Degree of protection of enclosures	IEC 61439-1, subclause 10.3 and IEC 60529	As defined in IEC 61439-1, subclause 10.3 and IEC 60529	Degree of protection shall be verified in accordance with IEC 60529
Design verification: construction	Clearances and creepage distances	IEC 61439-1, subclause 10.4	As defined in IEC 61439-1, subclause 10.4 and Annex F	Clearances shall not be less than those corresponding to table 1 and 2, respectively of IEC 61439-1
Design verification: construction	Protection against electric shock and integrity of protective circuits	IEC 61439-1, subclause 10.5	As defined in IEC 61439-1, subclause 10.5 Resistance between exposed conductive parts and protective conductor. Short-circuit withstand strength	According to IEC 61439-1, subclause 10.5
Design verification: construction	Incorporation of switching devices and components	IEC 61439-1, subclause 10.6	---	According to IEC 61439-1, subclause 10.6
Design verification: construction	Inspection of switching devices and components	IEC 61439-1, subclause 10.7	---	According to IEC 61439-1, subclause 10.7
Design verification: construction	Inspection of terminals for external conductors	IEC 61439-1, subclause 10.8	---	According to IEC 61439-1, subclause 10.8

400 V Sub DISTRIBUTION BOARDS				
TEST CLASSIFICATION	TEST DESCRIPTION	APPLICABLE STANDARD	TEST VALUES	ACCEPTANCE CRITERIA
Design verification: performance	Dielectric properties: Power-frequency withstand voltage	IEC 61439-1, subclause 10.9.2	As defined in tables 8 and 9 of IEC 61439-1 Test voltage shall have a sinusoidal waveform and a frequency between 45 Hz and 65 Hz	No leakage current over 100 mA and there shall be no disruptive discharges
Design verification: performance	Dielectric properties: Impulse withstand voltage	IEC 61439-1, Subclause 10.9.3.2 ¹	As defined in subclause 9.1.3 and table 10 of IEC 61439-1	No disruptive discharges ¹
Design verification: performance	Verification of temperature rise by: a) Testing with current b) Derivation of ratings for similar variants c) Calculation	IEC 61439-1, subclause 10.10	As defined in IEC 61439-1 subclauses 10.10.2, 10.10.3 or 10.10.4 as applicable	Temperature rise of parts shall not exceed the values specified in 9.2 and table 6 of IEC 61439-1
Design verification: performance	Verification of Short-circuit withstand strength by: a) Application of design rules b) Comparison with a reference design c) Test	IEC 61439-1, subclause 10.11	As defined in IEC 61439-1 subclauses 10.11.3, 10.11.4 or 10.11.5 as applicable	Confirmation of the short-circuit withstand strength declared by the original manufacturer

¹ Alternative tests as described in IEC 61439-1, subclauses 10.9.3.3 or 10.9.3.4 could be applied in accordance with subclause 10.9.3.1

400 V Sub DISTRIBUTION BOARDS				
TEST CLASSIFICATION	TEST DESCRIPTION	APPLICABLE STANDARD	TEST VALUES	ACCEPTANCE CRITERIA
Design verification: performance	Electromagnetic compatibility (EMC): Emission test and Immunity test	IEC 61439-1, subclause 10.12 and J.10.12 of Annex J	As defined in subclause J.10.12 of Annex J of IEC 61439-1	According to IEC 61439-1, subclause J.10.2 (Annex J.2)
Design verification: performance	Mechanical operation	IEC 61439-1, subclause 10.13	As defined in IEC 61439-1, subclause 10.13	Operating conditions of the apparatus, interlocks, specified degree of protection, etc, have not been impaired and if the effort requires for operation is practically the same as before the test
ROUTINE VERIFICATION				
Routine verification: construction	Degree of protection of enclosures	IEC 61439-1, subclause 11.2	---	Visual inspection to confirm that the degree of protection is maintained
Routine verification: construction	Clearances and creepage distances	IEC 61439-1, subclause 11.3	---	Clearances distances shall be higher than the specified values in table 1 of IEC 61439-1, otherwise an impulse withstand test shall be carried out as defined in subclause 11.3 of the aforementioned standard. Creepage distances shall be higher than the values specified in table 2 of IEC 61439-1
Routine verification: construction	Protection against electric shock and integrity of protective circuits	IEC 61439-1 subclause 11.4	---	Proper realization of the protective circuit based on a visual, mechanical and electrical inspection

400 V Sub DISTRIBUTION BOARDS				
TEST CLASSIFICATION	TEST DESCRIPTION	APPLICABLE STANDARD	TEST VALUES	ACCEPTANCE CRITERIA
Routine verification: construction	Incorporation of built-in components	IEC 61439-1 subclause 11.5	---	Correspondence of the installed equipment with the assembly manufacturing instructions
Routine verification: construction	Internal electrical circuits and connections	IEC 61439-1 subclause 11.6	---	Correct tightening of terminals on a random basis
Routine verification: construction	Terminals for external conductors	IEC 61439-1 subclause 11.7	---	Correspondence of cables and terminals according to the wiring diagram
Routine verification: construction	Mechanical operation	IEC 61439-1 subclause 11.8	---	Proper operation of random basis levers, pushbuttons and any possible mechanical actuating element
Routine verification: performance	Dielectric properties	IEC 61439-1 subclause 11.9	According to IEC 61439-1 tables 8,9 and 10	No disruptive discharges
Routine verification: performance	Wiring, operational performance and function	IEC 61439-1 subclause 11.10	---	Correct electrical operation and proper safety interlocks operation. Information and markings specified in IEC 61439-1 subclause 6 are complete

13.3 APPENDIX C- BOM For 43BMTB-BD-1210

Upstream	Ref Mark	Description	Content	Consumption	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable
43BMTB-BD-1000	43BMTB-BD-1210	SDB IP Class III Tr.B (160A)	3P+N+PE	50kW	43BMTB-JA-1004	NSX160H	MCCB	Micrologic 5.2E	4P4T	160.00	100.000	43BMTB-CAP-0140	Copper	5G95
43BMTB-BD-1210	26PHNB-CMC-3000	NBI LOW FLOW PUMP	3P+N+PE	43kW	43BMTB-JA-0073	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BMTB-CAP-0082	Copper	5G70
43BMTB-BD-1210	43BMTB-JR-1210	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	43BMTB-JF-1210	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000	43BMTB-CAP-0189	Copper	5G50
43BMTB-BD-1210	E_SPARE-1_(20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	JA-9000	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper	
43BMTB-BD-1210	E_SPARE-2_(20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	JA-9001	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper	
43BMTB-BD-1210	E_SPARE-3_(20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	JA-9002	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper	
43BMTB-BD-1210	E_SPARE-4_(20A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	JA-9003	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper	
43BMTB-BD-1210	U_SPARE-2_(32A)	UN-EQUIPPED SPARE-2 (3 Ph_32A, MCB)	3P+N+PE	32A		iC60N	C. Breaker C		4P4T	32.00	10.000		Copper	
43BMTB-BD-1210	U_SPARE-1_(63A)	UN-EQUIPPED SPARE-1 (3 Ph_63A, MCCB)	3P+N+PE	63A		iC60H	C. Breaker C		4P4T	63.00	15.000		Copper	

13.4 APPENDIX D- BOM For 43BMTB-BD-1510

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BMTB-BD-4000	43BMTB-BD-1510	SDB IP Class III Tr.B (160A)	3P+N+PE	32kW	54.34	43BMTB-JA-4003	NSX160H	MCCB	Micrologic 5.2E	4P4T	160.00	100.000	43BMTB-CAP-0164	Copper	3X(1x120)	1x120	1x70
43BMTB-BD-1510	6274ES-BP-3032	6274ES-BP-3032 SDB IP Class III Tr.B(100A)74 L3 03	3P+N+PE	27.09kW	46.00	43BMTB-JA-0082	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BMTB-CAP-0166	Copper	5G50		
43BMTB-BD-1510	43BMTB-JR-1510	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	JF-1510	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000		Copper	5G35		
43BMTB-BD-1510	E_SPARE-1_(20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9005	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BMTB-BD-1510	E_SPARE-2_(20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9006	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BMTB-BD-1510	E_SPARE-3_(20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9007	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BMTB-BD-1510	E_SPARE-4_(20A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	JA-9008	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BMTB-BD-1510	U_SPARE-2_(32A)	UN-EQUIPPED SPARE-2 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60N	C. Breaker C		4P4T	32.00	10.000		Copper			
43BMTB-BD-1510	U_SPARE-1_(63A)	UN-EQUIPPED SPARE-1 (3 Ph_63A, MCCB)	3P+N+PE	63A	63.00		iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			

