

PHB100-8

100M SUB-CONTROLLER

PRODUCT SPECIFICATION | V4.2



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1 Revision History

Document Version	Hardware Version	Release Date	Revision
V4.0	H100P (V1.0.0)	February 4, 2026	Initial release
V4.1	H100P_HUB (V1.0) H100P_CORE (V1.0.0)	May 23, 2026	Updated product appearance Hardware mainboard changed Updated output-current parameters
V4.2	H100P_HUB (V1.0) H100P_CORE (V1.0.0)	August 31, 2026	Updated product appearance; added installation statement, carton dimensions, net weight, and shipping weight

2 Product Overview

The PHB100-8 is a Mooncell-developed Gigabit-to-100M sub-controller for LED display systems. It provides one Gigabit Ethernet input, one Gigabit Ethernet loop output for cascading, and eight 100M outputs. Waterproof aviation connectors integrate signal and power distribution, with two internal power-supply modules. The unit accepts AC 100-240 V, 50/60 Hz. Output ports support signal return; each port supports up to DC 48 V, 20 A. Maximum unit power is 6,000 W at AC 220 V with both internal power supplies fully loaded.

One unit supports up to 491,520 pixels. Its processing and signal-transmission capability improves output utilization while maintaining stable operation. It is designed for LED strip displays, grid displays, and architectural or decorative LED lighting displays.

3 Key Features

- Eight 100M outputs for Mooncell C-series receiving cards
- Bidirectional loop-backup support
- PC software monitoring of operating parameters and status
- Configuration readback
- Gigabit Ethernet bit-error-rate detection
- Output-voltage monitoring
- Input overvoltage protection: trip point >300 V AC; recovery range 290-300 V AC
- Input undervoltage protection: trip point <80 V AC; recovery range 80-90 V AC

- Output overvoltage protection: nominal output 48 V DC. The module latches off for an internal overvoltage fault, or when external voltage exceeds 63 V DC for more than 500 ms.
- Output short-circuit protection supports a sustained short circuit and automatically recovers after the fault is removed.
- Device stability detection
- Offline front-panel test
- Static parameter storage and protected firmware upgrade

4 Product Appearance

4.1 Product Views



* Product images are for reference only. The delivered product prevails.

Front Panel		
No.	Name	Description
1	SIGNAL IN	1 × Gigabit Ethernet input
	SIGNAL OUT	1 × Gigabit Ethernet loop output for cascading
2	OUTPUT	8 × 100M outputs
		Ports 1-4 are powered by PWR1

		Ports 5-8 are powered by PWR2
3	Power input	AC 100-240 V, 50/60 Hz input
4	Signal indicator button	Turns the control-signal indicators on or off
	Self-test button	With no Gigabit input, short-press to cycle through: red, green, blue, white, black, gradient, horizontal lines, vertical lines, left diagonal, and right diagonal

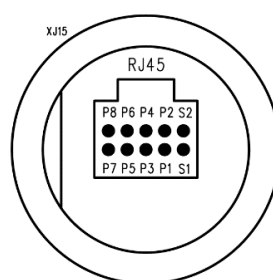
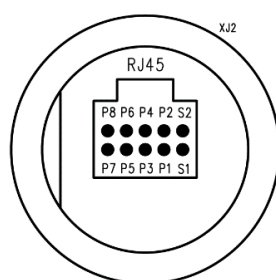
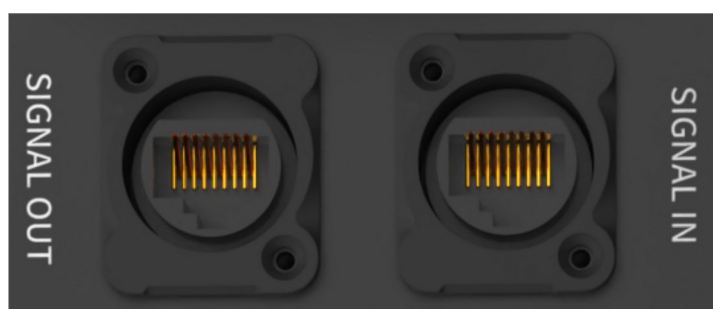
4.2 Indicators

