Attachment A

FACILITY EQUIPMENT

Mantle Rock Solar LLC

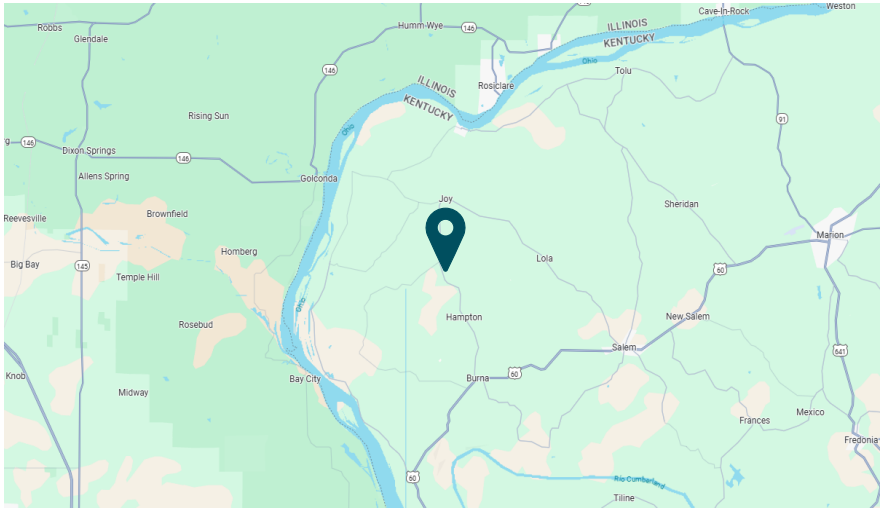
Livingston County, Kentucky

Atlantica
Sustainable Infrastructure

Project Mantle Rock

12 August 2025

1. Project Introduction & Location



Main Project Characteristics	
Project Name	Project Mantle Rock
Country	USA
Location	Livingston County, Kentucky
Interconnection Capacity (MWac)	42.0
Storage Capacity (MWh)	168.0
Total Project Area (Acres)	4.0
Useful Project Area (Acres)	4.0
POI	Burna Tap - Joy 69 kV Tansmission Line

The information presented in this document is intended for conceptual purposes only and reflects an early-stage development perspective. It aims to provide an initial vision of what the project might entail in the future. Please be aware that all details, projections, and assumptions are provisional and may be subject to change as the project advances. This document is not binding and should not be interpreted as a definitive representation of the project's final scope, design, or outcomes.

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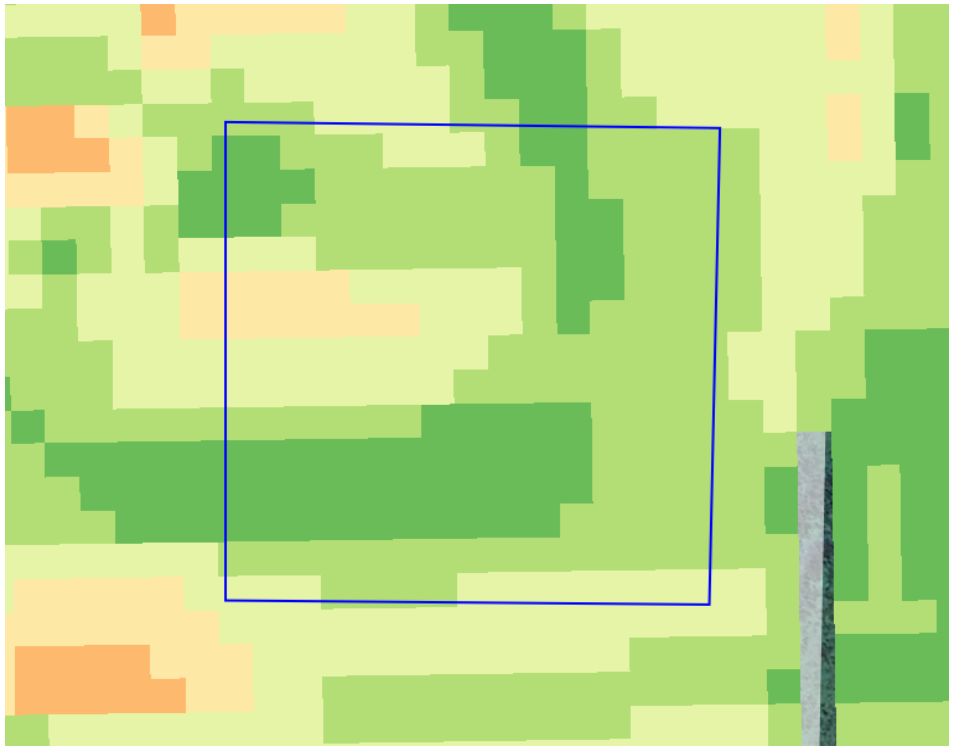
2. Slope Analysis



Results of Slope Analysis		
Level	Low Range	High Range
1	0.0%	2.5%
2	2.5%	5.0%
3	5.0%	7.5%
4	7.5%	10.0%
5	10.0%	12.5%
6	12.5%	15.0%

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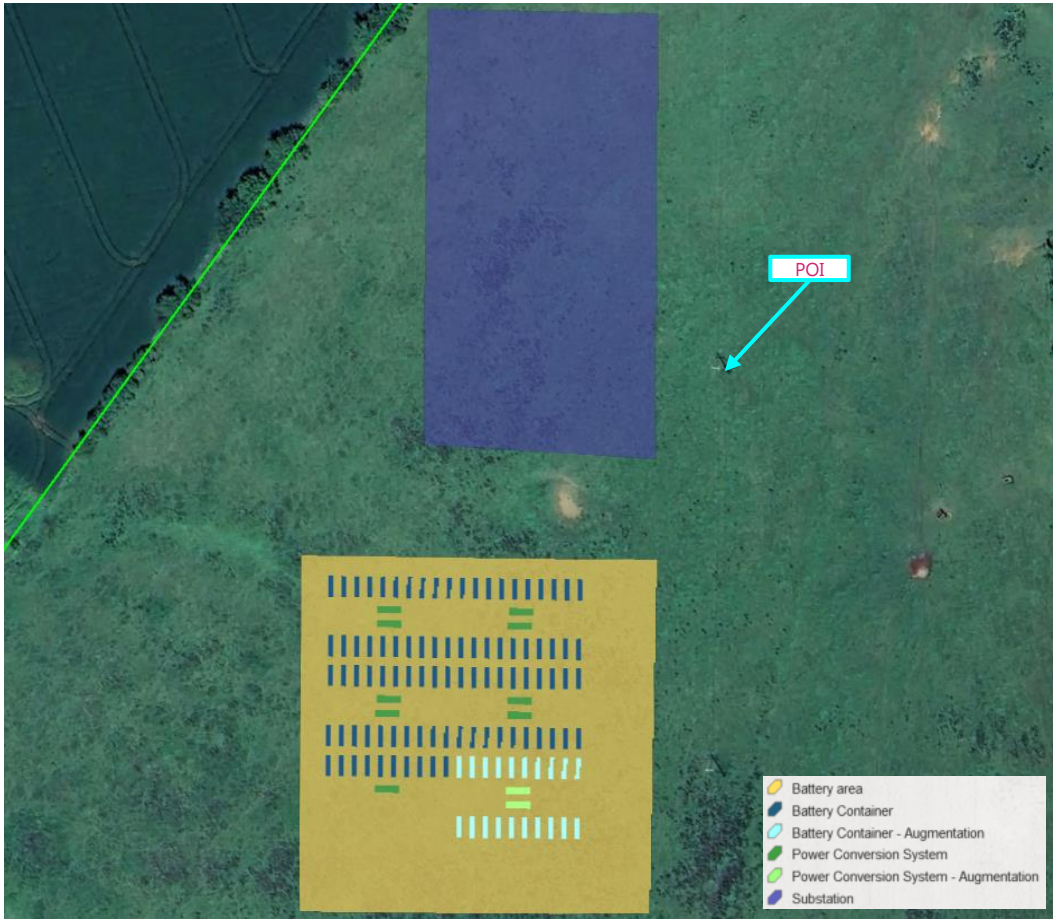
3. Conceptual Layout



Initial Design Specifications	
Nominal Power at POI	42.00 MWac
Hours	4 h
Required MWh at POI	168.00 MWh
5 Year Overbuild	52.68 MWh
BESS Equipment Manufacturer	Yes
BESS Equipment Enclosure Model	Fluence
Nameplate Capacity per Battery Enclosure [kWh]	Gridstack Pro 2000
# of BESS Equipment	84
Installed Capacity BOL	204.6 MWh
Useful Capacity BOL	168.1 MWh
PCS Required	Yes
PCS Model	EPC Power M10 (Includes MVT)
# of PCS	9
Augmentation Considerations	
# of BESS Enclosures for Augmentation	24
Augmentation Installed Capacity BOL	58.5 MWh
Augmentation Useful Capacity BOL	48.0 MWh

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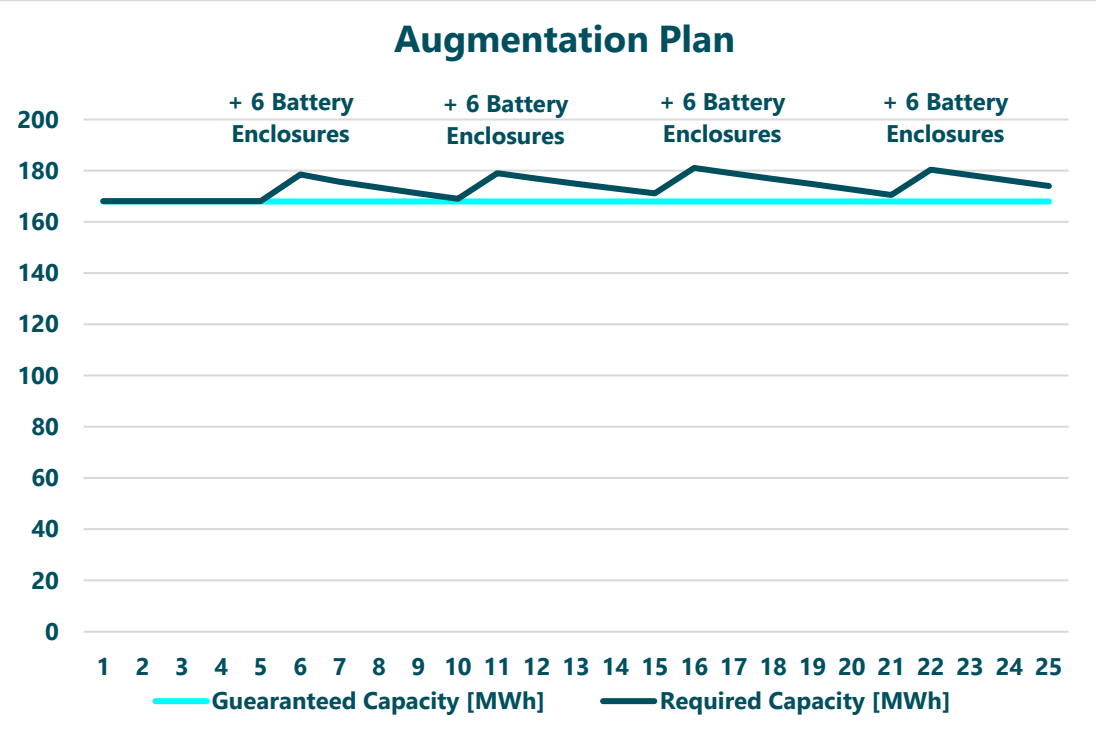
Project Mantle Rock

12 August 2025

4. Capacity Curves and Augmentation Strategy



Capacity Curve & Augmentation Strategy				
Year	Guaranteed Retention Curve	Installed Capacity [MWh]	Aug. DC Capacity [MWh]	Guaranteed Useful Capacity [MWh]
Year 1	100.0%	204.6		168.12
Year 2	100.0%	204.6		168.12
Year 3	100.0%	204.6		168.12
Year 4	100.0%	204.6		168.12
Year 5	100.0%	204.6		168.12
Year 6	99.0%	204.6	14.62	178.47
Year 7	97.4%	204.6		175.68
Year 8	96.0%	204.6		173.39
Year 9	94.7%	204.6		171.19
Year 10	93.4%	204.6		169.08
Year 11	92.2%	204.6	14.62	178.97
Year 12	91.1%	204.6		176.87
Year 13	90.0%	204.6		174.90
Year 14	89.0%	204.6		173.02
Year 15	88.0%	204.6		171.13
Year 16	86.9%	204.6	14.62	181.09
Year 17	85.8%	204.6		178.91
Year 18	84.7%	204.6		176.80
Year 19	83.7%	204.6		174.73
Year 20	82.6%	204.6		172.68
Year 21	81.6%	204.6		170.54
Year 22	80.5%	204.6	14.62	180.35
Year 23	79.5%	204.6		178.23
Year 24	78.5%	204.6		176.13
Year 25	77.5%	204.6		174.07

FLUENCE
A Siemens and AES Company

Fluence Gridstack Pro™

Built for the next era of utility scale energy storage

GRIDSTACK PRO OVERVIEW

As the industry shifts from MW-sized projects to GW-scale portfolios, storage systems must meet new standards in delivery, performance, and safety. Gridstack Pro provides utilities, developers, and independent power producers with a factory-built, configurable solution that delivers higher site density, easier maintenance, and lower operating costs. With GWh of systems operating, Fluence is trusted by leading power generators to deliver safe systems and reliable grid services on the largest, most complex storage projects.

Next-Level Flexibility

Diversified supply chain and Fluence Battery Management System (BMS) enable the right-fit solution and project delivery assurance

Total Intelligence

Enhanced performance and lower operating costs through improved State of Charge (SOC) accuracy, and pre-integrated Asset Performance Management (APM)

Optimized Design

The right balance of density, speed of installation, and ease of logistics, with uncompromised safety and security

Technical Specifications

BATTERY PACK OPTIONS	2000 SERIES	5000 SERIES	
Battery Cells	3XX Ah	3XX Ah	5XX Ah
Energy Capacity	2436 kWh	4872 - 5016 kWh	5644 kWh
Battery Enclosure Dimensions (H x L x D)	2550 x 7537 x 1734 mm (8.37 x 24.73 x 5.69 ft.)	2896 x 6820 x 2438 mm (9.5 x 22.37 x 8 ft.)	2896 x 6058 x 2438 mm (9.5 x 20 x 8 ft.)
Battery Enclosure Weight without coolant	~ 22,400 kg - 23,300 kg	43,500 kg	45,500 kg
Aux. Peak Load	16.7 kW (2-hr); 9.5 kW (4-hr)	34 kW (2-hr); 17 kW (4-hr)	
Maximum CP Rate	0.5	0.5	0.25
PERFORMANCE & SAFETY SPECS			
Discharge Duration	2 hours - 4 hours - 6 hours - 8 hours		
DC Voltage	Up to 1500V		
System Response Time	150ms		
Round Trip Efficiency	> 87%		
Availability	> 97%		
Grid Frequency	50/60 Hz		
Seismic Rating	Compliant with IEEE693 High, meets International Building Code (IBC), California Building Code (CBC) requirements per Seismic Design Category (SDC) D, Conforms to ASCE 7-10 standard		
Operating Temp. range	-20 °C to +50 °C (-4 °F to +122 °F)		
Certifications	UL/IEC		
Battery enclosure IP Rating	IP55		
Altitude	2,000 meters (without derating)		
Thermal Management	Liquid cooled		
Certifications and Codes	UL1741, UL1741SA/IEEE1547, NFPA68/69/72/855, UL 9540A Cell, Module, Unit		
SOFTWARE			
BMS, System Control and Market Applications	Fluence OS7		
Communication Protocol	Modbus, DNP3, and OPC UA		
Analytics and Optimization platform	Nispera		
Bidding Optimization Software	Mosaic*		

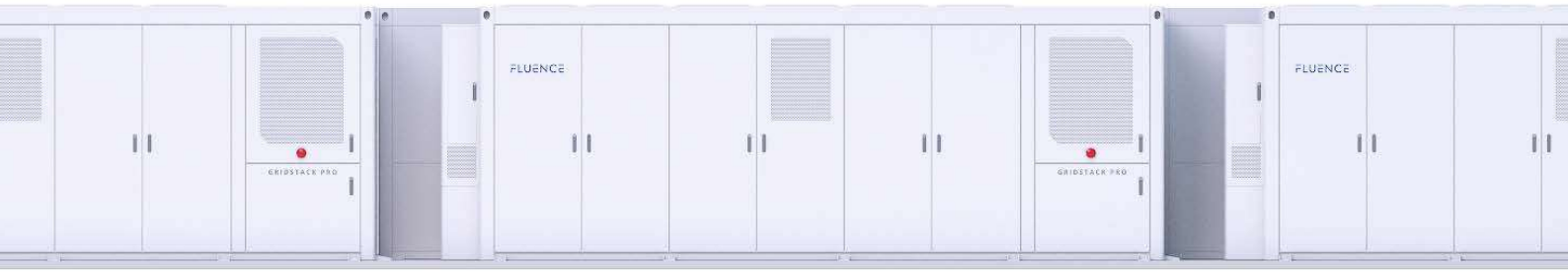
Note: Specifications in the above table are design estimates only and are not guaranteed. Contact Fluence for a project-specific estimate as final values depend on system design, location, and use case.

**Mosaic is an add-on currently available for assets in the NEM, CAISO, and ERCOT*

Next Level Flexibility

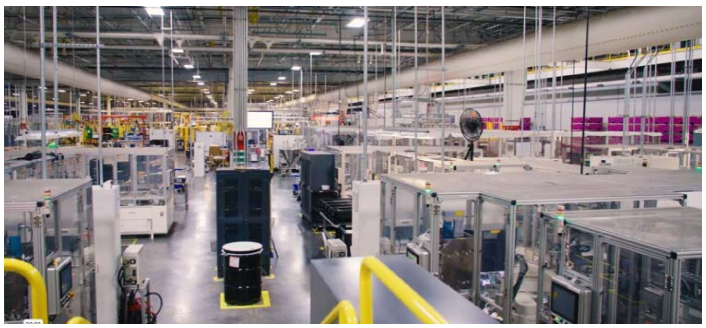
The Fluence-designed Battery Packs combine state-of-the-art battery modules, management systems, and monitoring equipment into a unified product architecture designed to improve operations through advanced thermal and state of charge (SOC) management. The integrated design ensures consistent product performance and safety at the system level while reducing the time it takes to introduce new battery technology from a growing base of global battery manufacturers.

With flexibility and reliability in mind, Gridstack Pro incorporates advanced features allowing for grid forming capabilities. This allows for optimization of sites and systems that operate entirely or partially off-grid, supporting storage, load, solar, and other generators.



Integrated Global Supply Chain

At Fluence we invest heavily in technology, systems engineering, product development, and R&D to strengthen our market leadership and enhance customer value. Gridstack Pro is built with Fluence Module, BMS, electronics, and software, free from components from countries of concern, safeguarding against cybersecurity and mitigating policy issues.

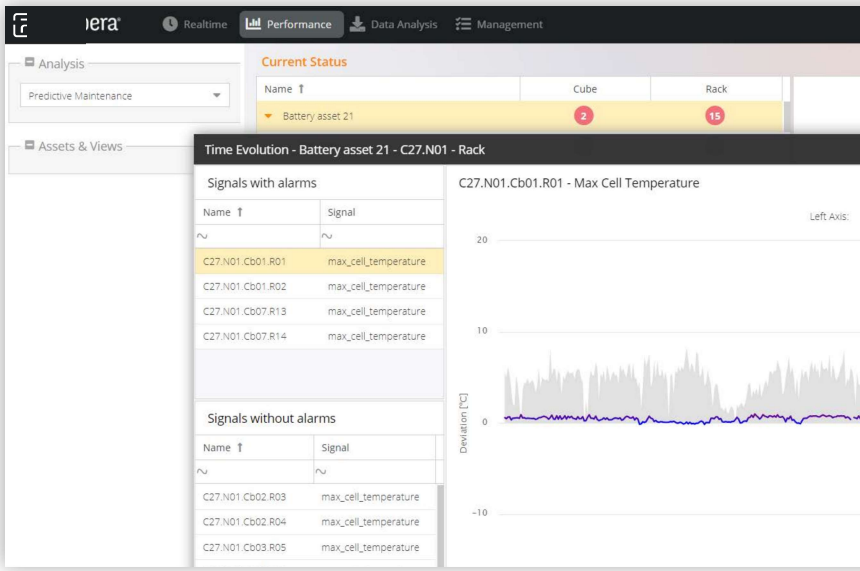


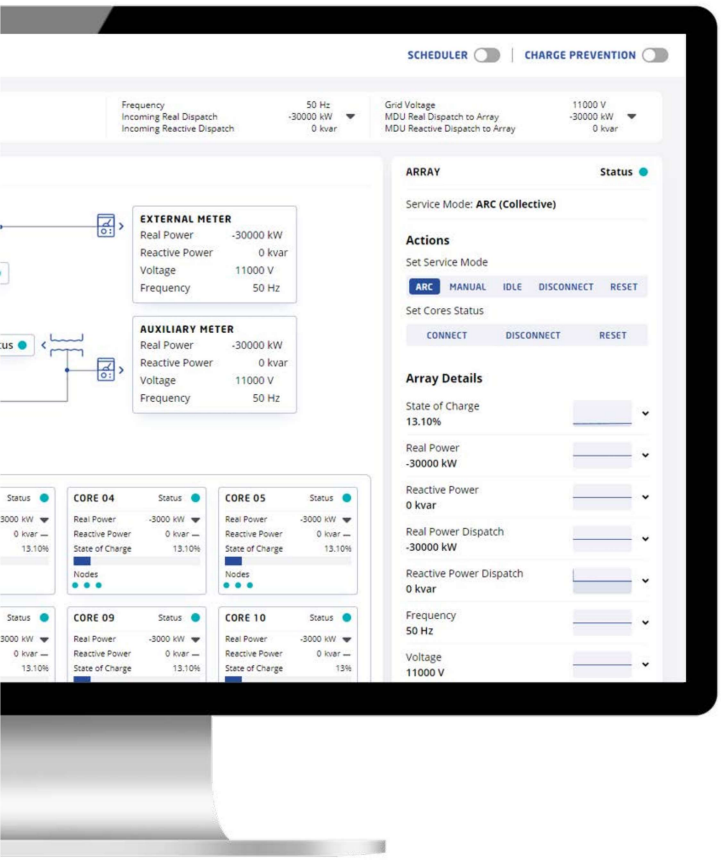
Total Intelligence

Enhanced Performance

Gridstack Pro delivers granular data access and plug- and-play API connectors for our cloud-based software - Nispera.

Pre-integration with Nispera enables customers to drive down costs and increase revenue through advanced asset performance management and predictive maintenance software. With access to the Nispera executive dashboard and real-time insights, alongside predictive maintenance features, customers can gain valuable oversight of their assets, facilitating pro-active decision-making and streamlined operations.





Fluence OS

Fully integrated controls with over 3 million operating hours – standard with all Gridstack Pro systems

SYSTEM CONTROL

Fully integrated controls system, including hardware and software, for the day-to-day management and dispatch of your storage system

SYSTEM MONITORING

Comprehensive data collection at every level of the storage system continuously monitors, detects, and alerts operators to potential anomalies

EXTERNAL INTEGRATION

Integration with external systems (ISO's, customer EMS, historian software, etc.) and 3rd party software applications via APIs and common protocols

ASSET PROTECTION

Enterprise-class network security and firewall capabilities keep critical grid infrastructure secure and support international cybersecurity standards

Optimized Design Balancing Density, Installation, and Maintenance

The right balance of density, speed of installation, and ease of logistics: the Gridstack Pro system is designed to maximize density, enabling more MWh per square foot. Gridstack Pro lowers balance of system costs while maintaining ease of shipping and installation by optimizing systems to reduce connections, inverters, transformers, and associated medium voltage (MV) infrastructure. Additionally, a two-thirds reduction in chillers minimizes preventative maintenance requirements. Gridstack Pro delivers up to 40% improved density for a 100MW, 4hr project, enabling more MWh in less space.

Gridstack Pro is designed for ease of transportation and logistics:

- Standard ISO sized containers for smooth logistics
- Manage of load sizes for ease of transport according to site regulations
- Global procurement and supply chain support throughout the whole logistics process
- Designed for crane transportation allowing easy maneuvering on site

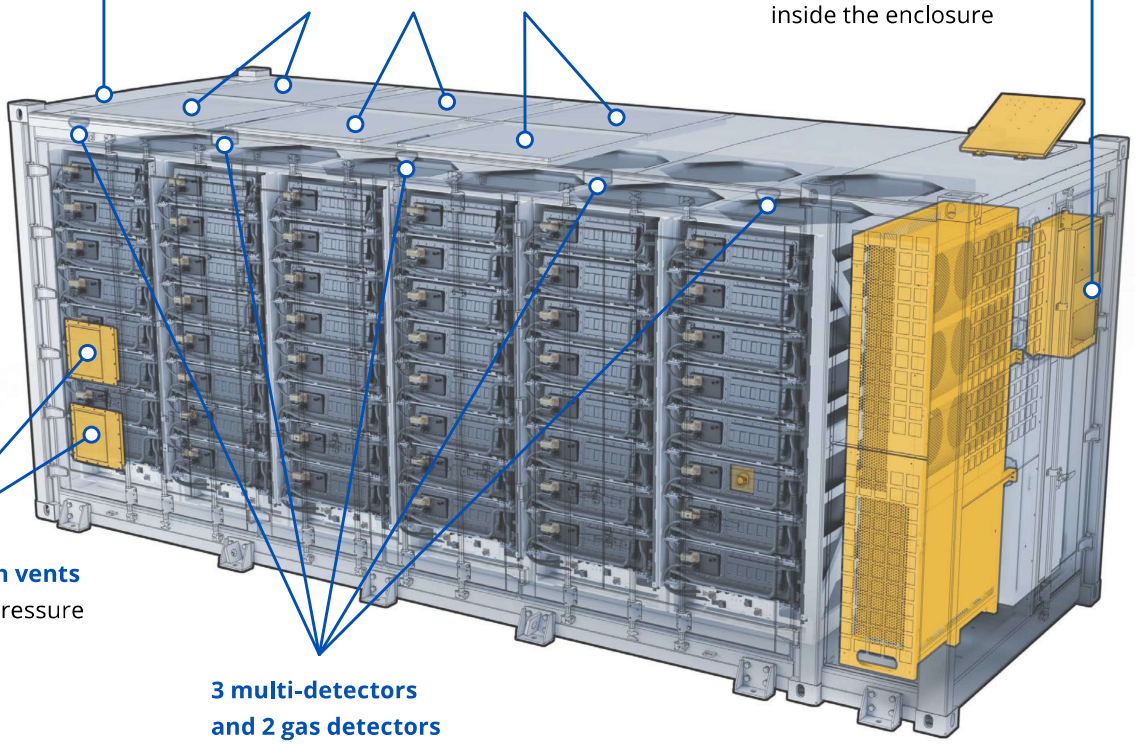
Uncompromising Safety

Gridstack Pro is designed to meet and exceed industry standards in safety certification and fire testing, including UL9540, UL9540A, NFPA-855, large scale burn testing, and more. With more than a decade of experience deploying and operating energy storage systems for our customers globally, the Fluence fleet has more than 2.5 million hours of operation with a strong safety and availability record.

Steel outer structure & **fiberglass insulation** for thermal performance

6 deflagration panels (positioned) for explosion protection per NFPA 68 and large-scale tested

Chiller and HVAC System aids battery cooling and maintains ambient temperature and humidity inside the enclosure



Active ventilation vents create a positive pressure during off gassing

3 multi-detectors and 2 gas detectors for CO/smoke/heat/H2

Fluence Energy, Inc. (Nasdaq: FLNC) is a global market leader delivering intelligent energy storage and optimization software for renewables and storage. Our solutions and operational services are helping to create a more resilient grid and unlock the full potential of renewable portfolios. With gigawatts of projects successfully contracted, deployed, and under management across nearly 50 markets, we are transforming the way we power our world for a more sustainable future.

