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REPORT

On

COMPONENT – SWITCHES, INDUSTRIAL CONTROL

PIONENG Co Ltd
Gwangmyeong, Republic of Korea

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DESCRIPTION

PRODUCT COVERED:

USR, CNR – Thyristor unit, PION series, Models PION, followed by -UL or -UD, followed by 1, 2 or 3, followed by W, followed by -030, -035, -050, -070, -090, -110, -130, -160, -200, -250, -300, -400 or -500, followed by four letters and/or numbers, followed by two letters and/or numbers or blank in round brackets.

GENERAL:

These devices are open type maximum three phases solid-state switch provided with thyristor output.

ELECTRICAL RATINGS:

Model	Control Input Rating		#Main Input/Output Rating		
	Voltage	Power Consumption	Phases (Legs)	Voltage	Current
PION-UL3W-035	Single phase 110 Vac, 50/60 Hz	40 W	3	190 - 480 Vac, 50/60 Hz	35 A
PION-UL3W-050					50 A
PION-UL3W-070					70 A
PION-UL3W-090					90 A
PION-UL3W-110					110 A
PION-UL3W-130					130 A
PION-UL3W-160					160 A
PION-UL3W-200					200 A
PION-UL3W-250		60 W			250 A
PION-UL3W-300					300 A
PION-UL3W-400		100 W			400 A
PION-UL3W-500					500 A
PION-UL2W-030		40 W	2		35 A
PION-UL2W-050					50 A
PION-UL2W-070					70 A
PION-UL2W-090					90 A
PION-UD2W-110					110 A
PION-UD2W-130					130 A
PION-UD2W-160					160 A
PION-UD2W-200					200 A
PION-UD2W-250		60 W			250 A
PION-UD2W-300					300 A
PION-UD2W-400		100 W			400 A
PION-UD2W-500					500 A

ELECTRICAL RATINGS:(CONT'D)

Model	Control Input Rating		#Main Input/Output Rating		
	Voltage	Power Consumption	Phases (Legs)	Voltage	Current
PION-UL2W-110	Single phase 110 Vac, 50/60 Hz	40 W	2	190 - 480 Vac, 50/60 Hz	110 A
PION-UL2W-130					130 A
PION-UL2W-160					160 A
PION-UL2W-200					200 A
PION-UL2W-250		60 W			250 A
PION-UL2W-300					300 A
PION-UL1W-090		40 W	1		90 A
PION-UD1W-110					110 A
PION-UD1W-130					130 A
PION-UD1W-160					160 A
PION-UD1W-200					200 A
PION-UD1W-250		60 W			250 A
PION-UD1W-300					300 A
PION-UD1W-400		100 W			400 A
PION-UD1W-500					500 A
PION-UL1W-110		40 W			110 A
PION-UL1W-130					130 A
PION-UL1W-160					160 A
PION-UL1W-200					200 A
PION-UL1W-250		60 W			250 A
PION-UL1W-300					300 A
PION-UL1W-030	24 Vdc, Class 2	8 W	1		30 A
PION-UL1W-050					50 A
PION-UL1W-070					70 A

#All Main input/output are General purpose (AC-1)
Alarm output: 250 Vac, 5 A

ENVIRONMENTAL RATINGS:

Maximum Surrounding Temperature Rating: 40 °C.
Pollution degree: 2

SHORT CIRCUIT RATING

Models	Special-purpose Fuses(JFHR2)	SCCR
PION-UL2W-030	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 50FE	100kA
PION-UL3W-035	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 63ET	
PION-UL3W-050 PION-UL2W-050	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 80ET	
PION-UL3W-070 PION-UL3W-090 PION-UL2W-090 PION-UD2W-090 PION-UL1W-090	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 100FE	
PION-UL3W-110 PION-UL2W-110 PION-UL1W-110 PION-UD2W-110 PION-UD1W-110	R/C(JFHR2), Zhongshan City Yihang Electric Co Ltd (E143197), Type 660GH-160UL	
PION-UL3W-130 PION-UL2W-130 PION-UL1W-130 PION-UD2W-130 PION-UD1W-130	R/C(JFHR2), Zhongshan City Yihang Electric Co Ltd (E143197), Type 660GH-200UL	
PION-UL3W-160 PION-UL2W-160 PION-UL1W-160 PION-UD2W-160 PION-UD1W-160	R/C(JFHR2), Zhongshan City Yihang Electric Co Ltd (E143197), Type 660GH-250UL	
PION-UL3W-200 PION-UL2W-200 PION-UL1W-200 PION-UD2W-200 PION-UD1W-200	R/C(JFHR2), Zhongshan City Yihang Electric Co Ltd (E143197), Type 660GH-315UL	
PION-UL3W-250 PION-UL2W-250 PION-UL2W-300 PION-UL1W-250 PION-UL1W-300 PION-UD2W-250 PION-UD1W-250	R/C(JFHR2), COOPER BUSSMANN LLC (E125085), Type 170M2621_400A	
PION-UL3W-500 PION-UD2W-500 PION-UD1W-500	R/C(JFHR2), COOPER BUSSMANN LLC (E125085), Type 170M4018_800A	
PION-UL3W-300 PION-UD2W-300 PION-UD1W-300	R/C(JFHR2), COOPER XI'AN FUSEGEAR CO LTD (E258171), Type FWH-500A	
PION-UL3W-400 PION-UD2W-400 PION-UD1W-400	R/C(JFHR2), COOPER XI'AN FUSEGEAR CO LTD (E258171), Type FWH-600A	

NOMENCLATURE:

PION	-	UL	3	W	-	035	-	B3CVT	(XX)
I		II	III	IV		V		VI	VII

I. - Basic designation

II – Basic designation
UL or UD: UL series

III – Number of Phases
1: 1 phase
2: 2 phases
3: 3 phases

IV – Load Voltage Type
W: 190 – 480 Vac

V – Load current
030: 35 A for 2 phases models, 30 A for 1 phase models
035: 35 A
050: 50 A
070: 70 A
090: 90 A
110: 110 A
130: 130 A
160: 160 A
200: 200 A
250: 250 A
300: 300 A
400: 400 A
500: 500 A

VI – Option – Five letters and/or numbers, Combination of below options
00: Basic model
D: DC FAN type
F: Fast response type
I: Current feedback type
T: Trans output type
V: Voltage feedback type
P: Power feedback type
2: two channels control type
3: three channels control type
S: Open delta wiring type
C: Channel wiring type
B: Fast channel output sensing type

VII – S/W option - Combination of two letters and/or numbers, X: A through Z or 0 through 9
(XX): S/W option type
Blank: Basic type

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Use – For use only in or with complete equipment of an Industrial Control Equipment where the acceptability of the combination has been determined by UL LLC.