13.5 APPENDIX E- BOM For 43BRTB-BD-1110

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-3100	43BRTB-BD-1110	SDB IP Class II Tr.B (400A)	3P+N+PE	170kW	288.68	43BRTB-JA-3104	NSX400H	MCCB	Micrologic 5.3E	4P4T	400.00	70.000	43BRTB-CAP-2002/2003	Copper	2X3X(1x150)	2X(1x150)	1x150
43BRTB-BD-1110	11F5IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0538	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1862	Copper	3G10		
43BRTB-BD-1110	11F5IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0539	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1860	Copper	3G10		
43BRTB-BD-1110	15VVIS-CU-0008	Signal Conditioning Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0540	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1861	Copper	3G10		
43BRTB-BD-1110	15VVIS-CU-0011	Signal Conditioning Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0541	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2024	Copper	3G10		
43BRTB-BD-1110	15VVIS-CU-0012	Signal Conditioning Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0542	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2025	Copper	3G4		
43BRTB-BD-1110	260000-CU-6104	Remote I/O panel	P+N+PE	2.5kW	10.83	43BRTB-JA-0552	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1863	Copper	3G4		
43BRTB-BD-1110	270600-CU-0007	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0547	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1865	Copper	3G4		
43BRTB-BD-1110	410000-BP-7203	BB CWC - CW monitoring 3-IP (74-B2)	P+N+PE	0.6kW	3.06	43BRTB-JA-0544	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1868	Copper	3G10		
43BRTB-BD-1110	410000-BP-7204	BB CWC - CW monitoring 4-IP (74-B2)	P+N+PE	0.9kW	4.58	43BRTB-JA-0543	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1869	Copper	3G6		
43BRTB-BD-1110	410000-BP-7205	BB CWC - CW monitoring -IP (74-B2)	P+N+PE	1.8kW	9.17	43BRTB-JA-0554	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1870	Copper	3G10		
43BRTB-BD-1110	410000-BP-7225	Switch complex Local-Dist.-IP (CS2L)*	3P+N+PE	40.5kW	68.77	43BRTB-JA-0546	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1874	Copper	5G50		
43BRTB-BD-1110	410000-BP-7226	Switch complex Local-Dist.-IP (CS3L)*	3P+N+PE	39.5kW	67.07	43BRTB-JA-0545	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1873	Copper	5G50		
43BRTB-BD-1110	410000-BP-7227	Switch complex Local-Dist.-IP (CS1L)*	3P+N+PE	39.8kW	67.58	43BRTB-JA-0550	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1872	Copper	5G50		
43BRTB-BD-1110	43BRTB-BP-1110	PBS43 Wall Mounted Panel	3P+N+PE	55kW	93.39	43BRTB-JA-0639	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-2159	Copper	5G50		
43BRTB-BD-1110	43BRTB-JR-1110	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-1110	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000	43BRTB-CAP-2174	Copper	5G35		
43BRTB-BD-1110	E-SPARE-1 (20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9000	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1110	E-SPARE-2 (20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9001	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1110	E-SPARE-3 (20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9002	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1110	E-SPARE-4 (63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00		iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1110	U-SPARE-2 (32A)	UN-EQUIPPED SPARE-2 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60H	C. Breaker C		4P4T	32.00	15.000		Copper			
43BRTB-BD-1110	U-SPARE-1 (63A)	UN-EQUIPPED SPARE-1 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00		iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			

13.6 APPENDIX F- BOM For 43BRTB-BP-1110

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable
43BRTB-BD-1110	43BRTB-BP-1110	PBS43 Wall Mounted Panel	3P+N+PE	55kW	93.39	43BRTB-JA-0639	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-2159	Copper	5G50
43BRTB-BP-1110	11F2IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0521	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1840	Copper	3G4
43BRTB-BP-1110	11F2IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0522	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1841	Copper	3G4
43BRTB-BP-1110	11F2IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0523	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1842	Copper	3G4
43BRTB-BP-1110	11F2IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0520	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1843	Copper	3G4
43BRTB-BP-1110	11F3IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0518	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1844	Copper	3G4
43BRTB-BP-1110	11F4IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0519	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1845	Copper	3G4
43BRTB-BP-1110	11F4IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0528	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1846	Copper	3G4
43BRTB-BP-1110	11F5IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0527	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1849	Copper	3G4
43BRTB-BP-1110	11H4IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0524	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1850	Copper	3G4
43BRTB-BP-1110	11H4IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0525	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1851	Copper	3G4
43BRTB-BP-1110	11H5IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0529	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1852	Copper	3G4
43BRTB-BP-1110	11H5IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0526	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1853	Copper	3G4
43BRTB-BP-1110	11H6IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0530	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1854	Copper	3G4
43BRTB-BP-1110	11I2IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0531	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1855	Copper	3G4
43BRTB-BP-1110	11I2IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0532	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1856	Copper	3G4
43BRTB-BP-1110	11I2IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0533	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1857	Copper	3G4
43BRTB-BP-1110	11I2IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0534	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1858	Copper	3G4
43BRTB-BP-1110	11I2IC-CU-0005	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0535	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1859	Copper	3G4
43BRTB-BP-1110	15VVIS-CU-0017	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0536	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1863	Copper	3G4
43BRTB-BP-1110	6274ES-BP-3020	Sub-Distribution Panel Class II IP Train B	3P+N+PE	16.17kW	29.17	43BRTB-JA-0737	iC60N	C. Breaker C		4P4T	50.00	10.000	43BRTB-CAP-2025	Copper	5G16
43BRTB-BP-1110	69AC74-CR-8001	Control Cubicle	P+N+PE	0.5kW	2.55	43BRTB-JA-0537	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1859	Copper	3G4
43BRTB-BP-1110	E -SPARE-1(20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9004	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper	
43BRTB-BP-1110	E -SPARE-2(20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9005	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper	
43BRTB-BP-1110	E -SPARE-3(20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9006	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper	

