

# Product data sheet

Specifications



## Regulated Power Supply, 100-240V AC, 24V 1.2 A, single phase, Modular

ABLM1A24012

### Main

Range of product	Modicon Power Supply
Product or component type	Power supply
Power supply type	Regulated switch mode
Variant option	Modular
Enclosure material	Plastic
Nominal input voltage	100...240 V AC single phase 100...240 V AC 2 phases
Input voltage limits	90...264 V AC
Rated power in W	30 W
Output voltage	24 V DC
Power supply output current	1.25 A

### Complementary

Nominal network frequency	50...60 Hz
Network system compatibility	TN TT IT
Maximum leakage current	0.25 mA 240 V AC
Input protection type	Integrated fuse (not interchangeable) 3.15 A External protection (recommended) 20 A Curve B External protection (recommended) 20 A Curve C External protection (recommended) 4 A Curve B External protection (recommended) 4 A Curve C
Inrush current	25 A at 115 V 50 A at 230 V
Power factor	0.48 at 115 V AC 0.38 at 230 V AC
Efficiency	87 % at 115 V AC 87 % at 230 V AC
Output voltage adjustment	24...28 V
Power dissipation in W	5 W
Current consumption	< 0.8 A 115 V AC < 0.6 A 230 V AC
Turn-on time	< 2 s
Holding time	> 20 ms 115 V AC > 60 ms 230 V AC

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

<b>Startup with capacitive loads</b>	3000 µF
<b>Residual ripple</b>	< 100 mV
<b>Expected capacitor life time</b>	10 year(s)
<b>Meantime between failure [MTBF]</b>	2500000 h at 25 °C, full load 1000000 h at 55 °C, 80 % load
<b>Output protection type</b>	Against overload and short-circuits, protection technology: automatic reset Against over temperature, protection technology: manual reset Against overvoltage, protection technology: manual reset
<b>Connections - terminals</b>	Screw connection: 0.5...1.5 mm <sup>2</sup> , (AWG 20...AWG 16) without wire end ferrule for input/output Screw connection: 0.5...1 mm <sup>2</sup> , (AWG 20...AWG 18) with wire end ferrule for input/output
<b>Line and load regulation</b>	< 0.5 %line < 1 %load
<b>Status LED</b>	1 LED (green)output voltage
<b>Depth</b>	55.6 mm
<b>Height</b>	91 mm
<b>Width</b>	36 mm
<b>Net weight</b>	0.170 kg
<b>Output coupling</b>	Serial Parallel
<b>Mounting support</b>	Top hat type TH35-15 rail conforming to IEC 60715 Top hat type TH35-7.5 rail conforming to IEC 60715 Double-profile DIN rail panel mounting
<b>Supply</b>	SELV conforming to EN/IEC 60950-1 SELV conforming to EN/IEC 60204-1 SELV conforming to IEC 60364-4-41

## Environment

<b>Standards</b>	EN 62368-1 EN/IEC 61010-1 EN 61010-2-201 EN/IEC 61204-3 EN 61000-6-1 EN 61000-6-2 EN 61000-6-3 EN 61000-6-4 EN 61000-3-2 EN 61000-3-3 UL 62368-1 UL 61010-1 UL 61010-2-201 CSA C22.2 No 62368-1 CSA C22.2 No 61010-1 CSA C22.2 No 61010-2-201 EN/IEC 62368-1
<b>Product certifications</b>	CE CUL listed CUL recognized RCM CB Scheme EAC KC NEC: class 2
<b>Operating altitude</b>	< 2000 m overvoltage category III 2000 m...5000 m overvoltage category II
<b>Shock resistance</b>	100 m/s <sup>2</sup> for 11 ms
<b>IP degree of protection</b>	IP20
<b>Ambient air temperature for operation</b>	-25...55 °C (without current derating) 55...70 °C (with current derating of 2.67 % per °C)
<b>Ambient air temperature for storage</b>	-40...85 °C
<b>Relative humidity</b>	0...95 % without condensation
<b>Overvoltage category</b>	II