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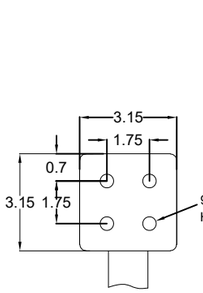
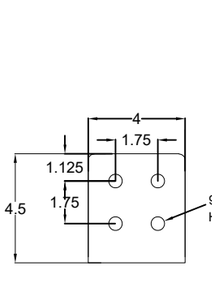
BR-042-04-EN

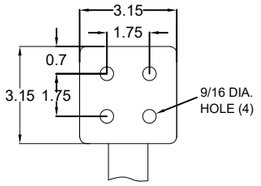
REVISIONS			
NO.	DESCRIPTION	DATE	APPD.
1			
2			



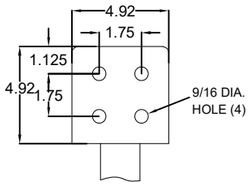
TIN PLATED H.V NEUTRAL PLATE-TYPE DETAIL



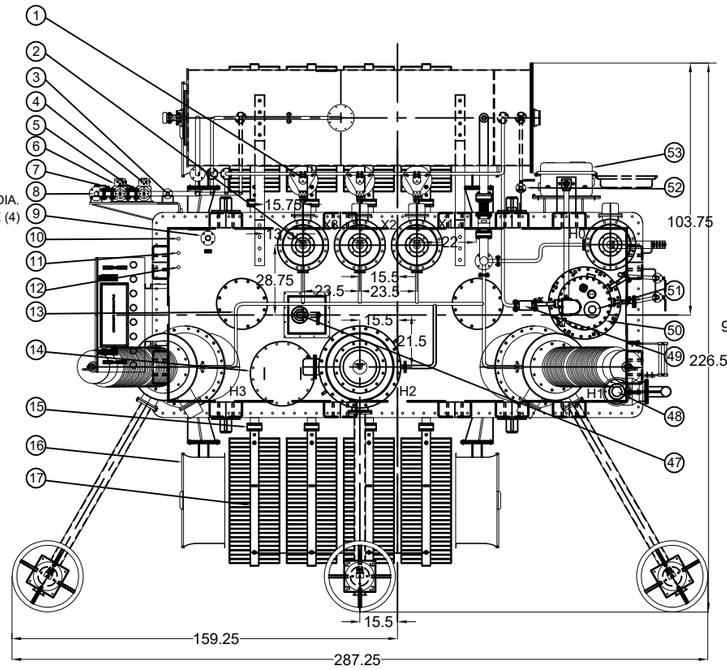
GROUND PAD

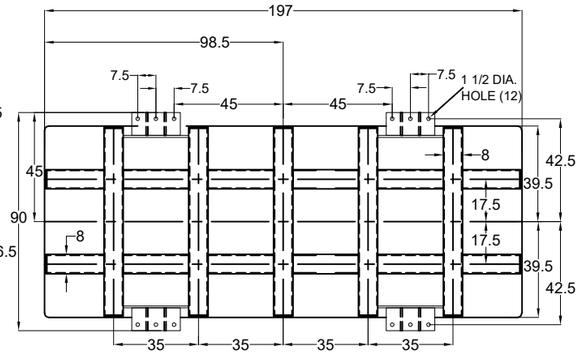


TIN PLATED H.V. PLATE-TYPE DETAIL

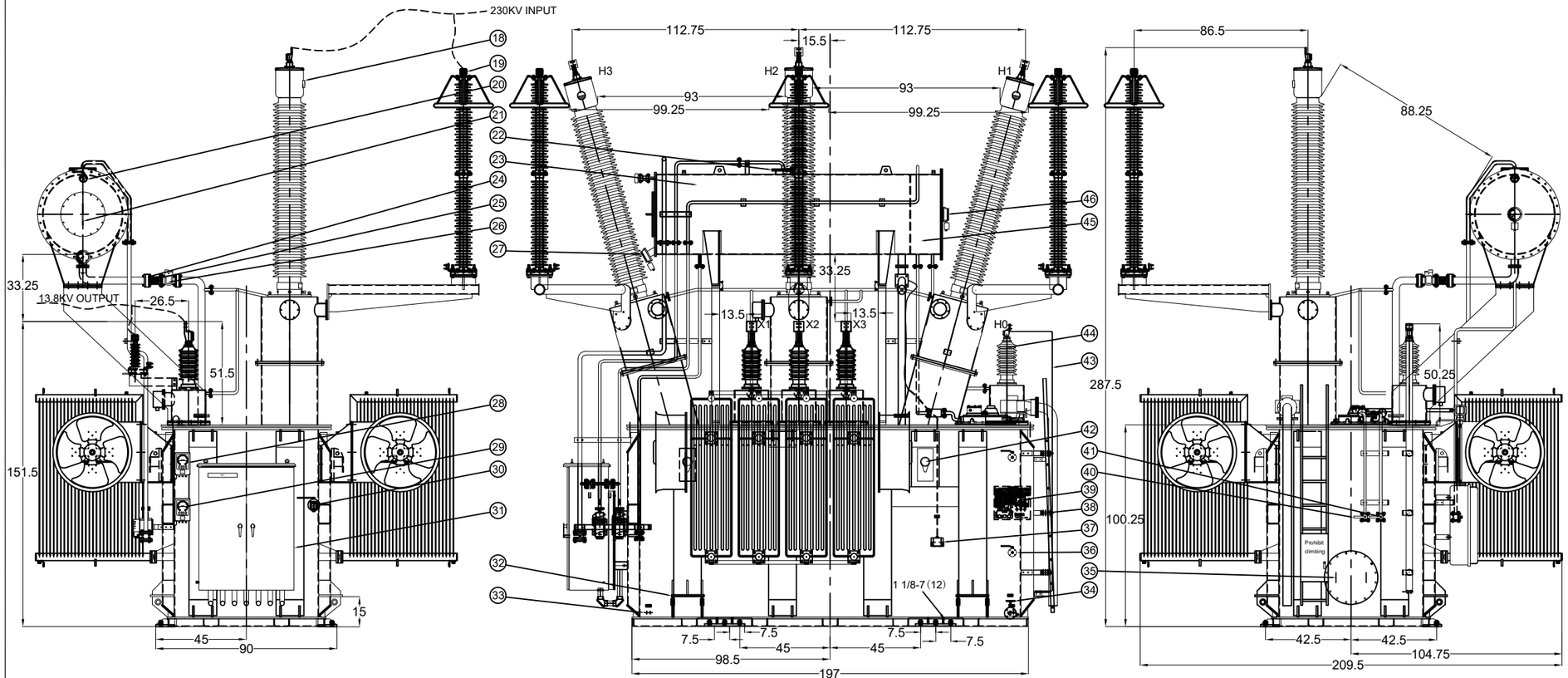


TIN PLATED L.V. PLATE-TYPE DETAIL





VIEW UNDERSIDE OF BASE



BILL OF MATERIAL

ITEM	MODEL	MANUFACTURER	DESCRIPTION	QTY.
1	YH10W-18	JINNIU	L.V. ARRESTER(RATING 18 kV MCOV 15.3 kV rms)	3
2	BFWC-40.5/2000	ZHIDA	L.V. BUSHING (40.5KV CLASS, 200 KV BIL)	8
3	SIZE: 1"	TBEA	DRAINING AND FILLING BALL-TYPE VALVE FOR MAIN CONSERVATOR	1
4	STB000	QUALITROL	DEHYDRATING BREATHER FOR OLTC CONSERVATOR	1
5	SIZE: 1"	TBEA	CONNECT BALL-TYPE VALVE FOR OLTC CONSERVATOR AND RUBBER BLADDER	1
6	STB000	QUALITROL	DEHYDRATING BREATHER FOR MAIN CONSERVATOR	1
7	SIZE: 1"	TBEA	CONNECT BALL-TYPE VALVE FOR MAIN CONSERVATOR AND RUBBER BLADDER	1
8	SIZE: 2"	TBEA	VACUUM BALL-TYPE VALVE FROM CONSERVATOR	1
9	SIZE: 2"	TBEA	FLANGE CONNECTION BALL-TYPE VALVE FOR TOP FILTER	1
10		DAELIM	POCKET FOR WTI ELEMENT	1
11		DAELIM	POCKET FOR OTI ELEMENT	1
12		DAELIM	POCKET FOR SPARE ELEMENT	1
13	SIZE: 1"	DAELIM	PIPING TO CONSERVATOR	1
14	SIZE: 21.25"	DAELIM	MANHOLE (BOLTED AND GASKETED)	1
15	SIZE: 3.15"	TBEA	RADIATOR BUTTERFLY VALVE	16
16	CFZ-9Q-10	ERG	COOLING FANS (SINGLE- PHASE, 60 HERTZ, 240VOLT)	4
17	PCJ2000-30/520	DAELIM	COOLING RADIATORS (REMOVABLE WITH ISOLATION / SHUTOFF VALVES)	8
18	BRLW-252/630-4	ZHIDA	H.V. BUSHING (252 KV CLASS, 1050 KV BIL)	3
19	YH10W-192	JINNIU	H.V. ARRESTER(RATING 192 kV MCOV 152 kV rms)	3
20	050-35E	QUALITROL	PRESSURE/VACUUM GAUGE	1
21	SIZE: 17.715"	DAELIM	MANHOLE FOR CONSERVATOR	1
22		JIANGSHU SIRUI	RUBBER BLADDER FOR CONSERVATOR	1
23	Ø39.365"x126"	DAELIM	MAIN CONSERVATOR SYSTEM	1
24	SIZE: 3.15"	TBEA	ISOLATING VALVE FOR CONSERVATOR	2
25	SIZE: 3.15"	JIANGYINGJIAYU	FLEXIBLE PIPE	1
26	BC-80	EMB	RELAY BUCHHOLZ (WITH ALARM AND TRIP CONTACTS)	1
27	042	QUALITROL	LIQUID LEVEL GAUGE FOR MAIN CONSERVATOR (WITH ALARM CONTACTS)	1
28	AKM34	QUALITROL	OIL TEMPERATURE GAUGE	1
29	AKM35	QUALITROL	WTI TEMPERATURE GAUGE	1
30	900	QUALITROL	SUDDEN PRESSURE RELAY(WITH SEAL-IN RELAY 909)	1
31		DAELIM	STAINLESS STEEL CONTROL TERMINAL BOX	1
32		DAELIM	JACKING PAD	4
33		DAELIM	ANSI 4-HOLE STAINLESS STEEL GROUND PAD	2
34	SIZE: 2"	TBEA	FLANGE CONNECTION GLOBE-TYPE VALVE WITH SAMPLING DEVICE FOR DRAIN	1
35	SIZE: 21.25"	DAELIM	MANHOLE (BOLTED AND GASKETED)	1
36	SIZE: 1"	TBEA	CONNECT BALL-TYPE VALVE FOR DGA (QUALITROL TM8)	2
37		EMB	GAS SAMPLER	1
38	FZ1-10	DAXIN	STAND-OFF INSULATOR FOR H.V NEUTRAL COPPER BAR	3
39		DAELIM	STAINLESS STEEL DIAGRAM NAMEPLATE	1
40	SIZE: 1"	TBEA	DRAINING CONNECT BALL-TYPE VALVE FOR OLTC	1
41	SIZE: 1"	TBEA	FILINING CONNECT BALL-TYPE VALVE FOR OLTC	1
42		DAELIM	LIFTHOOK	4
43	15/64"X3.15"	DAELIM	COPPER BAR FOR H.V NEUTRAL GROUND	1
44	BFWC-40.5/630	ZHIDA	H.V. NEUTRAL BUSHING (40.5KV CLASS, 200 KV BIL)	1
45	Ø39.365"x15.35"	DAELIM	OLTC CONSERVATOR SYSTEM	1
46	032	QUALITROL	LIQUID LEVEL GAUGE FOR OLTC CONSERVATOR (WITH ALARM CONTACTS)	1
47	BJL-10/100	PINXIANG	CORE GROUND BUSHING	1
48	XPRD	QUALITROL	PRESSURE RELIEF DEVICE (WITH ALARM CONTACTS)	1
49	QJ4-25	HUAMING	OLTC PROTECTIVE RELAY	1
50	CVIII2-350Y/72.5	HUAMING	H.V. LOAD TAP CHANGER	1
51		HUAMING	PRESSURE RELIEF DEVICE FOR OLTC (WITH ALARM CONTACTS)	1
52	SIZE: 1"	TBEA	DRAINING AND FILLING BALL-TYPE VALVE FOR OLTC CONSERVATOR	1
53	CMA7	HUAMING	MOTOR DRIVE UNIT	

APPROXIMATE WEIGHTS IN POUNDS:

ITEM	WEIGHT(LBS)
TANK&ACCESORIES WEIGHT	50000
TRANSFORMER ACTIVE PART WEIGHT	54900
TOTAL OIL WEIGHT	42400
TRANSPORTION WEIGHT	112500
TOTAL WEIGHT	147300

TECHNICAL DATA:

MAXIMUM AMBIENT TEMPERATURE	50℃
MINIMUM AMBIENT TEMPERATURE	-25℃
AVERAGE DAILY MAXIMUM TEMPERATURE	25℃
MAXIMUM HEIGHT OF SEA LEVEL	1260m
STANDARD	IEEE Std. C57.12.00
RATED POWER	20/26.6/33.3MVA
TYPE OF COOLING	ONAN/ONAF1/ONAF2
PRIMARY VOLTAGE	230KV
SECONDARY VOLTAGE	13.8KV
FREQUENCY	60Hz
TAP CHANGER IN HV SIDE	±8×0.625%
IMPEDANCE AT 20000 KVA, NOMINAL VOLTAGE	10%
NO-LOAD LOSS AT RATED VOLTAGE	26kW
ON-LOAD LOSS AT RATED VOLTAGE(ONAN 20MVA)	61.5kW
WINDING CONNECTION	YND1
PRIMARY WINDING IMPULSE LEVEL	750KV
PRIMARY NEUTRAL IMPULSE LEVEL	110KV
SECONDARY WINDING IMPULSE LEVEL	110KV
OIL TYPE (ASTM D3487 NO PCB)	MINERAL OIL TYPE II
WINDING MATERIAL	COPPER
COLOR	ANSI 70GRAY

DAELIM BELEFIC
ELECTRIC, WITH AN EDGE

BEIJING DAELIM GREEN EP TECH CO.,LTD

DESCRIPTION:
TRANSFORMER OUTLINE
20/26.6/33.3 MVA - 3PH.- 60 HZ. 65°C- ONAN/ONAF/ONAF

REU ORDER NO:	DRAWING NUMBER:						REV:
	OL12726						7
REU SPEC NO:	SCALE:	BY:	DATE:	CHK:	DATE:		SHEET:
12726	N.T.S	CDS	05-16-2024				1 OF 1

LTC TRANSFORMER
MADE IN CHINA BEIJING DAELIM GREEN EP TECH CO.,LTD

CLASS ONAN/ONAF/ONAF	THREE PHASE	60 HERTZ
20000/26600/33300 KVA AT 65°C RISE		4200 FEET ALTITUDE

H	20000 KVA	26600 KVA	33300 KVA	LOAD TAP CHANGER CVIII2-350Y/72.5-10193W		
VOLTS	AMPS	AMPS	AMPS	POS.	K TO	CONVERTIDOR SELECTOR
241500	47.8	63.6	79.6	1	+	K+
240063	48.1	64.0	80.1	2	+	
238625	48.4	64.4	80.6	3	+	
237188	48.7	64.7	81.1	4	+	
235750	49.0	65.1	81.6	5	+	
234313	49.3	65.5	82.1	6	+	
232875	49.6	65.9	82.6	7	+	
231438	49.9	66.4	83.1	8	+	
230000	50.2	66.8	83.6	9a	+	
230000	50.2	66.8	83.6	9b	K	
230000	50.2	66.8	83.6	9c	-	K-
228563	50.5	67.2	84.1	10	-	
227125	50.8	67.6	84.6	11	-	
225688	51.2	68.0	85.2	12	-	
224250	51.5	68.5	85.7	13	-	
222813	51.8	68.9	86.3	14	-	
221375	52.2	69.4	86.8	15	-	
219938	52.5	69.8	87.4	16	-	
218500	52.8	70.3	88.0	17	-	

X	20000 KVA	26600 KVA	33300 KVA
VOLTS	AMPS	AMPS	AMPS
13800	837	1113	1393

VOLTAGE RATING	WINDING KV. B.I.L. LINE	WINDING KV. B.I.L. NEUT.	COND. MAT'L.	BUSHING KV. B.I.L. LINE	BUSHING KV. B.I.L. NEUT.
230000Y/132790	750	110	CU	1050	200
13800d	110		CU	200	

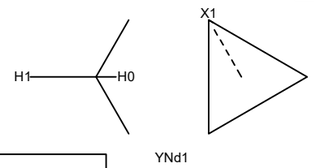
IMPEDANCE	BASE MVA	VOLTAGE RATING
	20	230000V-13800V

NO-LOAD LOSS	KW
RATED LOAD LOSS(BASE 20MVA)	KW

VECTOR GROUPING	YNd1

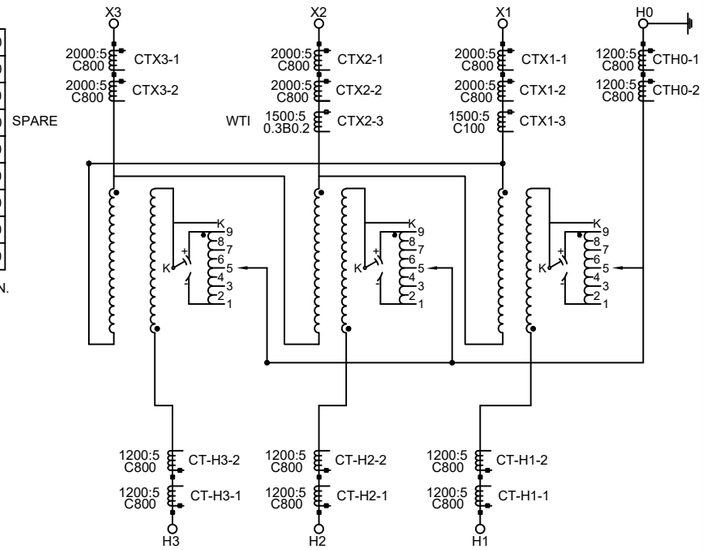
APPROXIMATE WEIGHTS IN POUNDS:

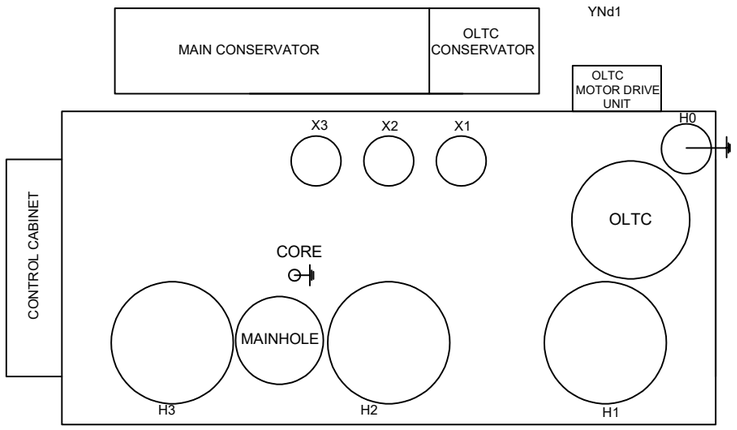
CORE AND COILS				54900
TANK AND FITTINGS				40800
REMOVABLE RADIATORS				9600
AT 25°C	4770 GALS. OF	MINERIAL OIL	IN TANK	35800
AT 25°C	400 GALS. OF	MINERIAL OIL	IN RADS.	3000
AT 25°C	53 GALS. OF	MINERIAL OIL	IN L.T.C.	400
AT 25°C	370 GALS. OF	MINERIAL OIL	IN CON.	2800
TOTAL				147300
WEIGHT OF TRANSPORT(WITH OIL)				112500
RISE OR FALL PER 10°C TEMP. CHANGE				0.75 IN.



FORM OF CONSTRUCTION	CORE	AMBIENT TEMPERATURE MAXIMUM	50° C
OVERLOAD RATING OF OLTC	IEEE C57.131	MANUFACTURE STANDARD	IEEE C57.12.00
DESIGN SEISMIC CAPABILITY	LOW PER IEEE 693-2005		

1200/5 C800 CTH		2000/5 C800 CTX		1500/2.2 1.2B0.5 WTI CTX2-3	
NOMINAL RATIO	LEADS ON	NOMINAL RATIO	LEADS ON	NOMINAL RATIO	LEADS ON
100 : 5	X2-X3	300 : 5	X3-X4	1500 :2.2	X1-X2
200 : 5	X1-X2	400 : 5	X1-X2	1500/5 1.2B0.5 SPARE CTX1-3	
300 : 5	X1-X3	500 : 5	X4-X5	NOMINAL RATIO	LEADS ON
400 : 5	X4-X5	500 : 5	X2-X3	1500 :5	X1-X2
500 : 5	X3-X4	800 : 5	X2-X4		
600 : 5	X2-X4	1100 : 5	X1-X3		
800 : 5	X1-X4	1200 : 5	X1-X4		
900 : 5	X3-X5	1500 : 5	X1-X4		
1000 : 5	X2-X5	1600 : 5	X2-X5		
1200 : 5	X1-X5	2000 : 5	X1-X5		





CAUTION:
1.THE SECONDARY SIDE OF CT MUST NOT BE OPEN CIRCUIT.
2.CORE GROUND BUSHINGS MUST BE GROUNDED.
3.BEFORE INSTALLING OR OPERATING READ INSTRUCTIONS
4.DO NOT OPERATE TRANSFORMER WHEN THE READING OF LIQUID LEVEL GAUGE IS
BELOW THE LOW POINT OF THE SCALE
5.DO NOT OPERATE THE DE-ENERGIZED TAP CHANGER WITH THE TRANSFORMER ENERGIZED

SPEC. NO. 12726 SERIAL NO. MFG. DATE

REVISIONS

NO.	DESCRIPTION	DATE	APPD.
1			
2			

DAELIM BELEFIC
ELECTRIC, WITH AN EDGE

BEIJING DAELIM GREEN EP TECH CO.,LTD

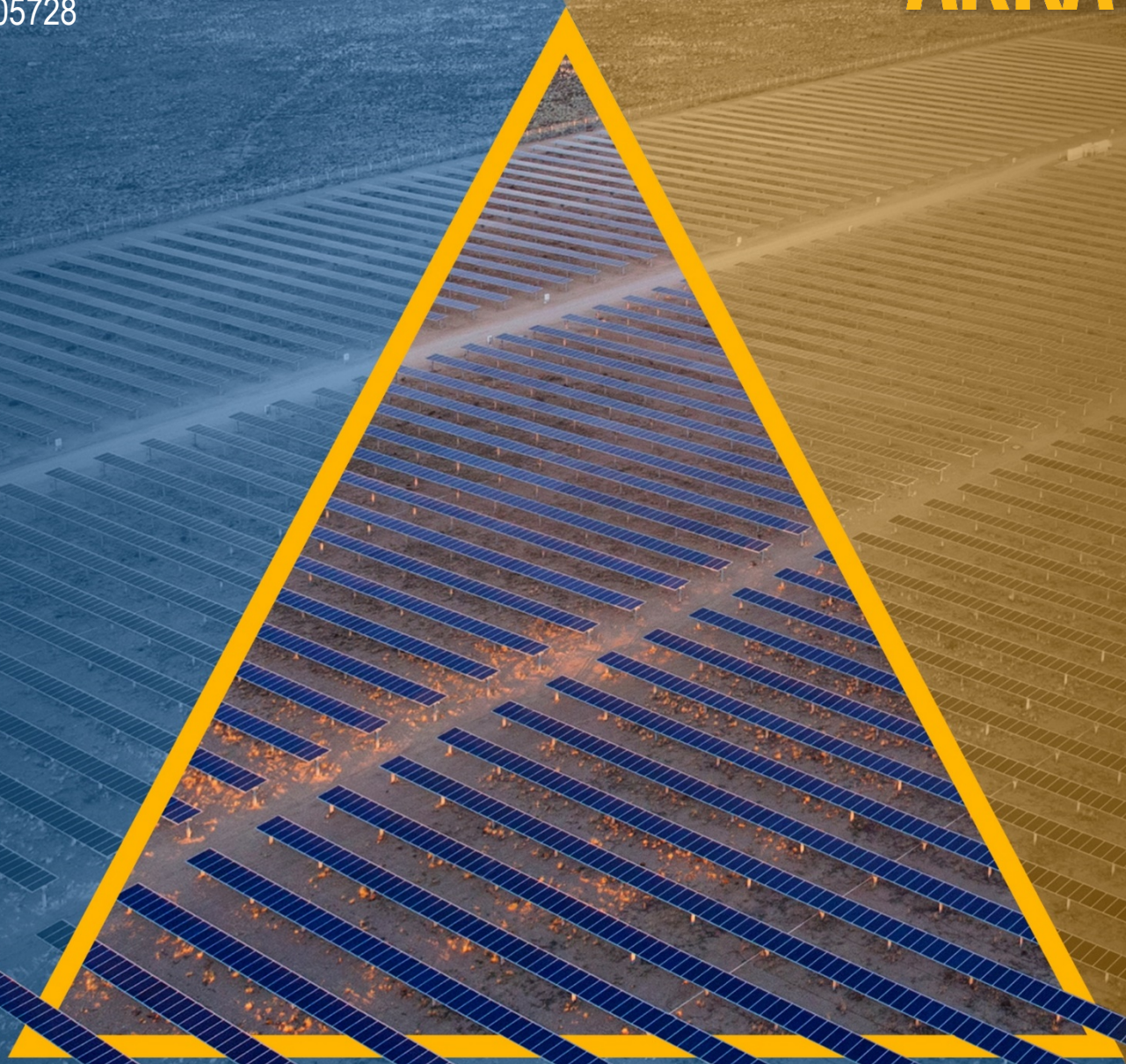
DESCRIPTION: TRANSFORMER NAMEPLATE
20/26.6/33.3 MVA - 3PH.- 60 HZ. 65°C - ONAN/ONAF/ONAF

REU ORDER NO:	DRAWING NUMBER:	REV:
	NP12726	4

REU SPEC NO:	SCALE:	BY:	DATE:	CHK:	DATE:	SHEET:
12726	N.T.S.	CDS	05-16-2024	CDS	05-16-2024	1 OF 1

Overnight-CA-Atlantica-Dura-
ZNShine-90MR
Q-05728

ARRAY



Single-Axis Solar Tracker Quote Package

Array Technologies is a global leader advancing the future of clean energy positioned to deliver renewable solutions for customers around the globe.

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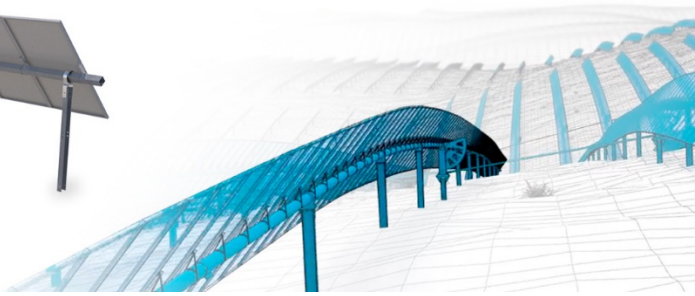

Overnight-CA-Atlantica-Dura-ZNShine-90MR
Quote Number: Q-05728
Total Project MW: 180.0383
Solution(s) of Interest: DuraTrack HZ v3.0 52

Created Date: 04/30/2024
Estimated Project Start Date: 08/01/2025
Contractual Reference:

Pricing Summary

Item	Price	Price Per Watt
Tracker	$14,863,319.80	$0.0826
Tracker Freight (Port or Factory to Site)	$758,858.70	$0.0042
Tracker Total	$15,622,178.50	$0.0868
Foundation	$2,034,207.06	$0.0113
Foundation Freight (Port or Factory to Site:)	$112,875.18	$0.0006
Foundation Total	$2,147,082.25	$0.0119
Tracker & Foundation	$16,897,526.86	$ 0.0939
Tracker & Foundation Freight (Port or Factory to Site)	$871,733.88	$ 0.0048
Tracker & Foundation Total	$17,769,260.75	$ 0.0987
Tracker Construction Spares	$32,729.36	
Foundation Construction Spares	$4,937.24	
Spares Total	$37,666.60	
Services	$0.00	
Services Total	$0.00	
Taxes	$0.00	
Bonds	$0.00	
Quote Grand Total	$17,806,927.35	

Generate energy with integrity when you partner with Array Technologies. Our utility-scale solar tracking solutions are time-proven and engineered to withstand the harshest conditions on the planet. Fewer components, locally-focused sourcing solutions, and an emphasis on ease of installation help Array to deliver the best utility-scale solar tracker solutions in the market.

ARRAY
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sales@arraytechinc.com
www.arraytechinc.com

Atlantica

Dear Rosemary Sapien,

Thank you for your interest in a solar tracker system from Array. The intent of this quote is to show Array's commitment to supply solar tracking equipment for your project.

There are several elements that can affect the final price for the trackers, primarily the building code, module selection, and final layout. Please review the following considerations:

1. Prices accurate at time quoted. Not binding until locked under a price locked Letter of Intent (LOI) or executed contract.
2. See the attached Specifications for additional product details and inclusions and exclusions applicable to this quote.
3. The tracker design and components are dependent on module manufacturer approval, subject to change.
4. Our standard Terms and Conditions and Warranty documents are available for your review. Please note that these are confidential. Any alterations to the Terms or Warranty may result in price adjustments.
5. Freight per relevant Incoterms.
6. Specifications and site layout contained in this quote are unverified and subject to final Array Engineering review. Changes in the specifications or final review may result in reconfiguration of the product. Array reserves the right to change price if any deviations from the assumed site specifications and layout are made.
7. The accompanying quote is provided for your information and does not constitute an offer for sale.
8. Unless otherwise stated, all pricing is quoted in USD.
9. Prices quoted here reflect duties and tariffs applicable to the current source plan. In the event that there is a change in law which results in an increase to applicable duties or tariffs, prices may change.
10. Supply of foundations is not included in the pricing set forth in this quote unless pricing for provision of foundations is separately and explicitly included in this quote.
11. If this quote includes the HL Radial Slot Bearing products on the Interior tracker rows, these bearing housing assemblies are only compatible with W8 profile wide-flange beams. Therefore, W8 profile foundations are required for Interior tracker rows.
12. If this quote includes the HL Radial Slot Bearing products on the Exterior tracker rows, these bearing housing assemblies are only compatible with W8 profile wide-flange beams. Therefore, W8 profile foundations are required for Exterior tracker rows.
13. If this quote includes a reference to SmarTrack weather strategy software, refer to Service line items and O&M guide, Addendum to 90053-000.
14. Tracker system may include torque tube products with different gauge steel (12ga and 13ga). Torque tube products will be specified for each tracker row configuration in the Approved Drawing Package (ADP) for construction.
15. DuraTrack & OmniTrack may include bearing housings with a coated or mill finish. Sites featuring mill finish bearing housings produce a nominal sound emission of 1) Instantaneous/Maximum Sound Level: 54 dBA at 50 m (Daytime Time-Weighted 39 Leq, dBA), 2) Instantaneous/Maximum Sound Level: 45 dBA at 250 m (Daytime Time-Weighted 30 Leq, dBA). Sound levels are per whole site (not per bearing/row) and are measured from the perimeter bearings/rows.
16. If OmniTrack is quoted, foundation piles must be driven at different heights above grade along each of the tracker rows; laser or string line controls are not sufficient. Customer must use pile driving equipment with GPS capabilities to control variable pile reveal heights based on the z-coordinate from the pile reveal plan.

Thank you for the opportunity to provide you with this quote. We look forward to working with you on your solar tracker project. Please contact us with any questions.

Best Regards,
Josh Avenell
josh.avenell@arraytechinc.com

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Project Details		
Max Angle N/S (°): 4	Product Corrosion: L	Temperature Configuration: Standard
Max Angle E/W (°): 7	Center Structure: GCS	Min - Max Operating Temperature (°C): (-5.00,40.00)
Max Driveline Angle (°): 0	Foundation HDG Thickness ():	Snow Configuration: Building Code
Tracker Design Life (yrs): 30	Foundation Design Life (yrs): 30	Tracker System Certification: UL
File Layout Name: Estimated Counts	Center Structure Foundations: 3,479	Bearing Foundations: 38,269
Design Code: ASCE_7-16	Wind Speed: 90	Ground Snow: 5
Building/ Risk Category: Category I		

Tracker Design Details for Module: ZXM7-UHLDD144 Series					
Module Length (mm)	2,278	**GCR (%)**	35.05	**Clamp - Region A**	400 mm TB
Module Width (mm)	1,134	**Pitch (m)**	6.5	**Clamp - Region B**	400 mm TB
Module Weight (kg)	31.5	**CS Gap Width (in)**	31	**Clamp - Region C**	400 mm HR 10 mm
Module Frame Thickness (mm)	30	**Max Tracker Height (ft)**	6	**Clamp - Region D**	400 mm HR 10 mm
Module Wattage	575	**Module Quantity**	313,110	**Number of Strings**	10,437
String Size	30	**MW of this Module**	180.0383	**Bearing Finish**	Uncoated
Allowable Foundation Profile – Exterior		**Allowable Foundation Profile – Interior**		**Bearing Housing Material**	Steel

Tracker Row

ZXM7-UHLDD144 Series								
Modules Per Row (MR)	Position	Module Split	Damper Qty	Exposure Qty	Foundation Qty	Row Qty	Unit Price	Extended Price
90	Exterior	41N/49S	3	2	12	279	$3,967.5482	$1,106,945.95
90	Interior	41N/49S	3	2	12	3,200	$3,967.5482	$12,696,154.24

Sitewide Components

Description	Unit Price	Quantity	Extended Price
ASSY, DRVLN, ALUM, Tube, 5861mm	$89.0076	3354	$298,531.49
Kit,U-Joint,Drvln,Aluminum,Single Slot	$89.1739	3354	$299,089.26

ASSY,Site Data Ctrl,V3,100-240V,Maint Sw	$1,451.4341	1	$1,451.43
ASSY, GPS	$277.1646	1	$ 277.16
WLDMNT, SKT, 28.5mm, .500 SQ Drive THK	$43.5592	10	$ 435.59
ASSY, 6X MTR CTRL, 100-240V	$1,400.4841	21	$29,410.17
ASSY, Jig, UJ SPCR	$12.5296	2	$ 25.06
ASSY,Alignment Jig,2285mm,Max Module Len	$468.1630	50	$23,408.15
Kit, MTR ASSY, GCS	$150.1643	125	$18,770.54
Kit,MTR ASSY,6.3A,GCS,BON,H,UL,AttaBox	$2,555.3168	125	$319,414.60
Wire, 6 COND 18 AWG Direct Burial 600V	$0.6498	62500	$40,612.50
Tool, Spacer, Module Gap, Plastic, 10mm	$1.1336	50	$ 56.68
O&M Spares	$28,736.9740	1	$28,736.97

Tracker Pricing Summary	Price	Price per Watt
Tracker	$14,863,319.80	$0.0826
Tracker Freight (Port or Factory to Site)	$758,858.70	$0.0042
Taxes	$0.00	
Bonds	$0.00	
Tracker Total	$15,622,178.50	$0.0868

Tracker Construction Spares

The below quote for recommended optional tracker construction spares is valid only if purchased at the time of project order. Prices are inclusive of freight.

Description	Product Quantity	Unit Price	Extended Price
Hardware Construction Spares	1	$2,186.6981	$2,186.70
Row Construction Spares	7	$4,180.7804	$29,265.46
Drivelines Construction Spares	1	$1,277.1948	$1,277.19
		Tracker Construction Spares Total:	**$32,729.35**

Foundations

If foundations are ordered, the following notes apply:

Pile reveal height is 6" lower than the tracker height. Foundation design is based on current Geotech data provided to Array Technologies.

Final foundation designs are to be confirmed with Foundation Design Engineer on Record. Foundation counts are preliminary until final foundation requirements are defined.

ZXM7-UHLDD144 Series

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Type	Row Position	Row Length	Profile Size	Length	Embedment	Design Zone	Qty	Total Weight	Unit Price per Pound	Extended Price
CS	Full Ext Row	90	W6X7	5.83	5	1	279	11,385.99	$0.8290	$9,438.99
BH	Full Int Row	90	W6X7	8.63	5	1	35200	2,126,432.00	$0.8290	$1,762,812.13
CS	Full Int Row	90	W6X7	5.83	5	1	3200	130,592.00	$0.8290	$108,260.77
BH	Full Ext Row	90	W6X7	8.63	5	1	3069	185,398.29	$0.8290	$153,695.18

Total Foundation Quantity: 41,748.00
Total Weight (lbs): 2,453,808.28

Foundation Pricing Summary	Price	Price per Watt
Foundation	$2,034,207.06	$0.0113
Foundation Freight (Port or Factory to Site:)	$112,875.18	$0.0006
Foundation Total	$2,147,082.25	$0.0119

Foundation Construction Spares

The below quote for recommended, optional foundation construction spares is valid only if purchased at the time of project order. Prices are inclusive of freight.

