

## FEATURES

- Slim Design (39mm) with 25° Push-In connectors
- Active Inrush Current Limit
- Split AC-Input 85V to 132VAC & 170V to 277VAC
- Highest Efficiency up to 94%
- Adjustable output voltage 12V, 24V, 48V
- Reduced no load power consumption 0.7W to 0.8W
- Full Power -40°C/+60°C, Boost Power 150%/5s
- Thermal Power Bonus 120%/45°C
- Lifetime Expectancy 165khrs/ 40°C/ 75% load
- DC-OK Signal
- Made in Europe
- 3 year warranty



Dimensions (HxWxD): 125.0 x 39.0 x 139mm (4.9 x 1.5 x 4.47 inch)  
600g (1.32 lbs)

## APPLICATIONS



## SAFETY &amp; EMC



## DESCRIPTION

The slim RACPRO1-S240E is a high reliability, single phase AC input, 240W DIN Rail mount power supply in extremely compact dimensions of 125 x 139mm with a width of only 39mm with 12V, 24V or 48V output. It is a cost-efficient answer for demanding applications in the harsh industrial automation field with an extended return voltage immunity making it suitable for safe operation against back feeding loads like decelerating motors and inductors. The split input range of 85V to 132VAC and 170V to 277VAC allows operation on worldwide mains from 100V/120VAC to 200/240VAC. These units will deliver up to 240W over the full -40°C to +60°C ambient temperature range with only convection cooling. An extended power bonus of up to 288W at 45°C plus a power boost of up to 150% for 5s makes them suitable for powering highly inductive or capacitive loads. The unique and innovative modern design with 25° push-in connectors allows easy tool-less installation or replacement. The product is certified according to the global safety standards IEC/EN/UL 61010-1 and IEC/EN/UL/CSA 61010-2-201. Electromagnetic radiated and conducted emissions are compliant to heavy industrial EN 61000-6-3 Class B emission standard and EN 61000-6-2 immunity standard.

## SELECTION GUIDE

| Part Number                   | Input Voltage Range [VAC] | Output Voltage nom. [VDC] | Adjustable Output Voltage [VDC] | Output Current nom. [A] | Efficiency <sup>(1)</sup> typ. [%] | rated Output Power <sup>(2)</sup> [W] |
|-------------------------------|---------------------------|---------------------------|---------------------------------|-------------------------|------------------------------------|---------------------------------------|
| RACPRO1-S240E/12              | 85-132 / 170-277          | 12                        | 12-15                           | 15                      | 91.3                               | 180                                   |
| RACPRO1-S240E/24              | 85-132 / 170-277          | 24                        | 24-29                           | 10                      | 93.1                               | 240                                   |
| RACPRO1-S240E/48 *coming soon | 85-132 / 170-277          | 48                        | 48-56                           | 5                       | 94                                 | 240                                   |

Note1: Efficiency is tested at nominal input (230VAC) and full load at +25°C ambient.

Note2: Thermal Power Bonus 120% ( $T_{AMB} = 45^{\circ}\text{C}$  max.), and Boost Power 150%/5sec max.; refer to „Boost Power“.

## ACCESSORIES

| Part Number         | Description  | Datasheet Link                          |
|---------------------|--|---|
| RACPRO1-4SP/24V/5A  | electronic circuit breaker; 4-channel; input voltage DC 24 V adjustable output current 1.75-5.75A and selectable NEC Class 2 mode    | <a href="#">RACPRO1-4SP/24V/5A.pdf</a>  |
| RACPRO1-4SP/24V/10A | electronic circuit breaker; 4-channel; input voltage DC 24 V; adjustable output current 3.5-11.5A                                    | <a href="#">RACPRO1-4SP/24V/10A.pdf</a> |
| RACPRO1-RD40        | highly efficient n+1 redundancy or decoupling diode module 2 x 20A or 1 x 40A for power supplies with 12V, 24V or 48V output voltage | <a href="#">RACPRO1-RD40.pdf</a>        |

**RACPRO1-S240E Series ◊ 1AC DIN-Rail Power Supply**

240W ◊ Input: 120/240VAC nom.

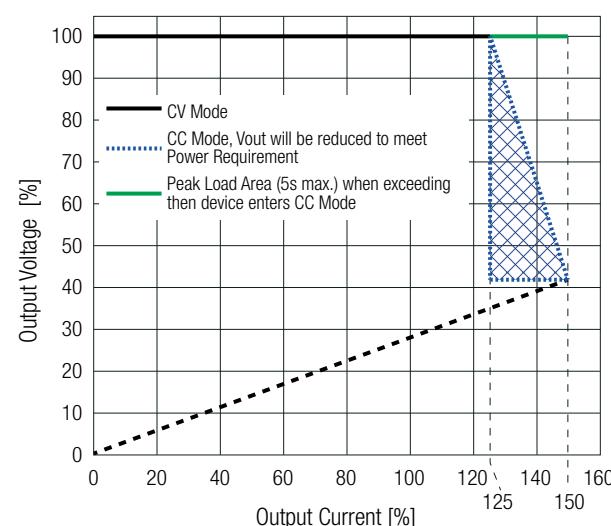
**BASIC CHARACTERISTICS (measured @  $T_{AMB} = 25^\circ\text{C}$ , 230VAC full load and after warm-up unless otherwise stated)**

