# Phaseo™ power supplies ABL1, ABL7 and ABL8

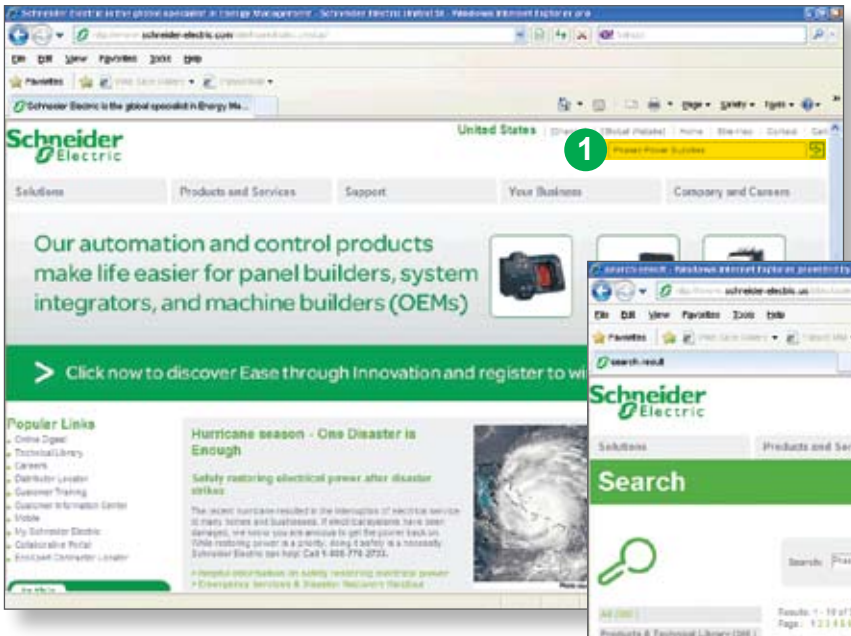
## Catalog
## 2011

Schneider Electric™

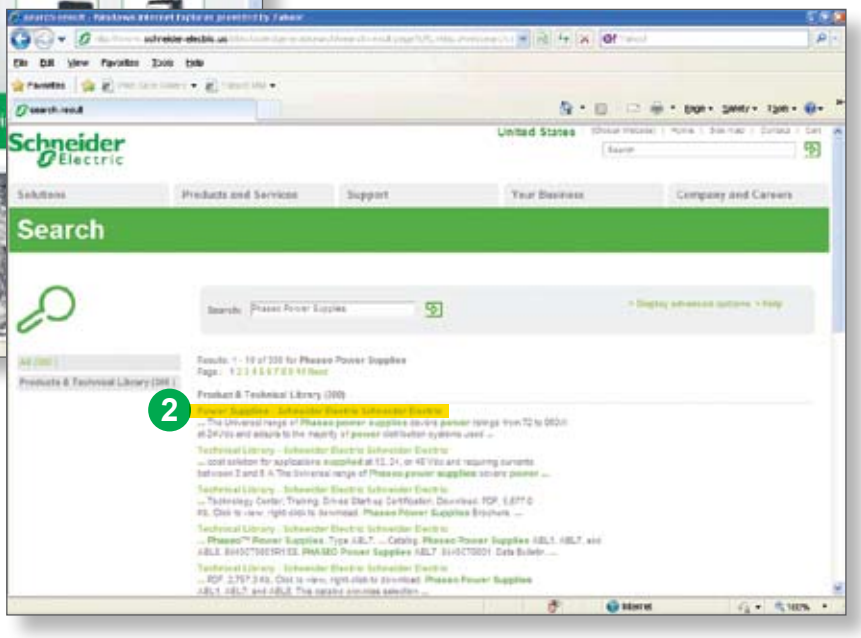
# Phaseo™ power supplies

# Go online to www.schneider-electric.com for technical information about products listed in this catalog, including:

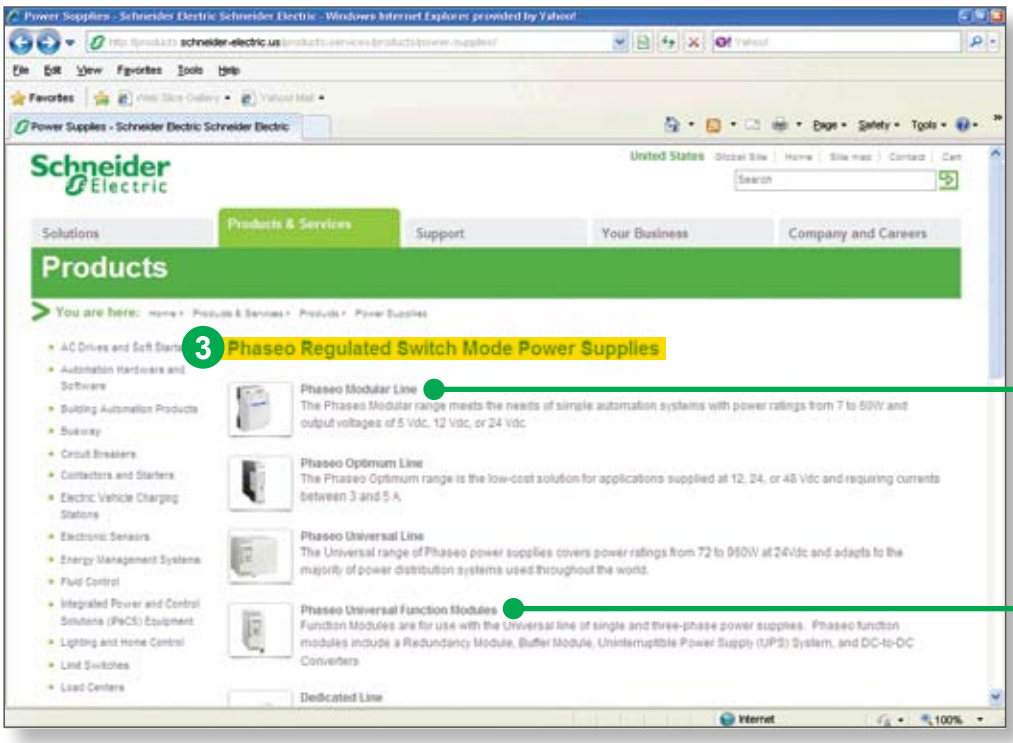
## To learn more about Phaseo™ electronic switch mode power supply products, follow these steps...




**1** **Go to www.schneider-electric.com and enter "Phaseo Power Supplies" in the Search Box.**

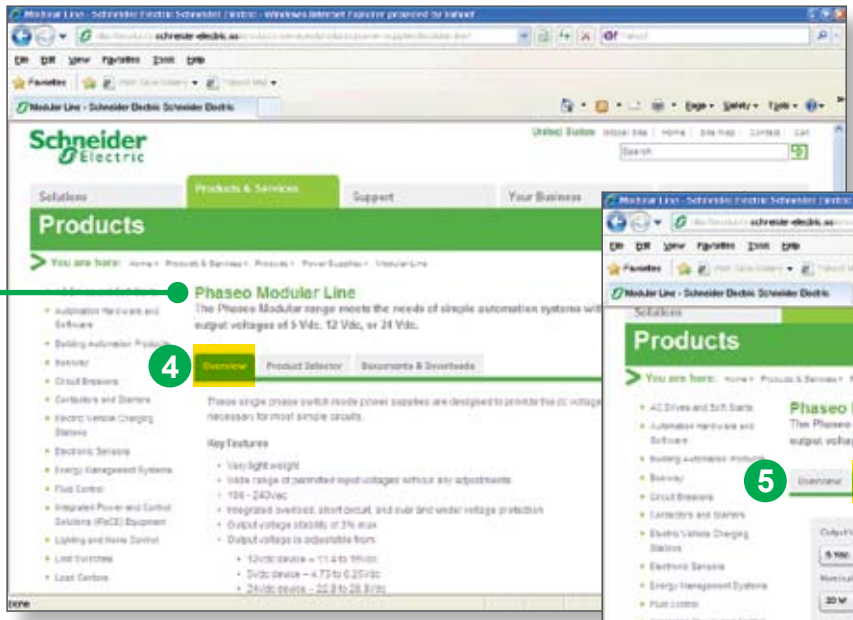



**2** **On the Search results page, select the first listing under "Product & Technical Library" entitled Power Supplies - Schneider Electric Schneider Electric.**

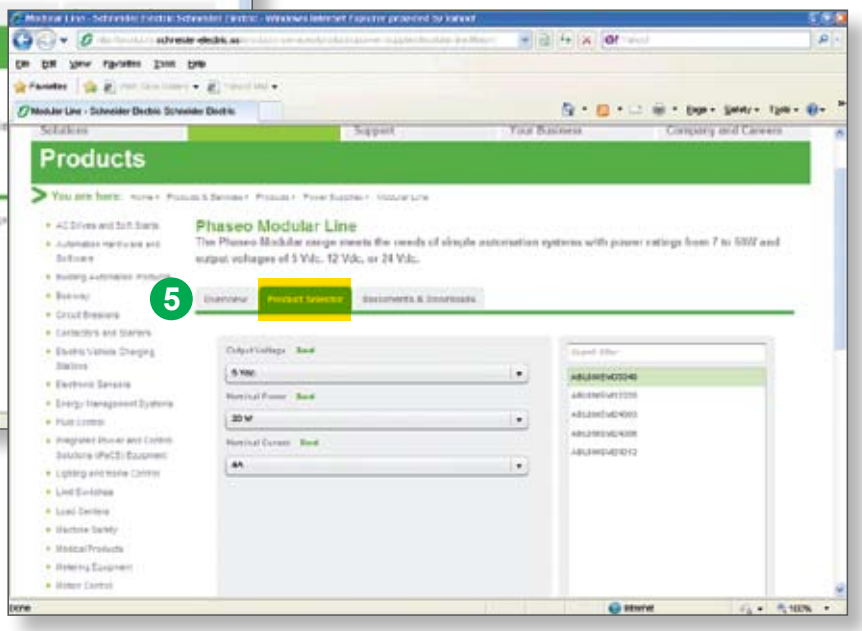



**3** **On the "Products" page – under "Phaseo Regulated Switch Mode Power Supplies" – select from the following product lines, including: Modular, Optimum, Universal, Universal Function Modules and Dedicated Line.**

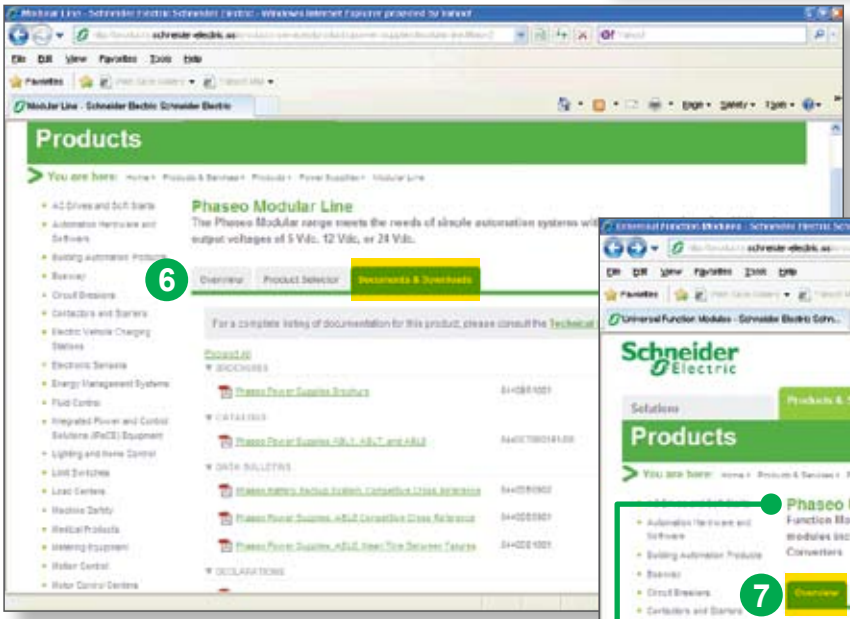
> Specifications > Dimensions > References
> Curves > Links to user guides and CAD files



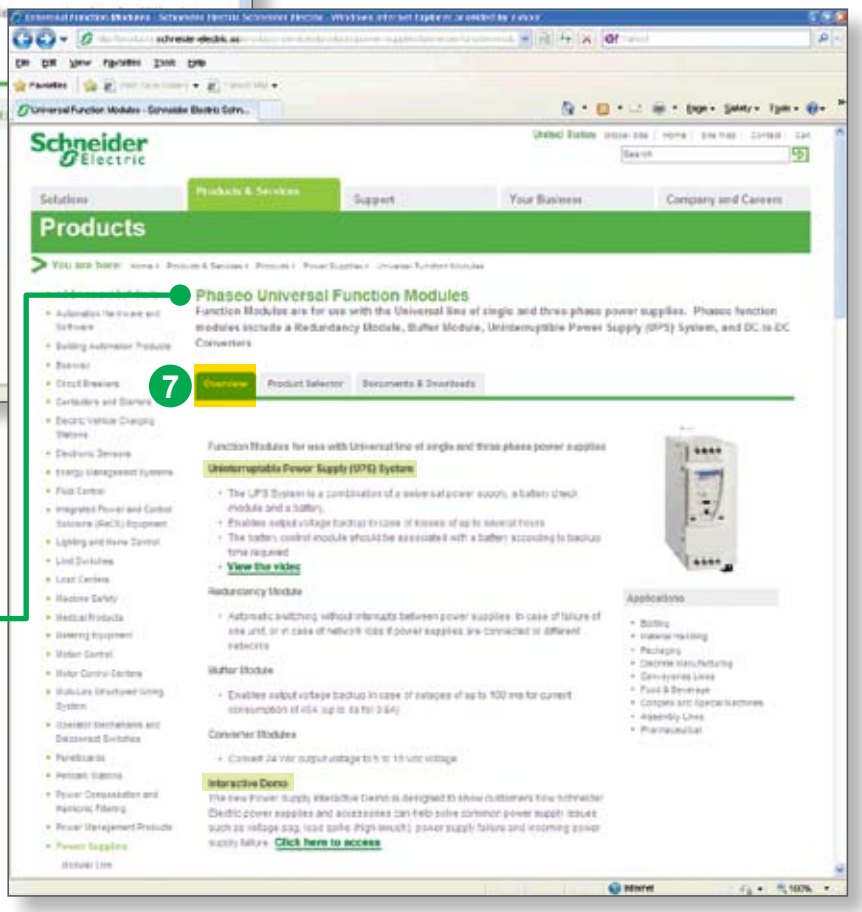

**4** For example...select the "Phaseo Modular Line" and click on Overview for Key Features and Applications.




**5** Use the Product Selector to identify the Phaseo Power Supply with the right specifications to meet your requirements.




**6** Select Documents & Downloads to view and select Product Brochures, Catalogs, Data Bulletins, Declarations, Handouts and Instruction Bulletins.




**7** And, when you select "Phaseo Universal Function Modules" and click on Overview, you'll find out about the Uninterruptable Power Supply (UPS) System and the Interactive Demo.

# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL7/ABL8 Modular and Optimum ranges

| | | | | |
|---|---|---|---|---|
| **Power supplies** | | **Regulated switch mode** | | |
| | | **Phase Modular range and Optimum range industrial power supplies** | | |
| | |  |  |   |
| **Input voltage** | | 100 to 240 V ∿<br>120 to 250 V ⎓ | | |
| **Connection to world-wide line supplies** | United States<br>- 120 V (in phase-to-neutral)<br>- 240 V (in phase-to-phase) | Single-phase (N-L1) or 2-phase (L1-L2) connection | | |
| | Europe<br>- 230 V (in phase-to-neutral)<br>- 400 V (in phase-to-phase) | Single-phase (N-L1) connection | | |
| | United States<br>- 277 V (in phase-to-neutral)<br>- 480 V (in phase-to-phase) | – | | |
| **IEC/EN 61000-3-2 conformity** | | Yes for ABL7RP, not for ABL8REM and not applicable for ABL8MEM and ABL7RM | | |
| **Protection against undervoltage** | | Yes | | |
| **Protection against overloads and short-circuits** | | Yes, voltage detection. Automatic restart on elimination on the detected fault | | |
| **Diagnostic relay** | | – | | |
| **Compatibility with function modules** | | – | | |
| **Power reserve (Boost)** | | 1.25 to 1.4 In for 1 minute, depending on model (with ABL8MEM) | | No |
| **Output voltage** | | 5 V ⎓ | 12 V ⎓ | 24 V ⎓ | 48 V ⎓ |
| **Output current** | 0.3 A | | | **ABL8MEM24003 (Modular)** | |
| | 0.6 A | | | **ABL8MEM24006 (Modular)** | |
| | 1.2 A | | | **ABL8MEM24012 (Modular)** | |
| | 2 A | | **ABL8MEM12020 (Modular)** | | |
| | 2.5 A | | | **ABL7RM24025 (Modular)** | **ABL7RP4803 (Optimum)** |
| | 3 A | | | **ABL8REM24030 (Optimum)** | |
| | 4 A | **ABL8MEM05040 (Modular)** | | | |
| | 5 A | | **ABL7RP1205 (Optimum)** | **ABL8REM24050 (Optimum)** | |
| | 6 A | | | | |
| | 10 A | | | | |
| | 20 A | | | | |
| | 40 A | | | | |
| **Pages** | | 14 | 14 *(Modular)* and 20 *(Optimum)* | | 20 |

# Phaseo™ power supplies
## Regulated switch mode power supplies
## ABL8 Universal range and DC/DC Converter modules

| Regulated switch mode | | | | |
|---|---|---|---|---|
| **Phaseo Universal range industrial power supplies** | | | **ABL8DCC Function modules: Converter modules ⎓ 24 V/⎓ 5-12 V** | |
|  |  | |  |  |
| 100 to 120 V ∿ and 200 to 500 V ∿ *(1)* | 380 to 500 V ∿ | | 24 V ⎓ | |
| Single-phase (N-L1) or 2-phase (L1-L2) connection | – | | – | |
| | 3-phase (L1-L2-L3) connection | | – | |
| | 3-phase (L1-L2-L3) connection | | – | |
| Yes | | | – | |
| Yes | | | – | |
| Yes, current limitation or undervoltage detection | | | Yes, current limitation | |
| Yes, depending on model | | | | |
| Yes with buffer module, battery and battery control modules, redundancy module and discriminating downstream protection module | | | | |
| 1.5 In for 4 seconds | | | No | |
| 24 V ⎓ | | | 5 V ⎓ | 7 to 12 V ⎓ |
| | | | | |
| | | | | |
| | | | | |
| | | | | **ABL8DCC12020** *(2)* |
| | | | | |
| **ABL8RPS24030** | | | | |
| | | | | |
| **ABL8RPS24050** | | | | |
| | | | **ABL8DCC05060** *(2)* | |
| **ABL8RPS24100** | | | | |
| **ABL8RPM24200** | **ABL8WPS24200** | | | |
| | **ABL8WPS24400** | | | |
| 26 | | | 36 | |

*(1) Except* **ABL8RPM24200**. ∿ 100 to 120 V and ∿ 200 to 240 V.
*(2) ⎓/⎓ converter module, requires to be associated with ABL8RP/ABL8WP power supply.*

# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL1 Dedicated range

| | | | |
|---|---|---|---|
| **Power supplies** | | **Regulated switch mode**<br>**Phaseo Dedicated range power supplies for repetitive machines** | |
| | |  |   |
| **Input voltage** | | 100 to 240 V ∿<br>120 to 370 V ⎓ | |
| **Connection to world-wide line supplies** | United States<br>- 120 V (in phase-to-neutral)<br>- 240 V (in phase-to-phase) | Single-phase (N-L1) or 2-phase (L1-L2) connection | |
| | Europe<br>- 230 V (in phase-to-neutral)<br>- 400 V (in phase-to-phase) | Single-phase (N-L1)<br>– | |
| | United States<br>- 277 V (in phase-to-neutral)<br>- 480 V (in phase-to-phase) | Single-phase (N-L1)<br>– | |
| **IEC/EN 61000-3-2 conformity** | | Yes for ABL1RP, not applicable for ABL1REM24025/12050 | |
| **Protection against undervoltage** | | – | |
| **Protection against overloads and short-circuits** | | Yes, voltage detection. Automatic restart on elimination on the detected fault | |
| **Diagnostic relay** | | – | |
| **Compatibility with function modules** | | – | |
| **Power reserve (Boost)** | | No | |
| **Output voltage** | | 12 V ⎓ | 24 V ⎓ |
| **Output current** | 2.5 A | | **ABL1REM24025** |
| | 3 A | | |
| | 4.2 A | | **ABL1R●M24042** |
| | 4.8 A | | |
| | 5 A | **ABL1REM12050** | |
| | 6.2 A | | **ABL1R●M24062** |
| | 8.3 A | **ABL1RPM12083** | |
| | 10 A | | **ABL1R●M24100** |
| **Pages** | | 50 | |

# Phaseo™ power supplies
## Regulated switch mode power supplies
## AS-Interface range for AS-Interface cabling system

| **Regulated switch mode** | |
|---|---|
| **Phaseo AS-Interface range for AS-Interface cabling system** | |
|  / |  |
| 100 to 240 V ∼ | |
| Single-phase (N-L1) connection | |
| Single-phase (N-L1) connection | |
| – | |
| No | Yes |
| – | Yes |
| Yes | |
| – | |
| – | |
| No | |
| 30 V ⎓ | 24 V ⎓ |
| **ASIABLB3002**<br>**ASIABLD3002** *(1)*<br>**ASIABLM3024** *(2)* | |
| | **ASIABLM3024** *(2)* |
| | |
| **ASIABLB3004** *(2)*<br>**ASIABLD3004** *(1)* | |
| 56 | |

*(1) With ground fault detection.*
*(2) One output 30 ⎓ and one output 24 ⎓ ± 5%.*

# Phaseo™ power supplies
## Regulated switch mode power supplies

## Overview

The Phaseo™ electronic switch mode power supply offer is designed to provide the DC voltage necessary for the PLC and automation system equipment control circuits.

These power supplies include five ranges:
- Modular, Optimum and Universal ranges for common applications (ABL8 and ABL7)
- AS-Interface range for the AS-Interface cabling system (AS-Interface)
- Dedicated range for repetitive equipment (ABL1)

The Phaseo offer meets all the needs encountered in industrial, commercial and residential applications. With phase-to-neutral (N-L1), phase-to-phase (L1-L2) or 3-phase (L1-L2-L3) connection to the line supply, these electronic switch mode power supplies provide a quality of output current that is suitable for the loads supplied and compatible with the line supply available in the equipment. Clear guidelines are given for selecting protection devices which are often used with them, and thus a comprehensive solution is provided that can be used in total safety.

### Phaseo switch mode power supplies

Phaseo switch mode power supplies are totally electronic and their output voltage is regulated. The use of electronics makes it possible to significantly improve the performance of these power supplies, which offer:
- Very compact size
- Integrated overload, short-circuit, overvoltage and undervoltage protection
- Very wide input voltage range for the Universal range
- High degree of output voltage stability
- Good performance
- Diagnostics via LED indicators on the front panel
- Remote diagnostics via a relay contact for the Universal range

Phaseo power supplies deliver a stabilized ⎓ output voltage that is precise to 3%, whatever the load from a ∿ line supply, within the ranges of:
- For Modular, Optimum, Dedicated and AS-Interface ranges:
  - 100 to 240 V ∿ for phase-to-neutral (N-L1) or phase-to-phase (L1- L2) connection
- For the Universal range:
  - 85 to 550 V ∿ for phase-to-neutral (N-L1) or phase-to-phase (L1- L2) connection
  - 360 to 550 V ∿ for 3-phase connection (L1-L2-L3)

Conforming to IEC standards and UL, CSA, TÜV and C-Tick certified, they are suitable for industrial use.

Phaseo power supplies also incorporate:
- Output voltage adjustment potentiometer in order to be able to compensate for

Natural cooling

- Direct mounting on 35 mm DIN rails, optional on Dedicated range *(1)*

*(1) The Optimum and AS-Interface ranges can also take 75 mm DIN rails.*

# Phaseo™ power supplies
## Regulated switch mode power supplies

*ABL8MEM12020*

*ABL8REM24030*

*ABL8RPS24100*

*ABL8BUF24400*

*ASIABL●30●4*

*ASIABL●3002*

*ABL1R●M●●0●●*

*ABL1R●M24100*

## Overview *(continued)*

**Phaseo™ switch mode power supplies** (continued)

Phaseo regulated switch mode industrial supplies are offered in three ranges (Modular, Optimum and Universal), complemented by the AS-Interface and Dedicated ranges for repetitive machines.

