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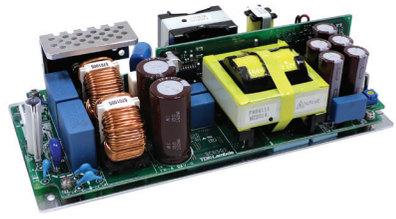
TDK·Lambda CUS350MP Series

350 / 500W Medical Power Supplies with a 1,000W Peak Capability

https://product.tdk.com/en/power/cus350mp
www.emea.lambda.tdk.com/cus350mp

Medical Industrial Test



The CUS350MP-1000 AC-DC power supplies are rated up to 350W (1,000W peak) with convection cooling for applications requiring low audible noise, or up to 500W (1,000W peak) with external airflow. The series is certified to IEC60601-1 3rd edition (medical), IEC62368-1 and IEC62477-1 (OVCIII) with compliance to the EN60601-1-2:2015 Edition 4 immunity requirements. With efficiencies of up to 94%, waste heat is reduced allowing the power supply to operate reliably in a compact 88 x 183 x 44mm package size. A 5V 0.3A standby voltage and remote on/off are fitted as standard. The high peak power rating makes the CUS350MP-1000 suitable for use in printers and equipment utilizing DC motors.

Features	Benefits
• Up to 350W Convection Cooled or 500W With External Airflow	• Low Audible Noise
• High Peak Power Rating up to 800W for 5s or 1,000W for 1s	• Size and Cost Reductions Compared to Continuously Rated Products
• Medical Certification (2 x MoPP)	• Suitable for B and BF Rated Equipment
• Class B Conducted and Radiated EMI	• Easier System Compliance
• Compact 88 x 183 x 44mm (3.46 x 7.2 x 1.73") Package	• Space Saving in End Equipment
• Five Year Warranty	• Low Cost of Ownership

Model Selector

Model	Output Voltage (V)	Adjustment Range (V)	Max Current Convection (A)	Max Power Convection (W)	Max Current Forced Air (A)	Max Power Forced Air (W)	Max Peak Current (A)	Max Peak Power (W)
CUS350MP-1000-24	24	24 - 26.4	14.6	350.4	20.8	499.2	41.7	1000.8
CUS350MP-1000-30	30	27 - 30	11.65	349.5	16.6	498.0	33.3	999.0
CUS350MP-1000-36	36	36 - 42	9.7	349.2	13.8	496.8	27.7	997.2
CUS350MP-1000-48	48	45 - 48	7.3	350.4	10.4	499.2	20.9	1003.2

CUS350MP-1000-	24	/	TA

Output voltage 24, 30, 36, 48

blank	Dual fuses, baseplate mounted
/A	With cover
/T	Screw terminals
TA	With cover and screw terminals
/CO2	Pcb coating
/SF	Single input fuse (Line)

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Specifications

Model		CUS350MP-1000
Input		
Input Voltage range	Vac / Vdc	85 - 265Vac, 120 - 370Vdc (1)(2)
Input Frequency	Hz	47 - 63
Input Current (115/230Vac)	A	Convection cooled: 3.6 / 1.7. Forced air: 4.9 / 1.5
Inrush Current at 100/200Vac (Cold Start)	A	15 / 30 first inrush, 30 / 30 second inrush
Leakage Current	uA	<300 (60Hz)
Power Factor (10/200Vac)	-	0.98 / 0.93
Harmonic Compliance	-	Meets IEC61000-3-2
Hold Up Time	ms	Convection cooled: 20. Forced air: 15. (Typical)
Efficiency at 115/230Vac (Typ)	%	91 / 94
Conducted & Radiated EMI	-	EN55011 / EN55032-B, FCC Class B, VCCI-B
Immunity	-	See immunity section
Insulation Class	-	Class I
Safety Certifications and Markings	-	IEC/ES/EN60601-1, IEC/UL/EN62368-1, EN62477-1 (OVCIII), CE Mark and UKCA Mark

