Technical Data Sheet

RACPRO1-DP-T720 Series ◊ 3AC Power Supply

720W ◊ Input: 400-480VAC nom. / 500VDC nom.

RECOM
AC/DC Converter

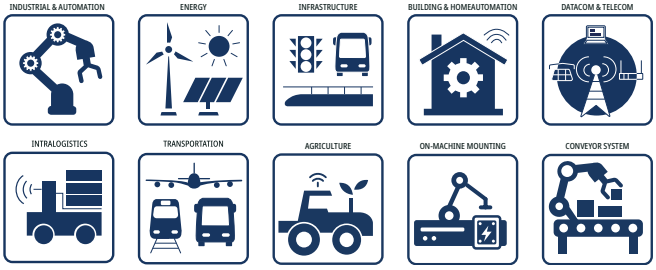
FEATURES

- Highest power density 400W/l
- AC-Input range 3x320V to 3x600V
- DC-Input range 425V to 800V
- PFC>0,9 and insignificant inrush current
- Highest efficiency up to 96.8%
- Temperature range -40°C/+70°C
- Highest output power 720W at 45°C
- Peak power 1.080W at 70°C/5s
- Highest lifetime 431kh at 20°C/500W
- 24V & 48V adjustable output voltages
- Output voltage & load indication by LED
- Extended surge immunity up to 2.5kV/6kV
- Made in Europe with 3 year warranty



Dimensions (LxWxD): 192 x 177 x 60mm (7.6 x 7 x 2.4 inch)

APPLICATIONS



SAFETY & EMC

RoHS² compliant 10 from 10 | Reach compliant | IECEE CB SCHEME | CE | cULus LISTED E550315

DESCRIPTION

The robust RACPRO1-DP-T720 is a 720 W IP67-sealed, waterproof and dustproof three-phase AC input power supply engineered for decentralized power architectures. Designed for direct installation on industrial equipment such as motors, conveyor belts, and machines, it eliminates the need for traditional switching cabinets.

Its innovative modern design enables fast installation and flexible production-line reconfiguration. Multi-color LEDs provide real-time output load current and fault indication, complemented by a remote DC-OK signal for simple commissioning and continuous monitoring.

Decentralized power delivers major advantages: lower installation costs, reduced cabling (less copper), and greater system flexibility. The RACPRO1-DP-T720 is purpose-built for these demanding, exposed environments. It accepts a wide three-phase 320–600 VAC or 425–800 VDC input (DC microgrid compatible) with insignificant inrush current and delivers trimmable 24 VDC or 48 VDC outputs via sealed connectors. With peak efficiency of 96.8 %, it provides full output power up to +45 °C using only convection cooling.

Measuring just 192 × 177 × 60 mm and weighing appr. 1.5 kg, it achieves class-leading power density of 400 W/l — making machine or bulkhead mounting straightforward and space-efficient.

Certified to IEC/EN/UL 61010-1 and IEC/EN/UL/CSA 61010-2-201, the unit meets heavy-industrial EMC requirements (EN 61000-6-4 Class B emissions and EN 61000-6-2 immunity) and offers extended 6 kVAC surge immunity. Manufactured in Europe and backed by a 3-year warranty, the RACPRO1-DP-T720 sets a new standard for rugged, high-performance decentralized power.

SELECTION GUIDE

Part Number	Input voltage range [VAC]	Output voltage factory set [VDC]	Adjustable output voltage [VDC]	Output channels [ ]	Output current per channel max. [A]	Efficiency (1) typ. [%]	Rated output power (2) [W]
RACPRO1-DP-T720/24 (3)	3x 320-600	24	24-29	4	10	96.7	720
RACPRO1-DP-T720/48 (3)	3x 320-600	48	48-56	4	10	96.8	720

Note1: Efficiency is tested at nominal input (400/480VAC) and light load at +25°C ambient.

Note2: Boost Power 150% (1080W) for 5sec max., over the entire operating ambient temperature range; refer to **„Boost Power“**.

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720W ◊ Input: 400-480VAC nom. / 500VDC nom.

RECOM AC/DC Converter

MODEL NUMBERING

RACPRO1-DP-T720/ __ /M12

- Decentralized Power Supply
- nom. Output Power
- Connector Options (3)
- nom. Output Voltage

Note3: add suffix "/M12" for M12 connector types. Detail information: **„Dimension Drawing RACPRO1-DP-T720/xx/M12 (mm)"**
Other connector/output voltage variants on request. See ordering information below.