### Phaseo Modular range

The Phaseo Modular range meets all the needs of simple automation systems with power ratings from 7 to 60 W and an output voltage of 5 V ⎓, 12 V ⎓ or 24 V ⎓.
The shape and compact nature of its casing mean that it can be incorporated either in a modular panel or mounted on a DIN rail in a cabinet. Direct mounting on a panel (using its two retractable legs) and the choice of wires exiting at the top or bottom (except for the **ABL7RM24025** model) make it an easy product to integrate.

### Phaseo Optimum range

The Phaseo Optimum range is the low-cost solution for applications supplied in 12 V ⎓, 24 V ⎓ or 48 V ⎓ and requiring currents between 3 and 5 A.
The Optimum range of Phaseo power supplies delivers a voltage that can guarantee the PLC logic states. In the event of an overload the power supply protection trips so that, once the detected fault has been eliminated, the power supply reverts to its nominal state.
Since the Optimum range of Phaseo power supplies does not have PFC *(Power Factor Correction)*, they do not meet the requirements of standard IEC/EN 61000-3-2 (except for **ABL7RP1205/7RP4803** models).

### Phaseo Universal range

The Universal range of Phaseo power supplies covers power ratings from 72 to 960 W in 24 V ⎓ and adapts to the majority of power distribution systems used throughout the world. The same power supply can thus be connected phase-to-neutral (N-L1) or phase-to-phase for line supplies ranging from 100 V ∿ to 500 V ∿ nominal. This product offering also includes three phase units. In addition, this range offers:

- Diagnostic functions (local or remote)
- User choice of operating mode in the event of an overload (current limiting or stop)
- Function modules to help ensure continuity of service:
  - Protection against microbreaks or prolonged outages by means of the Buffer module and Battery Control modules
  - Paralleling and redundancy functions by means of the Redundancy module
- Power reserve (boost function) for absorbing the transient current peaks required by the application

With the Universal range of power supplies, it is possible to satisfy the need for auxiliary voltage (5 V ⎓ to 15 V ⎓) using ⎓ / ⎓ Converter modules.

The incorporation of a PFC *(Power Factor Correction)* input filter reduces harmonic pollution to a minimum level across the entire Universal range, ensuring compliance with the requirements of standard IEC/EN 61000-3-2.

### Phaseo AS-Interface range

The 72 and 144 W AS-Interface range of Phaseo power supplies is designed to deliver a voltage of 30 V ⎓, which is a prerequisite for the AS-Interface cabling system. These electronic switch mode power supplies with phase-to-neutral (N-L1) connection help ensure the quality of the output current in accordance with the electrical specifications and in compliance with standard EN 50295.

### Phaseo Dedicated range

The Dedicated range of Phaseo power supplies from 60 to 240 W is designed for integration in repetitive equipment requiring a voltage of 12 V ⎓ or 24 V ⎓.
These electronic switch mode power supplies, with phase-to-neutral (N-L1) connection, with or without anti-harmonic filter and UL 508, CSA and TÜV certified, meet all the needs encountered in commercial machines and standard catalog machines.

## Specifications of the 24 V ⎓ operating voltage

The permissible tolerances for the operating voltage are listed in publications IEC/EN 61131-2 and DIN 19240.

For a nominal voltage Un of 24 V ⎓, the extreme operating values are from - 15% to + 20% of voltage Un, whatever the supply fluctuations in the range - 10% to + 6% (defined by standard IEC 38) with load variations in the range 0 to 100% of nominal current In.

All 24 V ⎓ Phaseo™ power supplies are designed to provide an output voltage within these ranges.

It may be necessary to use a voltage measurement relay to detect when the normal voltage limits are being surpassed and to deal with the consequences of this.
The Universal range has integrated voltage detection.

## Recommendations for the use of 24 V ⎓ voltage

The Phaseo power supplies can be used to supply control circuits with Protection Extra Low Voltage (PELV) or Safety Extra Low Voltage (SELV) in compliance with standard IEC/EN 60364-4-41.

They have the following specifications:
- Double insulation between the input circuit (connected to the line supply) and the low voltage output circuit via an integrated isolation transformer
- Internal device limiting the output voltage to less than 60 V in the event of an internal detected fault

## **Harmonic pollution** (power factor)

The current drawn by a power supply is not sinusoidal. This leads to the generation of harmonic currents that pollute the distribution system. European standard IEC/EN 61000-3-2 limits the harmonic currents produced by power supplies.

This standard covers all devices between 75 and 1000 W, drawing up to 16 A per phase and connected directly to the public distribution system. Devices connected downstream of a private, low voltage general transformer are therefore excluded. Regulated switch mode supplies always consume harmonic currents; a filter circuit (Power Factor Correction or PFC) must therefore be added to comply with standard IEC/EN 61000-3-2.

The **ABL8RPS / 8RPM / 8WPS24●●0** Universal range and the **ABL1RPM** Dedicated range of Phaseo power supplies comply with standard EN 61000-3-2 and can therefore be connected directly to public distribution systems.

Since the **ABL8MEM240●●** Modular range and **ABL7RM24025** and **ABL1REM12050/24025** Dedicated range of Phaseo power supplies have power ratings of < 75 W, they are not subject to the requirements of standard EN 61000-3-2. They can therefore be connected directly to public distribution systems.

The **ABL8REM** Optimum range and the **ABL1REM** Dedicated range of Phaseo power supplies must only be connected downstream of a private, low voltage general transformer.

# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL7/ABL8 Modular range

*ABL8MEM●●●●●* *Zelio™ Logic*

## Switch mode power supplies: Modular range

The **ABL8MEM/ABL7RM** power supply offer is designed to provide the DC voltage necessary for the control circuits of automation system equipment consuming 7 to 60 W in 5, 12 and 24 V ⎓. Comprised of six products, this range meets the needs encountered in industrial, commercial, and residential applications. These Modular electronic switch mode power supplies provide a quality of output current that is suitable for the loads supplied and compatible with the Zelio™ Logic range. Clear guidelines are given on selecting the upstream protection devices which are often used with them, and thus a comprehensive solution is provided that can be used in total safety.

The Modular range of Phaseo™ power supplies can be connected in phase-to-neutral (N-L1) or in phase-to-phase *(1)* (L1-L2). They deliver a voltage that is precise to 3%, whatever the load and whatever the type of line supply, within a range of 85 to 264 V ∿. Conforming to IEC standards and UL, CSA and TUV certified, they are suitable for global use. They have overload and short-circuit protection.

Due to their low power, the Modular range of Phaseo power supplies consume very little harmonic current and thus are not subject to the requirements of standard IEC/EN 61000-3-2 concerning harmonic pollution.

All the Modular range of Phaseo power supplies have protection devices to help ensure optimum performance of the automation system with an automatic reset mode on elimination of the detected fault.

All products are equipped with an output voltage adjustment potentiometer in order to be able to compensate for any line voltage drops in installations with long cable runs.

These power supplies also have a cable channel on the side of the unit so that the output wires can be directed to the top or bottom of the product as required.

They are designed for direct mounting on 35 mm DIN rails, or on a panel using their retractable mounting legs.

There are six references available in the Phaseo Modular range:

| | | | |
|---|---|---|---|
| ■ **ABL8MEM24003** | 7 W | 0.3 A | 24 V ⎓ |
| ■ **ABL8MEM24006** | 15 W | 0.6 A | 24 V ⎓ |
| ■ **ABL8MEM24012** | 30 W | 1.2 A | 24 V ⎓ |
| ■ **ABL7RM24025** | 60 W | 2.5 A | 24 V ⎓ |
| ■ **ABL8MEM05040** | 20 W | 4 A | 5 V ⎓ |
| ■ **ABL8MEM12020** | 25 W | 2 A | 12 V ⎓ |

*(1) 240 V ∿ nominal.*

## Description

**ABL8MEM●●●●**


**ABL7RM24025**


1 14 AWG (2.5 mm²) screw terminal for connection of the AC input voltage
2 Output voltage adjustment potentiometer
3 14 AWG (2.5 mm²) screw terminal for connection of the output voltage
4 LED indicating presence of the DC output voltage
5 Channel for through-wiring of the output voltage conductors at the bottom (except for model ABL7RM24025)
6 Clip-on marker label (except for model ABL7RM24025)
7 Retractable mounting legs for panel mounting

# Phaseo™ power supplies

## Regulated switch mode power supplies

### ABL7/ABL8 Modular range

## Technical specifications

| Power supply type | | | ABL8MEM24003 | ABL8MEM24006 | ABL8MEM24012 | ABL7RM24025 |
|---|---|---|---|---|---|---|
| **Certifications** | | | cULus 508, cCSAus (CSA22.2 n950-1), TÜV 60950-1, CE, CTick, RoHS | | | |
| **Conformity to standards** | Safety | | IEC/EN 60950-1, SELV | | | |
| | EMC | | IEC/EN 61000-6-2, IEC/EN 61000-6-3, IEC/EN 61204-3, EN 55022 Class B | | | |
| **Input circuit** | | | | | | |
| **LED indication** | | | No | | | |
| **Input values** | Nominal voltage | **V** | 100 to 240 Vac | | | |
| | Limit voltage | **V** | 85 to 264 Vac<br>120 to 250 Vdc *(1)* | | | 85 to 264 Vac |
| | Current consumption | **A** | 0.25 (100 Vac)<br>0.18 (240 Vac) | 0.4 (100 Vac)<br>0.25 (240 Vac) | 0.65 (100 Vac)<br>0.4 (240 Vac) | 1.2 (120 Vac)<br>0.7 (240 Vac) |
| | Permissible frequencies | **Hz** | 47 to 63 | | | |
| | Maximum inrush current | **A** | 20 | | | 90 for 1 ms |
| | Power factor | | > 0.5 | | | |
| | Efficiency at nominal load | | > 78% | > 80% | > 82% | > 84% |
| | Dissipated power at nominal load | **W** | 2 | 3.8 | 6.6 | 11.4 |
| **Output circuit** | | | | | | |
| **LED indication** | | | Green LED | | | |
| **Nominal output values** | Voltage ($U_{Out}$) | **V** | 24 Vdc | | | |
| | Current | **A** | 0.3 | 0.6 | 1.2 | 2.5 |
| | Power | **W** | 7 | 15 | 30 | 60 |
| **Precision** | Output voltage | **V** | Adjustable from 22.8 to 28.8 Vdc | | | |
| | Line and load regulation | | ± 3% | | | |
| | Residual ripple - noise | **mV** | 250 | | | 200 |
| **Holding time for I max.** | $U_{In}$ = 100 Vac | **ms** | ≥ 10 | | | |
| | $U_{In}$ = 230 Vac | **ms** | ≥ 150 | | | |
| **Protection** | Against short circuits | | Permanent | | | |
| | Against undervoltages | **V** | – | | | < 19 |
| | Thermal | | Yes | | | – |
| **Operating and environmental specifications** | | | | | | |
| **Connections** | Input | **AWG (mm²)** | 26 to 14 (2 x 0.14 to 2.5) screw terminals | | | |
| | Output | **AWG (mm²)** | 26 to 14 (2 x 0.14 to 2.5) screw terminals | | 26 to 14 (4 x 0.14 to 2.5) screw terminals | |
| **Mounting** | | | On DIN rail, 35 x 7.5 mm and 35 x 15 mm or on panel (2 x ⌀ 4 mm) | | | |
| **Operating position** | On vertical plane | | Vertical | | | |
| **Connections** | Series | | Possible | | | |
| | Parallel | | Possible | | | |
| **Environment** | Operating temperature | **°F (°C)** | -13 to 158 derating from 131 °F (-25 to +70 derating from 55 °C), | | | -13 to 131 °F (-25 to +55 °C) |
| | Storage temperature | **°F (°C)** | -40 to 158 °F (-40 to +70 °C) | | | |
| | Relative humidity | | 90% during operation, 95% in storage | | | |
| | Degree of protection | | IP 20 conforming to IEC 60529 | | | |
| | Vibration per to EN 61131-2 | | 3 to 11.9 Hz, amplitude 0.14 in. (3.5 mm); and 11.9 -150 Hz, acceleration 2 g | | | |
| **Protection class according to VDE 0106 1** | | | Class II | | | |
| **Dielectric strength 50 Hz for 1 min** | Input/output | **V rms** | 3000 Vac | | | |
| **Input fuse incorporated** | | | Yes (not interchangeable) | | | |
| **Emissions according to EN 61000-6-3** | | | EN 50081-1 (generic) | | | |
| | Radiation | | EN 55022 Class B | | | |
| | Conducted on the power line | | EN 55022 Class B | | | |
| | Harmonic currents | | IEC/EN 61000-3-2 | | | |
| **Immunity according to EN 61000-6-2** | | | IEC 61000-6-2 (generic) | | | |
| | Electrostatic discharge | | IEC/EN 61000-4-2 (6 kV contact/8 kV air) | | | IEC/EN 61000-4-2 (4 kV contact/8 kV air) |
| | Radiated electromagnetic fields | | IEC/EN 61000-4-3 level 3 (10 V/m) | | | |
| | Induced electromagnetic fields | | IEC/EN 61000-4-6 level 3 (10 V/m) | | | |
| | Rapid transients | | IEC/EN 61000-4-4 (4 kV) | | | |
| | Surges | | IEC/EN 61000-4-5 (1 kV) | | | |
| | Primary outages | | IEC/EN 61000-4-11 (voltage dips and interruptions) | | | |

*(1) DC input voltages are not included in cULus, cCSAus, and TÜV certifications.*

## Technical specifications

| Power supply type | | | ABL8MEM05040 | ABL8MEM12020 |
|---|---|---|---|---|
| **Certifications** | | | cULus 508, cCSAus (CSA22.2 n950-1), TÜV EN 60950-1, CE, CTick, RoHS | |
| **Conformity to standards** | Safety | | IEC/EN 60950-1, SELV | |
| | EMC | | IEC/EN 61000-6-2, IEC/EN 61000-6-3, IEC/EN 61204-3, EN 55022 Class B | |
| **Input circuit** | | | | |
| **LED indication** | | | No | |
| **Input values** | Nominal voltage | **V** | 100 to 240 Vac | |
| | Limit voltage | **V** | 85 to 264 Vac<br>120 to 250 Vdc *(1)* | |
| | Current consumption | **A** | 0.55 (100 Vac)<br>0.35 (240 Vac) | 0.6 (100 Vac)<br>0.35 (240 Vac) |
| | Permissible frequencies | **Hz** | 47 to 63 | |
| | Maximum inrush current | **A** | 20 | |
| | Power factor | | > 0.5 | |
| | Efficiency at nominal load | | > 75% | > 80% |
| | Dissipated power at nominal load | **W** | 6.7 | 6.2 |
| **Output circuit** | | | | |
| **LED indication** | | | Green LED | |
| **Nominal output values** | Voltage ($U_{out}$) | **V** | 5 Vdc | 12 to 15 Vdc |
| | Current | **A** | 4 | 2.1 |
| | Power | **W** | 20 | 25 |
| **Precision** | Output voltage | **V** | Adjustable from 4.75 to 6.25 | Adjustable from 11.4 to 15 |
| | Line and load regulation | | ± 3% | |
| | Residual ripple - noise | **mV** | 250 | |
| **Holding time for I max** | $U_{In}$ min | **ms** | ⩾ 10 | |
| **Protection** | Against short circuits | | Permanent | |
| | Against undervoltages | | – | |
| | Thermal | | – | |
| **Operating and environmental specifications** | | | | |
| **Connections** | Input | **AWG ($mm^2$)** | 26 to 14 (2 x 0.14 to 2.5) screw terminals | |
| | Output | **AWG ($mm^2$)** | 26 to 14 (4 x 0.14 to 2.5) screw terminals | |
| **Mounting** | | | On DIN rail, 35 x 7.5 mm and 35 x 15 mm or on panel (2 x ⌀ 4 mm) | |
| **Operating position** | On vertical plane | | Vertical | |
| **Connections** | Series | | Possible | |
| | Parallel | | Possible | |
| **Environment** | Operating temperature | **°F (°C)** | -13 to 158 derating from 131 °F (-25 to +70 derating from 55 °C) | |
| | Storage temperature | **°F (°C)** | -40 to 158 °F (-40 to +70 °C) | |
| | Maximum relative humidity | | 90% during operation<br>95% in storage | |
| | Degree of protection | | IP 20 conforming to IEC 60529 | |
| | Vibration | | 3 to 11.9 Hz, amplitude 0.14 in (3.5 mm); and 11.9 -150 Hz, acceleration 2 g | |
| **Protection class according to VDE 0106 1** | | | Class II | |
| **Dielectric strength 50 Hz for 1 min** | Input/output | **V rms** | 3000 Vac | |
| **Input fuse incorporated** | | | Yes (not interchangeable) | |
| **Emissions according to EN 61000-6-3** | | | EN 50081-1 (generic) | |
| | Radiation | | EN 55022 Class B | |
| | Conducted on the power line | | EN 55022 Class B | |
| | Harmonic currents | | IEC/EN 61000-3-2 | |
| **Immunity according to EN 61000-6-2** | | | IEC 61000-6-2 (generic) | |
| | Electrostatic discharge | | IEC/EN 61000-4-2 (6 kV contact/8 kV air) | |
| | Radiated electromagnetic fields | | IEC/EN 61000-4-3 level 3 (10 V/m) | |
| | Induced electromagnetic fields | | IEC/EN 61000-4-6 level 3 (10 V/m) | |
| | Rapid transients | | IEC/EN 61000-4-4 (4 kV) | |
| | Surges | | IEC/EN 61000-4-5 (1 kV) | |
| | Primary outages | | IEC/EN 61000-4-11 (voltage dips and interruptions) | |

*(1) DC input voltages are not included in cULus, cCSAus, and TÜV certifications.*

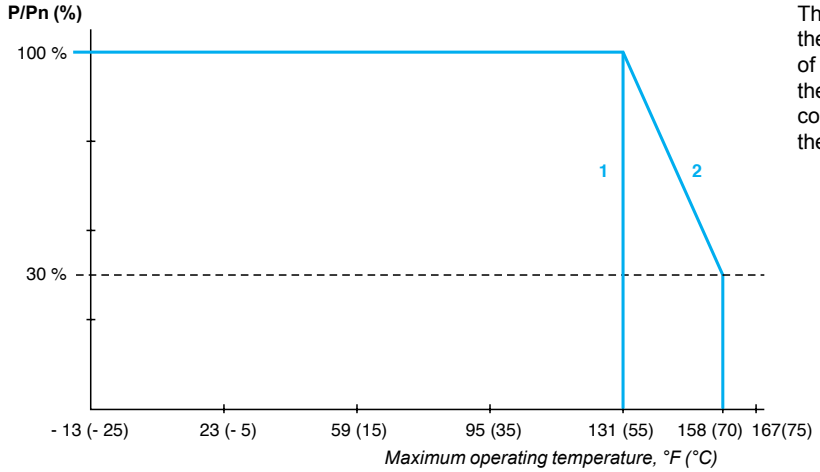
## Output specifications

### Behavior when short circuits and overloads occur

Phaseo™ power supplies are equipped with an electronic protection device. When an overload or short circuit occurs, the integrated protection interrupts the current supply before the output voltage drops below 19 V. The output voltage reverts to its nominal value upon elimination of the detected fault, eliminating the need to take any action.

**Derating**

The ambient temperature is a determining factor which limits the power that an electronic power supply can deliver continuously. Excessively high temperatures around the electronic components significantly reduce their life. The nominal ambient temperature for the Modular range of Phaseo power supplies is 131°F (55 °C). Above this temperature, derating is necessary up to a maximum temperature of 158 °F (70 °C) (except for the **ABL7RM24025** model).




The graph to the left shows the power as a percentage of the nominal power that the power supply can deliver continuously, depending on the ambient temperature.

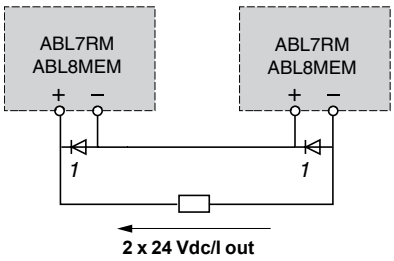
*1 With an* **ABL7RM24025**
*2 With an* **ABL8MEM●●●●●**

**Temporary overloads**

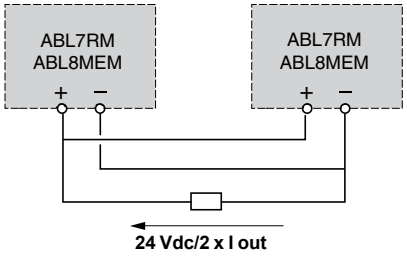
The **ABL8MEM●●●●** Modular range of power supplies have an energy reserve that can be used to supply the application with 125% to 140% of the nominal output current for a maximum of 1 minute, depending on the model.

## Series or parallel connection

### Series connection




### Parallel connection




*1 Two shottky diodes, Imin = power supply In, and Vmin = 50 V*

| Family | Series | Parallel |
|---|---|---|
| **ABL7RM / 8MEM** | 2 products max. | 2 products max. |

**NOTE:** *Series or parallel connection is recommended only for products with identical catalog numbers.*

# Phaseo™ power supplies
## Regulated switch mode power supplies
## ABL7/ABL8 Modular range

### Selection of protection for the power supply primary

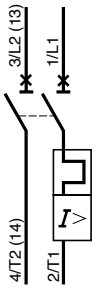
| Type of line supply | 100 to 240 V ∿ single-phase | | |
|---|---|---|---|
| Type of protection | Thermal-magnetic circuit-breaker | | Class CC fuse |
| | GB2 (IEC) | C60N (IEC)<br>C60N (UL/CSA) | |
| **ABL8MEM05040** | GB2 ●●07 *(1)* | 24581<br>24517 | 2 A |
| **ABL8MEM12020** | | | |
| **ABL8MEM24003** | | | |
| **ABL8MEM24006** | | | |
| **ABL8MEM24012** | | | |
| **ABL7RM24025** | GB2 ●●08 *(1)* | 24582<br>24518 | 3 A |

*(1) Complete the reference by replacing ●● as required:*
- **CB** *for single-pole circuit-breaker with magnetic trip threshold 12 to 16 In*
- **CD** *for single-pole + neutral circuit-breaker with magnetic trip threshold 12 to 16 In*
- **DB** *for 2-pole circuit-breaker with magnetic trip threshold 12 to 16 In*
- **CS** *for single-pole circuit-breaker with magnetic trip threshold 5 to 7 In*

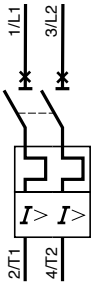
### Wiring diagrams

**GB2CB●●**


**GB2CD●●**




**GB2DB●●**




**GB2CS●●**

# Phaseo™ power supplies
## Regulated switch mode power supplies
## ABL7/ABL8 Modular range

## References

*ABL8MEM05040/12020/24012*

*ABL8MEM24003/24006*

*ABL7RM24025*

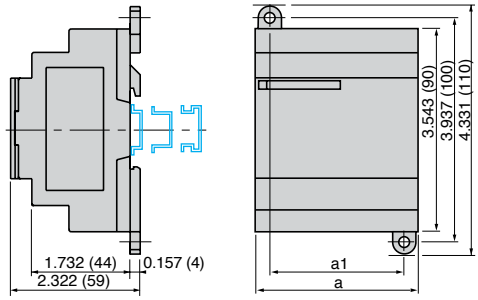
| Input voltage | Secondary | | | Reset | Conforming to standard IEC/EN 61000-3-2 *(1)* | Reference | Weight lbs (kg) |
|---|---|---|---|---|---|---|---|
| | Output voltage | Nominal power | Nominal current | | | | |
| **Single-phase** (N-L1) **or 2-phase** (L1-L2) **connection** | | | | | | | |
| **100 to 240 V** -15%, + 10% 50/60 Hz | 5 V ⎓ | 20 W | 4 A | Automatic | Not applicable | **ABL8MEM05040** | 0.51 (0.23) |
| | 12 V ⎓ | 25 W | 2 A | Automatic | Not applicable | **ABL8MEM12020** | 0.50 (0.23) |
| | 24 V ⎓ | 7 W | 0.3 A | Automatic | Not applicable | **ABL8MEM24003** | 0.28 (0.13) |
| | | 15 W | 0.6 A | Automatic | Not applicable | **ABL8MEM24006** | 0.29 (0.13) |
| | | 30 W | 1.2 A | Automatic | Not applicable | **ABL8MEM24012** | 0.51 (0.23) |
| | | 60 W | 2.5 A | Automatic | Not applicable | **ABL7RM24025** | 0.71 (0.32) |

| Designation | Use | Order in multiples of | Unit reference | Weight lbs (kg) |
|---|---|---|---|---|
| **Clip-on marker labels** | Replacement parts for ABL8MEM power supplies | 100 | **LAD90** | 0.07 (0.03) |

*(1) Due to their power < 75 W, the* **Modular** *range of power supplies is not subject to the requirements of standard IEC/EN 61000-3-2.*

## Approximate dimensions

**ABL8MEM●●●●● / ABL7RM24025 power supply**

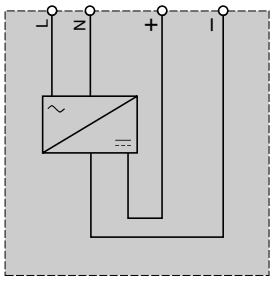



| | a | a1 |
|---|---|---|
| ABL8MEM05040 | 2.10 (53) | 1.65 (42) |
| ABL8MEM12020 | 2.10 (53) | 1.65 (42) |
| ABL8MEM24003 | 1.40 (36) | 0.94 (24) |
| ABL8MEM24006 | 1.40 (36) | 0.94 (24) |
| ABL8MEM24012 | 2.10 (53) | 1.65 (42) |
| ABL7RM24025 | 2.83 (72) | 2.36 (60) |

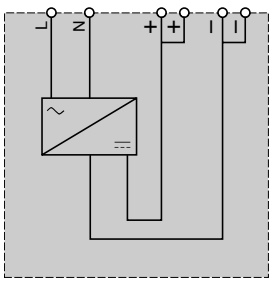
in (mm)

## Wiring diagrams

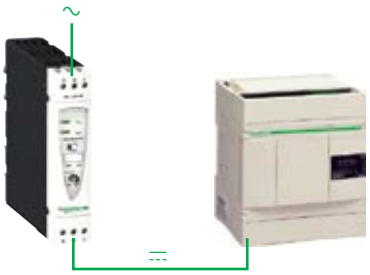
**ABL8MEM2400●**




**ABL8MEM05040 / 8MEM12020 / 8MEM24012 / 7RM24025**



# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL7/ABL8 Optimum range



*ABL8REM24030* *Twido*

## Switch mode power supplies: Optimum range

The **ABL8REM/7RP** power supply offer is designed to provide the DC voltage necessary for the control circuits of automation system equipment consuming 60 to 144 W in 12, 24 and 48 V ⎓. Comprised of four products, this range meets the needs encountered in industrial, commercial, and residential applications. With phase-to-neutral (N-L1) or phase-to-phase (1) (L1-L2) connection, these slim electronic switch mode power supplies provide a quality of output current that is suitable for the loads supplied and compatible with both the Twido™ range and the smallest Modicon™ M340™ configurations, making them ideal partners. Their simplified specifications in comparison with the Universal offer also make them the low-cost solution for applications less affected by problems with the line supply, such as harmonic pollution and outages. Clear guidelines are given on selecting the upstream protection devices which are often used with them, and thus a comprehensive solution is provided that can be used in total safety.