13.7 APPENDIX G- BOM For 43BRTB-BD-1120

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-2100	43BRTB-BD-1120	SDB IP Class II Tr.B (400A)	3P+N+PE	178kW	302.26	43BRTB-JA-2103	NSX400H	MCCB	Micrologic 5.3E	4P4T	400.00	70.000	43BRTB-CAP-1977/1978	Copper	2X3X(1x120)	2X(1x120)	1x120
43BRTB-BD-1120	11C3IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0012	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1408	Copper	3G4		
43BRTB-BD-1120	11C3IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0022	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1407	Copper	3G4		
43BRTB-BD-1120	11C3IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0020	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1406	Copper	3G4		
43BRTB-BD-1120	11C3IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0021	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1405	Copper	3G10		
43BRTB-BD-1120	11C3IC-CU-0005	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0019	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1409	Copper	3G10		
43BRTB-BD-1120	11C4IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0017	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1404	Copper	3G10		
43BRTB-BD-1120	11C4IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0018	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1410	Copper	3G10		
43BRTB-BD-1120	11C4IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0016	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1411	Copper	3G4		
43BRTB-BD-1120	11C5IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0013	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1412	Copper	3G4		
43BRTB-BD-1120	11C5IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0014	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1417	Copper	3G4		
43BRTB-BD-1120	11F1IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0473	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1787	Copper	3G4		
43BRTB-BD-1120	11F1IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0474	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1788	Copper	3G4		
43BRTB-BD-1120	11F1IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0472	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1789	Copper	3G4		
43BRTB-BD-1120	11F6IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0475	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1790	Copper	3G4		
43BRTB-BD-1120	11F6IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0476	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1791	Copper	3G4		
43BRTB-BD-1120	11F6IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0015	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1416	Copper	3G10		
43BRTB-BD-1120	11F6IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0036	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1415	Copper	3G10		
43BRTB-BD-1120	11F7IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0477	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1792	Copper	3G4		
43BRTB-BD-1120	11F7IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0037	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1414	Copper	3G10		
43BRTB-BD-1120	11F7IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0035	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1413	Copper	3G10		
43BRTB-BD-1120	11F8IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0478	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1795	Copper	3G4		
43BRTB-BD-1120	11F9IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0479	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1794	Copper	3G4		
43BRTB-BD-1120	11G4IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0480	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1394	Copper	3G4		
43BRTB-BD-1120	11G4IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0481	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1395	Copper	3G4		
43BRTB-BD-1120	11G4IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0482	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1397	Copper	3G4		
43BRTB-BD-1120	11G4IC-CU-0005	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0453	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1798	Copper	3G10		
43BRTB-BD-1120	11G5IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0454	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1799	Copper	3G10		
43BRTB-BD-1120	11G5IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0483	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1793	Copper	3G4		
43BRTB-BD-1120	11G6IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0455	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1800	Copper	3G10		
43BRTB-BD-1120	11G6IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0484	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1396	Copper	3G4		
43BRTB-BD-1120	11I1IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0456	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1801	Copper	3G4		
43BRTB-BD-1120	11I1IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0459	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1802	Copper	3G4		
43BRTB-BD-1120	11I1IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0457	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1803	Copper	3G4		
43BRTB-BD-1120	11I1IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0458	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1804	Copper	3G4		
43BRTB-BD-1120	11I1IC-CU-0005	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0460	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1805	Copper	3G4		
43BRTB-BD-1120	11I1IC-CU-0006	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0461	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1806	Copper	3G4		
43BRTB-BD-1120	11S3IC-CU-0100	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0462	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1807	Copper	3G6		
43BRTB-BD-1120	11S3IC-CU-0101	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0463	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1808	Copper	3G6		
43BRTB-BD-1120	24CR00-CU-0024	Signal Conditioning Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0464	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1809	Copper	3G10		
43BRTB-BD-1120	260000-CU-1001	PHVV System-Local Control Cubicle-CU-1001	P+N+PE	1.5kW	7.38	43BRTB-JA-0641	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2028	Copper	3G4		
43BRTB-BD-1120	260000-CU-1002	DY System-Local Control Cubicle-CU-1002	P+N+PE	1.5kW	7.38	43BRTB-JA-0642	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2029	Copper	3G4		
43BRTB-BD-1120	260000-CU-1003	PHBD System-Local Control Cubicle-CU-1003	P+N+PE	1.5kW	7.38	43BRTB-JA-0644	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2031	Copper	3G4		
43BRTB-BD-1120	410000-BP-7201	BB CWC - CW monitoring 1-IP (74-B2)	P+N+PE	2.4kW	12.23	43BRTB-JA-0470	IC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1815	Copper	3G10		
43BRTB-BD-1120	410000-BP-7202	BB CWC - CW monitoring 2-IP (74-B2)	P+N+PE	0.6kW	3.06	43BRTB-JA-0471	IC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1816	Copper	3G10		
43BRTB-BD-1120	410000-BP-7221	Plant Interlock Controller-TF/PF/CC-IP	P+N+PE	8kW	40.75	43BRTB-JA-0485	IC60N	C. Breaker C		2P2T	50.00	20.000	43BRTB-CAP-1398	Copper	3G16		
43BRTB-BD-1120	410000-BP-7223	Switch complex Local-Dist.-IP (PF4, PF5)*	3P+N+PE	44.8kW	76.07	43BRTB-JA-0468	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1814	Copper	5G70		
43BRTB-BD-1120	410000-BP-7224	Switch complex Local-Dist.-IP (PF6)*	3P+N+PE	26.5kW	45.00	43BRTB-JA-0469	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1813	Copper	5G70		
43BRTB-BD-1120	450574-CU-0001	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0486	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1399	Copper	3G4		
43BRTB-BD-1120	450574-CU-0002	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0487	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1400	Copper	3G4		
43BRTB-BD-1120	450574-CU-0003	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0488	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1401	Copper	3G4		
43BRTB-BD-1120	4601IN-CU-0034	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0489	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1402	Copper	3G4		
43BRTB-BD-1120	4801SR-CU-0023	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0490	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1403	Copper	3G4		
43BRTB-BD-1120	4802CM-CU-0021	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0491	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1796	Copper	3G4		
43BRTB-BD-1120	69AC74-CU-8002	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0492	IC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1797	Copper	3G4		
43BRTB-BD-1120	43BRTB-JR-1120	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-1120	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000		Copper	5G35		
43BRTB-BD-1120	E-SPARE - 1(20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9008	IC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1120	E-SPARE - 2(20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9009	IC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1120	E-SPARE - 3(20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9010	IC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1120	E-SPARE - 4(63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	JA-9011	IC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1120	U-SPARE-2(32A)	UN-EQUIPPED SPARE-2 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		IC60H	C. Breaker C		4P4T	32.00	15.000		Copper			
43BRTB-BD-1120	U-SPARE-1(63A)	UN-EQUIPPED SPARE-1 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00		IC60H	C. Breaker C		4P4T	63.00	15.000		Copper			

13.8 APPENDIX H- BOM For 43BRTB-BD-1210

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-2100	43BRTB-BD-1210	SDB IP Class II Tr.B (250A)	3P+N+PE	102kW	173.21	43BRTB-JA-2104	NSX250H	MCCB	Micrologic 5.2E	4P4T	250.00	70.000	43BRTB-CAP-1979/1980	Copper	3X(1x185)	1x185	1x185
43BRTB-BD-1210	18PIU0-CU-6101	"FPIS Control FPIS Cask B1 C10" (SPARE)	P+N+PE	0.81kW	4.13	43BRTB-JA-0564	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2045	Copper	3G4		
43BRTB-BD-1210	4802CM-CU-0030	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0569	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1879	Copper	3G4		
43BRTB-BD-1210	4802CM-CU-0031	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0568	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1877	Copper	3G4		
43BRTB-BD-1210	55NEX0-BP-3103	Distribution Panel	3P+N+PE	20kW	33.96	43BRTB-JA-0560	NSX100H	MCCB	TM63D	4P4T	63.00	70.000	43BRTB-CAP-1878	Copper	5G25		
43BRTB-BD-1210	55NEX0-BP-3401	Distribution Panel	3P+N+PE	15kW	25.47	43BRTB-JA-0572	NSX100H	MCCB	TM63D	4P4T	63.00	70.000	43BRTB-CAP-1884	Copper	5G25		
43BRTB-BD-1210	55NEX0-BP-4101	Distribution Panel	3P+N+PE	40kW	67.92	43BRTB-JA-0570	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1883	Copper	5G50		
43BRTB-BD-1210	69AC74-CU-9002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0559	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1885	Copper	3G4		
43BRTB-BD-1210	43BRTB-JR-1210	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-1210	INF 125 22x58	Fuse gG	gG	4P4F	125.00	5.000	43BRTB-CAP-2177	Copper	5G35		
43BRTB-BD-1210	E- SPARE-1 (20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9020	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1210	E- SPARE-2 (20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9021	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1210	E- SPARE-3 (20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9022	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1210	E- SPARE-4 (63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	JA-9023	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1210	U- SPARE-2 (32A)	UN-EQUIPPED SPARE-2 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60N	C. Breaker C		4P4T	32.00	10.000		Copper			
43BRTB-BD-1210	U- SPARE-1 (100A)	UN-EQUIPPED SPARE-1 (3 Ph_100A, MCCB)	3P+N+PE	100A	100.00		NSX100B	MCCB	Micrologic 5.2E	4P4T	100.00	25.000		Copper			

13.9 APPENDIX I- BOM For 43BRTB-BD-1220

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-3100	43BRTB-BD-1220	SDB IP Class II Tr.B (160A)	3P+N+PE	93kW	157.92	43BRTB-JA-3105	NSX160H	MCCB	Micrologic 5.2E	4P4T	160.00	70.000	43BRTB-CAP-2004/2005	Copper	3X(1x150)	1x150	1x150
43BRTB-BD-1220	450574-CU-0004	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0145	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1490	Copper	3G6		
43BRTB-BD-1220	450574-CU-0005	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0148	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1491	Copper	3G6		
43BRTB-BD-1220	450574-CU-0006	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0146	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1492	Copper	3G6		
43BRTB-BD-1220	450574-CU-0021	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0147	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1493	Copper	3G6		
43BRTB-BD-1220	4801SR-CU-0022	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0149	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1494	Copper	3G6		
43BRTB-BD-1220	4802CM-CU-0020	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0150	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1495	Copper	3G6		
43BRTB-BD-1220	55NEX0-BP-3203	Distribution Panel	3P+N+PE	35kW	59.43	43BRTB-JA-0151	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1496	Copper	5G50		
43BRTB-BD-1220	55NEX0-BP-3802	Distribution Panel	3P+N+PE	20kW	33.96	43BRTB-JA-0153	NSX100H	MCCB	Micrologic 5.2E	4P4T	40.00	70.000	43BRTB-CAP-1499	Copper	5G16		
43BRTB-BD-1220	6274ES-BP-3018	Sub-Distribution Panel Class II IP Train B	3P+N+PE	8.68kW	15.66	43BRTB-JA-0739	iC60N	C. Breaker C		4P4T	40.00	10.000	43BRTB-CAP-2163	Copper	5G16		
43BRTB-BD-1220	69AC74-CU-9001	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0155	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1497	Copper	3G10		
43BRTB-BD-1220	43BRTB-JR-1220	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-1220	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000	43BRTB-CAP-2178	Copper	5G35		
43BRTB-BD-1220	E-SPARE-1(20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9024	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1220	E-SPARE-2(20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9025	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1220	E-SPARE-3(20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9026	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1220	E-SPARE-4(63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	JA-9027	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1220	U-SPARE-1 (32A)	UN-EQUIPPED SPARE-1 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60H	C. Breaker C		4P4T	32.00	15.000		Copper			
43BRTB-BD-1220	U-SPARE-2 (63A)	UN-EQUIPPED SPARE-2 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00		iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			