ORDERING INFORMATION

Model	Nominal output voltage (factory set)	Connector type	
		M12 connector */M12	7/8" connector */S78
RACPRO1-DP-T720/24*	24VDC	y	coming soon
RACPRO1-DP-T720/36*	36VDC	on request	on request
RACPRO1-DP-T720/48*	48VDC	y	coming soon

y= standard portfolio; on request= MOQ may apply on project base

BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, 3AC 400VAC full load and after warm-up unless otherwise stated)

Parameter	Condition		Min.	Typ.	Max.
Nominal Input Voltage	50/60Hz		400VAC		480VAC
Operating Range (4)	3 phase operation (5)		320VAC		600VAC
	DC input; refer to **„Connections for DC-operation"**		425VDC		800VDC
Turn-on Voltage	prevents switching on during 1AC operation			296VAC	
	DC operation			419VDC	
Turn-off Voltage	AC operation			198VAC	
	DC operation			265VDC	
Input Current	AC operation	400VAC		3x 1.2A	
		480VAC		3x 1A	
	DC operation	500VDC		2x 1.5A	
Inrush Current	3AC 400VAC, cold start		no inrush current except EMC charging peaks		
No Load Power Consumption	3AC 400VAC	RACPRO1-DP-T720/24		3.5W	
		RACPRO1-DP-T720/48		3.9W	
	3AC 480VAC	RACPRO1-DP-T720/24		3.3W	
		RACPRO1-DP-T720/48		3.7W	
Power Dissipation	full load	RACPRO1-DP-T720/24		28.2W	
		RACPRO1-DP-T720/48		26.9W	
Input Frequency Range			47Hz		63Hz
Nominal Output Voltage (factory set)	RACPRO1-DP-T720/24			24VDC	
	RACPRO1-DP-T720/48			48VDC	
Minimum Load			0%		
Power Factor	full load			0.93	
Start-up time	3AC 400VAC			350ms	
Rise time	RACPRO1-DP-T720/24			22ms	
	RACPRO1-DP-T720/48			18ms	
Hold-up time	400/480VAC			20ms	
Internal Operating Frequency				70kHz	
Ripple and Noise	20MHz bandwidth	RACPRO1-DP-T720/24		70mVp-p	
		RACPRO1-DP-T720/48		30mVp-p	

Note4: The products were submitted for safety files at AC and DC-Input operation. (320V-600VAC and 425-800VDC)
If input voltage is >500VDC consider an external fuse according to applicable standards.
Note5: Output power derating for Line-input above 3AC 550VAC (derate linearly from 100% at 550VAC to 90% at 3AC 600VAC)

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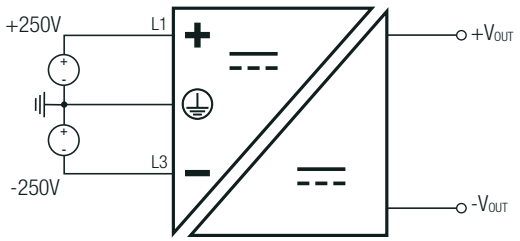
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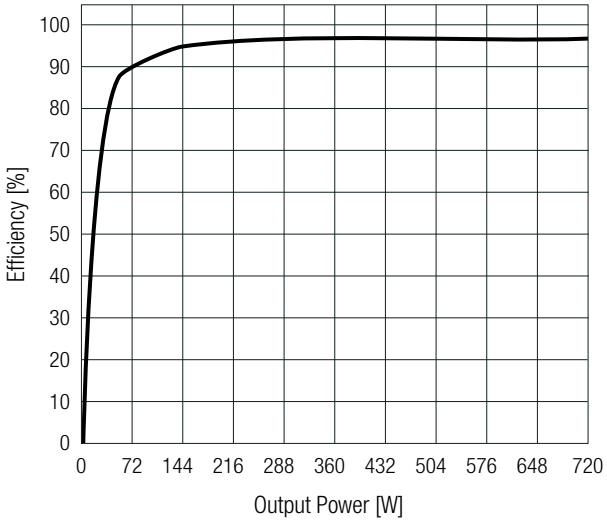
BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, 3AC 400VAC full load and after warm-up unless otherwise stated)

Connections for DC-operation

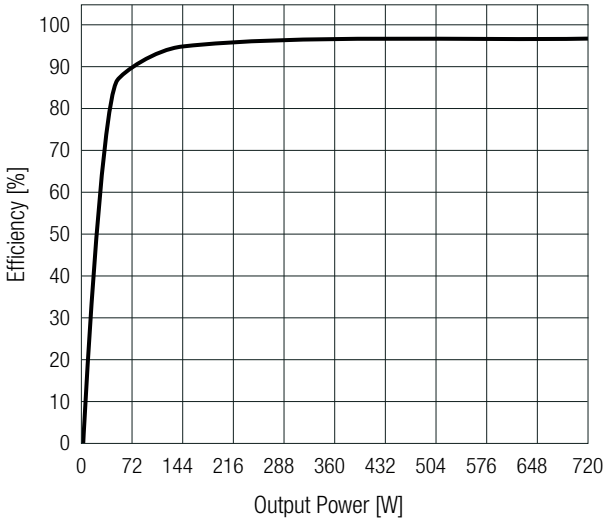


Efficiency vs. Load

RACPRO1-DP-T720/24
(400VAC, 26VDC)



RACPRO1-DP-T720/48
(400VAC, 52VDC)