<b>Electrical energy source class conforming to IEC 62368-1</b>	ES1
<b>Electrical shock protection class</b>	Class II without PE connection
<b>Pollution degree</b>	2
<b>Vibration resistance</b>	3 mm (f= 2...9 Hz) conforming to IEC 60721-3-3 10 m/s <sup>2</sup> (f= 9...200 Hz) conforming to IEC 60721-3-3
<b>Electromagnetic immunity</b>	Immunity to electrostatic discharge - test level: 6 kV (contact discharge) conforming to EN/IEC 61000-4-2 Immunity to electrostatic discharge - test level: 9 kV (air discharge) conforming to EN/IEC 61000-4-2 Electromagnetic field immunity test - test level: 10 V/m (80 MHz...2 GHz) conforming to EN/IEC 61000-4-3 Electromagnetic field immunity test - test level: 5 V/m (2...2.7 GHz) conforming to EN/IEC 61000-4-3 Electromagnetic field immunity test - test level: 3 V/m (2.7...6 GHz) conforming to EN/IEC 61000-4-3 Immunity to fast transients - test level: 4 kV (on input-output) conforming to EN/IEC 61000-4-4 Surge immunity test - test level: 3 kV (between power supply and earth) conforming to EN/IEC 61000-4-5 Surge immunity test - test level: 1.5 kV (between phases) conforming to EN/IEC 61000-4-5 Immunity to conducted disturbances - test level: 10 Vrms (0.15...80 MHz) conforming to EN/IEC 61000-4-6 Immunity to magnetic fields - test level: 30 A/m (50...60 Hz) conforming to EN/IEC 61000-4-8 Immunity to voltage dips - test level: 100 % (1 cycle) conforming to EN/IEC 61000-4-11 Immunity to voltage dips - test level: 60 % (10 cycles) conforming to EN/IEC 61000-4-11 Immunity to voltage dips - test level: 30 % (25 cycles) conforming to EN/IEC 61000-4-11 Disturbing field emission conforming to EN 55016-2-3 Limits for harmonic current emissions conforming to EN 61000-3-2 Conducted disturbance emission conforming to EN 55016-1-2 Conducted disturbance emission conforming to EN 55016-2-1
<b>Electromagnetic emission</b>	Conducted emissions conforming to EN 61000-6-3 Radiated emissions conforming to EN 61000-6-4
<b>Dielectric strength</b>	3000 V AC input/output

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Weight</b>	172 g
<b>Package 1 Height</b>	5 cm
<b>Package 1 width</b>	6 cm
<b>Package 1 Length</b>	11 cm
<b>Unit Type of Package 2</b>	P12
<b>Number of Units in Package 2</b>	1392
<b>Package 2 Weight</b>	267.936 kg
<b>Package 2 Height</b>	105 cm
<b>Package 2 width</b>	80 cm
<b>Package 2 Length</b>	120 cm
<b>Unit Type of Package 3</b>	S02
<b>Number of Units in Package 3</b>	29
<b>Package 3 Weight</b>	5.332 kg
<b>Package 3 Height</b>	15 cm
<b>Package 3 width</b>	30 cm
<b>Package 3 Length</b>	40 cm

## Offer Sustainability

<b>Sustainable offer status</b>	Green Premium product
<b>REACH Regulation</b>	<a href="#">REACH Declaration</a>
<b>EU RoHS Directive</b>	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>

<b>Mercury free</b>	Yes
<b>RoHS exemption information</b>	<a href="#">Yes</a>
<b>China RoHS Regulation</b>	<a href="#">China RoHS declaration</a>
<b>Environmental Disclosure</b>	<a href="#">Product Environmental Profile</a>
<b>Circularity Profile</b>	<a href="#">End of Life Information</a>
<b>WEEE</b>	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
<b>California proposition 65</b>	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>

