

# Product data sheet

Specifications



## Regulated Power Supply, 100-240V AC, 24V 3.1 A, single phase, Optimized

ABLS1A24031

### Main

Range of product	Modicon Power Supply
Product or component type	Power supply
Power supply type	Regulated switch mode
Variant option	Optimized
Enclosure material	Plastic
Nominal input voltage	100...240 V AC single phase 100...240 V AC 2 phases 140...340 V DC
Rated power in W	75 W
Output voltage	24 V DC
Power supply output current	3.13 A

### Complementary

Input voltage limits	85...264 V AC (without temperature derating) 120...375 V DC (without temperature derating) 85...120 V DC (with temperature derating)
Nominal network frequency	50...60 Hz
Network system compatibility	TN TT IT
Maximum leakage current	1 mA 240 V AC
Input protection type	Integrated fuse (not interchangeable) 5 A External protection (recommended) 20 A Curve C External protection (recommended) 13 A Curve B External protection (recommended) 10 A Curve C
Inrush current	40.0 A at 115 V 80.0 A at 230 V
Power factor	0.55 at 115 V AC 0.45 at 230 V AC
Efficiency	88 % at 230 V AC
Output voltage adjustment	21.6...26.4 V
Power dissipation in W	15 W
Current consumption	< 1.8 A 115 V AC < 1 A 230 V AC < 0.8 A 140 V DC
Turn-on time	< 1.2 s
Holding time	> 20 ms 115 V AC

> 40 ms 230 V AC

<b>Startup with capacitive loads</b>	5000 µF
<b>Residual ripple</b>	< 120 mV
<b>Meantime between failure [MTBF]</b>	700000 h at 25 °C, full load conforming to SR 332
<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...2.5 mm <sup>2</sup> , (AWG 20...AWG 14) for output Screw connection: 0.75...2.5 mm <sup>2</sup> , (AWG 18...AWG 14) for input
<b>Line and load regulation</b>	< 0.5 % network 0 to 100 % load at 25 °C < 1 % network full voltage range in line at 25 °C
<b>Status LED</b>	1 LED (green) output voltage
<b>Depth</b>	102 mm
<b>Height</b>	123.6 mm
<b>Width</b>	27 mm
<b>Net weight</b>	0.22 kg
<b>Output coupling</b>	Parallel Serial
<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
<b>Supply</b>	SELV conforming to EN/IEC 60950-1 SELV conforming to EN/IEC 60204-1 SELV conforming to IEC 60364-4-41
<b>Dielectric strength</b>	3000 V AC with input to output
<b>Service life</b>	10 year(s)

## 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>Environmental characteristic</b>	3M4 conforming to IEC 60721-3-3
<b>Operating altitude</b>	< 5000 m
<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>	-20...-10 °C with current derating of 1 % per °C mounting position A < 2000 m -10...40 °C without derating mounting position A 115 V AC < 2000 m -10...50 °C without derating mounting position A 230 V AC < 2000 m 40...70 °C with current derating of 1.67 % per °C mounting position A 115 V AC < 2000 m 50...70 °C with current derating of 2.5 % per °C mounting position A 230 V AC < 2000 m

<b>Electrical shock protection class</b>	Class I
<b>Pollution degree</b>	2
<b>Vibration resistance</b>	3 mm (f= 2...9 Hz) conforming to IEC 60068-2-6 10 m/s <sup>2</sup> (f= 9...200 Hz) conforming to IEC 60068-2-6
<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 Immunity to conducted RF disturbances - test level: 10 V/m (80 MHz...2 GHz) conforming to EN/IEC 61000-4-3 Immunity to conducted RF disturbances - test level: 5 V/m (2...2.7 GHz) conforming to EN/IEC 61000-4-3 Immunity to conducted RF disturbances - 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 RF disturbances - test level: 10 V (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 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