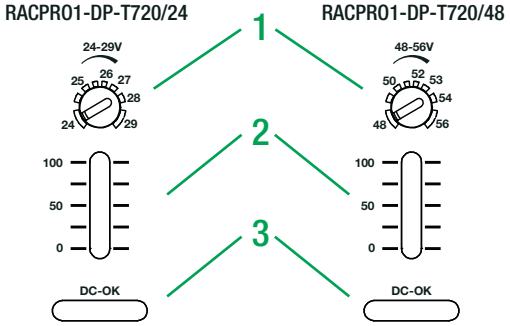


ADDITIONAL FEATURES

Parameter	Condition		Value
Output Voltage Adjustability [6]	potentiometer, 8 selectable voltage steps; selected voltage is common to all channels	RACPRO1-DP-T720/24	24V, 24.5V, 25V, 25.5V, 26V, 27V, 28V, 29VDC
		RACPRO1-DP-T720/48	48V, 49V, 50V, 51V, 52V, 53V, 54V, 56VDC
Boost Power	refer to **„Boost Power“**, over the entire operating range up to 70°C		150% (1080W max.) for 5s
Load Indication LED	LED green, refer to **„Load Indication LED“**		normal mode
	LED off		abnormal mode, no operation or failure
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-DP-T720/24	30VDC/0.1A
		RACPRO1-DP-T720/48	60VDC/0.1A

Note6: Make sure that the maximum rated output power will not be exceeded when trimming up.

FRONT PANEL ELEMENTS

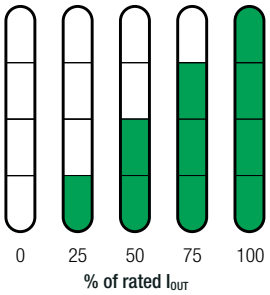


1. Output Voltage Potentiometer (refer to **„Output Voltage Adjustability [6]“**)
2. Load LED indicator (refer to **„Load Indication LED““**)
3. DC-OK LED (refer to **„DC-OK LED“**)

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LOAD INDICATION LED

The LED bar with four lights displaying actual and target current of rated output current.



REGULATIONS (measured @ T_{AMB}= 25°C, 3AC 400VAC full load and after warm-up unless otherwise stated)

Parameter	Condition	Value
Output Accuracy		±0.5% max.
Line Regulation	low line to high line, full load	±0.1% typ.
Load Regulation	0% to 100% load	±0.5% typ.
Max. Capacitive Load (start-up)	RACPRO1-DP-T720/24	60mF
	RACPRO1-DP-T720/48	15mF
Transient Response	10-100% load	±3.0% typ.
	recovery time	1ms typ.

PROTECTIONS (measured @ T_{AMB}= 25°C, 3AC 400VAC full load and after warm-up unless otherwise stated)

Parameter	Type			Value
Internal Input Fuse	DC compliant			2x T5A, slow-blow
External Input Protection	3-phase circuit breaker with a minimum of 6A and a maximum of 16 A, characteristic B or C; or a circuit breaker for motor protection with a maximum of 16A, trip class 10			
Short Circuit Protection (SCP)				hiccup mode, auto recovery
Over Voltage Protection (OVP)	RACPRO1-DP-T720/24			37.4VDC
	RACPRO1-DP-T720/48			59VDC
Return Voltage Immunity	continuous		RACPRO1-DP-T720/24	35VDC max.
			RACPRO1-DP-T720/48	63VDC max.
	<5 min		RACPRO1-DP-T720/24	38VDC max.
			RACPRO1-DP-T720/48	68VDC max.
Absorbing Energy				2.6J
Over Voltage Category (OVC)				OVC II (5000m); OVC III (2000m)
Over Current Protection (OCP)	<5 sec		RACPRO1-DP-T720/24	33.5A typ., hiccup mode, auto recovery
			RACPRO1-DP-T720/48	17.2A typ., hiccup mode, auto recovery
Class of Equipment				Class I with PE connection
Isolation Voltage (safety certified) (7)	tested for 1 minute	I/P to O/P		2.6kVAC / 3.7kVDC
		I/P to PE		1.6kVAC / 2.2kVDC
Isolation Voltage (tested by Recom) (7)	tested for 1 minute	7/8" connector type	I/P to O/P; I/P to PE	3.5kVAC / 5kVDC
		M12 connector type	I/P to O/P; I/P to PE	2.6kVAC / 3.7kVDC
Isolation Resistance	I/P to O/P			4.5MΩ min.
Insulation Grade				reinforced
Input/Output Separation (8)	-Vout internally connected to protective earth			PELV/ES1
Earth Leakage Current	480VAC/60Hz			0.42mA typ.

Note7: For repeat Hi-Pot testing, reduce the time and/or the test voltage.
Note8: SELV (no connection between -Vout and PE) output version available on request.