13.10 APPENDIX J- BOM For 43BRTB-BD-1310

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-3100	43BRTB-BD-1310	SDB IP Class II Tr.B (400A)	3P+N+PE	235kW	399.05	43BRTB-JA-3106	NSX400H	MCCB	Micrologic 5.3E	4P4T	400.00	70.000	43BRTB-CAP-2006	Copper	2X3X(1x150)	2X(1x150)	1x150
43BRTB-BD-1310	18DMHX-CU-6101	DMS Control L1 C08 - Bank 1	P+N+PE	1.5kW	7.64	43BRTB-JA-0176	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2049	Copper	3G4		
43BRTB-BD-1310	18DMHX-CU-6001	DMS Control L1 C08 (SPARE)	P+N+PE	1.5kW	7.64	43BRTB-JA-0713	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2053	Copper	3G4		
43BRTB-BD-1310	18DMHX-CU-6102	DMS Control L1 C08 (SPARE)	P+N+PE	1.5kW	7.64	43BRTB-JA-0714	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2052	Copper	3G4		
43BRTB-BD-1310	18DMHX-CU-6103	DMS Control L1 C08 (SPARE)	P+N+PE	1.5kW	7.64	43BRTB-JA-0711	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2051	Copper	3G4		
43BRTB-BD-1310	18DMHX-CU-6104	DMS Control L1 C08 (SPARE)	P+N+PE	3.4kW	17.32	43BRTB-JA-0712	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2050	Copper	3G6		
43BRTB-BD-1310	18DMHX-CU-8701	DMS Interlock Control L1 C08 - Bank 1	P+N+PE	1.6kW	8.15	43BRTB-JA-0801	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2300	Copper	3G4		
43BRTB-BD-1310	18DMHX-CU-8702	DMS Interlock Control L1 C08 - Bank 1	P+N+PE	.6kW	3.06	43BRTB-JA-0804	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2299	Copper	3G4		
43BRTB-BD-1310	18DMHX-CU-8301	DMS Interlock Control L1 C08 - Bank 1	P+N+PE	.6kW	3.06	43BRTB-JA-0802	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2298	Copper	3G4		
43BRTB-BD-1310	18DMHX-CU-8302	DMS Interlock Control L1 C08 - Bank 1	P+N+PE	.6kW	3.06	43BRTB-JA-0803	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2297	Copper	3G4		
43BRTB-BD-1310	32DT90-CU-3004	Control Cubicle	3P+N+PE	2kW	3.40	43BRTB-JA-0177	iC60H	C. Breaker C		4P4T	20.00	15.000	43BRTB-CAP-1534	Copper	5G4		
43BRTB-BD-1310	450574-CU-0007	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0178	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1524	Copper	3G4		
43BRTB-BD-1310	450574-CU-0008	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0179	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1525	Copper	3G4		
43BRTB-BD-1310	450574-CU-0009	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0180	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1526	Copper	3G4		
43BRTB-BD-1310	450574-CU-0010	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0181	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1527	Copper	3G4		
43BRTB-BD-1310	4801SR-CU-0024	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0186	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1528	Copper	3G4		
43BRTB-BD-1310	4802CM-CU-0022	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0185	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1529	Copper	3G4		
43BRTB-BD-1310	4802CM-CU-0032	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0182	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1532	Copper	3G4		
43BRTB-BD-1310	4802CM-CU-0033	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0183	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1531	Copper	3G4		
43BRTB-BD-1310	4802CM-CU-0034	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0184	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1530	Copper	3G4		
43BRTB-BD-1310	55F100-CU-5801	Control Cubicle	P+N+PE	10kW	50.94	43BRTB-JA-0191	iC60H	C. Breaker C		2P2T	63.00	30.000	43BRTB-CAP-1538	Copper	3G25		
43BRTB-BD-1310	55F100-CU-5802	Control Cubicle	P+N+PE	10kW	50.94	43BRTB-JA-0192	iC60H	C. Breaker C		2P2T	63.00	30.000	43BRTB-CAP-1537	Copper	3G25		
43BRTB-BD-1310	55F100-CU-5805	Control Cubicle	3P+N+PE	20kW	33.96	43BRTB-JA-0193	NSX100H	MCCB	Micrologic 5.2E	4P4T	40.00	70.000	43BRTB-CAP-1539	Copper	5G16		
43BRTB-BD-1310	55NEX0-BP-0008	Distribution Panel	3P+N+PE	15kW	25.47	43BRTB-JA-0189	NSX100H	MCCB	TM63D	4P4T	63.00	70.000	43BRTB-CAP-1967	Copper	5G25		
43BRTB-BD-1310	55NEX0-BP-2011	Distribution Panel	3P+N+PE	40kW	67.92	43BRTB-JA-0175	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1523	Copper	5G50		
43BRTB-BD-1310	55NEX0-BP-5201	Distribution Panel	3P+N+PE	20kW	33.96	43BRTB-JA-0187	NSX100H	MCCB	TM80D	4P4T	80.00	70.000	43BRTB-CAP-1533	Copper	5G50		
43BRTB-BD-1310	55NEX0-BP-5702	Distribution Panel	3P+N+PE	35kW	59.43	43BRTB-JA-0190	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1535	Copper	5G50		
43BRTB-BD-1310	6274ES-BP-3015	Sub-Distribution Panel Class II IP Train B	3P+N+PE	34.15kW	61.61	43BRTB-JA-0188	NSX100B	MCCB	Micrologic 5.2E	4P4T	100.00	25.000	43BRTB-CAP-1818	Copper	5G35		
43BRTB-BD-1310	69AC74-CR-1001	Wall-mounted Control Cubicle	P+N+PE	0.5kW	2.55	43BRTB-JA-0173	iC60N	C. Breaker C		2P2T	10.00	20.000	43BRTB-CAP-1521	Copper	3G4		
43BRTB-BD-1310	69AC74-CR-1003	Wall-mounted Control Cubicle	P+N+PE	0.5kW	2.55	43BRTB-JA-0174	iC60N	C. Breaker C		2P2T	10.00	20.000	43BRTB-CAP-1522	Copper	3G4		
43BRTB-BD-1310	43BRTB-JR-1310	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-1310	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000	43BRTB-CAP-2180	Copper	5G35		
43BRTB-BD-1310	E -SPARE-1 (20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9035	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1310	E -SPARE-2 (20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9036	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1310	E -SPARE-3 (20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9037	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1310	E -SPARE-4 (63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	JA-9038	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1310	U -SPARE-2 (32A)	UN-EQUIPPED SPARE-2 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60H	C. Breaker C		4P4T	32.00	15.000		Copper			
43BRTB-BD-1310	U -SPARE-1 (100A)	UN-EQUIPPED SPARE-1 (3 Ph_100A, MCCB)	3P+N+PE	100A	100.00		NSX100B	MCCB	Micrologic 5.2E	4P4T	100.00	25.000		Copper			