| Parameter                            | Condition                            |           | Min.   | Typ.     | Max.   |
|--------------------------------------|--------------------------------------|-----------|--------|----------|--------|
| Nominal Input Voltage                | automatic voltage selection          | low line  | 100VAC |          | 120VAC |
|                                      |                                      | high line | 200VAC |          | 240VAC |
| Operating Range <sup>(3)</sup>       | low line                             |           | 85VAC  |          | 132VAC |
|                                      | high line                            |           | 170VAC |          | 277VAC |
| Turn-on Voltage                      |                                      |           |        | 80VAC    |        |
| Turn-off Voltage                     |                                      |           |        | 75VAC    |        |
| Input Current                        | RACPRO1-S240E/12                     | 120VAC    |        | 3.4A     |        |
|                                      |                                      | 240VAC    |        | 1.5A     |        |
|                                      | RACPRO1-S240E/24<br>RACPRO1-S240E/48 | 120VAC    |        | 4.2A     |        |
|                                      |                                      | 240VAC    |        | 2A       |        |
| Inrush Current                       | cold start                           | 120VAC    |        | 3.3A     |        |
|                                      |                                      | 240VAC    |        | 6.3A     |        |
| No Load Power Consumption            | 120VAC                               |           |        | 0.7W     |        |
|                                      | 240VAC                               |           |        | 0.8W     |        |
| Input Frequency Range                |                                      |           | 47Hz   |          | 63Hz   |
| Nominal Output Voltage (factory set) | RACPRO1-S240E/12                     |           |        | 12VDC    |        |
|                                      | RACPRO1-S240E/24                     |           |        | 24VDC    |        |
|                                      | RACPRO1-S240E/48                     |           |        | 48VDC    |        |
| Minimum Load                         |                                      |           | 0%     |          |        |
| Power Factor                         | 240VAC, full load                    |           |        | 0.6      |        |
| Start-up time                        | 120VAC                               |           |        | 650ms    | 700ms  |
|                                      | 240VAC                               |           |        | 820ms    | 900ms  |
| Rise time                            |                                      |           |        | 14ms     |        |
| Hold-up time                         | 120VAC                               |           | 32ms   | 40ms     |        |
|                                      | 240VAC                               |           | 34ms   | 42ms     |        |
| Internal Operating Frequency         |                                      |           |        | 70kHz    |        |
| Ripple and Noise                     | 20MHz bandwidth                      | 120VAC    |        | 128mVp-p |        |
|                                      |                                      | 240VAC    |        | 88mVp-p  |        |

Note3: The products were submitted for safety files at AC (120/240VAC  $\pm 10\%$ ).

Output power derating for Line-input of less than:

12Vout: 108Vac/190Vac (derate linearly from 100% at 108Vac to 88% at 85Vac / 100% at 190Vac to 92% at 175Vac)  
 24/48Vout: 90Vac/190Vac (derate linearly from 100% at 90Vac to 90% at 85Vac / 100% at 190Vac to 85% at 175Vac)

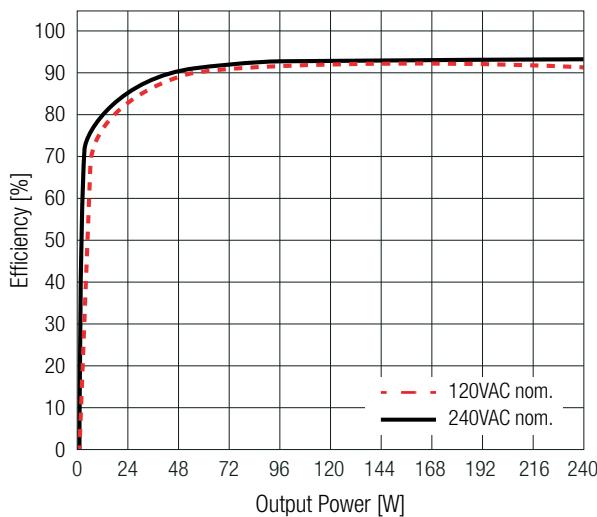
**U/I Characteristic**

**RACPRO1-S240E Series ◊ 1AC DIN-Rail Power Supply**

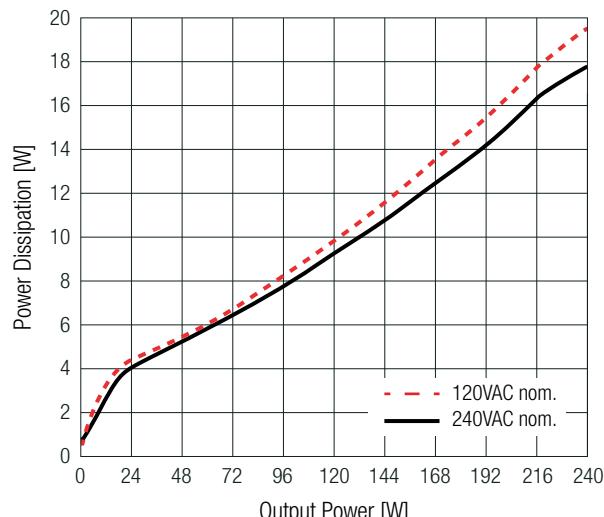
240W ◊ Input: 120/240VAC nom.