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ENVIRONMENTAL (measured @ T_{AMB}= 25°C, 3AC 400VAC 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 (9)			5000m
Operating Humidity			95% RH max.
Pollution Degree			PD3
IP Rating			IP65 and IP67
Shock	according to IEC 60068-2-27 Fa	non-operating (10)	15G/11ms, 3 times (positive/negative) in all axis
Vibration	according to IEC 60068-2-6 Fc	non-operating (10)	5 - 18.4Hz @ 3.5mm deflection 8.4 -150Hz @ 2G, 10 cycles /axis(min-max-min); 1 octave/min
MTBF	according to EN/IEC 61709 (SN29500)	RACPRO1-DP-T720/24	518 x 10³ hours
		RACPRO1-DP-T720/48	573 x 10³ hours
Lifetime Expectancy (11)			refer to **„Table1: Lifetime Expectancy“**

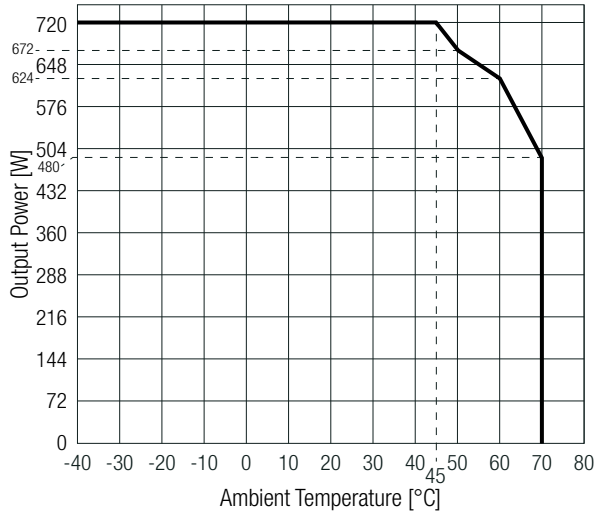
Note9: Recognized by safety agency for safe operation up to 5000m. High altitude operation may impact the performance and lifetime
Note10:Functional test after shock/vibration tests

Table1: Lifetime Expectancy

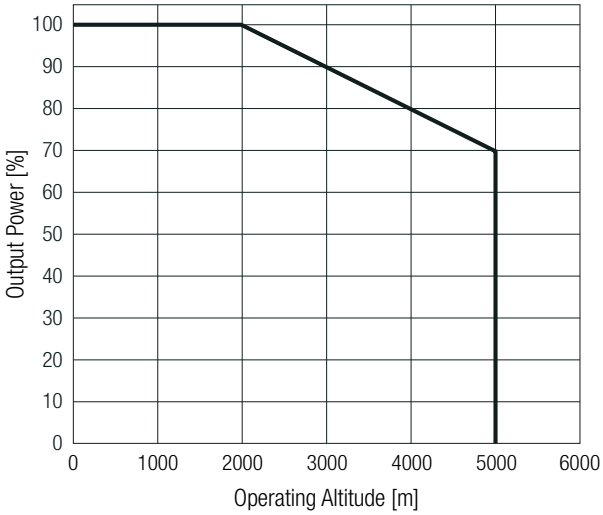
Ambient Temperature	RACPRO1-DP-T720/24			RACPRO1-DP-T720/48		
	250W	500W	720W	250W	500W	720W
+20°C	1033 x 10³ hrs.	431 x 10³ hrs.	95 x 10³ hrs.	984 x 10³ hrs.	496 x 10³ hrs.	169 x 10³ hrs.
+30°C	688 x 10³ hrs.	293 x 10³ hrs.	68 x 10³ hrs.	545 x 10³ hrs.	296 x 10³ hrs.	84 x 10³ hrs.
+40°C	327 x 10³ hrs.	143 x 10³ hrs.	35 x 10³ hrs.	301 x 10³ hrs.	146 x 10³ hrs.	42 x 10³ hrs.

Note11: Lifetime values are calculated for mounting with insulating sheet. Mounting on a cooling plate can improve thermal conditions and increase lifetime.

Derating Graph
(@ Chamber and natural convection 0.1m/s; standard mounting orientation)



Altitude Derating
(for continuous operation)



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RACPRO1-DP-T720 Series ◊ 3AC Power Supply

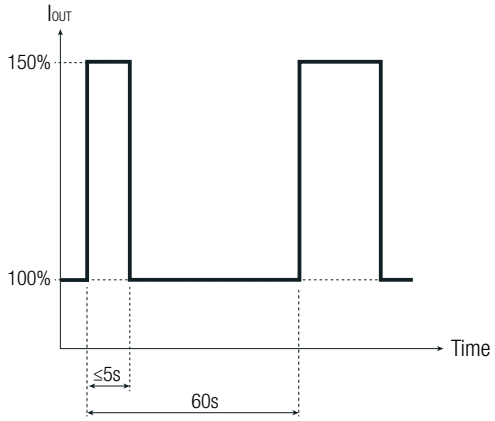
720W ◊ Input: 400-480VAC nom. / 500VDC nom.