Product Description	Embedment	Qty	Pounds	Unit Price	Extended Price
Foundations Construction Spares		1		$4,937.2400	$4,937.24

Foundation Construction Spares Total: $4,937.24

Additional Services

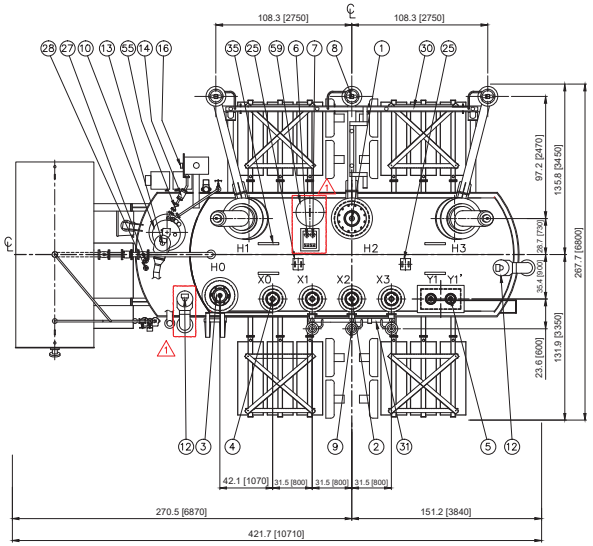
Description	Unit Price	Quantity	Extended Price
10/5 Global Limited Product Warranty	$0.0000	1	$ 0.00

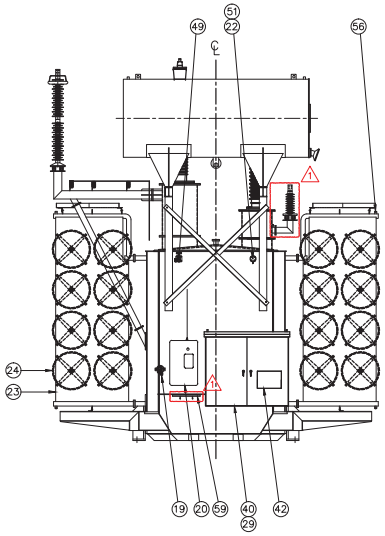
Services Total: $0.00

DRAWING LIST

NO.	TITLE	DWG. NO.
1	OUTLINE DRAWING	LT0222-B100
2	GROUNDING	LT0222-B110
3	FOUNDATION	LT0222-B200
4	NAME PLATE	LT0222-B300
5	H.V. BUSHING	POC900G0800Z137
6	H.V.N. BUSHING	POC650G0800S
7	L.V. & L.V.N. BUSHING	B-88843-9-70
8	T.V. BUSHING	B-88723-70
9	H.V & H.V.N & T.V TERMINAL	HDSF-14-1-D-12-12
10	H.V & H.V.N DRAW LEAD TERMINAL	SDB-58818&S
11	L.V & L.V.N TERMINAL	ASNF-61-4B-BR-ETP
12	H.V. ARRESTER	TEXLIM PZ P192ZH245A
13	L.V. ARRESTER	POLIM-S Q030SA024A

3φ–60Hz–120/160/200MVA–230(±16x0.625%)/34.5/13.8kV

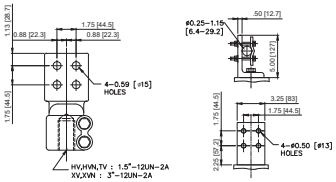




WEIGHTS	
TOTAL	413,800 LBS (W/ OIL)
CORE & COIL	208,600 LBS
OIL QUANTITY	110,200 LBS (14,700 GALS)
TANK & FITTING	95,000 LBS
SHIPPING	267,400 LBS (W/O OIL)
TOLERANCE : ±5%	

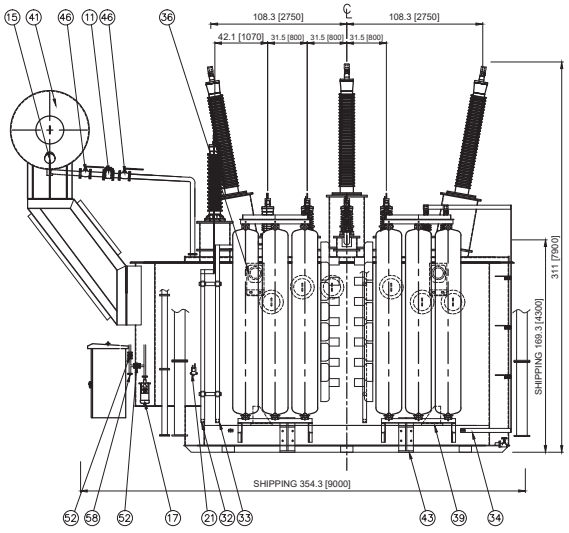
* FINISH COLOR : ANSI #70 SKY GRAY

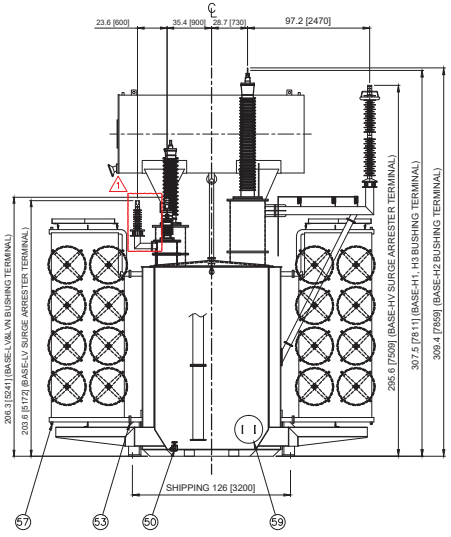
* NOTE
1. All dimensions are in inches(millimeters).
2. Dimensions Tolerance : ±5%
3. The positions & dimensions can be changed slightly.
4. The hand holes may be added, if necessary.
5. NEMA 4–holes pads on all bushings & surge arresters will be provided with the transformer.
6. Bushing and Surge Arrester terminals can be rotated.
7. Material of bushing terminal : Tinned copper.
   Material of surge arrester line terminal : Aluminum.
   Material of surge arrester ground terminal : Galvanized.
8. DGA monitoring system is mounted on bracket with anti–vibration pad (NBR).
9. Material of tank
   : SS275 (The grade is higher than ASTM A36).

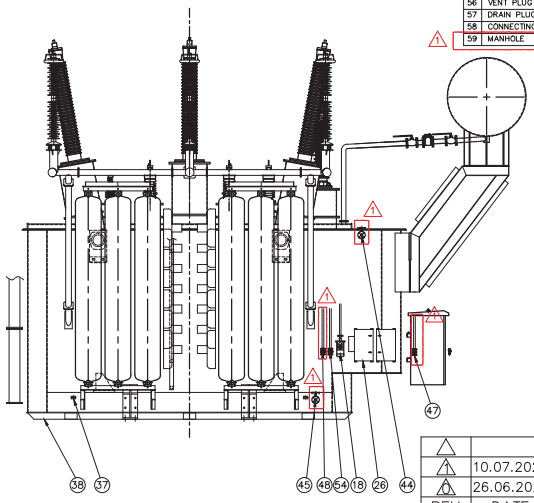


DETAIL of BUSHING TERMINAL DETAIL of ARRESTER TERMINAL

NO.	NAME OF PARTS	Q'TY	MODEL	MAKER
1	HV BUSHING	3	POC900G0800Z137	PCORE/USA
2	LV BUSHING	3	B–88843–9–70	PCORE/USA
3	HVN BUSHING	1	POC650G0800S	PCORE/USA
4	LVN BUSHING	1	B–88843–9–70	PCORE/USA
5	TV BUSHING	2	B–88723–70	PCORE/USA
6	CORE GROUNDING BUSHING	1	7.2kV, 200A, 60kV BIL	SAMPOONG/KOREA
7	CLAMP GROUNDING BUSHING	1	7.2kV, 200A, 60kV BIL	SAMPOONG/KOREA
8	HV SURGE ARRESTER	3	PEXLIM PZ P192ZH245A	ABB/USA
9	LV SURGE ARRESTER	3	POLIM–S Q030SA024A	ABB/USA
10	ON LOAD TAP CHANGER	1	VM III 650Y	MR/GERMANY
11	BUCHHOLZ RELAY	1	TYPE 53	EMB/GERMANY
12	PRESSURE RELIEF DEVICE FOR MAIN TANK	2	XPRD. 10psi	QUALITROL/USA
13	PRESSURE RELIEF DEVICE FOR OLTC	1	XPRD. 20psi	QUALITROL/USA
14	SUDDEN FLOW RELAY FOR OLTC	1	RS2001	MR/GERMANY
15	OIL LEVEL INDICATOR FOR MAIN CONSERVATOR	1	T0215	TAIJIN/KOREA
16	OIL LEVEL INDICATOR FOR OLTC CONSERVATOR	1	T0212	TAIJIN/KOREA
17	DEHYDRATING BREATHER FOR MAIN TANK	1	MTraB DB	MESSKO/GERMANY
18	DEHYDRATING BREATHER FOR OLTC	1	MTraB DB	MESSKO/GERMANY
19	OIL TEMPERATURE INDICATOR	1	104 SCADA	QUALITROL/USA
20	MOTOR DRIVE UNIT	1	ED 100S	MR/GERMANY
21	GAS SAMPLING DEVICE	1	ZG1.2	EMB/GERMANY
22	SUDDEN PRESSURE RELAY	1	900–009–03	QUALITROL/USA
23	RADIATOR	12	520W, 3500L, 38FINS	SINJUNGWOO/KOREA
24	COOLING FAN WITH MOTOR	32	T2129	TAIJIN/KOREA
25	BASE PLATE FOR FALL ARRESTER TOWER	2	FB–SW1	PELSE/USA
26	DGA MONITORING SYSTEM	1	DGA 900	KELMAN/UK
27	OIL TEMPERATURE INDICATOR SENSOR	1	–	QUALITROL/USA
28	TOP OIL RTD	1	103–023–01	QUALITROL/USA
29	AMBIENT RTD	1	103–049–01	QUALITROL/USA
30	HV SURGE ARRESTER GROUNDING BUS BAR	1	COPPER. (0.25"t X 3")	ILJIN/KOREA
31	LV SURGE ARRESTER GROUNDING BUS BAR	1	COPPER. (0.25"t X 3")	ILJIN/KOREA
32	HVN BUSHING GROUNDING BUS BAR	1	COPPER. (0.25"t X 3")	ILJIN/KOREA
33	LVN BUSHING GROUNDING BUS BAR	1	COPPER. (0.25"t X 3")	ILJIN/KOREA
34	TV BUSHING GROUNDING BUS BAR	1	COPPER. (0.25"t X 3")	ILJIN/KOREA
35	LIFTING EYE FOR COVER	4	–	ILJIN/KOREA
36	LIFTING LUG FOR MAIN TANK	4	–	ILJIN/KOREA
37	GROUND PAD	4	–	ILJIN/KOREA
38	SKID BASE	1	–	ILJIN/KOREA
39	JACKING PAD	4	–	ILJIN/KOREA
40	LOCAL CONTROL PANEL	1	–	ILJIN/KOREA
41	CONSERVATOR	1	–	ILJIN/KOREA
42	NAMEPLATE	1	–	ILJIN/KOREA
43	ANCHOR PLATE	4	–	ILJIN/KOREA
44	INLET VALVE FOR DGA	1	2" GLOBE VALVE MODEL 123	UNITED BRASS/USA
45	OUTLET VALVE FOR DGA	1	2" GLOBE VALVE MODEL 123	UNITED BRASS/USA
46	SHUT–OFF VALVE FOR BUCHHOLZ RELAY	2	3" BALL VALVE	SAMSUNG/KOREA
47	DRAIN VALVE FOR MAIN CONSERVATOR	1	1" GLOBE VALVE	OK–KWANG/KOREA
48	DRAIN VALVE FOR OLTC CONSERVATOR	1	1" GLOBE VALVE	OK–KWANG/KOREA
49	UPPER FILTER VALVE	1	506–202	MILWAUKEE/USA
50	DRAIN AND LOWER FILTER VALVE	1	506–202	MILWAUKEE/USA
51	ISOLATING VALVE FOR SUDDEN PRESSURE RELAY	1	2" BUTTERFLY VALVE	TAIJIN/KOREA
52	EQUALIZING VALVE FOR CONSERVATOR	2	1" GLOBE VALVE	OK–KWANG/KOREA
53	SHUT–OFF VALVE FOR RADIATOR	24	3" BUTTERFLY VALVE	TAIJIN/KOREA
54	OIL FILLING VALVE FOR OLTC	1	1" GLOBE VALVE	OK–KWANG/KOREA
55	SHUT–OFF VALVE FOR SUDDEN FLOW RELAY	1	1" GLOBE VALVE	OK–KWANG/KOREA
56	VENT PLUG FOR RADIATOR	12	DIN42558–M12	SINJUNGWOO/KOREA
57	DRAIN PLUG FOR RADIATOR	12	DIN42558–M12	SINJUNGWOO/KOREA
58	CONNECTING SOCKET WITH PLUG	2	1" NPT	ILJIN/KOREA
59	MANHOLE	3	I.D ø17.7(450)	ILJIN/KOREA







REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
1	10.07.2020	FOR APPROVAL	S.K.K	K.W.J	W.J.K	J.C.K
0	26.06.2020	FOR APPROVAL	S.K.K	K.W.J	W.J.K	J.C.K

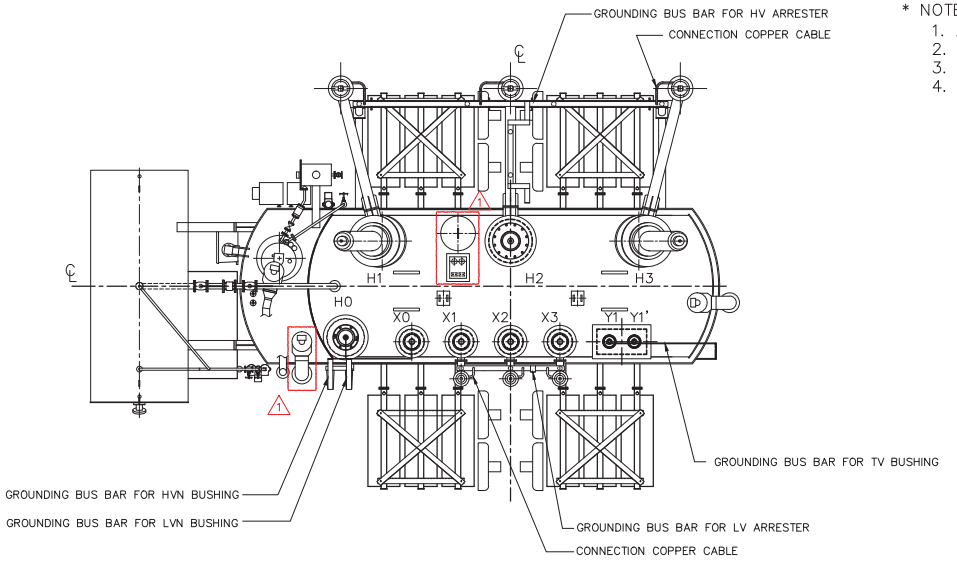
ILJIN Electric

TITLE: OUTLINE

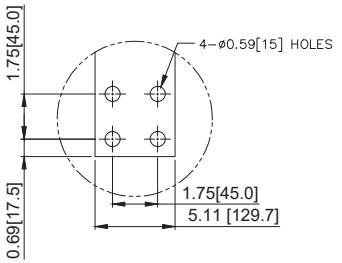
SCALE: N/S DWG. NO.: LT0222–B100 REV.: 1

A3 (297mm x 420mm)

3φ–60Hz–120/160/200MVA–230(±16x0.625%)/34.5/13.8kV

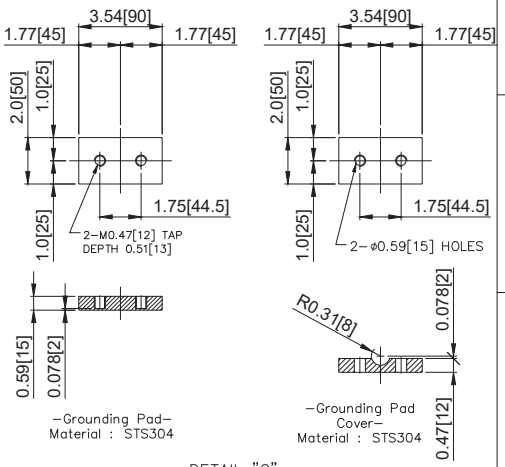


* NOTE
1. All dimensions are in inches(millimeters).
2. Dimensions tolerance : ±5%
3. The grounding pads with covers are provided at 4 corners.
4. The ground bus jumper between the neutral bushings and the vertical ground bus is to be removed when the neutral is grounded through an impedance.

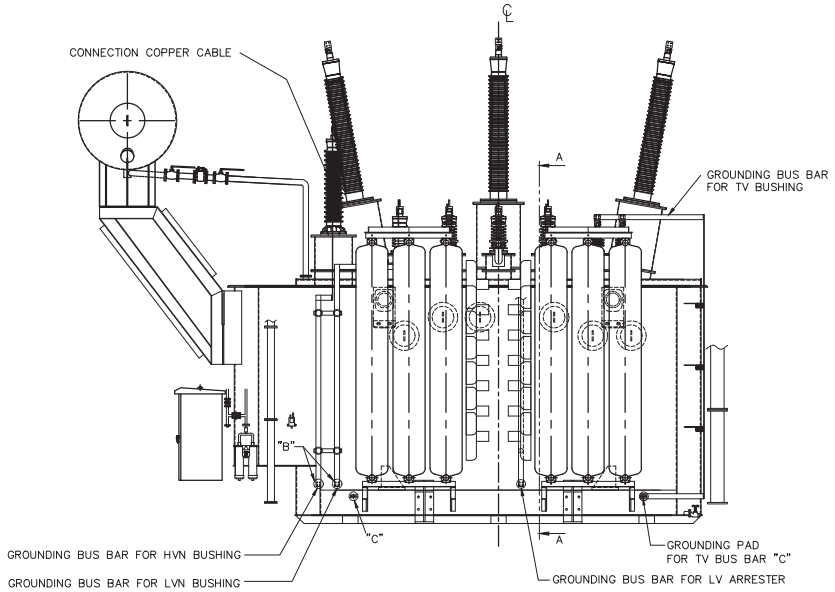


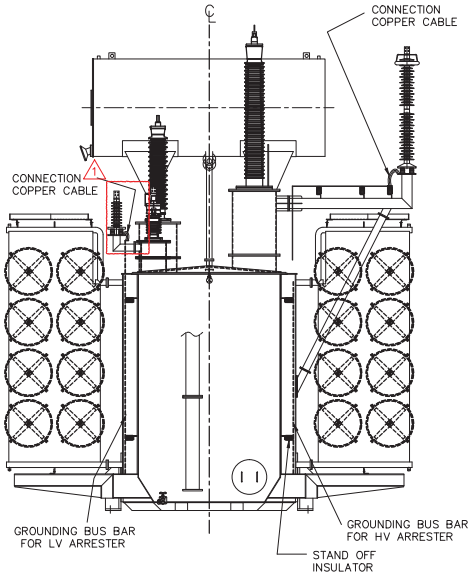
Material : Tinned copper

DETAIL "B"



DETAIL "C"





SECTION "A–A"

REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
1	10.07.2020	FOR APPROVAL	S.K.K	K.W.J	W.J.K	J.C.K
0	26.06.2020	FOR APPROVAL	S.K.K	K.W.J	W.J.K	J.C.K

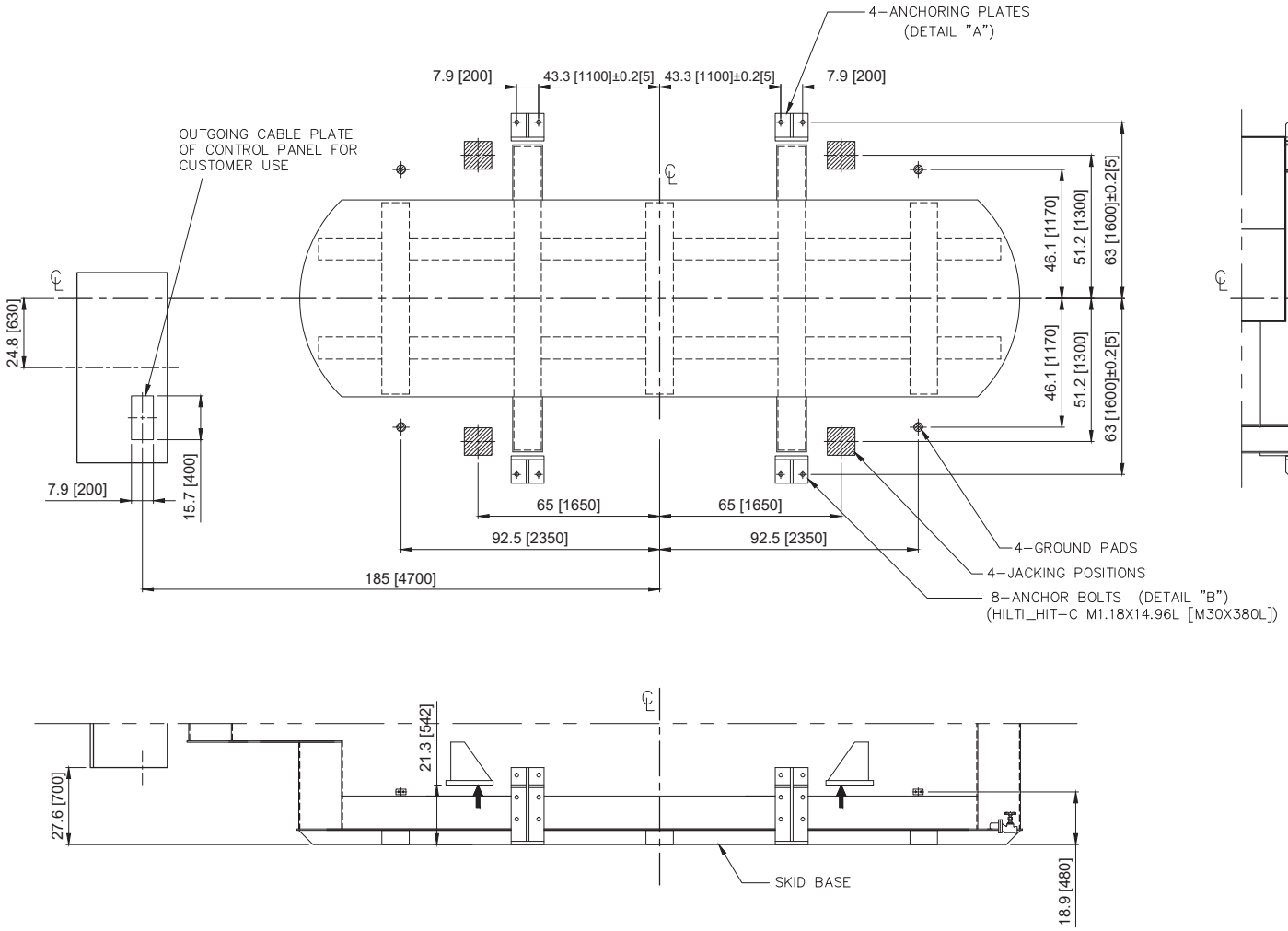
ILJIN Electric

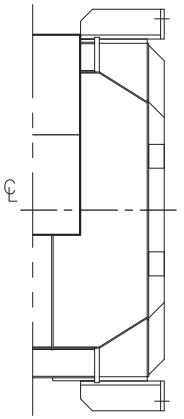
TITLE: GROUNDING OUTLINE

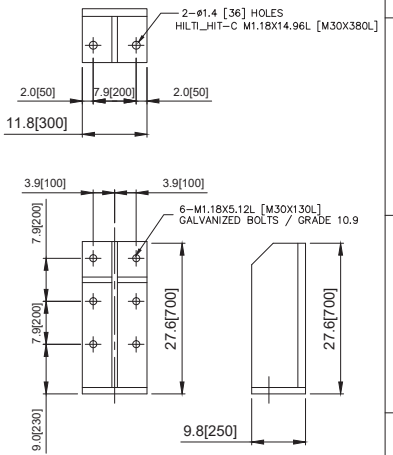
SCALE	DWG. NO.	REV.
N/S	LT0222–B110	1

A3 (297mm x 420mm)

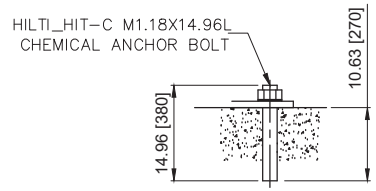
3ϕ–60Hz–120/160/200MVA–230(±16x0.625%)/34.5/13.8kV







DETAIL "A"



DETAIL "B"

* NOTE
1. All dimensions are in inches [millimeters].
2. Dimensions Tolerance : ±5%
3. The positions & dimensions can be changed slightly.

REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	26.06.2020	FOR APPROVAL	S.K.K	K.W.J	W.J.K	J.C.K

ILJIN Electric

TITLE: FOUNDATION

SCALE	DWG. NO.	REV.
N/S	LT0222–B200	0

A3 (297mm x 420mm)

ILJIN GENERATOR STEP-UP TRANSFORMER

6-φ0.16(4) HOLES

RATED CAPACITY (MVA)			
	ONAN	ONAF1	ONAF2
HV	120	160	200
LV	120	160	200
TV	36	48	60

RATED VOLTAGE (V)	
HV	230,000
LV	34,500
TV	13,800

PHASE	3
FREQUENCY	60Hz
STANDARD	IEEE C57.12.00

TEMPERATURE RISE	
WINDING	65 °C
OIL	65 °C

MATERIAL	
INSULATION OIL	ASTM D3487 TYPE II
CONDUCTOR	COPPER

BASIC IMPULSE LEVEL (kV)		
	WINDING	BUSHING
HV	900	1,050
HVN	450	550
LV, LVN	200	200
TV	110	150

% IMPEDANCE (at 85°C)		
WINDING	BASE	% Iz
HV - LV	120MVA	*NOTE 3)

COOLING CLASS		
ONAN	ONAF1	ONAF2

WEIGHTS	
TOTAL	413,800 lbs
CORE & COILS	208,600 lbs
INSULATION OIL (at 25 °C)	110,200 lbs
	14,700 gals
TANK & FITTINGS	95,000 lbs
SHIPPING (W/O OIL)	267,400 lbs

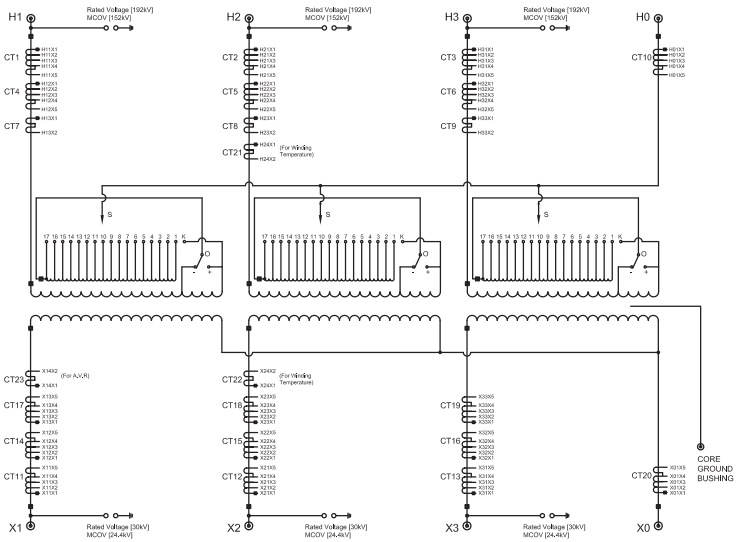
SOUND LEVEL (dBA)	
ONAN	*NOTE 3)
ONAF1	*NOTE 3)
ONAF2	*NOTE 3)

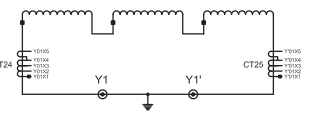
BUSHING CURRENT TRANSFORMER					
CT	BURDEN	ACCURACY	TRF	RATIO	CONNECTION
1~6	200	C800	2.0	1200/1000/900/800/600/500/ 400/300/200/100 : 5A	X1-X5/X2-X5/X3-X5/X1-X4/X2-X4 X3-X4/X4-X5/X1-X3/X1-X2/X2-X3
7~9	45	0.3B1.8	4.0	450 : 5A	X1-X2
10	200	C800	2.0	1200/1000/900/800/600/500/ 400/300/200/100 : 5A	X1-X5/X2-X5/X3-X5/X1-X4/X2-X4 X3-X4/X4-X5/X1-X3/X1-X2/X2-X3
11~20	200	C800	2.0	4000/2500/2200/2000/1500 1200/1000/800/500/300 : 5A	X1-X5/X1-X4/X1-X3/X2-X5/X2-X4 X2-X3/X1-X2/X3-X5/X4-X5/X3-X4
21	22.5	1.2B0.9	2.0	600 : 5A	X1-X2
22, 23	22.5	1.2B0.9	2.0	4000 : 5A	X1-X2
24, 25	200	C800	2.0	1200/1000/900/800/600/500/ 400/300/200/100 : 5A	X1-X5/X2-X5/X3-X5/X1-X4/X2-X4 X3-X4/X4-X5/X1-X3/X1-X2/X2-X3

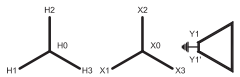
WINDING	VOLTAGE (V)	CURRENT (A, 65℃ RISE)			ON-LOAD TAP CHANGER (on HV)		
		120MVA	160MVA	200MVA	POSITION	TAP SEL.	COARSE TAP SEL.
HV	253,000	273.8	365.1	456.4	16R	1	1
	251,563	275.4	367.2	459.0	15R	2	2
	250,125	277.0	369.3	461.6	14R	3	3
	248,688	278.6	371.5	464.3	13R	4	4
	247,250	280.2	373.6	467.0	12R	5	5
	245,813	281.8	375.8	469.7	11R	6	6
	244,375	283.5	378.0	472.5	10R	7	7
	242,938	285.2	380.2	475.3	9R	8	8
	241,500	286.9	382.5	478.1	8R	9	9
	240,063	288.6	384.8	481.0	7R	10	10
	238,625	290.3	387.1	483.9	6R	11	11
	237,188	292.1	389.5	486.8	5R	12	12
	235,750	293.9	391.8	489.8	4R	13	13
	234,313	295.7	394.2	492.8	3R	14	14
	232,875	297.5	396.7	495.8	2R	15	15
	231,438	299.4	399.1	498.9	1R	16	16
	R 230,000	301.2	401.6	502.0	NR	17a	17
					N	17b	S-K
					NL	17c	1
	228,563	303.1	404.2	505.2	1L	18	2
	227,125	305.0	406.7	508.4	2L	19	3
	225,688	307.0	409.3	511.6	3L	20	4
	224,250	308.9	411.9	514.9	4L	21	5
	222,813	310.9	414.6	518.2	5L	22	6
	221,375	313.0	417.3	521.6	6L	23	7
	219,938	315.0	420.0	525.0	7L	24	8
	218,500	317.1	422.8	528.5	8L	25	9
	217,063	319.2	425.6	532.0	9L	26	10
	215,625	321.3	428.4	535.5	10L	27	11
	214,188	323.5	431.3	539.1	11L	28	12
	212,750	325.6	434.2	542.7	12L	29	13
	211,313	327.9	437.2	546.4	13L	30	14
	209,875	330.1	440.1	550.2	14L	31	15
	208,438	332.4	443.2	554.0	15L	32	16
	207,000	334.7	446.3	557.8	16L	33	17
LV	34,500	2,008.2	2,677.6	3,347.0			

O+

O-







VECTOR GROUP
YNyn0+d1

- MAXIMUM OPERATING PRESSURES OF LIQUID PRESERVATION SYSTEM 10 lbf/in² (PSI) POSITIVE AND 8 lbf/in² (PSI) NEGATIVE.
- TANK AND CONSERVATOR DESIGNED FOR 15 lbf/in² (PSI) VACUUM FILLING.
- CONTAINS NO DETECTABLE LEVEL OF PCB (LESS THAN 2PPM) AT THE TIME OF MANUFACTURE.
- SUITABLE FOR STEP UP AND STEP DOWN OPERATION
- CORE TYPE.
- OUTDOOR USE.
- H0 BUSHING IS TO BE SOLIDLY GROUNDED, AND THE X0 BUSHING MAY BE EITHER SOLIDLY GROUNDED, OR GROUNDED THROUGH AN IMPEDANCE NOT TO EXCEED 0.8 OHMS.

SERIAL NO.	19TI0061 001	MANUFACTURED IN	2021. .

1

* NOTE
1. METERIAL: 1.2t STS304
2. COLOR: BLACK
3. THE TEST VALUE & SERIAL NUMBER WILL BE ENGRAVED AFTER TEST.
4. ALL DIMENSIONS ARE IN INCHES(MILLIMETERS).