**BASIC CHARACTERISTICS (measured @  $T_{AMB}=25^{\circ}\text{C}$ , 230VAC full load and after warm-up unless otherwise stated)****RACPRO1-S240E/24**

Efficiency vs. Load



Power Dissipation vs. Load

**ADDITIONAL FEATURES**

| Parameter                                   | Condition  | Value                                  |
|---|--|--|
| Output Voltage Adjustability <sup>(4)</sup> | RACPRO1-S240E/12                                       | 12-15VDC                               |
|   | RACPRO1-S240E/24                                       | 24-29VDC                               |
|   | RACPRO1-S240E/48                                       | 48-56VDC                               |
| Boost Power                                 | refer to „Boost Power“                                 | 150% for 5s                            |
| DC-OK LED                                   | LED green  | output voltage ok, normal mode         |
|   | LED off  | abnormal mode, no operation or failure |
| Signal Contact                              | closed   | normal mode                            |
|   | open   | abnormal mode, no operation or failure |
| Signal Contact Rating                       | do not connect signaling contact to hazardous voltages | RACPRO1-S240E/12; RACPRO1-S240E/24     |
|   |  | 30VDC/0.1A                             |
|   |  | RACPRO1-S240E/48                       |
|   |  | 60VDC/0.1A                             |

Note4: Make sure that the maximum rated output power will not be exceeded when trimming up.

**REGULATIONS (measured @  $T_{AMB}=25^{\circ}\text{C}$ , 230VAC full load and after warm-up unless otherwise stated)**

| Parameter                       | Condition                          | Value      |
|---------------------------------|------------------------------------|------------|
| Output Accuracy                 |                                    | ±1.0% max. |
| Line Regulation                 | low line to high line, full load   | ±0.5% max. |
| Load Regulation                 | 0% to 100% load                    | ±1.0% max. |
| Max. Capacitive Load (start-up) | RACPRO1-S240E/12; RACPRO1-S240E/24 | 20mF       |
|                                 | RACPRO1-S240E/48                   | 10mF       |
| Transient Response              | 10-100% load                       | ±2.0% typ. |
|                                 | recovery time                      | 10ms typ.  |

**RACPRO1-S240E Series ◊ 1AC DIN-Rail Power Supply**

240W ◊ Input: 120/240VAC nom.

**PROTECTIONS (measured @  $T_{AMB} = 25^{\circ}C$ , 230VAC full load and after warm-up unless otherwise stated)**

| Parameter   | Type                | Value   |
|---|---------------------|---|
| Internal Input Fuse                                 |                     | T6.3A, slow-blow  |
| External Input Protection                           |                     | 16A max. C-characteristic circuit breaker or faster     |
| Short Circuit Protection (SCP)                      |                     | hiccup mode, auto recovery                              |
| Over Voltage Protection (OVP)                       | SELV output         | RACPRO1-S240E/12  |
|   |                     | RACPRO1-S240E/24  |
|   |                     | RACPRO1-S240E/48  |
| Return Voltage Immunity                             | continuous          | RACPRO1-S240E/12  |
|   |                     | RACPRO1-S240E/24  |
|   |                     | RACPRO1-S240E/48  |
|   | <5 min              | RACPRO1-S240E/12  |
|   |                     | RACPRO1-S240E/24  |
|   |                     | RACPRO1-S240E/48  |
| Absorbing Energy                                    | RACPRO1-S240E/12    | 1.5J  |
|   | RACPRO1-S240E/24    | 1.3J  |
|   | RACPRO1-S240E/48    | 2J  |
| Over Voltage Category (OVC)                         |                     | OVC II (5000m)  |
|   |                     | OVC III (2000m)   |
| Over Current Protection (OCP)                       | <5 sec              | >150% of rated load current, hiccup mode, auto recovery |
| Class of Equipment                                  |                     | Class I with PE connection                              |
| Isolation Voltage (safety certified) <sup>(5)</sup> | tested for 1 minute | I/P to O/P  |
|   |                     | I/P to PE   |
|   |                     | O/P to PE   |
| Isolation Resistance                                | I/P to O/P          | 4.5MΩ min.  |
| Insulation Grade                                    |                     | reinforced  |
| Earth Leakage Current                               | 240VAC/60Hz         | 2mA max.  |

Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

**ENVIRONMENTAL (measured @  $T_{AMB} = 25^{\circ}C$ , 230VAC full load and after warm-up unless otherwise stated)**

| Parameter                           | Condition  |                  | Value  |
|-------------------------------------|--|------------------|--|
| Operating Ambient Temperature Range | @ natural convection (0.1m/s)                                | with derating    | -40°C to +70°C   |
|                                     |  | without derating | refer to „Derating Graph“  |
| Operating Altitude <sup>(6)</sup>   | refer to „Altitude Derating“                                 |                  | 5000m  |
| Operating Humidity                  | non-condensing   |                  | 95% RH max.  |
| Pollution Degree                    |  |                  | PD2  |
| IP Rating                           |  |                  | IP20   |
| Shock                               | according to IEC 60068-2-27 Fa                               | non-operating    | 15G/11ms, 3 times (positive/negative) in all axis  |
| Vibration                           | according to IEC 60068-2-6 Fc                                | non-operating    | 5 - 8.4Hz @ 3.5mm deflection<br>8.4 - 150Hz @ 2G, 10 cycles /axis(min-max-min); 1 octave/min |
| MTBF                                | according to EN/IEC 61709 (SN29500), $T_{AMB} = 40^{\circ}C$ |                  | 1230 x 10 <sup>3</sup> hours   |
| Lifetime Expectancy <sup>(7)</sup>  | 230VAC   |                  | refer to below table   |

Note6: Recognized by safety agency for safe operation up to 5000m. High altitude operation may impact the performance and lifetime