13.11 APPENDIX K- BOM For 43BRTB-BP-1320

Upstream	Ref Mark	Description	Content	Consumption	IB	IZ	Ref Mark Device	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-1420	43BRTB-BP-1320	PBS43 Wall Mounted Panel	3P+N+PE	68kW	115.47	198.08	43BRTB-JA-0500	NSX160B	MCCB	Micrologic 5.2E	4P4T	160.00	25.000	43BRTB-CAP-2182	Copper	3X(1x120)	1x120	1x70
43BRTB-BP-1320	18DM00-CU-8001	DMS Central Interlock Control (critical functions)	P+N+PE	1.5kW	7.64	25.22	43BRTB-JA-0820	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2309	Copper	3G4		
43BRTB-BP-1320	18DM00-CU-8101	DMS Central Interlock Control (non-critical functi	P+N+PE	1.5kW	7.64	25.22	43BRTB-JA-0821	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2310	Copper	3G4		
43BRTB-BP-1320	18GC00-CU-8101	PIS Plant Interlock System	P+N+PE	2kW	10.19	25.22	43BRTB-JA-0822	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2311	Copper	3G4		
43BRTB-BP-1320	55NEX0-BP-5303	Distribution Panel	3P+N+PE	55kW	86.29	118.44	43BRTB-JA-0195	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1541	Copper	5G70		
43BRTB-BP-1320	69AC74-CU-1001	Control Cubicle	P+N+PE	2kW	10.19	44.59	43BRTB-JA-0196	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1540	Copper	3G10		
43BRTB-BP-1320	4802CM-CU-0049	Control Cubicle	P+N+PE	1kW	5.09	44.59	43BRTB-JA-0823	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2308	Copper	3G10		
43BRTB-BP-1320	E-SPARE -1 (20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	0.00	JA-9039	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BP-1320	E-SPARE -2 (20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	0.00	JA-9040	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BP-1320	E-SPARE -3 (20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	0.00	JA-9041	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			

13.12 APPENDIX L- BOM For 43BRTB-BD-1410

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device 1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-3100	43BRTB-BD-1410	SDB IP Class II Tr.B (250A)	3P+N+PE	112kW	190.19	43BRTB-JA-3122	NSX250H	MCCB	Micrologic 5.2E	4P4T	250.00	70.000	43BRTB-CAP-2008/2009	Copper	3X(1x185)	1x185	1x70
43BRTB-BD-1410	15VVIS-CU-0003	Signal Conditioning Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0221	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1574	Copper	3G4		
43BRTB-BD-1410	15VVIS-CU-0010	Signal Conditioning Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0222	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1575	Copper	3G4		
43BRTB-BD-1410	18GI30-CU-3002	GIS GVB Control	P+N+PE	1kW	5.09	43BRTB-JA-0225	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1572	Copper	3G4		
43BRTB-BD-1410	32DT90-CU-4023	Control Cubicle	3P+N+PE	2kW	3.40	43BRTB-JA-0230	iC60H	C. Breaker C		4P4T	20.00	15.000	43BRTB-CAP-1579	Copper	5G4		
43BRTB-BD-1410	450574-CU-0011	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0212	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1557	Copper	3G4		
43BRTB-BD-1410	450574-CU-0012	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0213	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1558	Copper	3G4		
43BRTB-BD-1410	450574-CU-0013	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0214	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1559	Copper	3G4		
43BRTB-BD-1410	450574-CU-0014	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0215	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1560	Copper	3G4		
43BRTB-BD-1410	450574-CU-0015	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0216	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1561	Copper	3G4		
43BRTB-BD-1410	450574-CU-0016	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0217	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1562	Copper	3G4		
43BRTB-BD-1410	4801SR-CU-0025	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0220	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1565	Copper	3G4		
43BRTB-BD-1410	4802CM-CU-0023	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0219	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1564	Copper	3G6		
43BRTB-BD-1410	4802CM-CU-0035	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0231	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1568	Copper	3G4		
43BRTB-BD-1410	4802CM-CU-0036	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0232	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1569	Copper	3G4		
43BRTB-BD-1410	55NEX0-BP-7203	Distribution Panel	3P+N+PE	20kW	33.96	43BRTB-JA-0234	NSX100H	MCCB	Micrologic 5.2E	4P4T	40.00	70.000	43BRTB-CAP-1578	Copper	5G35		
43BRTB-BD-1410	55NEX0-BP-7801	Distribution Panel	3P+N+PE	40kW	67.92	43BRTB-JA-0235	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1570	Copper	5G50		
43BRTB-BD-1410	69AC74-CU-2001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0218	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1563	Copper	3G6		
43BRTB-BD-1410	18DM00-CU-8002	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0223	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1567	Copper	3G4		
43BRTB-BD-1410	18DMZX-CU-6001	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0224	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1571	Copper	3G4		
43BRTB-BD-1410	18DMZX-CU-6101	Control Cubicle	P+N+PE	3.8kW	19.36	43BRTB-JA-0226	iC60N	C. Breaker C		2P2T	25.00	20.000	43BRTB-CAP-1573	Copper	3G6		
43BRTB-BD-1410	18DMZX-CU-8301	Control Cubicle	P+N+PE	.5kW	2.55	43BRTB-JA-0228	iC60N	C. Breaker C		2P2T	6.00	20.000	43BRTB-CAP-1577	Copper	3G2,5		
43BRTB-BD-1410	18DMZX-CU-8701	Control Cubicle	P+N+PE	.4kW	2.04	43BRTB-JA-0229	iC60N	C. Breaker C		2P2T	6.00	20.000	43BRTB-CAP-1576	Copper	3G2,5		
43BRTB-BD-1410	18DM00-CU-8102	Control Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0805	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2301	Copper	3G4		
43BRTB-BD-1410	43BRTB-JR-1410	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-1410	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000		Copper	5G35		
43BRTB-BD-1410	E_SPARE-1(20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	43BRTB-JA-9060	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1410	E_SPARE-2(20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	43BRTB-JA-9061	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1410	E_SPARE-3(20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	43BRTB-JA-9062	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1410	E_SPARE-4(63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	43BRTB-JA-9063	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1410	U_SPARE-1(32A)	UN-EQUIPPED SPARE-1 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60N	C. Breaker C		4P4T	32.00	10.000		Copper			
43BRTB-BD-1410	U_SPARE-2(100A)	UN-EQUIPPED SPARE-2 (3 Ph_100A, MCCB)	3P+N+PE	100A	100.00		NSX100B	MCCB	Micrologic 5.2E	4P4T	100.00	25.000		Copper			

13.13 APPENDIX M- BOM For 43BRTB-BD-1420

Upstream	Ref Mark	Description	Content	Consumption	IB	IZ	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-2100	43BRTB-BD-1420	SDB IP Class II Tr.B (400A)	3P+N+PE	145kW	246.22	433.68	43BRTB-JA-2105	NSX400H	MCCB	Micrologi c 5.3E	4P4T	400.00	70.000	43BRTB-CAP-1981/1982	Copper	2X3X(1x120)	2X(1x120)	1x120
43BRTB-BD-1420	43BRTB-BP-1320	PBS43 Wall Mounted Panel	3P+N+PE	68kW	115.47	198.08	43BRTB-JA-0500	NSX160B	MCCB	Micrologi c 5.2E	4P4T	160.00	25.000	43BRTB-CAP-2182	Copper	3X(1x120)	1x120	1x70
43BRTB-BD-1420	55NEX0-BP-7501	Distribution Panel	3P+N+PE	15kW	25.47	51.94	43BRTB-JA-0236	iC60L	C. Breaker C		4P4T	40.00	20.000	43BRTB-CAP-1582	Copper	5G16		
43BRTB-BD-1420	55NEX0-BP-8402	Distribution Panel	3P+N+PE	20kW	33.96	99.50	43BRTB-JA-0237	NSX100H	MCCB	Micrologi c 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1583	Copper	5G50		
43BRTB-BD-1420	6274ES-BP-3013	Sub-Distribution Panel Class II IP Train B	3P+N+PE	13kW	23.45	52.10	43BRTB-JA-0655	iC60L	C. Breaker C		4P4T	40.00	20.000	43BRTB-CAP-2058	Copper	5G16		
43BRTB-BD-1420	69AC74-CU-2002	Control Cubicle	P+N+PE	2kW	10.19	32.47	43BRTB-JA-0239	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1580	Copper	3G6		
43BRTB-BD-1420	43BRTB-JR-1420	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	79.34	43BRTB-JF-1420	INFC 63 22x58	Fuse gG	gG	4P4F	63.00	2.500	43BRTB-CAP-2183	Copper	5G35		
43BRTB-BD-1420	E -SPARE-1 (20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	0.00	JA-9064	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1420	E -SPARE-2 (20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	0.00	JA-9065	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1420	E -SPARE-3 (20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	0.00	JA-9066	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1420	E -SPARE-4 (63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	0.00	JA-9067	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1420	U -SPARE-2 (32A)	UN-EQUIPPED SPARE-2 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00	0.00		iC60N	C. Breaker C		4P4T	32.00	10.000		Copper			
43BRTB-BD-1420	U -SPARE-1 (100A)	UN-EQUIPPED SPARE-1 (3 Ph_100A, MCCB)	3P+N+PE	100A	100.00	0.00		NSX100B	MCCB	Micrologi c 5.2E	4P4T	100.00	25.000		Copper			

