Premium
Powering Your Challenge

CPM-40K

40 kW ISOLATED HIGH-VOLTAGE DC/DC CONVERTER MODULE

GENERAL FEATURES:

- 40 kW isolated high-voltage DC/DC converter module
- Wide 200–900 Vdc input range
- Software-programmable 150–1000 Vdc output
- Selectable HV and LV operating modes
- Up to 98% peak efficiency
- Galvanic isolation between input and output
- CAN 2.0 communication interface
- Modular and parallel system integration
- Wide operating temperature range
- Comprehensive electrical and thermal protections
- IEC 61851-21-2 EMC compliance



DESCRIPTION

The CPM-40K is a 40 kW isolated high-voltage DC/DC converter module designed for modular power conversion architectures requiring controlled energy transfer between high-voltage DC buses, batteries and regulated DC loads. Its wide input and software-programmable output voltage ranges, selectable HV and LV operating modes, galvanic isolation and CAN communication provide a flexible platform for integration into industrial and energy conversion systems. Typical applications include DC fast charging, energy storage charging systems, DC microgrid subsystems, industrial DC power supplies and high-voltage battery test equipment. With up to 98% peak efficiency, comprehensive protections and compliance with IEC 61851-21-2 EMC requirements, the CPM-40K enables efficient and reliable system integration.

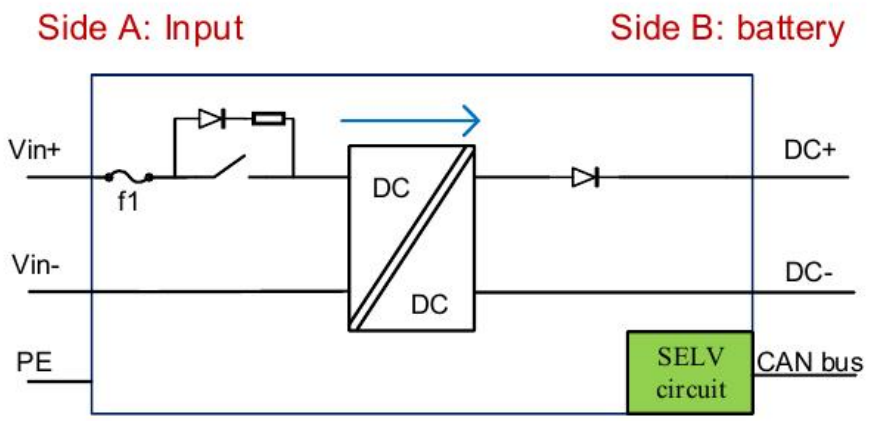
Part Number	Input Voltage Range [VDC]	Output Voltage Nom. [VDC]	Output Current Max. [A]	Efficiency Typ. [%]	Output Power Max. [W]
CPM-40K-36133	200 – 900	800 (rated)	133.3 (LV) / 80 (HV)	97.5	40000

INPUT	
Input voltage range	200 – 900 Vdc
Input voltage, nominal	650 Vdc
Max. input current	105 A @ 400 Vdc, full load
Leakage current	≤ 3.5 mA @ Vin = 650 Vdc
Input over-voltage protection (OVP)	> 900 V (±4V)
Input under-voltage protection (UVP)	< 200 V (±4V)
OUTPUT	
Output voltage range – High Voltage (HV) mode	200 – 1000 Vdc
Output voltage range – Low Voltage (LV) mode	150 – 500 Vdc
Output voltage, rated	800 Vdc
Max. output current – HV mode	80 A @ Vout = 500 V
Max. output current – LV mode	133.3 A @ Vout = 300 V
Output power	40 kW (Vin 400 – 900 Vdc)
Startup current	≤ 110% of rated current
Current limited range – HV mode	0.5 – 80 A
Current limited range – LV mode	0.5 – 133.3 A
Output ripple (peak-to-peak)	≤ 1%
Output OVP – software (HV mode)	Vcmd × 1.1
Output OVP – software (LV mode)	Vcmd + 50 V
Output OVP – hardware	Vcmd + 100 V
DC-DC EFFICIENCY	
Typical efficiency	97.5% @ full load (800 Vdc in / 800 Vdc out)
Peak efficiency	98%
MEASUREMENT ACCURACY	
DC input voltage accuracy	± 2 V @ 650 Vdc nominal
DC input current accuracy	± 2% @ > 50% load
DC output voltage accuracy	± 0.5% (150 – 1000 Vdc range)
DC output current accuracy	± 1 A
ENVIRONMENTAL	
Operating temperature	-40°C to +75°C (55–75°C linear derating to 50%)
Storage temperature	-40°C to +85°C
Relative humidity	0 to 95%, non-condensing
Operating altitude	0 to 4000 m
Cooling method	Forced air
Acoustic noise	58 dB @ 25°C, rated input and output, full load
Pollution degree	2 (per NB/T 33001-2018)
Overvoltage category	2 (per NB/T 33001-2018)
EMC	
Radiated emission	Class B (CISPR 16-2-3)
Conducted emission	Class A (CISPR 16-2-1)
Immunity	ESD (IEC 61000-4-2), radiated RF (IEC 61000-4-3), EFT/burst (IEC 61000-4-4), surge (IEC 61000-4-5), conducted RF (IEC 61000-4-8)
EMC standard	IEC 61851-21-2:2018, EN IEC 61851-21-2:2021, BS EN IEC 61851-21-2:2021
SAFETY	
Safety regulation	IEC 61851-1, IEC 61851-23
Isolation	Galvanic isolation, input to output
Dielectric strength – Input to PE (chassis)	2647 Vdc, no breakdown/flashover
Dielectric strength – Output to PE (chassis)	2647 Vdc, no breakdown/flashover
MECHANICAL	
Dimensions (W x H x D)	300 × 84 × 437.5 mm
Net weight	14.45 kg

