

## DIN-RAIL MODULE (LED) with integrated DC/DC Converter 20C-2X1R-2405E2:1MC

- 20 Watt DC/DC Converter with 35mm DIN-RAIL Module for Single-Board Computer
- Input voltage 24 VDC ; Output 5 VDC / 4 Amp.
- Including LED for operation control
- Operating temperature: with DIN-Rail case max. 70 °C, DCDC converter 85 °C max.
- High efficiency up to 90%
- Case material DIN-Rail Module: Plastic, flame retardant (UL94-V0)
- Short Circuit Protection: Hiccup, continuous, self-recovery
- Inbuild DC/DC Converter 20C-2X1R-2405E2:1MC
- Option 1: Also available for SBC with 5.1VDC, 9VDC and for 3,5" SBC's with 12VDC
- Option 2: DIN Rail Module without upper DIN RAIL Case
- Option 3: Single DC/DC Converter



Option 2



Option 3

All specifications typical at Ta=25°C, humidity less than 75%, nominal input voltage and rated output load unless otherwise specified.

### 20C-2X1R-2405E2:1MC - Input Specifications

Input Voltage / Range	Vdc	24 (18-36)
Start up Time (Nominal Vin and constant resistive load)	mS, typ.	10
Start-up Voltage	Vdc, max.	18
Input Current No Load	mA, typ.	40
Input Current Full Load	mA, typ.	969
Input Filter		PI Filter
Input Reflected Ripple Current	mA, typ.	30

### 20C-2X1R-2405E2:1MC - Output Specifications

Output Voltage	Vdc	5
Output Voltage Accuracy (0-100%)	%, typ.	±1.0
Output Current	mA, min.	0
Output Current	mA, max.	4000
Line Regulation	%, max.	±0.5
Load Regulation (5% to 100%)	%, typ.	±0.5
Over Current Protection	%, typ.	110 (min.) - 190 (max.)
Over Voltage Protection	%Vo	110-160
Ripple and Noise (20 MHz Bandwidth)	mV p-p, typ.	50
Ripple and Noise (20 MHz Bandwidth)	mV p-p, max.	100
Short Circuit Protection		Hiccup, continuous, self-recovery
Temperature Coefficient	@FL, % / °C, typ.	±0.03 (max.)
Capacitive Load @FL	µF, max.	10000
Transient Recovery Time	µs, typ.	300
Transient Response Deviation	%, max.	±5

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### 20C-2X1R-2405E2:1MC - General Specification

Efficiency @FL	%, typ.	90
I/O Isolation Voltage(60sec)	Vdc, min.	1500
I/O Isolation Capacitance	pF, typ.	1050 (@ 100kHz/0.1V)
I/O Isolation Resistance @500VDC	M Ohm., min.	1000
Switching Frequency @FL	kHz, typ	270
Storage Humidity	%, rel H, max.	95
MTBF Reliability Calculated (MIL-HDBK-217F) at 25°C	khrs	>1000
CTR Module ON	Vdc	Ctrl pin open or pulled high (3.5-12VDC)
CTR Module OFF	Vdc	Ctrl pin pulled low to GND (0-1.2VDC)
CTR Module CTR OFF Input Current	mA,typ	4
Operating Temperature	°C	Converter: -40 ~ +85 With DIN-Rail case: max. 70 (see Temperature Derating Curve)
Pin Soldering Resistance Temperature	°C, max.	300
Storage Temperature	°C	-55 ~ +125
Maximum Case Temperature	°C	105
Cooling		Free air convection
Vibration		10-150Hz, 5G, 90min. along X,Y and Z
Case Material <b>Converter</b>		Aluminum alloy
Weight of Converter	g	26
Dimension Converter	mm	50.8 x 25.4 x 11.8
Case Material <b>DIN-Rail Module</b>		Top cover: Lexan, Bottom: Noryl - flame retardant (UL94-V0)
Weight of complete DIN-Rail Module	g	72 gr. (DIN-Rail Module: 46 gr. , Converter 26 gr.)
Dimension DIN-Rail-Module (with Rail TS35)	mm	35.0 x 86.0 x 60.5