**Electrical Safety**

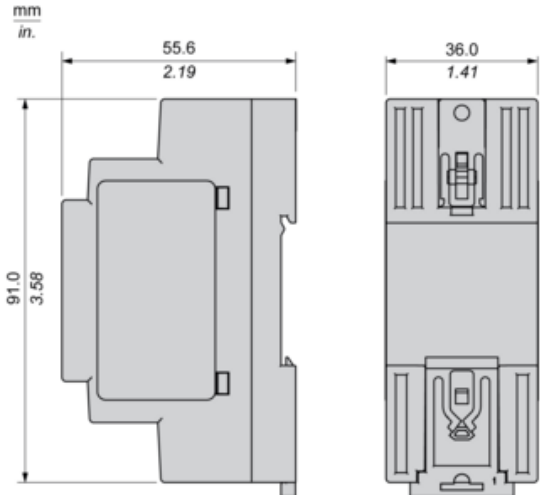
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- If the unit is use in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- For means of disconnection a switch or circuit breaker, located near the product, must be included in the installation. A marking as disconnecting devi
- The device has an internal fuse. The unit is tested and approved with branch circuit protective device up to 20A. This circuit breaker can be used as d
- The power supply is only suitable for audio, video, information, communication, industrial and control equipment.

Dimensions

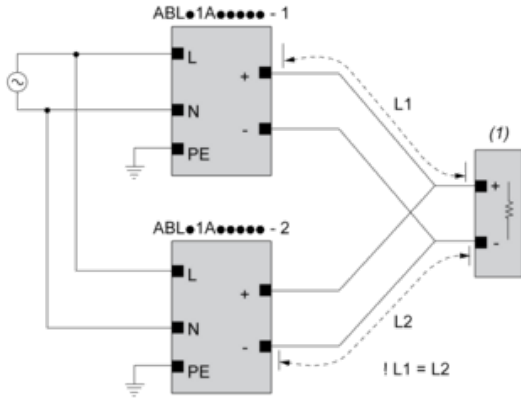
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Side and Rear View