13.14 APPENDIX N- BOM For 43BRTB-BD-1510

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device 1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-3100	43BRTB-BD-1510	SDB IP Class II Tr.B (400A)	3P+N+PE	185kW	314.15	43BRTB-JA-3108	NSX400H	MCCB	Micrologic 5.3A	4P4T	400.00	70.000	43BRTB-CAP-2010/2011	Copper	2X3X(1x150)	2X(1x150)	1x150
43BRTB-BD-1510	11G1IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0250	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1597	Copper	3G6		
43BRTB-BD-1510	11G1IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0251	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1598	Copper	3G6		
43BRTB-BD-1510	11H1IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0253	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1599	Copper	3G6		
43BRTB-BD-1510	11H1IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0252	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1600	Copper	3G6		
43BRTB-BD-1510	11H2IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0254	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1602	Copper	3G6		
43BRTB-BD-1510	11H2IC-CU-0004	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0255	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1601	Copper	3G6		
43BRTB-BD-1510	11H3IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0256	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1603	Copper	3G6		
43BRTB-BD-1510	260000-CU-5112	Remote I/O panel	P+N+PE	2.5kW	10.83	43BRTB-JA-0257	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1605	Copper	3G10		
43BRTB-BD-1510	260000-CU-6113	Remote I/O panel	P+N+PE	2.5kW	10.83	43BRTB-JA-0259	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1604	Copper	3G6		
43BRTB-BD-1510	260000-CU-6117	Remote I/O panel	P+N+PE	2.5kW	10.83	43BRTB-JA-0258	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2064	Copper	3G6		
43BRTB-BD-1510	343IPC-CU-0001	ACB 1, 2, 5	P+N+PE	3.5kW	15.95	43BRTB-JA-0244	iC60N	C. Breaker C		2P2T	25.00	20.000	43BRTB-CAP-1586	Copper	3G6		
43BRTB-BD-1510	343IPI-CU-0003	ACB's-PIS	P+N+PE	6kW	27.35	43BRTB-JA-0245	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1587	Copper	3G10		
43BRTB-BD-1510	343U00-CU-0002	ACB-5 CP	P+N+PE	4.5kW	20.51	43BRTB-JA-0241	iC60N	C. Breaker C		2P2T	32.00	20.000	43BRTB-CAP-1589	Copper	3G10		
43BRTB-BD-1510	410000-BP-7325	Switch complex Local-Dist.-IP (CS2U)*	3P+N+PE	36.5kW	61.98	43BRTB-JA-0261	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1608	Copper	5G50		
43BRTB-BD-1510	410000-BP-7327	Switch complex Local-Dist.-IP (CS1U)*	3P+N+PE	36.5kW	61.98	43BRTB-JA-0260	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1607	Copper	5G50		
43BRTB-BD-1510	43BRTB-BP-1610	PBS43 Wall Mounted Panel	3P+N+PE	58kW	98.49	43BRTB-JA-0730	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-2140	Copper	5G50		
43BRTB-BD-1510	4601IN-CU-0038	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0249	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2063	Copper	3G4		
43BRTB-BD-1510	6274ES-BP-3010	Sub-Distribution Panel Class II IP Train B	3P+N+PE	18.19kW	32.82	43BRTB-JA-0504	iC60H	C. Breaker C		4P4T	63.00	15.000	43BRTB-CAP-2065	Copper	5G25		
43BRTB-BD-1510	69AC74-CU-3002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0717	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1590	Copper	3G4		
43BRTB-BD-1510	69CO74-CU-3001	Control Cubicle PA	P+N+PE	4kW	20.38	43BRTB-JA-0262	iC60N	C. Breaker C		2P2T	25.00	20.000	43BRTB-CAP-1594	Copper	3G6		
43BRTB-BD-1510	69CO74-CU-3002	Control Cubicle PA	P+N+PE	4kW	20.38	43BRTB-JA-0263	iC60N	C. Breaker C		2P2T	25.00	20.000	43BRTB-CAP-1595	Copper	3G6		
43BRTB-BD-1510	69CO74-CU-3003	Control Cubicle PA	P+N+PE	3kW	15.28	43BRTB-JA-0264	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1596	Copper	3G6		
43BRTB-BD-1510	53PTCP-BD-0001	BD for Class II B74	3P+N+PE	38.5kW	65.38	43BRTB-JA-0282	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1834	Copper	5G50		
43BRTB-BD-1510	43BRTB-JR-1510	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-1510	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000	43BRTB-CAP-2185	Copper	5G35		
43BRTB-BD-1510	E_SPARE-1(25A)	EQUIPPED SPARE-1 (1 Ph_25A, MCB)	P+N+PE	25A	25.00	43BRTB-JA-9072	iC60N	C. Breaker C		2P2T	25.00	20.000		Copper			
43BRTB-BD-1510	E_SPARE-2(25A)	EQUIPPED SPARE-2 (1 Ph_25A, MCB)	P+N+PE	25A	25.00	43BRTB-JA-9073	iC60N	C. Breaker C		2P2T	25.00	20.000		Copper			
43BRTB-BD-1510	E_SPARE-3(25A)	EQUIPPED SPARE-3 (1 Ph_25A, MCB)	P+N+PE	25A	25.00	43BRTB-JA-9074	iC60N	C. Breaker C		2P2T	25.00	20.000		Copper			
43BRTB-BD-1510	E_SPARE-4 (63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	43BRTB-JA-9075	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1510	U_SPARE-3 (32A)	UN-EQUIPPED SPARE-3 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60H	C. Breaker C		4P4T	32.00	15.000		Copper			
43BRTB-BD-1510	U_SPARE-2 (63A)	UN-EQUIPPED SPARE-2 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00		iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1510	U_SPARE-1 (100A)	UN-EQUIPPED SPARE-1 (3 Ph_100A, MCCB)	3P+N+PE	100A	100.00		NSX100B	MCCB	Micrologic 5.2E	4P4T	100.00	25.000		Copper			