Conditions of Acceptability - When installed in the end-use equipment, consideration shall be given to the following:

1. A suitable enclosure shall be provided.

2. These devices are suitable for factory wiring only.

3. These devices have been evaluated for use at maximum surrounding air temperature 40 °C.

4. The device has been evaluated for use in pollution degree 2 environment.

CONSTRUCTION DETAILS:

The product shall be constructed in accordance with the following description:

General - The details of construction are covered in the following photographs and accompanying descriptive pages.

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

Corrosion Protection – All parts are made of corrosion resistant material or plated as corrosion protection.

Mounting – These devices should be mounted as specified by manufacturer’s instructions.

Spacings – Between any uninsulated live part and an uninsulated live part of opposite polarity, uninsulated grounded part. The Spacings are evaluated by the Standard for LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR - PART 4-1: CONTACTORS AND MOTOR-STARTERS - ELECTROMECHANICAL CONTACTORS AND MOTOR-STARTERS, UL 60947-4-1, Table 13 and Table 15.

MARKINGS:

Ink-Stamped adhesive backed labels secured to or printed on the devices designated with followings;

1. Manufacturer’s name, file number or trademark (Note 1),
2. Model number (Note 1),
3. Electrical ratings (Note 1) - voltage rating in volts (AC or DC), the number of phases, and if necessary, the frequency. The device may be marked appropriately for the intended use in amperes, volt-amperes or watts, horsepower, or any combination thereof,
4. Surrounding Air Temperature rating (Note 2),
5. Load Marking, General use or AC-1 (Note 1),
6. Pollution degree 2 (Note 2)

Note.

1. Marking is visible when the device is mounted singularly. The marking may be on the side of the device, and is not required to be visible when the device is mounted next to other devices.

2. Marking is shipped separately with the device. In addition, the device shall be marked with a reference to the information, such as by diagram number, document number or installation manual.

Summary of Figures and Illustrations - The following figures and illustrations shall be used as supplementary information where specifically noted.

FIG. No.	Description
1, 2	External view of model PION-UL3W-500-B3CVT
3, 4	Power board of model PION-UL3W-500-B3CVT
5, 6	External view of model PION-UL1W-070-VD
7, 8	Power board of model PION-UL1W-070-VD

ILL. No.	Description
1	Circuit diagram of model PION-UL3W-500-B3CVT
2	PWB layout of model PION-UL3W-500-B3CVT
3	Circuit diagram of model PION-UL1W-070-VD
4	PWB layout of model PION-UL1W-070-VD
5 - 10	Dimension of Front cover
11 - 16	Dimension of Bottom housing
17 - 22	Dimension of Top housing
23 – 28	Dimension of Left side housing
29 - 34	Dimension of Right side housing
35 – 38	Dimension of CT
39	Dimension of Terminal block
40	Dimension of Terminal housing
41	Dimension of Surge killer housing
42	Dimension of Cable cover
43	Dimension of Cable holder
44	Dimension of Plate
45 - 48	Dimension of Epoxy Insulator
49 - 54	Dimension of Busbar for Fuse
55 – 62	Dimension of Busbar for CT
63 - 65	Dimension of Busbar for 1 leg type
66 – 72	Dimension of Heatsink
73	Specification of VT
74	Specification of Transformer
75	Specification of Inductor
76	Dimension of Cover, MODEL PION-UL1W-070-VD
77	Dimension of Housing, MODEL PION-UL1W-070-VD
78	Dimension of Busbar for Fuse, MODEL PION-UL1W-070-VD
79 – 81	Dimension of Busbar, MODEL PION-UL1W-070-VD
82	Dimension of Heatsink, MODEL PION-UL1W-070-VD
83 - 84	Dimension of Plate

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2

General - Figure 1 and Figure 2 are external view of model PION-UL3W-500-B3CVT. Model PION-UL3W-500-B3CVT is considered to represent of the entire series except for models PION-UL1W-030, PION-UL1W-050 and PION-UL1W-070.

1. Front Cover –Steel, dimensions are like below table.

Models	Size (mm)	Ill. No.
PION-UL3W-035, PION-UL2W-030, PION-UL3W-050, PION-UL2W-050	115 x 214.4 x 58.0, 1.2T	5
PION-UL3W-070, PION-UL2W-070, PION-UL3W-090, PION-UL2W-090, PION-UL1W-090, PION-UL2W-110, PION-UL1W-110, PION-UL2W-130, PION-UL1W-130	124.0 x 248.7 x 50.0, 1.6T	6
PION-UL3W-110, PION-UD2W-110, PION-UD1W-110, PION-UL3W-130, PION-UD2W-130, PION-UD1W-130, PION-UL2W-160, PION-UL1W-160, PION-UL2W-200, PION-UL1W-200	124.0 x 344.8 x 50, 1.6T	7
PION-UL3W-160, PION-UD2W-160, PION-UD1W-160, PION-UL3W-200, PION-UD2W-200, PION-UD1W-200, PION-UL2W-250, PION-UL1W-250, PION-UL2W-300, PION-UL1W-300	166.0 x 369.8 x 50.0, 1.6T	8
PION-UL3W-250, PION-UD2W-250, PION-UD1W-250, PION-UL3W-300, PION-UD2W-300, PION-UD1W-300	219.2 x 449.2 x 50.0, 1.6T	9
PION-UL3W-400, PION-UD2W-400, PION-UD1W-400, PION-UL3W-500, PION-UD2W-500, PION-UD1W-500	294.5 x 509.2 x 50.0, 1.6T	10

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

2. Bottom Housing - Steel, assembled with Top housing, Left side housing and Right side housing by screw. Dimensions are like below table.