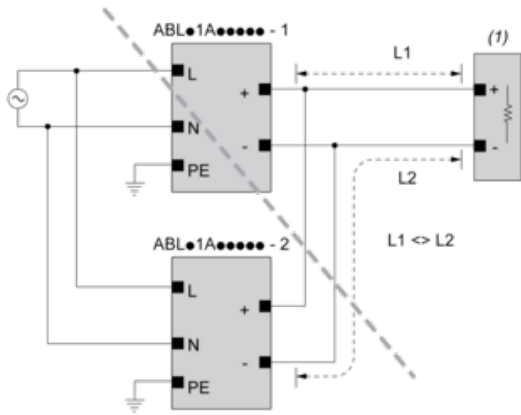
**Connections and Schema**

**Correct Parallel Connection**



(1) : Load

**Incorrect Parallel Connection**



(1) : Load

$ABLx1Axxxxx-1 = ABLx1Axxxxx-2$

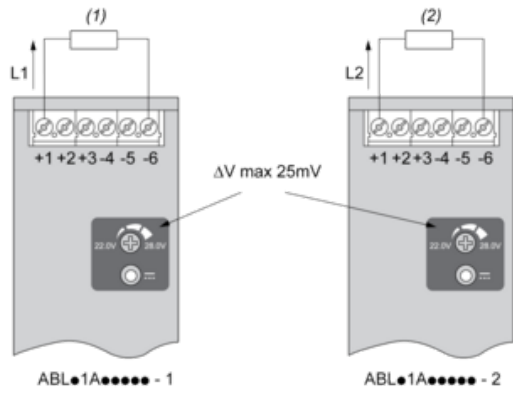
max 2 x  $ABLx1Axxxxx$

$L1 = L2$

$\Delta V$  max 25 mV

$L_{Load} < 90\% \times L_{nom}$

**Output Voltage Balancing**



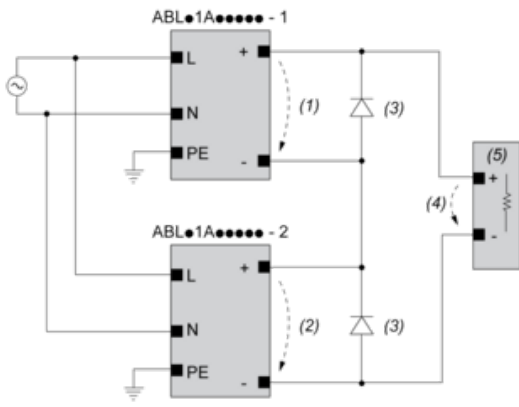
(1) :  $R_{Load1}$

(2) :  $R_{Load2}$

$R_{Load1} = R_{Load2}$

$I_1 = I_2 = \sim I_{nom}$

## Series Connection



- (1) :  $V_{out1}$
- (2) :  $V_{out2}$
- (3) : 2 x Diode,  $V_{RRM} > 2 \times V_{out1/2}$ ,  $I_F > 2 \times I_{nom1/2}$
- (4) :  $V_{Load} = 2 \times V_{out}$
- (5) : Load



**Connections and Schema**

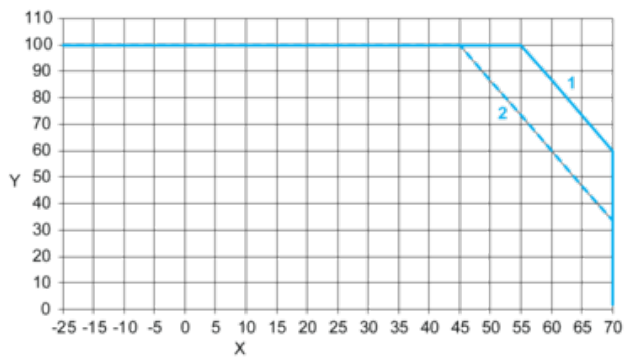
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		(1)		
		<40°C	<50°C	<70°C
ABLM1A24004		60°C	75°C	75°C
ABLM1A12010		60°C	75°C	90°C
ABLM1A24006		60°C	75°C	90°C
ABLM1A05036	Input	60°C	75°C	90°C
	Output	75°C	90°C	90°C
ABLM1A12021		60°C	75°C	90°C
ABLM1A24012		60°C	75°C	90°C
ABLM1A12042		60°C	75°C	90°C
ABLM1A24025		60°C	75°C	90°C

(1) : Ambient

**Performance Curve**

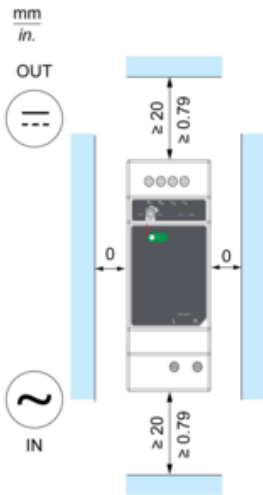
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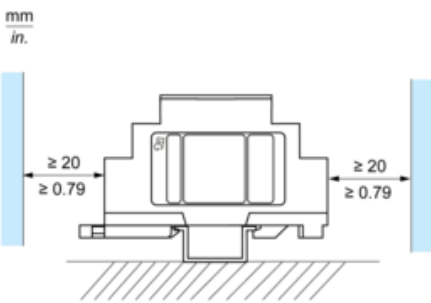
- X : Ambient Temperature (°C)
- Y : Percentage of Max Load (%)
- 1 : Mounting A & B, altitude 2000M
- 2 : Mounting A & B, altitude 5000M

Mounting

Mounting Position A



Mounting Position B



Incorrect Mounting