13.15 APPENDIX O- BOM For 43BRTB-BD-1520

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-2100	43BRTB-BD-1520	SDB IP Class II Tr.B (630A)	3P+N+PE	211kW	358.30	43BRTB-JA-2106	NSX630H	MCCB	Micrologic 5.3E	4P4T	630.00	70.000	43BRTB-CAP-1983/1984	Copper	2X3X(1x240)	2X(1x240)	1x240
43BRTB-BD-1520	11C1IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0268	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1638	Copper	3G6		
43BRTB-BD-1520	11C1IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0269	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1639	Copper	3G6		
43BRTB-BD-1520	11C1IC-CU-0003	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0270	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1640	Copper	3G6		
43BRTB-BD-1520	11C2IC-CU-0001	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0271	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1641	Copper	3G6		
43BRTB-BD-1520	11G2IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0272	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1642	Copper	3G6		
43BRTB-BD-1520	11G3IC-CU-0002	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0273	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1643	Copper	3G6		
43BRTB-BD-1520	11S1IC-CU-0100	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0275	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1644	Copper	3G6		
43BRTB-BD-1520	15VVIS-CU-0014	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0278	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1648	Copper	3G6		
43BRTB-BD-1520	343IPC-CU-0002	ACB 3, 4	P+N+PE	3kW	13.67	43BRTB-JA-0289	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1670	Copper	3G4		
43BRTB-BD-1520	343IPC-CU-2005	ACB-3, 4	P+N+PE	1.5kW	6.84	43BRTB-JA-0279	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1651	Copper	3G6		
43BRTB-BD-1520	343K00-CU-0002	TSCS	P+N+PE	4kW	18.23	43BRTB-JA-0281	iC60N	C. Breaker C		2P2T	32.00	20.000	43BRTB-CAP-1650	Copper	3G10		
43BRTB-BD-1520	343P00-CU-0002	ACB-4 PF	P+N+PE	4.5kW	20.51	43BRTB-JA-0286	iC60H	C. Breaker C		2P2T	40.00	30.000	43BRTB-CAP-1667	Copper	3G10		
43BRTB-BD-1520	343P00-CU-0004	ACB-4 PF	3P+N+PE	12kW	19.25	43BRTB-JA-0288	iC60L	C. Breaker C		4P4T	40.00	20.000	43BRTB-CAP-1671	Copper	5G16		
43BRTB-BD-1520	343S00-CU-0002	ACB-3 ST	P+N+PE	4.5kW	20.51	43BRTB-JA-0283	iC60H	C. Breaker C		2P2T	40.00	30.000	43BRTB-CAP-1666	Copper	3G10		
43BRTB-BD-1520	343S00-CU-0004	ACB-3 ST	3P+N+PE	12kW	19.25	43BRTB-JA-0285	iC60L	C. Breaker C		4P4T	40.00	20.000	43BRTB-CAP-1672	Copper	5G16		
43BRTB-BD-1520	410000-BP-7301	BB CWC - CW monitoring 1-IP (74-L3)	P+N+PE	1.2kW	6.11	43BRTB-JA-0507	iC60H	C. Breaker C		2P2T	40.00	30.000	43BRTB-CAP-1837	Copper	3G10		
43BRTB-BD-1520	410000-BP-7322	Plant Interlock Controller-BBMS-PF/CS-IP	P+N+PE	4kW	20.38	43BRTB-JA-0508	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1652	Copper	3G10		
43BRTB-BD-1520	410000-BP-7323	Switch complex Local-Dist.-IP (PF1)*	3P+N+PE	37.5kW	63.68	43BRTB-JA-0505	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1835	Copper	5G50		
43BRTB-BD-1520	410000-BP-7324	Switch complex Local-Dist.-IP (PF2, 3)*	3P+N+PE	46.8kW	79.47	43BRTB-JA-0506	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1836	Copper	5G50		
43BRTB-BD-1520	69AC74-CR-3001	Wall mounted Control Cubicle	P+N+PE	0.5kW	2.55	43BRTB-JA-0290	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1653	Copper	3G4		
43BRTB-BD-1520	43BRTB-JR-1520	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-1520	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000	43BRTB-CAP-2187	Copper	5G35		
43BRTB-BD-1520	6274ES-BP-3025	Sub-Distribution Panel Class II IP Train B	3P+N+PE	16.1kW	29.05	43BRTB-JA-0755	NG125N	C. Breaker C		4P4T	40.00	25.000	43BRTB-CAP-2240	Copper	5G25		
43BRTB-BD-1520	260000-CU-0110	Signal Conditioning Cubicle-CU-0110	P+N+PE	1.5kW	7.38	43BRTB-JA-0806	iC60N	C. Breaker C		2P2T	16.00	20.000	43BRTB-CAP-2302	Copper	3G4		
43BRTB-BD-1520	E_SPARE-1 (20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9076	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1520	E_SPARE-2 (20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9077	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1520	E_SPARE-3 (20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9078	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-1520	E_SPARE-4_(40A)	EQUIPPED SPARE-4 (3 Ph_40A, MCB)	3P+N+PE	40A	40.00	JA-9079	iC60L	C. Breaker C		4P4T	40.00	20.000		Copper			
43BRTB-BD-1520	E_SPARE-5_(63A)	EQUIPPED SPARE-5 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	JA-9080	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-1520	U_SPARE-2 (32A)	UN-EQUIPPED SPARE-2 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60H	C. Breaker C		4P4T	32.00	15.000		Copper			
43BRTB-BD-1520	U_SPARE-1 (100A)	UN-EQUIPPED SPARE-1 (3 Ph_100A, MCCB)	3P+N+PE	100A	100.00		NSX100B	MCCB	Micrologic 5.2E	4P4T	100.00	25.000		Copper			

13.16 APPENDIX P- BOM For 43BRTB-BD-2510

Upstream	Ref Mark	Description	Content	Consumption	IB	Ref Mark Device 1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable	Neutral	PE/PEN
43BRTB-BD-3100	43BRTB-BD-2510	SDB II CLASS II Tr.B (250A)	3P+N+PE	117kW	198.68	43BRTB-JA-3109	NSX250H	MCCB	Micrologic 5.2E	4P4T	250.00	70.000	43BRTB-CAP-2012/2013	Copper	3X(1x185)	1x185	1x185
43BRTB-BD-2510	11S1IC-CU-0101	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0740	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2164	Copper	3G4		
43BRTB-BD-2510	11S2IC-CU-0100	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0742	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2165	Copper	3G4		
43BRTB-BD-2510	11S2IC-CU-0101	Control Cubicle	P+N+PE	2kW	10.19	43BRTB-JA-0741	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2166	Copper	3G4		
43BRTB-BD-2510	343C00-CU-0002	ACB-1 CS	P+N+PE	4.5kW	20.51	43BRTB-JA-0678	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-2102	Copper	3G10		
43BRTB-BD-2510	343C00-CU-0004	ACB-1 CS	3P+N+PE	12kW	19.25	43BRTB-JA-0679	iC60N	C. Breaker C		4P4T	40.00	10.000	43BRTB-CAP-2104	Copper	5G16		
43BRTB-BD-2510	343IPC-CU-2001	ACB-1, 2, 5	P+N+PE	2kW	9.12	43BRTB-JA-0680	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-2105	Copper	3G4		
43BRTB-BD-2510	343T00-CU-0002	ACB-2 TF	P+N+PE	4.5kW	20.51	43BRTB-JA-0682	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-2106	Copper	3G10		
43BRTB-BD-2510	343T00-CU-0004	ACB-2 TF	3P+N+PE	12kW	19.25	43BRTB-JA-0687	iC60H	C. Breaker C		4P4T	40.00	15.000	43BRTB-CAP-2108	Copper	5G16		
43BRTB-BD-2510	343U00-CU-0004	ACB-5 CP	3P+N+PE	12kW	19.25	43BRTB-JA-0684	iC60H	C. Breaker C		4P4T	40.00	15.000	43BRTB-CAP-2111	Copper	5G16		
43BRTB-BD-2510	410000-BP-7302	BB CWC - CW monitoring 2-IP (74-L3)	P+N+PE	1.2kW	6.11	43BRTB-JA-0351	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1683	Copper	3G16		
43BRTB-BD-2510	410000-BP-7303	BB CWC - CW monitoring 3-IP (74-L3)	P+N+PE	1.5kW	7.64	43BRTB-JA-0352	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1684	Copper	3G10		
43BRTB-BD-2510	410000-BP-7304	BB CWC - CW monitoring 4-IP (74-L3)	P+N+PE	.6kW	3.06	43BRTB-JA-0353	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1685	Copper	3G10		
43BRTB-BD-2510	410000-BP-7321	Plant Interlock Controller-BBMS-TF/CC-IP	P+N+PE	4kW	20.38	43BRTB-JA-0346	iC60N	C. Breaker C		2P2T	40.00	20.000	43BRTB-CAP-1687	Copper	3G10		
43BRTB-BD-2510	410000-BP-7326	Switch complex Local-Dist.-IP (CS3U)*	3P+N+PE	39.5kW	67.07	43BRTB-JA-0350	NSX100F	MCCB	Micrologic 5.2E	4P4T	100.00	36.000	43BRTB-CAP-1686	Copper	5G50		
43BRTB-BD-2510	450574-CU-0017	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0345	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1696	Copper	3G4		
43BRTB-BD-2510	450574-CU-0018	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0349	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1697	Copper	3G4		
43BRTB-BD-2510	450574-CU-0019	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0348	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1698	Copper	3G4		
43BRTB-BD-2510	450574-CU-0020	Network Cubicle	P+N+PE	1.5kW	7.64	43BRTB-JA-0347	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1695	Copper	3G4		
43BRTB-BD-2510	4801SR-CU-0026	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0344	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1694	Copper	3G4		
43BRTB-BD-2510	4801SR-CU-0027	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0342	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1693	Copper	3G4		
43BRTB-BD-2510	4802CM-CU-0024	Control Cubicle	P+N+PE	1kW	5.09	43BRTB-JA-0343	iC60N	C. Breaker C		2P2T	20.00	20.000	43BRTB-CAP-1692	Copper	3G4		
43BRTB-BD-2510	43BRTB-JR-2510	DEHN-DG M TNS 275 (952400) Type 2 SPD	3P+N+PE	60A	60.00	43BRTB-JF-2510	INFC 125 22x58	Fuse gG	gG	4P4F	125.00	5.000	43BRTB-CAP-2189	Copper	5G35		
43BRTB-BD-2510	E-SPARE -1(20A)	EQUIPPED SPARE-1 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9085	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-2510	E-SPARE -2(20A)	EQUIPPED SPARE-2 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9086	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-2510	E-SPARE -3(20A)	EQUIPPED SPARE-3 (1 Ph_20A, MCB)	P+N+PE	20A	20.00	JA-9087	iC60N	C. Breaker C		2P2T	20.00	20.000		Copper			
43BRTB-BD-2510	E-SPARE -4(63A)	EQUIPPED SPARE-4 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00	JA-9088	iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			
43BRTB-BD-2510	U-SPARE- 1 (32A)	UN-EQUIPPED SPARE-1 (3 Ph_32A, MCB)	3P+N+PE	32A	32.00		iC60H	C. Breaker C		4P4T	32.00	15.000		Copper			
43BRTB-BD-2510	U-SPARE- 2 (63A)	UN-EQUIPPED SPARE-2 (3 Ph_63A, MCB)	3P+N+PE	63A	63.00		iC60H	C. Breaker C		4P4T	63.00	15.000		Copper			