**Lifetime Expectancy at 230Vac****RACPRO1-S240E/24**

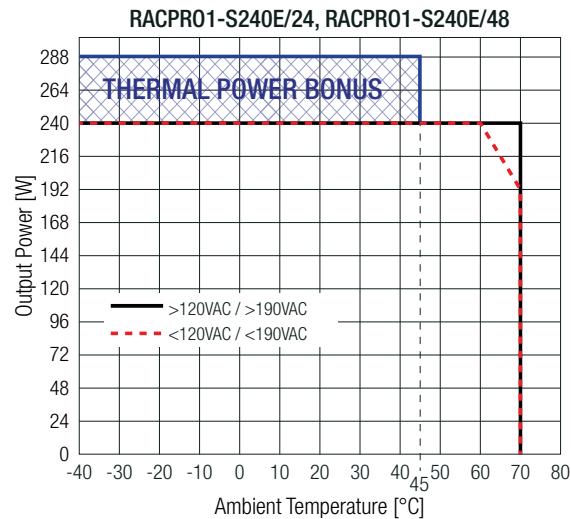
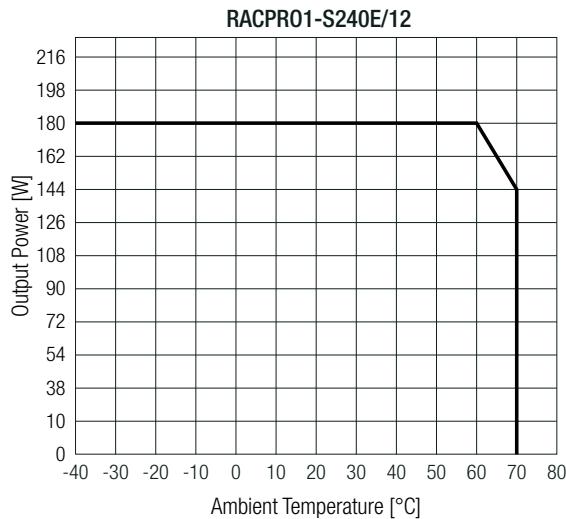
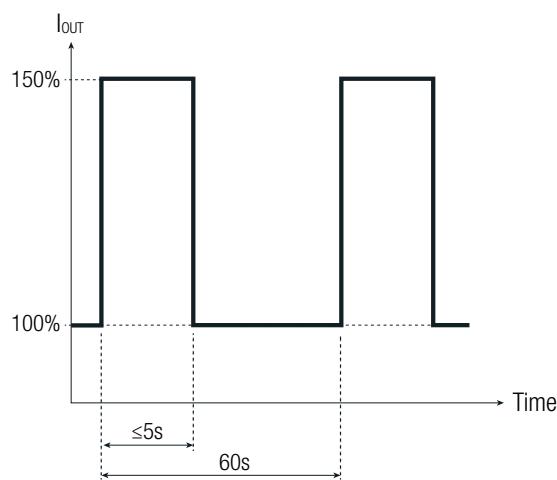
| Ambient Temperature | 50% Load                   | 75% Load                   | 100% Load                  |
|---------------------|----------------------------|----------------------------|----------------------------|
| +20°C               | 743 x 10 <sup>3</sup> hrs. | 662 x 10 <sup>3</sup> hrs. | 321 x 10 <sup>3</sup> hrs. |
| +30°C               | 372 x 10 <sup>3</sup> hrs. | 331 x 10 <sup>3</sup> hrs. | 161 x 10 <sup>3</sup> hrs. |
| +40°C               | 186 x 10 <sup>3</sup> hrs. | 165 x 10 <sup>3</sup> hrs. | 80 x 10 <sup>3</sup> hrs.  |

Note7: The stated lifetime expectancy of more than 15 years is provided for comparison purposes only and does not imply continuous 24/7 operation.

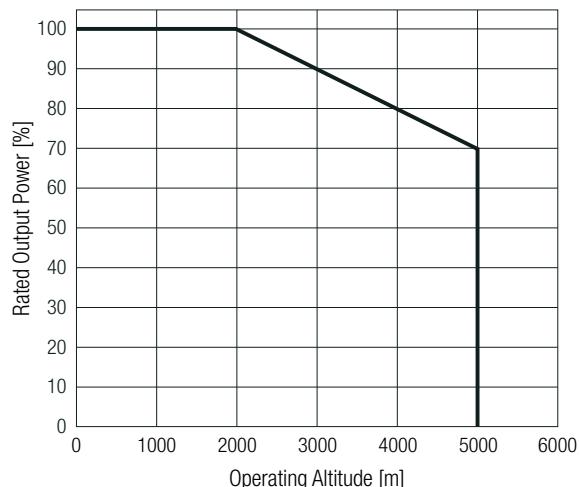
ENVIRONMENTAL (measured @  $T_{AMB} = 25^{\circ}\text{C}$ , 230VAC full load and after warm-up unless otherwise stated)

## Derating Graph

(@ Chamber and natural convection 0.1m/s, standard mounting orientation)

Note8: Thermal power bonus only applies at an input voltage  $\geq 108\text{VAC}$  (low line operation) and  $\geq 210\text{VAC}$  (high line operation)Boost Power  
(-40°C to +60°C max.)