The Optimum range of Phaseo™ power supplies delivers a voltage that is precise to 3%, whatever the load and whatever the type of line supply, within a range of 85 to 264 V ∿. Conforming to IEC standards and UL, CSA and TUV certified, they are suitable for global use. They have overload and short-circuit protection.

**ABL8REM** power supplies do not have anti-harmonic filters and do not satisfy the requirements of standard IEC/EN 61000-3-2 concerning harmonic pollution. **ABL7RP** power supplies, however, are equipped with a PFC *(Power Factor Correction)* filter, thus ensuring compliance with standard IEC/EN 61000-3-2.

The **Optimum** range of Phaseo power supplies includes protection devices to help ensure optimum performance of the automation system with an automatic reset mode on elimination of the detected fault.

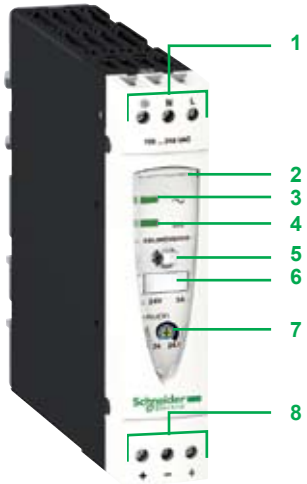
In the event of an overload or short-circuit, the integrated protection interrupts the current supply before the output voltage drops below 19 V ⎓. The protection device resets itself automatically on elimination of the detected fault, which avoids having to take any action or change a fuse.

All products are equipped with an output voltage adjustment potentiometer in order to be able to compensate for any line voltage drops in installations with long cable runs.

These power supplies are designed for direct mounting on 35 and 75 mm DIN rails.

There are four references available in the **Optimum** range of Phaseo power supplies:

| | | | |
|---|---|---|---|
| ■ **ABL8REM24030** | 72 W | 3 A | 24 V ⎓ |
| ■ **ABL8REM24050** | 120 W | 5 A | 24 V ⎓ |
| ■ **ABL7RP1205** | 60 W | 5 A | 12 V ⎓ |
| ■ **ABL7RP4803** | 144 W | 3 A | 48 V ⎓ |




## Description

1 14 AWG (2.5 mm²) enclosed screw terminals for connection of the input voltage (single-phase N-L1, phase-to-phase L1-L2 *(1)*)
2 Protective glass flap
3 Input voltage status LED (orange).
4 Output DC voltage status LED (green).
5 Locking catch for the glass flap (sealable)
6 Clip-on marker label.
7 Output voltage adjustment potentiometer
8 14 AWG (2.5 mm²) enclosed screw terminal block for connection of the DC output voltage

*(1) 240 V ∿ nominal*

# Phaseo™ power supplies

## Regulated switch mode power supplies

### ABL7/ABL8 Optimum range

## Technical specifications

| Type of power supply | | | ABL7RP1205 | ABL7RP4803 | ABL8REM24030 | ABL8REM24050 |
|---|---|---|---|---|---|---|
| **Certifications** | | | cULus 508, cCSAus (CSA22.2 n950-1), File Class, TÜV 60950-1, CE, CTick, RoHS | | | |
| **Conformity to standards** | Safety | | IEC/EN 60950, IEC/EN 61496-1-2, SELV | | IEC/EN 60950, SELV | |
| | EMC | | EN 50081-1, IEC 61000-6-2 (EN 50082-2) | | | |
| **Input circuit** | | | | | | |
| **LED indication** | | | Orange LED | | | |
| **Input values** | Nominal voltage | **V** | 100 to 240 Vac compatible with 110 to 220 Vdc *(1)* | | 100 to 240 Vac compatible with 110 to 220 Vdc *(1)* | |
| | Limit voltage | **V** | 85 to 264 Vac compatible with 100 to 250 Vdc *(1)* | | 85 to 264 Vac single-phase compatible with 100 to 250 Vdc *(1)* | |
| | Current consumption $U_{In}$ = 240 V⏦ | **A** | 0.4 | 0.6 | 0.83 | 1.2 |
| | Current consumption $U_{In}$ = 100 V⏦ | **A** | 0.8 | 1 | 1.46 | 1.9 |
| | Permissible frequencies | **Hz** | 47 to 63 | | | |
| | Maximum inrush current | **A** | 30 | | | |
| | Power factor | | 0.98 approx. | | 0.65 approx. | |
| | Efficiency at nominal load | | > 85% | | | |
| | Dissipated power at nominal load | **W** | 10.6 | 25.4 | 12.7 | 21.2 |
| **Output circuit** | | | | | | |
| **LED indication** | | | Green LED | | | |
| **Nominal output values** | Voltage ($U_{Out}$) | **V** | 12 Vdc | 48 Vdc | 24 Vdc | |
| | Current | **A** | 5 | 3 | 3 | 5 |
| | Power | **W** | 60 | 144 | 72 | 120 |
| **Precision** | Output voltage | **V** | Adjustable from 12 to 14.4 Vdc | Adjustable from 48 to 57.6 Vdc | Adjustable from 24 to 28.8 Vdc | |
| | Line and load regulation | | ± 3% | | | |
| | Residual ripple - noise | **mV** | < 200 (peak-peak) | | | |
| **Holding time for I max** | $U_{In}$ = 240 V⏦ | **ms** | ≥ 20 | | ≥ 10 | |
| | $U_{In}$ = 100 V⏦ | **ms** | ≥ 20 | | ≥ 10 | |
| **Protection** | Against short circuits | | Permanent/automatic or manual restart | | Permanent/automatic restart | |
| | Against overloads | | 1.1 In | | | |
| | Against overvoltages | | Tripping if $U_{Out}$ > 1.5 Un | | | |
| | Against undervoltages | | Tripping if $U_{Out}$ < 0.8 Un | | | |
| **Operating and environmental specifications** | | | | | | |
| **Connections** | Input | **AWG ($mm^2$)** | 26 to 14 (2 x 0.14 to 2.5) screw terminals + ground | | | |
| | Output | **AWG ($mm^2$)** | 26 to 14 (2 x 0.14 to 2.5) screw terminals + ground, multiple output, depending on model | | | |
| **Mounting** | On DIN rail | **in (mm)** | 1.38 x.30, 1.38 x.59 and 2.95x.30 (35 x 7.5, 35 x 15 and 75 x 7.5) | | | |
| **Operating position** | On vertical plane | | Vertical | | | |
| **Connections** | Series | | Possible | | | |
| | Parallel | | Possible | | | |
| **Degree of protection** | | | IP 20 conforming to IEC 60529 | | | |
| **Environment** | Operating temperature | **°F (°C)** | 32 to 140 derating from 122 °F (0 to +60 derating from 50 °C) | | | |
| | Storage temperature | **°F (°C)** | -13 to 158 °F (-25 to +70 °C) | | | |
| | Maximum relative humidity | | 95% without condensation or dripping water | | | |
| | Vibration per to EN 61131-2 | | 3 to 11.9 Hz, amplitude 0.14 in (3.5 mm); and 11.9 to 150 Hz, acceleration 2 g | | | |
| **Protection class according to VDE 0106 1** | | | Class I | | | |
| **Dielectric strength 50 and 60 Hz for 1 min** | Input/output | **V rms** | 3000 Vac | | | |
| | Input/ground | **V rms** | 3000 Vac | | | |
| | Output/ground (and output/output) | **V rms** | 500 Vac | | | |
| **Input fuse incorporated** | | | Yes (not interchangeable) | | | |
| **Emissions according to EN 61000-6-3** | | | EN 50081-1 (generic) | | | |
| | Conducted/radiated | | EN 55011/EN 55022 cl. B | | | |
| **Immunity according to EN 61000-6-2** | | | IEC 61000-6-2 (generic) | | | |
| | Electrostatic discharge | | IEC/EN 61000-4-2 (6 kV contact/8 kV air) | | | |
| | Radiated electromagnetic fields | | IEC/EN 61000-4-3 level 3 (10 V/m) | | | |
| | Induced electromagnetic fields | | IEC/EN 61000-4-6 level 3 (10 V/m) | | | |
| | Rapid transients | | EN 61000-4-4 level 3 (2 kV) | | | |
| | Surges | | IEC/EN 61000-4-5 (2 kV) | | | |
| | Primary outages | | IEC/EN 61000-4-11 (voltage dips and interruptions) | | | |

*(1) DC input voltages are not included in cULus, cCSAus, and TÜV certifications.*

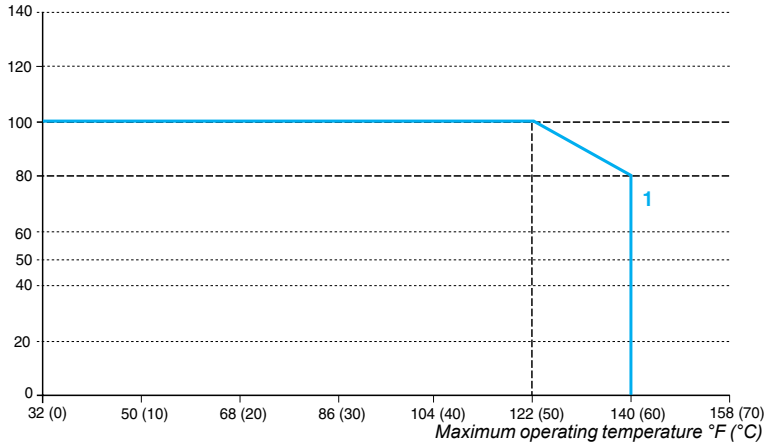
## Output specifications

### Derating

The ambient temperature is a determining factor which limits the power that an electronic power supply can deliver continuously. Excessively high temperatures around the electronic components significantly reduce their life.

The nominal ambient temperature for the Optimum range Phaseo™ power supplies is 122 °F (50 °C). Above this temperature, derating is necessary up to a maximum temperature of 140 °F (60 °C).

The graph below shows the power as a percentage of the nominal power that the power supply can deliver continuously, depending on the ambient temperature.



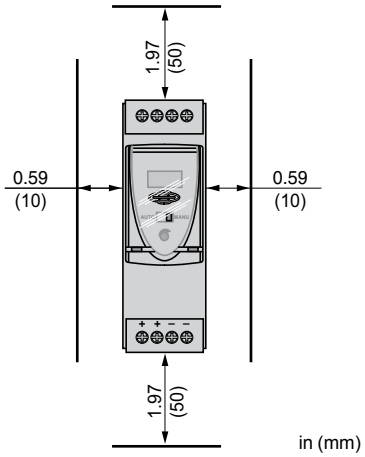

*1 ABL8REM, ABL7RP mounted vertically*

Derating should be considered in extreme operating conditions:

- Intensive operation (output current permanently close to the nominal current, combined with a high ambient temperature)
- Output voltage set above 24 Vdc (to compensate for line voltage drops, for example)
- Parallel connection to increase the total power

### General rules

| | |
|---|---|
| Intensive operation | See derating in above graph.<br>Example for ABL8REM:<br>■ Without derating, from 32 to 122 °F (0 to 50 °C)<br>■ Derating of nominal current by 2% per additional °C, up to 60 °C. See chart. |
| Rise in output voltage | The nominal power is mounted.<br>Increasing the output voltage means that the current delivered must be reduced. |
| Parallel connection to increase the total power | The total power is equal to the sum of the power supplies used, but the maximum ambient temperature for operation is 122 °F (50 °C).<br>To improve heat dissipation, the power supplies must not be in contact with each other. |



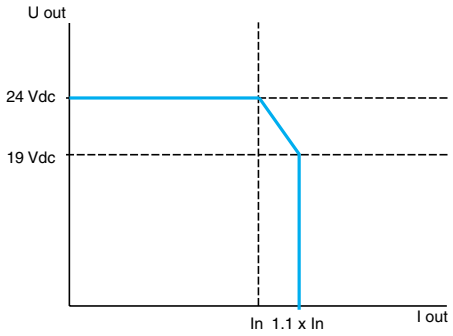

In all cases, there must be adequate convection around the products to assist cooling. There must be sufficient clearance around the Optimum range Phaseo power supplies:

- 1.97 inches (50 mm) above and below
- 0.59 inches (15 mm) on the sides

## Output specifications *(continued)*

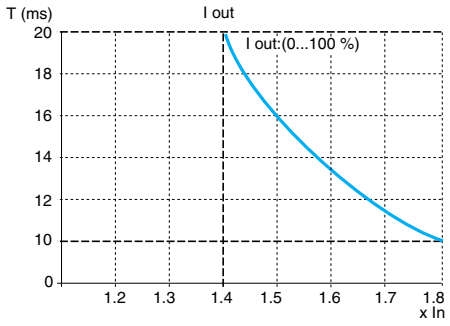
### Load limit

**ABL8REM240●● / ABL7RP●●●●**



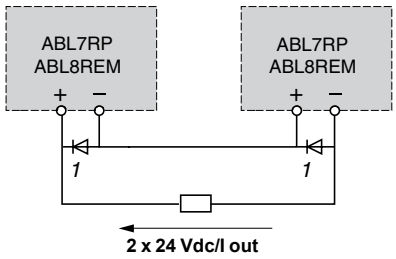

### Temporary overloads

**ABL8REM / ABL7RP**

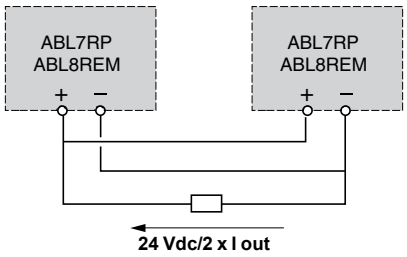



### Series or parallel connection

**Series connection**




**Parallel connection**




*1 Two shottky diodes, Imin = power supply In, and Vmin = 50 V*

| Family | Series | Parallel |
|---|---|---|
| **ABL8REM / 7RP** | 2 products max. | 2 products max. |

*Series or parallel connection is recommended only for products with identical catalog numbers.*

# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL7/ABL8 Optimum range

## Selection of protection for the power supply primary

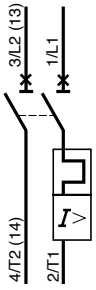
| Type of line supply (Single Phase) | 100 V ∼ | | | 240 V ∼ | | |
|---|---|---|---|---|---|---|
| **Type of protection** | **Thermal-magnetic circuit-breaker** | | **Class CC fuse** | **Thermal-magnetic circuit-breaker** | | **Class CC fuse** |
| | GB2 (IEC) | C60N (IEC) C60N (UL) | | GB2 (IEC) | C60N (IEC) C60N (UL) | |
| **ABL7RP1205** | GB2 ●●06 *(1)* | 24580 24516 | 2 A | GB2 ●●06 *(1)* | 24580 24516 | 1 A |
| **ABL8REM24030** | GB2 ●●07 *(1)* | 24581 24517 | 2 A | GB2 ●●06 *(1)* | 24580 24516 | 1 A |
| **ABL8REM24050** | GB2 ●●07 *(1)* | 24581 24517 | 2 A | GB2 ●●06 *(1)* | 24580 24516 | 1 A |
| **ABL7RP4803** | GB2 ●●07 *(1)* | 24581 24517 | 2 A | GB2 ●●06 *(1)* | 24580 24516 | 1 A |

*(1) Complete the reference by replacing ●● with*
**CB** for single-pole circuit-breaker with magnetic trip threshold 12 to 16 In
**CD** for single-pole + neutral circuit-breaker with magnetic trip threshold 12 to 16 In
**DB** for 2-pole circuit-breaker with magnetic trip threshold 12 to 16 In
**CS** for single-pole circuit-breaker with magnetic trip threshold 5 to 7 In

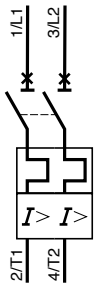
## Wiring for GB2●●0● thermal-magnetic circuit protectors

**GB2CB●●**


**GB2CD●●**




**GB2D●●**




**GB2CS●●**

# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL7/ABL8 Optimum range

## Regulated switch mode power supplies: Phaseo™ Optimum range

*ABL7RP1205/4803*

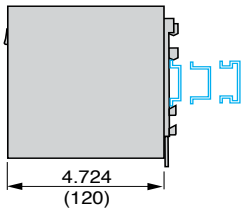
*ABL8REM24030*

*ABL8REM24050*

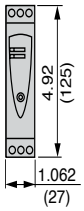
| Input voltage | Secondary | | | Reset | Conforming to standard CEI/EN 61000-3-2 | Reference | Weight lbs (kg) |
|---|---|---|---|---|---|---|---|
| | Output voltage | Nominal power | Nominal current | | | | |
| **Single-phase (N-L1) or phase-to-phase (L1-L2) connection** | | | | | | | |
| **100 to 240 V** ∿ - 15%, + 10% 50/60 Hz | 12 V ⎓ | 60 W | 5 A | Automatic or manual | Yes | **ABL7RP1205** | 2.37 (1.08) |
| | 24 V ⎓ | 72 W | 3 A | Automatic | No | **ABL8REM24030** | 1.21 (0.55) |
| | | 120 W | 5 A | Automatic | No | **ABL8REM24050** | 1.75 (0.79) |
| | 48 V ⎓ | 144 W | 2.5 A | Automatic or manual | Yes | **ABL7RP4803** | 2.37 (1.08) |

## Approximate dimensions

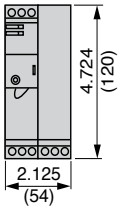
**ABL7RP●●●●**
**Common side view**
**Mounted on 35 and 75 mm DIN rails**



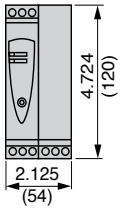

**ABL8REM24030**




**ABL7RP1205/4803**



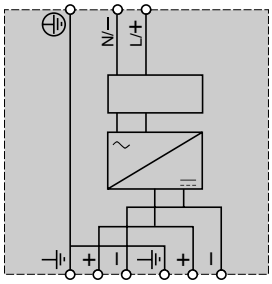

**ABL8REM24050**



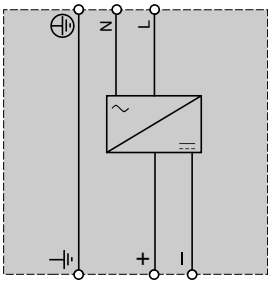

in (mm)

## Wiring diagrams

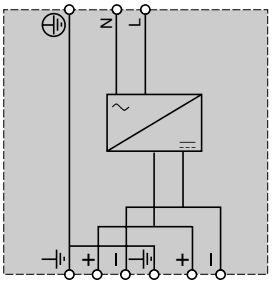
**ABL7RP1205 / 48030**




**ABL8REM24030**




**ABL8REM24050**



# Phaseo™ power supplies

## Regulated switch mode power supplies

### ABL8 Universal range

ABL8RPS24050

Modicon™ M340™ automation platform

## Switch mode power supplies: Universal range

The **ABL8RPS/RPM/WPS** power supply offer is designed to provide the DC voltage necessary for the control circuits of automation system equipment. Comprised of six products, this range meets the needs encountered in industrial and commercial applications. These compact electronic switch mode power supplies provide a quality of output current that is suitable for the loads supplied and compatible with the Modicon™ M340™, Premium™ and Quantum™ ranges. When used with additional function modules, they help ensure continuity of service in the event of network power outages or application malfunctions. Clear guidelines are given on selecting the function modules and upstream protection devices which are often used with them, and thus a comprehensive solution is provided that can be used in total safety.

The Universal range of Phaseo™ power supplies must be connected in phase-to-neutral or phase-to-phase for **ABL8RPS/RPM**, and in three-phase for **ABL8WPS**. They deliver a voltage that is precise to 3%, whatever the load and whatever the type of line supply, within the ranges:

- 85 to 132 V ∼ and 170 to 550 V ∼ for **ABL8RPS**
- 85 to 132 V ∼ and 170 to 264 V ∼ for **ABL8RPM**
- 340 to 550 V ∼ for **ABL8WPS**

Their very wide input voltage range allows a considerable reduction of parts held in stock and offers a distinct advantage in terms of machine design.

Conforming to IEC standards and UL and CSA certified, they are suitable for global use.

**ABL8RPS/RPM** and **ABL8WPS** power supplies are all equipped with a harmonic filter, ensuring compliance with standard IEC/EN 61000-3-2 concerning harmonic pollution.

All the Universal range of Phaseo power supplies have protection devices to help ensure optimum performance of the automation system. Their operating mode can be configured as required by the user:

- □ **Manual reset protection mode:** Priority is given to the voltage so as to guarantee the PLC logic states and nominal operation of the supplied actuators.
- □ **Automatic reset protection mode:** Priority is given to the current to allow troubleshooting for example, or to help ensure continuity of service until the arrival of the maintenance team.

The Universal range of Phaseo power supplies also has a power reserve, allowing them to deliver a current of 1.5 In at regular intervals. This avoids the need to oversize the power supply if the device has a high inrush current, while ensuring optimum performance of the automation system.

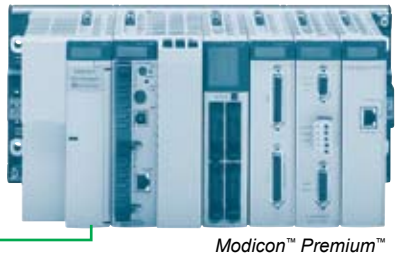
The diagnostics for the Universal range of Phaseo power supplies are available on the front of the device via LEDs ($U_{Out}$ and $I_{Out}$) and via a dry contact relay.

All products are equipped with an output voltage adjustment potentiometer in order to be able to compensate for any line voltage drops in installations with long connection cable runs.

These power supplies are designed for direct mounting on a 35 mm DIN rail.

# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL8 Universal range

*ABL8WPS24200*



*Modicon™ Premium™ automation platform*

## Switch mode power supplies: Universal range *(continued)*

There are four references available in the Universal range of Phaseo™ power supplies for phase-to-neutral or phase-to-phase connection:

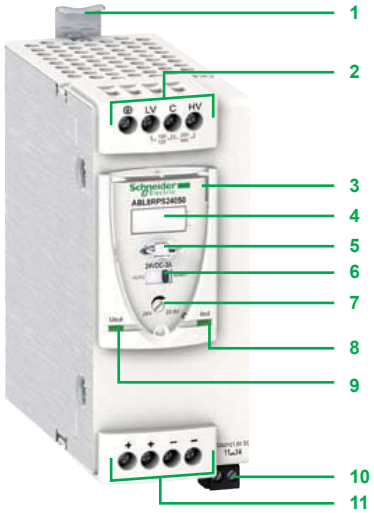
| | | | |
|---|---|---|---|
| ■ **ABL8RPS24030** | 72 W | 3 A | 24 V ⎓ |
| ■ **ABL8RPS24050** | 120 W | 5 A | 24 V ⎓ |
| ■ **ABL8RPS24100** | 240 W | 10 A | 24 V ⎓ |
| ■ **ABL8RPM24200** | 480 W | 20 A | 24 V ⎓ |

The Universal range of Phaseo power supplies also features two references for three-phase connection:

| | | | |
|---|---|---|---|
| ■ **ABL8WPS24200** | 480 W | 20 A | 24 V ⎓ |
| ■ **ABL8WPS24400** | 960 W | 40 A | 24 V ⎓ |

A range of function modules also allows functions to be added to the Universal range of Phaseo power supplies so as to help ensure continuity of service:

- □ Buffer module or Battery Control modules combined with batteries to help ensure continuity of service in the event of a network power outage
- □ Redundancy module to meet the most demanding requirements for continuity of service even if the power supply fails
- □ Converter modules delivering nominal voltages of 5 and 12 V ⎓ from the 24 V ⎓ output of the Universal range of Phaseo power supplies




## Description

**Universal range of power supplies**

The Universal range of Phaseo regulated switch mode power supplies, **ABL8RPS24●●0/RPM24200/WPS24●00**, is comprised of:

1 Spring clip for 35 mm DIN rail
2 12 AWG (4 mm²) enclosed screw terminals for connection of the AC voltage (single-phase, phase-to-phase or three-phase connection)
3 Protective glass flap
4 Clip-on marker label
5 Locking catch for the glass flap (sealable)
6 Protection mode selector
7 Output voltage adjustment potentiometer
8 Output voltage status LED (green and red) *(1)*
9 Output current status LED (green, red and orange)
10 Screw terminals for connection of the diagnostic relay contact, except **ABL8RPS24030**
11 12 AWG (4 mm²) [8 AWG (10 mm²) on **ABL8WPS24●00** and **ABL8RPM24200**] enclosed screw terminals for connection of the DC output voltage

*(1) See "LED Descriptions" on page 28*

# Phaseo™ power supplies
## Regulated switch mode power supplies
## ABL8 Universal range

## Technical specifications

| Type of power supply | | | ABL8RPS24030 | ABL8RPS24050 | ABL8RPS24100 | ABL8RPM24200 |
|---|---|---|---|---|---|---|
| **Certifications** | | | CB scheme EN 60950-1, cULus 508, cCSAus, CE, RoHS | | | |
| **Conformity to standards** | Safety | | IEC/EN 60950-1, EN 61204, SELV | | | |
| | EMC | | EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61204-3 | | | |
| **Input circuit** | | | | | | |
| **Input values phase-to-neutral (N-L1) or phase-to-phase (L1-L2)** | Nominal voltage | V | 100 to 120 / 200 to 500 Vac | | | 100 to 120 / 200 to 240 Vac |
| | Limit voltage | V | 85 to 132 / 170 to 550 Vac | | | 85 to 132 / 170 to 264 Vac |
| | Permissible frequencies | Hz | 47 to 63 | | | |
| | Maximum inrush current | A | 30 for 2 ms max. | | | |
| | Power factor | | 0.59 at 120 Vac / 0.51 at 240 Vac | | 0.69 at 120 Vac / 0.68 at 240 Vac | |
| | Efficiency at nominal load | | > 87 % | | | > 88 % |
| | Dissipated power at nominal load | W | 7.8 | 15.5 | 31 | 57.6 |
| **Anti-harmonic filtering** | | | Yes, via integrated PFC passive filter | | | |
| **Output circuit** | | | | | | |
| **Compatibility with function modules** | | | Buffer, battery and battery control unit, and redundancy | | | |
| **Diagnostics** | LEDs on front panel | | Current (green, orange, and red), voltage (green, red, and off) | | | |
| | Relay | | – | Relay closed $U_{Out}$ > 21.6 V contact 230 Vac, 0.5 A max; 24 Vdc, 5 mA min | | |
| **Nominal output values** | Nominal output voltage ($U_{Out}$) | V | 24 Vdc | | | |
| | Current | A | 3 | 5 | 10 | 20 |
| | Power | W | 72 | 120 | 240 | 480 |
| **Permissible temporary inrush current (boost)** | | A | 1.5 In for 4 s maximum | | | |
| **Precision** | Nominal output voltage ($U_{Out}$) | V | Adjustable 24 to 28.8 Vdc | | | |
| | Line and load regulation | | 1 % to 3 % | | | |
| | Residual ripple - noise | mV | < 200 (peak-peak) | | | |
| **Holding time for I max.** | $U_{In}$ = 100 Vac | ms | ⩾ 20 | | | |
| | $U_{In}$ = 240 Vac | ms | ⩾ 40 | | | |
| | $U_{In}$ = 400 Vac | ms | ⩾ 120 | | | – |
| **Protection** | Against short circuits | | Permanent, automatic or manual restart | | | |
| | Against overloads | | < 1.10 In (after "boost" function) | | | |
| | Against overvoltages | V | 30 to 32 Vdc | | | |
| | Against undervoltages | V | Tripping if $U_{Out}$ < 21.6 (in manual mode) | | | |
| | Thermal | | Yes | | | |

### LED Descriptions

| U out | | | 11 / 14 |
|---|---|---|---|
| ☀ | ☺ | 21.6 V ⩽ Uout | — |
| ☀ | ☹ | 7 V ⩽ Uout < 21.6 V | / |
| ▭ | 😐 | Uout < 7 V | / |

| I out | | |
|---|---|---|
| ☀ | ☺ | Iout ⩽ In |
| ☀ | 😐 | In ⩽ Iout |
| ☀ | ☹ | **Power supply shut off** 0 V / 0 A **State of protection** |

▭ OFF
☀/☺ Green
☀/😐 Orange
☀/☹ Red

## Operating and environmental specifications

| Type of power supply | | | ABL8RPS24030 | ABL8RPS24050 | ABL8RPS24100 | ABL8RPM24200 |
|---|---|---|---|---|---|---|
| Connections | Input | AWG (mm²) | 22 to 12 (2 x 0.5 to 4) screw terminals + ground terminal | | | |
| | Output | AWG (mm²) | 24 to 10 (4 x 0.5 to 4) screw terminals + ground terminal | | | |
| | Diagnostic relay | AWG (mm²) | – | 14 (2 x 2.5) removable screw terminal block | | |
| Mounting | On DIN rail | in/mm | 1.38 x 0.30 and 1.38 x 0.59 (35 x 7.5 and 35 x 15) | | | |
| Operating position | | | Vertical | | | |
| Connections | Series | | Possible | | | |
| | Parallel | | Possible | | | |
| Degree of protection | | | IP 20 conforming to IEC 60529 | | | |
| Environment | Operating temperature | °F (°C) | -13 to 140 derating from 122 °F (-25 to +60 derating from 50 °C) | | | |
| | Storage temperature | °F (°C) | -40 to158 °F (-40 to +70 °C) | | | |
| | Maximum relative humidity | | 90% during operation, 95% in storage | | | |
| | Vibration per to EN 61131-2 | | 3 to 11.9 Hz, amplitude 0.14 in (3.5 mm); and 11.9 to 150 Hz, acceleration 2 g | | | |
| Protection class | According to VDE 0106 1 | | Class I | | | |
| Dielectric strength 50 Hz for 1 min | Input/output | V rms | 4000 Vac | | | 3000 Vac |
| | Input/ground | V rms | 3500 Vac | | | 2500 Vac |
| | Output/ground | V rms | 500 Vac | | | |
| Input fuse incorporated | | | No | | | |
| Emissions according to EN 61000-6-3 | Radiation | | EN 55022 Class B and GL levels | | | |
| | Conducted on the power line | | EN 55022 Class B and GL levels | | | |
| | Harmonic currents | | IEC/EN 61000-3-2 | | | |
| Immunity according to EN 61000-6-2 and GL | Electrostatic discharge | | IEC/EN 61000-4-2 (6 kV contact/8 kV air) | | | |
| | Radiated electromagnetic fields | | IEC/EN 61000-4-3 level 3 (10 V/m) | | | |
| | Induced electromagnetic fields | | IEC/EN 61000-4-6 level 3 (10 V/m) | | | |
| | Rapid transients | | IEC/EN 61000-4-4 (4 kV) | | | |
| | Surges | | IEC/EN 61000-4-5 (2 kV) | | | |
| | Primary outages | | IEC/EN 61000-4-11 (voltage dips and interruptions) | | | |

## Technical specifications

| Type of power supply | | | ABL8WPS24200 | ABL8WPS24400 |
|---|---|---|---|---|
| **Certifications** | | | CB scheme EN 60950-1, cULus 508, cCSAus, CE, RoHS | |
| **Conformity to standards** | Safety | | EN 60950-1, EN 61204, SELV | |
| | EMC | | EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61204-3 | |
| **Input circuit** | | | | |
| **LED indication** | | | – | |
| **Input values 3 phases (L1-L2-L3)** | Nominal values | **V** | 380-500 Vac | |
| | Permissible values | **V** | 320-550 Vac | |
| | Permissible frequencies | **Hz** | 47 to 63 | |
| | Maximum inrush current | **A** | 25 for 2 ms max. | |
| | Power factor | | 0.65 | 0.85 |
| | Efficiency at nominal load | | > 92% | |
| | Dissipated power at nominal load | **W** | 38.4 | 76.8 |
| **Anti-harmonic filtering** | | | Yes, via integrated PFC passive filter | |
| **Operating mode in the event of phase failure** | | **V** | Operation possible for a few minutes then protection trips | |
| **Output circuit** | | | | |
| **Compatibility with function modules** | | | Buffer, battery and battery control unit, and redundancy | |
| **Diagnostics** | LEDs on front panel | | Current (green, orange, and red), voltage (green, red, and off) | |
| | Relay | | Closed relay $U_{Out}$ > 21.6 V, contact 230 Vac, 0.5 A max; 24 Vdc, 5 mA min | |
| **Nominal output values** | Output voltage ($U_{Out}$) | **V** | 24 Vdc | |
| | Current | **A** | 0 to 20 | 0 to 40 |
| | Power | **W** | 480 | 960 |
| **Permissible temporary inrush current (boost)** | | **A** | 1.5 In for 4 s maximum | |
| **Precision** | Output voltage ($U_{Out}$) | **V** | Adjustable 24 to 28.8 Vdc | |
| | Line and load regulation | | 1% to 3% | |
| | Residual ripple - noise | **mV** | < 200 (peak-peak) | |
| **Holding time for I max** | $U_{In}$ = 400 Vac | **ms** | ⩾ 18 | ⩾ 14 |
| **Protection** | Against short circuits | | Permanent, automatic or manual restart | |
| | Against overloads | | < 1.10 In (after "boost" function) | |
| | Against overvoltages | **V** | 30 to 32 Vdc | |
| | Against undervoltages | **V** | Tripping if $U_{Out}$ < 21.6 (in manual mode) | |
| | Thermal | | Yes | |
| **Operating and environmental specifications** | | | | |
| **Connections** | Input | **AWG ($mm^2$)** | 22–12 (3 x 0.5 to 4) screw terminals + ground | |
| | Output | **AWG ($mm^2$)** | 22–8 (4 x 0.5 to 10) screw terminals | |
| | Diagnostic relay | **AWG ($mm^2$)** | 14 (2 x 2.5) removable screw terminal block | |
| **Mounting** | On DIN rail | **in (mm)** | 1.38 x 0.30 and 1.38 x 0.59 (35 x 7.5 and 35 x 15) | |
| **Operating position** | | | Vertical | |
| **Connections** | Series | | Possible | |
| | Parallel | | Possible | |
| **Degree of protection** | | | IP 20 conforming to IEC 60529 | |
| **Environment** | Operating temperature | **°F (°C)** | -13 to 140 derating from 122 °F (-25 to +60 derating from 50°C) | |
| | Storage temperature | **°F (°C)** | -40 to 158 °F (-40 to +70 °C) | |
| | Maximum relative humidity | | 90% during operation, 95% in storage | |
| | Vibration per to EN 61131-2 | | 3 to 11.9 Hz, amplitude 0.14 in (3.5 mm); and 11.9 to150 Hz, acceleration 2 g | |
| **Protection class according to VDE 0106 1** | | | Class I | |
| **Dielectric strength 50 Hz for 1 min** | Input/output | **V rms** | 4000 Vac | |
| | Input/ground | **V rms** | 3500 Vac | |
| | Output/ground | **V rms** | 500 Vac | |
| **Input fuse incorporated** | | | No | |
| **Emissions according to EN 61000-6-3** | Radiation | | EN 55022 Class B and GL levels | |
| | Conducted on the power line | | EN 55022 Class B and GL levels | |
| | Harmonic currents | | IEC/EN 61000-3-2 | |
| **Immunity according to EN 61000-6-2 and GL** | Electrostatic discharge | | IEC/EN 61000-4-2 (6 kV contact/8 kV air) | |
| | Radiated electromagnetic fields | | IEC/EN 61000-4-3 level 3 (10 V/m) | |
| | Induced electromagnetic fields | | IEC/EN 61000-4-6 level 3 (10 V/m) | |
| | Rapid transients | | IEC/EN 61000-4-4 (4 kV) | |
| | Surges | | IEC/EN 61000-4-5 (1 kV) | |
| | Primary outages | | IEC/EN 61000-4-11 (voltage dips and interruptions) | |

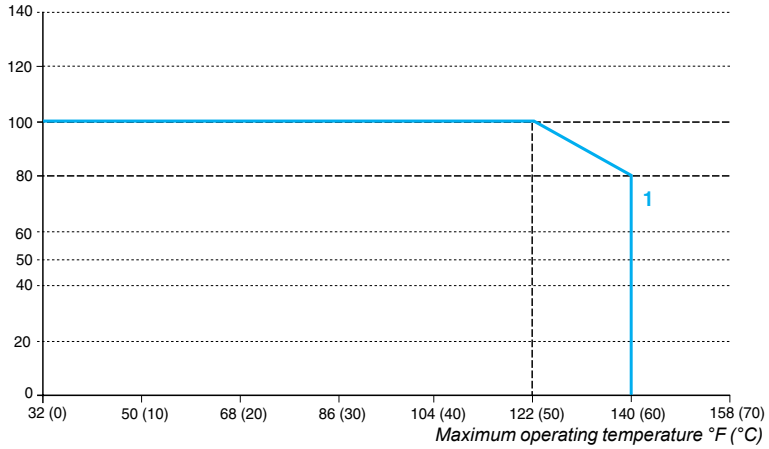
## Output specifications

### Derating

The ambient temperature is a determining factor which limits the power that an electronic power supply can deliver continuously. Excessively high temperatures around the electronic components significantly reduce their life.

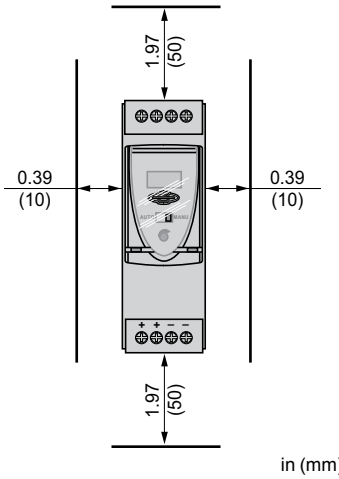
The nominal ambient temperature for the Universal range of Phaseo™ power supplies is 122 °F (50 °C). Above this temperature, derating is necessary up to a maximum temperature of 140 °F (60 °C).

The graph below shows the power as a percentage of the nominal power that the power supply can deliver continuously, depending on the ambient temperature.




*1 ABL8RPM, ABL8RPS, ABL8WPS mounted vertically*

Derating should be considered in extreme operating conditions:
- Intensive operation (output current permanently close to the nominal current, combined with a high ambient temperature)
- Output voltage set above 24 Vdc (to compensate for line voltage drops, for example)
- Parallel connection to increase the total power




in (mm)

| General rules | |
|---|---|
| Intensive operation | See derating in above graph.<br>Example for ABL8RPS:<br>■ Without derating, from 32 to 122 °F (0 to 50 °C)<br>■ Derating of nominal current by 2% per additional °C, up to 60 °C. See chart. |
| Rise in output voltage | The nominal power is mounted.<br>Increasing the output voltage means that the current delivered must be reduced. |
| Mounting | To allow heat dissipation, the power supplies must not be in contact with each other. |

In all cases, there must be adequate convection around the products to assist cooling. There must be sufficient clearance around the Universal range Phaseo power supplies:
- 1.97 inches (50 mm) above and below
- 0.39 inches (10 mm) on the sides

## Output specifications *(continued)*

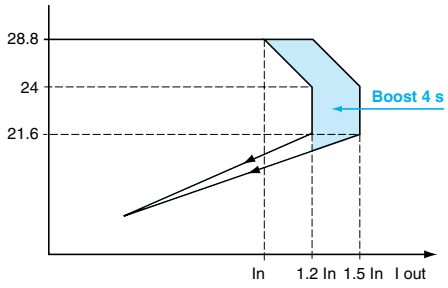
**Behavior when overloads occur:**

■ Automatic reset protection mode (current limiting): If the output current exceeds approximately 1.2 In, the output current is limited to this value. The value of the output voltage can then be less than 21 V but the diagnostic relay opens, allowing the anomaly to be fed back to the automation system. This prevents feedback of any undefined logic state. On elimination of the overload, the output voltage reverts to its preset value.
■ Manual reset protection mode (undervoltage detection): If the output current exceeds approximately 1.2 In, the power supply stops completely before the output voltage drops below 21 V and no longer delivers any current. The detected fault is stored in memory as long as voltage is present at the power supply primary. After the primary is de-energized for a few seconds, the power supply will become operational again if the cause of the detected fault has been removed.

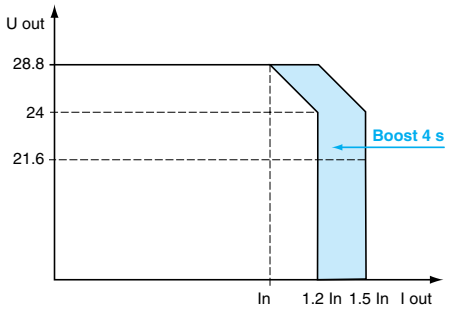
*In both these modes, any overload of less than 1.5 In and lasting less than 4 s will be absorbed by the "boost" circuit, and the voltage delivered will stay within the specified limits (adjustment voltage +/- 3%).*

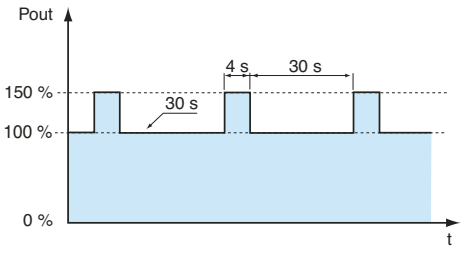
## Load limit

**Manual reset protection mode**
**ABL8RPM24200 / ABL8RPS24●●● / ABL8WPS24●●●**




**Automatic reset protection mode**
**ABL8RPM24200 / ABL8RPS24●●● / ABL8WPS24●●●**




## "Boost" repeat accuracy

The **ABL8RPS / RPM / WPS** Universal range of Phaseo™ power supplies has a power reserve, allowing them to supply the application with energy up to 1.5 times the nominal current at the intervals illustrated by the graph to the left.

The "boost" amplitude and repeat accuracy depend on:
■ Overload duration
■ Overload intensity
■ Period between each consumption peak

When the power supply can no longer cope (repeated overloads, overload duration > 4 seconds, power rating > 150% of nominal power) the integrated protection trips.

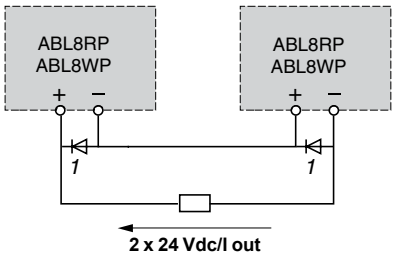
## Behavior in the event of phase failure on 3-phase power supplies

The **ABL8WPS24●00** Universal range of Phaseo power supplies are capable of starting and delivering a nominal current and voltage for a few minutes when failure of one phase occurs. Their protection (thermal) then trips and they are reset automatically or manually, depending upon the operator's presetting.

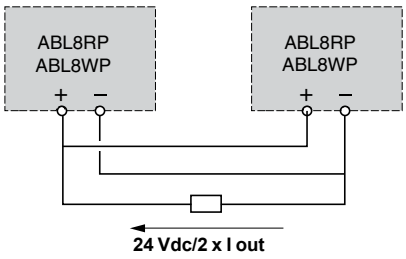
## Output specifications *(continued)*

**Series or parallel connection**

**Series connection**




**Parallel connection**




| Family | Series | Parallel |
|---|---|---|
| **ABL8RPS / 8RPM / 8WPS** | 2 products max. | 2 products max. |

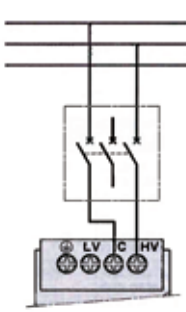
***Note:*** *Series or parallel connection is only recommended for products with identical catalog numbers. For better availability, the power supplies can also be connected in parallel using the ABL8RED24400 Redundancy module.*

*1 Two shottky diodes, Imin = power supply In, and Vmin = 50 V*

## Selection of the protections on the power supply primary circuit

| | | ∼ 115 V | | | | ∼ 230 V | | | | ∼ 400 V | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ABL** | | **IEC** | | **UL / CSA** *(2)* | | **IEC** | | **UL / CSA** *(2)* | | **IEC** | | **UL / CSA** *(2)* |
| **8RPS24030** | GB2/GV2 | GB2 CD07 | 2 A (8 x 32) | – | 2 A (8 x 32) | GB2 CD07 | 2 A (8 x 32) | – | 2 A (8 x 32) | GV2 RT06 *(1)* | 2 A (10,3 x 38,1) | 2 A (10,3 x 38,1) |
| | C60N | 2 A C curve | | 24443 | | 2 A C curve | | 24443 | | – | | |
| **8RPS24050** | GB2/GV2 | GB2 CD08 | 4 A (8 x 32) | – | 4 A (8 x 32) | GB2 CD07 | 2 A (8 x 32) | – | 2 A (8 x 32) | GV2 RT06 *(1)* | 2 A (10,3 x 38,1) | 2 A (10,3 x 38,1) |
| | C60N | 3 A C curve | | 24444 | | 2 A C curve | | 24443 | | – | | |
| **8RPS24100** | GB2/GV2 | GB2 CD12 | 6 A (8 x 32) | – | 6 A (8 x 32) | GB2 CD08 | 4 A (8 x 32) | – | 4 A (8 x 32) | GV2 RT07 *(1)* | 4 A (10,3 x 38,1) | 4 A (10,3 x 38,1) |
| | C60N | 6 A C curve | | 24447 | | 3 A C curve | | 24444 | | – | | |
| **8RPM24200** | GB2/GV2 | GB2 CD16 | 10 A (8 x 32) | – | 10 A (8 x 32) | GB2 CD12 | 6 A (8 x 32) | – | 6 A (8 x 32) | – | – | – |
| | C60N | 10 A C curve | | 24449 | | 6 A C curve | | 24447 | | | | |
| **8WPS24200** | GB2/GV2 | – | – | – | – | – | – | – | – | GV2 ME06 | 2 A (10,3 x 38,1) | 2 A (10,3 x 38,1) |
| | C60N | | | | | | | | | – | | |
| **8WPS24400** | GB2/GV2 | – | – | – | – | – | – | – | – | GV2 ME07 | 4 A (10,3 x 38,1) | 4 A (10,3 x 38,1) |
| | C60N | | | | | | | | | – | | |