Immunity

Test	Standard	Test Level	Criteria	
ESD	EN61000-4-2	3	A	-
Radiated Susceptibility	EN61000-4-3	3	A	-
Electrical Fast Transient Burst	EN61000-4-4	3	A	-
Surge	EN61000-4-5	3 (4)	A	Level 4 common mode only
Conducted Susceptibility	EN61000-4-6	3	A	-
Magnetic fields	EN61000-4-8	4	A	-
ESD	IEC60601-1-2 Ed.4	4	A	-
Radiated Susceptibility		3	A	-
Electrical Fast Transient Burst		3	A	-
Voltage Dips and Input Interruptions	EN61000-4-11	30% dip 500ms	A	-
		60% dip 200ms	B / A	100Vac / 230Vac
		100% dip 20ms	A	-
		100% dip 500ms	B	-
	IEC60601-1-2 Ed.4	30% dip 500ms	A	Customer to consider essential performance of end equipment
		60% dip 200ms	A	
		100% dip 20ms	A	
		100% dip 500ms	B	
SEMI F47 Line Dip	SEMI F47	-	-	At input voltages > 200Vac

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Specifications

Model		CUS350MP-1000
Output		
Output Voltage Tolerance	%	±1
Switching Frequency (Converter)	kHz	75 to 120. At light or no load the CUS350MP-1000 will operate in intermittent burst mode
Line Regulation	%	4
Load Regulation	%	8
External Load Capacitance	uF	24V: 10,000, 30V: 8,750, 36V: 7,500, 48V: 5,000
Ripple & Noise	mV	1% (0 to 50°C), 2% (-20 to 0°C)
Temperature Coefficient	%/°C	<0.02
Minimum Load	-	No minimum load required
Overcurrent Protection	%	> 101
Overvoltage Protection	V	24V: >28.1, 30V: >31.1, 36V: 44.1, 48V: >50.1
Overtemperature Protection	-	Yes, latching. Cycle AC or use remote on/off to reset
Remote Sense	-	No
Remote On/Off	-	Apply short to enable output voltage
DC Good / Fan Alarm	-	-
Standby Voltage	-	5V 0.3A isolated (always on)
Indicators	-	-
Parallel Operation	-	Not possible
Environmental		
Operating Temperature	°C	-20 to +70, derate linearly to 30% load from 50 to 70. See Note (2) for links to the specification and instruction manual.
Storage Temperature	°C	-30 to +75
Humidity (non condensing)	%RH	Operating: 30 - 90, Storage: 30 - 90
Cooling	-	Convection or ≥2.2m/s forced air directed at components C8, C9 and T1 (2)
Altitude	m	5000 (IEC62368-1), 4000 (IEC60601-1), 2000 (IEC62477-1)
Withstand Voltage (For 1 minute)	-	Input to Ground 2kVac (1xMoPP), Input to Output 4kVac (2xMoPP), Output to Ground 1.5kVac (1xMoPP) for 1 min.
Isolation Resistance	MΩ	>100 at 25°C, 70%RH & 500VDC
Vibration (Non-operating)	-	10 - 55Hz: 19.6m/s^2 (sweep 1 min) X, Y, Z for 1 hour
Shock	-	< 196.1 m/s^2
Other		
Weight (Typ)	g	Open frame: 770, With cover (/A): 850
Size (LxWxH)	mm	Open frame: 183 x 88 x 44, With cover (/A): 212 x 99.5 x 49.6
Size (LxWxH)	Inches	Open frame: 7.2 x 3.46 x 1.73, With cover (/A): 8.35 x 3.92 x 1.95
Connectors	-	Input and output connectors JST VHR5N Signal JST PHDR-8VS. /A models screw terminals
MTBF - Telcordia SR-332 issue 3*	Hours	1,066,036
Warranty	yrs	5

Notes
See website for detailed specifications, test methods and installation manual
(1) Safety certified for AC input only
(2) Consult specification and instruction manual for derating and peak power characteristics
*24V output model, 25°C ambient, full load, 200Vac input

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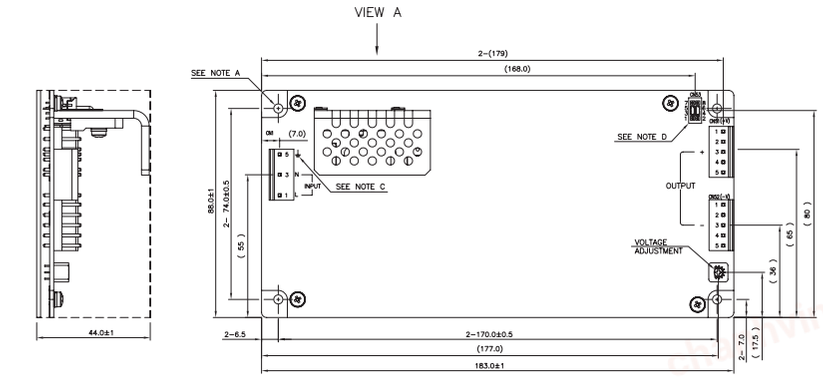
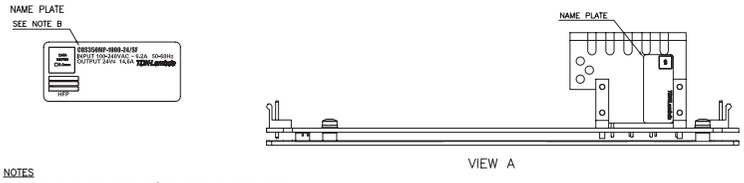
Outline Drawing (open frame)