Indicator	Description	
SIG1-SIG8	Off	Output power is abnormal
	Flashing	Communication between the sub-controller and receiving card is normal
SIG IN	Off	No Gigabit Ethernet signal input
	Flashing	SIGNAL IN is receiving a valid Gigabit Ethernet signal
SIG OUT	Off	No Gigabit Ethernet signal output
	Flashing	SIGNAL OUT is transmitting a valid Gigabit Ethernet signal
PWR1	Off	PWR1 supply is abnormal
	Steady on	Red indicator remains on when PWR1 is operating normally
PWR2	Off	PWR2 supply is abnormal
	Steady on	Red indicator remains on when PWR2 is operating normally

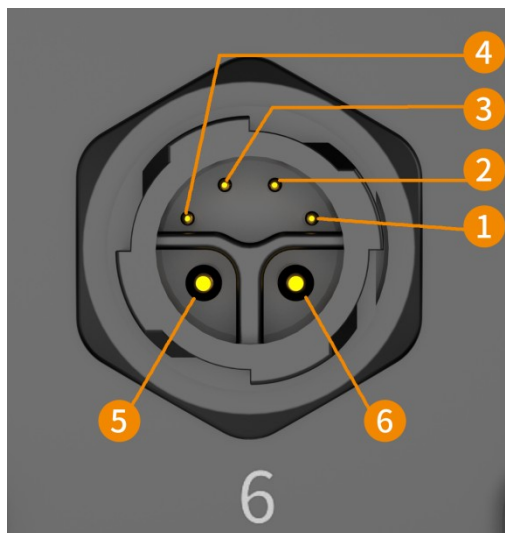
4.3 Port Definitions