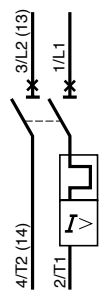
*(1)*



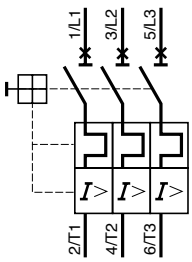

*(2) Conformance with UL508 and CSA 22.2 n°14.*

## Wiring diagrams

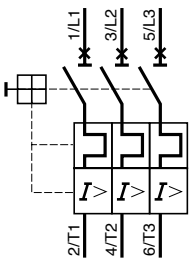
**GB2CD●●**




**GV2RT●●**




**GV2ME●●**




CB scheme EN60950-1, UL, cCSAus, CE, RoHS

# Phaseo™ power supplies
## Regulated switch mode power supplies
## ABL8 Universal range


ABL8RPS24050


ABL8RPM24200


ABL8WPS24200


ABL8BUF24400


ABL8BBU24200


ABL8RED24400

### Regulated switch mode power supplies: Phaseo™ Universal range

| Input voltage | Secondary: Output voltage | Secondary: Nominal power | Secondary: Nominal current | Reset | Conforming to standard IEC/EN 61000-3-2 | Reference | Weight lbs (kg) |
|---|---|---|---|---|---|---|---|
| **Single-phase** (N-L1) **or 2-phase** (L1-L2) **connection** | | | | | | | |
| **100 to 120 V - 200 to 500 V ∼** - 15%,+ 10% 50/60 Hz | 24 to 28.8 V ⎓ | 72 W | 3 A | Auto/man | Yes | **ABL8RPS24030** | 1.58 (0.72) |
| | | 120 W | 5 A | Auto/man | Yes | **ABL8RPS24050** | 1.88 (0.85) |
| | | 240 W | 10 A | Auto/man | Yes | **ABL8RPS24100** | 3.50 (1.59) |
| **100 to 120 V/200 to 240 V ∼** - 15%,+ 10% 50/60 Hz | 24 to 28.8 V ⎓ | 480 W | 20 A | Auto/man | Yes | **ABL8RPM24200** | 6.20 (2.81) |
| **Three-phase connection** (L1-L2-L3) | | | | | | | |
| **380 to 500 V ∼** ± 10 % 50/60 Hz | 24 to 28.8 V ⎓ | 480 W | 20 A | Auto/man | Yes | **ABL8WPS24200** | 4. 67 (2.12) |
| | | 960 W | 40 A | Auto/man | Yes | **ABL8WPS24400** | 7.00 (3.18) |

### Function modules for continuity of service *(1)*

| Function | Use | Designation | Reference | Weight lbs (kg) |
|---|---|---|---|---|
| **Continuity after a power outage** *(5)* | Holding time 100 ms at 40 A and 2 s at 1 A | Buffer module | **ABL8BUF24400** | 3.00 (1.36) |
| | Holding time 9 min at 40 A to 2 hrs at 1 A (depending on use with a Battery Control module-battery unit and load) *(2)* | Battery Control module 20 A output current | **ABL8BBU24200** | 2.37 (1.08) |
| | | Battery Control module 40 A output current | **ABL8BBU24400** | 2.63 (1.19) |
| | | 3.2 Ah battery module *(3)* | **ABL8BPK24A03** | 10.69 (4.85) |
| | | 7 Ah battery module *(3)* | **ABL8BPK24A03** | 16.98 (7.70) |
| | | 12 Ah battery module *(3)* | **ABL8BPK24A12** | 25.35 (11.50) |
| **Continuity after a malfunction** *(6)* | Paralleling and redundancy of the power supply to help ensure uninterrupted operation of the application excluding AC line failures and application overloads | Redundancy module | **ABL8RED24400** | 1.27 (0.58) |

### DC/DC converters *(1) (7)*

| Primary *(4)*: Input voltage | Primary: Universal range power supply module output current | Secondary: Output voltage | Secondary: Nominal current | Reference | Weight lbs (kg) |
|---|---|---|---|---|---|
| **24 V** ⎓ - 9%, + 24% | 2.2 A | 5 to 6.5 V ⎓ | 6 A | **ABL8DCC05060** | 1.25 (0.57) |
| | 1.7 A | 7 to 15 V ⎓ | 2 A | **ABL8DCC12020** | 1.22 (0.55) |

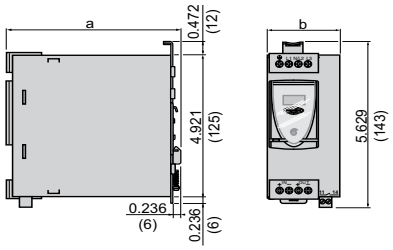
### Separate and replacement parts

| Designation | Use | Composition | Reference | Weight lbs (kg) |
|---|---|---|---|---|
| **Fuse assemblies** | For ABL8BKP24A●● Battery | 4 x 20 A and 6 x 30 A | **ABL8FUS02** | – |
| **Clip-on marker labels** | All products except ABL8PRP24100 | Order in multiples of 100 | **LAD90** | 0.066 (0.030) |
| | ABL8PRP24100 selective Protection Module | Order in multiples of 22 | **ASI20MACC5** | – |
| **DIN rail mounting kit** | ABL8BPK2403 Battery Module | – | **ABL1A02** | – |
| **Cables** | Connection cable between ABL8BBU and PC for updating the software | RS232 3m | **SR2CBL01** | 0.330 (0.150) |
| | | USB 3m | **SR2USB01** | 0.330 (0.150) |
| **EEPROM memory** | Backup and duplication of ABL8 BBU24●00 battery control module parameters | – | **SR2MEM02** | 0.022 (0.010) |

*(1) For use with Universal range of Phaseo power supplies.*
*(2) For table of compatibility of Battery Control module-battery unit with holding time depending on the load.*
*(3) Supplied with 20 or 30 A fuse depending on the model.*
*(4) Voltage from a 24 V ⎓ Universal range Phaseo power supply.*
*(5) For more information, see page 41.*
*(6) For more information, see page 46.*
*(7) For more information, see page 36.*

## Approximate dimensions

**ABL8RPS24●●● / ABL8RPM24200 / ABL8WPS24●●●**
**Common side view**

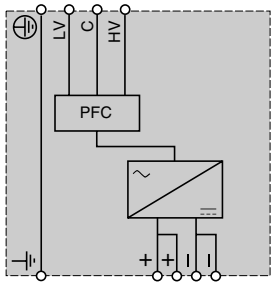



| Reference | a | b |
|---|---|---|
| ABL8RPS24030 | 4.48 (114) | 1.73 (44) |
| ABL8RPS24050 | 4.48 (114) | 2.20 (56) |
| ABL8RPS24100 | 5.27 (134) | 3.35 (85) |
| ABL8RPM24200 | 5.86 (149) | 5.71 (145) |
| ABL8WPS24200 | 5.86 (149) | 3.74 (95) |
| ABL8WPS24400 | 5.86 (149) | 6.50 (165) |
| | in (mm) | |

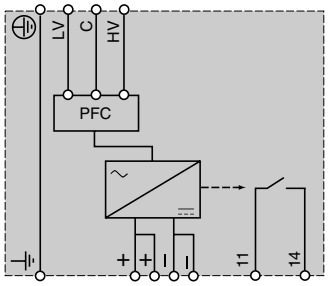
ABL8RPS, ABL8WPS, AND ABL7RPM:
cULus File E164867 CNN NMTR and NMTR7
cCSAus–File 238438 Class 3211-07, 5311-07, 5311-87
CB scheme EN 60950-1, CE, RoHS

## Wiring diagrams

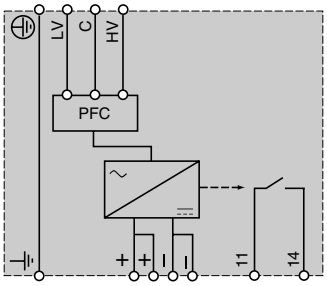
**ABL8RPS24030**



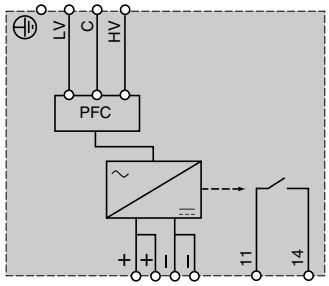

**ABL8RPS24050**



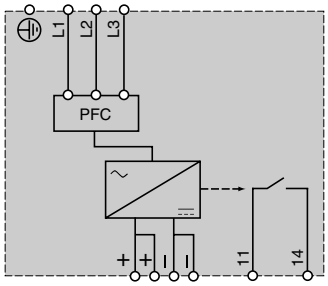

**ABL8RPS24100**



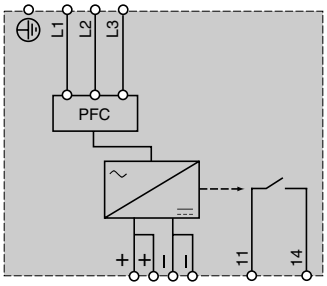

**ABL8RPM24200**




**ABL8WPS24200**

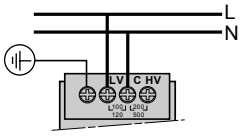



**ABL8WPS24400**

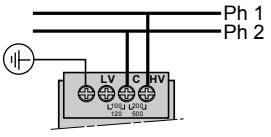



## Line supply wiring diagrams

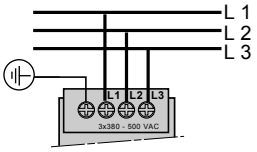
**Single-phase (L-N) 100 to 120 V**



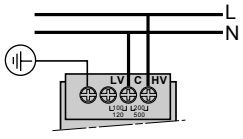

**Phase-to-phase (L1-L2) 200 to 500 V**




**Three-phase (L1-L2-L3) 3 x 380 to 500 V**




**Single-phase (L-N) 200 to 500 V**



# Phaseo™ power supplies

## Regulated switch mode power supplies

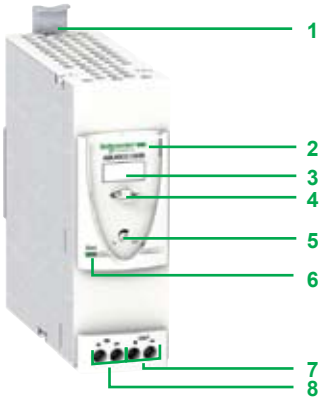
## Function modules (for Universal range): DC/DC Converter modules

### Supplying 5 V ⎓ and 12 V ⎓ auxiliary voltages

The Phaseo™ range offers modules that convert the 24 V ⎓ voltage to a 5 to 15 V ⎓ voltage.

These modules can be used for savings in the:
- Upstream protection normally used with the 5 to 15 V ⎓ power supply
- Connection to the line supply

There are two references available for this solution:
- **ABL8DCC05060 :** 5 to 6.5 V ⎓, 6 A converter module
- **ABL8DCC12020 :** 7 to 15 V ⎓, 2 A converter module




### Description

**5 V ⎓ and 12 V ⎓ Converter modules**

The **ABL8DCC●●0●0** DC/DC Converter modules include:
1. Spring clip for 35 mm DIN rail
2. Protective glass flap
3. Clip-on marker label
4. Locking catch for the glass flap (sealable)
5. Output voltage adjustment potentiometer
6. Output current status LED (green)
7. 12 AWG (4 mm²) enclosed screw terminals for connection of the 24 V ⎓ input voltage
8. 12 AWG (4 mm²) enclosed screw terminals for connection of the 5 V ⎓ or 12 V ⎓ output voltage

# Phaseo™ power supplies

## Regulated switch mode power supplies

### Function modules (for Universal range):
### DC/DC Converter modules

## Technical specifications

| Type of module | | | Converter | |
|---|---|---|---|---|
| | | | **ABL8DCC05060** | **ABL8DCC12020** |
| **Certifications** | | | CB scheme EN60950-1, UL, cCSAus, CE, RoHs | |
| **Conformity to standards** | Safety | | EN60950-1, EN61204 | |
| | EMC | | EN 50081-1, EN61000-6-2, EN61000-6-3 | |
| **Input circuit** | | | | |
| **Input values** | Nominal voltage | **V** | 24 to 28.8 Vdc | |
| | Limit voltage | **V** | 22 to 30 Vdc | |
| | Protection against reverse polarity | | Yes | |
| | Efficiency at nominal load | | > 80% | > 82% |
| | Dissipated power at nominal load | **W** | 7 | 4 |
| **Output circuit** | | | | |
| **Diagnostics** | LEDs on front panel | | Voltage > 4 Vdc (green) | Voltage > 6 Vdc (green) |
| **Nominal output values** | Output voltage ($U_{Out}$) | **V** | 5, Adjustable from 5 to 6.5 Vdc | 12, Adjustable from 7 to 15 Vdc |
| | Current | **A** | 6 | 2 |
| | Power | **W** | 30 | 24 |
| **Precision** | Line and load regulation | | 1 to 3% | |
| | Residual ripple - noise | **mV** | < 100 | |
| **Protection** | Against short circuits | | Permanent, automatic restart | |
| | Against overloads | | Permanent, automatic restart $I_{Out}$ > 1.1 In | |
| | Against overvoltages | **V** | Permanent, automatic restart $U_{Out}$ > 7.8 | Permanent, automatic restart $U_{Out}$ > 18 |
| | Thermal | | – | |
| **Operating and environmental specifications** | | | | |
| **Connections** | Input | **AWG ($mm^2$)** | 24 to 12 (2 x 0.5 to 4) | |
| | Output | **AWG ($mm^2$)** | 24 to 12 (2 x 0.5 to 4) | |
| **Mounting** | On DIN rail | **in (mm)** | 1.38 x0.30 and 1.38 x 0.59 (35 x 7.5 and 35 x 15) | |
| **Operating position** | | | Mounted vertically<br>Mounted horizontally with derating of power from 122 to 140 °F (50 to 60 °C)<br>40% maximum to 140 °F (60°C) | Vertical or horizontal position |
| **Degree of protection** | | | IP 20 conforming to IEC 60529 | |
| **Environment** | Temperature – Operation | **°F (°C)** | -40 to 185 °F (-40 to +85 °C) | |
| | Temperature – Storage | **°F (°C)** | -13 to 140 °F (-25 to +60 °C) | |
| | Relative humidity – Operation | | 90% | |
| | Relative humidity – Storage | | 95% | |
| | Vibration according to EN 61131-2 | | 3 to 11.9 Hz, amplitude 0.14 in (3.5 mm); 11.9 to 150 Hz, acceleration 2 g | |
| **Protection class** | | | Class III | |
| **Dielectric strength 50 Hz for 1 min** | Input/output | **V rms** | 500 Vac | |
| | Input/ground | **V rms** | 500 Vac | |
| | Output/ground | **V rms** | 500 Vac | |
| **Emissions according to EN 61000-6-3** | Conducted/radiated | | EN 55022 - Class B | |
| **Immunity according to EN 61000-6-2** | Electrostatic discharge | | IEC/EN 61000-4-2 (6 kV contact/8 kV air) | |
| | Radiated electromagnetic fields | | IEC/EN 61000-4-3 level 3 (10 V/m) | |
| | Induced electromagnetic fields | | IEC/EN 61000-4-6 level 3 (10 V/m) | |
| | Rapid transients | | IEC/EN 61000-4-4 level 3 (2 kV) | |
| | Surges | | IEC/EN 61000-4-5 level 2 (1 kV) | |

# Phaseo™ power supplies

## Regulated switch mode power supplies

### Function modules (for Universal range): DC/DC Converter modules

*ABL8DCC050060/12020*

## References

**DC/DC converters** (for use with Universal range of Phaseo power supplies)

| Primary *(1)* | | Secondary | | Reference | Weight |
|---|---|---|---|---|---|
| Input voltage | Universal range power supply module output current | Output voltage | Nominal current | | lbs (kg) |
| **24 V ⎓** - 9%,+ 24% | 2.2 A | 5 to 6.5 V ⎓ | 6 A | **ABL8DCC05060** | 0.661 (0.300) |
| | 1.7 A | 7 to 15 V ⎓ | 2 A | **ABL8DCC12020** | 0.661 (0.300) |

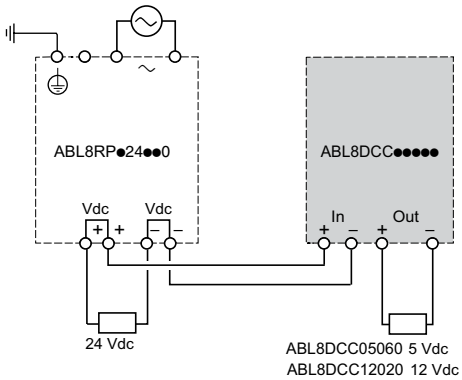
**Replacement part**

| Designation | Composition | Unit reference | Weight lbs (kg) |
|---|---|---|---|
| **Clip-on marker labels** | Order in multiples of 100 | **LAD90** | 0.661 (0.300) |

*(1) Voltage from a 24 V ⎓ Phaseo Universal range power supply*

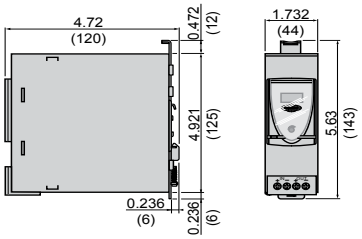
## Wiring diagram for use with a Universal range power supply

**With ABL8DCC●●0●0 Converter module**




## Approximate dimensions

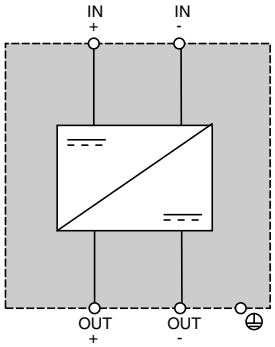
**ABL8DCC05060 and ABL8DCC12020 Converter modules**




in (mm)

## Wiring diagram

**ABL8DCC05060 and ABL8DCC12020 Converter modules**



# Phaseo™ power supplies
## Regulated switch mode power supplies
## Function modules (for Universal range): Buffer modules and Battery Control modules

## Introduction

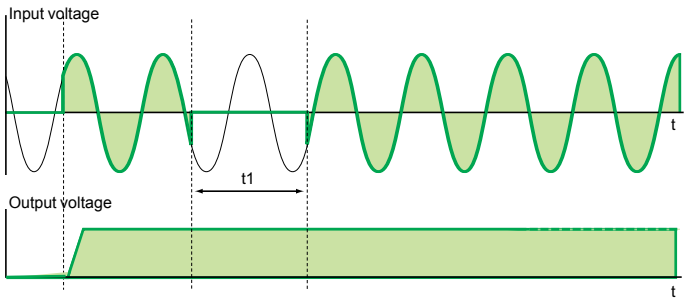
The **ABL8B** Function module offer complements the **ABL8RPS/8RPM/8WPS** regulated switch mode power supply offer, forming a set of solutions to meet the needs for continuity of service in the most demanding applications.

These modules, connected to the electronic switch mode power supply outputs, offer the following solutions:

- Immunity to microbreaks (see below)
- Voltage holding in the event of power outages (see page 40)
- Voltage holding in the event of power supply equipment failure (see page 46)

## Continuity of service: Immunity to microbreaks

**ABL8RPS/8RPM/8WPS** power supplies can deliver their nominal power in the event of a microbreak of less than 20 ms. When outages exceed this value, the **ABL8BUF24400** Buffer Function module, combined with an **ABL8RPS/8RPM/8WPS** power supply, is used. In the event of short interruptions, the Buffer module takes over and continues to provide the 24 V ⎓ voltage.
The table below indicates the maximum time for immunity to microbreaks t1.




| Power supply | | Typical time for immunity to microbreaks with Buffer module (40 A) at Un t1 | |
|---|---|---|---|
| | | 100% load at the Buffer module output | 2 A at the Buffer module output |
| **ABL8RPS24030** | Single-phase or 2-phase 3 A, 72 W | 0.912 s | 0.984 s |
| **ABL8RPS24050** | Single-phase or 2-phase 5 A, 120 W | 0.472 s | 1.33 s |
| **ABL8RPS24100** | Single-phase or 2-phase 10 A, 240 W | 0.220 s | 1.34 s |
| **ABL8RPM24200** | Single-phase or 2-phase 20 A, 480 W | 0.206 s | 1.82 s |
| **ABL8WPS24200** | 3-phase 20 A, 480 W | 0.056 s *(1)* | 1.18 s |
| **ABL8WPS24400** | 3-phase 40 A, 960 W | 0.092 s *(1)* | 1.29 s |

*(1) Values subject to increase significantly. Please consult our website* www.schneider-electric.com

# Phaseo™ power supplies

## Regulated switch mode power supplies

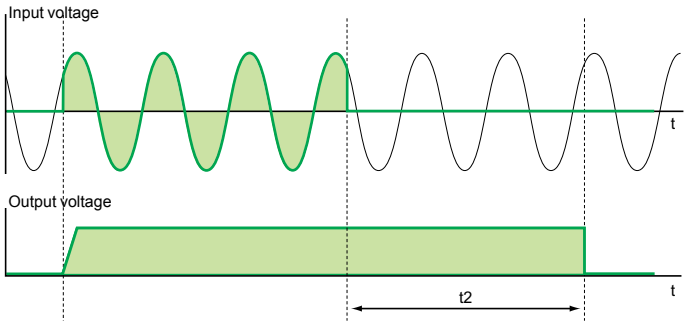
### Function modules (for Universal range): Buffer modules and Battery Control modules

## Continuity of service: Immunity to microbreaks (continued)

For applications that are sensitive to unintended stopping, the **ABL8B** range of Function modules offers a solution including:

- Electronic switch mode power supply and Buffer module for holding times t2 up to two seconds
- Electronic switch mode power supply, Battery Control module and Battery module for holding times t2 of between two seconds and a few hours

These solutions are used to supply voltage after loss of the line supply, thus enabling saving of current values or fallback of some actuators supplied with 24 V ⎓.
The table below indicates the possible holding times according to the equipment combinations and the current required.

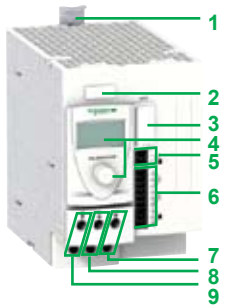


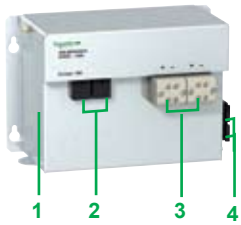

| Holding current | Holding time t2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | | | | | | | | Minutes | | | | | | | | | | | | | | | | Hours | | | |
| | 0.1 | 0.2 | 0.5 | 1 | 2 | 5 | 10 | 30 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 30 | 40 | 50 | 1 | 2 | 3 | 5 |
| 1 A | 1 | 1 | 1 | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 |
| 2 A | 1 | 1 | 1 | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+6 | 2+6 |
| 3 A | 1 | 1 | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 | 2+6 +6 |
| 4 A | 1 | 1 | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 +6 | 2+6 +6 |
| 5 A | 1 | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 | 2+6 +6 | 2+6 +6 | |
| 6 A | 1 | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 | 2+6 | 2+6 +6 | 2+6 +6 | |
| 7 A | 1 | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 | 2+6 | 2+6 | 2+6 +6 | | |
| 8 A | 1 | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 | 2+6 | 2+6 +6 | 2+6 +6 | | |
| 10 A | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 | 2+6 +6 | 2+6 +6 | 2+6 +6 | | | |
| 15 A | 1 | 1 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+4 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 | 2+6 | 2+6 | 2+6 +6 | 2+6 +6 | 2+6 +6 | | | | |
| 20 A | 1 | 1 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+5 | 2+6 | 2+6 | 2+6 | 2+6 | 2+6 | 2+6 | 2+6 +6 | 2+6 +6 | 2+6 +6 | | | | | | |
| 25 A | 1 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | | | | | | | |
| 30 A | 1 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+6 | 3+6 | 3+6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | | | | | | | |
| 35 A | 1 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+5 | 3+6 | 3+6 | 3+6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | | | | | | | | |
| 40 A | 1 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | 3+6 +6 | | | | | | | | | |

| Function modules | Reference | Code |
|---|---|---|
| 40 A Buffer module | **ABL8BUF24400** | 1 |
| 20 A Battery Control module | **ABL8BBU24200** | 2 |
| 40 A Battery Control module | **ABL8BBU24400** | 3 |
| 3.2 Ah Battery module | **ABL8BPK24A03** | 4 |
| 7 Ah Battery module | **ABL8BPK24A07** | 5 |
| 12 Ah Battery module | **ABL8BPK24A12** | 6 |

***Note:*** *Several Buffer modules (up to a maximum of three) can be connected in parallel to increase the immunity time. The times given in the table above (boxes marked 1) should be multiplied by the number of modules used (2 or 3).*

# Phaseo™ power supplies
## Regulated switch mode power supplies
### Function modules (for Universal range): Buffer modules and Battery Control modules


## Description

### 40 A Buffer module

The **ABL8BUF24400** Buffer Function module includes:
1 Spring clip for 35 mm DIN rail
2 Clip-on marker label
3 LED indicator (green): module ready (maximum load)
4 8 AWG (10 mm²) enclosed screw terminals for connection of the 24 V ⎓ input voltage
5 8 AWG (10 mm²) enclosed screw terminals for connection of the 24 V ⎓ output voltage
6 Removable screw terminal block for connection of the diagnostic contact: module ready (maximum load)

### 20 A and 40 A Battery Control modules

The **ABL8BBU24●00** Battery control Function modules include:
1 Spring clip for 35 mm DIN rail
2 Clip-on marker label
3 Memory card slot for backup and duplication of the configuration parameters
4 Display and configuration parameter browse/selection button
5 Removable screw connector for connection of the battery voltage inhibit input (terminal block supplied)
⚠ This contact must always be volt-free.
6 Removable screw connector for connection of the diagnostic contacts: power supply presence, battery alarm and presence (terminal block supplied)
7 8 AWG (10 mm²) enclosed screw terminals for connection of the 24 V ⎓ output voltage
8 8 AWG (10 mm²) enclosed screw terminals for connection of the power supply 24 V ⎓ input voltage
9 8 AWG (10 mm²) enclosed screw terminals for connection of the battery voltage 24 V ⎓ input voltage

### 3.2 Ah, 7 Ah, and 12 Ah Battery modules

The front panel of the **ABL8BPK24A●●** Battery Function modules include:
1 Metal box that can be mounted on a vertical or horizontal panel
2 Fuse carrier (one or two depending on the model), which, in addition to protecting the output, can be used to disable the battery module (fuse supplied but not fitted)
3 8 AWG (10 mm²) enclosed screw terminals for connection of the Battery module 24 V ⎓ output voltage (depending on the model, allows two Battery modules to be connected in parallel)
4 Fuse storage attachment

## Functions

### ABL8BBU24●00 Battery Control modules

The main module functions are:
- Charging and checking the associated battery
- Automatic switching between the power supply and the battery in the event of a power outage
- Diagnostics

The Battery Control modules offer a three-color LCD screen and a navigation button that can be used to:
- Display the status and diagnostic data
- Access the service and maintenance functions
- Set the module parameters

These modules also have a diagnostic relay (C/O contacts) relating to:
- Power supply status
- Battery module status
- Alarm

The following functions are available:
- Inhibition or activation (local or remote) of the battery to help ensure the safety of maintenance operations on the application
- Battery test
- Backup and download of a configuration via a memory card enabling storage and duplication of the configuration parameters so as to eliminate repetitive operations when setting up the Battery Control modules

The module parameters can be set in order to define:
- User language
- Rating of the battery connected to the Battery Control module
- Operating temperature for the battery in order to optimize its life
- Length and cross-section of connection to compensate for voltage losses due to length of line
- Duration of the battery-powered supply
- Threshold voltage provided by the power supply below which the battery takes over

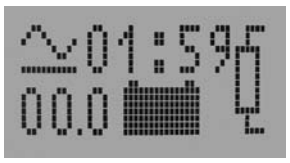
Whichever solution is used, the output terminals for the power supplies, Buffer modules and Battery Control modules have been designed to make it easier to isolate a backed-up circuit and a non-backed-up circuit to help ensure discrimination in continuity of service after a power outage.