## Altitude Derating



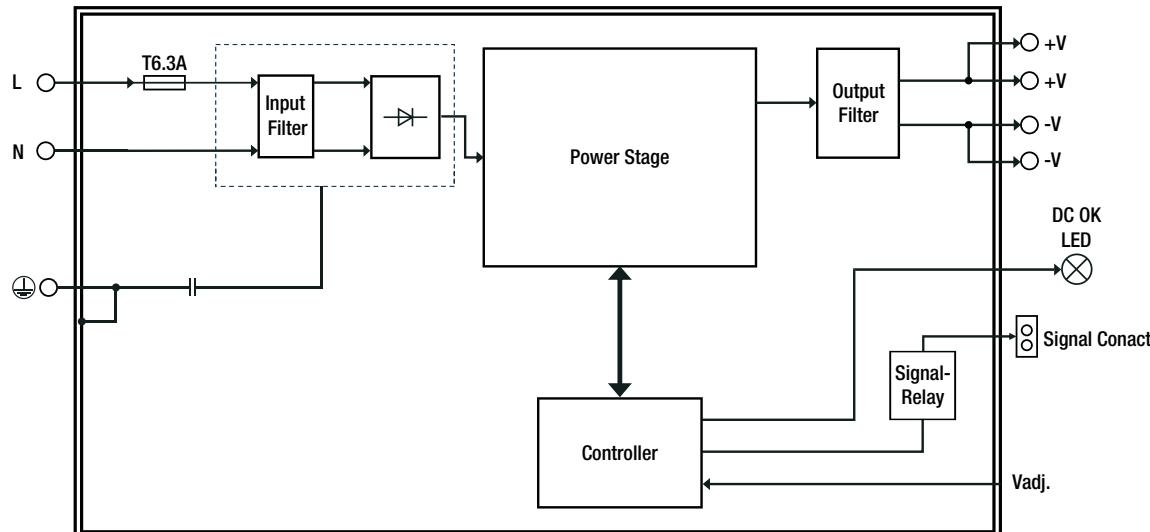
## SAFETY &amp; CERTIFICATIONS

| Certificate Type (Safety)  | Report Number      | Standard   |
|--|--------------------|--|
| Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements (CB)                                 | 25TH0250_61010-1_0 | IEC61010-1:2010+A1:2016 3rd Edition  |
| Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements                                      |                    | EN61010-1:2010+A1:2019   |
| Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements                                      | E550315            | UL61010-1:2012 3rd Edition<br>CAN/CSA-C22.2 No. 61010-1-12 3rd Edition     |
| Electrical Equipment For Measurement, Control, and Laboratory Use; Part 2-201:<br>Particular requirements for control equipment (CB) | 25TH0250_61010-1_0 | IEC61010-2-201:2017 2nd Edition<br>EN IEC 61010-2-201:2018                 |
| Electrical Equipment For Measurement, Control, and Laboratory Use; Part 2-201:<br>Particular requirements for control equipment      | E550315            | UL61010-2-201:2018 2nd Edition<br>CAN/CSA-C22.2 No. 61010-2-201:2018-02-01 |
| RoHS2  |                    | RoHS 2011/65/EU + AM2015/863   |

## SAFETY &amp; CERTIFICATIONS

| EMC Compliance  | Condition  | Standard / Criterion   |  |
|---|--|--|--|
| Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments |  | IEC/EN61000-6-2:2019   |  |
| Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential area        |  | IEC/EN 61000-6-3:2021  |  |
| ESD Electrostatic discharge immunity test   | Air: $\pm 8\text{kV}$ ; Contact: $\pm 6\text{kV}$  | IEC61000-4-2:2008, Criteria A<br>EN61000-4-2:2009, Criteria A    |  |
| Radiated, radio-frequency, electromagnetic field immunity test  | 10V/m (80-1000MHz)   | IEC/EN61000-4-3:2006+A2:2010, Criteria A                         |  |
| Fast Transient and Burst Immunity   | AC Power Port: $\pm 4\text{kV}$<br>DC-Output Port: $\pm 2\text{kV}$                              | IEC/EN61000-4-4:2012, Criteria A                                 |  |
| Surge Immunity  | AC-Power Port:<br>L-N: $\pm 2\text{kV}$<br>L-PE, N-PE,: $\pm 4\text{kV}$                         | IEC/EN61000-4-5:2014+A1:2017,<br>Criteria A                      |  |
|   | DC-Output Port:<br>Vout(+)-Vout(-): $\pm 1\text{kV}$<br>Vout(+)-PE, Vout(-)-PE: $\pm 1\text{kV}$ |  |  |
| Immunity to conducted disturbances, induced by radio-frequency fields   | 10Vrms (0.15-80MHz)  | IEC61000-4-6:2013, Criteria A<br>EN61000-4-6:2014, Criteria A    |  |
| Power Magnetic Field Immunity   | 30A/m, 50/60Hz   | EN61000-4-8:2010, Criteria A                                     |  |
| Voltage Dips  | 230VAC, 50Hz   | 100%, 5 cycle; 70%, 10 cycles;<br>40%, 25 cycles; 30%, 25 cycles | IEC61000-4-11:2004+A1:2017, Criteria B |
| Voltage Interruptions   | 230VAC, 50Hz   | 100%, 250 cycles   | IEC61000-4-11:2004+A1:2017, Criteria B |
| Limits of Harmonic Current Emissions  |  | EN IEC 61000-3-2:2019  |  |
| Limits of Voltage Fluctuations & Flicker  |  | EN61000-3-3:2013+A1:2017   |  |