Models	Size (mm)	Ill. No.
PION-UL3W-035, PION-UL2W-030, PION-UL3W-050, PION-UL2W-050	115.0 x 117.3 x 1.2, 1.2T	11
PION-UL3W-070, PION-UL2W-070, PION-UL3W-090, PION-UL2W-090, PION-UL1W-090, PION-UL2W-110, PION-UL1W-110, PION-UL2W-130, PION-UL1W-130	120.0 x 146.75 x 1.6, 1.6T	12
PION-UL3W-110, PION-UD2W-110, PION-UD1W-110, PION-UL3W-130, PION-UD2W-130, PION-UD1W-130, PION-UL2W-160, PION-UL1W-160, PION-UL2W-200, PION-UL1W-200	120.0 x 163.7 x 1.6, 1.6T	13
PION-UL3W-160, PION-UD2W-160, PION-UD1W-160, PION-UL3W-200, PION-UD2W-200, PION-UD1W-200, PION-UL2W-250, PION-UL1W-250, PION-UL2W-300, PION-UL1W-300	162.6 x 172.4 x 1.6, 1.6T	14
PION-UL3W-250, PION-UD2W-250, PION-UD1W-250, PION-UL3W-300, PION-UD2W-300, PION-UD1W-300	219.2 x 229.8 x 17.0, 2.0T	15
PION-UL3W-400, PION-UD2W-400, PION-UD1W-400, PION-UL3W-500, PION-UD2W-500, PION-UD1W-500	294.5 x 228.5 x 17.0, 2.0T	16

3. Top Housing - Steel, assembled with Bottom housing, Left side housing and Right side housing by screw. Dimensions are like below table.

Models	Size (mm)	Ill. No.
PION-UL3W-035, PION-UL2W-030, PION-UL3W-050, PION-UL2W-050	112.0 x 144.75 x 14.2, 1.2T	17
PION-UL3W-070, PION-UL2W-070, PION-UL3W-090, PION-UL2W-090, PION-UL1W-090, PION-UL2W-110, PION-UL1W-110, PION-UL2W-130, PION-UL1W-130	120.0 x 154.9 x 15.0, 1.6T	18
PION-UL3W-110, PION-UD2W-110, PION-UD1W-110, PION-UL3W-130, PION-UD2W-130, PION-UD1W-130, PION-UL2W-160, PION-UL1W-160, PION-UL2W-200, PION-UL1W-200	120.0 x 172.0 x 13.5, 1.6T	19
PION-UL3W-160, PION-UD2W-160, PION-UD1W-160, PION-UL3W-200, PION-UD2W-200, PION-UD1W-200, PION-UL2W-250, PION-UL1W-250, PION-UL2W-300, PION-UL1W-300	166.0 x 174.8 x 15.0, 1.6T	20
PION-UL3W-250, PION-UD2W-250, PION-UD1W-250, PION-UL3W-300, PION-UD2W-300, PION-UD1W-300	219.2 x 229.8 x 17.0, 2.0T	21
PION-UL3W-400, PION-UD2W-400, PION-UD1W-400, PION-UL3W-500, PION-UD2W-500, PION-UD1W-500	294.5 x 228.5 x 17.0, 2.0T	22

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

4. Left side Housing - Steel, assembled with Bottom housing, Top housing and Right side housing by screw. Dimensions are like below table.

Models	Size (mm)	Ill. No.
PION-UL3W-035, PION-UL2W-030, PION-UL3W-050, PION-UL2W-050	240.0 x 152.2 x 27.0, 1.2T	23
PION-UL3W-070, PION-UL2W-070, PION-UL3W-090, PION-UL2W-090, PION-UL1W-090, PION-UL2W-110, PION-UL1W-110, PION-UL2W-130, PION-UL1W-130	282.0 x 162.6 x 31.5, 1.6T	24
PION-UL3W-110, PION-UD2W-110, PION-UD1W-110, PION-UL3W-130, PION-UD2W-130, PION-UD1W-130, PION-UL2W-160, PION-UL1W-160, PION-UL2W-200, PION-UL1W-200	384.2 x 179.7 x 24.6, 1.6T	25
PION-UL3W-160, PION-UD2W-160, PION-UD1W-160, PION-UL3W-200, PION-UD2W-200, PION-UD1W-200, PION-UL2W-250, PION-UL1W-250, PION-UL2W-300, PION-UL1W-300	409.2 x 182.5 x 24.6, 1.6T	26
PION-UL3W-250, PION-UD2W-250, PION-UD1W-250, PION-UL3W-300, PION-UD2W-300, PION-UD1W-300	510.0 x 224.0 x 42.0, 2.0T	27
PION-UL3W-400, PION-UD2W-400, PION-UD1W-400, PION-UL3W-500, PION-UD2W-500, PION-UD1W-500	570.0 x 224.0 x 62.0, 2.0T	28

5. Right side Housing - Steel, assembled with Bottom housing, Left side housing and Top housing by screw. Dimensions are like below table.

Models	Size (mm)	Ill. No.
PION-UL3W-035, PION-UL2W-030, PION-UL3W-050, PION-UL2W-050	240.0 x 133.7 x 27.0, 1.2T	29
PION-UL3W-070, PION-UL2W-070, PION-UL3W-090, PION-UL2W-090, PION-UL1W-090, PION-UL2W-110, PION-UL1W-110, PION-UL2W-130, PION-UL1W-130	282.0 x 152.1 x 31.5. 1.6T	30
PION-UL3W-110, PION-UD2W-110, PION-UD1W-110, PION-UL3W-130, PION-UD2W-130, PION-UD1W-130, PION-UL2W-160, PION-UL1W-160, PION-UL2W-200, PION-UL1W-200	384.2 x 169.2 x 24.6, 1,6T	31
PION-UL3W-160, PION-UD2W-160, PION-UD1W-160, PION-UL3W-200, PION-UD2W-200, PION-UD1W-200, PION-UL2W-250, PION-UL1W-250, PION-UL2W-300, PION-UL1W-300	409.2 x 172.0 x 24.6, 1.6T	32
PION-UL3W-250, PION-UD2W-250, PION-UD1W-250, PION-UL3W-300, PION-UD2W-300, PION-UD1W-300	510.0 x 229.5 x 42.0, 2.0T	33
PION-UL3W-400, PION-UD2W-400, PION-UD1W-400, PION-UL3W-500, PION-UD2W-500, PION-UD1W-500	570.0 x 229.5 x 62.0, 2.0T	34