ILJIN ELECTRIC CO., LTD
LT0222 - B300
Hongseong-gun, Republic of KOREA
Tel : +82-41-413-3000

16.9 [430]
16.5 [420]
8.3 [210]
18.9 [480]
19.3 [490]

REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
1	10.07.2020	FOR APPROVAL	J.H.P	K.W.J	C.K.L	K.M.L
0	26.06.2020	FOR APPROVAL	J.H.P	K.W.J	C.K.L	K.M.L

ILJIN Electric

TITLE: NAMEPLATE

SCALE	DWG. NO.	REV.
N/S	LT0222-B300	1

A3 (297mm x 420mm)

HUBBELL PCORE ELECTRIC

kV CLASS 230 kV	**BIL** 1050 kV	**Uy** 146 kV

CURRENT RATING

800 AMP DRAW LEAD CONNECTION
1200 AMP BOTTOM CONN. TRANSFORMER
1600 AMP BOTTOM CONN. OIL CIRCUIT BREAKER

MIN. CREEP 250.50 [6362.7]	**MIN. STRIKE** 85.00 [2159.0]
CREEP/L-G 1.89 [47.9]	**STD.** IEEE C57.19.00/01

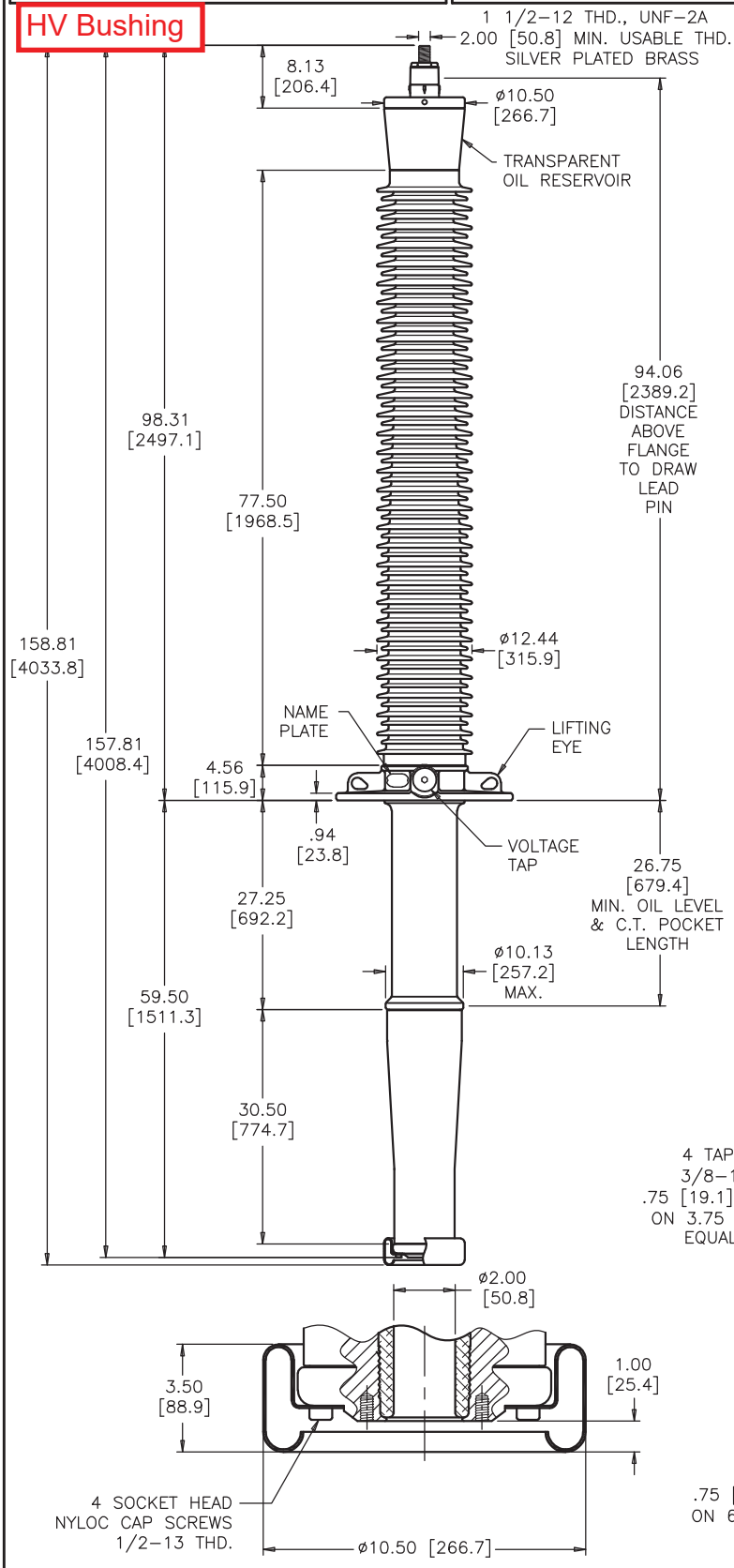
PCB CONTENT OF OIL IS LESS THAN 1 ppm

DWG.	**CATALOG NUMBER**	**GLAZE COLOR**
SD	POC900B0800Z137	BROWN
SD	POC900G0800Z137	LT. GRAY

TITLE TRANSFORMER – BREAKER INTERCHANGEABLE
1050 kV BIL / 146 kV Uy
SILVER PLATED BRASS TOP TERMINAL
7.88 [200.0] LONGER ABOVE FLANGE
800A DRAW LEAD, SMALL COATED SHIELD WITH NYLOC BOLTS

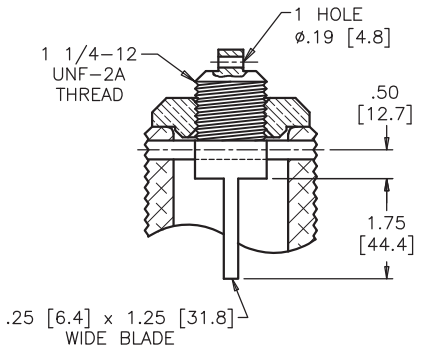
DATE 1-11-19	**REV. DATE**
MAXIMUM ALTITUDE 10000 ft [3000 m]	
NET WEIGHT 760 lb [345 kg]	
ANGLE OF INCLINATION FROM THE VERTICAL 0° TO 60°	

HV Bushing

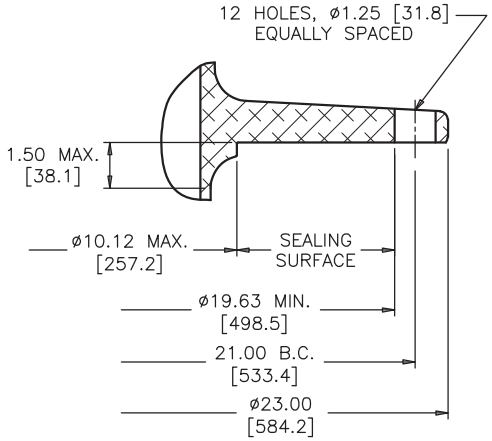


SMALL COATED SHIELD WITH NYLOC BOLTS

NOTE: ACTUAL DRAW-LEAD CURRENT RATING IS DETERMINED BY CABLE SIZE

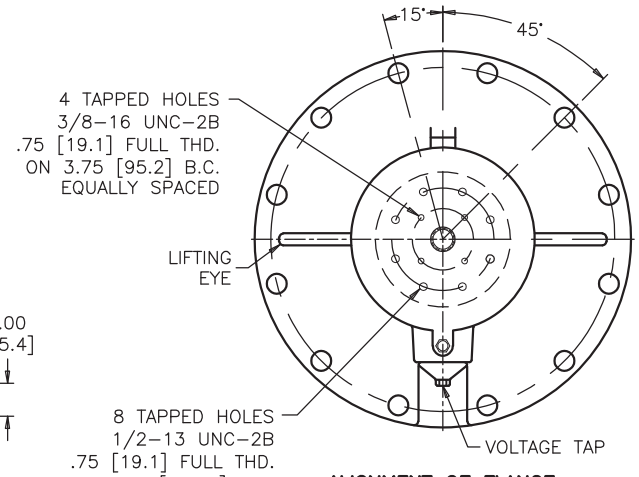


DRAW LEAD ASSEMBLY



MOUNTING FLANGE

ANGLE BETWEEN HOLES IN BOTTOM TERMINAL & IN FLANGE COINCIDE WITHIN ±2°



ALIGNMENT OF FLANGE AND BOTTOM TERMINAL TOP VIEW

DIMENSIONS IN INCHES [MILLIMETERS]

REVISION	**SCALE** 1/16

HUBBELL POWER SYSTEMS

PCORE ELECTRIC

kV CLASS 138 kV	**BIL** 650 kV	**Uy** 102 kV

CURRENT RATING

800 AMP DRAW LEAD CONNECTION
1200 AMP BOTTOM CONN. TRANSFORMER
1600 AMP BOTTOM CONN. OIL CIRCUIT BREAKER

MIN. CREEP 126.00 [3200.4]	**MIN. STRIKE** 54.00 [1371.6]
CREEP/Uy 1.23 [31.2]	**STD.** IEEE C57.19.00/01

PCB CONTENT OF OIL IS LESS THAN 1 ppm

DATE 12-10-96	**REV. DATE** 9-18-08
MAXIMUM ALTITUDE	10000 ft [3000 m]
NET WEIGHT	375 lb [170 kg]
ANGLE OF INCLINATION FROM THE VERTICAL	0° TO 60°

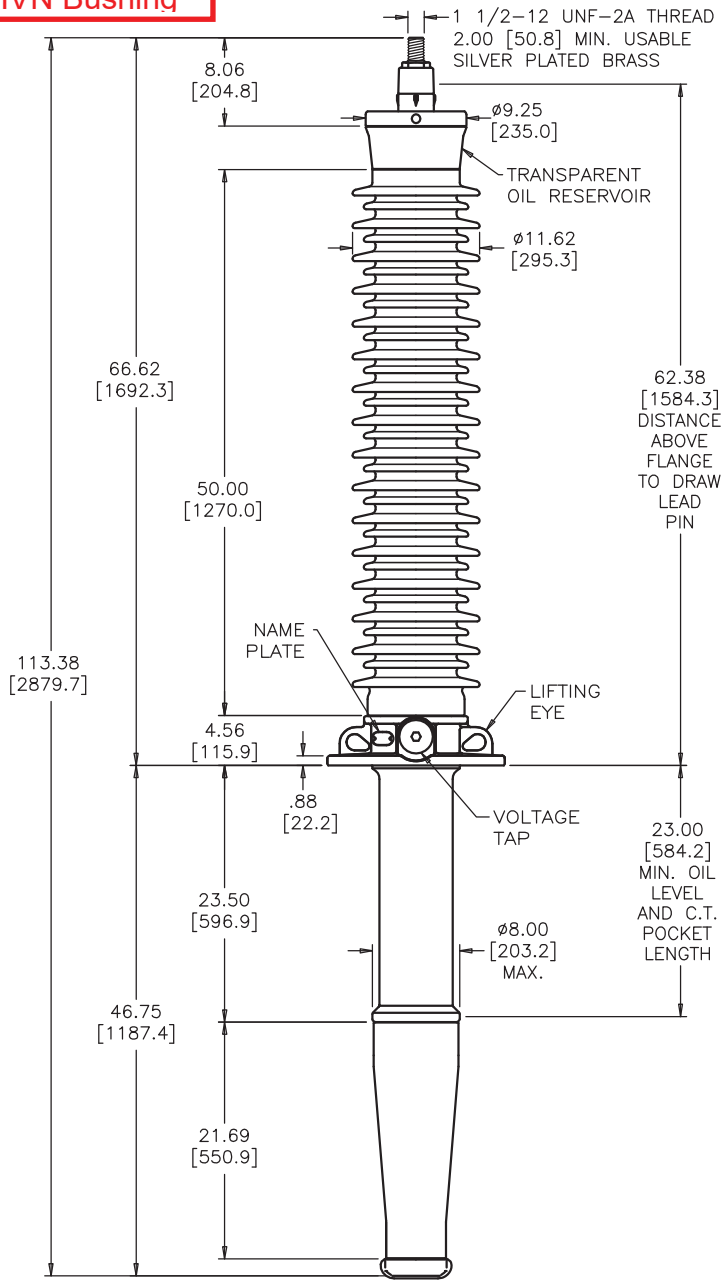
DWG.	CATALOG NUMBER	GLAZE COLOR
SD	POC650B0800S	BROWN
SD	POC650G0800S	LT. GRAY

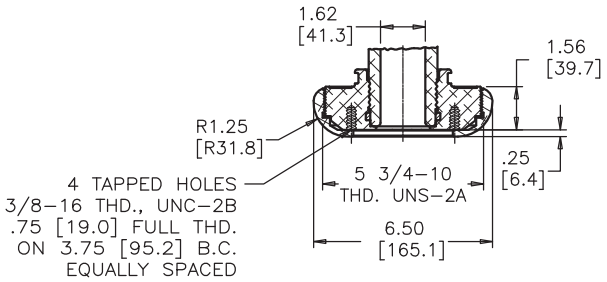
TITLE

TRANSFORMER – BREAKER INTERCHANGEABLE

SILVER PLATED BRASS TOP TERMINAL

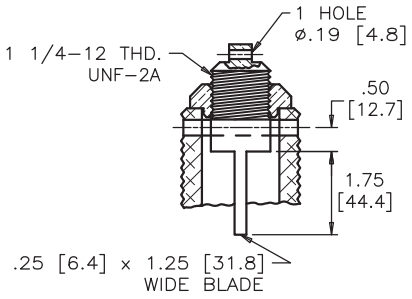
HVN Bushing



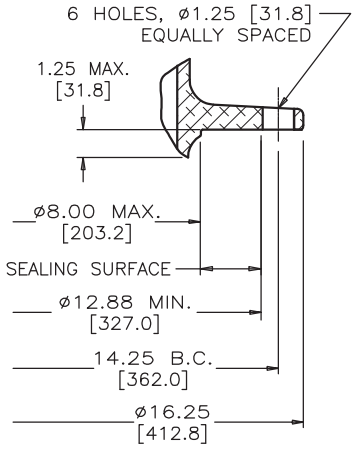


TWO PIECE BOTTOM END CAP WITH UNCOATED TRANSFORMER SHIELD

NOTE: ACTUAL DRAW-LEAD CURRENT RATING IS DETERMINED BY CABLE SIZE

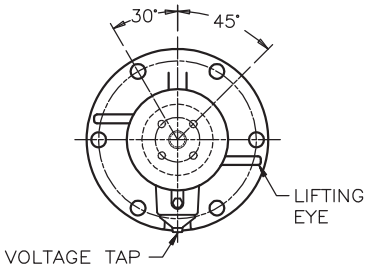


DRAW LEAD ASSEMBLY



MOUNTING FLANGE

ANGLE BETWEEN HOLES IN BOTTOM TERMINAL & IN FLANGE COINCIDE WITHIN ±2°



ALIGNMENT OF FLANGE AND BOTTOM TERMINAL TOP VIEW

DIMENSIONS IN INCHES [MILLIMETERS]

REVISION REMOVED °C, TEMPERATURE GOVERNED BY IEEE STANDARDS

SCALE 1/12

HUBBELL POWER SYSTEMS — PCORE ELECTRIC

kV CLASS 34.5 kV	BIL 200 kV	Uy 22 kV
CURRENT RATING	4000 AMP BOTTOM CONNECTED	
MIN. CREEP 40.00 [1016.0]	MIN. STRIKE 18.00 [457.2]	
CREEP/Uy 1.82 [46.2]	STD. IEEE C57.19.00/01	
PCB CONTENT OF OIL IS LESS THAN 1 ppm		

DWG.	CATALOG NUMBER	GLAZE COLOR
SD	B-88843-9	BROWN
SD	B-88843-9-70	LT. GRAY

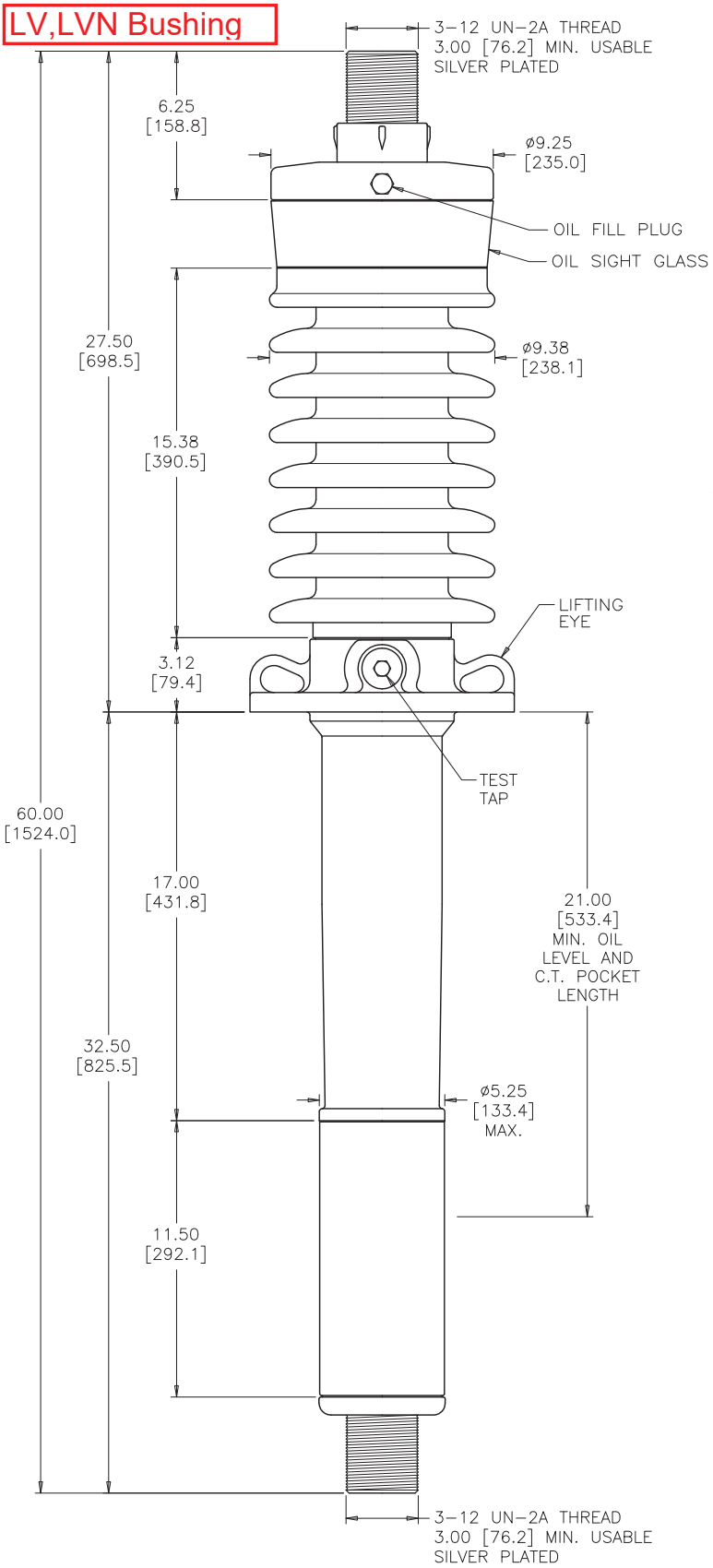
TITLE

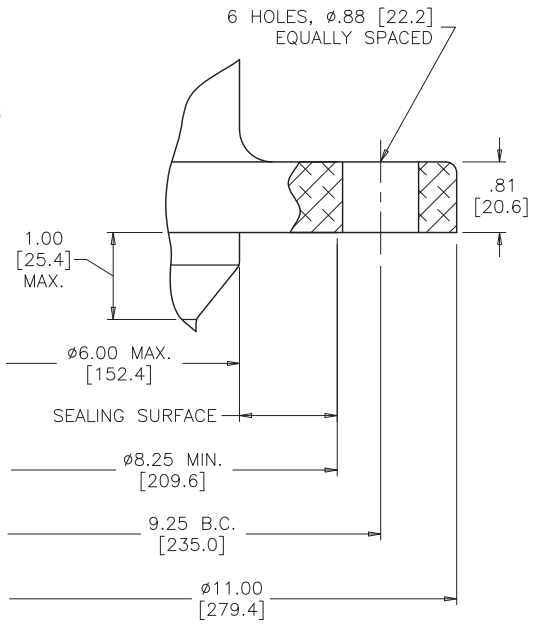
POC BUSHING

EXTRA LONG UPPER PORCELAIN

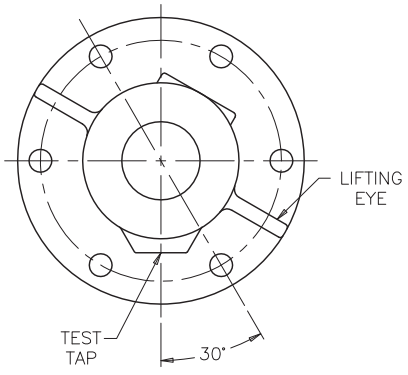
DATE	1-3-05
REV. DATE	8-22-12
MAXIMUM ALTITUDE	10000 ft [3000 m]
NET WEIGHT	175 lb [79 kg]
ANGLE OF INCLINATION FROM THE VERTICAL	0° TO 60°

LV,LVN Bushing





MOUNTING FLANGE DETAIL



FLANGE ALIGNMENT DIAGRAM
TOP VIEW

DIMENSIONS IN INCHES [MILLIMETERS]

REVISION "EXTRA LONG UPPER PORCELAIN" WAS "HIGH ALTITUDE"

SCALE 1/5

HUBBELL POWER SYSTEMS

PCORE ELECTRIC

kV CLASS 25 kV	**BIL** 150 kV	**Uy** 16 kV
CURRENT RATING		
2000 AMP BOTTOM CONNECTION		
MIN. CREEP 19.50 [495.3]	**MIN. STRIKE** 11.00 [279.4]	
CREEP/Uy 1.22 [31.0]	**STD.** IEEE C57.19.00/01	
PCB CONTENT OF OIL IS LESS THAN 1 ppm		

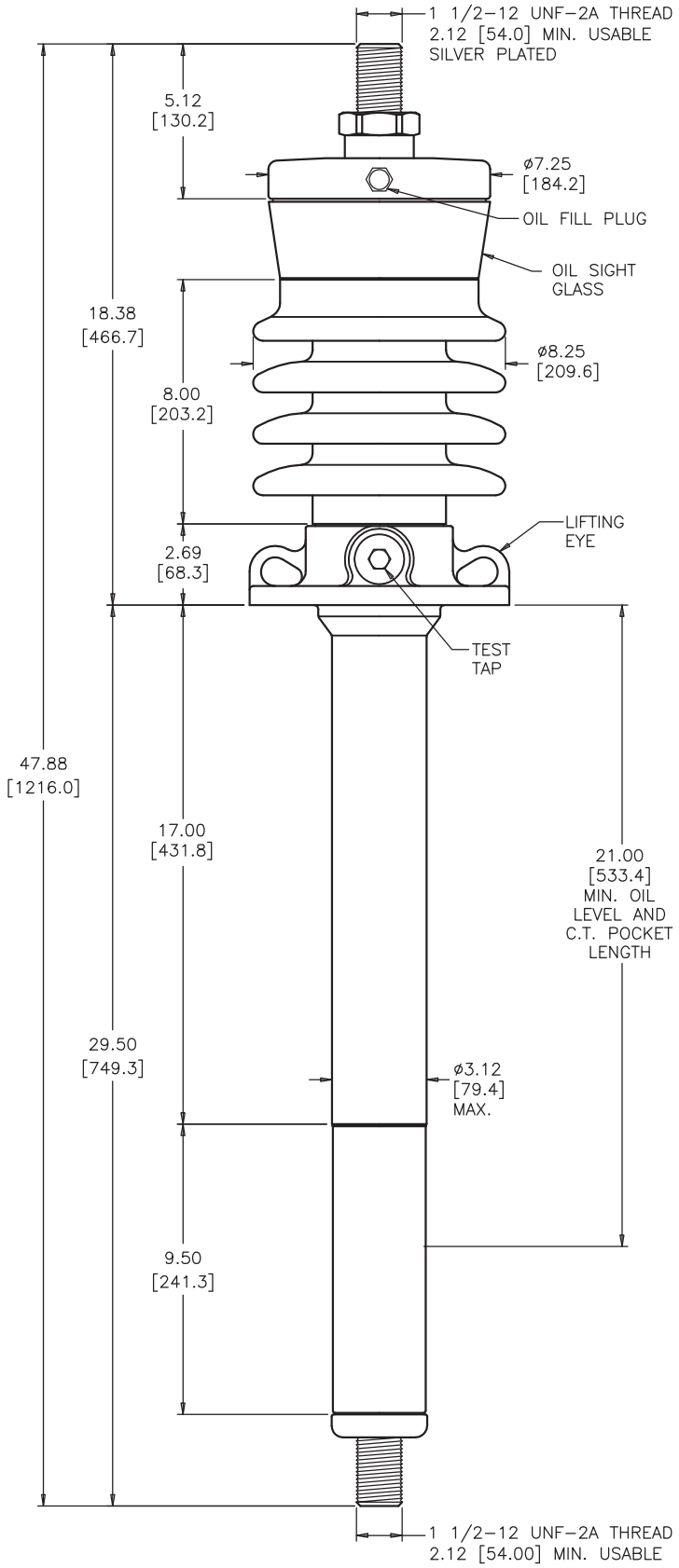
DWG.	**CATALOG NUMBER**	**GLAZE COLOR**
SD	B-88723	BROWN
SD	B-88723-70	LT. GRAY

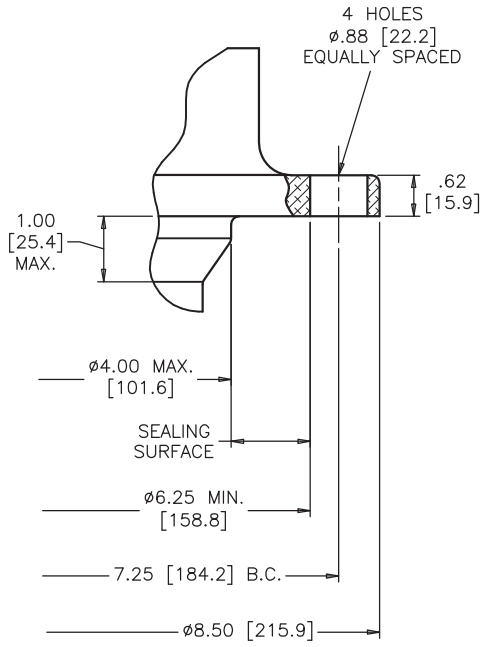
TITLE

POC BUSHING

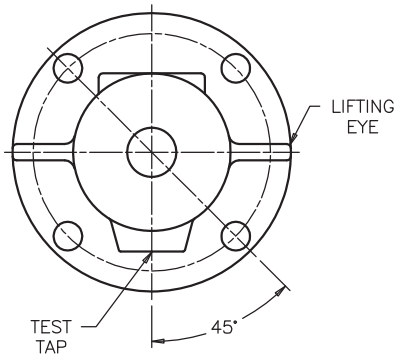
DATE 6-4-73	**REV. DATE** 9-18-08
MAXIMUM ALTITUDE 10000 ft [3000 m]	
NET WEIGHT 62 lb [28 kg]	
ANGLE OF INCLINATION FROM THE VERTICAL 0° TO 60°	

TV Bushing





MOUNTING FLANGE DETAIL



FLANGE ALIGNMENT DIAGRAM
TOP VIEW

DIMENSIONS IN INCHES [MILLIMETERS]

REVISION REMOVED °C, TEMPERATURE GOVERNED BY IEEE STANDARDS, MAXIMUM ALTITUDE WAS 3300 ft

SCALE 1/4

NOTES:
1. MATERIAL: CASTING – 255 ELECTRICAL BRONZE
   HARDWARE – STAINLESS STEEL
2. TO OBTAIN A TIN PLATED CASTING ADD "TP" SUFFIX TO CATALOG NO. (EXAMPLE: HDSF-14-D-12-12-TP)
3. ALL DIMENSIONS ARE IN INCHES
4. TO OBTAIN SILICON BRONZE HARDWARE ADD "ED" SUFFIX TO CATALOG NO. (EXAMPLE: HDSF-14-1-D-12-12-ED)
5. AMPACITY RATING: STANDARD- 2000 A
   HTJC-2300 A

HV,HVN,TV Terminal

CATALOG NO.	FIG. NO	STUD DIA./THD	A	B	J	K	L	T	W
HDSF-14-1-D-12-12	2	$1\frac{1}{2}$-12	1.188	4.13	$\frac{1}{2}$-13	1.13	7.13	0.50	4.00
HDSF-14-1-3-38-12	2	$1\frac{1}{2}$-12	1.188	3.13	$\frac{1}{2}$-13	0.63	6.00	0.38	3.00
HDSF-20-1-D-12-12	2	2-12	1.188	4.13	$\frac{1}{2}$-13	1.13	7.25	0.50	4.00
HDSF-12-1-D-38-12	2	$1\frac{1}{4}$-12	1.188	4.13	$\frac{1}{2}$-13	1.13	7.00	0.38	4.00
HDSF-12-1-D-38-14	2	$1\frac{1}{4}$-14	1.188	4.13	$\frac{1}{2}$-13	1.13	7.00	0.38	4.00
HDSF-12-1-D-38-0	2	$1\frac{1}{4}$-SMOOTH	1.188	4.13	$\frac{1}{2}$-13	1.13	7.00	0.38	4.00
HDSF-14-1-D-38-12	2	$1\frac{1}{2}$-12	1.188	4.13	$\frac{1}{2}$-13	1.13	7.00	0.38	4.00

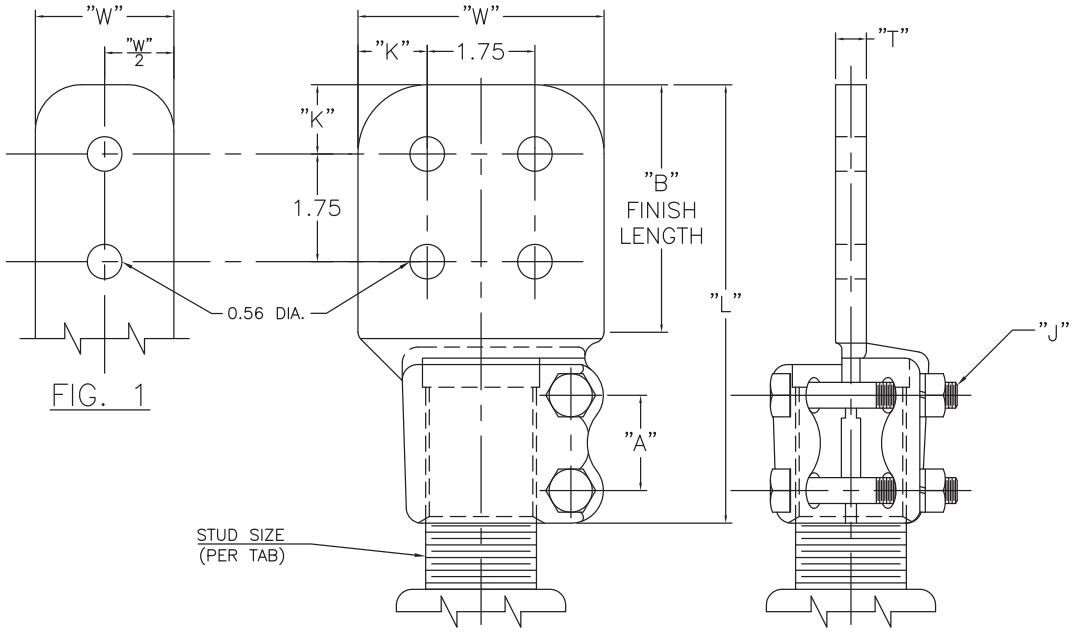


FIG. 1

FIG. 2

67551	11/17/2016	HG	HG
EC #	DATE	CHG BY	RESP ENG

DESC OF DWG:
REDRAWN IN AUTOCAD
ADD NOTE 4 AND CORRECTED NOTE 1
--
--
REASON (S) FOR CHANGE: --
DISPOSITION OF MAT'L: --

ANDERSON® TOLERANCE CHART

HUBBELL® POWER SYSTEMS

TITLE: STUD CONNECTOR STUD TO FLAT

SIZE	DWG NO.	CAT / PART / ASSY NO.	REV
-	CC-12926	SEE CHART	06

DO NOT SCALE THIS DRAWING	DRN BY HDY	DATE 1-17-84	SHEET 1 OF 1

PART No. SDB-58818 & S (SERIES)

TITLE CRIMP TYPE DRAW LEAD TERMINAL

PCORE ELECTRIC

HUBBELL

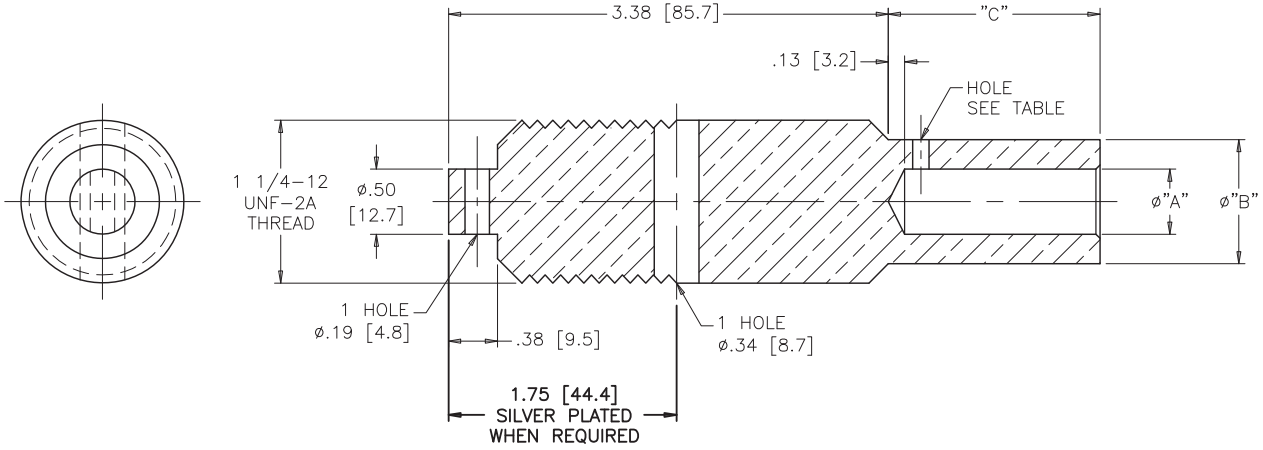
DATE 1-17-12 SCALE 1/1

REF.