NOTES
A. 4-ø3.5 HOLES FOR CUSTOMER'S CHASSIS MOUNTING HOLE.
B. MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, AND COUNTRY OF MANUFACTURE ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
C. ⏚ IS PROTECTIVE BONDING TERMINAL
D. SIGNAL CONNECTOR INFORMATION

PIN CONFIGURATION AND FUNCTIONS OF CN53

PIN NO.	CONFIGURATION	FUNCTION
1	−R	GND FOR REMOTE ON/OFF TERMINAL
2	+RO	REMOTE ON/OFF TERMINAL
3	−R	GND FOR REMOTE ON/OFF TERMINAL
4	+RS	REMOTE ON/OFF TERMINAL
5	−STB	GND FOR STANDBY SUPPLY
6	+STB	STANDBY SUPPLY (5V/0.3A)
7	−STB	GND FOR STANDBY SUPPLY
8	+STB	STANDBY SUPPLY (5V/0.3A)

FOR FURTHER INFORMATION REFER TO INSTRUCTION MANUAL

* PIN2 : MUST NOT APPLY VOLTAGE EXTERNALLY. IT WILL CAUSE POWER SUPPLY DAMAGE.

CONNECTORS USED :

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (INPUT SIDE CN1)	B3P5-VH(LF)(SN)	JST	1
PIN HEADER (OUTPUT SIDE CN51 & CN52)	B5P-VH(LF)(SN)	JST	2
PIN HEADER (SIGNAL CONNECTOR CN53)	B8B-PHDSS(LF)(SN)	JST	1

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
SOCKET HOUSING (CN1)	VHR-5N	JST	1
SOCKET HOUSING (CN51 & CN52)	VHR-5N	JST	2
SOCKET HOUSING (CN53)	PHDR-8VS	JST	1

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):

■INPUT SIDE (CN1) AND OUTPUT SIDE (CN51 AND CN52)

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
TERMINAL PINS	SVH-41T-P1.1	JST	13
HAND CRIMPING TOOL	YC-930R	JST	–

■SIGNAL CONNECTOR (CN53)

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
TERMINAL PINS	SPHD-002T-P0.5	JST	–
	SPHD-001T-P0.5		
HAND CRIMPING TOOL	YRS-620, YC-610R	JST	–

ACCESSORIES:
* SHORT PIECE ----------1
SHORTING +RS – +STB, −R – −STB (ATTACHED ON CN53 AT SHIPMENT)

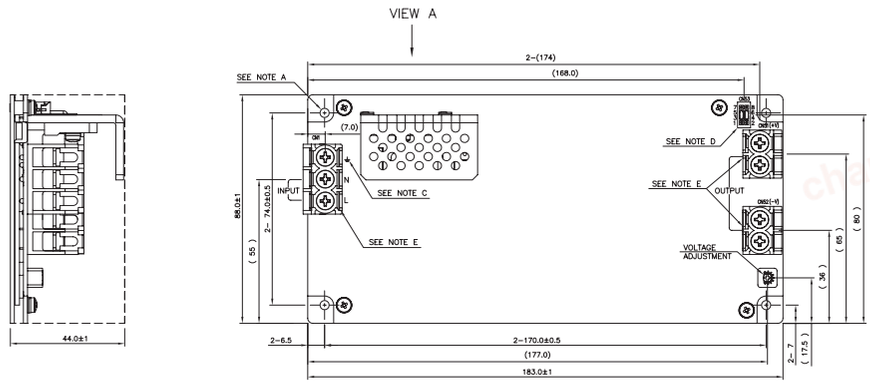
(UNIT:mm)