Gigabit Ethernet Connector

1000M	
S1: EGND	S2: EGND
P4: MX2_P	P1: MX0_P
P5: MX2_N	P2: MX0_N
P7: MX3_P	P3: MX1_P
P8: MX3_N	P6: MX1_N



100M Output Connector

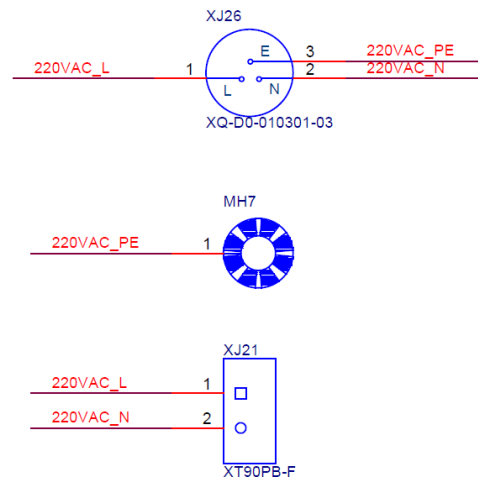


POWER	100M
5: GND	1: RX_N
6: 48 V	2: RX_P
	3: TX_N
	4: TX_P

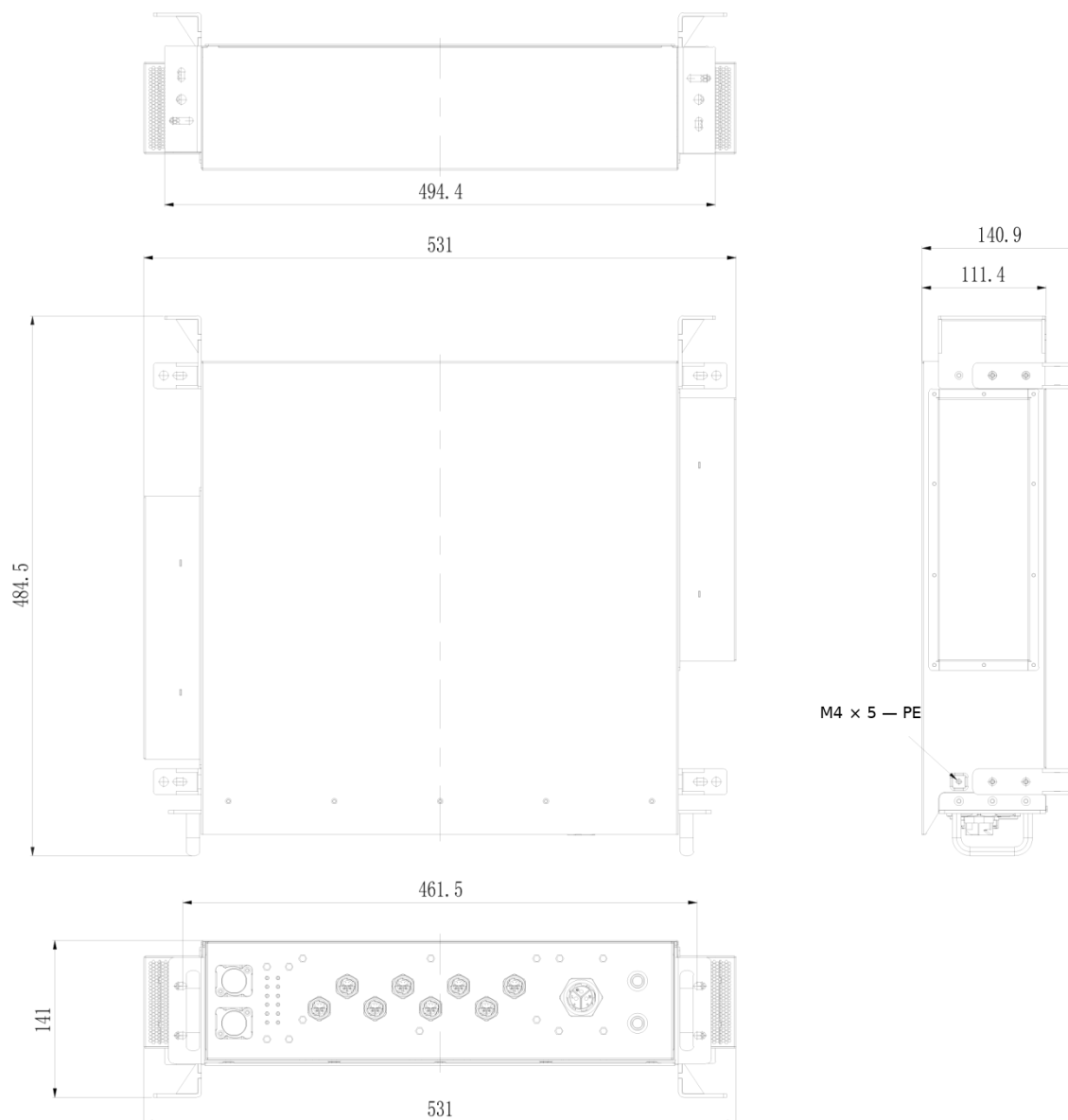
AC Power Input



220Vac Input



4.4 Mechanical Dimensions

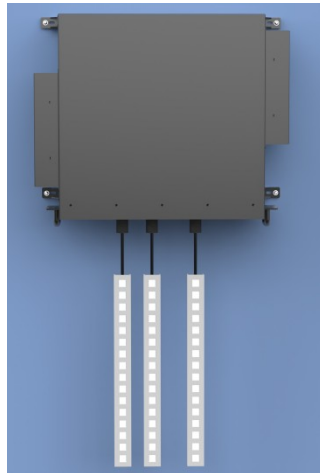


* Tolerance: ± 0.3 mm. Dimensions in millimetres.

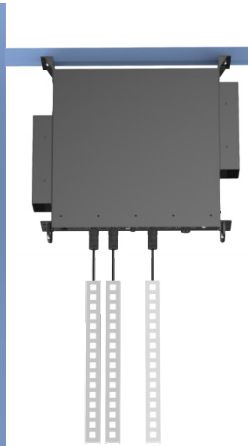
4.5 Installation and Mounting

When mounting the product on brackets, use four M5 × 8 screws. The mounting structure must support at least 28 kg.