RECOM AC/DC Converter

ENVIRONMENTAL (measured @ T_{AMB}= 25°C, 3AC 400VAC full load and after warm-up unless otherwise stated)

Boost Power

(400V-480VAC or 500VDC, -40°C to +70°C)



SAFETY & CERTIFICATIONS

Certificate Type (Safety)	Report Number	Standard
Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements (CB)	ET2025020 453A0	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-Vol1 -Sec2	UL61010-1:2012 3rd Edition CAN/CSA-C22.2 No. 61010-1-12 3rd Edition
Electrical Equipment For Measurement, Control, and Laboratory Use; Part 2-201: Particular requirements for control equipment (CB)	ET2026005 461A0	IEC61010-2-201:2017 2nd Edition
Electrical Equipment For Measurement, Control, and Laboratory Use; Part 2-201: Particular requirements for control equipment		EN IEC 61010-2-201:2018
Electrical Equipment For Measurement, Control, and Laboratory Use; Part 2-201: Particular requirements for control equipment	E550315-Vol1 -Sec2	UL61010-2-201:2018 2nd Edition CAN/CSA-C22.2 No. 61010-2-201:28-02-01 2nd Edition
RoHS2		RoHS 2011/65/EU + AM2015/863

EMC Compliance according to IEC/EN61000-6-4/6-2	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 equipment in residential environments				IEC/EN 61000-6-3:2021, Class B
ESD Electrostatic discharge immunity test	Air: ±2, 4, 8, 15kV Contact: ±2, 4, 6, 8kV			IEC61000-4-2:2008, Criteria A EN61000-4-2:2009, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	10V/m (80-1000MHz)			EN IEC 61000-4-3:2020, Criteria A
Fast Transient and Burst Immunity	AC Power Port: ±0.5, 1, 2, 4kV DC-Output Port: ±0.5, 1, 2, 4kV Signal Contact: ±0.5, 1, 2kV			IEC/EN61000-4-4:2012, Criteria A
Surge Immunity	AC-Power Port:	M12 connector	L1-L2, L1-L3, L2-L3: ±0.5, 1, 2.5kV L1-PE, L2-PE, L3-PE: ±0.5, 1, 2, 4kV	IEC/EN61000-4-5:2014+A1:2017, Criteria A
		7/8" connector	L1-L2, L1-L3, L2-L3: ±0.5, 1, 2.5kV L1-PE, L2-PE, L3-PE: ±0.5, 1, 2, 6kV	
	DC-Output Port:		Vout(+) - Vout(-): ±0.5, 1kV PELV: Vout(+/-) - PE: ±0.5, 1, 2kV	
Immunity to conducted disturbances, induced by radio-frequency fields	20Vrms (0.15-80MHz)			IEC61000-4-6:2013, Criteria A EN61000-4-6:2014, Criteria A
Voltage Dips	400VAC, 50Hz		100%: 0.5, 1, 5P 70%: 0.5, 1, 5, 10, 25, 50P	EN IEC 61000-4-11:2020, Criteria A
			40%: 5, 10, 25, 50, 100, 250P 30%: 5, 10, 25, 50, 100, 250P	EN IEC 61000-4-11:2020, Criteria B
Voltage Interruptions	400VAC, 50Hz		100%: 250P	EN IEC 61000-4-11:2020, Criteria C
Limits of Harmonic Current Emissions				EN IEC 61000-3-2:2019
Limits of Voltage Fluctuations & Flicker				EN61000-3-3:2013