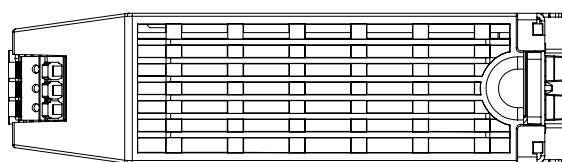
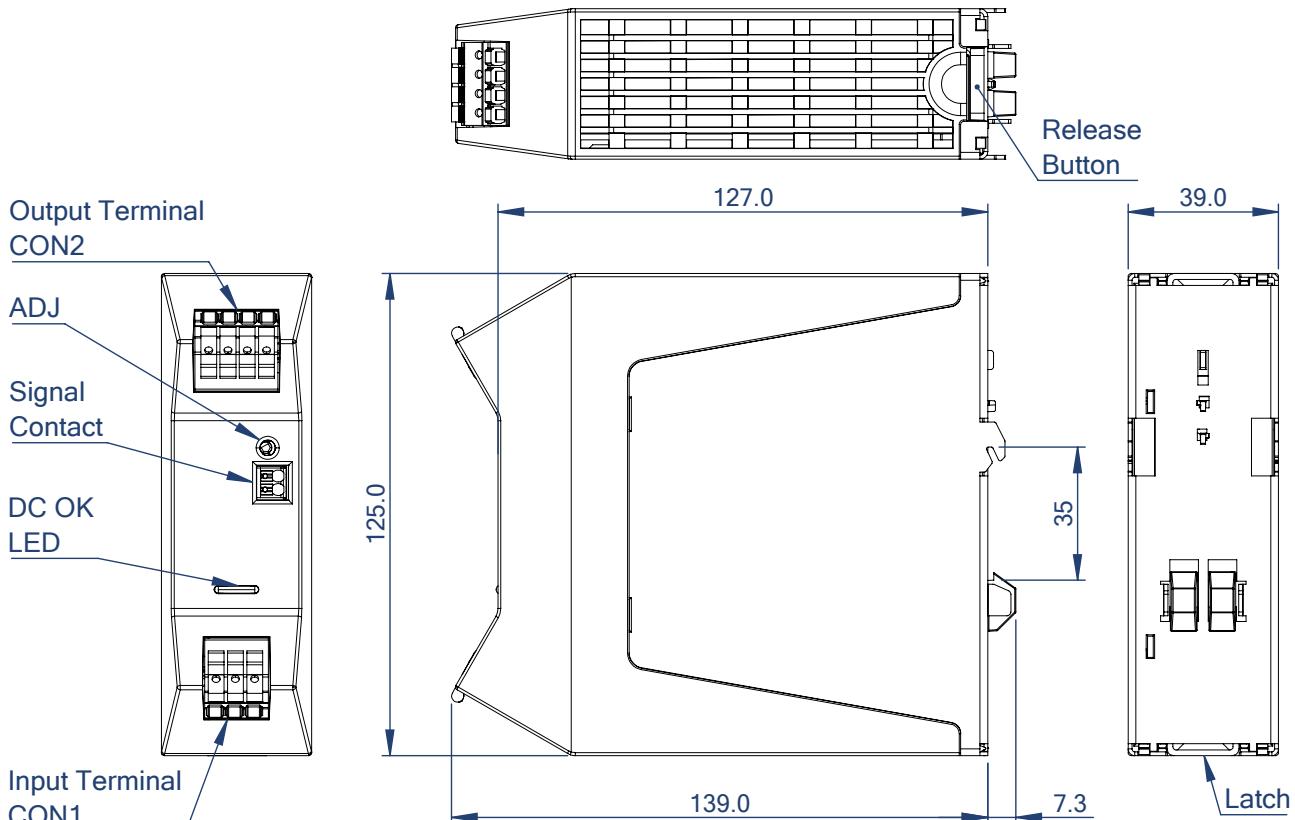
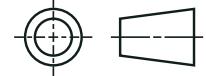
## BLOCK DIAGRAM



## DIMENSION &amp; PHYSICAL CHARACTERISTICS

| Parameter         | Type    | Value   |
|-------------------|---------|---|
| Material          | chassis | polycarbonate (UL94 V-0) / aluminum             |
| Dimension (HxWxD) |         | 125.0 x 39.0 x 139.0mm<br>4.9 x 1.5 x 4.47 inch |
| Weight            |         | 600g<br>1.32 lbs                                |

## Dimension Drawing (mm)



## Input &amp; Output Cage Clamp

| Function   | AWG   | mm <sup>2</sup> |
|--|-------|-----------------|
| L, N   | 24-12 | 0.25-4          |
| PE  | 24-12 | 0.25-4          |
| +1, +2 (Vout)  | 24-12 | 0.25-4          |
| -1, -2 (Vout)  | 24-12 | 0.25-4          |
| Wire stripping length: 10-12mm   |       |                 |

Push-In Signal Terminal <sup>10)</sup>

| Function                     | AWG   | mm <sup>2</sup> |
|------------------------------|-------|-----------------|
| Signal (13,14)               | 24-16 | 0.25-1.5        |
| Wire stripping length: 8-9mm |       |                 |

Note10: Do not connect signaling contact to hazardous voltages. Ferrules are required for flexible cable.

Note9: Use flexible (stranded wire) or solid cables with above wire cross-section is recommended.

Use copper conductors designed for an operating temperature of at least 90°C.