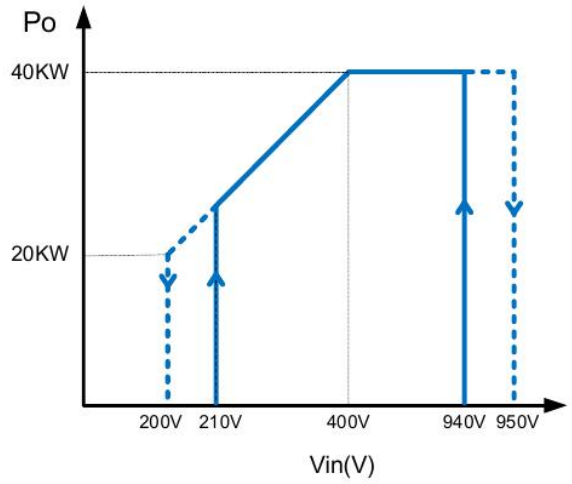
Enclosure material	SGLCC (galvanized steel)
Protection level	IP20
Environmental protection	Top-layer potting (glue protection) against dust accumulation and condensation
CONTROL	
Control interface	CAN 2.0B, extended 29-bit identifier (CAN1H, CAN1L)
CAN bus baud rate	125 kbit/s (default)
CAN addressing	Monitor address 0x01–0x0F; module address 0x01–0x1F (matches dial-switch range 0–31)
Communication timeout	0–120 s, configurable (default 10 s)
Enable signal	EN-sys / CGND-sys (operation forbidden when in short-circuit state)
Address setting	Binary (8421) dial switch, address range 0–31
Status indicators	Green (OK) / Yellow (Derating) / Red (Alarm/Fault) LEDs
CAN-monitored parameters	Output voltage/current, input voltage, inlet temperature, battery voltage, module status/fault bits, fan speed, serial number, hardware version
PROTECTIONS	
Over-temperature (OTP)	Shutdown at Tamb > 75°C
Input over/under-voltage	UVP < 200 V, OVP > 900 V (±4V)
Output over-voltage	Software + hardware OVP (see OUTPUT section)
Over-current / short-circuit	OCP and short-circuit protection

BLOCK DIAGRAM

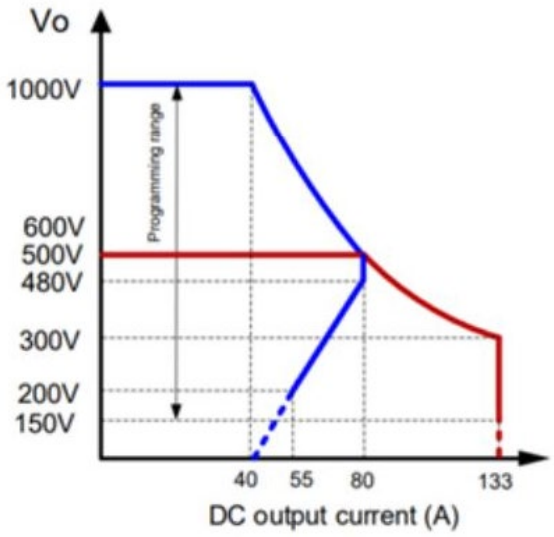
DC input source configuration (Side A: input bus) and isolated DC/DC conversion stage to the DC output (Side B), including the SELV control circuit and CAN bus interface.