13.17 APPENDIX P- BOM For 53PTCP-BD-0001

Upstream	Ref Mark	Description	Content	Consumption	IB	IZ	Ref Mark Device1	Prot Device	Type	Release	Tripping poles	Rating	Icu	Cable Ref Mark	Core	Cable
43BRTB-BD-1510	53PTCP-BD-0001	BD for Class II B74	3P+N+PE	38.5kW	65.38	99.50	43BRTB-JA-0282	NSX100H	MCCB	Micrologic 5.2E	4P4T	100.00	70.000	43BRTB-CAP-1834	Copper	5G50
53PTCP-BD-0001	5301CS-CU-0001	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0008	Copper	3G4
53PTCP-BD-0001	5301CS-CU-0002	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0080	Copper	3G4
53PTCP-BD-0001	5301CS-CU-0003	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0081	Copper	3G4
53PTCP-BD-0001	5301CS-CU-0004	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0082	Copper	3G4
53PTCP-BD-0001	5301CS-CU-0005	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0083	Copper	3G4
53PTCP-BD-0001	5301CS-CU-0006	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0084	Copper	3G4
53PTCP-BD-0001	5302CS-CU-0001	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0016	Copper	3G4
53PTCP-BD-0001	5302CS-CU-0002	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0010	Copper	3G4
53PTCP-BD-0001	5302CS-CU-0003	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0011	Copper	3G4
53PTCP-BD-0001	5302CS-CU-0004	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0012	Copper	3G4
53PTCP-BD-0001	5302CS-CU-0005	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0013	Copper	3G4
53PTCP-BD-0001	5302CS-CU-0006	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0014	Copper	3G4
53PTCP-BD-0001	5303CS-CU-0001	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0024	Copper	3G4
53PTCP-BD-0001	5303CS-CU-0002	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0018	Copper	3G4
53PTCP-BD-0001	5303CS-CU-0003	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0019	Copper	3G4
53PTCP-BD-0001	5303CS-CU-0004	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0020	Copper	3G4
53PTCP-BD-0001	5303CS-CU-0005	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0021	Copper	3G4
53PTCP-BD-0001	5303CS-CU-0006	Control Cubicle	P+N+PE	1.5kW	7.64	25.19		iC60N	C. Breaker C		2P2T	16.00	20.000	53PTCP-CAP-0022	Copper	3G4
53PTCP-BD-0001	SPARE-1	Control Cubicle	P+N+PE	1.5kW	7.64			iC60N	C. Breaker C		2P2T	16.00			Copper	3G4
53PTCP-BD-0001	SPARE-2	Control Cubicle	P+N+PE	1.5kW	7.64			iC60N	C. Breaker C		2P2T	16.00			Copper	3G4
53PTCP-BD-0001	SPARE-3	Control Cubicle	P+N+PE	1.5kW	7.64			iC60N	C. Breaker C		2P2T	16.00			Copper	3G4
53PTCP-BD-0001	SPARE-4	Control Cubicle	P+N+PE	1.5kW	7.64			iC60N	C. Breaker C		2P2T	16.00			Copper	3G4
53PTCP-BD-0001	SPARE-5	Control Cubicle	P+N+PE	1.5kW	7.64			iC60N	C. Breaker C		2P2T	16.00			Copper	3G4
53PTCP-BD-0001	SPARE-6	Control Cubicle	P+N+PE	1.5kW	7.64			iC60N	C. Breaker C		2P2T	16.00			Copper	3G4

13.18 APPENDIX Q- BOM I&C Equipment

S.No	PBS	Tag	TTT Code	Room Details	GBS Room	Equipment for monitoring	Type I&C	RIO Number of Signals	Cables	Connection to
1	43	43BRTB-BD-1120	BD	74-B2	74-B2-07	Equipment for monitoring: - 2.5mm ² DBU - 40 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 1 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 1 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 1	RIO	12	1 cables MS1016LN 1 cable FS48F9LN	43BRTA-BD-1410
2	43	43BRTB-BD-1110	BD	74-B2	74-B2-03	Equipment for monitoring: - 2.5mm ² DBU - 40 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 1 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 1 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 1	RIO	18	2 cables MS1016LN 1 cable FS48F9LN	43BRTA-BD-1410

3	43	43BRTB-BD-1210	BD	74-B1	74-B1-03	Equipment for monitoring: - 2.5mm² DBU - 40 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 1 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 1 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 1	RIO	18	2 cables MS1016LN 1 cable FS48F9LN	43BRTA-BD-1410
4	43	43BRTB-BD-1220	BD	74-B1-04	74-B1-04	Equipment for monitoring: - 2.5mm² DBU - 40 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 1 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 1 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 1	RIO	18	2 cables MS1016LN 1 cable FS48F9LN	43BRTA-BD-1410
5	43	43BRTB-BD-1310	BD	74-L1-04	74-L1-03	Equipment for monitoring: - 2.5mm² DBU - 30 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 1 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 1 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 1	RIO	12	1 cables MS1016LN 1 cable FS48F9LN	43BRTA-BD-1410

6	43	43BRTB-BD-1410	BD	74-L2-03	74-L2-03	Equipment for monitoring: - 2.5mm² DBU - 50 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 2 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 1 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 1 - S7-1500, mounting rail 245 mm (9.6"), 6ES7590-1AC40-0AA0 - 1 - PS 60W 120/230VAC, 6ES7507-0RA00-0AB0 - 1 - CPU 1516-3 PN/DP, 2MB Prog., 7,5MB Data, 6ES7516-3AP03-0AB0 - 1 - Communication processor CP 1543-1, 6GK7543-1AX10-0XE0 - 1 - Memory card for CPU 1500 24 MB, 6ES7954-8LF04-0AA0 - 1	PLC	24	3 cables MS1016LN 1 cable FS48F9LN	450574-CNP-0033
7	43	43BRTB-BD-1420	BD	74-L2-04	74-L2-04	Equipment for monitoring: - 2.5mm² DBU - 70 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 1 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 2 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 2	PLC	30	4 cables MS1016LN 1 cable FS48F9LN	43BRTB-BD-1410

8	43	43BRTB-BD-1510	BD	74-L3-01	74-L3-01	Equipment for monitoring: - 2.5mm² DBU - 70 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 1 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 2 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 2	RIO	30	4 cables MS1016LN 1 cable FS48F9LN	43BRTA-BD-1480
9	43	43BRTB-BD-1520	BD	74-L3-01	74-L3-01	Equipment for monitoring: - 2.5mm² DBU - 70 - Optical Small Patch Box - 1 - Managed Switches Hirschmann BRS30-08040000-STCZ99HHSEAXX.X. - 1 - Circuit Breaker, 2p/10A iC60N "C" - 1 - Circuit Breaker, 2p/1A iDT40T "C" - 3 - SIMATIC system rail, length 482,6mm, 6ES7193-6MR00-0AA0-1 - SITOP PSU8200 24 V/10 A stabilized power supply input: 120/230 V AC output: 24 V DC/10 A 6EP3334-8SB00-0AY0 - 1 - S7-1500, mounting rail 482.6 mm (19") 6ES7590-1AE80-0AA0 - 1 - SIMATIC ET 200MP, interface module IM 155-5 MF HF, 6ES7155-5MU00-0CN0 - 1 - SIMATIC ET 200SP, BusAdapter BA 2xRJ45, 6ES7193-6AR00-0AA0 - 1 - SIMATIC S7-1500, digital input module DI 32x24 V DC HF, 6ES7521-1BL00-0AB0 - 2 - SIMATIC S7-1500, Front connector Screw-type system, 6ES7592-1AM00-0XB0 - 2	RIO	30	4 cables MS1016LN 1 cable FS48F9LN	43BRTA-BD-1480