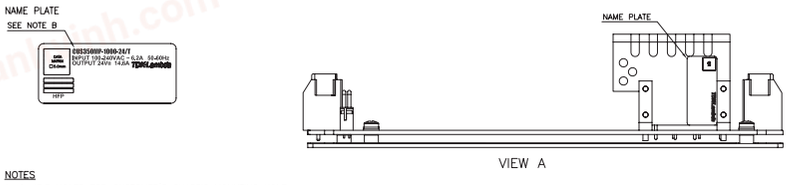
MODEL	CUS350MP-1000/SF

TDK-Lambda

PA644-02-01/SF

Outline Drawing (Open frame with screw terminals /T)





NOTES
A. 4-ø3.5 HOLES FOR CUSTOMER'S CHASSIS MOUNTING HOLE.
B. MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, AND COUNTRY OF MANUFACTURE ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
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D. SIGNAL CONNECTOR INFORMATION

PIN CONFIGURATION AND FUNCTIONS OF CN53

PIN NO.	CONFIGURATION	FUNCTION
1	−R	GND FOR REMOTE ON/OFF TERMINAL
2	+RO	REMOTE ON/OFF TERMINAL
3	−R	GND FOR REMOTE ON/OFF TERMINAL
4	+RS	REMOTE ON/OFF TERMINAL
5	−STB	GND FOR STANDBY SUPPLY
6	+STB	STANDBY SUPPLY (5V/0.3A)
7	−STB	GND FOR STANDBY SUPPLY
8	+STB	STANDBY SUPPLY (5V/0.3A)

FOR FURTHER INFORMATION REFER TO INSTRUCTION MANUAL

E. M3.5 SCREWS FOR INPUT AND OUTPUT TERMINAL, RECOMMENDED TORQUE: 1.0 Nm ~ 1.6 Nm.

* PIN2 : MUST NOT APPLY VOLTAGE EXTERNALLY. IT WILL CAUSE POWER SUPPLY DAMAGE.

CONNECTORS USED :

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (SIGNAL CONNECTOR CN53)	B8B-PHDSS(LF)(SN)	JST	1

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
SOCKET HOUSING (CN53)	PHDR-8VS	JST	1

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):

■SIGNAL CONNECTOR (CN53)

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
TERMINAL PINS	SPHD-002T-P0.5	JST	–
	SPHD-001T-P0.5		
HAND CRIMPING TOOL	YRS-620, YC-610R	JST	–

ACCESSORIES:
SHORT PIECE ----------1
SHORTING +RS – +STB, −R – −STB (ATTACHED ON CN53 AT SHIPMENT)

(UNIT:mm)

MODEL	CUS350MP-1000/T

TDK-Lambda

PA644-02-01/T

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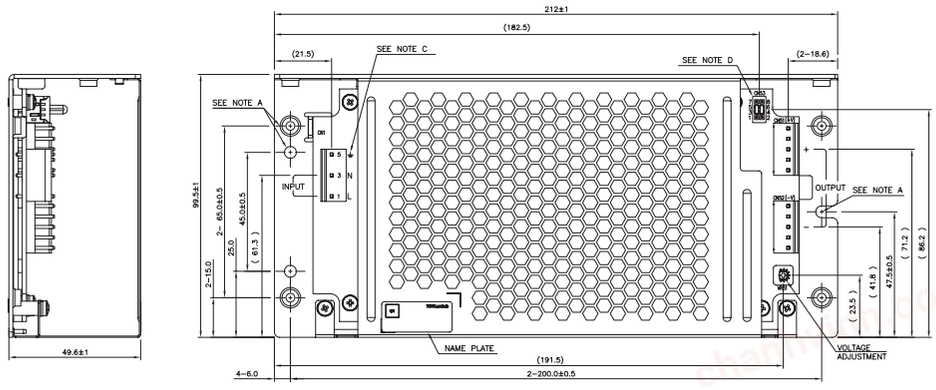
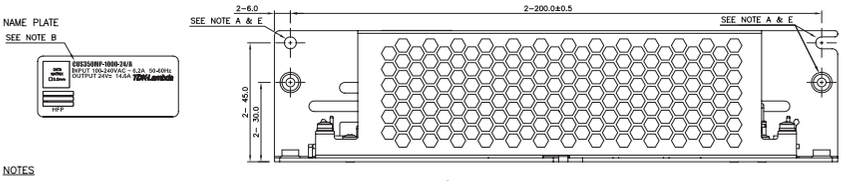
Outline Drawing (Open frame with cover /A)