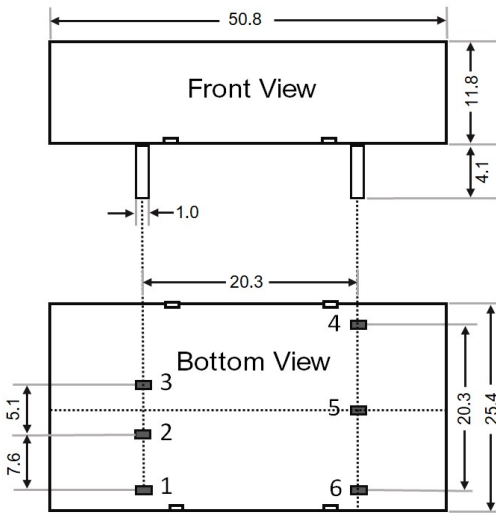
### 20C-2X1R-2405E2:1MC - Special Characteristics

Surge Voltage (1sec.)	Vdc, min.	-0.7
Surge Voltage (1sec.)	Vdc, max.	50
Start-up Voltage	Vdc, max.	18

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### 20C-2X1R-2405E2:1MC - Technical Drawing

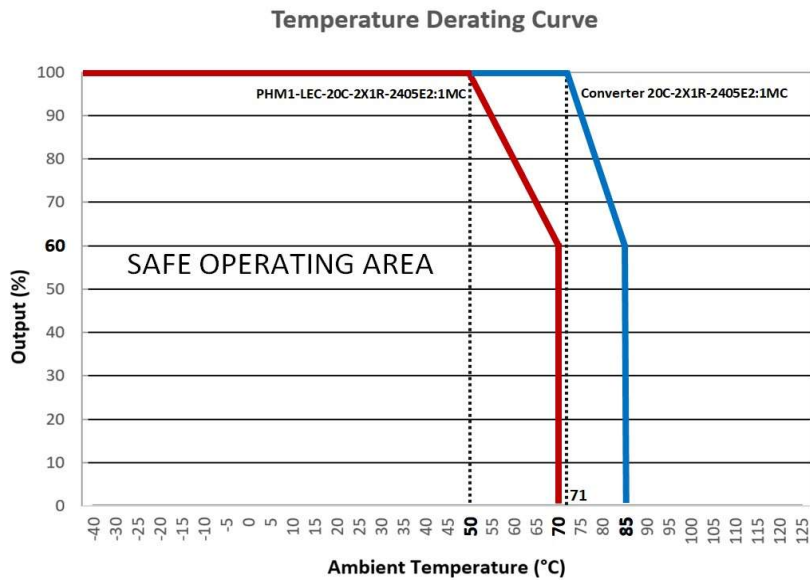


#### PIN Connections

PIN 01	Ctrl
PIN 02	GND
PIN 03	Vin
PIN 04	+Vo
PIN 05	Trim
PIN 06	0V

All dimensions in millimetres | Tolerances: ±0.50  
 Values generally rounded to one decimal place  
 Specifications may change without notice