REVISION	DATE
REVISED ROUNDING & ADDED ITEM 13	9-9-16
ITEMS 14, 15, 16 & 17	11-8-17
ITEMS 18, 19 AND 20	12-7-18
ADDED CURRENT NOTE	3-13-19

NOTES: 1. DIMENSIONS ARE IN INCHES [MILLIMETERS]
2. MATERIAL – COPPER.
3. ADD "S" SUFFIX TO INDICATE SILVER PLATING IN DESIGNATED AREA IS REQUIRED. ex. B-58818-S1.

NOTE: THE MAXIMUM CONTINUOUS CURRENT RATINGS OF THE BUSHING ARE STATED ON THE BUSHING NAME PLATE. HOWEVER, THE ACTUAL DRAW LEAD CURRENT RATING IS DETERMINED BY THE TRANSFORMER CABLE SIZE SELECTED BY THE TRANSFORMER MANUFACTURER AS THE DRAW LEAD IS AN INTEGRAL PART OF THE TRANSFORMER I.E. IT MAY BE LESS THAT THE CURRENT RATING STATED ON THE BUSHING NAME PLATE BUT SHALL NOT EXCEED THE BUSHING NAME PLATES DRAW LEAD CONTINUOUS CURRENT RATING.



ITEM	"A"	"B"	"C"	HOLE	CABLE SIZE	CRIMP DIE	ITEM	"A"	"B"	"C"	HOLE	CABLE SIZE	CRIMP DIE
10	.544 [13.82]	.750 [19.05]	1.63 [41.3]	YES	2/0 AWG	4/0	20	.650 [16.51]	.813 [20.64]	1.63 [41.3]	NO	300 MCM	W30RT
9	.313 [7.94]	.472 [11.99]	2.13 [54.0]	YES	NA	NA	19	.547 [13.89]	.688 [17.46]	1.63 [41.3]	NO	4/0 AWG	W28RT
8	NO HOLE	1.188 [30.18]	1.63 [41.3]	NO	NA	---	18	.393 [9.98]	.513 [13.49]	1.63 [41.3]	NO	1/0 AWG	W25RT
7	.953 [24.21]	1.188 [30.18]	1.63 [41.3]	YES	500 MCM	500	17	.886 [22.50]	1.050 [26.67]	1.63 [41.3]	YES	NA	---
6	.922 [23.42]	1.188 [30.18]	1.63 [41.3]	YES	400 MCM	500	16	.720 [18.29]	.953 [24.21]	1.63 [41.3]	YES	NA	---
5	.828 [21.03]	1.000 [25.40]	1.63 [41.3]	YES	350 MCM	350	15	.720 [18.29]	.910 [23.11]	1.63 [41.3]	YES	NA	---
4	.797 [20.24]	1.000 [25.40]	1.63 [41.3]	YES	300 MCM	350	14	.516 [[13.10]	.750 [19.05]	1.63 [41.3]	YES	NA	---
3	.625 [15.88]	.750 [19.05]	1.63 [41.3]	YES	4/0 AWG	4/0	13	.953 [24.21]	1.188 [30.18]	1.63 [41.3]	NO	500 MCM	---
2	.594 [15.09]	.750 [19.05]	1.63 [41.3]	YES	3/0 AWG	4/0	12	.656 [16.7]	1.000 [25.40]	1.63 [41.3]	YES	250 MCM	NA
1	.438 [11.13]	.750 [19.05]	1.63 [41.3]	YES	3 OR 1/0 AWG	4/0	11	.450 [11.43]	.750 [19.05]	1.63 [41.3]	YES	#2	4/0

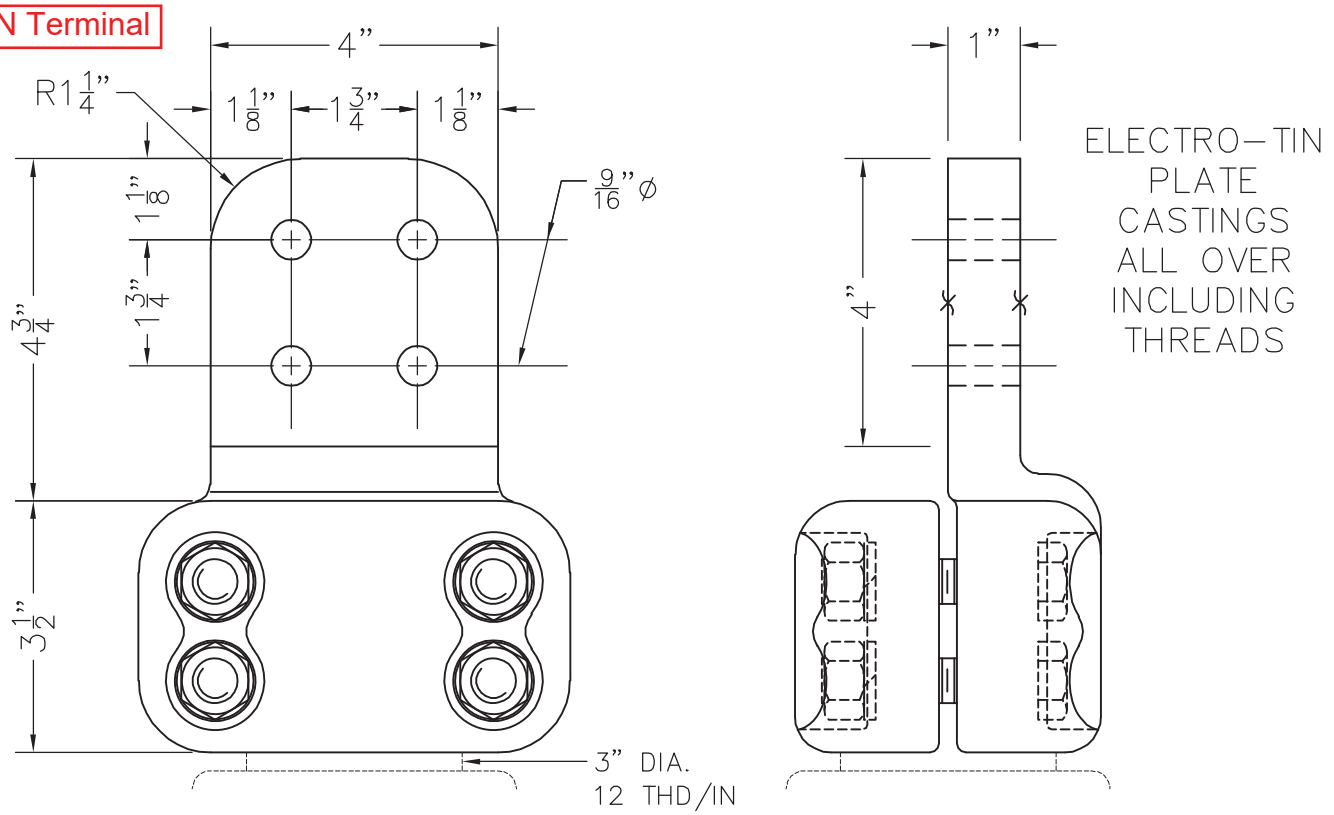
HV Bushing

HVN Bushing

Catalog No. ASNF-61-4B-BR-ETP

CONDUCTOR: 3"-12 STUD

LV,LVN Terminal



- MATERIAL -

ITEM	PART NO.	QTY	DESCRIPTION	MATERIAL	REF. DWG
1	ASNF-61-4B	1	CONNECTOR BODY - CAST BRONZE	ELEC BRZ	CP-1536
2	ASNFHV-61C	1	CAP - CAST BRONZE	ELEC BRZ	BP-1199
3		4	5/8"ø x 3" H.H. BOLT	SIL BRZ	
4		4	5/8"ø HEX NUT	SIL BRZ	
5		4	5/8"ø SPRINGLOCK WASHER	SIL BRZ	

4000 A

Ass'y Wt. 21.20 #

Job no. _____

Item(s) no. _____

Qty. req'd _____

No.	By	Date	Revision

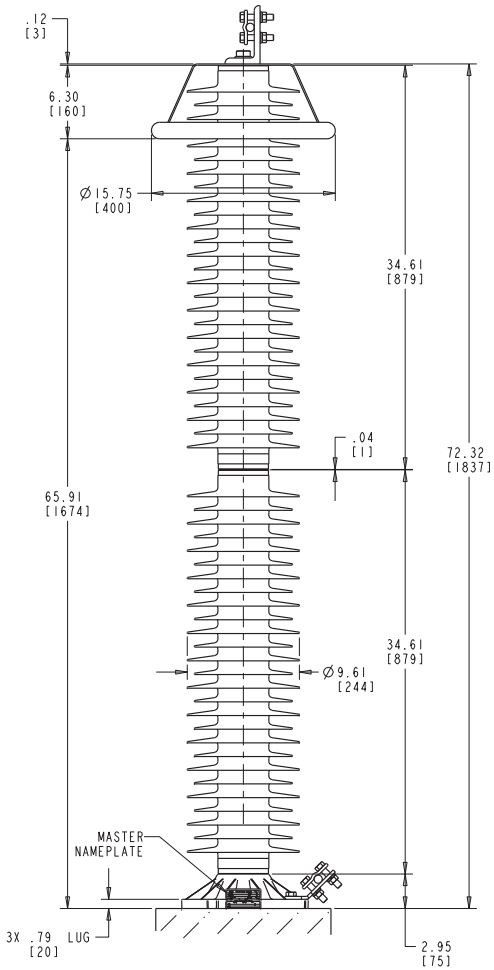
SEFCOR INC.
GRIFFIN, GEORGIA

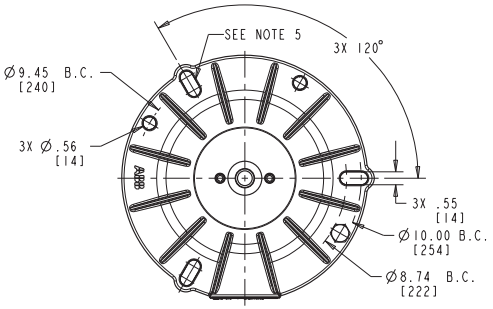
DWS | 12/10/12

ASNF-61-4B-BR-ETP

STYLE NO.	RATINGS				TOV WITH PRIOR DUTY OF W_{th}		TOV WITHOUT PRIOR DUTY		MAXIMUM RESIDUAL VOLTAGE WITH DIFFERENT CURRENT WAVEFORMS (kV_{PEAK})								
	DUTY CYCLE	MCOV	ENERGY RATING						SPL (SIPL)			LPL (LIPL)					FOW
	kV_{RMS}		kJ/kV_{MCOV}	CLASS	kV_{RMS}		kV_{RMS}		30/60 μS			8/20 μS					0.5 μS
	V_R	V_{MCOV}	W_{th}		1 sec	10 sec	1 sec	10 sec	0.5 kA	1 kA	2 kA	3 kA	5 kA	10 kA	15 kA	20 kA	10 kA
P192ZH245A	192	152	13.0	G	213	202	225	215	363	373	386	402	415	437	461	478	465
P204ZH245A	204	164	13.0	G	226	215	239	228	386	396	410	427	441	464	490	508	494
P216ZH245A	216	174	13.0	G	240	227	253	241	409	419	434	452	467	491	518	538	523
P228ZH245A	228	180	13.0	G	253	240	267	255	432	442	458	477	493	519	547	568	552
P240ZH245A	240	190	13.0	G	266	253	281	268	454	466	482	502	519	546	576	598	581

HV Arrester





DRILLING PLAN

NOTES:
1. FOR MINIMUM PHASE-TO-GROUND AND PHASE-TO-PHASE CLEARANCES REFER TO IEEE C62.11 AND C62.22. OTHER APPARATUS STANDARDS, SPECIFICATIONS OR LOCAL CODES MAY SUPERCEDE DISTANCES SPECIFIED.
2. ARRESTER ASSEMBLY CONSISTS OF ARRESTER UNIT, LINE & GROUND TERMINALS WITH GALVANIZED CLAMPS, AND .50 INCH HARDWARE.
3. LINE & GROUND TERMINALS CAN ACCOMODATE CU OR AL CABLE SIZE NO. 2 TO 1000 MCM (.25 [6.4] TO 1.15 [29.2]) DIA.
4. LINE & GROUND TERMINAL CLAMP CAN BE MOUNTED AS SHOWN OR ROTATED 90° AS REQUIRED.
5. MTG. SLOTS FOR .500 INCH HARDWARE. THICKNESS OF LUG = .79 [20]
6. DESIGNED FOR VERTICAL MOUNT.
7. SPECIFIED LONG-TERM LOAD (SLL) 2212 FT-LBS [3000 Nm]
8. SPECIFIED SHORT-TERM LOAD (SSL) 4425 FT-LBS [6000 Nm]
9. RATED SHORT-CIRCUIT CURRENT 65kA RMS.
10. NOMINAL CREEPAGE DISTANCE 294 [7480].
11. MAXIMUM ARRESTER WEIGHT 180 lbs [82 kg].
12. ARRESTER USES GRADING RING 1HSA300712-101.
13. ROUTINE TESTED ACCORDING TO IEEE C62.11.

REV.	DESCRIPTION & DATE
01	JUNE 19, 2018 UPDATED STYLE P192ZH245A UPDATED STYLE P228ZH245A ADDED STYLE P204ZH245A ADDED STYLE P216ZH245A ADDED STYLE P240ZH245A MAV
02	NOVEMBER 30, 2018

ALL DIMENSIONS IN INCHES [MM] UNLESS NOTED

PEXLIM P-Z / IEEE STATION G / IEC CLASS 4
POLYMER ARRESTER / 245 kV SYSTEM
HEAVY CREEPAGE / (101) OUTLINE

ABB Inc.
Power Products Division
100 Distribution Circle, Mt Pleasant, PA 15666

CAD DRW PRO/E WILDFIRE 2.0	
SCALE 0.06	SHEET 1 OF 1
ASSY. DWG.	
DWN LVERDSKY	4F2184 REV. 2
CHKD MAV	
APVD RH	

pro_e-bdr-d

4F2184
DRW

LV Arrester

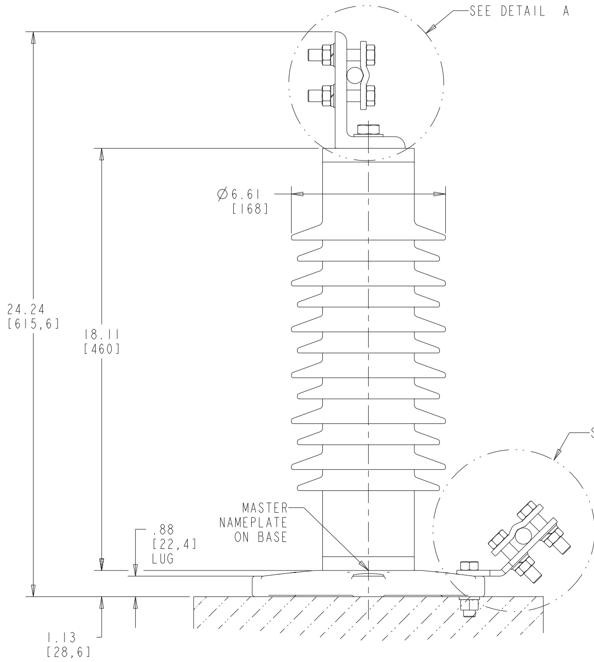
STYLE NO.	RATINGS (kV rms)		TOV (kV rms)	MAXIMUM RESIDUAL VOLTAGE WITH CURRENT WAVE (kV PEAK)				
	VOLTAGE Vr	MCOV Vmcov	WITH PRIOR ENERGY SINGLE IMPULSE OF 4.5 kJ/kVr	SPL (SIPL) 30/60 μS	LPL (LIPL) 8/20 μS			FOW 0.5 μS
				500 A	3 kA	10 kA	20 kA	10 kA
STANDARD CREEP								
Q024SA019A	24	19.5	@10 sec = 26.3	47.7	53.5	57.6	63.9	63.0
Q027SA022A	27	22.0	@10 sec = 29.6	53.6	60.1	64.8	71.8	70.8
Q030SA024A	30	24.4	@10 sec = 32.9	59.5	66.7	72.0	79.7	78.6
Q033SA027A	33	27.0	@10 sec = 36.1	65.4	73.4	79.2	87.6	86.4
Q036SA029A	36	29.0	@10 sec = 39.4	71.3	80.0	86.4	95.5	94.2
Q039SA031B	39	31.5	@10 sec = 42.7	77.3	86.6	93.6	103	102
Q042SA034B	42	34.0	@10 sec = 46.0	83.3	93.4	101	112	110
EXTRA CREEP								
Q003SC002A	3	2.55	@10 sec = 4.93	9.77	10.9	11.3	12.9	12.8
Q004SC003A	4	3.40	@10 sec = 4.93	10.0	11.2	11.6	13.3	13.1
Q005SC004A	5	4.25	@10 sec = 6.57	12.3	13.7	14.4	16.3	16.1
Q006SC005A	6	5.10	@10 sec = 6.57	12.8	14.3	15.0	17.0	16.8
Q007SC006A	7	5.95	@10 sec = 9.86	17.7	19.8	21.0	23.6	23.3
Q008SC007A	8	6.80	@10 sec = 9.86	18.5	20.7	22.0	24.7	24.4
Q009SC008B	9	7.65	@10 sec = 9.86	19.0	21.3	22.6	25.4	25.0
Q010SC008B	10	8.40	@10 sec = 11.0	21.0	23.5	25.0	28.0	27.6
Q012SB010A	12	10.2	@10 sec = 13.1	25.1	28.1	30.0	33.5	33.1
Q015SB012A	15	12.7	@10 sec = 16.4	31.3	35.0	37.5	41.8	41.2
Q018SB015A	18	15.3	@10 sec = 19.7	37.4	41.9	45.0	50.0	49.3
Q021SB017B	21	17.0	@10 sec = 23.0	41.8	46.9	50.4	55.9	55.2

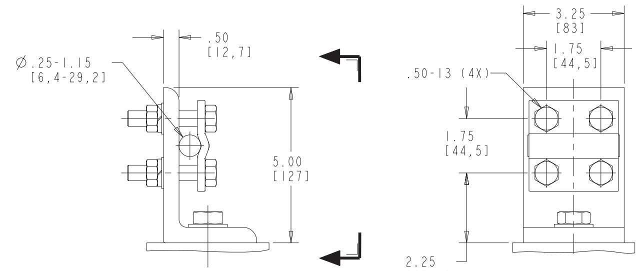
ABB POLIM-S SURGE ARRESTER

STYLE NO. *	SERIAL NO. *
RATING * kV RMS	MCOV * kV RMS
WT. 33 lbs	MFG DATE *
GRADING RING NONE	PRESS RELIEF CLASS 65 kA RMS
4F4002H02 MADE IN USA	IEEE / ENERGY / IEC CLASS STATION / E / 3

MASTER NAMEPLATE

* ASSIGNED AT THE TIME OF PRODUCTION AND RECORDED IN THE PROPER LOCATIONS



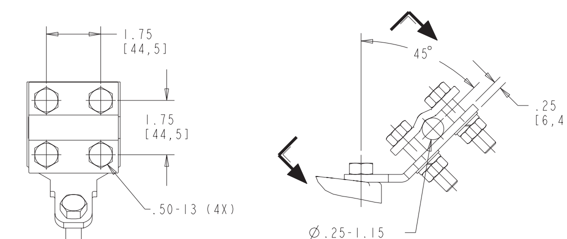


DETAIL A

(ENLARGED)
SCALE 0.500

LINE TERMINAL (ALUMINUM)

(CAN BE ADJUSTED TO ANY ANGLE)

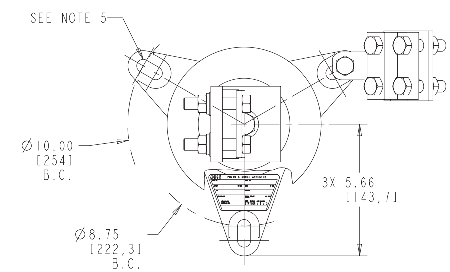


DETAIL B

(ENLARGED)
SCALE 0.500

GROUND TERMINAL (GALVANIZED)

(CAN BE ATTACHED TO ANY LUG)



DRILLING PLAN

NOTES:
1. FOR MINIMUM PHASE-TO-GROUND AND PHASE-TO-PHASE CLEARANCES REFER TO IEEE C62.11 AND C62.22. OTHER APPARATUS STANDARDS, SPECIFICATIONS OR LOCAL CODES MAY SUPERCEDE DISTANCES SPECIFIED.
2. ARRESTER ASSEMBLY CONSISTS OF ARRESTER UNIT, LINE & GROUND TERMINALS WITH CLAMPS, AND .50 INCH HARDWARE.
3. LINE & GROUND TERMINALS CAN ACCOMODATE CU OR AL CABLE SIZE NO. 2 TO 1000 MCM (.25 [6.4] TO 1.15 [29.2]) DIA.
4. LINE & GROUND TERMINAL CLAMP CAN BE MOUNTED AS SHOWN OR ROTATED 90° AS REQUIRED.
5. MTG. SLOTS FOR .50 INCH HARDWARE (3) EQUALLY SPACED, THICKNESS OF LUG = .88 [22.4]
6. DESIGNED FOR VERTICAL OR HORIZONTAL MOUNT.
7. MAX CANTILEVER LOAD 20,000 in-lbs [2260 Nm].
8. PRESSURE RELIEF CLASS IS 65 kA RMS SYMMETRICAL.
9. NOMINAL CREEPAGE DISTANCE 42.2 [1073].
10. MAXIMUM ARRESTER WEIGHT 33.0 lbs [15.0 kg].

REV. DESCRIPTION & DATE

REV.	DATE	DESCRIPTION
01	FEBRUARY 9, 2010	STYLES Q036SA029A AND Q021SB017A: UPDATED MAXIMUM RESIDUAL VOLTAGE CHART TOV COLUMN HEADER RECONFIGURED "(ALUMINUM)" ADDED TO LINE TERMINAL CALLOUT "(GALVANIZED)" ADDED TO GROUND TERMINAL CALLOUT NOTE 1: PRODUCT BULLETIN NUMBER ADDED NOTE 7: LOAD WAS STRENGTH FORMAT TITLE BLOCK ADDRESS UPDATED DJK
02	JULY 26, 2011	ADDED STYLE NO.: Q003SC002A, Q004SC003A, Q005SC004A, Q006SC005A, Q007SC006A, Q008SC007A, Q009SC008B, Q010SC008B DJK
03	AUGUST 1, 2011	Q021SB017B WAS Q021SB017A DJK
04	AUGUST 11, 2011	NOTE 9: CREEPAGE 42.2 WAS 42.0 DETAIL B: .25 ADDED DRILLING PLAN RELOCATED DJK
05	OCTOBER 22, 2013	TITLE UPDATED NOTE 8 AND NAMEPLATE PRESSURE RELIEF CLASS 65 kA WAS 63 kA NOTE 1 UPDATED MIPSTERM REPLACED WITH LINETERM 24.24 WAS 24.27 .88 LUG ADDED DETAIL A: 5.00 WAS 5.03 2.25 WAS 2.15 3.25 WAS 3.94 (CAN BE ADJUSTED TO ANY ANGLE) ADDED DJK
06	MAY 14, 2018	

ALL DIMENSIONS IN INCHES [MM] UNLESS NOTED

POLIM-S / IEEE STATION E / IEC CLASS 3
POLYMER ARRESTER
12 SHED HOUSING OUTLINE

ABB Inc.
Power Products Division
100 Distribution Circle, Mt Pleasant, PA 15666

CAD DRW PRO/E WILDFIRE 2.0
SCALE 0.20
SHEET 1 OF 1
ASSY. DWG.
DWN KRYGOWSKI
CHKD DJK
APPD MGM

DRW 4F4003 REV. 6

pro_e-bdr-d

LOCAL CONTROL PANEL

CUSTOMER : EDF RENEWABLE ENERGY

PROJECT NAME : MORRIS RIDGE SOLAR GENERATION PROJECT

TITLE : LOCAL CONTROL PANEL DRAWINGS

REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE: DRAWING COVER

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-010	0

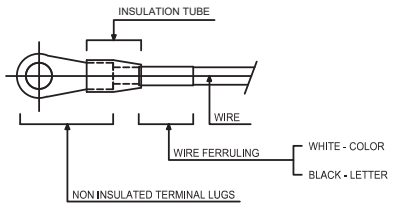
A3 (297mm x 420mm)

WIRE SPECIFICATION

DESCRIPTION			WIRE SPEC. TYPE	WIRE SPEC. SIZE	WIRE SPEC. COLOR	MARKING TUBE COLOR	MARKING FERRULING COLOR
INCOMING	1PH 2W 240VAC 60Hz POWER	A	XHHW/SIS	70mm2	BLACK	-	-
		B	XHHW/SIS	70mm2	BLACK	-	
	125VDC CONTROL	+	XHHW/SIS	6.0mm2	BLACK	RED	WHITE
		−	XHHW/SIS	6.0mm2	BLACK	BLUE	
LOCAL CONTROL PANEL	1PH 2W 240VAC 60Hz POWER	A	XHHW/SIS	10.0mm2	BLACK	RED	
		B	XHHW/SIS	10.0mm2	BLACK	BLUE	
	125VDC CONTROL	+	XHHW/SIS	2.5mm2	BLUE	RED	
		−	XHHW/SIS	2.5mm2	BLUE	BLUE	
	120VAC CONTROL	A	XHHW/SIS	2.5mm2	YELLOW	RED	
		N	XHHW/SIS	2.5mm2	YELLOW	BLACK	
	OUTPUT SIGNAL	ALARM	XHHW/SIS	2.5mm2	BLUE	RED	
		TRIP	XHHW/SIS	2.5mm2	BLUE	RED	
		SIGNAL	CVV-SB	1.5mm2	BLACK (2CORE)	RED(+) BLUE(-)	
	P.T	A	XHHW/SIS	4.0mm2	RED	RED	
		B	XHHW/SIS	4.0mm2	RED	YELLOW	
		C	XHHW/SIS	4.0mm2	RED	BLUE	
		N	XHHW/SIS	4.0mm2	RED	BLACK	
	B.C.T	A	XHHW/SIS	6.0mm2	BLACK	RED	
		B	XHHW/SIS	6.0mm2	BLACK	YELLOW	
		C	XHHW/SIS	6.0mm2	BLACK	BLUE	
		N	XHHW/SIS	6.0mm2	BLACK	BLACK	
	1PH 240VAC 60Hz FAN MOTOR	A	XHHW/SIS	4.0mm2	YELLOW	RED	
		B	XHHW/SIS	4.0mm2	YELLOW	BLUE	
	GROUND		XHHW/SIS	6.0mm2	YELLOW /GREEN	GREEN	
MONITORING	POWER		XHHW/SIS	1.5mm2	BLUE	-	
	POTENTIAL		XHHW/SIS	1.5mm2	BLUE	-	
	CURRENT		XHHW/SIS	4.0mm2	BLACK	-	
	RELAY		XHHW/SIS	1.5mm2	BLUE	-	
	SIGNAL		XHHW/SIS	1.5mm2	BLUE	-	

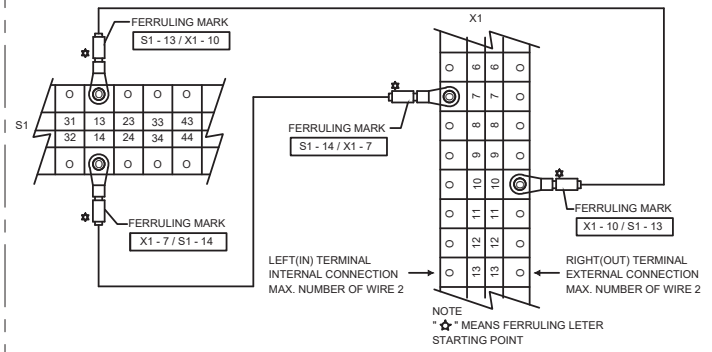
NOTE
1. WIRE TYPE : XHHW/SIS(600/1000Vac FLAME-RETARDANT XLPE INSULATED WIRE)

FERRULING METHOD



1. IF THE MARKING OF WIRE BE NOT INDICATED ON DRAWING MARKING METHOD SHALL BE ACCORDING TO FOLLOWING METHOD

2. WIRING SHALL BE TERMINATED WITH RING TYPE NON INSULATED LUGS. RING TYPE LUGS SHALL BE USED FOR ALL CURRENT TRANSFORMERS WIRING TERMINATIONS.



REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE: WIRE SPECIFICATION

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-020	0

A3 (297mm x 420mm)

BILL OF MATERIAL LIST

NO.	DESIGNATION	DESCRIPTION	TYPE	MAKER / COUNTRY	Q`TY	REMARK
01	52M	MOLDED CASE CIRCUIT BREAKER FOR MAIN POWER	ABN102c 75AT 2P	LS / KOREA	1EA	
02	52A,52B	MOLDED CASE CIRCUIT BREAKER FOR FAN MOTOR POWER	ABN52c 40AT 2P	LS / KOREA	2EA	
03	52F1 TO 52F24	MANUAL MOTOR SWITCH FOR FAN MOTOR PROTECTION	MMS32S(1.6-2.5A) W/AL. CONTACT 1NO, 1NC	LS / KOREA	32EA	
04	52M11,52M12	MINIATURE CIRCUIT BREAKER FOR BREATHER OF M.TR AND OLTC	BK63H 20A 2P	LS / KOREA	2EA	
05	52M13	MINIATURE CIRCUIT BREAKER FOR DGA POWER	BK63H 10A 2P	LS / KOREA	1EA	
06	52C	MINIATURE CIRCUIT BREAKER FOR CONTROL POWER	BK63H 50A 1P	LS / KOREA	1EA	
07	52C1,52C2	MINIATURE CIRCUIT BREAKER FOR CONTROL POWER	BK63H 32A 1P	LS / KOREA	2EA	
08	52C21,52C22,52C23,52C25	MINIATURE CIRCUIT BREAKER FOR CONTROL POWER	BK63H 20A 1P	LS / KOREA	4EA	
09	52C24,52C26,52C27	MINIATURE CIRCUIT BREAKER FOR CONTROL POWER	BK63H 10A 1P	LS / KOREA	3EA	
10	4-F1,4-F2,4-F3,4-F4	MAGNETIC CONTACTOR	MC-22b,2NO,2NC, 240VAC(COIL 120VAC)	LS / KOREA	4EA	
11	27TA,27TB	TIME DELAY RELAY(OFF DELAY)	H3CR-H8L 0-30sec, 240VAC W/SOCKET	OMRON / KOREA	2EA	
12	27C	TIME DELAY RELAY(OFF DELAY)	H3CR-H8L 0-30sec, 120VAC W/SOCKET	OMRON / KOREA	1EA	
13	27D	TIME DELAY RELAY(OFF DELAY)	H3CR-H8L 0-30sec, 125VDC W/SOCKET	OMRON / KOREA	1EA	
14	26X1,26X2,49FA,49FB	AUXILIARY RELAY	MR4 120VAC 4NO	LS / KOREA	4EA	
15	43A,43B	SELECTOR SWITCH FOR FAN CONTROL MAN. / OFF / AUTO	YSNC 3221-64MRB	YONGSUNG / KOREA	2EA	
16	RT	RECEPTACLE	GF5362 20A AC 120V	HUBBELL / USA	1EA	
17	FL1,FL2	THREE WAVELENGTH LAMP (WITH COVER)	RFL-20 120VAC 20W	RUN ELEC. / KOREA	2EA	
18	LS1,LS2	LIMIT S/W	Z15-G07	YONGSUNG / KOREA	2EA	
19	23T	THERMOSTAT	RTL-50	RUN ELEC. / KOREA	1EA	
20	R1,R2	SPACE HEATER	RHCT-400W 240VAC 400W	RUN ELEC. / KOREA	2EA	
21	TS1	TEST SWITCH	FMS04E(26-26-26-26-26-26-1-10)	STATES / USA	1EA	
22	43S	SELECTOR SWITCH FOR OLTC CONTROL LOCAL / REMOTE / AUTO	YSNC 3203-64MRB	YONGSUNG / KOREA	1EA	
23	43LR	CONTROL SWITCH FOR OLTC CONTROL LOWER / RAISE	YSNC 3102A-64RPB	YONGSUNG / KOREA	1EA	
24	72D	MOLDED CASE CIRCUIT BREAKER FOR DC POWER	ABS32c 20AT 2P	LS / KOREA	1EA	
25	72D1	MOLDED CASE CIRCUIT BREAKER FOR DC	ABS32c 10AT 2P	LS / KOREA	1EA	
26	X11	TERMINAL BLOCK FOR POWER (X11-1 TO X11-4)	YSFT 200-04 200A 4P (WITH COVER)	YONGSUNG / KOREA	1EA	
27	X1,X2,X21	TERMINAL BLOCK FOR POWER	EB25B12C 12P (WITH COVER)	GE / USA	3EA	
28	X3,X4	TERMINAL BLOCK FOR FAN POWER	EB25B12C 12P (WITH COVER)	GE / USA	6EA	
29	X5,X6,X7,X8,X9,X10,X13,X91	TERMINAL BLOCK FOR CONTROL	EB25B12C 12P (WITH COVER)	GE / USA	16EA	
30	STB1~25	TERMINAL BLOCK FOR B.C.T	EB-27B06SC (WITH COVER)	GE / USA	25EA	
31	ACT1,ACT2,FCT1,FCT2	CURRENT TRANSDUCER	Amperage Range (Selectable) 20/100/150A OUT:0-10VDC CTCGV10NN	SETRA / USA	4EA	
32	TD	DC SIGNAL REPLICATOR IN:4-20mA / OUT1,OUT2:4-20mA	DT-ISOAAC-D 120VAC	DAEJOO / KOREA	1EA	
33	63X1,63X2	SEAL-IN RELAY	909-300-1	QUALTROL / USA	2EA	
34	49T-1	ELECTRIC TRANSFORMER MONITOR	SEL-2414	SEL / USA	1EA	
35	49T-3	REMOTE I/O MODULE	SEL-2505 W/SEL-C272A COM. WIRE	SEL / USA	1EA	
36	90BU	BACKUP CONTROL FOR AVR	M-0329B	BECKWITH / USA	1EA	
37	MCT	CURRENT TRANSFORMER FOR AVR CT INPUT	M-0169A	BECKWITH / USA	1EA	
38	90	COMPREHENSIVE TAP CHANGER CONTROL	TAPCON 250 W/ ADAPTOR PANEL	MR / GERMANY	1EA	
39	SPH	SINGLE PANEL HOUSING W/ADAPTOR (SC TYPE CONNECTOR)	SPH-01P W/CCH-CP12-59	CORNING	1EA	

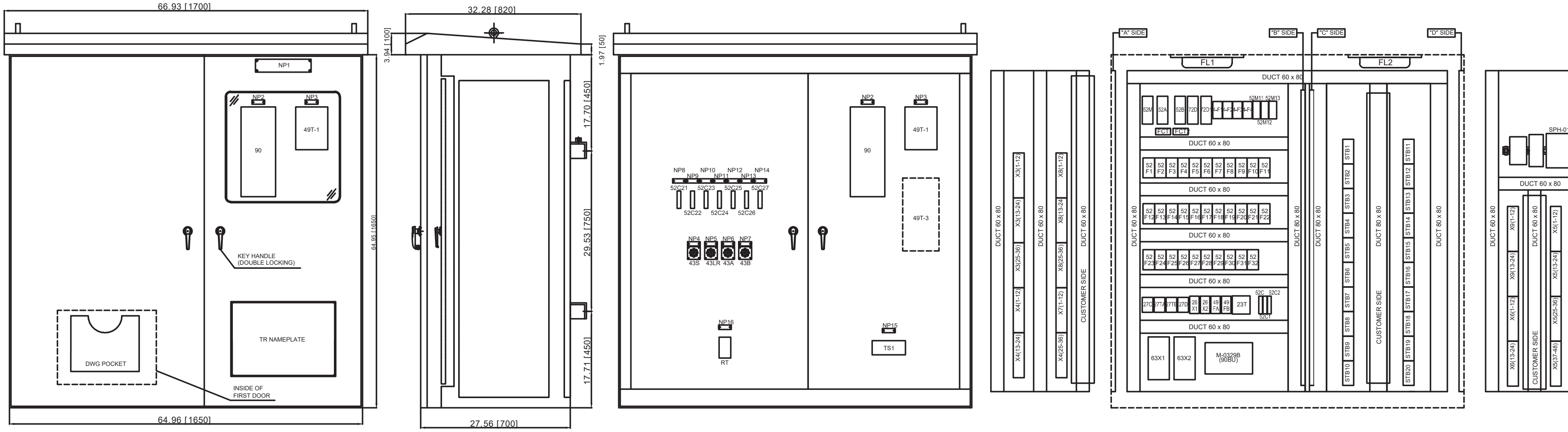
REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
1	10.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE: BILL OF MATERIAL LIST

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-030	1

A3 (297mm x 420mm)



FRONT VIEW

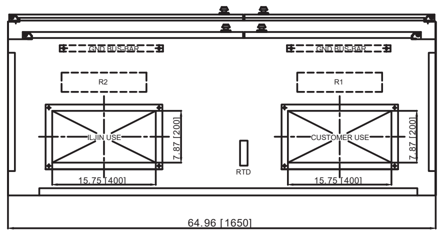
SIDE VIEW

2'nd DOOR

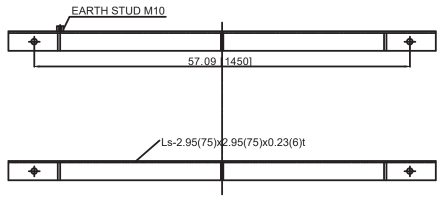
A-SIDE VIEW

FRONT VIEW WITHOUT DOOR

D-SIDE VIEW



BOTTOM VIEW



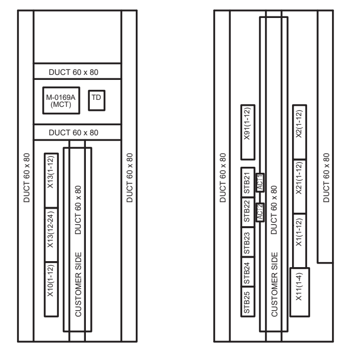
REAR VIEW

NOTE

1. UNIT : INCHES (MILIMETERS)
2. DIMENSIONS TOLERANCE : ±5%
3. PAINTING : POWDER COATING

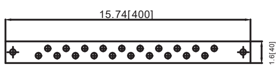
DRY FILM THICKNESS		60 um ABOVE
COLOR	INTERIOR	ANSI 70
	EXTERIOR	

4. MATERIAL : GENERAL STRUCTURAL ROLLED STEEL
5. THICKNESS : DOOR 3.2t / OTHER 2.3t
6. PROTECTION LEVEL : NEMA 4X



B-SIDE VIEW

C-SIDE VIEW



1. BUS-BAR, Cu
2. SILVER PLATE

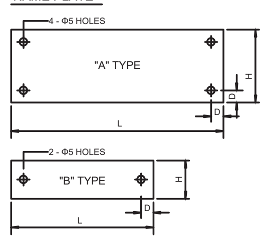
GROUND BUS-BAR DETAIL

TYPE	DESCRIPTION	QTY	REMARKS
A	LOCAL CONTROL PANEL FOR POWER STEP-UP TRANSFORMER	1	NP1
B	AUTO VOLTAGE REGULATOR (90)	1	NP2
B	TRANSFORMER MONITOR (49T-1)	1	NP3
B	OLTC CONTROL (43S)	1	NP4
B	OLTC CONTROL (43LR)	1	NP5
B	STAGE 1 FAN CONTROL (43A)	1	NP6

TYPE	DESCRIPTION	QTY	REMARKS
B	STAGE 2 FAN CONTROL (43B)	1	NP7
B	49T-2 CONTROL 120VAC 60Hz (52C21)	1	NP8
B	TD CONTROL 120VAC 60Hz (52C22)	1	NP9
B	MDU MOTOR 120VAC 60Hz (52C23)	1	NP10
B	LTC CONTROL 120VAC 60Hz (52C24)	1	NP11
B	RECEPTACLE 120VAC 60Hz (52C25)	1	NP12

TYPE	DESCRIPTION	QTY	REMARKS
B	LIGHTING 120VAC 60Hz (52C26)	1	NP13
B	HEATER 120VAC 60Hz (52C27)	1	NP14
B	TEST SWITCH (TS1)	1	NP15
B	RECEPTACLE 120VAC 60Hz (RT)	1	NP16

NAME PLATE



DIMENSION UNIT : mm

TYPE	H	L	D	REMARKS
A	60	260	5	
B	20	62	5	

NOTE
1. COLOR OF LETTER
☒ BLACK ☐ WHITE ☐ OTHER ______
2. COLOR OF BACK GROUND
☐ BLACK ☐ WHITE ☒ OTHER ALUMINUM

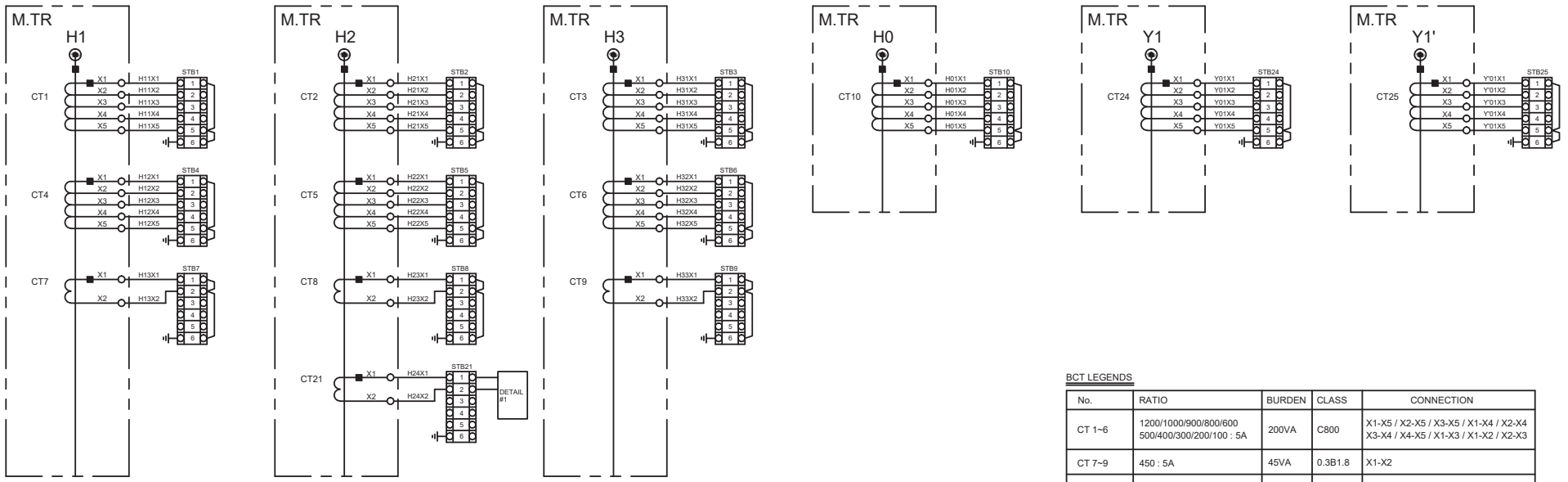
REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
△						
△						
△						
△						
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

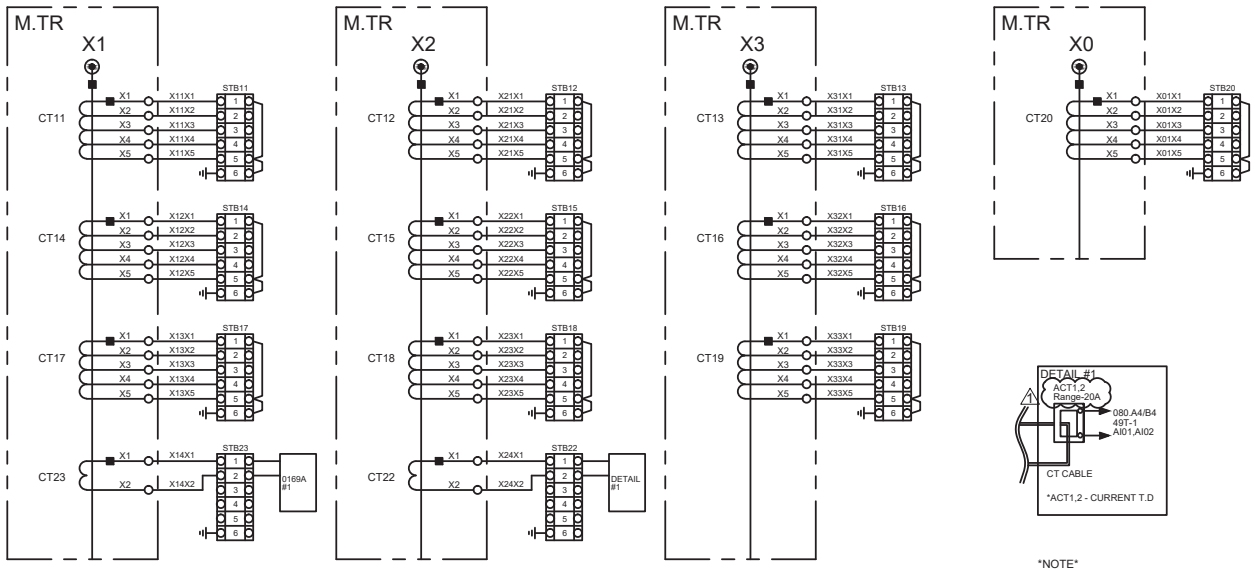
ILJIN Electric Co., Ltd.

TITLE
LAYOUT ARRANGEMENT

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-040	0

A3 (297mm x 420mm)





BCT LEGENDS

No.	RATIO	BURDEN	CLASS	CONNECTION
CT 1~6	1200/1000/900/800/600 500/400/300/200/100 : 5A	200VA	C800	X1-X5 / X2-X5 / X3-X5 / X1-X4 / X2-X4 X3-X4 / X4-X5 / X1-X3 / X1-X2 / X2-X3
CT 7~9	450 : 5A	45VA	0.3B1.8	X1-X2
CT 10	1200/1000/900/800/600 500/400/300/200/100 : 5A	200VA	C800	X1-X5 / X2-X5 / X3-X5 / X1-X4 / X2-X4 X3-X4 / X4-X5 / X1-X3 / X1-X2 / X2-X3
CT 11~20	4000/2500/2200/2000/1500 1200/1000/800/500/300 : 5A	200VA	C800	X1-X5 / X1-X4 / X1-X3 / X2-X5 / X2-X4 X2-X3 / X1-X2 / X3-X5 / X4-X5 / X3-X4
CT 21	600 : 5A	22.5VA	1.2B0.9	X1-X2
CT 22, 23	4000 : 5A	22.5VA	1.2B0.9	X1-X2
CT 24,25	1200/1000/900/800/600 500/400/300/200/100 : 5A	200VA	C800	X1-X5 / X2-X5 / X3-X5 / X1-X4 / X2-X4 X3-X4 / X4-X5 / X1-X3 / X1-X2 / X2-X3

NOTE
-Current Transformer Terminations-
All current transformers in the control cabinet shall be terminated to screw type terminal blocks with short circuiting strip.

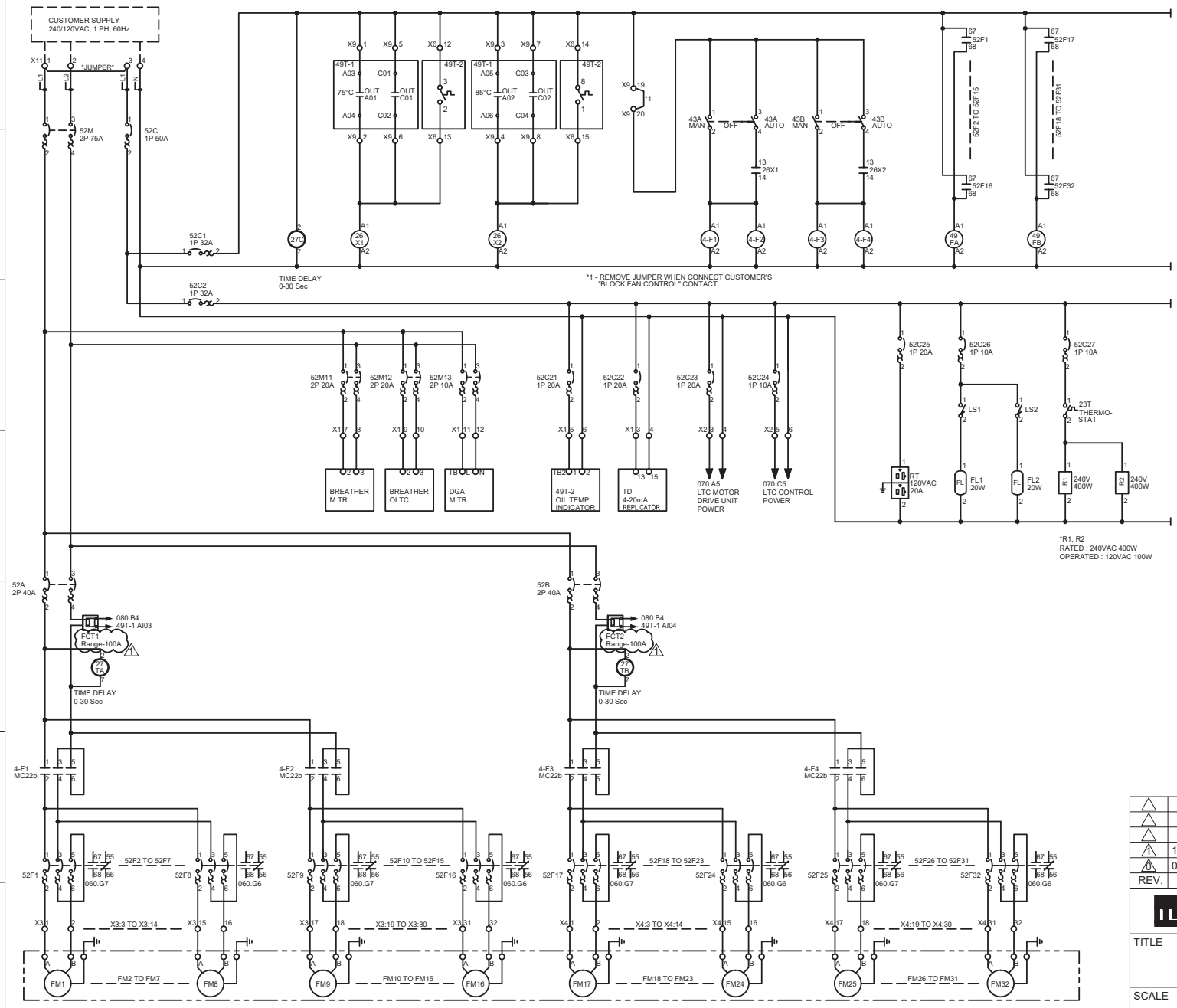
REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
1	10.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE: BCT LEGENDS

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-050	1

A3 (297mm x 420mm)



27C	27TA	27TB
H3CR-H8L(120VAC)	H3CR-H8L(240VAC)	H3CR-H8L(240VAC)

26X1	26X2	49FA
MR-4(120VAC)	MR-4(120VAC)	MR-4(120VAC)

49FB	4FA	4FB
MR-4(120VAC)	MC22b(120VAC)	MC22b(120VAC)

43A	43B
FAN CONTROL	FAN CONTROL
YSNC3221-64MRB	YSNC3221-64MRB

NOTE1

1. FAN MOTOR FM1 TO FM32
- RATED VOLTAGE : 1PH 240Vac 60Hz
- OPERATING VOLTAGE : 228-240Vac 60Hz
- OPERATING CURRENT : 1.5A
- STARTING CURRENT : 8A

2. MANUAL MOTOR STARTER : 52F1 TO 52F28
- RANGE (1.6~2.5A)
- SETTING VALUE : 1.9A

NOTE2

1. 49T-1 ELECTRIC TRANSFORMER MONITOR
- A01: STAGE 1 ON BY WINDING TEMPERATURE
- A02: STAGE 2 ON BY WINDING TEMPERATURE
- C01: STAGE 1 ON BY REMOTE CONTROL
- C02: STAGE 2 ON BY REMOTE CONTROL

2. 49T-2 OIL TEMPERATURE INDICATOR

REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
1	10.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

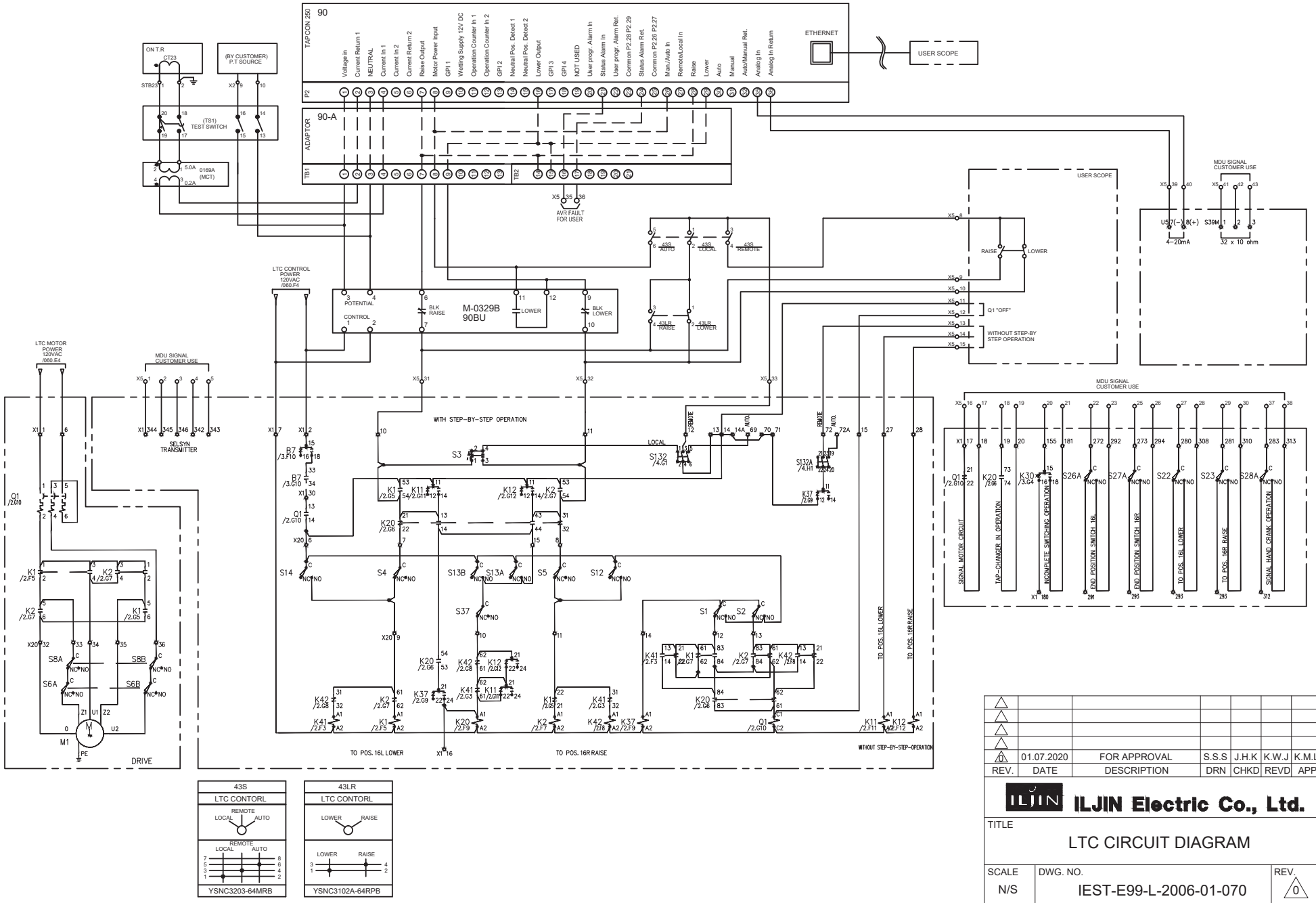
ILJIN Electric Co., Ltd.

TITLE

SCHEMATIC DIAGRAM

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-060	1

A3 (297mm x 420mm)



REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

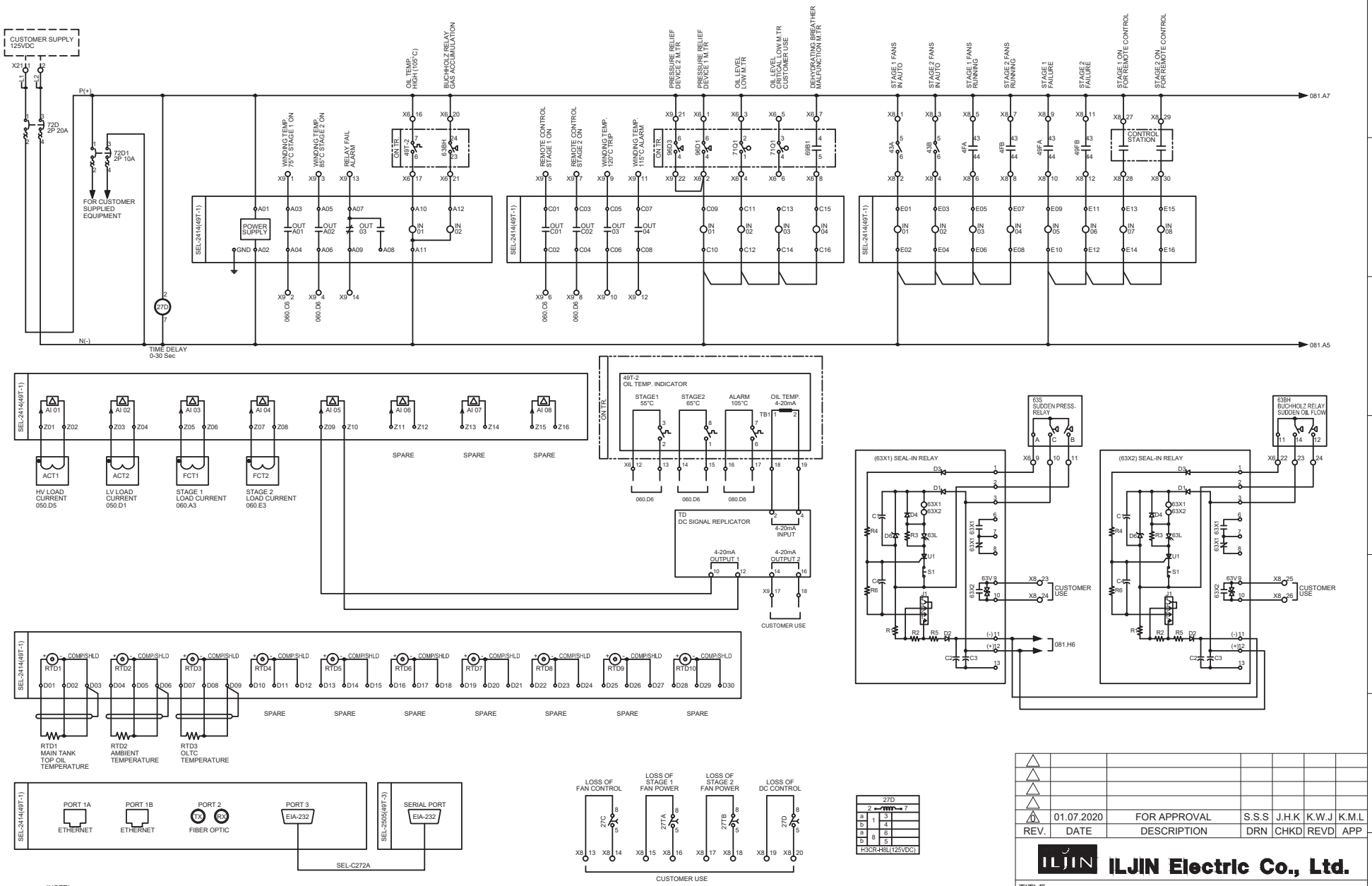
ILJIN Electric Co., Ltd.

TITLE

LTC CIRCUIT DIAGRAM

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-070	0

A3 (297mm x 420mm)



NOTE

1. THESE RTDs SHALL DIRECTLY BE CONNECTED TO 49T-1 WITHOUT TERMINAL BLOCK
2. ACT1, ACT2, FCT1 AND FCT2 ARE AUXILIARY CURRENT TRANSFORMER FOR 49T-1 CT INPUT.