### ABL8BPK24A●● Battery modules

Each Battery module consists of:
- Lead-sealed batteries (two in series)
- Automotive type fuse protection

Only these modules are compatible with the **ABL8BBU** Battery Control modules.

Green: Nominal status/information



Orange: Warning

Red: Detected fault

*Examples of Battery Control module diagnostic screens*

⚠ *In the event of the Battery Control module-Battery module combination not being used for long periods (approximately 1 week minimum) the following is recommended:*

*- Fully charge the Battery module for at least 72 hours, then*
*- Remove the fuse(s) from the Battery module(s) and store them in the allocated slots* **2**

# Phaseo™ power supplies

## Regulated switch mode power supplies

### Function modules (for Universal range): Buffer modules and Battery Control modules

## Technical specifications

| Type of Function module | | | | Buffer module ABL8BUF24400 | Battery Control module ABL8BBU24200 | ABL8BBU24400 |
|---|---|---|---|---|---|---|
| **Certifications** | | | | CB scheme EN60950-1, cULus 508, cCSAus, CE, RoHS | | |
| **Conformity to standards** | Safety | | | EN60950-1, EN61204 | | |
| | EMC | | | IEC/EN61000-6-2, IEC/EN61000-6-3 | | |
| **Input circuit** | | | | | | |
| **Input values** | Nominal voltage | | V | 24 to 28.8 Vdc | | |
| | Limit voltage | | V | 22 to 30 Vdc | | |
| | No-load/On-load/Max. consumption | | A | 0.1/0.6/40.6 | 0.1/1.7/21.7 | 0.1/1.7/41.7 |
| | Activation threshold | | V | $U_{In}$ - 1 and 22 Vdc min. | Adjustable 22 to 26 Vdc | |
| | Protection against reverse polarity | | | Yes | | |
| | Dissipated power at nominal load | | W | < 15 | < 7 | < 12 |
| **Output circuit** | | | | | | |
| **Nominal output values** | Voltage ($U_{Out}$) | | V | Nominal mode: $U_{In}$ -0.25<br>Buffer mode: $U_{In}$ -1 | Nominal mode: $U_{In}$ -0.25<br>Battery mode: $U_{battery}$ -0.5 | |
| | Max. current | | A | 40 | 20 | 40 |
| **Precision** | Residual ripple - noise | | mV | < 200 | | |
| **Holding time** | I = 0.5 A | | | 6 s | | |
| | I = 40 A | | | 0.1 s | | |
| **Protection** | Against short circuits | Power-supplied mode | | Permanent, automatic restart | Power supply protection | |
| | | Battery-backed mode | | – | Permanent, automatic restart | |
| | Against overloads | | | > 45 A | 1.5 In | |
| | Against overvoltages | | V | – | – | – |
| | Against undervoltages | | V | Tripping if $U_{Out}$ < 19 | – | |
| | Thermal | | | – | | |
| **Operating and environmental specifications** | | | | | | |
| **Connections** | Input | | AWG (mm²) | 20 to 8 (2 x 0.5 to 10) screw terminals | | |
| | Output | | AWG (mm²) | 20 to 8 (2 x 0.5 to 10) screw terminals | | |
| | Diagnostic relay | | mm² | 2.5 | 0.75 | |
| **Mounting** | On DIN rail | | in (mm) | 1.38 x 0.30 and 1.38 x 0.59 (35 x 7.5 and 35 x 15 ) | | |
| **Operating position** | | | | Mounted vertically<br>Mounted horizontally (with derating of maximum power by 20% from 50°C) | | |
| **Connections** | Series | | | – | | |
| | Parallel | | | Yes | – | |
| **Degree of protection** | | | | IP 20 conforming to IEC 60529 | | |
| **Environment** | Temperature | Operation | °F (°C) | -13 to 140 °F (-25 to +60 °C) | | |
| | | Storage | °F (°C) | -40 to 185 °F (-40 to +85 °C) | | |
| | Relative humidity | Operation | | 90% | | |
| | | Storage | | 95% | | |
| | Vibration according to EN 61131-2 | | | 3 to 11.9 Hz, amplitude 0.14 in (3.5 mm); 11.9 to 150 Hz, acceleration 2 g | | |
| **Protection class according to VDE 0106 1** | | | | Class II | | |
| **Charging time** | | | s | < 25 | Depending on the battery used | |
| **Control input** | | | | – | Battery inhibit input /OFF: terminals 1 and 2 linked = battery off<br>⚠ This contact must always be volt-free. | |
| **Diagnostics** | Via LED | | | Green: Buffer ready<br>Off: Load < 95% | – | |
| | LCD screen | | | – | Green: nominal status, orange: warning, red: detected fault | |
| | Via relay | | | Open: Load < 95%<br>Closed: Buffer ready | 3 C/O relays: for power supply status, battery and alarm status | |
| | | | | | PSU: relay tripped (contact 1-2 closed): 24 V present on In input | |
| | | | | | : relay tripped (contact 4-5 closed): backup mode, current supplied by the battery | |
| | | | | | Alarm: relay tripped (contact 7-8 closed): battery charge < 80% battery off or disconnected | |
| **Relay characteristic** | | | | 230 Vac 0.5 A, 24 Vdc 5 mA min. | | |
| **Dielectric strength 50 Hz for 1 min** | Input/ground | | V rms | 500 Vac | | |
| | Output/ground | | V rms | 500 Vac | | |
| **Emissions according to EN 61000-6-3** | Conducted/radiated | | | EN 55022 - Class B | | |
| **Immunity according to EN 61000-6-2** | Electrostatic discharge | | | IEC/EN 61000-4-2 (6 kV contact/8 kV air) | | |
| | Radiated electromagnetic fields | | | IEC/EN 61000-4-3 level 3 (10 V/m) | | |
| | Induced electromagnetic fields | | | IEC/EN 61000-4-6 level 3 (10 V/m) | | |
| | Rapid transients | | | IEC/EN 61000-4-4 level 3 (2 kV) | | |
| | Surges | | | IEC/EN 61000-4-5 level 2 (1 kV) | | |

# Phaseo™ power supplies

## Regulated switch mode power supplies

### Function modules (for Universal range): Buffer modules and Battery Control modules

## Technical specifications

| Type of Function module | | | | Battery ABL8BPK24A03 | ABL8BPK24A07 | ABL8BPK24A12 |
|---|---|---|---|---|---|---|
| **Battery type** | | | | Lead-sealed battery | | |
| **Certifications** | | | | Certification pending | | |
| **Conformity to standards** | Safety | | | Conformity pending | | |
| **Input circuit** | | | | | | |
| **Input values** | Nominal voltage | | **V** | 24 to 28.8 Vdc | | |
| | Limit voltage | | **V** | 22 to 29 Vdc | | |
| | Load current | | **A** | 0.3 | 0.7 | 1.2 |
| | Protection against reverse polarity | | | Yes | | |
| | Charging time | | **h** | 72 max. | | |
| **Output circuit** | | | | | | |
| **Nominal output values** | Voltage (Un) | | **V** | 24 Vdc | | |
| | Max. current | | **A** | 32 | 40 | 75 |
| | Capacity | | **Ah** | 3.2 | 7 | 12 |
| **Holding time at 20°C** | Maximum | | **h** | 20 at 0.16 A | 20 at 0.35 A | 20 at 0.6 A |
| | Minimum | | **min** | 5 at 8.4 A | 5 at 18.2 A | 5 at 31.3 A |
| **Protection** | Against short circuits and overloads by automotive type fuse protection | | | 1 x 20 A | 1 x 30 A | 2 x 30 A |
| | Self-discharge rate | 1 month | | 3% | | |
| | | 3 months | | 9% | | |
| | | 6 months | | 15% | | |
| **Operating and environmental specifications** | | | | | | |
| **Connections** | Input | | **AWG (mm²)** | 20 to 8 (2 x 0.5 to 10) | | 20 to 8 (4 x 0.5 to 10) |
| | Output | | **AWG (mm²)** | 20 to 8 (2 x 0.5 to 10) | | 20 to 8 (4 x 0.5 to 10) |
| **Mounting** | On DIN rail | | **in (mm)** | 1.38 x 0.30 and 1.38 x 0.59 (35 x 7.5 and 35 x 15 ) | – | |
| | On vertical panel | | | With 4 screws ⌀ 5 mm | | |
| | On horizontal panel | | | With 2 screws ⌀ 5 mm | | |
| **Operating position** | | | | Vertical or horizontal | | |
| **Connections** | Series | | | – | | |
| | Parallel | | | Yes | | |
| **Degree of protection** | | | | IP 10 conforming to IEC 60529 | | |
| **Environment** | Temperature | Operation | **°F (°C)** | 32 to 104 °F (0 to +40 °C) | | |
| | | Storage | **°F (°C)** | -4 to 122 °F (-20 to +50 °C) | | |
| | Vibration according to EN 61131-2 | | | 3 to 11.9 Hz, amplitude 3.5 mm; and 11.9 to 150 Hz, acceleration 2 g | | |
| **Protection class according to VDE 0106 1** | | | | Class III | | |
| **Service life (approximate)** | | 68 °F (20 °C) | **h** | 44,000 | | |
| | | 77 °F (25 °C) | **h** | 31,000 | | |
| | | 86 °F (30 °C) | **h** | 22,000 | | |
| | | 95 °F (35 °C) | **h** | 15,000 | | |
| | | 104 °F (40 °C) | **h** | 11,000 | | |
| | | 113 °F (45 °C) | **h** | 7,300 | | |
| | | 122 °F (50 °C) | **h** | 5,000 | | |

# Phaseo™ power supplies

## Regulated switch mode power supplies

### Function modules (for Universal range): Buffer modules and Battery Control modules

*ABL8BUF24400*

*ABL8BBU24200*

*ABL8BBU24200*

**ABL8BUF2440**
**cULus File E164867 CCN NMTR and NMTR7**

**cCSAus File 238438 Class 5311-07 and 5311-87**

**ABL8BBU**
**UL Listed File E164867 CCN NMTR**

## References

### Function modules

| Function | Use | Designation | Reference | Weight lbs (kg) |
|---|---|---|---|---|
| **Continuity after a power outage** | Holding time 100 ms at 40 A and 2 s at 1 A | Buffer module | **ABL8BUF24400** | 2.645 (1.200) |
| | Holding time 9 min at 40 A to 2 hrs at 1 A (depending on use with a battery control module-battery unit and load) *(1)* | Battery Control module 20 A output current | **ABL8BBU24200** | 1.102 (0.500) |
| | | Battery Control module, 40 A output current | **ABL8BBU24400** | 1.543 (0.700) |
| | | 3.2 Ah battery module *(2)* | **ABL8BPK24A03** | 7.716 (3.500) |
| | | 7 Ah battery module *(2)* | **ABL8BPK24A07** | 14.330 (6.500) |
| | | 12 Ah battery module *(2)* | **ABL8BPK24A12** | 26.455 (12.000) |

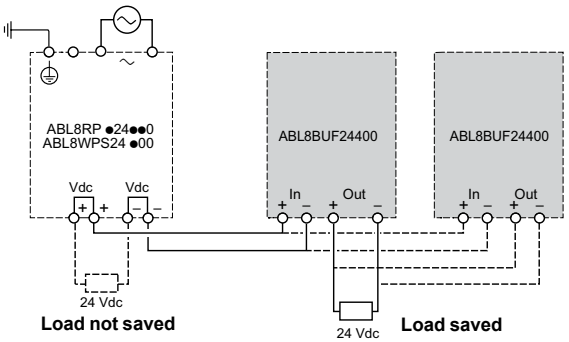
### Separate and replacement parts

| Designation | Description | Composition | Unit reference | Weight lbs (kg) |
|---|---|---|---|---|
| **Fuse assemblies** | For ABL8BKP24A●● battery | 4 x 20 A and 6 x 30 A | **ABL8FUS02** | – |
| **Clip-on marker labels** | All products except ABL8PRP24100 | Order in multiples of 100 | **LAD90** | 0.066 (0.030) |
| **Kit for mounting on DIN rail** | For ABL8BPK2403 Battery module | – | **ABL1A02** | – |
| **Cables** | Connection cable between ABL8BBU and PC for updating the software | RS232 3 m | **SR2CBL01** | 0.330 (0.150) |
| | | USB 3 m | **SR2USB01** | 0.330 (0.150) |
| **EEPROM memory** | Backup and duplication of ABL8 BBU parameters | – | **SR2MEM02** | 0.022 (0.010) |

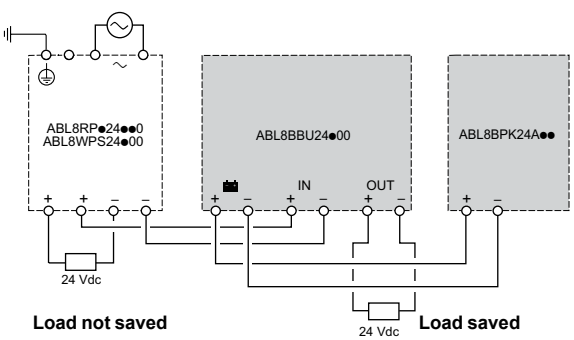
*(1) See page 40 for details.*
*(2) Supplied with 20 or 30 A fuse depending on the model.*

## Wiring diagrams for use with Universal range power supplies

**With ABL8BUF24400 Buffer module**




**With ABL8BBU24•00 Battery Control module**



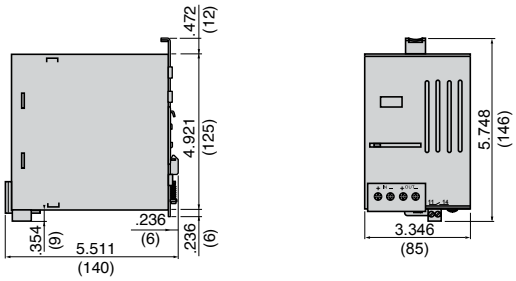
# Phaseo™ power supplies

## Regulated switch mode power supplies

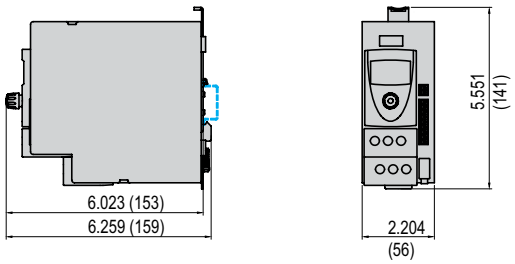
### Function modules (for Universal range): Buffer modules and Battery Control modules

## Approximate dimensions

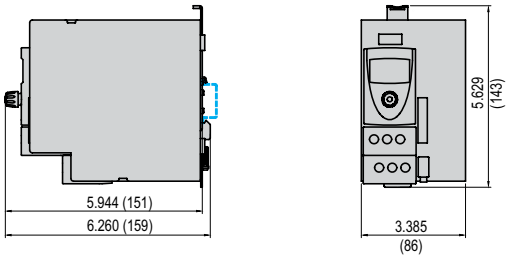
**ABL8BUF24400 Buffer module**



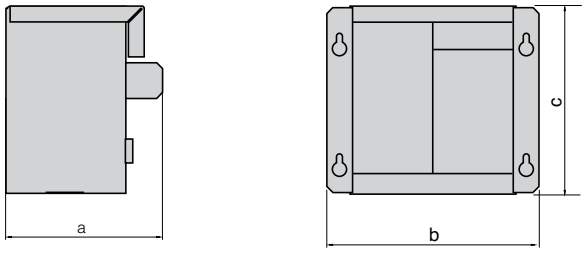

**ABL8BBU24200 Battery Control module**




**ABL8BBU24400 Battery Control module**




**ABL8BPK24A03/A07/A12 Battery modules**



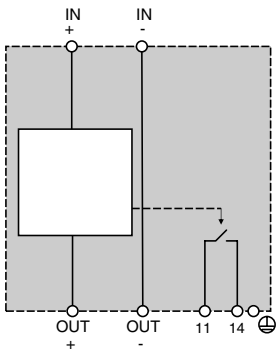

| Reference | a | b | c |
|---|---|---|---|
| ABL8BPK24A03 | 3.83 (97) | 7.24 (184) | 5.45 (138) |
| ABL8BPK24A07 | 5.16 (131) | 6.69 (170) | 5.98 (152) |
| ABL8BPK24A12 | 5.16 (131) | 9.29 (236) | 6.12 (155) |

in (mm)

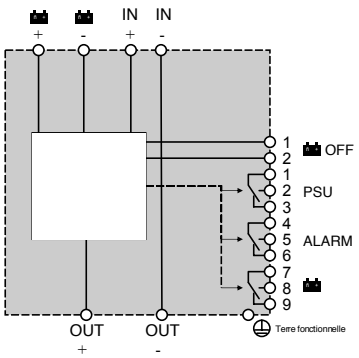
in (mm)

## Wiring diagrams

**AB8BUF24400 Buffer module**




**ABL8BBU24200 and ABL8BBU24400 Battery Control modules**



# Phaseo™ power supplies

## Regulated switch mode power supplies

## Function modules (for Universal range): Redundancy module

### Continuity of service: Failure of power supply equipment

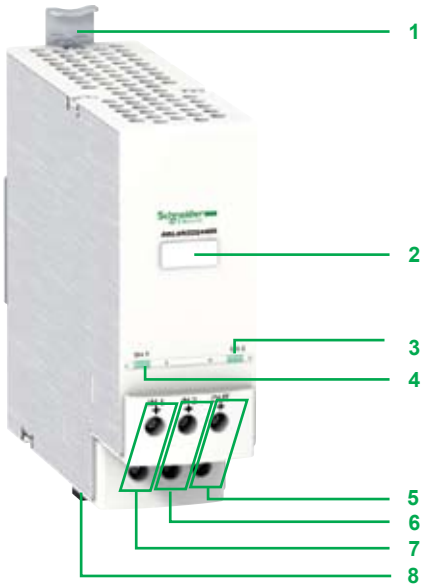
Where continuous operation of the application is the prime concern, it is necessary to help ensure that when one power supply malfunctions, a second power supply takes over. The **ABL8RED24400** Redundancy module can perform this function, ensuring that the failure of one power supply does not disturb the second (for example, in the event of a short-circuit of one of the power supply outputs).

The **ABL8RED24400** Redundancy module, used with two electronic switch mode power supplies of the same type, can be used to supply the nominal power to the application even if one of the power supplies fails.

The various diagnostics - on the front panel (LED) and remote (relay) - inform the maintenance team as soon as the first detected fault occurs on one of the power supplies.

When continuity of service is critical for the application, it may be necessary to provide redundancy for the Redundancy module.

***Note:*** *The Redundancy module can be used to connect two power supplies with a maximum rating of 20 A in parallel. To connect two 40 A* **ABL8WPS24400** *power supplies, two* **ABL8RED24400** *Redundancy modules must be used.*




### Description

**2 x 20 A Redundancy module**

The **ABL8RED24400** Redundancy Function module includes:

1 Spring clip for 35 mm DIN rail
2 Clip-on marker label
3 Input voltage status LED (green) for the first 24 V ⎓ power supply
4 Input voltage status LED (green) for the second 24 V ⎓ power supply
5 8 AWG (10 mm²) enclosed screw terminals for connection of the 24 V ⎓ output voltage
6 8 AWG (10 mm²) enclosed screw terminals for connection of the input voltage for the second 24 V ⎓ power supply (I ⩽ 20 A)
7 8 AWG (10 mm²) enclosed screw terminals for connection of the input voltage for the first 24 V ⎓ power supply (I ⩽ 20 A)
8 Removable screw terminal block for connection of the diagnostic contact: power supply connected to a faulty input

# Phaseo™ power supplies

## Regulated switch mode power supplies

### Function modules (for Universal range): Redundancy module

## Technical specifications

| Type of Function module | | | | Redundancy ABL8RED24400 |
|---|---|---|---|---|
| **Certifications** | | | | CB scheme EN60950-1, cULus 508, cCSAus, CE, RoHS |
| **Conformity to standards** | Safety | | | EN60950-1, EN61204 |
| | EMC | | | EN61000-6-2, EN61000-6-3 |
| **Input circuit** | | | | |
| **Input values** | Nominal voltage ($U_{In}$) | | **V** | 24–28.8 Vdc |
| | Limit voltage | | **V** | 22–30 Vdc |
| | Input limit current | | **A** | 20 per input |
| | Protection against reverse polarity | | | Yes |
| **Output circuit** | | | | |
| **Nominal output values** | Output voltage ($U_{Out}$) | | **V** | $U_{In}$ - 0.2 |
| | Max. current ($I_{Out}$) | | **A** | 40 |
| **Number of channels** | | | | 1 |
| **Protection** | Against short circuits | | | Provided by the power supply |
| | Against overloads | | | Manual, provided by the power supply |
| **Operating and environmental specifications** | | | | |
| **Connections** | Input | | **AWG ($mm^2$)** | 20–8 (2 x 0.5 to 10) |
| | Output | | **AWG ($mm^2$)** | 20–8 (2 x 0.5 to 10) |
| | Diagnostic relay | | **($mm^2$)** | 2.5 |
| **Mounting** | On DIN rail | | **in (mm)** | 1.38 x 0.30 and 1.38 x 0.59 (35 x 7.5 and 35 x 15) |
| **Operating position** | | | | Vertical or horizontal position |
| **Connections** | Series | | | — |
| | Parallel | | | Yes for 2 x 40 A |
| **Degree of protection** | | | | IP 20 conforming to IEC 60529 |
| **Environment** | Temperature | Operation | **°F (°C)** | -13 to 140 °F (-25 to +60 °C) |
| | | Storage | **°F (°C)** | -40 to 185 °F (-40 to +85 °C) |
| | Relative humidity | Operation | | 90% |
| | | Storage | | 95% |
| | Vibration according to EN 61131-2 | | | 3–11.9 Hz, amplitude 0.14 in (3.5 mm); 11.9–150 Hz, acceleration 2 g |
| **Protection class according to VDE 0106 1** | | | | Class II |
| **Diagnostics** | Via LED | | | 1 LED per input<br>Green: power supply operational |
| | Via relay | | | Closed: 2 power supplies operational |
| **Dielectric strength 50 Hz for 1 min** | Input/output | | **V rms** | No isolation |
| | Input/ground | | **V rms** | 500 Vac |
| | Output/ground | | **V rms** | 500 Vac |
| **Emissions according to EN 61000-6-3** | Conducted/radiated | | | EN 55022 - Class B |
| **Immunity according to EN 61000-6-2** | Electrostatic discharge | | | IEC/EN 61000-4-2 (6 kV contact/8 kV air) |
| | Radiated electromagnetic fields | | | IEC/EN 61000-4-3 level 3 (10 V/m) |
| | Induced electromagnetic fields | | | IEC/EN 61000-4-6 level 3 (10 V/m) |
| | Rapid transients | | | IEC/EN 61000-4-4 level 3 (2 kV) |
| | Surges | | | IEC/EN 61000-4-5 level 2 (1 kV) |