Wall mount



Suspended mount



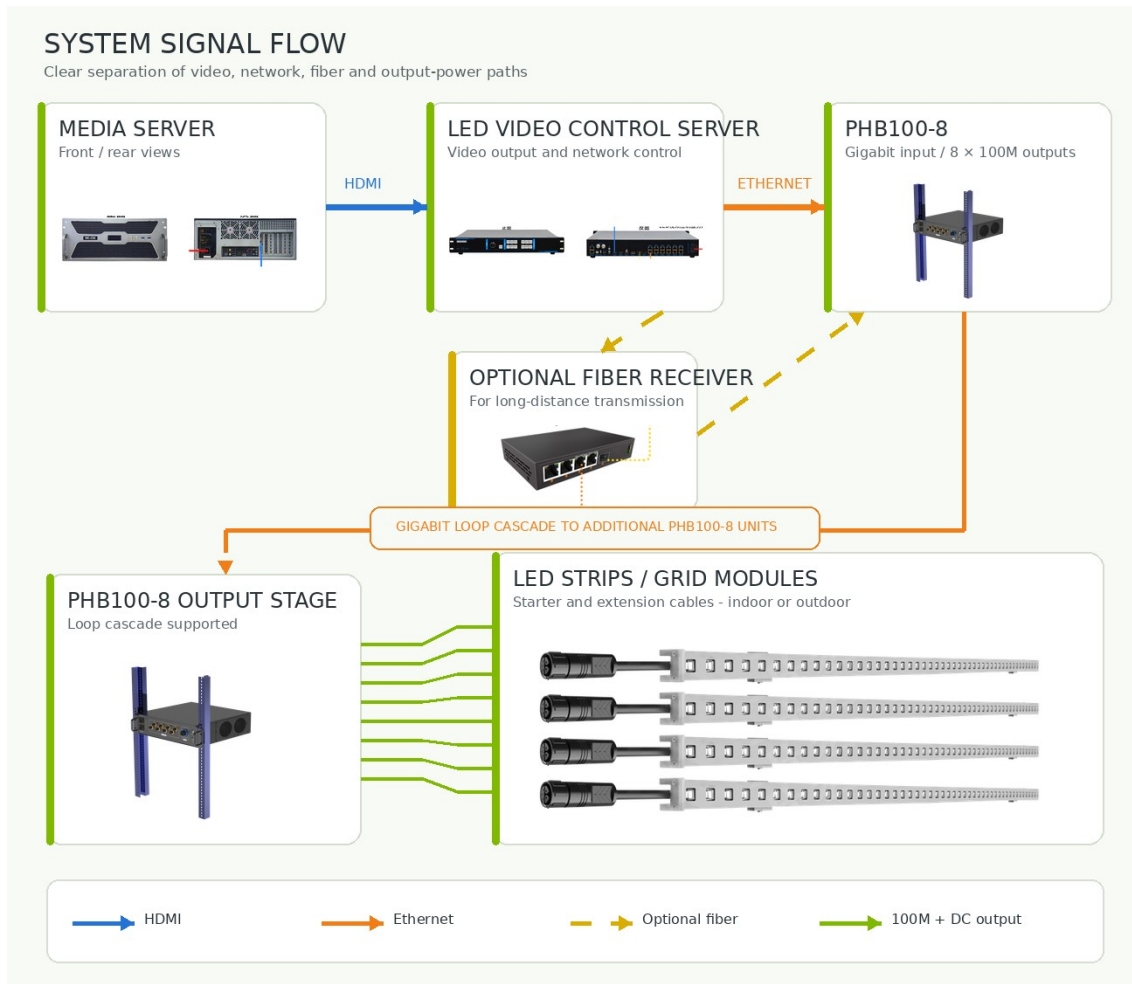
Rack mount



- Elevated operating temperature - In a closed or multi-unit rack assembly, the rack temperature may exceed room temperature. Install the equipment within the manufacturer's specified maximum ambient temperature (Tma).
- Reduced airflow - Rack installation must not restrict the airflow required for safe operation.
- Mechanical loading - Mount the equipment so that uneven mechanical loading does not create a hazardous condition.
- Circuit overloading - Consider the effect of circuit overload on overcurrent protection and supply wiring. Use the ratings shown on the equipment nameplate when planning the supply circuit.
- Reliable grounding - Connect the power cable only to an outlet with a reliable protective-earth connection.