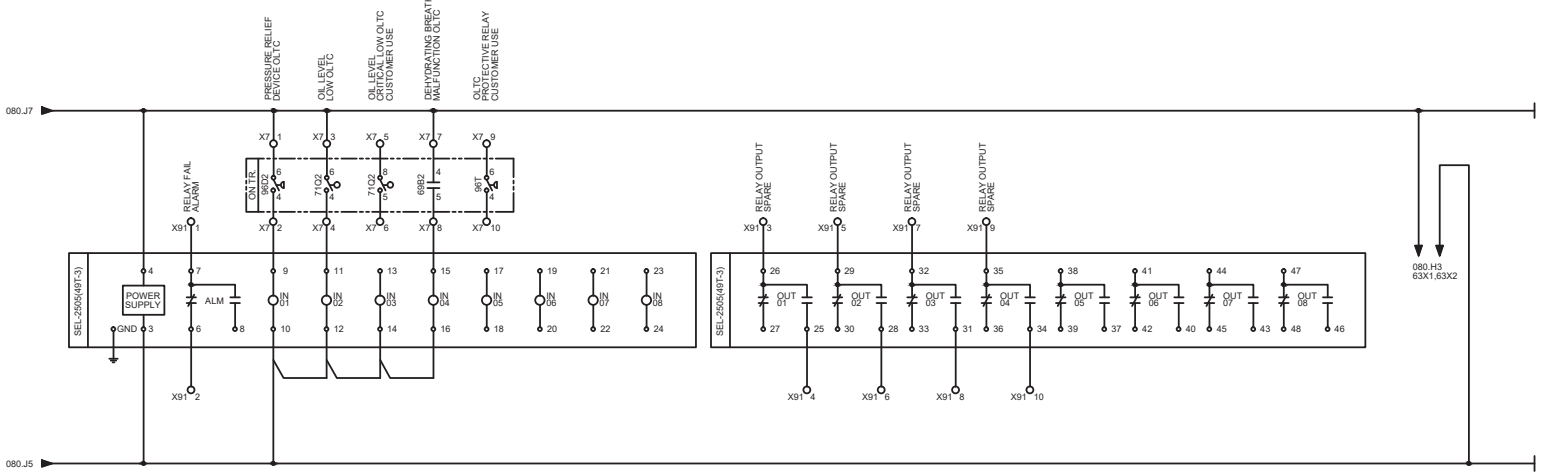
REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE: MONITORING SCHEMATIC 1

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-080	0

A3 (297mm x 420mm)



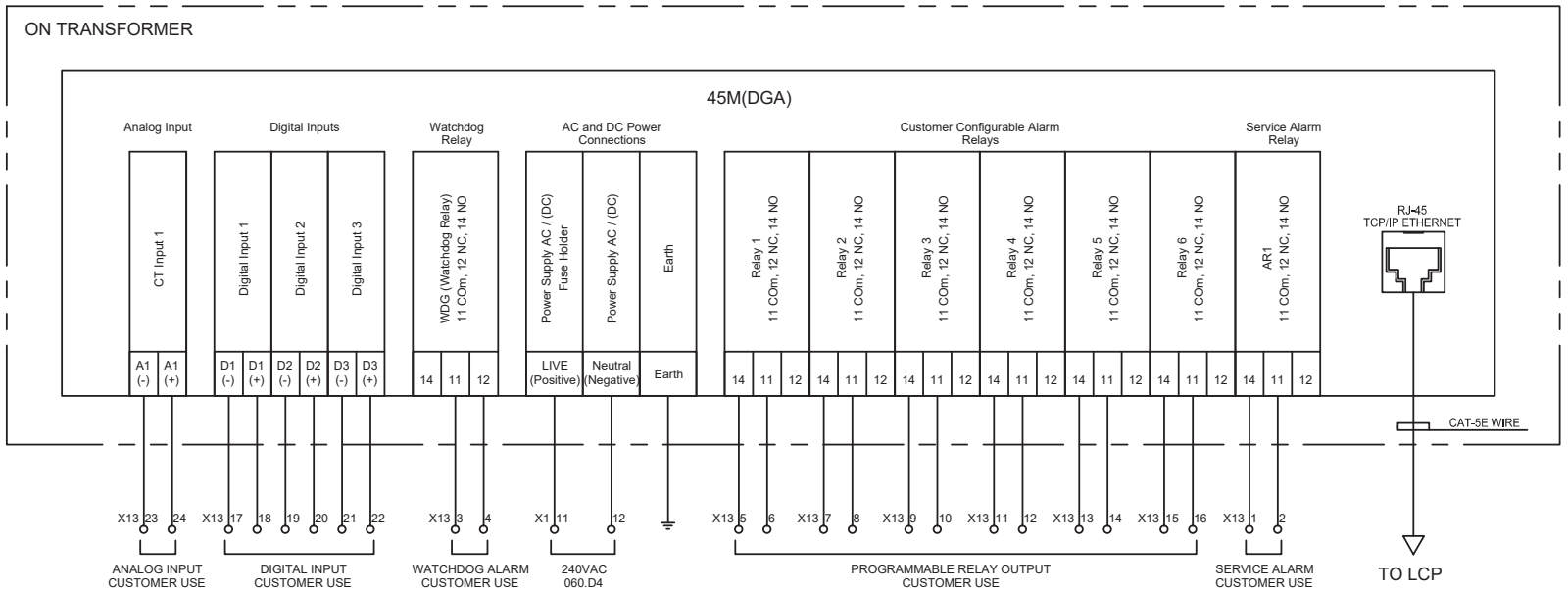
REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE: MONITORING SCHEMATIC 2

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-081	0

A3 (297mm x 420mm)



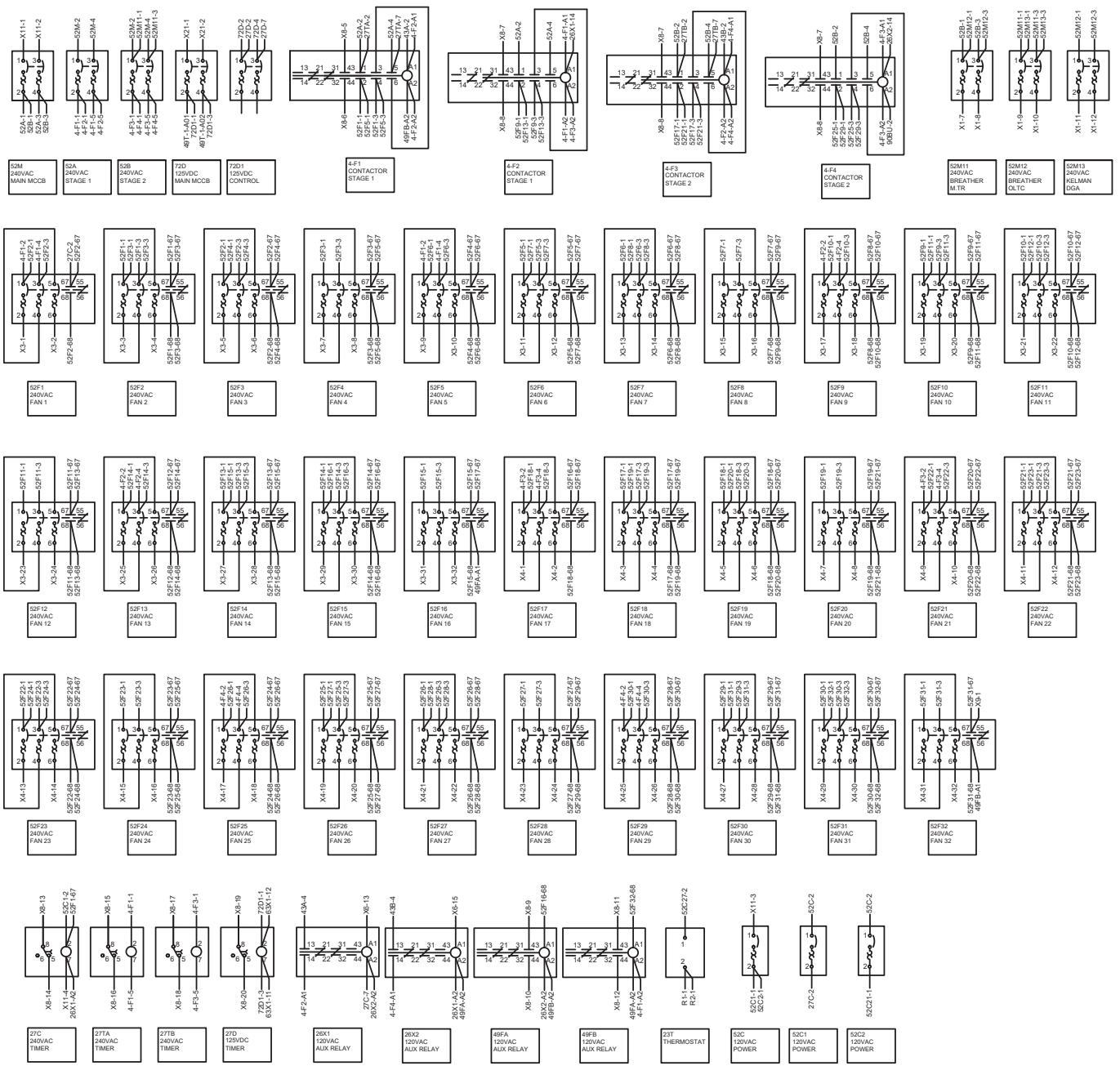
REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE: DGA MONITORING

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-082	0

A3 (297mm x 420mm)



REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

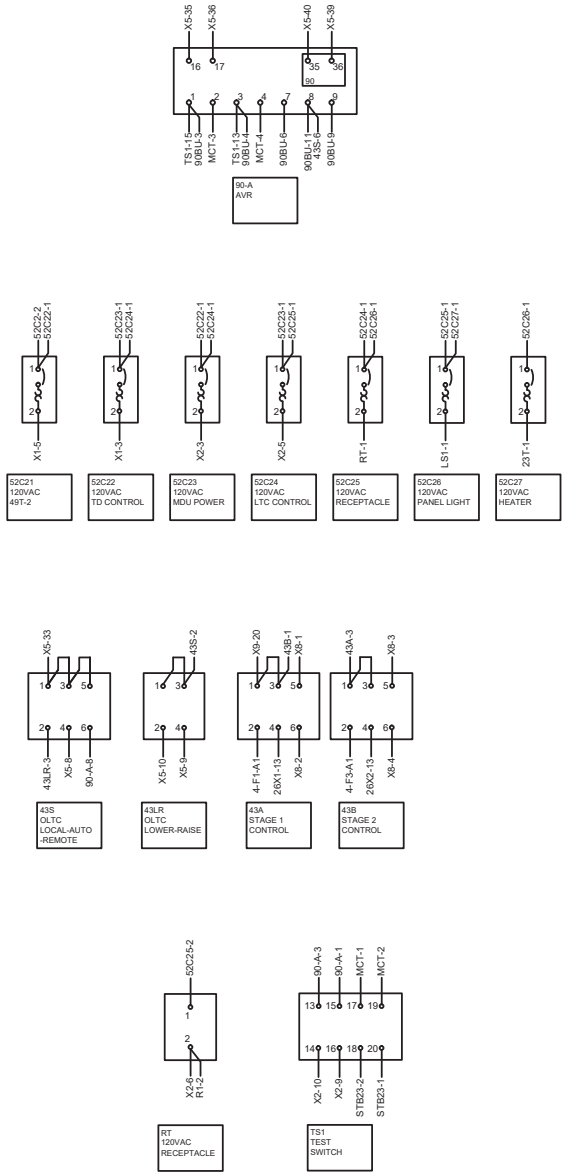
ILJIN Electric Co., Ltd.

TITLE

WIRING DIAGRAM 1

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-090	0

A3 (297mm x 420mm)



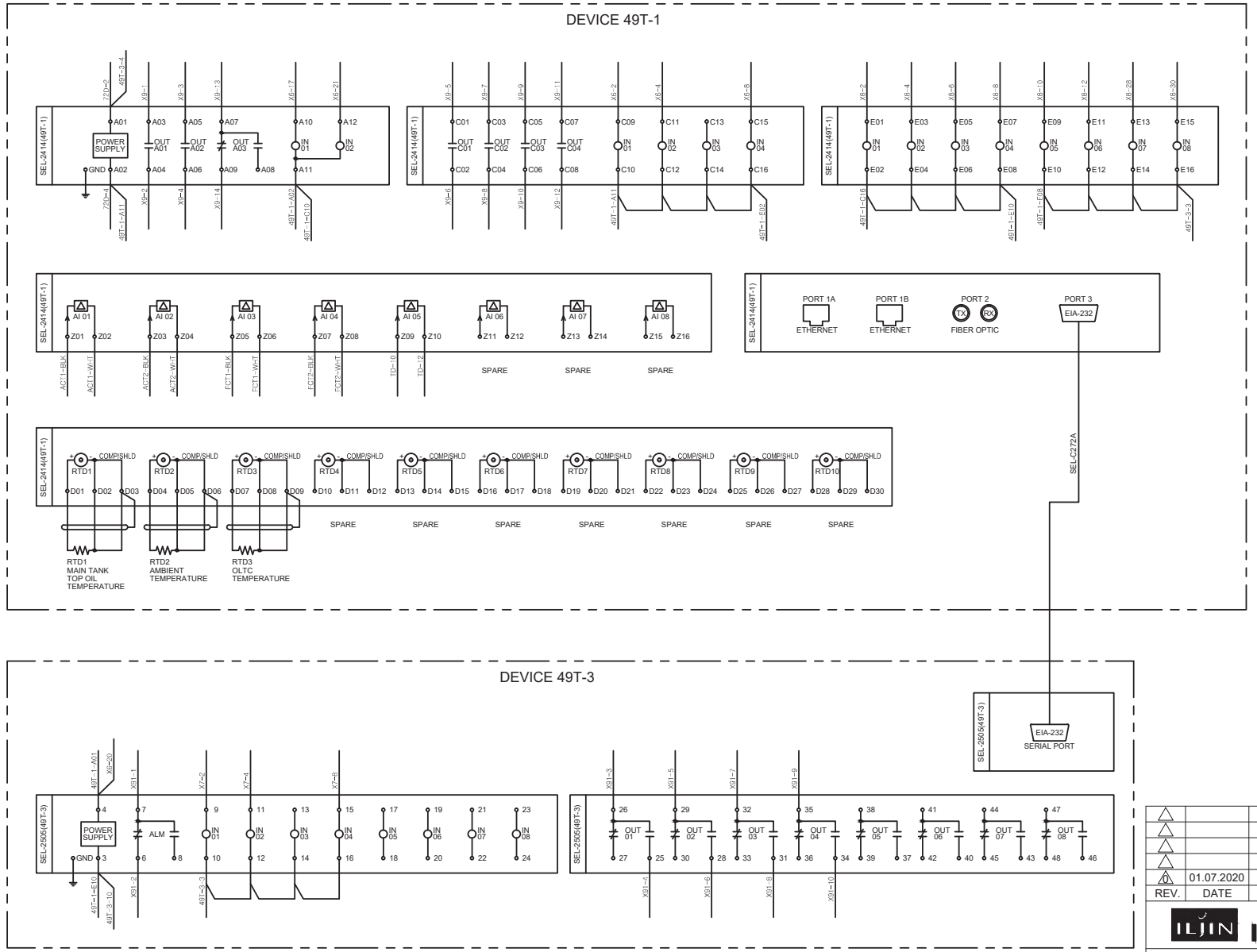
REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE: WIRING DIAGRAM 2

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-091	0

A3 (297mm x 420mm)



REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

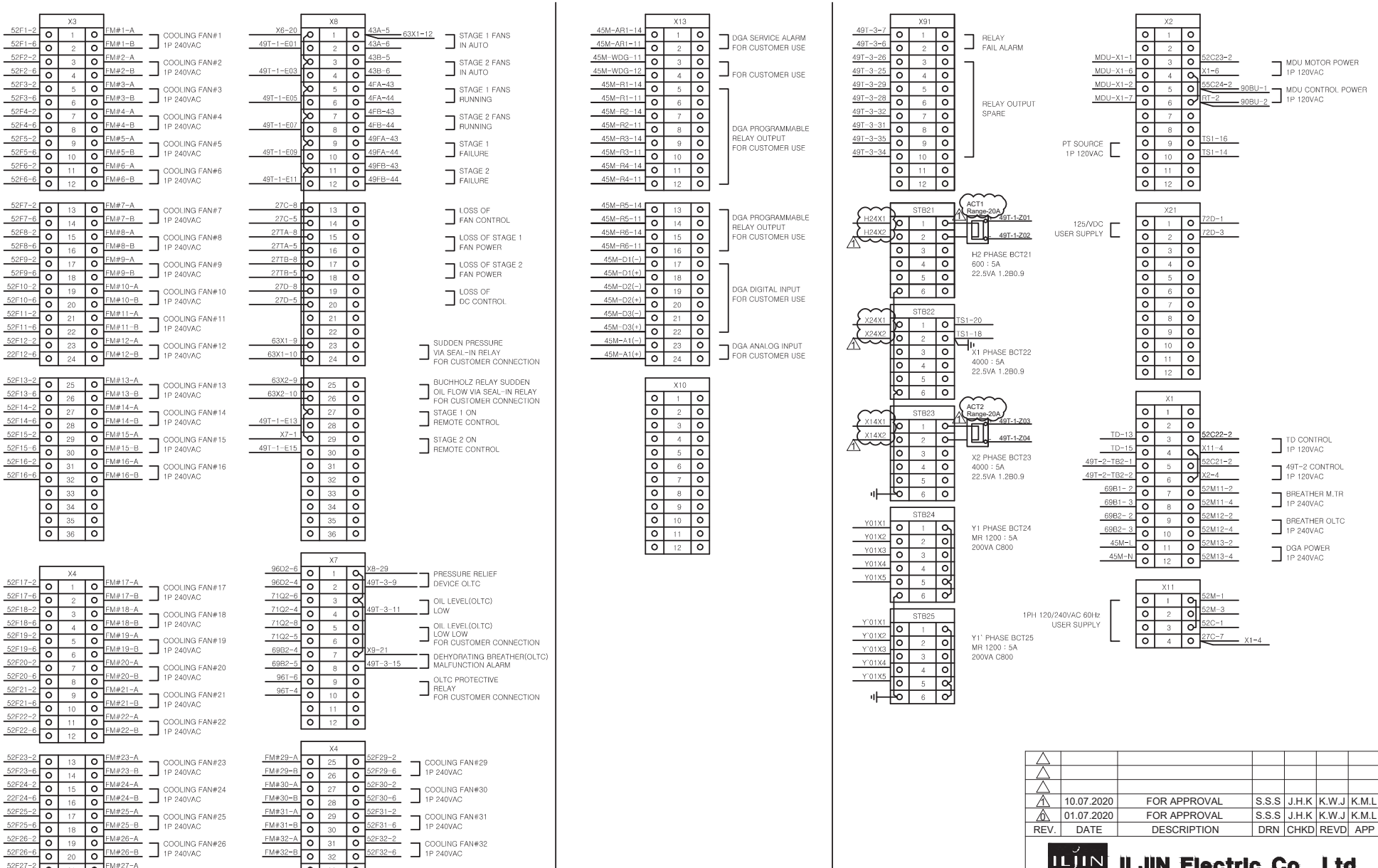
ILJIN Electric Co., Ltd.

TITLE

WIRING DIAGRAM 3

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-092	0

A3 (297mm x 420mm)



REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
1	10.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

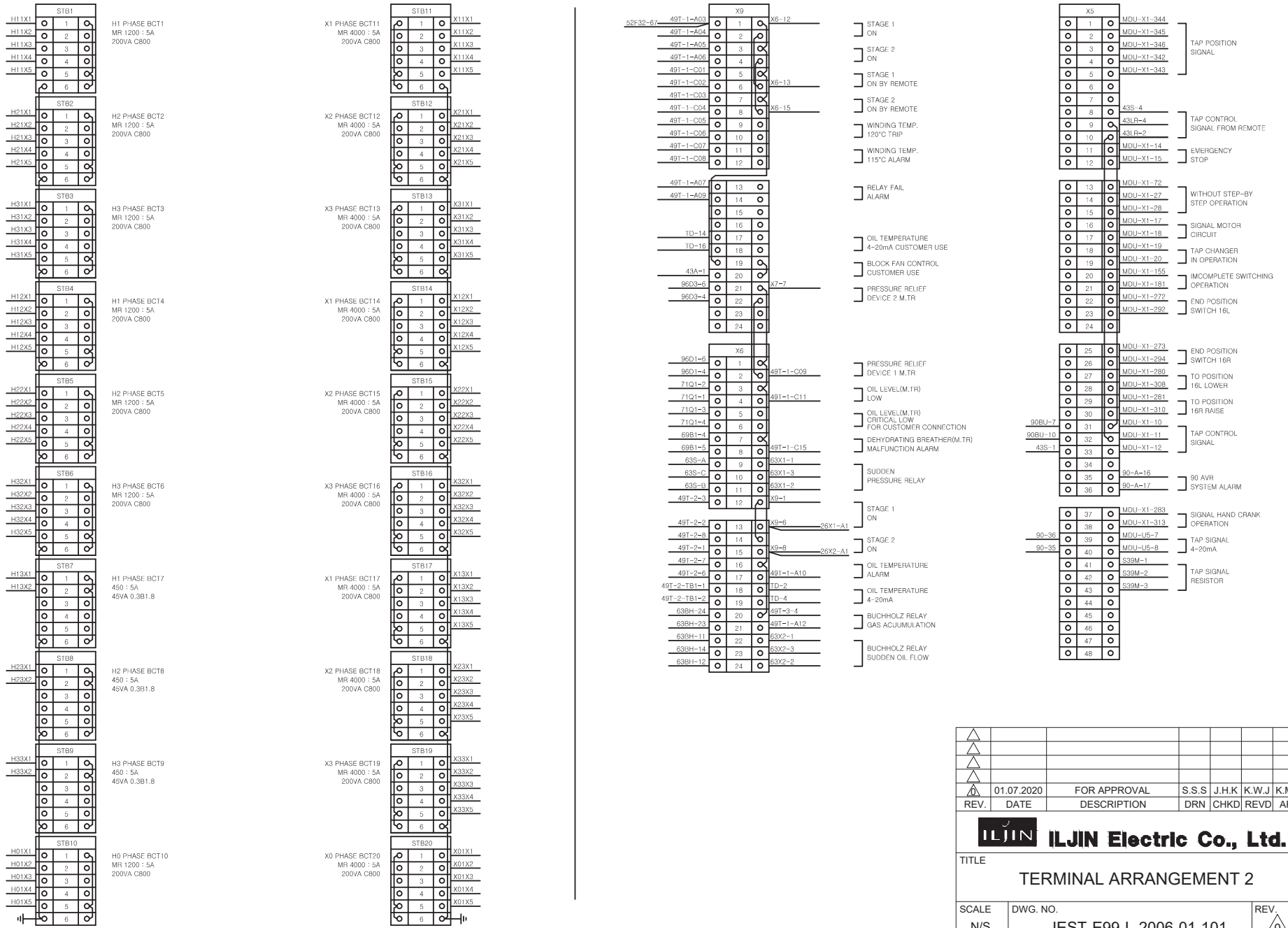
ILJIN Electric Co., Ltd.

TITLE

TERMINAL ARRANGEMENT 1

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-100	1

A3 (297mm x 420mm)



REV.	DATE	DESCRIPTION	DRN	CHKD	REVD	APP
0	01.07.2020	FOR APPROVAL	S.S.S	J.H.K	K.W.J	K.M.L

ILJIN Electric Co., Ltd.

TITLE

TERMINAL ARRANGEMENT 2

SCALE	DWG. NO.	REV.
N/S	IEST-E99-L-2006-01-101	0

A3 (297mm x 420mm)

Type Test Approbal	**21192-TTA**
Applicant	Gamesa Electric S.A.U. Calle Mar Mediterráneo 16. 28830. San Fernando de Henares, Madrid. Spain.
Series	PV 3X Series Stor PCS 3X Series
Models	See page 2
Type of generating unit	Three-phase Solar Inverter Three-phase bidirectional converter
Technical Data	See pages 2 to 5
Network connection code	**IEEE 519-2014.** IEEE Recommended Practice and Requirements for Harmonic Control in Electric Power Systems. Current Harmonics.

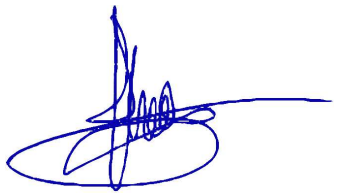
The above-mentioned generating unit complies with the requirements of the:

IEEE 519-2014. IEEE Recommended Practice and Requirements for Harmonic Control in Electric Power Systems. Current Harmonics.

The harmonics measurement are shown in the Annex of this document.

This Type Test Approval cancels and supersedes the document 21180-TTA-E1 issued on November 12, 2021

Madrid, April 22, 2022



Alberto Martin
Technical Manager

Models

PV 3X			
PV3400 STD PV3600 STD PV3750 STD PV3900 STD	PV3400 HTD PV3600 HTD PV3750 HTD PV3900 HTD	PV3800 AEP PV4000 AEP PV4200 AEP PV4400 AEP	PV4100 UEP PV4300 UEP PV4500 UEP PV4700 UEP

Stor PCS 3X	
Stor PCS 3830 AEP Stor PCS 4000 AEP Stor PCS 4220 AEP Stor PCS 4400 AEP	Stor PCS 4100 UEP Stor PCS 4300 UEP Stor PCS 4500 UEP Stor PCS 4700 UEP

Technical characteristics

PV 3X

	PV3400 STD	PV3600 STD	PV3750 STD	PV3900 STD
DC INPUT				
Max. DC Current @25ºC	2 x 2100 A			
Max. DC Current @40ºC	2 x 2030 A			
Max. DC Current @45ºC	2 x 2010 A			
Max. DC Current @50ºC	2 x 1990 A			
Max. DC Current @55ºC	2 x 995 A			
Max. DC Current @60ºC	--			
DC Voltage range	835 - 1500 V	875 - 1500 V	915 - 1500 V	955 - 1500 V
DC Voltage Range MPPT	835 - 1300 V	875 - 1300 V	915 - 1300 V	955 - 1300 V
Nr of DC ports	max 24 fuse +/- monitored max 36 fuse + monitored			
Max. short-circuit current. Isc PV	Up to 9000 A			
MPPT	1			
AC OUTPUT				
Max. AC Current @25ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @40ºC	3327 kVA	3493 kVA	3660 kVA	3826 kVA
Max. AC Current @45ºC	3300 kVA	3465 kVA	3630 kVA	3795 kVA
Max. AC Current @50ºC	3273 kVA	3436 kVA	3600 kVA	3764 kVA
Max. AC Current @55ºC	1636 kVA	1718 kVA	1800 kVA	1882 kVA
Max. AC Current @60ºC	0 kVA	0 kVA	0 kVA	0 kVA
Maximum output current	3280 Arms			
Nominal AC Voltage	600 Vrms (±15%)	630 Vrms (±15%)	660 Vrms (±15%)	690 Vrms (±15%)
Maximum output fault current (time)	5,1 kA (<1 ms)			
AC power frequency	50/60 Hz (± 6%)			

	PV3400 HTD	PV3600 HTD	PV3750 HTD	PV3900 HTD
DC INPUT				
Max. DC Current @25ºC	2 x 2100 A			
Max. DC Current @40ºC	2 x 2100 A			
Max. DC Current @45ºC	2 x 2100 A			
Max. DC Current @50ºC	2 x 2100 A			
Max. DC Current @55ºC	2 x 2100 A			
Max. DC Current @60ºC	2 x 1050 A			
DC Voltage range	835 - 1500 V	875 - 1500 V	915 - 1500 V	955 - 1500 V
DC Voltage Range MPPT	835 - 1300 V	875 - 1300 V	915 - 1300 V	955 - 1300 V
Nr of DC ports	max 24 fuse +/- monitored max 36 fuse + monitored			
Max. short-circuit current. Isc PV	Up to 9000 A			
MPPT	1			
AC OUTPUT				
Max. AC Current @25ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @40ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @45ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @50ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @55ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @60ºC	1704 kVA	1789 kVA	1875 kVA	1959 kVA
Maximum output current	3280 Arms			
Nominal AC Voltage	600 Vrms (±15%)	630 Vrms (±15%)	660 Vrms (±15%)	690 Vrms (±15%)
Maximum output fault current (time)	5,1 kA (<1 ms)			
AC power frequency	50/60 Hz (± 6%)			

	PV 3800 AEP	PV 4000 AEP	PV 4200 AEP	PV 4400 AEP
DC INPUT				
Max. DC Current @25ºC	2 x 2362 A			
Max. DC Current @40ºC	2 x 2100 A			
Max. DC Current @45ºC	2 x 2100 A			
Max. DC Current @50ºC	2 x 2100 A			
Max. DC Current @55ºC	2 x 2100 A			
Max. DC Current @60ºC	2 x 1050 A			
DC Voltage range	835 - 1500 V	875 - 1500 V	915 - 1500 V	955 - 1500 V
DC Voltage Range MPPT	835 - 1300 V	875 - 1300 V	915 - 1300 V	955 - 1300 V
Nr of DC ports	max 24 fuse +/- monitored max 36 fuse + monitored			
Max. short-circuit current. Isc PV	Up to 9000 A			
MPPT	1			
AC OUTPUT				
Max. AC Current @25ºC	3837 kVA	4029 kVA	4221 kVA	4412 kVA
Max. AC Current @40ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @45ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @50ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @55ºC	3409 kVA	3579 kVA	3750 kVA	3920 kVA
Max. AC Current @60ºC	1704 kVA	1789 kVA	1875 kVA	1959 kVA
Maximum output current	3692 Arms			
Nominal AC Voltage	600 Vrms (±15%)	630 Vrms (±15%)	660 Vrms (±15%)	690 Vrms (±15%)
Maximum output fault current (time)	5,8 kA (<1 ms)			
AC power frequency	50/60 Hz (± 6%)			

	PV 4100 UEP	PV 4300 UEP	PV 4500 UEP	PV 4700 UEP
DC INPUT				
Max. DC Current @25ºC	2 x 2500 A			
Max. DC Current @40ºC	2 x 2500 A			
Max. DC Current @45ºC	2 x 2400 A			
Max. DC Current @50ºC	2 x 2310 A			
Max. DC Current @55ºC	2 x 2220 A			
Max. DC Current @60ºC	2 x 1110 A			
DC Voltage range	835 - 1500 V	875 - 1500 V	915 - 1500 V	955 - 1500 V
DC Voltage Range MPPT	835 - 1300 V	875 - 1300 V	915 - 1300 V	955 - 1300 V
Nr of DC ports	max 24 fuse +/- monitored max 36 fuse + monitored			
Max. short-circuit current. Isc PV	Up to 9000 A			
MPPT	1			
AC OUTPUT				
Max. AC Current @25ºC	4095 kVA	4299 kVA	4504 kVA	4709 kVA
Max. AC Current @40ºC	4095 kVA	4299 kVA	4504 kVA	4709 kVA
Max. AC Current @45ºC	3942 kVA	4139 kVA	4336 kVA	4534 kVA
Max. AC Current @50ºC	3790 kVA	3979 kVA	4169 kVA	4538 kVA
Max. AC Current @55ºC	3637 kVA	3819 kVA	4001 kVA	4183 kVA
Max. AC Current @60ºC	1819 kVA	1910 kVA	2001 kVa	2091 kVA
Maximum output current	3940 Arms			
Nominal AC Voltage	600 Vrms (± 15%)	630 Vrms (± 15%)	660 Vrms (± 15%)	690 Vrms (± 15%)
Maximum output fault current (time)	6,2 kA (<1 ms)			
AC power frequency	50/60 Hz (± 6%)			

Stor PCS 3X

	Stor PCS 3830 AEP	Stor PCS 4000 AEP	Stor PCS 4220 AEP	Stor PCS 4400 AEP
DC INPUT				
Max. DC Current @25ºC	2 x 2362 A			
Max. DC Current @40ºC	2 x 2100 A			
Max. DC Current @45ºC	2 x 2100 A			
Max. DC Current @50ºC	2 x 2100 A			
Max. DC Current @55ºC	2 x 2100 A			
Max. DC Current @60ºC	2 x 1050 A			
DC Voltage range (with derating)	835 - 1500 V	875 - 1500 V	915 - 1500 V	955 - 1500 V
DC Voltage range (w/o derating)	835 - 1300 V	875 - 1300 V	915 - 1300 V	955 - 1300 V
Number of fused DC inputs per Power/module/total	Up to 3+ & 3- / 6+ & 6-			
AC OUTPUT				
Max. AC Current @25ºC	3836 kVA	4029 kVA	4220 kVA	4412 kVA
Max. AC Current @40ºC	3408 kVA	3579 kVA	3749 kVA	3920 kVA
Max. AC Current @45ºC	3408 kVA	3579 kVA	3749 kVA	3920 kVA
Max. AC Current @50ºC	3408 kVA	3579 kVA	3749 kVA	3920 kVA
Max. AC Current @55ºC	3408 kVA	3579 kVA	3749 kVA	3920 kVA
Max. AC Current @60ºC	1703 kVA	1789 kVA	1873 kVa	1959 kVA
Maximum AC current per Power module/Total @25ºC	1846 / 3962 Arms			
Nominal AC Voltage	600 Vrms (± 10%)	630 Vrms (± 10%)	660 Vrms (± 10%)	690 Vrms (± 10%)
AC power frequency	47,5 – 53/57 – 63 Hz			

	Stor PCS 4100 UEP	Stor PCS 4300 UEP	Stor PCS 4500 UEP	Stor PCS 4700 UEP
DC INPUT				
Max. DC Current @40ºC	2 x 2500 A			
Max. DC Current @45ºC	2 x 2407 A			
Max. DC Current @50ºC	2 x 2313 A			
Max. DC Current @55ºC	2 x 2220 A			
Max. DC Current @60ºC	2 x 1110 A			
DC Voltage range (with derating)	835 - 1500 V	875 - 1500 V	915 - 1500 V	955 - 1500 V
DC Voltage range (w/o derating)	835 - 1300 V	875 - 1300 V	915 - 1300 V	955 - 1300 V
Number of fused DC inputs per Power/module/total	Up to 3+ & 3- / 6+ & 6-			
AC OUTPUT				
Max. AC Current @40ºC	4095 kVA	4299 kVA	4504 kVA	4709 kVA
Max. AC Current @45ºC	3942 kVA	4139 kVA	4336 kVA	4534 kVA
Max. AC Current @50ºC	3790 kVA	3979 kVA	4169 kVA	4358 kVA
Max. AC Current @55ºC	3637 kVA	3819 kVA	4001 kVA	4183 kVA
Max. AC Current @60ºC	1819 kVA	1910 kVA	2001 kVa	2091 kVA
Maximum AC current per Power module/Total @25ºC	1970 / 3940 Arms			
Nominal AC Voltage	600 Vrms (± 10%)	630 Vrms (± 10%)	660 Vrms (± 10%)	690 Vrms (± 10%)
AC power frequency	47,5 – 53/57 – 63 Hz			

RECORD OF CHANGES

Revision	Modification / Changes	Date
0	New Temperatures added by client request.	22/04/2022

Measurement results Annex

Models:
- PV3400STD (600Vac), PV3600STD (630Vac), PV3750STD (660Vac), PV3900STD (690Vac)
- PV3400HTD (600Vac), PV3600HTD (630Vac), PV3750HTD (660Vac), PV3900HTD (690Vac)