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	3.7 cm
<b>Package 1 Width</b>	14.0 cm
<b>Package 1 Length</b>	16.0 cm
<b>Package 1 Weight</b>	303.0 g
<b>Unit Type of Package 2</b>	S03
<b>Number of Units in Package 2</b>	22
<b>Package 2 Height</b>	30.0 cm
<b>Package 2 Width</b>	30.0 cm
<b>Package 2 Length</b>	40.0 cm
<b>Package 2 Weight</b>	7.283 kg
<b>Unit Type of Package 3</b>	P12
<b>Number of Units in Package 3</b>	528
<b>Package 3 Height</b>	105.0 cm
<b>Package 3 Width</b>	80.0 cm
<b>Package 3 Length</b>	120.0 cm
<b>Package 3 Weight</b>	192.6 kg

## 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>China RoHS Regulation</b>	<a href="#">China RoHS declaration</a>

<b>RoHS exemption information</b>	<a href="#">Yes</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**

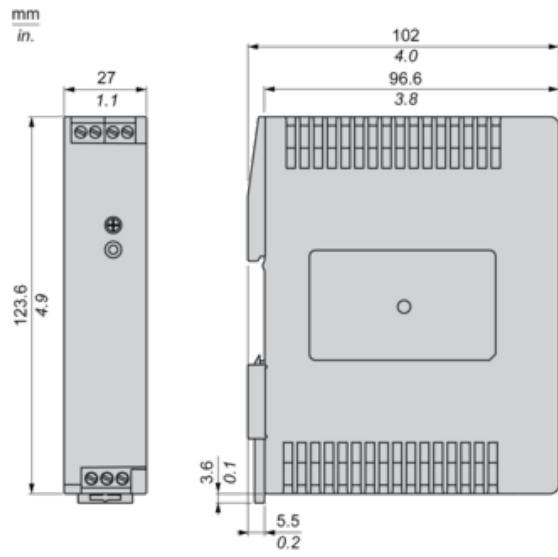
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- If the unit is use in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- For means of disconnection a switch or circuit breaker, located near the product, must be included in the installation. 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

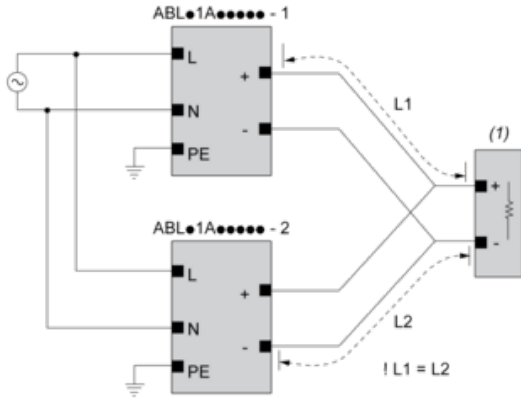
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Front and Side Views