# Phaseo™ power supplies

## Regulated switch mode power supplies

### Function modules (for Universal range): Redundancy module

*ABL8RED24400*

**Function module**

| Function | Use | Designation | Reference | Weight lbs (kg) |
|---|---|---|---|---|
| **Continuity after a failure** | Paralleling and redundancy of the power supply to help ensure uninterrupted operation of the application excluding AC line failures and application overloads | Redundancy module | **ABL8RED24400** | 1.54 (0.700) |

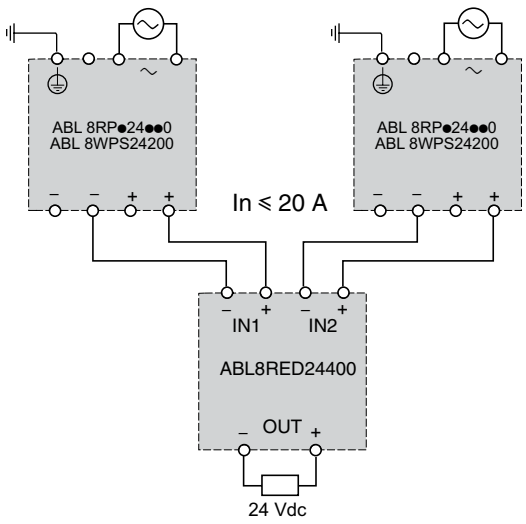
**Replacement part**

| Designation | Composition | Unit reference | Weight lbs (kg) |
|---|---|---|---|
| **Clip-on marker labels** | Order in multiples of 100 | **LAD90** | 0.07 (0.030) |

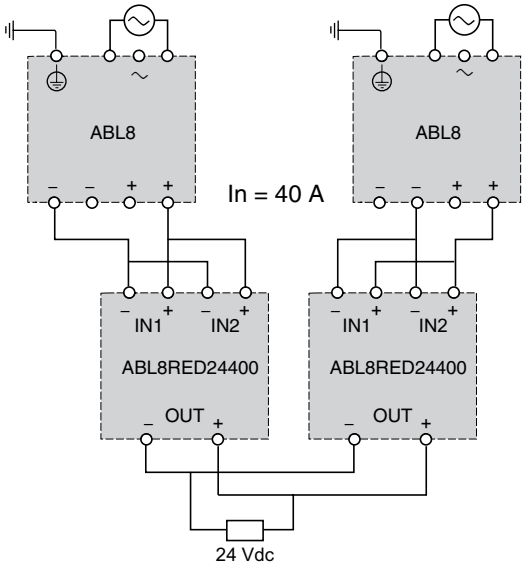
**Wiring diagrams for use with Universal range power supplies**

**With ABL8RED24400 Redundancy module**

**ABL8RPS24●●●/ABL8RPM24200/ABL8WPS24200**




**ABL8WPS24400 or full system redundancy**




cULus File E164867 CCN NMTR and NMTR7
cCSAus File 238438 Class 5311-87

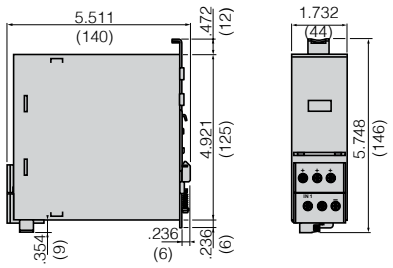
# Phaseo™ power supplies

## Regulated switch mode power supplies

### Function modules (for Universal range): Redundancy module

## Approximate dimensions

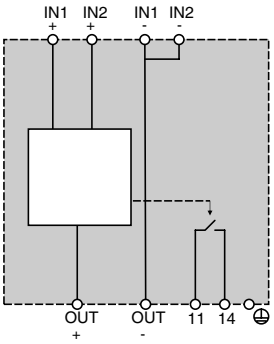
**ABL8RED24400 Redundancy module**




In/(mm)

## Wiring diagram

**ABL8RED24400 Redundancy module**



# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL1 Dedicated range

## Introduction

**ABL1REM/RPM** Phaseo™ Dedicated range regulated switch mode power supplies are specially designed to provide the DC voltage necessary for electrical equipment operating on a safety extra low voltage (SELV). Split into two ranges, they are able to meet all the needs encountered in standard commercial machines.

These single-phase power supplies, with or without anti-harmonic distortion filter, conform to world-wide standards. Switch mode technology provides the quality of the output current with regulation below 3%.

As machine components, **ABL1REM/RPM** Phaseo Dedicated range power supplies are easy to install; only the set-up may vary from one application to another. The ABL1 range has been specially designed for machine manufacturers.

**ABL1REM/RPM** regulated switch mode power supplies are totally electronic and regulated. They provide the following benefits:

- Wide input voltage range from 85 to 264 V ∿ and 120 to 370 V ⎓ (not indicated on the product).
- Several products with anti-harmonic distortion input filter.
- High degree of output voltage stability, adjustable by potentiometer.
- Built-in thermal overload protection.
- Conformity to world-wide standards.
- Conformity to standard EN 55022 class B.
- UL 508, CSA and TÜV certifications.
- Overload and short-circuit protection.
- Considerably reduced weight.
- Identical mounting accessories for all models.

ABL1 power supplies for electrical equipment are divided into two ranges :

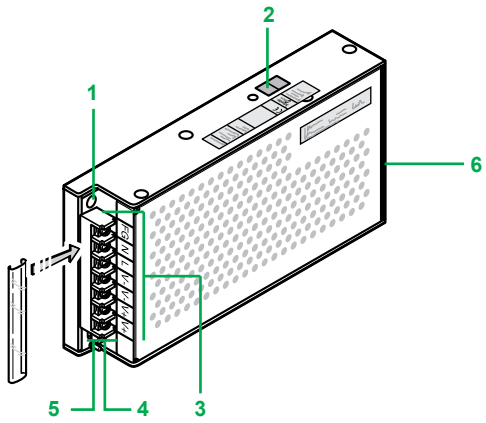
- **ABL1REM**, single-phase:
  - 60 W for the 12 V ⎓ version,
  - 60 W, 100 W, 150 W and 240 W for the 24 V ⎓ versions.
- **ABL1RPM**, single-phase with anti-harmonic distortion filter:
  - 100 W for the 12 V ⎓ version,
  - 100 W, 150 W and 240 W for the 24 V ⎓ versions.

### Electromagnetic compatibility

Levels of conducted and radiated emissions are defined in standards EN 55011 and EN 55022.
The products in the ABL1 range are class B, the strictest level, and can be used without any restrictions due to their low emissions.

### Behavior in the event of short-circuits

ABL1 power supplies are equipped with electronic and thermal overload protection. This protection resets itself automatically on elimination of the detected fault, which avoids having to take any action or change a fuse.




## Description

**ABL1REM/RPM** regulated switch mode power supplies include:

1 Two mounting holes for M4 x 20 screws.
2 115/230 V input voltage selector (on 150 W and 240 W versions only).
3 12 AWG (4 mm²) screw clamp terminal block for connection of the AC input voltage and DC output voltage.
4 Green LED indicating presence of the DC output voltage.
5 Output voltage adjustment potentiometer (± 10 %).
6 Removable, transparent, clip-on cover.

# Phaseo™ power supplies

## Regulated switch mode power supplies

### ABL1 Dedicated range

## Technical specifications

| Type of power supply | | | | ABL1REM | | | | | ABL1RPM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 12050 | 24025 | 24042 | 24062 | 24100 | 12083 | 24042 | 24062 | 24100 |
| **Product certifications/markings** | | | | cULus 508, cCSAus, CSA 22.2 n° 60950-1, UL 60950-1, TÜV, CTick, RoHS, CE | | | | | | | | |
| **Conforming to standards** | Safety | | | IEC/EN 60950-1, SELV | | | | | | | | |
| | Generic EMC | | | EN 50081-1, IEC 61000-6-2 (EN 50082-2), IEC/EN 61000-6-3 | | | | | | | | |
| | Low frequency harmonic currents | | | – | | | | | IEC/EN 61000-3-2 | | | |
| **LED indication** | | | | – | | | | | | | | |
| **Input voltages** | Nominal voltage | | V | 100 to 240 Vac | | | 100 to 120 Vac<br>200 to 240 Vac | | 100 to 240 Vac | | 100 to 120 Vac<br>200 to 240 Vac | |
| | Limit voltage | Vac | V | 85 to 264 Vac | | | 85 to 132/170 to 264 Vac | | 85 to 264 Vac | | 85 to 132/170 to 264 Vac | |
| | | Vdc compatible | V | 120 to 370 Vdc | | | 180 to 370 Vdc [1] | | 120 to 370 Vdc [1] | | 180 to 370 Vdc [1] | |
| | Current consumption | $U_{In}$ = 240 V | A | 1 | | 0.7 | 2.5 | 3 | 0.7 | | 2.5 | 3 |
| | | $U_{In}$ = 100 V | A | 2 | | 1.4 | 5 | 6 | 1.7 | | 5 | 6 |
| | Permissable frequencies | | Hz | 47 to 63 | | | | | | | | |
| | Maximum inrush current | | A | 50 | | | | | | | | |
| | Power factor | | | 0.65 approx. | | | | | 0.7 to 0.95 approx. (depending on model) | | | |
| | Efficiency at nominal load | | | > 80% | | | | | | | | |
| | Dissipated power at nominal load | | W | 15 | | 25 | 37.5 | 60 | 25 | | 37.5 | 60 |
| **LED indication** | | | | Green LED | | | | | | | | |
| **Nominal output values** | Voltage ($U_{Out}$) | | V | 2 Vdc | 24 Vdc | | | | 12 Vdc | 24 Vdc | | |
| | Current | | A | 5 | 2.5 | 4.2 | 6.2 | 10 | 8.3 | 4.2 | 6.2 | 10 |
| | Power | | W | 60 | | 100 | 150 | 240 | 100 | | 150 | 240 |
| **Precision** | Adjustable output voltage | | V | 10.8–13.2 | 21.6–26.4 | | | | 10.8–13.2 | 21.6–26.4 | | |
| | Line and load regulation | | | ± 3% | | | | | | | | |
| | Residual ripple - noise | | mV | < 200 (peak-peak) | | | | | | | | |
| **Holding time for I max.** | $U_{In}$ = 240 V | | ms | ⩾ 40 | | | | | | | | |
| | $U_{In}$ =100 V | | ms | ⩾ 10 | | | | | | | | |
| **Protection** | Against shorts circuits | | | Permanent, automatic restart | | | | | | | | |
| | Against overloads | | | 1.1 to 1.5 In | | | | | | | | |
| | Against undervoltages | | | U > 1.25 $U_{Out}$ | | | | | | | | |
| | Thermal | | | Yes (limiting operation above a temperature between 50 and 60 °C, depending on the load rating) | | | | | | | | |

## Operating and environmental specifications

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Connections** | Input | | AWG (mm²) | 12 (2 + ground) x 4 | | | | | | | | |
| | Output | | AWG (mm²) | 12 (2 x 4) | | 12 (4 x 4) | | | | | | |
| **Mounting** | | | | On panel or on ABL1A01 reversible mounting bracket | | | | | | | | |
| **Operating position** | | | | All positions with derating | | | | | | | | |
| **Connections** | Series | | | Possible (2 max.) | | | | | | | | |
| | Parallel | | | Possible (2 max.) | | | | | | | | |
| **Degree of protection** | | | | IP 20, conforming to standard IEC/EN 60950 with clip-on cover over connection terminal block | | | | | | | | |
| **Overvoltage category** | | | | II | | | | | | | | |
| **Environment** | Temperature | Operating | °F (°C) | 32 to 140 derating from 113 °F (0 to + 60 derating from 45 °C) | | | | | | | | |
| | | Storage | °F (°C) | -13 to 185 °F (-25 to +85 °C) | | | | | | | | |
| | Max. relative humidity | | | 20 to 90% | | | | | | | | |
| | Vibrations, per EN 61131-2 | | | 5 to 9 Hz, amplitude 0.14 in (3.5 mm); and 9 to 150 Hz, acceleration 2 g | | | | | | | | |
| **Protection class** | According to VDE 0106 1 | | | Class 1 | | | | | | | | |
| **Degree of pollution** | | | | 2 | | | | | | | | |
| **Dielectric strength 50 and 60 Hz for 1 min** | Input/output | | V rms | 3000 Vac | | | | | | | | |
| | Input/ground | | V rms | 1500 Vac | | | | | | | | |
| | Output/ground | | V rms | 500 Vac | | | | | | | | |
| **Input fuse incorporated** | | | | Yes (not interchangeable) | | | | | | | | |
| **Emissions according to EN 61000-6-3** | | | | IEC/EN 61000-6-3 (generic) | | | | | | | | |
| | Conducted/radiated | | | IEC/EN 55011, IEC/EN 55022 class B | | | | | | | | |
| **Immunity according to EN 61000-6-2** | | | | IEC/EN 61000-6-2 (generic) | | | | | | | | |
| | Electrostatic discharge | | | IEC/EN 61000-4-2 level 3 (4 kV contact/8 kV air) | | | | | | | | |
| | Radiated electromagnetic fields | | | IEC/EN 61000-4-3 level 3 (10 V/m) | | | | | | | | |
| | Induced electromagnetic fields | | | IEC/EN 61000-4-6 level 3 (10 V/m) | | | | | | | | |
| | Rapid transients | | | IEC/EN 61000-4-4 level 3 (2 kV) | | | | | | | | |
| | Surges | | | IEC/EN 61000-4-5 | | | | | | | | |
| | Conducted interference | | | IEC/EN 61000-4-8 level 4, IEC/EN 61000-4-12 level 3 | | | | | | | | |
| | Primary outage | | | Conforming to standard IEC/EN 61000-4-11(voltage dips and interruptions) | | | | | | | | |

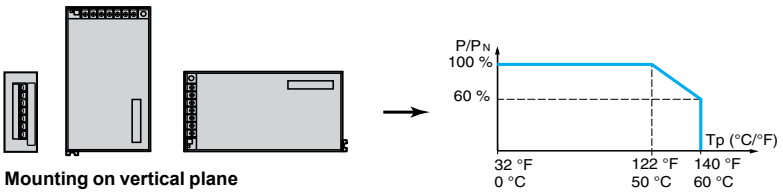
## Output specifications

### Derating

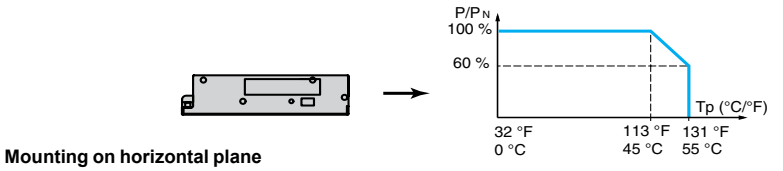
The ambient temperature is a determining factor which limits the power that an electronic power supply can deliver continuously. Excessively high temperatures around the electronic components significantly reduce their life.

**ABL1R●M24100** power supplies (240 W) are mechanically ventilated from an ambient temperature > 104 °F (40 °C) approx., or for a load rating > 90% approx. The rated ambient temperature for **ABL1REM/1RPM** power supplies is 122 °F (+50 °C). Above this, derating is necessary up to a maximum temperature of 140 °F (+60 °C).

The curves below show the power (in relation to the nominal power) which the power supply can deliver continuously, according to the ambient temperature.




**Mounting on vertical plane**




**Mounting on horizontal plane**

### Extreme operating conditions

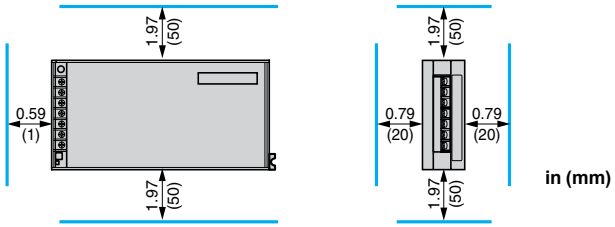
Derating should be considered in extreme operating conditions:
- Intensive operation (output current permanently close to the nominal current, combined with a high ambient temperature)
- Output voltage set above 24 V (to compensate for line voltage drops, for example)
- Parallel connection to increase the total power

### General rules to be complied with

| | |
|---|---|
| **Intensive operation** | See derating on above curves.<br>Example for ABL1 mounted vertically:<br>■ Without derating, from 32 to 122 °F (0 to 50 °C)<br>■ Derating of nominal current by 4%, per additional °C, up to 60 °C |
| **Rise in output voltage** | The nominal power is mounted.<br>Increasing the output voltage means that the current delivered will be reduced. |
| **Parallel connection to increase the power** | The total power is equal to the sum of the power supplies used, but the maximum ambient temperature for operation is 122 °F (50 °C).<br>To improve heat dissipation, the power supplies must not be in contact with each other. |

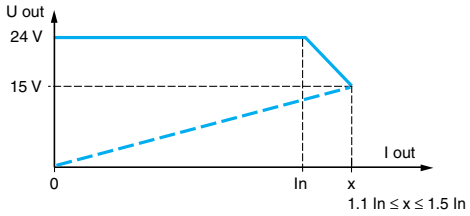
*Note: See page 53 for a schematic drawing of the ABL1 Dedicated Range power supplies.*

## Output specifications *(continued)*



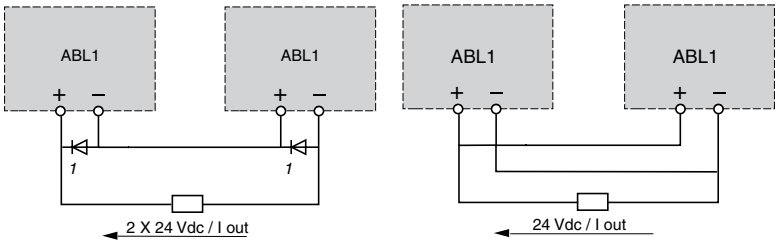

In all cases, there must be adequate convection around the products to help ensure sufficient cooling. There must be a clear space of 1.97 in (50 mm) above and below the power supplies, and of 0.79 in (20 mm) at the sides.

### Load limits




### Series or parallel connection

**Series connection** **Parallel connection**




*1 8 A / 100 V Shottky diode for* **ABL1REM12050 / 1REM24025 / 1R●M24042**
*15 A /1 00 V Shottky diode for* **ABL1RPM12083 / 1R●M24062 / 1R●M24100**

## Selection of protection for the power supply primary

| **Type of mains supply** / **Type of protection** (2 poles protected) | ∼ **115 V single-phase** | | | ∼ **230 V single-phase** | | |
|---|---|---|---|---|---|---|
| | **Thermal-magnetic circuit-breaker** | | **Class CC fuse** | **Thermal-magnetic circuit-breaker** | | **Class CC fuse** |
| | GB2 (IEC) | C60N (IEC) C60N (UL) | | GB2 (IEC) | C60N (IEC) C60N (UL) | |
| **ABL1REM12050** | GB2 DB07 | 24517 | 2 A | GB2 DB07 | 24517 | 2 A |
| **ABL1REM24025** | GB2 DB07 | 24517 | 2 A | GB2 DB07 | 24517 | 2 A |
| **ABL1RPM12083** | GB2 DB07 | 24517 | 2 A | GB2 DB07 | 24517 | 2 A |
| **ABL1REM24042** | GB2 DB07 | 24517 | 2 A | GB2 DB07 | 24517 | 2 A |
| **ABL1RPM24042** | GB2 DB07 | 24517 | 2 A | GB2 DB07 | 24517 | 2 A |
| **ABL1REM24062** | GB2 DB07 | 24517 | 2 A | GB2 DB08 | 24518 | 4 A |
| **ABL1RPM24062** | GB2 DB07 | 24517 | 2 A | GB2 DB08 | 24518 | 4 A |
| **ABL1REM24100** | GB2 DB08 | 24518 | 4 A | GB2 DB10 | 17454 | 6 A |
| **ABL1RPM24100** | GB2 DB08 | 24518 | 4 A | GB2 DB10 | 17454 | 6 A |

# Phaseo™ power supplies
## Regulated switch mode power supplies
### ABL1 Dedicated range

*ABL1REM24025*

*ABL1R●M24042*

*ABL1R●M24062*

*ABL1R●M24100*

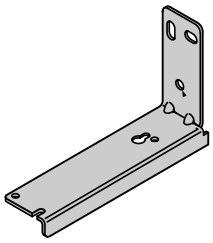
## References

**Regulated switch mode power supplies: ABL1REM Phaseo™ Dedicated range**

| Input voltage 47 to 63 Hz | Output voltage | Nominal power | Nominal current | Auto-protect reset | Conforming to standard IEC/EN 61000-3-2 | Reference | Weight lbs (kg) |
|---|---|---|---|---|---|---|---|
| **100 to 240 V ∿** *(1)* single-phase wide range | 12 V ⎓ | 60 W | 5 A | Automatic | No | **ABL1REM12050** | 1.25 (0.57) |
| | 24 V ⎓ | 60 W | 2.5 A | Automatic | No | **ABL1REM24025** | 1.19 (0.54) |
| | | 100 W | 4.2 A | Automatic | No | **ABL1REM24042** | 1.62 (0.73) |
| **100 to 120 V ∿ 200 to 240 V ∿** *(2)* single-phase | 24 V ⎓ | 150 W | 6.2 A | Automatic | No | **ABL1REM24062** | 2.49 (1.13) |
| | | 240 W | 10 A | Automatic | No | **ABL1REM24100** | 2.35 (1.07) |

**Regulated switch mode power supplies: ABL1RPM Phaseo Dedicated range**

| Input voltage 47 to 63 Hz | Output voltage | Nominal power | Nominal current | Auto-protect reset | Conforming to standard IEC/EN 61000-3-2 | Reference | Weight lbs (kg) |
|---|---|---|---|---|---|---|---|
| **100 to 240 V ∿** *(1)* single-phase wide range | 12 V ⎓ | 100 W | 8.3 A | Automatic | Yes | **ABL1RPM12083** | 1.62 (0.73) |
| | 24 V ⎓ | 100 W | 4.2 A | Automatic | Yes | **ABL1RPM24042** | 1.62 (0.73) |
| **100 to 120 V ∿ 200 to 240 V ∿** *(2)* single-phase | 24 V ⎓ | 150 W | 6.2 A | Automatic | Yes | **ABL1RPM24062** | 2.49 (1.13) |
| | | 240 W | 10 A | Automatic | Yes | **ABL1RPM24100** | 3.05 (1.38) |

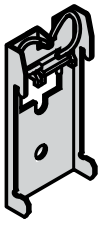


*ABL1A01*

**Mouting accessories**

| Description | For power supplies | Sold in lots of | Unit reference | Weight lbs (kg) |
|---|---|---|---|---|
| **Reversible mounting bracket** | For the mounting on the back of cabinet of ABL1R●M●●●●● power supply | 5 | **ABL1A01** | 0.187 (0.085) |
| **Clip-on mounting plate for DIN 35 mm mounting rail** | - ABL1REM12050/24025: the plate mounting on DIN requires one mounting plate<br>- ABL1RPM12083 and<br>- ABL1R●M24042/24062/24100: the plate mouting on DIN requires 2 mounting plates<br>- ABL1R●M●●●●●: the mounting on the back of cabinet on the DIN rail requires one mounting plate | 5 | **ABL1A02** | 0.077 (0.035) |

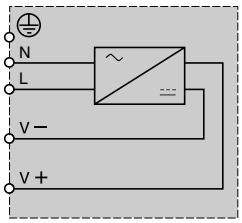
*(1) Compatible input voltage ⎓ 120 to 370 V not indicated on the product.*
*(2) Compatible input voltage ⎓ 180 to 370 V not indicated on the product.*