NOTES
A. 3-ø4.5 HOLES, 2-ø4.5 OPEN SLOT HOLES & 6-M4 THREADED HOLES ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLE.
A1. THE INSTALLATION BY MOUNTING HOLES AT SIDE WALL WILL NOT BE SATISFIED VIBRATION AND SHOCK SPECIFICATION.
B. MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, AND COUNTRY OF MANUFACTURE ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
C. ⏚ IS PROTECTIVE BONDING TERMINAL
D. SIGNAL CONNECTOR INFORMATION

PIN CONFIGURATION AND FUNCTIONS OF CN53

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4	+RS	REMOTE ON/OFF TERMINAL
5	-STB	GND FOR STANDBY SUPPLY
6	+STB	STANDBY SUPPLY (5V/0.3A)
7	-STB	GND FOR STANDBY SUPPLY
8	+STB	STANDBY SUPPLY (5V/0.3A)

* PIN2 : MUST NOT APPLY VOLTAGE EXTERNALLY. IT WILL CAUSE POWER SUPPLY DAMAGE.

FOR FURTHER INFORMATION REFER TO INSTRUCTION MANUAL
E. THE INSTALLATION BY MOUNTING HOLES AT SIDE WALL WILL NOT BE SATISFIED VIBRATION AND SHOCK SPECIFICATION.

CONNECTORS USED :

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (INPUT SIDE CN1)	B3P5-VH(LF)(SN)	JST	1
PIN HEADER (OUTPUT SIDE CN51 & CN52)	B5P-VH(LF)(SN)	JST	2
PIN HEADER (SIGNAL CONNECTOR CN53)	B8B-PHDSS(LF)(SN)	JST	1

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
SOCKET HOUSING (CN1)	VHR-5N	JST	1
SOCKET HOUSING (CN51 & CN52)	VHR-5N	JST	2
SOCKET HOUSING (CN53)	PHDR-8VS	JST	1

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):
■ INPUT SIDE (CN1) AND OUTPUT SIDE (CN51 AND CN52)

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
TERMINAL PINS	SVH-41T-P1.1	JST	13
HAND CRIMPING TOOL	YC-930R	JST	-

■ SIGNAL CONNECTOR (CN53)

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
TERMINAL PINS	SPHD-002T-P0.5	JST	-
	SPHD-001T-P0.5		
HAND CRIMPING TOOL	YRS-620, YC-610R	JST	-

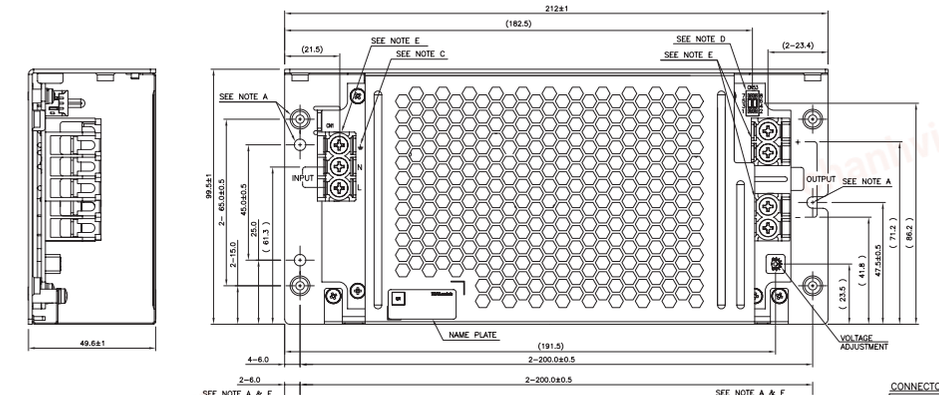
ACCESSORIES:
* SHORT PIECE ----------1
SHORTING +RS - +STB, -R - -STB (ATTACHED ON CN53 AT SHIPMENT)

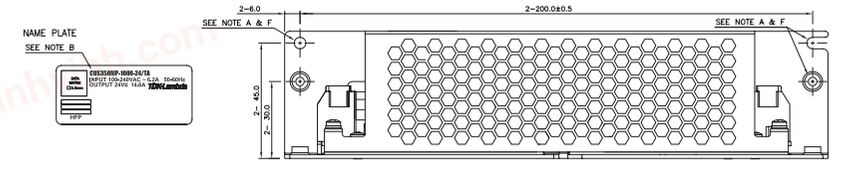
(UNIT:mm)

MODEL	CUS350MP-1000/A
TDK-Lambda	

PA644-02-01/A-A

Outline Drawing (Open frame with cover and screw terminals /TA)





NOTES
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6	+STB	STANDBY SUPPLY (5V/0.3A)
7	-STB	GND FOR STANDBY SUPPLY
8	+STB	STANDBY SUPPLY (5V/0.3A)

* PIN2 : MUST NOT APPLY VOLTAGE EXTERNALLY. IT WILL CAUSE POWER SUPPLY DAMAGE.