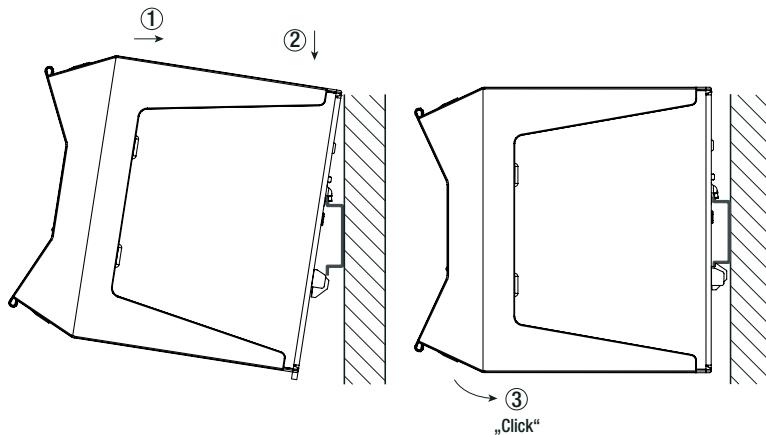
Tolerance: ±0.5mm

## INSTALLATION &amp; APPLICATION

## Mounting Instruction

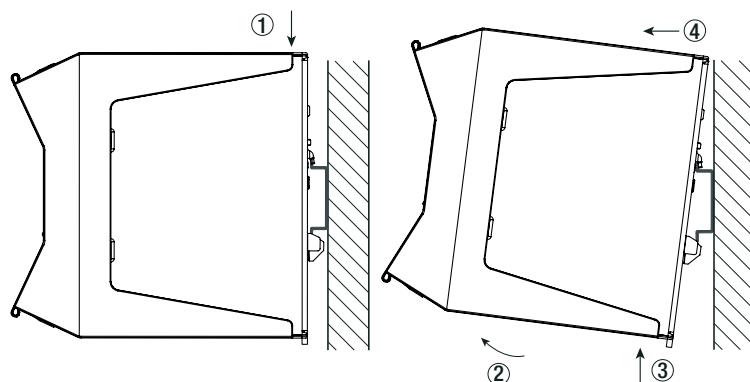
Mounting Rail: Standard TS35 DIN Rail in accordance with EN 60715.

## Mounting



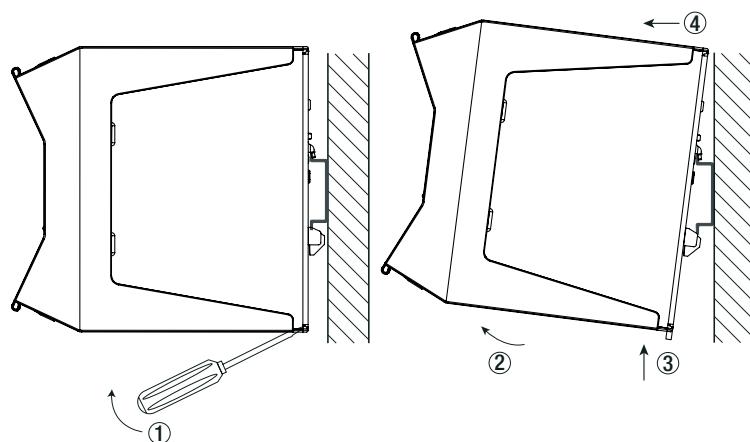
1. Place the device on the DIN rail with a slight upward tilt. Snap the device into the DIN rail.
2. Now tilt the device downwards until it reaches the lower part of the DIN rail.
3. Press the lower part of the device firmly against the rail until the device locks into position on the DIN rail.
4. To make sure it is securely locked in place, give the device a gentle shake.

## Release Option 1 (tool-less)



1. Press the unlock button on the top of the device to release the latch from the rail.
2. While pushing the button, slightly tilt the device forward.
3. Pull the device away from the DIN rail by pushing it up
4. Remove the power supply completely from the rail.

## Release Option 2 (by using a screwdriver)



1. Pull the DIN rail latch by using a screwdriver OUT of the device and HOLD it.
2. Tilt the bottom of the device OUT.
3. Pull the device away from the DIN rail by pushing it up.
4. Remove the power supply completely from the rail.

## INSTALLATION &amp; APPLICATION

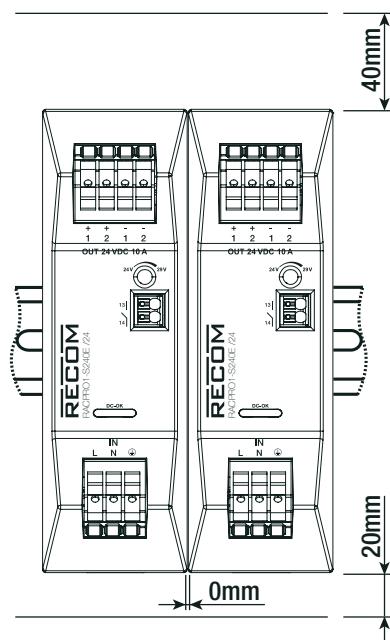
## Installation Instructions

To guarantee sufficient convection cooling, keep a distance of 40mm above and 20mm below the device.

For vertical mounting the device should be installed with the input terminal on the bottom (standard orientation).

For all other mounting orientations, the maximum output power must be reduced by 15% of the nominal power.

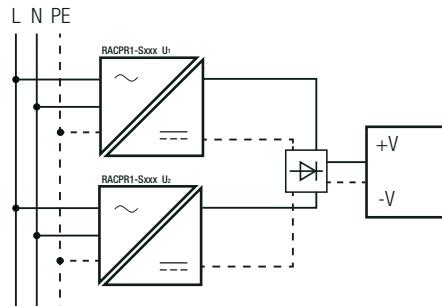
No space between supplies is required.