### Temperature Derating Curve - Single Converter & Converter with DIN-Rail Module

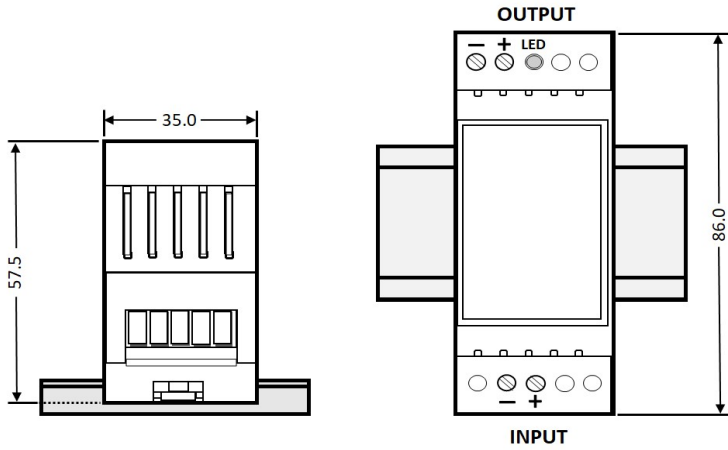


**Please note: The maximum operation temperature with DIN-Rail case is 70°C!**

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**DIN-RAIL MODULE (LED) with integrated DC/DC Converter 20C-2X1R-2405E2:1MC**

**DIN-RAIL MODULE (LED) - Technical Drawing & Features**

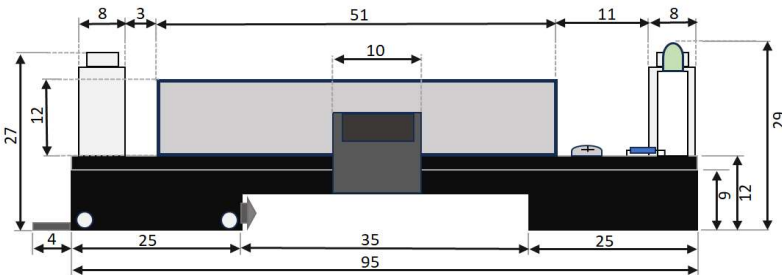


All dimensions in millimetres | Tolerances:  $\pm 0.50$   
Values generally rounded to one decimal place  
**Specifications may change without notice**

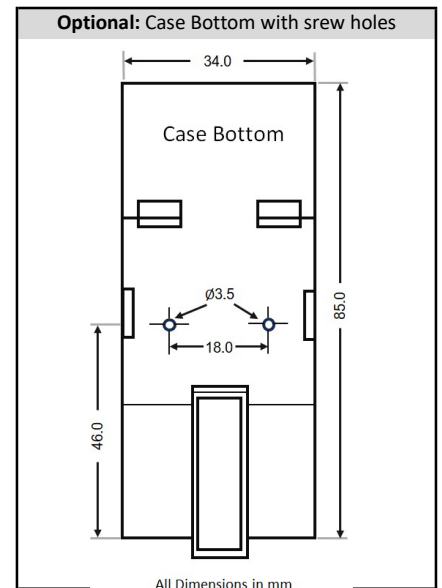
Case-Material: Top: Lexan, Bottom: Noryl  
Flammability class UL94-V0  
Case top with ventilation slot for optimised cooling.



**Dimensions PHM1-LED-20C-2X1R-2405E2:1MC (without upper case)**



All dimensions in millimetres | Tolerances:  $\pm 1.0$   
**Specifications may change without notice**



**Additional features for DIN-RAIL Version "LED":**

- Includes the lower case with a DIN RAIL clip and the basic PCB with screwing connectors and soldered in DC/DC converter
- Includes additional top cover with label
- Includes LED for visual operation control

**Optional features for DIN-RAIL:**

PEAK offers on request also output voltage trimming and remote on/off function, if the used DC/DC converter supports these features. Also screw holes on the bottom side and other customer oriented combinations are possible (**Option 2**).

**The converter is also available**  
**5.1V/9V/12V/15V/18V Output Voltage on request**

**Please Note:** Exposure of devices to any of these conditions may adversely affect long-term reliability. Do not operate the devices exceeding the absolute maximum rating, over rating causes damage to the unit(s). **PEAK Application Support:** For more information regarding the EMC or other technical requests please feel free to contact our Application Support Team by email [peak@peak-electronics.de](mailto:peak@peak-electronics.de) or phone +49(0)6135-70260.

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