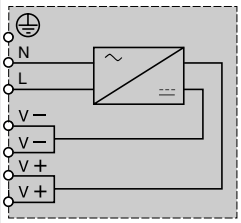
*ABL1A02*

## Wiring diagrams

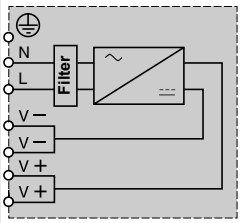
**ABL1REM12050, ABL1REM24025**




**ABL1REM24042, ABL1REM24062, ABL1REM24100**

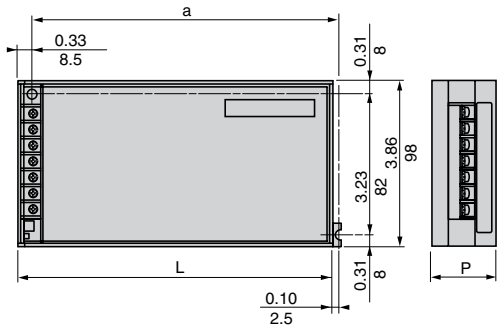



**ABL1RPM●●●●●**



## Approximate dimensions

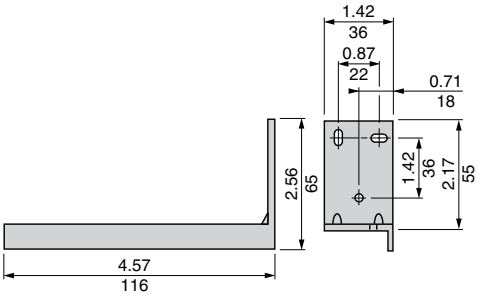
**ABL1R●M●●●●●**



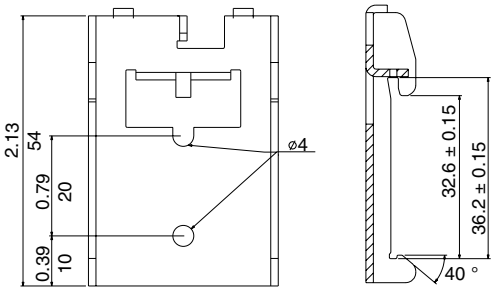

| ABL | L | P | a |
|---|---|---|---|
| ABL1REM12050 | 5.91 (150) | 1.50 (38) | 5.67 (144) |
| ABL1REM24025 | 5.91 (150) | 1.50 (38) | 5.67 (144) |
| ABL1REM24042 | 7.87 (200) | 1.50 (38) | 7.64 (194) |
| ABL1REM24062 | 7.87 (200) | 1.97 (50) | 7.64 (194) |
| ABL1REM24100 | 7.87 (200) | 2.56 (65) | 7.64 (194) |
| ABL1RPM12083 | 7.87 (200) | 1.50 (38) | 7.64 (194) |
| ABL1RPM24042 | 7.87 (200) | 1.50 (38) | 7.64 (194) |
| ABL1RPM24062 | 7.87 (200) | 1.97 (50) | 7.64 (194) |
| ABL1RPM24100 | 7.87 (200) | 2.56 (65) | 7.64 (194) |

in (mm)

**ABL1A01**



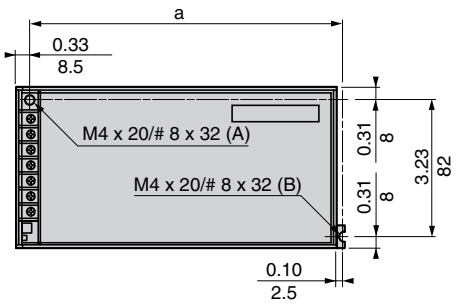

**ABL1A02**




## Mounting

**ABL1R●M●●●●●**

**Direct mounting by 2 M4 x 20 screws**




**Back-of-cabinet mounting using the ABL1A01 reversible bracket with 3 ∅ 4 mm screws**

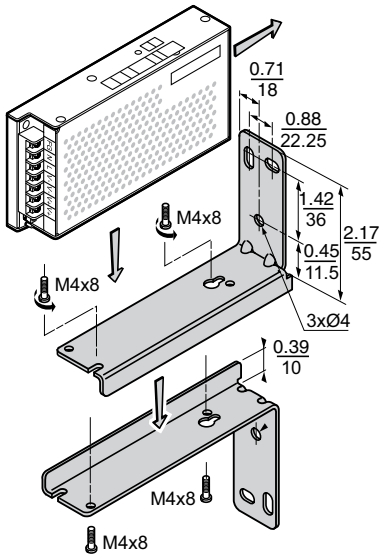
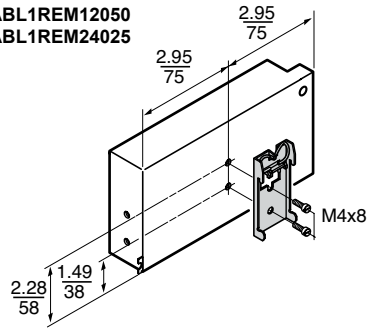
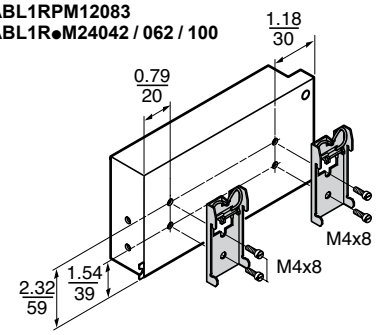



**Plate-mounting using the ABL1A02 clip-on plate on a 35 mm DIN rail**

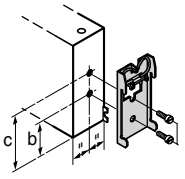
**ABL1REM12050**
**ABL1REM24025**




**ABL1RPM12083**
**ABL1R●M24042 / 062 / 100**




**Mounting by the back ABL1R●M●●●●●:**



# Phaseo™ power supplies

## Regulated switch mode power supplies

### ASIABL AS-Interface™ range

## Power supplies for AS-Interface™ cabling system

Consistent with the standard Phaseo™ line, the range of **ASIABL** power supplies is designed to deliver a ⎓ voltage, as required by AS-Interface cabling systems. Three versions are available to meet all needs encountered in industrial applications, in enclosures, cells or floor-standing enclosures. These single-phase, electronic, switch mode power supplies guarantee the quality of the output current, in accordance with the electrical specifications and conforming to standard EN 50295.

*ASIABLB3002*

**ASIABLB300●**

Operating on a 100 to 240 V ∿ supply, this power supply delivers a voltage of 30 V ⎓. Available in 2.4 and 4.8 A ratings, the outgoing terminal block allows the cable to be connected separately to the AS-Interface interface modules and to the AS-Interface master. Input and output LEDs allow fast and continuous diagnostics.

*ASIABLD3004*

**ASIABLD300●**

Operating on a 100 to 240 V ∿ supply, this power supply delivers a voltage of 30 V ⎓. Available in 2.4 and 4.8 A ratings, it allows diagnosis and management of ground detected faults on AS-Interface interface modules. In the event of a ground detected fault, the Phaseo power supply stops dialog on the AS-Interface cabling system and puts the installation in a fallback condition. Restarting is only possible after deliberate acknowledgement of the detected fault. Two inputs/outputs enable dialog with a processing unit. The outgoing terminal block is used to connect the AS-Interface cable separately to the interface modules and master modules. Input, output and ground detected fault LED's allow fast and continuous diagnostics.

*ASIABLM3024*

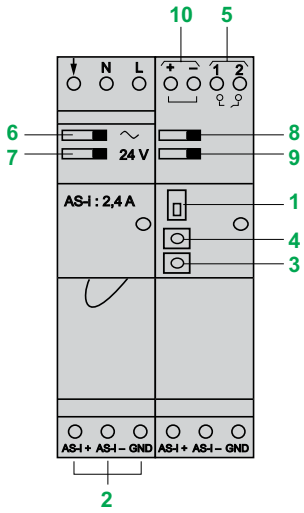
**ASIABLM3024**

Operating on a 100 to 240 V ∿ supply, this product provides two separate power supplies, which are totally independent in the way they operate.
Two output voltages – 30 V/2.4 A (AS-Interface line supply) and 24 V/3 A – are available, making it possible to supply the control equipment without an additional power supply. Input and output LEDs allow fast and continuous diagnostics.

# Phaseo™ power supplies
## Regulated switch mode power supplies
## ASIABL AS-Interface™ range

## Technical specifications

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Type of power supply** | | | **ASIABLB3002** | **ASIABLB3004** | **ASIABLD3002** | **ASIABLD3004** | **ASIABLM3024** | |
| **Functions** | | | Supply to the AS-Interface line (30 V ⎓) | | | | 30 V ⎓ supply | 24 V ⎓ supply |
| **Product certifications** | | | UL 508, CSA 22-2 n°950, TÜV 60950-1 | | | | | |
| **Conforming to standards** | Safety | | IEC/EN 60950-1 | | | | | |
| | EMC | | EN 50081-1, IEC/EN 61000-6-2, EN 55022 class B | | | | | |
| | Low frequency harmonic currents | | No | | | | | |
| **Input circuit** | | | | | | | | |
| **LED indication** | | | Orange LED | | | | | |
| **Input voltage** | Rated values | **V** | ∿ 100 to 240 | | | | | |
| | Permissible values | **V** | ∿ 85 to 264 | | | | | |
| | Current consumption | **A** | 0.5 | 1 | 0.5 | 1 | | |
| | Permissible frequencies | **Hz** | 47 to 63 | | | | | |
| | Current at switch-on | **A** | < 30 | | | | | |
| | Power factor | | 0.65 | | | | | |
| | Efficiency at nominal load | **%** | > 83 | | | | > 83 | > 80 |
| | Dissipated power at nominal load | **W** | 14.7 | 29.5 | 14.7 | 29.5 | 14.7 | 36 |
| **Output circuit** | | | | | | | | |
| **LED indication** | | | Green LED | | | | | |
| **Nominal output values** | Voltage ($U_{Out}$) | **V** | 30 (AS-Interface) | | | | ⎓ 30 | ⎓ 24 |
| | Current | **A** | 2.4 | 4.8 | 2.4 | 4.8 | 2.4 | 3 |
| | Power | **W** | 72 | 144 | 72 | 144 | 72 | 72 |
| **Precision** | Adjustable output voltage | **V** | – | | | | – | 100 to 120 % |
| | Line and load regulation | | 3 % | | | | | |
| | Residual ripple - noise | **mV** | 300 - 50 | | | | | |
| **Holding time** for I max | $U_{In}$ min | **ms** | ⩾ 10 | | | | | |
| **Protection** | Against short-circuit | | Permanent. Automatic restart after elimination of the detected fault | | | | | |
| | Against overload | | 1.1 In | | | | | |
| | Against overvoltage | | Tripping if U > 1.2 Un | | | | U > 1.2 Un | U > 1.5 Un |
| | Against undervoltage | | Tripping if U < 0.95 Un | | | | U < 0.95 Un | U < 0.8 Un |
| **Operating specifications** | | | | | | | | |
| **Connections** | Input | **mm²** | 2 x 2.5 screw terminals + ground | | | | | |
| | Output | **mm²** | 2 x 2.5 screw terminals + ground, multiple output | | | | | |
| **Environment** | Operating temperature | **°C** | 0 to + 60 (derating from 50, see page 14061-EN_Ver7.3/4) | | | | | |
| | Storage temperature | **°C** | - 25 to + 70 | | | | | |
| | Maximum relative humidity | | 95 % (without condensation or dripping water) | | | | | |
| | Degree of protection | | IP 20 (conforming to IEC/EN 60529) | | | | | |
| | Vibrations | | IEC/EN 61131-2 | | | | | |
| **Operating position** | | | Vertical | | | | | |
| **MTBF** | | **h** | > 100000 (conforming to Bell core, at 40 °C) | | | | | |
| **Dielectric strength** 50 Hz during 1 min | Input/output | **V rms** | 3000 | | | | | |
| | Input/ground | **V rms** | 3000 | | | | | |
| | Output/ground (and output/output) | **V rms** | 500 | | | | | |
| **Input fuse incorporated** | | | Yes (not interchangeable) | | | | | |
| **Emission** according to EN 61000-6-3 | Conducted/radiated | | Class B (conforming to EN 55022) | | | | | |
| **Immunity** according to IEC/EN 61000-6-2 | Electrostatic discharge | | IEC/EN 61000-4-2 (4 kV contact/8 kV air) | | | | | |
| | Radiated lectromagnetic field | | IEC/EN 61000-4-3 level 3 (10 V/m) | | | | | |
| | Induced electromagnetic field | | IEC/EN 61000-4-6 (10 V/m) | | | | | |
| | Rapid transients | | IEC 61000-4-4 level 3 (2 kV), | | | | | |
| | Primary outages | | IEC 61000-4-11 (voltage dips and interruptions) | | | | | |

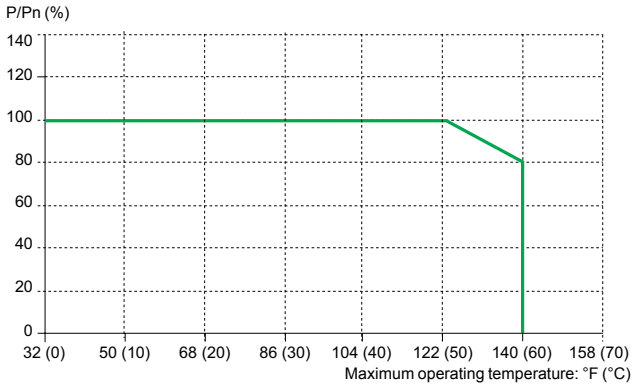



## Output specifications

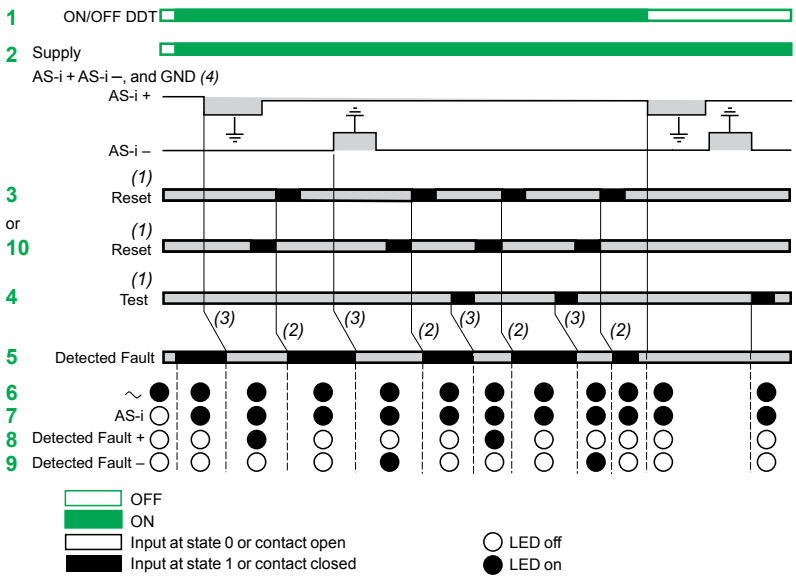
### Derating

The ambient temperature is a determining factor which limits the power that an electronic power supply can deliver continuously. If the temperature around the electronic components is too high, their life will be significantly reduced.

The graph below shows the power (in relation to the nominal power) which the power supply can deliver continuously, according to the ambient temperature.




## Function diagram




*(1) 30 ms min.*
*(2) 15 ms.*
*(3) 20 ms.*
*(4) Warning: the ground fault detector will only operate if the ground (GND) terminal is connected.*

### ⚠ Warning

■ The ground (GND) *(4)* connection must be made. In the event of disconnection, the built-in detector becomes inoperative. To obtain ground connection diagnostics, it is recommended that an **ASIABLD300●** power supply be used with built-in insulation control.

■ An appearence of accidental ground detected fault triggers, in the following cases, the activationg of built-in protection:
□ **case 1**: detected fault between AS-i "+" and ground,
□ **case 2**: detected fault between AS-i "-" and ground,
□ **case 3**: detected fault between sensors/actuators (supplied by ASIABLD300●) and ground.

**In cases 1 and 2** with switch 1 ON -> OFF: maintain of detected fault, any exchange between master and slaves.

**In case 3** with switch 1 ON -> OFF: restart of exchanges between master and slaves but the states of inputs/outputs of affected module are not guaranted.

# Phaseo™ power supplies
## Regulated switch mode power supplies
## ASIABL AS-Interface™ range

## Selection: Upstream protection of power supplies for AS-Interface™ cabling system

| Type of mains supply | ~ 115 V single-phase | | | ~ 230 V single-phase | | |
|---|---|---|---|---|---|---|
| **Power supply** | **Thermal-magnetic supplementary breaker** *(1)* | | **Class CC fuse** | **Thermal-magnetic supplementary breaker** (2-pole) | | **Class CC fuse** |
| **Single-pole** | GB2CB●● | | | | | |
| **2-pole** | GB2DB●● | C60N | | GB2DB●● | C60N | |
| **ASIABLB3002** | GB2 ●B07 | MG24517 *(2)* | 2 A | GB2 DB06 | MG24516 *(2)* | 2 A |
| **ASIABLB3004** | GB2 ●B08 | MG24518 *(2)* | 4 A | GB2 DB07 | MG17453 *(2)* | 2 A |
| **ASIABLD3002** | GB2 ●B07 | MG24517 *(2)* | 2 A | GB2 DB06 | MG24516 *(2)* | 2 A |
| **ASIABLD3004** | GB2 ●B08 | MG24518 *(2)* | 4 A | GB2 DB07 | MG17453 *(2)* | 2 A |
| **ASIABLM3024** | GB2 ●B07 | MG24517 *(2)* | 2 A | GB2 DB06 | MG17453 *(2)* | 2 A |

*(1) Single-phase protection, replace ● by C; 2-pole protection, replace ● by D.*
*(2) UL certified circuit breaker.*

## References

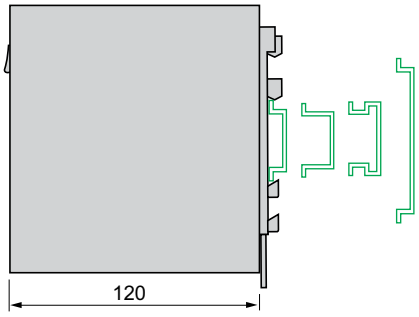
*ASIABL●3002*

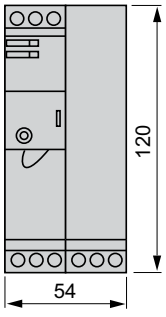
| Input voltage | Secondary | | | Auto-protect reset | Ground fault detection | Reference | Weight |
|---|---|---|---|---|---|---|---|
| | Output voltage | Nominal power | Nominal current | | | | lbs (kg) |
| **Single phase** (N-L1) **or 2-phase** (L1-L2) | | | | | | | |
| ~ **100 to 240 V** - 15 %, + 10 % 50/60 Hz | ⎓ 30 V | 72 W | 2,4 A | Auto | No | **ASIABLB3002** | 1.76 (0.800) |
| | | 144 W | 4,8 A | Auto | No | **ASIABLB3004** | 2.87 (1.300) |
| | | 72 W | 2,4 A | Auto | Yes | **ASIABLD3002** | 1.76 (0.800) |
| | | 144 W | 4,8 A | Auto | Yes | **ASIABLD3004** | 2.87 (1.300) |
| | ⎓ 30 V | 72 W | 2,4 A | Auto | No | **ASIABLM3024** | 2.87 (1.300) |
| | ⎓ 24 V | 72 W | 3 A | | | | |

## Dimensions

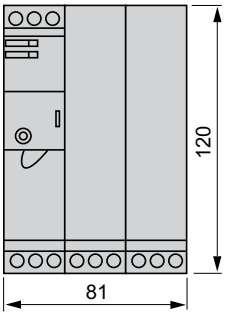
Common side view
Mounting on 35 and 75 mm DIN rails

**ASIABLB3002**
**ASIABLD3002**



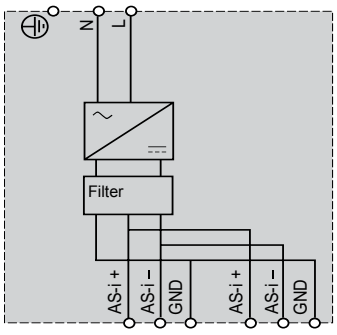




**ASIABLB3004 / ABLD3004**
**ASIABLM3024**

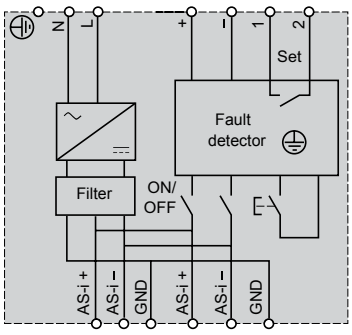



## Wiring diagrams

**ASIABLB300●**




**ASIABLD300●**

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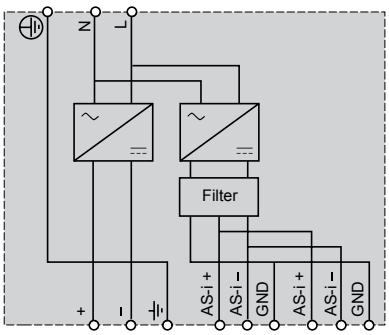
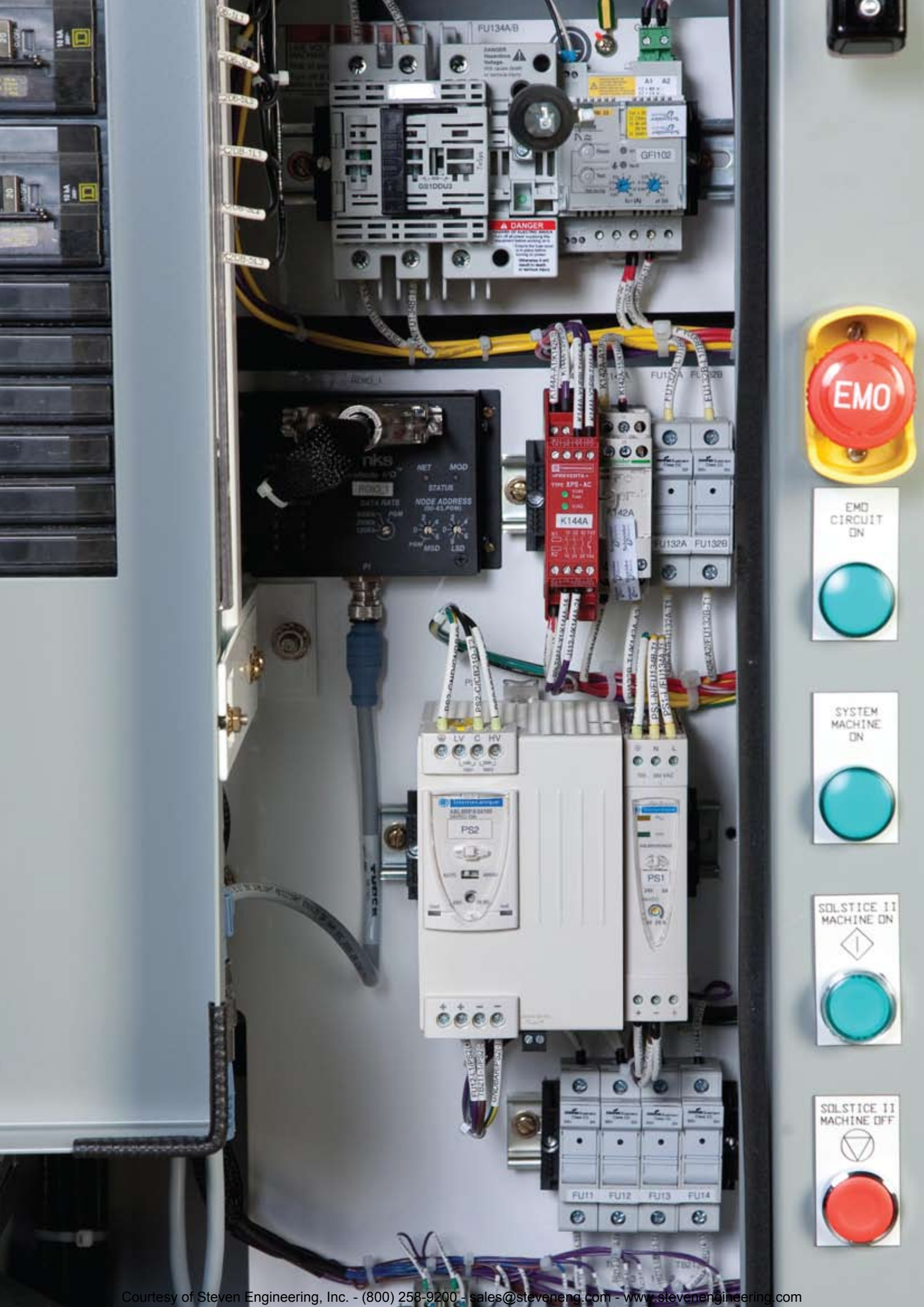



24 V ⎓

# Product reference index



http://www.schneider-electric.com/

**Schneider Electric USA, Inc.**
8001 Knightdale Blvd.
Knightdale, NC 27545

USA Customer Care Center
Tel: 888-778-2733

**Schneider Electric Canada**
5985 McLaughlin Rd.
Missassauga, Ontario, Canada L5R 1B8

Canada Customer Care Center
Tel: 800-565-6699



Design: Schneider Electric
Photos: Schneider Electric

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