5 Application Topology

5.1 Connection Topology



Connection between the first LED fixture and the control box:

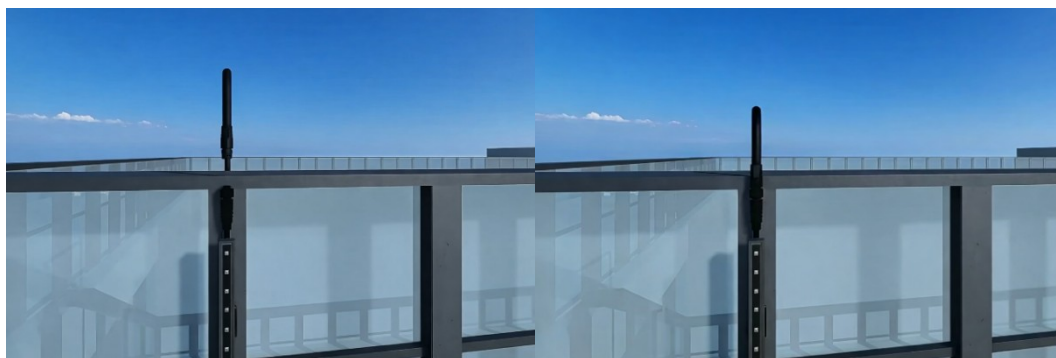


Figure 1

Figure 2



1. Integrated waterproof aviation connectors carry both fixture power and signal.
2. Male/female interconnects link adjacent fixtures without intermediate conduit.

5.2 Application Examples



Customer Project 1



Customer Project 2



Customer Project 3

6 Product Specifications

6.1 Loading Capacity

Loading Capacity	Entire Unit	Maximum: 491,520 pixels Typical: 480,000 pixels Minimum: 16,384 pixels
	Per Output	Maximum: 61,440 pixels at 4096 × 15 Typical: 60,000 pixels at 2000 × 30 Minimum: 2,048 pixels at 1 × 2048

Loading Range	Width	4,096 pixels
	Height	4,096 pixels
Offset Range	Horizontal	0-4,095 pixels
	Vertical	0-4,095 pixels

Note: Output capacity depends on the configured loading geometry. A wider output geometry generally supports more pixels; use a wider loading configuration where practical.

6.2 General Specifications

Electrical	Input	AC 100-240 V, 50/60 Hz
	Output	Maximum per-port power output: DC 48 V, 20 A (output ports support signal return)
Operating Environment	Operating temperature	-25 °C to +75 °C
	Operating humidity	10% RH to 90% RH, non-condensing
Storage Environment	Storage temperature	-40 °C to +75 °C
Chassis Dimensions	484.5 × 513 × 111.4 mm (L × W × H), including mounting ears and feet	
Net Weight	10.23 kg	
Packaging	Carton dimensions	692 × 588 × 230 mm
	Accessories	1 × M25 locking 3-pin female power cable; 2 × waterproof RJ45 plugs; 2 × mounting ears; 4 × mounting brackets; 6 × M4 × 8 screws; 1 × certificate of conformity; 1 × packing list
	Shipping weight	14.0 kg, including accessories and packaging
	Packing quantity	1 unit/carton

6.3 Power-Supply Electrical Characteristics

Operating Environment

Item	Specification
Operating temperature	-25 °C to +75 °C
Storage temperature	-40 °C to +75 °C
Relative humidity	5%-95%, non-condensing
Altitude	≤5,000 m. From 3,000 m to 5,000 m, reduce the maximum operating temperature by 1 °C for each 200 m increase in altitude.

Electrical Characteristics

Item	Specification
Input Characteristics	
Operating voltage	AC 100-240 V
Frequency	50/60 Hz
Rated input current	Total unit input current ≤32 A
Power factor	≥0.99 at 100% load

THD	≤5% at 50%-100% load
Output Characteristics	
Output voltage	48 V DC
Linear power derating	6,000 W at 176-290 V AC input; 6,000-2,500 W at 175-85 V AC input; 3,400 W at 110 V AC input
Voltage regulation accuracy	≤±0.6% Vo
Dynamic response	25%-50% and 50%-75% load steps: overshoot ≤±5%; recovery ≤200 μs (±0.6% Vo). 10%-90% load step: recovery 1 ≤50 μs (±5% Vo); recovery 2 ≤1 ms (±1% Vo).
Standby power	≤5 W
Startup time	3-10 s
Output hold-up time	>10 ms
Psophometric noise voltage	≤2 mV
Wideband noise voltage	≤50 mV (3.4-150 kHz); ≤20 mV (0.15-30 MHz)

Output Characteristics

The following curves apply to one internal power-supply module.