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

6. SCR – R/C(QQQX2), details are like below table.

Models	SCR Information
PION-UL3W-035, PION-UL3W-050 PION-UL2W-030, PION-UL2W-050	R/C(QQQX2), SEMIKRON International GmbH (E63532), Type SKKT 58/16 E, Rated 1600 V, 55 A
PION-UL3W-070, PION-UL3W-090 PION-UL2W-090, PION-UD2W-090, PION-UL1W-090	R/C(QQQX2), SEMIKRON International GmbH (E63532), Type SKKT 107/16 E, Rated 1600 V, 119 A
PION-UL3W-110, PION-UL3W-130 PION-UL2W-110, PION-UL2W-130 PION-UL1W-110, PION-UL1W-130 PION-UD2W-110, PION-UD2W-130 PION-UD1W-110, PION-UD1W-130	R/C(QQQX2), SEMIKRON International GmbH (E63532), Type SKKT 172/16 E, Rated 1600 V, 175 A
PION-UL3W-160, PION-UL3W-200 PION-UL2W-160, PION-UL2W-200 PION-UL1W-160, PION-UL1W-200 PION-UD2W-160, PION-UD2W-200 PION-UD1W-160, PION-UD1W-200	R/C(QQQX2), Ixys Semiconductor GmbH (E72873), Type MCMA260P1600YA, Rated 1600 V, 260 A
PION-UL3W-250, PION-UL3W-300 PION-UL2W-250, PION-UL2W-300 PION-UL1W-250, PION-UL1W-300 PION-UD2W-250, PION-UD2W-300 PION-UD1W-250, PION-UD1W-300	R/C(QQQX2), Ixys Semiconductor GmbH (E72873), Type MCC310-16IO1, Rated 1600 V, 320 A
PION-UL3W-400, PION-UL3W-500 PION-UD2W-400, PION-UD2W-500 PION-UD1W-400, PION-UD1W-500	R/C(QQQX2), IXYS UK WESTCODE LTD (E157027), Type MCC501-16IO1, Rated 1600 V, 503 A

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

7. Fuse – R/C(JFHR2), Special-purpose Fuses, details are like below table.

Models	Fuse Information
PION-UL2W-030	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 50FE, Rated 50 A, 700 Vac
PION-UL3W-035	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 63ET, Rated 63 A, 700 Vac
PION-UL3W-050, PION-UL2W-050	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 80ET, Rated 80 A, 700 Vac
PION-UL3W-070, PION-UL3W-090 PION-UL2W-090, PION-UD2W-090 PION-UL1W-090	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 100FE, Rated 100 A, 700 Vac
PION-UL3W-110, PION-UL2W-110 PION-UL1W-110, PION-UD2W-110 PION-UD1W-110	R/C(JFHR2), Zhongshan City Yihang Electric Co Ltd (E143197), Type 660GH-160UL, Rated 160 A, 660 Vac
PION-UL3W-130, PION-UL2W-130 PION-UL1W-130, PION-UD2W-130 PION-UD1W-130	R/C(JFHR2), Zhongshan City Yihang Electric Co Ltd (E143197), Type 660GH-200UL, Rated 200 A, 660 Vac
PION-UL3W-160, PION-UL2W-160 PION-UL1W-160, PION-UD2W-160 PION-UD1W-160,	R/C(JFHR2), Zhongshan City Yihang Electric Co Ltd (E143197), Type 660GH-250UL, Rated 250 A, 660 Vac
PION-UL3W-200, PION-UL2W-200 PION-UL1W-200, PION-UD2W-200 PION-UD1W-200	R/C(JFHR2), Zhongshan City Yihang Electric Co Ltd (E143197), Type 660GH-315UL, Rated 315 A, 660 Vac
PION-UL3W-250, PION-UL2W-250 PION-UL2W-300, PION-UL1W-250 PION-UL1W-300, PION-UD2W-250 PION-UD1W-250	R/C(JFHR2), COOPER BUSSMANN LLC (E125085), Type 170M2621_400A, Rated 400 A, 700 Vac
PION-UL3W-500, PION-UD2W-500 PION-UD1W-500	R/C(JFHR2), COOPER BUSSMANN LLC (E125085), Type 170M4018_800A, Rated 800 A, 700 Vac
PION-UL3W-300, PION-UD2W-300 PION-UD1W-300	R/C(JFHR2), COOPER XI'AN FUSEGEAR CO LTD (E258171), Type FWH-500A, Rated 500 A, 500 Vac
PION-UL3W-400, PION-UD2W-400 PION-UD1W-400	R/C(JFHR2), COOPER XI'AN FUSEGEAR CO LTD (E258171), Type FWH-600A, Rated 600 A, 500 Vac