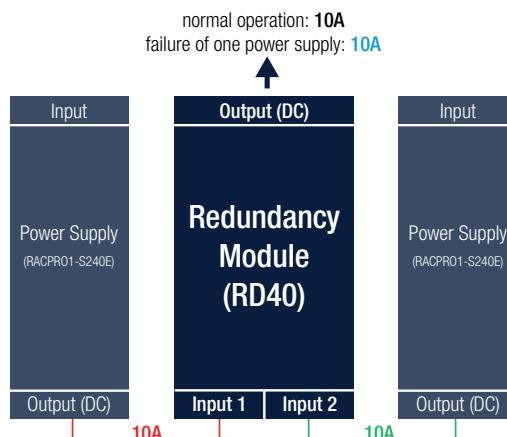
## Parallel operation for redundancy 1+1

- 1) Adjust each power supply to the exact same output voltage with same load and cooling conditions.
- 2) Use the same wire length and cable cross-section for each power supply (star connection) and energize all units at the same time to avoid triggering overload protection.
- 3) It must be ensured that one of the power supply is able to provide the total required output power of the DC load to be supplied.
- 4) In normal operation, each of the two power supplies will be utilized by up to 50%.
- 5) **ATTENTION:** To prevent high reverse currents in the event of a secondary output fault, it is recommended to install a protective circuit at the output of each device when more than two power supplies are connected in parallel (e.g. decoupling diode or DC fuse).

Leakage current, EMI, inrush current, harmonics will increase when using multiple power supplies.



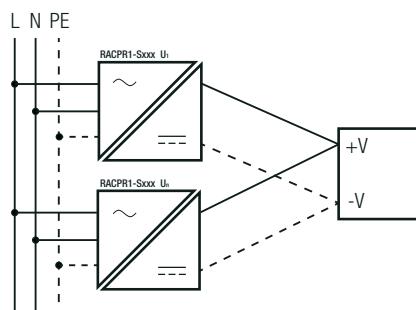
**Please Note:** This basic redundancy configuration does not protect against internal short circuits on the secondary side. In such cases, the faulty unit may draw current from the remaining supplies, resulting in loss of output regulation. To prevent this, use redundancy modules with integrated decoupling elements. RECOM offers the [RACPRO1-RD40](#) redundancy module as a suitable solution for this purpose:



## INSTALLATION &amp; APPLICATION

## Parallel operation for increasing output power 1+1

- 1) Adjust each power supply to the exact same output voltage with same load and cooling conditions.
- 2) Use the same wire length and cable cross-section for each power supply (star connection) and energize all units at the same time to avoid triggering overload protection.
- 3) A 10% safety margin may be recommended because the power distribution may be slightly asymmetrical depending on the cabling.
- 4) **ATTENTION:** To prevent high reverse currents in the event of a secondary output fault, it is recommended to install a protective circuit at the output of each device when more than two power supplies are connected in parallel (e.g. decoupling diode or DC fuse). Leakage current, EMI, inrush current, harmonics will increase when using multiple power supplies.



## Series Operation

- 1) Only use PSU with the same type and performance class with identical parameters.
- 2) To increase the DC output voltage, connect 2 or more power supply units in series.
- 3) Therefore, negative output terminal “-1” of the first power supply unit must be connected to the positive output terminal “+1” of the second power supply unit and routed to the load. Depending on the common output-side earth reference point of the power supply unit, see below table/figures as example.
- 4) **ATTENTION:** Leakage current, EMI, inrush current, harmonics will increase when using multiple power supplies.

| Example with 2 PSU's in series: | Figure 1 | Figure 2 | Figure 3 |
|---------------------------------|----------|----------|----------|
| RACPRO1-S240E/24                | +48Vdc   | -48Vdc   | ±24Vdc   |
| RACPRO1-S240E/48                | +96Vdc   | -96Vdc   | ±48Vdc   |

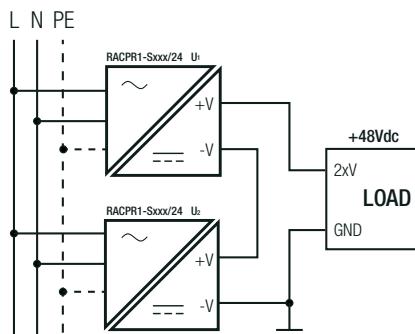


Figure 1

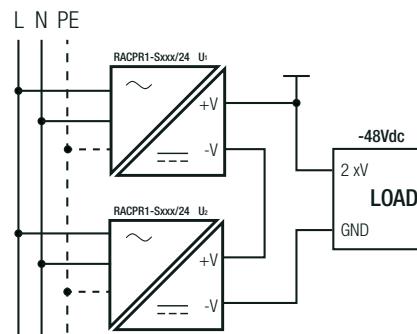


Figure 2

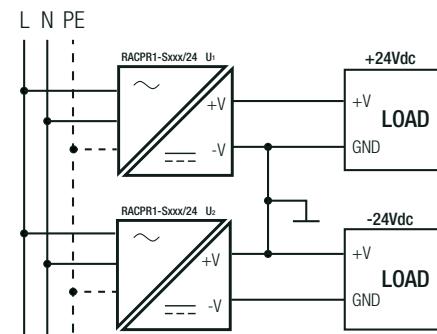


Figure 3

## PACKAGING INFORMATION

| Parameter                   | Type           | Value                  |
|-----------------------------|----------------|------------------------|
| Packaging Dimension (LxWxH) | cardboard box  | 137.0 x 153.0 x 63.0mm |
| Packaging Quantity          |                | 1 pc                   |
| Storage Temperature Range   |                | -40°C to +85°C         |
| Storage Humidity            | non-condensing | 95% RH max.            |

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.