Figure 1. Output V-I characteristic

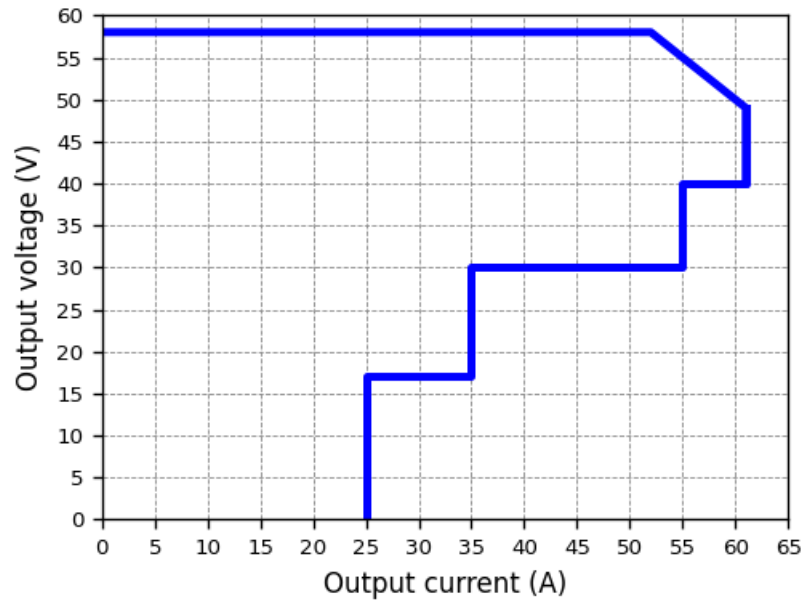


Figure 2. Output efficiency

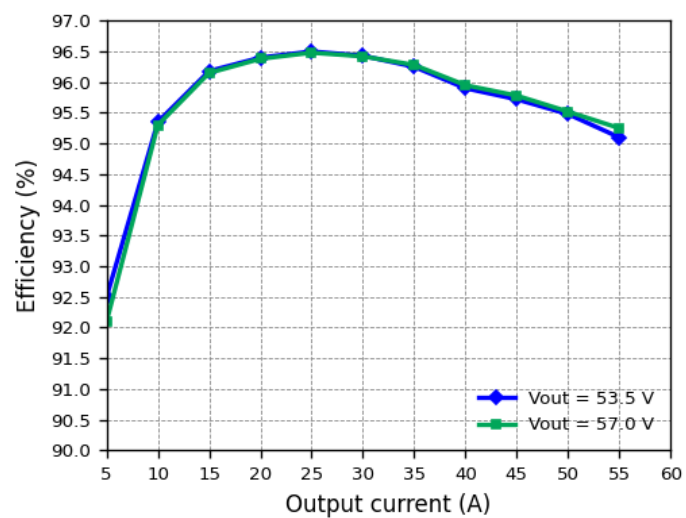
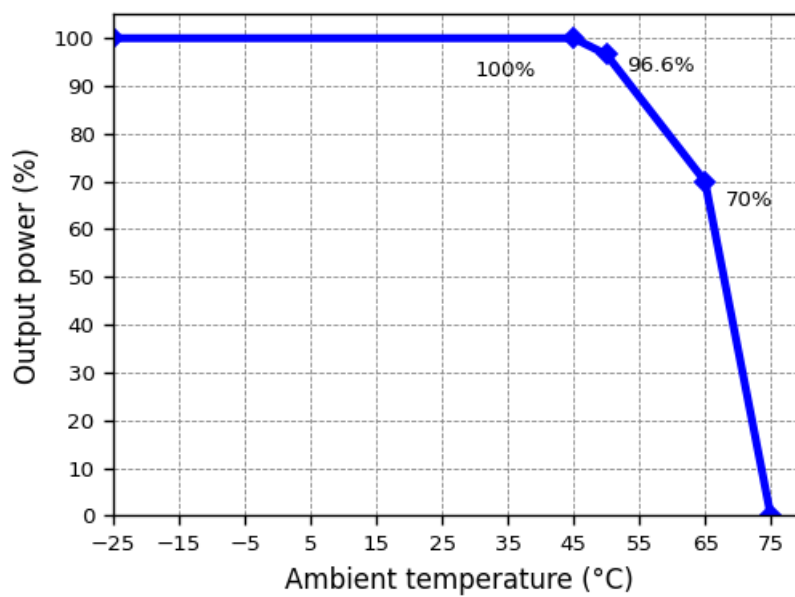