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

8. FAN – R/C(GPWV2), Details are like below table.

Models	FAN Information
PION-UL3W-035, PION-UL3W-050 PION-UL2W-110, PION-UL2W-130 PION-UL1W-110, PION-UL1W-130 PION-UL2W-030, PION-UL2W-050	R/C(GPWV2), Fulltech Electric Co Ltd (E136370), Type UF-92B11-H, Rated 110 Vac
PION-UL3W-070, PION-UL3W-090 PION-UL2W-090, PION-UL1W-090 PION-UL2W-070	R/C(GPWV2), Fulltech Electric Co Ltd (E136370), Type UF-92AM11-H, Rated 110 Vac
PION-UL3W-110, PION-UL3W-130 PION-UL3W-160, PION-UL3W-200 PION-UL3W-250, PION-UL3W-300 PION-UL3W-400, PION-UL3W-500 PION-UL2W-160, PION-UL2W-200 PION-UL2W-250, PION-UL2W-300 PION-UL1W-160, PION-UL1W-200 PION-UL1W-250, PION-UL1W-300 PION-UD2W-110, PION-UD2W-130 PION-UD2W-160, PION-UD2W-200 PION-UD2W-250, PION-UD2W-300 PION-UD2W-400, PION-UD2W-500 PION-UD1W-110, PION-UD1W-130 PION-UD1W-160, PION-UD1W-200 PION-UD1W-250, PION-UD1W-300 PION-UD1W-400, PION-UD1W-500	R/C(GPWV2), Fulltech Electric Co Ltd (E136370), Type UF-12A11-H, Rated 110 Vac
PION-UL3W-035, PION-UL3W-050 PION-UL2W-110, PION-UL2W-130 PION-UL1W-110, PION-UL1W-130 PION-UL2W-030, PION-UL2W-050	R/C(GPWV2), SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO LTD (E77551), Type EE92252B1-000U-F99, Rated 24 Vdc
PION-UL3W-070, PION-UL3W-090 PION-UL2W-090, PION-UL1W-090 PION-UL2W-070	R/C(GPWV2), SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO LTD (E77551), Type PMD2409PMB1-A (2)R.GN, Rated 24 Vdc
PION-UL3W-110, PION-UL3W-130 PION-UL3W-160, PION-UL3W-200 PION-UL2W-160, PION-UL2W-200 PION-UL2W-250, PION-UL2W-300 PION-UL1W-160, PION-UL1W-200 PION-UL1W-250, PION-UL1W-300 PION-UD2W-110, PION-UD2W-130 PION-UD2W-160, PION-UD2W-200 PION-UD1W-110, PION-UD1W-130 PION-UD1W-160, PION-UD1W-200	R/C(GPWV2), SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO LTD (E77551), Type EEC0382B1-000U-F99, Rated 24 Vdc

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

9. CT - Details are like below table.

Models	CT Information	Ill. No.
PION-UL3W-035, PION-UL3W-050 PION-UL3W-070, PION-UL2W-030 PION-UL2W-050, PION-UL2W-070	Manufactured by Sunghan Trans, Type Ts-16W(1.0), Rated 70 A, Insulation material – R/C(QMFZ2), SAMYANG CORPORATION (E121254), Type 1500GN(xx)K, 0.75 Minimum thickness, 75 degree C.	35
PION-UL3W-090 PION-UL3W-110, PION-UL3W-130, PION-UL2W-130 PION-UL2W-090 PION-UD2W-110, PION-UD2W-130 PION-UL1W-090, PION-UD1W-110 PION-UD1W-130, PION-UL2W-110 PION-UL1W-110, PION-UL1W-130	Manufactured by Sunghan Trans, Type Ts-16W(2.0), Rated 150 A, Insulation material – R/C(QMFZ2), SAMYANG CORPORATION (E121254), Type 1500GN(xx)K, 0.75 Minimum thickness, 75 degree C.	36
PION-UL3W-160, PION-UL3W-200 PION-UL2W-160, PION-UL2W-200 PION-UL1W-160, PION-UL1W-200 PION-UD2W-160, PION-UD2W-200 PION-UD1W-160, PION-UD1W-200	Manufactured by Sunghan Trans, Type T-5W(1.0), Rated 250 A, Insulation material – R/C(QMFZ2), SAMYANG CORPORATION (E121254), Type 1500GN(xx)K, 0.75 Minimum thickness, 75 degree C.	37
PION-UL3W-250, PION-UL3W-300 PION-UL3W-400, PION-UL3W-500 PION-UL2W-250, PION-UL2W-300 PION-UL1W-250, PION-UL1W-300 PION-UD2W-250, PION-UD2W-300 PION-UD2W-400, PION-UD2W-500 PION-UD1W-250, PION-UD1W-300 PION-UD1W-400, PION-UD1W-500	Manufactured by Sunghan Trans, Type Ts-603W(2.0), Rated 600 A, Insulation material – R/C(QMFZ2), SAMYANG CORPORATION (E121254), Type 1500GN(xx)K, 0.75 Minimum thickness, 75 degree C.	38

10. Wire harness – Constructions are like below.

(a) Wire – R/C(AVLV2), Style 1330 or 1332, Rated 600 V, 200 degree C.

(b) Tubing – R/C(YDPU2), DAE MYUNG ELECTRIC (E218405), Type VIT-600, Rated 600 V, 105 degree C.

(c) Heat shrinkable Tube – R/C(YDPU2), KOREA ACE TECH CO LTD (E245418), Type S-JIN ACE-TUBING, Rated 600 V, 125 degree C.

(d) Sleeve – R/C(YDTU2), DAEIL COATING CO LTD (E104390), Type DFA-11-2.8, Rated 600 V, 105 degree C.

11. Terminal Housing - R/C(QMFZ2), KOLON PLASTICS INC (E190675), Type KN332G30V0(bbbb), Rated V-0, 120 degree C, Minimum thickness 1.5 mm. Suitable for Direct Support Requirements. See Ill. 40 for details.

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

12. Surge killer housing- R/C(QMFZ2), KOLON PLASTICS INC (E190675), Type KN332G30V0(bbbb), Rated V-0, 120 degree C, Minimum thickness 1.5 mm. Suitable for Direct Support Requirements. See Ill. 41 for details.

13. Cable Cover – R/C(QMFZ2), Details are like below table.

Models	Cable Cover Information	Ill. No.
PION-UL3W-035, PION-UL3W-050 PION-UL3W-070, PION-UL3W-090 PION-UL3W-110, PION-UL3W-130 PION-UL3W-160, PION-UL3W-200 PION-UL3W-250, PION-UL3W-300 PION-UL3W-400, PION-UL3W-500 PION-UL2W-110, PION-UL2W-130 PION-UL2W-160, PION-UL2W-200 PION-UL2W-250, PION-UL2W-300 PION-UL1W-110, PION-UL1W-130 PION-UL1W-160, PION-UL1W-200 PION-UL1W-250, PION-UL1W-300 PION-UL2W-030, PION-UL2W-050 PION-UL2W-070, PION-UL2W-090 PION-UL1W-090 PION-UD2W-110, PION-UD2W-130 PION-UD2W-160, PION-UD2W-200 PION-UD2W-250, PION-UD2W-300 PION-UD2W-400, PION-UD2W-500 PION-UD1W-110, PION-UD1W-130 PION-UD1W-160, PION-UD1W-200 PION-UD1W-250, PION-UD1W-300 PION-UD1W-400, PION-UD1W-500	R/C(QMFZ2), LG CHEM LTD (E67171), Type LUPOY GN-5007F(#), Rated V-0, 95 degree C, Minimum thickness 1.5 mm.	42

14. Terminal Block – R/C(QMFZ2), KOLON PLASTICS INC (E190675), Type KN332G30V0(bbbb), Rated V-0, 120 degree C, Minimum thickness 1.5 mm. Suitable for Direct Support Requirements. See below table for details.

