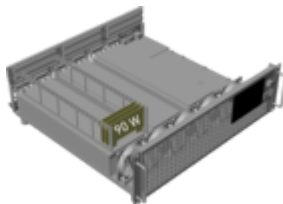


Datasheet MALP09-12C3

Module ¹⁾	MALP09-12C3	
Order no.	23-059-000-04	
Maximum input voltage U _{max}	120 V	
Maximum load current I _{max}	3 A	
Continuous power	90 W	
Resistance setting	0.667 Ω ... 1,333.333 Ω	
Minimum input voltage U _{min} ²⁾	1 V	
Rise and fall time fast	200 μs	
Input capacity	1.5 μF	

1. A [PMLA LP-M](#) housing and a [Cooling Unit LP](#) are required to operate a module.
2. Minimum input voltage for maximum static load current.

Series-Specific Data PMLA LP Variant

Series D, Rev. 1. Subject to technical changes.

The specified accuracies apply at an ambient temperature of 23 ± 5 °C with connected sense lines and when the devices are used with clean voltages (ripple and noise < 0.1 %). Accuracy may worsen at voltages with higher interference values. Technical data may vary for special devices/modules.
 Permissible voltages are positive or negative DC voltages.

Channels and functions	
Number of channels per device	max. 72
Number of channels per system	max. 96
Total power per device	max. 2160 W
Functions	group addressing and name assignment overcurrent protection undervoltage protection dynamic loads with list function internal measurement data memory discharge function for energy storage tests SCPI programming with measurement function MPP tracking trigger model SyncroLink for trigger synchronization saving and loading device settings watchdog in remote control mode
Operating modes	
Basic operating modes	CC, CV, CR, CP
Combined operating modes	CC+CV, CP+CV, CR+CV, CP+CC, CR+CC, CV+CC
Setting ranges	module-dependent
User interface	4.3" TFT touch display
Current rise and fall times	
With fast regulation	module-dependent
With slow regulation	ca. 1 ms
Accuracy of setting values	
Voltage	± 0.1 % of setting, ± 0.1 % of range
Current	± 0.1 % of setting ± 0.1 % of range
Resistance	± 1.4 % of setting ± 0.3 % of current range
Power (at U and I > 10 % of range)	± 0.7 % of setting
Power (at U or I 5 ... 10 % of range)	± 2 % of setting
Resolution	12 bits
Accuracy of adjustable protective devices	
Overcurrent protection	± 0.2 % of setting
Undervoltage protection	± 0.2 % of setting ± 0.2 % of range
Resolution	12 bits

Accuracy of measurement	
Voltage	± 0.1 % of measured value ± 0.05 % of range
Current	± 0.2 % of measured value ± 0.05 % of range
Resistance	is calculated from voltage and current values
Power	is calculated from voltage and current values
Resolution	16 bits
Sampling time	100 μ s, not triggerable
Dynamic function (LIST)	
Operating modes	CC, CV, CR, CP
Number of load levels	max. 100, with associated ramp and dwell time
Accuracy of load levels	see accuracy of setting
Pulse duration	0.2 ms ... 1000 s
Ramp duration	0 ... 1000 s
Resolution	0.2 ms
Accuracy of the setting times	± 0.02 %
SyncroLink	
Synchronism between load channels (jitter) of the same system	max. 100 μ s
Synchronism between load channels (jitter) to further systems	max. 250 μ s
Measurement data acquisition (DAQ) in internal memory	
Accuracy	see accuracy of measurement
Resolution	16 bits
Sampling time	0.2 ms ... 1000 s, resolution 0.2 ms
Measurement data	time stamp, voltage, current
Number of measuring points	max. 500
Settings memory	
Number of memory positions (incl. programmed list)	10, selectable
Input	
Input resistance	> 50 k Ω with load input switched off, diode function with reverse polarity up to rated current
Input capacity	module-dependent
Parallel operation	up to 5 channels in analog master-slave mode (hardware-controlled)
Maximum input voltage $U_{\max}$	module-dependent
Minimum input voltage $U_{\min}$	module-dependent

Input: permissible voltages	
U _{in} -PE (neg. load input - PE)	max. ±40 V DC
U _{in} +PE (pos. load input - PE)	U _{max} + 40 V DC
U _{in} -in- (neg. load inputs between the channels)	max. ±40 V DC
Power	
Continuous power	module-dependent
Derating	-1.2 %/°C for T _a > 21 °C
Protection and monitoring	
Protective devices	overcurrent, overpower, overtemperature
Monitoring messages	overvoltage indicator, polarity reversal indicator, undervoltage indicator (if input voltage is too low for set load)
Connections	
Load input	Phoenix Contact MSTB2,5/24-STF-5,08
Sense	25-pin D-sub female connector
Operating conditions	
Operating temperature	5 ... 40 °C
Storage temperature	-25 ... 65 °C
Max. operating height	2000 m above sea level
Pollution degree	2
Overvoltage category of mains	II
Max. Humidity	80 % at 31 °C, decreasing linearly to 50 % at 40 °C
Min. distance rear panel to wall or other objects	70 cm
Cooling	multi-stage air cooling, temperature-controlled, air inlet via the front panel, air outlet via the rear panel, suitable for gapless 19" mounting
Noise	max. 65 dB(A) at a distance of 1 m
Mains voltage	1/N/PE AC 100 ... 240 V 50/60 Hz
Mains cable	length max. 3 m, cross-section of mains connection wires min. 1 mm ²
Power consumption	max. 260 VA
Mechanics	
Housing	19", 3 U
Dimensions W x H x D	485 x 152 x 485 mm
Installation depth	470 mm
Installation height	134 mm
Weight	max. 22 kg
Color front panel	RAL7035 (light grey)
Color rear panel	stainless steel
Color cover	RAL7037 (stone grey)

Safety and EMC	
Protection class	1
Measurement category	0
Electrical safety	DIN EN 61010-1 DIN EN 61010-2-30
EMC, CE marking	DIN EN 61326-1 DIN EN 55011 DIN EN 61000-3-2 DIN EN 61000-3-3
Calibration	
FCC-PMLAxx	factory calibration certificate