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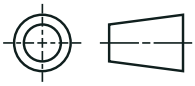
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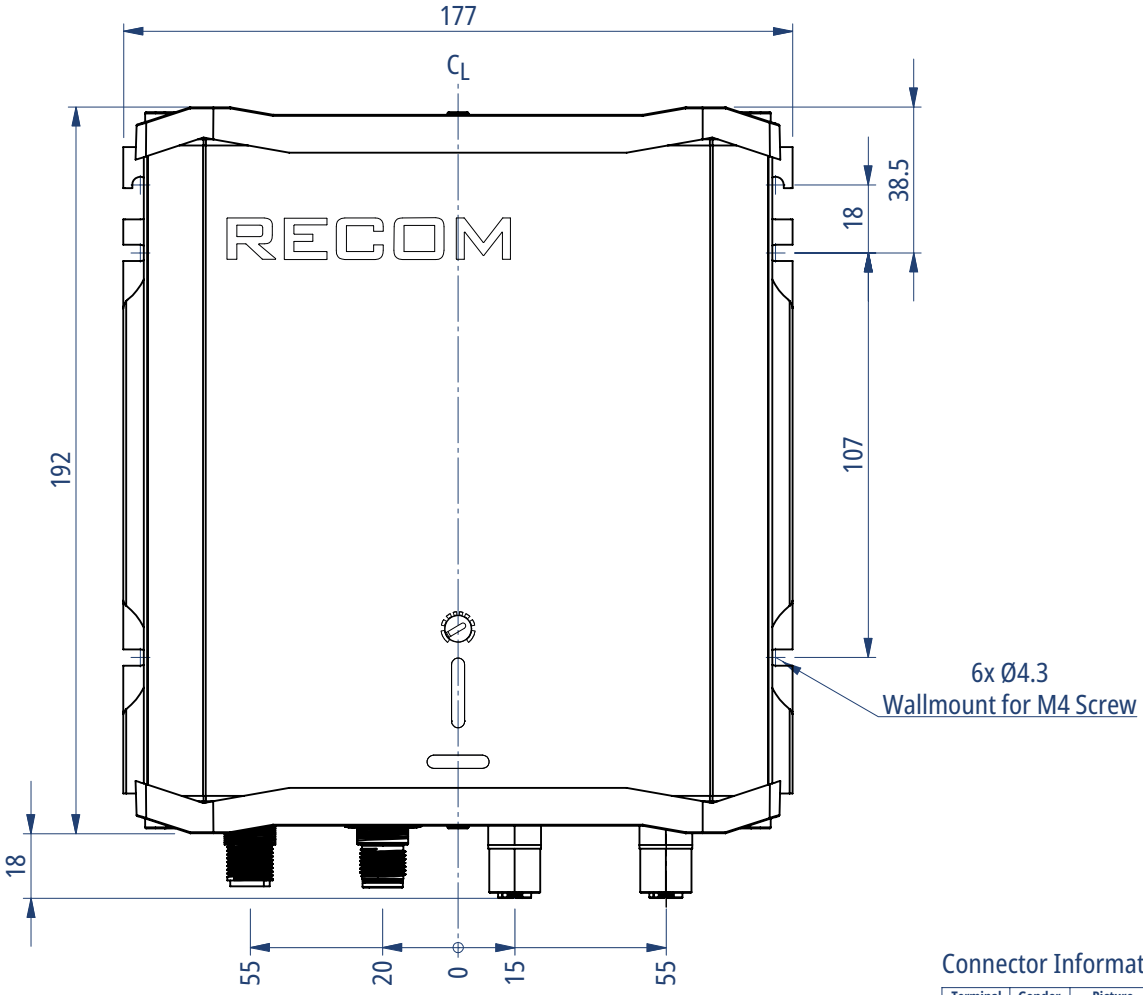
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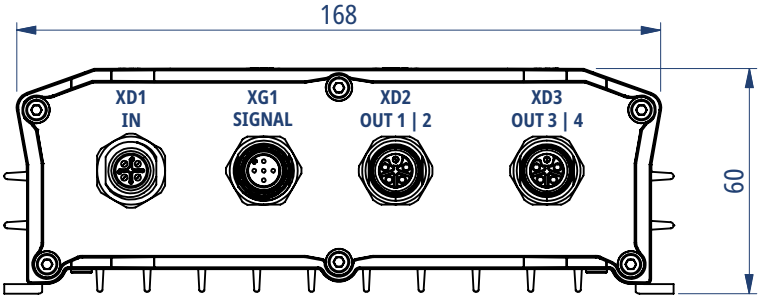
DIMENSION & PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	chassis	aluminum alloy
	cover	polycarbonate
Dimension (LxWxH)	without connector	192 x 177 x 60mm 7.6 x 7 x 2.4 inch
Weight	with M12 connector	1500g typ. 3.30 lbs
	with 7/8" connector	1570g typ. 3.46 lbs

Dimension Drawing RACPRO1-DP-T720/xx/M12 (mm)







Connector Information

Terminal	Gender	Picture	Pin	Connection
XD2 OUT 1 | 2	M12 L Female		1	24/48 VDC OUT 1
			2	GND OUT 2
			3	GND OUT 1
			4	24/48 VDC OUT 2
			PE	PE
XD3 OUT 3 | 4	M12 L Female		1	24/48 VDC OUT 3
			2	GND OUT 4
			3	GND OUT 3
			4	24/48 VDC OUT 4
			PE	PE
XD1 IN	M12 S Male		1	L1
			2	L2
			3	L3
			4	PE
XG1 SIGNAL	M12 A Male		1	Relay connection
			2	not connected
			3	not connected
			4	Relay connection
			5	not connected