FOR FURTHER INFORMATION REFER TO INSTRUCTION MANUAL
E. M3.5 SCREWS FOR INPUT AND OUTPUT TERMINAL, RECOMMENDED TORQUE: 1.0 Nm ~ 1.6 Nm.
F. THE INSTALLATION BY MOUNTING HOLES AT SIDE WALL WILL NOT BE SATISFIED VIBRATION AND SHOCK SPECIFICATION.

CONNECTORS USED :

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (SIGNAL CONNECTOR CN53)	B8B-PHDSS(LF)(SN)	JST	1

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
SOCKET HOUSING (CN53)	PHDR-8VS	JST	1

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):
■ SIGNAL CONNECTOR (CN53)

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
TERMINAL PINS	SPHD-002T-P0.5	JST	-
	SPHD-001T-P0.5		
HAND CRIMPING TOOL	YRS-620, YC-610R	JST	-

ACCESSORIES:
SHORT PIECE ----------1
SHORTING +RS - +STB, -R - -STB (ATTACHED ON CN53 AT SHIPMENT)

(UNIT:mm)

MODEL	CUS350MP-1000/TA
TDK-Lambda	

PA644-02-01/TA-A

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TDK-Lambda France SAS
Tel: +33 1 60 12 71 65
france@fr.tdk-lambda.com
www.emea.lambda.tdk.com/fr



Italy Sales Office
Tel: +39 02 61 29 38 63
info.italia@it.tdk-lambda.com
www.emea.lambda.tdk.com/it



Netherlands
info@nl.tdk-lambda.com
www.emea.lambda.tdk.com/nl



TDK-Lambda Germany GmbH
Tel: +49 7841 666 0
info@de.tdk-lambda.com
www.emea.lambda.tdk.com/de



Austria Sales Office
Tel: +43 2256 655 84
info@at.tdk-lambda.com
www.emea.lambda.tdk.com/at



Switzerland Sales Office
Tel: +41 44 850 53 53
info@ch.tdk-lambda.com
www.emea.lambda.tdk.com/ch



Nordic Sales Office
Tel: +45 8853 8086
info@dk.tdk-lambda.com
www.emea.lambda.tdk.com/dk



TDK-Lambda UK Ltd.
Tel: +44 (0) 12 71 85 66 66
info@uk.tdk-lambda.com
www.emea.lambda.tdk.com/uk



TDK-Lambda Ltd.
Tel: +9 723 902 4333
info@tdk-lambda.co.il
www.emea.lambda.tdk.com/il



C.I.S.
Commercial Support:
Tel: +7 (495) 665 2627
Technical Support:
Tel: +7 (812) 658 0463
info@tdk-lambda.ru
www.emea.lambda.tdk.com/ru



TDK-Lambda Americas
Tel: +1 800-LAMBDA-4 or 1-800-526-2324
powersolutions@us.tdk-lambda.com
www.us.lambda.tdk.com



TDK Electronics do Brasil Ltda
Tel: +55 11 3289-9599
sales.br@tdk-electronics.tdk.com
www.tdk-electronics.tdk.com/en



TDK-Lambda Corporation
Tel: +81-3-6778-1113
www.jp.lambda.tdk.com



TDK-Lambda (China) Electronics Co. Ltd.
Tel: +86 21 6485-0777
powersolutions@cn.tdk-lambda.com
www.lambda.tdk.com.cn



TDK-Lambda Singapore Pte Ltd.
Tel: +65 6251 7211
tls.mkt@sg.tdk-lambda.com
www.sg.lambda.tdk.com



TDK India Private Limited, Power Supply Division
Tel: +91 80 4039-0660
mathew.philip@in.tdk-lambda.com
www.sg.lambda.tdk.com

For Additional Information, please visit
https://product.tdk.com/en/power/