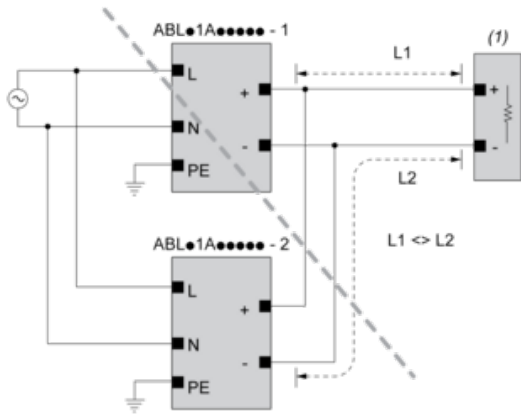
**Connections and Schema**

**Correct Parallel Connection**



(1) : Load

**Incorrect Parallel Connection**



(1) : Load

$ABLx1Axxxxx-1 = ABLx1Axxxxx-2$

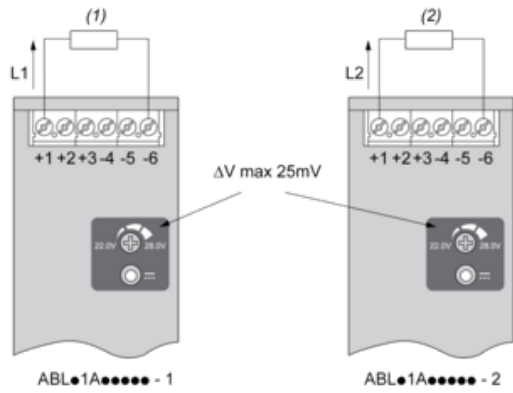
max 2 x  $ABLx1Axxxxx$

$L1 = L2$

$\Delta V$  max 25 mV

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

**Output Voltage Balancing**



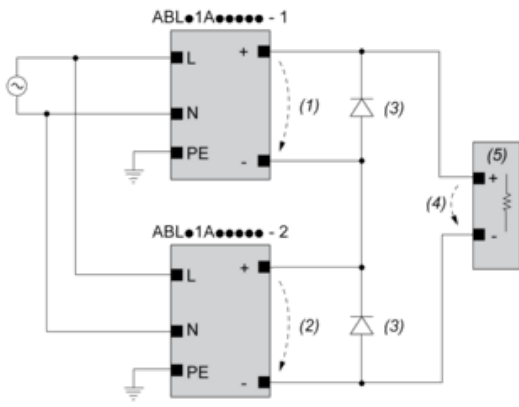
(1) :  $R_{Load1}$

(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**

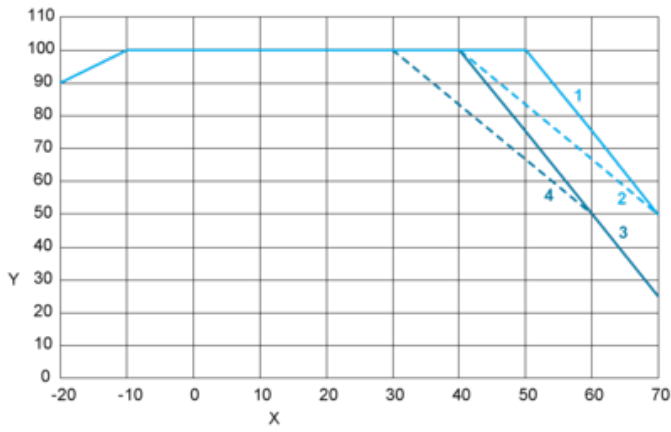
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	(1)		
	<40°C	<50°C	<70°C
ABLS1A24021	50°C	60°C	75°C
ABLS1A24038	50°C	60°C	75°C
ABLS1A12062	50°C	60°C	80°C
ABLS1A24031	50°C	60°C	80°C
ABLS1A12100	60°C	70°C	90°C
ABLS1A24050	60°C	70°C	90°C
ABLS1A48025	60°C	70°C	90°C
ABLS1A24100	60°C	70°C	90°C
ABLS1A24200	95°C	95°C	90°C

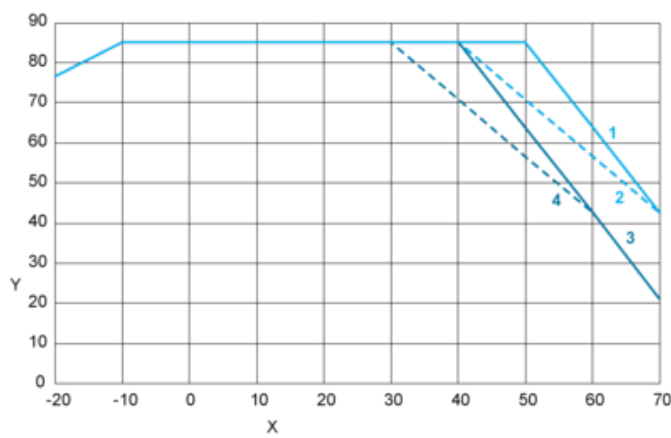
(1) : Ambient

**Performance Curve**

**Mounting Position A**



**Mounting Position B**



X : Surrounding Air Temperature

Y : Percentage of Max Load (%)