Models	Size (mm)	Ill. No.
PION-UL3W-035, PION-UL3W-050 PION-UL3W-070, PION-UL3W-090 PION-UL2W-030, PION-UL2W-050 PION-UL2W-070, PION-UL2W-090 PION-UL1W-090 PION-UL3W-110, PION-UL3W-130 PION-UL2W-110, PION-UL2W-130 PION-UL2W-160, PION-UL2W-200 PION-UL1W-110, PION-UL1W-130 PION-UL1W-160, PION-UL1W-200 PION-UD2W-110, PION-UD2W-130 PION-UD1W-110, PION-UD1W-130	110.0 x 30.0 x 47.0	39
PION-UL3W-160, PION-UL3W-200 PION-UD2W-160, PION-UD2W-200 PION-UD1W-160, PION-UD1W-200	150.0 x 30.0 x 65.5	85

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

15. Cable Holder – R/C(QMFZ2), Details are like below table.

Models	Cable Holder Information	Ill. No.
PION-UL3W-035, PION-UL3W-050 PION-UL3W-070, PION-UL3W-090 PION-UL3W-110, PION-UL3W-130 PION-UL3W-160, PION-UL3W-200 PION-UL3W-250, PION-UL3W-300 PION-UL3W-400, PION-UL3W-500 PION-UL2W-110, PION-UL2W-130 PION-UL2W-160, PION-UL2W-200 PION-UL2W-250, PION-UL2W-300 PION-UL1W-110, PION-UL1W-130 PION-UL1W-160, PION-UL1W-200 PION-UL1W-250, PION-UL1W-300 PION-UL2W-030, PION-UL2W-050 PION-UL2W-070, PION-UL2W-090 PION-UL1W-090 PION-UD2W-110, PION-UD2W-130 PION-UD2W-160, PION-UD2W-200 PION-UD2W-250, PION-UD2W-300 PION-UD2W-400, PION-UD2W-500 PION-UD1W-110, PION-UD1W-130 PION-UD1W-160, PION-UD1W-200 PION-UD1W-250, PION-UD1W-300 PION-UD1W-400, PION-UD1W-500	R/C(QMFZ2), LG CHEM LTD (E67171), Type LUPOY GN-5007F(#), Rated V-0, 95 degree C, Minimum thickness 1.5 mm.	43

16. Plate – R/C(QMFZ2), Details are like below table.

Models	Plate Information	Ill. No.
PION-UL3W-035, PION-UL3W-050 PION-UL2W-030, PION-UL2W-050	R/C(QMFZ2), LG CHEM LTD (E67171), Type LUPOY GN-5007F(#), Rated V-0, 95 degree C, Minimum thickness 1.5 mm.	44
PION-UL3W-070, PION-UL3W-090 PION-UL3W-110, PION-UL3W-130 PION-UL2W-110, PION-UL2W-130 PION-UL1W-110, PION-UL1W-130 PION-UL2W-070, PION-UL2W-090 PION-UL1W-090 PION-UD2W-110, PION-UD2W-130 PION-UD1W-110, PION-UD1W-130	R/C(QMFZ2), FOSHAN DAFU NEW MATERIAL CO LTD (E344287), Type DFPCR11 or DFPCR34, Rated V-0, 80 degree C, Minimum thickness 0.25 mm.	83
PION-UL3W-160, PION-UL3W-200 PION-UL3W-250, PION-UL3W-300 PION-UL3W-400, PION-UL3W-500 PION-UL2W-160, PION-UL2W-200 PION-UL2W-250, PION-UL2W-300 PION-UL1W-160, PION-UL1W-200 PION-UL1W-250, PION-UL1W-300 PION-UD2W-160, PION-UD2W-200 PION-UD2W-250, PION-UD2W-300 PION-UD2W-400, PION-UD2W-500 PION-UD1W-160, PION-UD1W-200 PION-UD1W-250, PION-UD1W-300 PION-UD1W-400, PION-UD1W-500		84

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

17. Epoxy Insulator – R/C(QMFZ2), JUNG DO E&P CO LTD (E114090), Type EP-1500F, Rated V-0, 130 degree C, Minimum thickness 1.5 mm. Suitable for Direct Support Requirements., Details are like below table.

Models	Size (mm)	Ill. No.
PION-UL3W-250, PION-UL2W-250 PION-UL1W-250, PION-UD2W-250 PION-UD1W-250 PION-UL3W-300, PION-UL2W-300 PION-UL1W-300, PION-UD2W-300 PION-UD1W-300	30 x 30	45
PION-UL3W-400, PION-UD2W-400 PION-UD1W-400 PION-UL3W-500, PION-UD2W-500 PION-UD1W-500	40 x 40	46
PION-UL3W-250, PION-UD2W-250 PION-UD1W-250 PION-UL3W-300, PION-UD2W-300 PION-UD1W-300 PION-UL3W-400, PION-UD2W-400 PION-UD1W-400 PION-UL3W-500, PION-UD2W-500 PION-UD1W-500	45 x 50	47
PION-UL2W-250, PION-UL1W-250 PION-UL2W-300, PION-UL1W-300	40 x 60	48