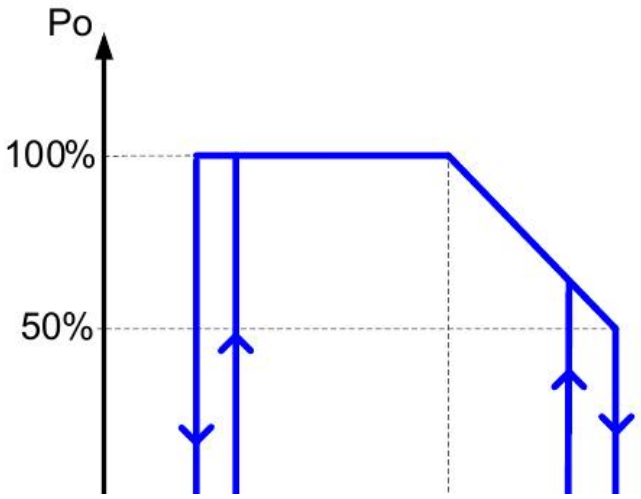
PERFORMANCE CURVES



Output power vs. DC input voltage.



Output voltage/current programming range (HV/LV mode).



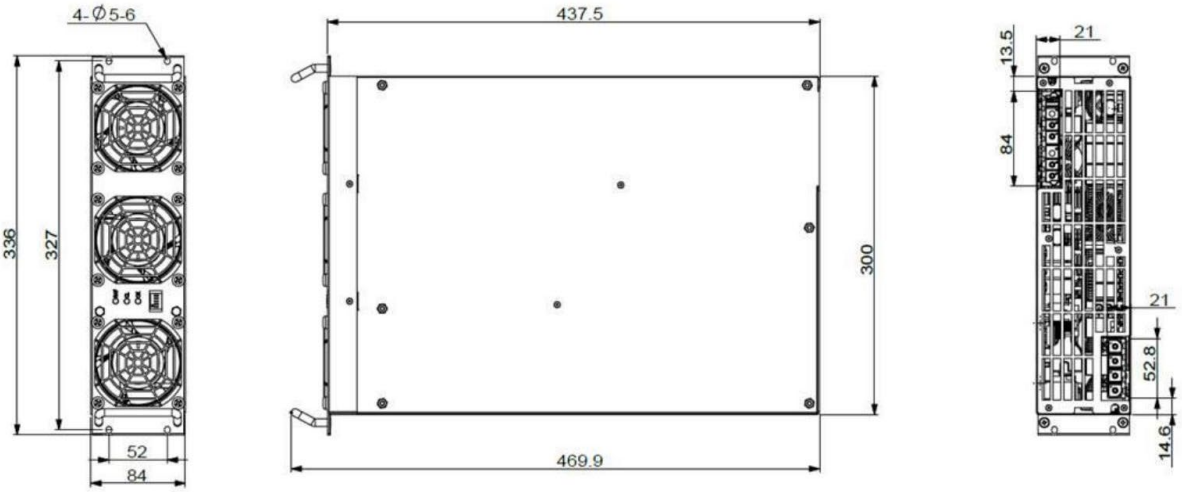
Output power vs. charging-module inlet temperature (thermal derating).

CONNECTORS

DC INPUT CONNECTOR (7-pin rectangular)	
PE	Pin 7
Vin+	Pins 4, 5
Vin–	Pins 1, 2
Reserved	Pins 3, 6
DC OUTPUT & SIGNAL CONNECTOR (14-pin rectangular)	
DC+	Pins 13, 14
DC–	Pins 11, 12
CAN1H-sys	Pin 1
CAN1L-sys	Pin 2
EN-sys	Pin 3
CGND-sys	Pin 4
Reserved	Pins 5-8

Mating connectors: YongHaoRun Technology YHR MPC-7ZKY1 series (DC input) and YHR MPC-14G12ZKY1-2 series (DC output/signal).

DIMENSIONS



Note: 4× Ø5–6 mm mounting holes. Enclosure material: SGLCC (galvanized steel). Net weight: 14.45 kg.