1 : Altitude 2000m, Input voltage = 230 VAC / 325 VDC

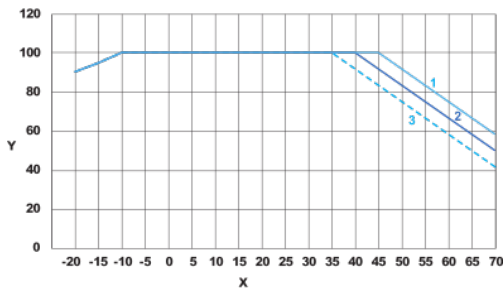
2 : Altitude 2000m, 115 VAC / 162 VDC

3 : Altitude 5000m, Input voltage = 230 VAC / 325 VDC

4 : Altitude 5000m, 115 VAC / 162 VDC

DC input voltage

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X : Surrounding Air Temperature

Y : Percentage of Maximum Load (%)

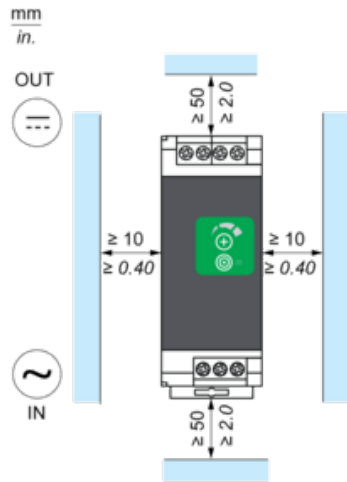
1 : 110 VDC

2 : 90 VDC

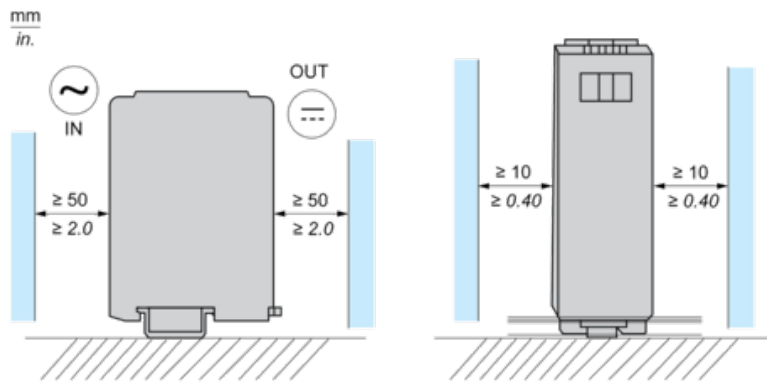
3 : 85 VDC

**Mounting**

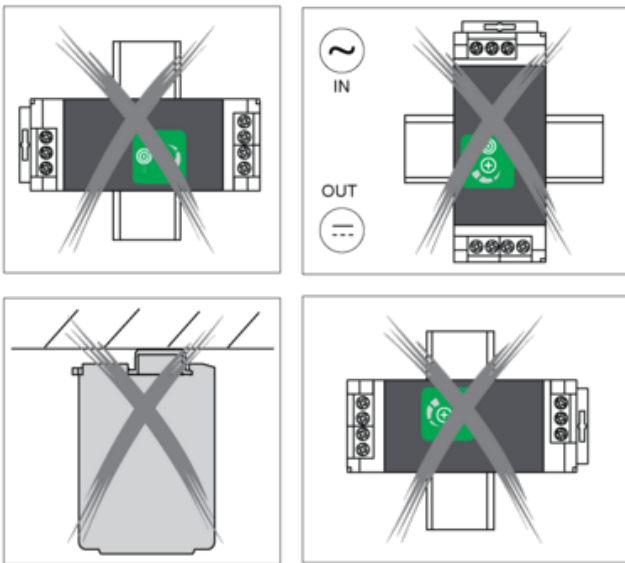
**Mounting Position A**



**Mounting Position B**



**Incorrect Mounting**



**Recommended replacement(s)**