18. Busbar for Fuse – Tin or Silver coated Copper, dimensions are like below table.

Models	Size (mm)	Ill. No.
PION-UL3W-110, PION-UD2W-110, PION-UD1W-110, PION-UL3W-130, PION-UD2W-130, PION-UD1W-130,	15.0 x 90.0 x 26.5, 3T	49
PION-UL3W-160, PION-UD2W-160 PION-UD1W-160, PION-UL3W-200 PION-UD2W-200, PION-UD1W-200	20.0 x 83.0 x 38.0, 4T	50
PION-UL3W-250, PION-UD2W-250 PION-UD1W-250, PION-UL3W-300 PION-UD2W-300, PION-UD1W-300	30.0 x 103.0 x 4.0, 4T	51
PION-UL3W-400, PION-UD2W-400 PION-UD1W-400, PION-UL3W-500 PION-UD2W-500, PION-UD1W-500	40.0 x 190.0 x 6.0, 6T	52
PION-UL2W-160, PION-UL1W-160 PION-UL2W-200, PION-UL1W-200	20.0 x 85.0 x 27.55, 4T	53
PION-UL2W-250, PION-UL1W-250 PION-UL2W-300, PION-UL1W-300	30.0 x 87.0 x 34.0, 4T	54

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

19. Busbar for CT – Tin or Silver coated Copper, dimensions are like below table. Minimum thickness 2.0 mm.

Models	Size (mm)	Ill. No.
PION-UL3W-035, PION-UL2W-030, PION-UL3W-050, PION-UL2W-050 PION-UL3W-070, PION-UL2W-070, PION-UL3W-090, PION-UL2W-090, PION-UL1W-090	15.0 x 87.6 x 20.0, 2T	55
PION-UL3W-110, PION-UD2W-110, PION-UD1W-110, PION-UL3W-130, PION-UD2W-130, PION-UD1W-130,	15.0 x 110.0 x 20.0, 3T	56
PION-UL3W-160, PION-UD2W-160 PION-UD1W-160, PION-UL3W-200 PION-UD2W-200, PION-UD1W-200	20.0 x 138.5 x 29.0, 4T	57
PION-UL3W-250, PION-UD2W-250 PION-UD1W-250, PION-UL3W-300 PION-UD2W-300, PION-UD1W-300	30.0 x 217.0 x 21.35, 4T	58
PION-UL3W-400, PION-UD2W-400 PION-UD1W-400, PION-UL3W-500 PION-UD2W-500, PION-UD1W-500	40.0 x 305.0 x 6.0, 6T	59
PION-UL2W-110, PION-UL1W-110 PION-UL2W-130, PION-UL1W-130	15.0 x 96.5 x 21.0, 3T	60
PION-UL2W-160, PION-UL1W-160 PION-UL2W-200, PION-UL1W-200	20.0 x 112.0 x 24.0, 4T	61
PION-UL2W-250, PION-UL1W-250 PION-UL2W-300, PION-UL1W-300	30.0 x 138.0 x 26.25, 4T	62

20. Busbar for 1 leg type – Tin or Silver coated Copper, dimensions are like below table. Minimum thickness 4.0 mm.

Models	Size (mm)	Ill. No.
PION-UL2W-110, PION-UL1W-110 PION-UL2W-130, PION-UL1W-130	20.0 x 203.5 x 3.0, 3T	63
PION-UL2W-160, PION-UL1W-160 PION-UL2W-200, PION-UL1W-200	20.0 x 283.0 x 27.55, 4T	64
PION-UL2W-250, PION-UL1W-250 PION-UL2W-300, PION-UL1W-300	30.0 x 318.0 x 34.0, 4T	65

*

21. Epoxy molding for surge killer – **R/C(QMFZ2), E-TEK (E227755), Type ETR-50B, Rated V-0, RTI 90 degree C.**

MODEL PION-UL3W-500-B3CVT – FIG. 1 and FIG. 2 (CONT'D)

22. Heatsink – Aluminum, Details are like below table.

Models	Size (mm)	Ill. No.
PION-UL3W-035, PION-UL2W-030, PION-UL3W-050, PION-UL2W-050	112.0 x 182.0 x 57.0	66
PION-UL3W-070, PION-UL2W-070, PION-UL3W-090, PION-UL2W-090, PION-UL1W-090	120.0 x 201.5 x 71.0	67
PION-UL3W-110, PION-UD2W-110, PION-UD1W-110, PION-UL3W-130, PION-UD2W-130, PION-UD1W-130, PION-UL2W-160, PION-UL1W-160 PION-UL2W-200, PION-UL1W-200	120.0 x 246.5 x 71.0	68
PION-UL3W-160, PION-UD2W-160 PION-UD1W-160, PION-UL3W-200 PION-UD2W-200, PION-UD1W-200 PION-UL2W-250, PION-UL1W-250 PION-UL2W-300, PION-UL1W-300	162.0 x 321.5 x 73.0	69
PION-UL3W-250, PION-UD2W-250 PION-UD1W-250, PION-UL3W-300 PION-UD2W-300, PION-UD1W-300	215.0 x 300.0 x 76.0	70
PION-UL3W-400, PION-UD2W-400 PION-UD1W-400, PION-UL3W-500 PION-UD2W-500, PION-UD1W-500	290.0 x 420.0 x 120.0	71
PION-UL2W-110, PION-UL1W-110 PION-UL2W-130, PION-UL1W-130	120.0 x 211.5 x 71.0	72

23. VT – Manufactured by J&D, Type JI or JIV, Current type voltage transformer, Rated 2 mA. See ill. 73 for details. It is applicable only for Option V and T types.

24. External connector – R/C(ECBT2), Molex L L C (E29179), Type 3191, Rated 600 V, 7 A, RTI 130 degree C. It is applicable only for Option C type.

25. External wire - R/C(AVLV2), Style 1330 or 1332, Rated 600 V, 200 degree C. It is applicable only for Option C type.

MODEL PION-UL3W-500-B3CVT – FIG. 3 and FIG. 4

General - Figure 3 and Figure 4 are Power board of model PION-UL3W-500-B3CVT. Model PION-UL3W-500-B3CVT is considered to represent of the entire series except for models PION-UL1W-030, PION-UL1W-050 and PION-UL1W-070.

1. PWB – R/C(ZPMV2), rated V-0, minimum 130 degree C.

2. Terminal block – R/C(XCFR2), TIANLI ELECTRICAL MACHINERY (NINGBO) CO LTD (E206029), Type B762-02-0773-09P, Rated 300 V, 20 A, RTI 105 degree C.