Figure 3. Output-power derating



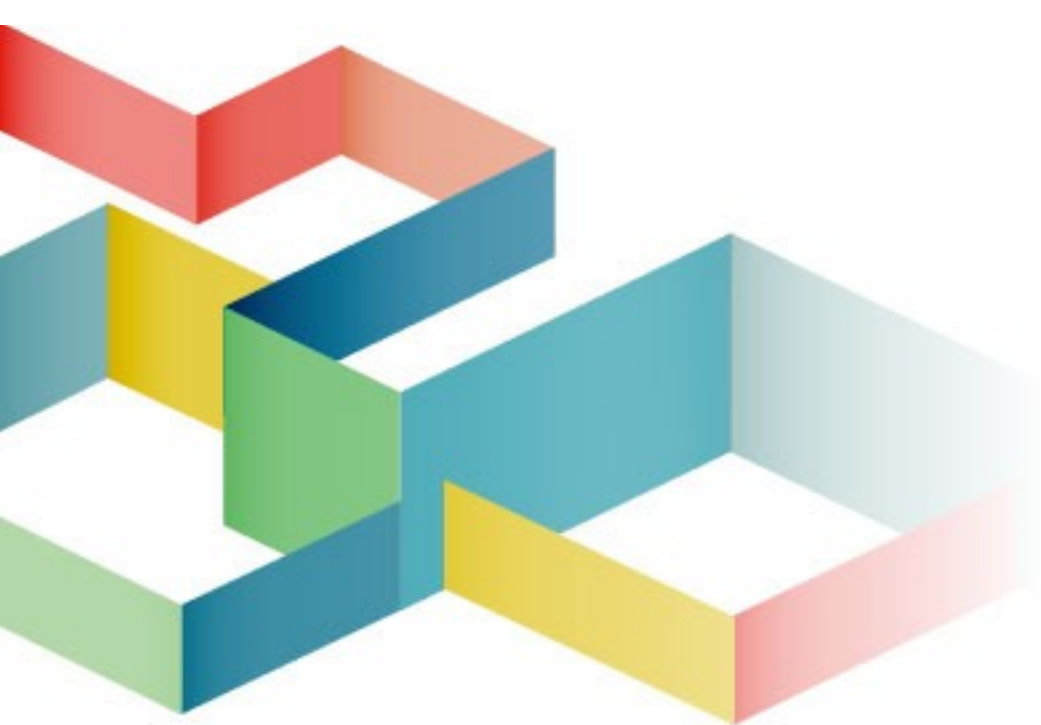
Protection Characteristics

Item	Specification
Protection Characteristics	
Input overvoltage protection	Trip point: >300 V AC
	Recovery range: 290-300 V AC
Input undervoltage protection	Trip point: <80 V AC
	Recovery range: 80-90 V AC

Output overvoltage protection	Adjustable range: 56-60 V DC. 1) Module latches off for an internal overvoltage fault. 2) Module latches off when external voltage exceeds 63 V DC for more than 500 ms.
Output current limiting / short-circuit protection	See Figure 1. Sustained short circuit is supported; the module automatically recovers when the short circuit is removed.
Overtemperature protection	Overtemperature protection is provided.

7 Safety Notes

- High-voltage hazard: This product operates from AC 100-240 V.
- Do not allow liquids, metal fragments, or other conductive objects to enter the equipment.
- Operate the equipment in a clean, dry environment.



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