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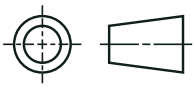
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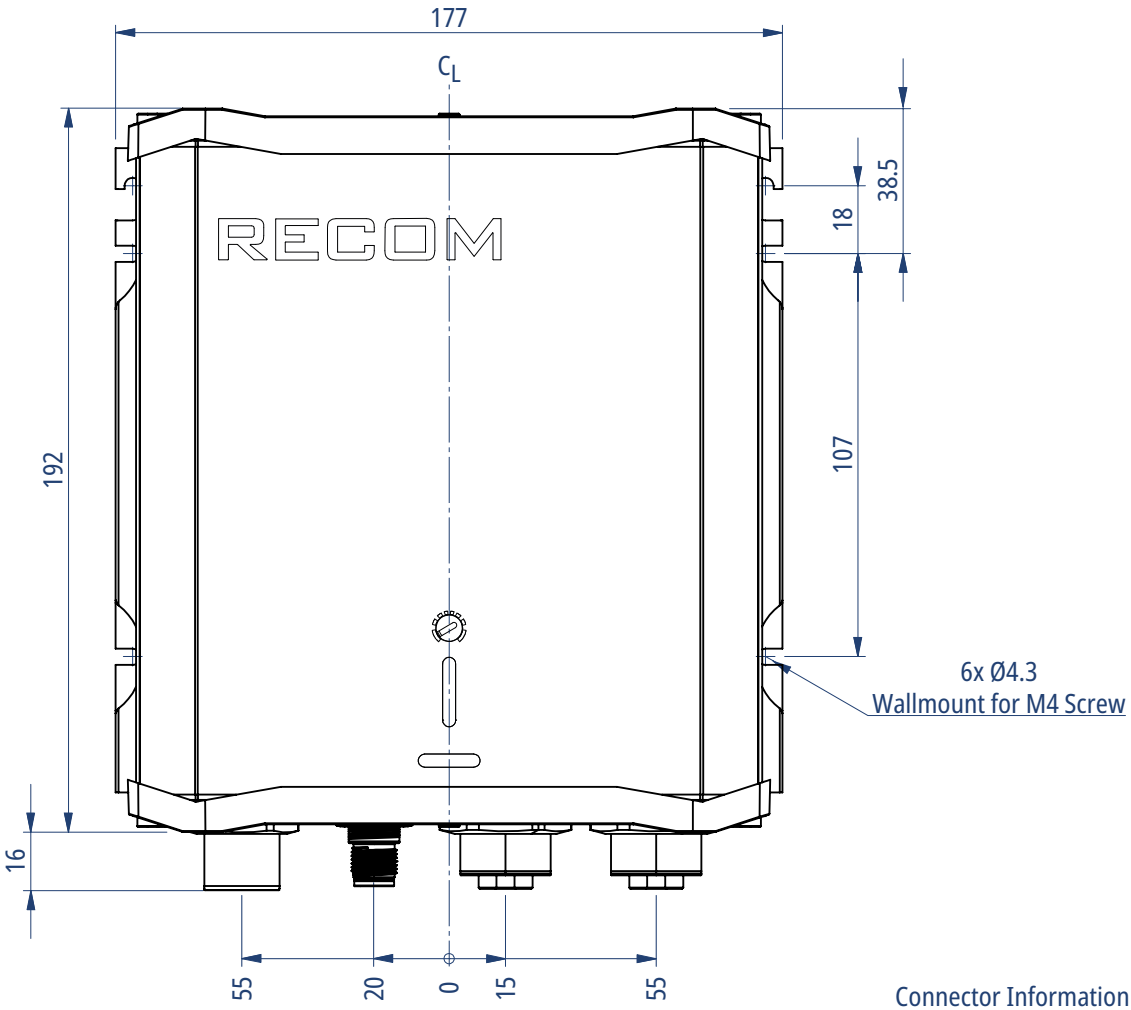
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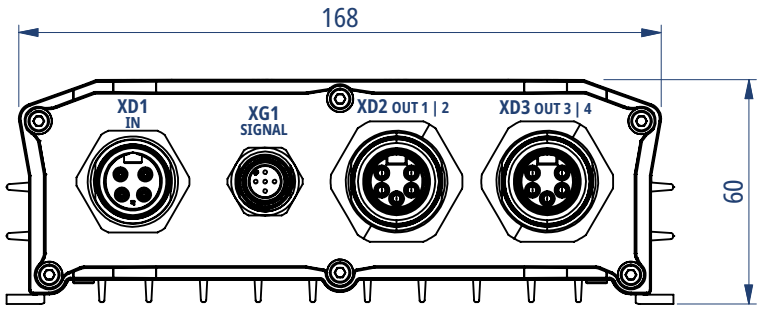
RECOM AC/DC Converter

DIMENSION & PHYSICAL CHARACTERISTICS

Dimension Drawing **RACPRO1-DP-T720/xx/S78 (mm)**







Connector Information

Terminal	Gender	Picture	Pin	Connection
XD2 OUT 1 | 2	7/8" Female		1	GND OUT 2
			2	GND OUT 1
			3	PE
			4	24/48 VDC OUT 1
			5	24/48 VDC OUT 2
XD3 OUT 3 | 4	7/8" Female		1	GND OUT 4
			2	GND OUT 3
			3	PE
			4	24/48 VDC OUT 3
			5	24/48 VDC OUT 4
XD1 IN	7/8" Male		1	L1
			2	L2
			3	L3
			PE	PE
XG1 SIGNAL	M12 A Male		1	Relay connection
			2	not connected
			3	not connected
			4	Relay connection
			5	not connected

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INSTALLATION & APPLICATION

Installation Instructions

Install the device on a sufficiently large, flat and stable surface.