Harmonic 60Hz	% of nominal In			Limits (% of nominal)	Harmonic 60Hz	% of nominal In			Limits (% of nominal)
Power levels (%Pn)	33%	66%	100%	--	Power levels (%Pn)	33%	66%	100%	--
2	0,02%	0,03%	0,03%	1,00%	3	0,02%	0,02%	0,03%	4,00%
4	0,02%	0,02%	0,02%	1,00%	5	0,14%	0,26%	0,42%	4,00%
6	0,01%	0,01%	0,01%	1,00%	7	0,14%	0,27%	0,47%	4,00%
8	0,01%	0,02%	0,02%	1,00%	9	0,01%	0,02%	0,02%	4,00%
10	0,01%	0,01%	0,01%	1,00%	11	0,22%	0,04%	0,22%	2,00%
12	0,02%	0,01%	0,02%	0,50%	13	0,13%	0,06%	0,18%	2,00%
14	0,01%	0,01%	0,01%	0,50%	15	0,02%	0,02%	0,03%	2,00%
16	0,02%	0,02%	0,02%	0,50%	17	0,27%	0,15%	0,12%	1,50%
18	0,03%	0,03%	0,03%	0,38%	19	0,06%	0,05%	0,05%	1,50%
20	0,03%	0,03%	0,03%	0,38%	21	0,03%	0,03%	0,03%	1,50%
22	0,02%	0,02%	0,02%	0,38%	23	0,04%	0,04%	0,07%	0,60%
24	0,03%	0,03%	0,02%	0,15%	25	0,03%	0,03%	0,03%	0,60%
26	0,03%	0,03%	0,03%	0,15%	27	0,03%	0,03%	0,03%	0,60%
28	0,02%	0,02%	0,02%	0,15%	29	0,04%	0,05%	0,05%	0,60%
30	0,03%	0,03%	0,03%	0,15%	31	0,04%	0,03%	0,05%	0,60%
32	0,03%	0,03%	0,03%	0,15%	33	0,04%	0,03%	0,03%	0,60%
34	0,02%	0,02%	0,02%	0,15%	35	0,04%	0,03%	0,03%	0,30%
36	0,03%	0,03%	0,03%	0,08%	37	0,05%	0,05%	0,06%	0,30%
38	0,03%	0,03%	0,02%	0,08%	39	0,05%	0,04%	0,04%	0,30%
40	0,02%	0,02%	0,02%	0,08%	41	0,04%	0,03%	0,03%	0,30%
42	0,02%	0,03%	0,02%	0,08%	43	0,03%	0,05%	0,05%	0,30%
44	0,02%	0,02%	0,02%	0,08%	45	0,04%	0,04%	0,04%	0,30%
46	0,01%	0,01%	0,02%	0,08%	47	0,03%	0,03%	0,04%	0,30%
48	0,02%	0,02%	0,02%	0,08%	49	0,03%	0,03%	0,03%	0,30%
50	0,01%	0,02%	0,02%	0,08%	--	--	--	--	--
THD	0,46%	0,45%	0,73%	5,00%	--	--	--	--	--

Models:
- PV3800 AEP (600Vac), PV4000 AEP (630Vac), PV4200 AEP (660Vac), PV4400 AEP (690Vac)

Harmonic 60Hz	% of nominal In			Limits (% of nominal)	Harmonic 60Hz	% of nominal In			Limits (% of nominal)
Power levels (%Pn)	33%	66%	100%	--	Power levels (%Pn)	33%	66%	100%	--
2	0,09%	0,06%	0,04%	1,00%	3	0,08%	0,08%	0,14%	4,00%
4	0,04%	0,03%	0,03%	1,00%	5	0,04%	0,08%	0,14%	4,00%
6	0,03%	0,03%	0,03%	1,00%	7	0,04%	0,08%	0,13%	4,00%
8	0,03%	0,03%	0,03%	1,00%	9	0,04%	0,04%	0,03%	4,00%
10	0,02%	0,02%	0,02%	1,00%	11	0,16%	0,05%	0,24%	2,00%
12	0,02%	0,02%	0,02%	0,50%	13	0,08%	0,10%	0,16%	2,00%
14	0,04%	0,04%	0,03%	0,50%	15	0,05%	0,06%	0,04%	2,00%
16	0,04%	0,04%	0,04%	0,50%	17	0,25%	0,16%	0,13%	1,50%
18	0,03%	0,03%	0,02%	0,38%	19	0,05%	0,06%	0,05%	1,50%
20	0,03%	0,03%	0,03%	0,38%	21	0,05%	0,05%	0,05%	1,50%
22	0,03%	0,03%	0,03%	0,38%	23	0,04%	0,06%	0,06%	0,60%
24	0,02%	0,02%	0,02%	0,15%	25	0,04%	0,05%	0,03%	0,60%
26	0,02%	0,02%	0,02%	0,15%	27	0,05%	0,04%	0,04%	0,60%
28	0,03%	0,02%	0,02%	0,15%	29	0,04%	0,05%	0,04%	0,60%
30	0,02%	0,02%	0,02%	0,15%	31	0,05%	0,06%	0,06%	0,60%
32	0,03%	0,03%	0,03%	0,15%	33	0,06%	0,05%	0,04%	0,60%
34	0,03%	0,03%	0,03%	0,15%	35	0,04%	0,05%	0,06%	0,30%
36	0,02%	0,02%	0,02%	0,08%	37	0,06%	0,05%	0,04%	0,30%
38	0,04%	0,03%	0,04%	0,08%	39	0,06%	0,05%	0,05%	0,30%
40	0,03%	0,03%	0,03%	0,08%	41	0,03%	0,04%	0,04%	0,30%
42	0,02%	0,02%	0,02%	0,08%	43	0,05%	0,03%	0,04%	0,30%
44	0,03%	0,02%	0,03%	0,08%	45	0,05%	0,04%	0,06%	0,30%
46	0,03%	0,03%	0,03%	0,08%	47	0,02%	0,03%	0,02%	0,30%
48	0,01%	0,02%	0,02%	0,08%	49	0,02%	0,04%	0,04%	0,30%
50	0,02%	0,02%	0,02%	0,08%	--	--	--	--	--
THD	0,40%	0,33%	0,45%	5,00%	--	--	--	--	--

Models:
- PV4100 UEP (600Vac), PV4300 UEP (630Vac), PV4500 UEP (660Vac), PV4700 UEP (690Vac)

Harmonic 60Hz	% of nominal In			Limits (% of nominal)	Harmonic 60Hz	% of nominal In			Limits (% of nominal)
Power levels (%Pn)	33%	66%	100%	--	Power levels (%Pn)	33%	66%	100%	--
2	0,07%	0,06%	0,06%	1,00%	3	0,07%	0,07%	0,15%	4,00%
4	0,03%	0,03%	0,04%	1,00%	5	0,03%	0,08%	0,14%	4,00%
6	0,02%	0,03%	0,05%	1,00%	7	0,04%	0,08%	0,13%	4,00%
8	0,03%	0,03%	0,03%	1,00%	9	0,04%	0,03%	0,04%	4,00%
10	0,02%	0,02%	0,03%	1,00%	11	0,14%	0,07%	0,23%	2,00%
12	0,01%	0,02%	0,03%	0,50%	13	0,06%	0,10%	0,16%	2,00%
14	0,03%	0,03%	0,04%	0,50%	15	0,05%	0,05%	0,06%	2,00%
16	0,04%	0,04%	0,04%	0,50%	17	0,24%	0,13%	0,16%	1,50%
18	0,03%	0,02%	0,03%	0,38%	19	0,05%	0,05%	0,05%	1,50%
20	0,03%	0,03%	0,03%	0,38%	21	0,05%	0,05%	0,05%	1,50%
22	0,02%	0,03%	0,03%	0,38%	23	0,03%	0,05%	0,05%	0,60%
24	0,02%	0,02%	0,02%	0,15%	25	0,04%	0,04%	0,02%	0,60%
26	0,02%	0,02%	0,02%	0,15%	27	0,05%	0,04%	0,04%	0,60%
28	0,03%	0,02%	0,02%	0,15%	29	0,03%	0,04%	0,05%	0,60%
30	0,02%	0,02%	0,02%	0,15%	31	0,05%	0,05%	0,05%	0,60%
32	0,03%	0,03%	0,03%	0,15%	33	0,06%	0,05%	0,04%	0,60%
34	0,03%	0,02%	0,03%	0,15%	35	0,04%	0,04%	0,06%	0,30%
36	0,02%	0,02%	0,02%	0,08%	37	0,06%	0,05%	0,05%	0,30%
38	0,04%	0,04%	0,04%	0,08%	39	0,06%	0,06%	0,04%	0,30%
40	0,03%	0,03%	0,03%	0,08%	41	0,03%	0,04%	0,04%	0,30%
42	0,02%	0,02%	0,02%	0,08%	43	0,05%	0,03%	0,04%	0,30%
44	0,03%	0,02%	0,03%	0,08%	45	0,05%	0,04%	0,05%	0,30%
46	0,03%	0,03%	0,03%	0,08%	47	0,02%	0,03%	0,03%	0,30%
48	0,02%	0,02%	0,02%	0,08%	49	0,02%	0,03%	0,04%	0,30%
50	0,02%	0,02%	0,02%	0,08%	--	--	--	--	--
THD	0,37%	0,31%	0,46%	5,00%	--	--	--	--	--

Models:
- PV3400STD (600Vac), PV3600STD (630Vac), PV3750STD (660Vac), PV3900STD (690Vac)
- PV3400HTD (600Vac), PV3600HTD (630Vac), PV3750HTD (660Vac), PV3900HTD (690Vac)

Harmonic 50Hz	% of nominal In			Limits (% of nominal)	Harmonic 50Hz	% of nominal In			Limits (% of nominal)
Power levels (%Pn)	33%	66%	100%	--	Power levels (%Pn)	33%	66%	100%	--
2	0,03%	0,03%	0,03%	1,00%	3	0,03%	0,04%	0,05%	4,00%
4	0,03%	0,04%	0,05%	1,00%	5	0,03%	0,06%	0,09%	4,00%
6	0,03%	0,04%	0,05%	1,00%	7	0,04%	0,07%	0,11%	4,00%
8	0,03%	0,03%	0,04%	1,00%	9	0,01%	0,02%	0,02%	4,00%
10	0,02%	0,02%	0,03%	1,00%	11	0,25%	0,03%	0,16%	2,00%
12	0,03%	0,03%	0,04%	0,50%	13	0,15%	0,05%	0,14%	2,00%
14	0,03%	0,03%	0,03%	0,50%	15	0,01%	0,01%	0,01%	2,00%
16	0,02%	0,02%	0,04%	0,50%	17	0,17%	0,07%	0,13%	1,50%
18	0,04%	0,04%	0,05%	0,38%	19	0,11%	0,04%	0,04%	1,50%
20	0,04%	0,04%	0,04%	0,38%	21	0,01%	0,01%	0,02%	1,50%
22	0,03%	0,03%	0,04%	0,38%	23	0,08%	0,12%	0,04%	0,60%
24	0,04%	0,04%	0,04%	0,15%	25	0,02%	0,05%	0,04%	0,60%
26	0,04%	0,05%	0,05%	0,15%	27	0,01%	0,01%	0,01%	0,60%
28	0,02%	0,02%	0,03%	0,15%	29	0,05%	0,04%	0,05%	0,60%
30	0,04%	0,04%	0,04%	0,15%	31	0,03%	0,01%	0,02%	0,60%
32	0,04%	0,04%	0,05%	0,15%	33	0,01%	0,01%	0,01%	0,60%
34	0,02%	0,02%	0,03%	0,15%	35	0,05%	0,04%	0,02%	0,30%
36	0,04%	0,04%	0,05%	0,08%	37	0,03%	0,02%	0,02%	0,30%
38	0,05%	0,05%	0,05%	0,08%	39	0,01%	0,01%	0,01%	0,30%
40	0,02%	0,02%	0,03%	0,08%	41	0,03%	0,04%	0,03%	0,30%
42	0,05%	0,04%	0,05%	0,08%	43	0,02%	0,02%	0,02%	0,30%
44	0,05%	0,06%	0,06%	0,08%	45	0,01%	0,01%	0,01%	0,30%
46	0,02%	0,02%	0,03%	0,08%	47	0,03%	0,03%	0,05%	0,30%
48	0,05%	0,05%	0,05%	0,08%	49	0,02%	0,02%	0,02%	0,30%
50	0,06%	0,06%	0,06%	0,08%	--				--
THD	0,43%	0,29%	0,38%		--				--

Models:
- PV3800 AEP (600Vac), PV4000 AEP (630Vac), PV4200 AEP (660Vac), PV4400 AEP (690Vac)

Harmonic 50Hz	% of nominal In			Limits (% of nominal)	Harmonic 50Hz	% of nominal In			Limits (% of nominal)
Power levels (%Pn)	33%	66%	100%	--	Power levels (%Pn)	33%	66%	100%	--
2	0,07%	0,09%	0,08%	1,00%	3	0,03%	0,06%	0,08%	4,00%
4	0,04%	0,07%	0,14%	1,00%	5	0,02%	0,08%	0,12%	4,00%
6	0,05%	0,07%	0,10%	1,00%	7	0,04%	0,08%	0,10%	4,00%
8	0,03%	0,05%	0,06%	1,00%	9	0,02%	0,02%	0,03%	4,00%
10	0,03%	0,03%	0,04%	1,00%	11	0,22%	0,05%	0,17%	2,00%
12	0,04%	0,05%	0,06%	0,50%	13	0,14%	0,08%	0,16%	2,00%
14	0,03%	0,03%	0,05%	0,50%	15	0,01%	0,01%	0,02%	2,00%
16	0,03%	0,03%	0,04%	0,50%	17	0,16%	0,06%	0,13%	1,50%
18	0,05%	0,05%	0,07%	0,38%	19	0,10%	0,02%	0,08%	1,50%
20	0,05%	0,04%	0,06%	0,38%	21	0,01%	0,02%	0,03%	1,50%
22	0,03%	0,04%	0,04%	0,38%	23	0,07%	0,07%	0,06%	0,60%
24	0,05%	0,05%	0,04%	0,15%	25	0,02%	0,05%	0,02%	0,60%
26	0,05%	0,05%	0,05%	0,15%	27	0,01%	0,01%	0,01%	0,60%
28	0,03%	0,03%	0,03%	0,15%	29	0,04%	0,05%	0,04%	0,60%
30	0,04%	0,05%	0,04%	0,15%	31	0,03%	0,02%	0,02%	0,60%
32	0,05%	0,05%	0,05%	0,15%	33	0,01%	0,01%	0,01%	0,60%
34	0,03%	0,03%	0,03%	0,15%	35	0,04%	0,04%	0,02%	0,30%
36	0,05%	0,05%	0,04%	0,08%	37	0,03%	0,02%	0,02%	0,30%
38	0,05%	0,05%	0,05%	0,08%	39	0,01%	0,01%	0,01%	0,30%
40	0,03%	0,03%	0,03%	0,08%	41	0,03%	0,03%	0,04%	0,30%
42	0,05%	0,05%	0,05%	0,08%	43	0,02%	0,03%	0,02%	0,30%
44	0,06%	0,05%	0,06%	0,08%	45	0,01%	0,01%	0,01%	0,30%
46	0,03%	0,03%	0,03%	0,08%	47	0,03%	0,03%	0,04%	0,30%
48	0,06%	0,06%	0,05%	0,08%	49	0,02%	0,03%	0,02%	0,30%
50	0,06%	0,06%	0,06%	0,08%	--				--
THD	0,41%	0,33%	0,46%		--				--

Models:
- PV4100 UEP (600Vac), PV4300 UEP (630Vac), PV4500 UEP (660Vac), PV4700 UEP (690Vac)

Harmonic 50Hz	% of nominal In			Limits (% of nominal)	Harmonic 50Hz	% of nominal In			Limits (% of nominal)
Power levels (%Pn)	33%	66%	100%	--	Power levels (%Pn)	33%	66%	100%	--
2	0,09%	0,10%	0,18%	1,00%	3	0,04%	0,06%	0,16%	4,00%
4	0,04%	0,07%	0,23%	1,00%	5	0,02%	0,08%	0,17%	4,00%
6	0,04%	0,07%	0,15%	1,00%	7	0,03%	0,08%	0,12%	4,00%
8	0,03%	0,04%	0,06%	1,00%	9	0,01%	0,02%	0,04%	4,00%
10	0,02%	0,03%	0,03%	1,00%	11	0,19%	0,07%	0,21%	2,00%
12	0,04%	0,04%	0,04%	0,50%	13	0,11%	0,09%	0,19%	2,00%
14	0,03%	0,03%	0,04%	0,50%	15	0,01%	0,01%	0,03%	2,00%
16	0,03%	0,02%	0,03%	0,50%	17	0,14%	0,07%	0,13%	1,50%
18	0,05%	0,04%	0,04%	0,38%	19	0,09%	0,03%	0,12%	1,50%
20	0,04%	0,05%	0,05%	0,38%	21	0,01%	0,02%	0,03%	1,50%
22	0,03%	0,03%	0,03%	0,38%	23	0,07%	0,05%	0,07%	0,60%
24	0,04%	0,04%	0,04%	0,15%	25	0,02%	0,04%	0,02%	0,60%
26	0,04%	0,04%	0,04%	0,15%	27	0,01%	0,01%	0,01%	0,60%
28	0,02%	0,03%	0,03%	0,15%	29	0,03%	0,05%	0,03%	0,60%
30	0,04%	0,04%	0,04%	0,15%	31	0,02%	0,02%	0,02%	0,60%
32	0,04%	0,04%	0,05%	0,15%	33	0,01%	0,01%	0,01%	0,60%
34	0,02%	0,03%	0,03%	0,15%	35	0,04%	0,04%	0,03%	0,30%
36	0,04%	0,05%	0,04%	0,08%	37	0,03%	0,01%	0,02%	0,30%
38	0,05%	0,04%	0,05%	0,08%	39	0,01%	0,01%	0,01%	0,30%
40	0,02%	0,03%	0,03%	0,08%	41	0,03%	0,03%	0,04%	0,30%
42	0,05%	0,05%	0,05%	0,08%	43	0,02%	0,03%	0,03%	0,30%
44	0,05%	0,05%	0,05%	0,08%	45	0,01%	0,01%	0,01%	0,30%
46	0,03%	0,03%	0,03%	0,08%	47	0,02%	0,03%	0,03%	0,30%
48	0,05%	0,05%	0,05%	0,08%	49	0,02%	0,03%	0,02%	0,30%
50	0,05%	0,05%	0,05%	0,08%	--				--
THD	0,36%	0,32%	0,58%		--				--

Models:

- Stor PCS 3830 AEP (600Vac), Stor PCS 4000 AEP (630Vac), Stor PCS 4220 AEP (660Vac), Stor PCS 4400 AEP (690Vac),

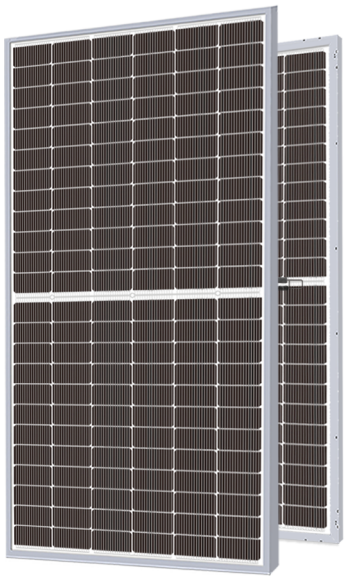
Harmonic 60Hz	% of nominal In			Limits (% of nominal)	Harmonic 60Hz	% of nominal In			Limits (% of nominal)
Power levels (%Pn)	33%	66%	100%	--	Power levels (%Pn)	33%	66%	100%	--
2	0,10%	0,12%	0,23%	1,00%	3	0,05%	0,07%	0,27%	4,00%
4	0,03%	0,04%	0,11%	1,00%	5	0,13%	0,31%	0,61%	4,00%
6	0,02%	0,02%	0,05%	1,00%	7	0,09%	0,26%	0,40%	4,00%
8	0,03%	0,02%	0,03%	1,00%	9	0,03%	0,04%	0,04%	4,00%
10	0,02%	0,02%	0,02%	1,00%	11	0,05%	0,13%	0,20%	2,00%
12	0,02%	0,02%	0,02%	0,50%	13	0,05%	0,08%	0,14%	2,00%
14	0,02%	0,02%	0,02%	0,50%	15	0,03%	0,03%	0,03%	2,00%
16	0,02%	0,02%	0,02%	0,50%	17	0,05%	0,08%	0,09%	1,50%
18	0,02%	0,01%	0,02%	0,38%	19	0,05%	0,03%	0,04%	1,50%
20	0,02%	0,01%	0,02%	0,38%	21	0,03%	0,03%	0,04%	1,50%
22	0,02%	0,02%	0,02%	0,38%	23	0,04%	0,04%	0,04%	0,60%
24	0,02%	0,02%	0,02%	0,15%	25	0,03%	0,04%	0,04%	0,60%
26	0,02%	0,03%	0,02%	0,15%	27	0,03%	0,05%	0,02%	0,60%
28	0,02%	0,03%	0,02%	0,15%	29	0,04%	0,03%	0,04%	0,60%
30	0,02%	0,02%	0,02%	0,15%	31	0,02%	0,03%	0,04%	0,60%
32	0,02%	0,02%	0,03%	0,15%	33	0,03%	0,04%	0,05%	0,60%
34	0,02%	0,02%	0,03%	0,15%	35	0,04%	0,04%	0,04%	0,30%
36	0,02%	0,02%	0,02%	0,08%	37	0,04%	0,02%	0,04%	0,30%
38	0,03%	0,02%	0,02%	0,08%	39	0,05%	0,04%	0,03%	0,30%
40	0,04%	0,02%	0,02%	0,08%	41	0,03%	0,03%	0,04%	0,30%
42	0,03%	0,03%	0,02%	0,08%	43	0,07%	0,07%	0,05%	0,30%
44	0,05%	0,04%	0,03%	0,08%	45	0,07%	0,06%	0,07%	0,30%
46	0,04%	0,04%	0,04%	0,08%	47	0,03%	0,03%	0,03%	0,30%
48	0,03%	0,03%	0,02%	0,08%	49	0,07%	0,06%	0,04%	0,30%
50	0,04%	0,03%	0,02%	0,08%	--				--
THD	0,31%	0,50%	0,88%		--				--

Models:

- Stor PCS 4100 UEP (600Vac), Stor PCS 4300 UEP (630Vac), Stor PCS 4500 UEP (660Vac), Stor PCS 4700 UEP (690Vac),

Harmonic 60Hz	% of nominal In			Limits (% of nominal)	Harmonic 60Hz	% of nominal In			Limits (% of nominal)
Power levels (%Pn)	33%	66%	100%	--	Power levels (%Pn)	33%	66%	100%	--
2	0,13%	0,15%	0,19%	1,00%	3	0,06%	0,08%	0,37%	4,00%
4	0,03%	0,05%	0,08%	1,00%	5	0,13%	0,30%	0,68%	4,00%
6	0,02%	0,02%	0,05%	1,00%	7	0,11%	0,25%	0,40%	4,00%
8	0,02%	0,02%	0,03%	1,00%	9	0,03%	0,03%	0,04%	4,00%
10	0,02%	0,02%	0,03%	1,00%	11	0,04%	0,14%	0,21%	2,00%
12	0,02%	0,02%	0,03%	0,50%	13	0,04%	0,09%	0,13%	2,00%
14	0,03%	0,02%	0,02%	0,50%	15	0,04%	0,03%	0,03%	2,00%
16	0,02%	0,02%	0,02%	0,50%	17	0,04%	0,08%	0,07%	1,50%
18	0,02%	0,01%	0,02%	0,38%	19	0,04%	0,03%	0,03%	1,50%
20	0,03%	0,01%	0,02%	0,38%	21	0,04%	0,03%	0,03%	1,50%
22	0,03%	0,01%	0,02%	0,38%	23	0,04%	0,05%	0,04%	0,60%
24	0,02%	0,01%	0,02%	0,15%	25	0,03%	0,03%	0,05%	0,60%
26	0,02%	0,02%	0,02%	0,15%	27	0,03%	0,04%	0,04%	0,60%
28	0,02%	0,02%	0,02%	0,15%	29	0,03%	0,02%	0,03%	0,60%
30	0,01%	0,02%	0,02%	0,15%	31	0,01%	0,04%	0,04%	0,60%
32	0,01%	0,03%	0,02%	0,15%	33	0,02%	0,04%	0,04%	0,60%
34	0,01%	0,03%	0,02%	0,15%	35	0,03%	0,04%	0,03%	0,30%
36	0,02%	0,02%	0,02%	0,08%	37	0,02%	0,03%	0,05%	0,30%
38	0,02%	0,02%	0,03%	0,08%	39	0,04%	0,03%	0,05%	0,30%
40	0,03%	0,02%	0,03%	0,08%	41	0,03%	0,04%	0,04%	0,30%
42	0,03%	0,02%	0,02%	0,08%	43	0,06%	0,05%	0,04%	0,30%
44	0,04%	0,03%	0,03%	0,08%	45	0,06%	0,05%	0,05%	0,30%
46	0,04%	0,03%	0,03%	0,08%	47	0,03%	0,03%	0,02%	0,30%
48	0,03%	0,02%	0,02%	0,08%	49	0,07%	0,06%	0,04%	0,30%
50	0,04%	0,03%	0,03%	0,08%	--				--
THD	0,31%	0,51%	0,95%		--				--

ZNSHINESOLAR



ZXM7-UHLDD144 Series

16BB HALF-CELL N-Type TOPCon Bifacial Double Glass Monocrystalline PV Module

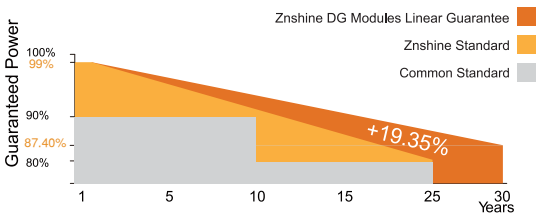
555-580W
POWER RANGE

22.45%
MAXIMUM EFFICIENCY

0.40%
YEARLY DEGRADATION

12 YEARS PRODUCT WARRANTY

30 YEARS OUTPUT GUARANTEE



*Please check the valid version of Limited Product Warranty which is officially released by ZNSHINE PV-TECH Co.,Ltd.

IEC 61215/IEC 61730

ISO 14001: Environmental Management System

ISO 9001: Quality Management System

ISO45001: Occupational Health and Safety Management System

*As there are different certification requirements in different markets.please contact your local znshine sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

Key Features

Excellent Cells Efficiency
SMBB technology reduce the distance between busbars and finger grid line which is benefit to power increase.

Better Weak Illumination Response
More power output in weak light condition, such as haze, cloudy, and early morning.

Anti PID
Ensured PID resistance through the quality control of cell manufacturing process and raw materials.

Adapt To Harsh Outdoor Environment
Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity environment.

TIER 1
Global,Tier 1 bankable brand,with independently certified advanced automated manufacturing.

Excellent Quality Managerment System
Warranted reliability and stringent quality assurances well beyond certified requirements.

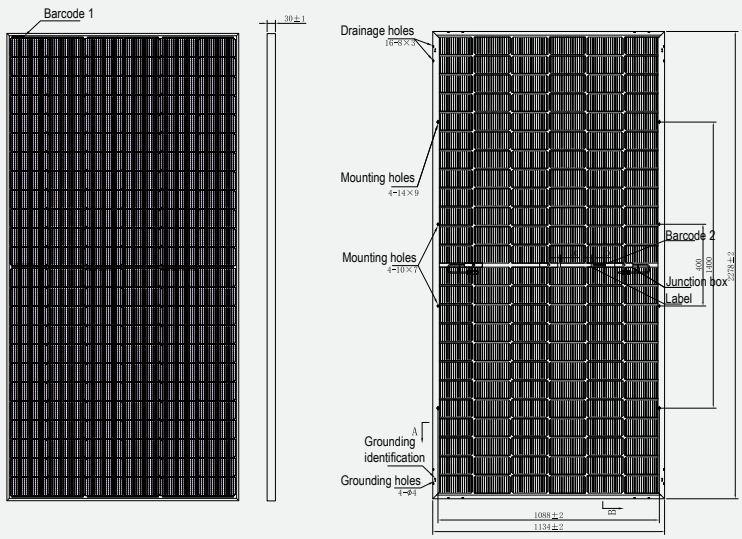
Bifacial Technology
Up to 25% additional power gain from back side depending on albedo.

Founded in 1988, ZNShine solar is a world's leading high-tech PV module manufacturer.With the advanced production lines, the company boasts module capacity of 10 GW. Bloomberg has listed ZNShine as a global Tier 1 PV module maker. Today Znshine has distributed its sales to more than 60 countries around the globe.

ZXM7-UHLDD144 Series | 16BB HALF-CELL N-Type TOPCon Bifacial Double Glass Monocrystalline PV Module

ZNSHINESOLAR

DIMENSIONS OF PV MODULE(mm)

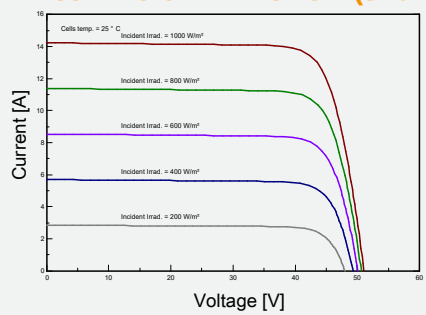


Front View

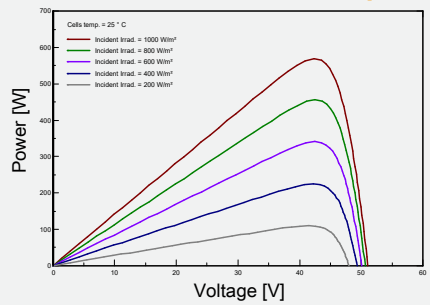
Back View

*Remark: customized frame color and cable length available upon request

I-V CURVES OF PV MODULE(570W)



P-V CURVES OF PV MODULE(570W)



ELECTRICAL CHARACTERISTICS | STC*

Nominal Power Watt Pmax(W)*	555	560	565	570	575	580
Maximum Power Voltage Vmp(V)	41.80	42.00	42.20	42.40	42.60	42.80
Maximum Power Current Imp(A)	13.28	13.34	13.39	13.45	13.50	13.56
Open Circuit Voltage Voc(V)	50.50	50.70	50.90	51.10	51.30	51.50
Short Circuit Current Isc(A)	14.05	14.11	14.17	14.23	14.29	14.35
Module Efficiency (%)	21.48	21.68	21.87	22.07	22.26	22.45

*The data above is for reference only and the actual data is in accordance with the pratical testing
*STC (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25±2℃, AM 1.5
*Measuring uncertainty: ±3%, all the electrical characteristics such as Power, Im, Vm and FF are within ±3% tolerance.

MECHANICAL DATA

Solar cells	N-type Monocrystalline
Cells orientation	144 (6×24)
Module dimension	2278×1134×30 mm (With Frame)
Weight	31.5±1.0 kg
Glass	2.0 mm+2.0mm, High Transmission, AR Coated Heat Strengthened Glass
Junction box	IP 68, 3 diodes
Cables	4 mm² ,350 mm (With Connectors)
Connectors*	MC4-compatible

*Please refer to regional datasheet for specified connector

ELECTRICAL CHARACTERISTICS | NMOT*

Maximum Power Pmax(Wp)	419.00	422.80	426.40	430.30	433.90	437.80
Maximum Power Voltage Vmp(V)	39.30	39.50	39.70	39.90	40.00	40.20
Maximum Power Current Imp(A)	10.65	10.70	10.74	10.79	10.83	10.88
Open Circuit Voltage Voc(V)	47.70	47.80	48.00	48.20	48.40	48.60
Short Circuit Current Isc(A)	11.34	11.39	11.44	11.48	11.53	11.58

*NMOT:Irradiance 800W/m²,Ambient Temperature 20℃,AM 1.5,Wind Speed 1m/s

TEMPERATURE RATINGS

NMOT	44℃ ±2℃
Temperature coefficient of Pmax	(-0.30±0.03)%/℃
Temperature coefficient of Voc	-0.25%/℃
Temperature coefficient of Isc	0.046%/℃
Refer.Bifacial Factor	(80±10)%

WORKING CONDITIONS

Maximum system voltage	1500 V DC
Operating temperature	-40℃~+85℃
Maximum series fuse	30 A
Front Side Maximum Static Loading	Up to 5400Pa
Rear Side Maximum Static Loading	Up to 2400Pa

*Remark:Do not connect Fuse in Combiner Box with two or more strings in parallel connection

ELECTRICAL CHARACTERISTICS WITH 25% REAR SIDE POWER GAIN*

Front power Pmax/W	555	560	565	570	575	580
Total power Pmax/W	694	700	706	713	719	725
Vmp/V(Total)	41.90	42.10	42.30	42.50	42.70	42.90
Imp/A(Total)	16.56	16.63	16.70	16.76	16.83	16.90
Voc/V(Total)	50.60	50.80	51.00	51.20	51.40	51.60
Isc/A(Total)	17.52	17.59	17.67	17.74	17.82	17.88

*Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

PACKAGING CONFIGURATION*

Piece/Box	36
Piece/Container(40'HQ)	720

*Customized packaging is available upon request.
*Remark:Electrical data in this catalog do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.
*Caution:Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

Add : 1#, Zhixi Industrial Zone, JintanJiangsu 213251, P.R. China Tel: +86 519 6822 0233