3. Fuse – R/C(JDYX2), COOPER BUSSMANN LLC (E19180), Type SR-5, Rated 250 V, 1A.

4. Capacitor – R/C(FOWX2), WENDENG NETRONTECH ELECTRONIC CO LTD (E339029), Type AD or AA, Rated 480 pF.

5. Transformer (6 pin) - Manufactured by NAMSUN ELECTRONICS, Type NTS-017 / EE2218(V). See Ill. 74 for details.

6. Thermistor – R/C(XGPU2), HONGZHI ENTERPRISES LTD (E319959), Type 10D-9, Rated 240 V, 2 A.

7. Varistor – R/C(VZCA2), HONGZHI ENTERPRISES LTD (E324904), Type HEL10D471K, Rated SPD type 5, 300 Vac, MLV 1180, MCOV 300, In 3.

8. Relay – R/C(NRNT2), Panasonic Corporation (E43149), Type APAN3112, Rated 250 Vac or 30 Vdc, 5 A.

9. Inductor – Manufactured by NAMSUN ELECTRONICS, Type NS-503 / UU1116(V). See Ill. 75 for details.

10. Bridge diode – R/C(QQQX2), YANGZHOU YANGJIE ELECTRONIC TECHNOLOGY CO LTD (E230084), Type DF10, 700 Vac, 1 A.

MODEL PION-UL1W-070-VD – FIG. 5 and FIG. 6

General - Figure 5 and Figure 6 are external view of model PION-UL1W-070-VD. Model PION-UL1W-070-VD is considered to represent of models PION-UL1W-030 and PION-UL1W-050.

1. Cover – R/C(QMFZ2), LG CHEM LTD (E67171), Type LUPOY GN-5007F(#), Rated V-0, 95 degree C, Minimum thickness 1.5 mm.

Models	Size (mm)	Ill. No.
PION-UL1W-030 PION-UL1W-050 PION-UL1W-070	52.0 x 20.15	76

2. Housing - R/C(QMFZ2), LG CHEM LTD (E67171), Type LUPOY GN-5007F(#), Rated V-0, 95 degree C, Minimum thickness 1.5 mm.

Models	Size (mm)	Ill. No.
PION-UL1W-030 PION-UL1W-050 PION-UL1W-070	80.0 x 145.07 x 95.9	77

3. SCR – R/C(QQQX2), details are like below table.

Models	SCR Information
PION-UL1W-030, PION-UL1W-050 PION-UL1W-070	R/C(QQQX2), SEMIKRON International GmbH (E63532), Type SKKT 107/16 E, Rated 1600 V, 119 A

4. Fuse

Models	Fuse Information
PION-UL1W-030	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 50FE, Rated 50 A, 700 Vac
PION-UL1W-050	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 80ET, Rated 80 A, 700 Vac
PION-UL1W-070	R/C(JFHR2), COOPER BUSSMANN LLC (E91958), Type 100FE, Rated 100 A, 700 Vac

5. FAN - R/C(GPWV2), Details are like below table.

Models	FAN Information
PION-UL1W-030, PION-UL1W-050 PION-UL1W-070	R/C(GPWV2), SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO LTD (E77551), Type EE80252B1-000U-F99, Rated 24 Vdc

MODEL PION-UL1W-070-VD – FIG. 5 and FIG. 6 (CONT'D)

6. CT - Details are like below table.

Models	CT Information	Ill. No.
PION-UL1W-030, PION-UL1W-050, PION-UL1W-070	Manufactured by Sunghan Trans, Type Ts-16W(1.0), Rated 70 A, Insulation material – R/C(QMFZ2), SAMYANG CORPORATION (E121254), Type 1500GN(xx)K, 0.75 Minimum thickness, 75 degree C.	35

7. Main input/output terminal – R/C(XCFR2), TIANLI ELECTRICAL MACHINERY (NINGBO) CO LTD (E206029), Type TLPS-300V, Rated 300 V, 12 A.

8. VT – Manufactured by J&D, Type JI or JIV, Current type voltage transformer, Rated 2 mA. See ill. 73 for details. It is applicable only for Option V and T types.

9. Busbar for Fuse – Tin or Silver coated Copper, dimensions are like below table.

Models	Size (mm)	Ill. No.
PION-UL1W-030, PION-UL1W-050, PION-UL1W-070	47.0 x 35.0 x 14.4, 2T	78

10. Busbar for terminal – Tin or Silver coated Copper, dimensions are like below table.

Models	Size (mm)	Ill. No.
PION-UL1W-030, PION-UL1W-050, PION-UL1W-070	20.35 x 51.5 x 14.0, 2T	79
	8.0 x 28.5 x 10.4, 2T	80
	15.0 x 72.5 x 14.4, 2T	81

11. Heatsink – Aluminum, Details are like below table.

Models	Size (mm)	Ill. No.
PION-UL1W-030, PION-UL1W-050, PION-UL1W-070	80.0 x 145.0 x 55.0	82

12. Surge killer housing- R/C(QMFZ2), KOLON PLASTICS INC (E190675), Type KN332G30V0(bbbb), Rated V-0, 120 degree C, Minimum thickness 1.5 mm. Suitable for Direct Support Requirements. See Ill. 41 for details.

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13. Epoxy molding for surge killer – **R/C(QMFZ2), E-TEK (E227755), Type ETR-50B, Rated V-0, RTI 90 degree C.**

MODEL PION-UL1W-070-VD – FIG. 7 and FIG. 8

General - Figure 7 and Figure 8 are Power board of model PION-UL1W-070-VD. Model PION-UL1W-070-VD is considered to represent of models PION-UL1W-030 and PION-UL1W-050.

1. PWB – R/C(ZPMV2), rated V-0, minimum 130 degree C.

2. Relay – R/C(NRNT2), Panasonic Corporation (E43149), Type APAN3112, Rated 250 Vac or 30 Vdc, 5 A.

3. Control Input connector - R/C(XCFR2), TIANLI ELECTRICAL MACHINERY (NINGBO) CO LTD (E206029), Type TL206V, Rated 300 V, 20 A.