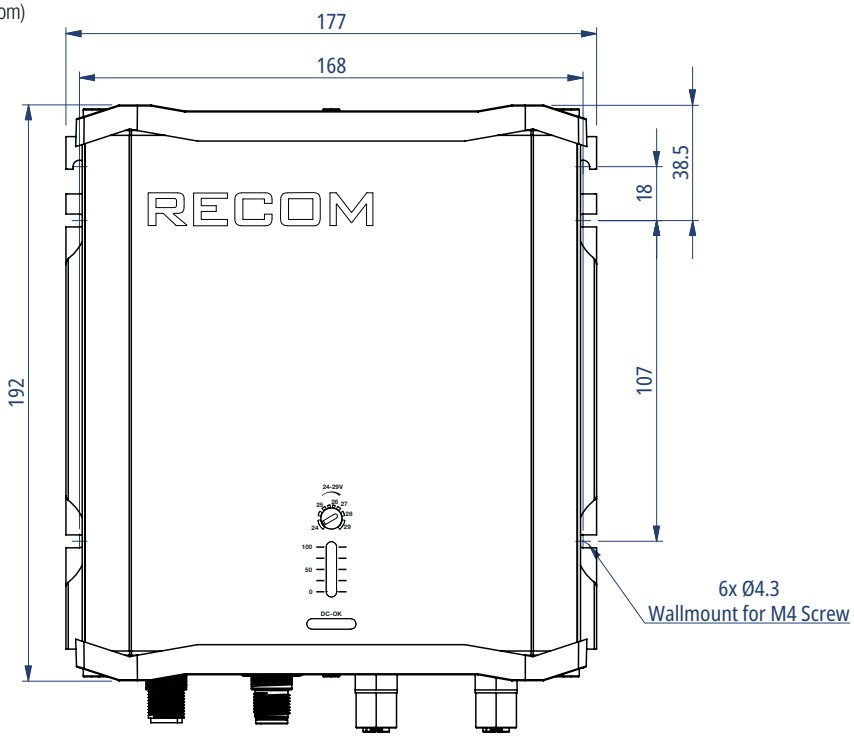
To guarantee sufficient convection cooling, maintain a distance of 50 mm above and below the device and 10 mm to the left and right.

For vertical (wall) mounting the device should be installed with the connectors on the bottom (= standard orientation).

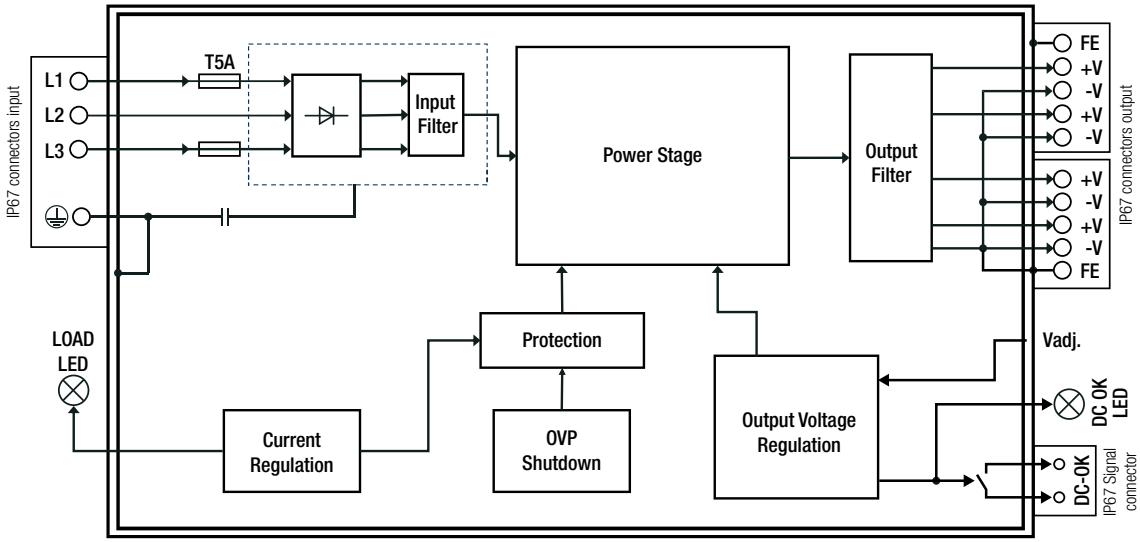
Recommended screw size is M4. It is recommended to use 4 screws, two on top and two on bottom mounting holes.

Standard Orientation

(Wall mounted, connectors on bottom)



BLOCK DIAGRAM



PELV-System

The DC output is provided as a PELV output with PE internally connected to –VOUT.

The output is galvanically isolated from the input by reinforced insulation.

The output connectors distribute one common DC output and are not galvanically isolated from each other.

Do not connect hazardous voltages to the output or to the DC-OK signal contacts.

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PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	cardboard box	260.0 x 230.0 x 64.0mm
Packaging Quantity		1 pc
Storage Temperature Range		-40°C to +85°C
Storage Humidity		95% 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.

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