Data sheet

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SAIA BURGESS CONTROLS

Q.PS-AD2-2402F

Power supplies with 24 VDC output

- Input rated voltage 115…230 VAC
- Output: 24 VDC ±3% / 2.5 A
- Power Boost: 3.5 A for at least 3 minutes, up to 60 °C
- Short-circuit protection
- Overload protection
- Strong overload without switch-off
- IP 20
- Mounting on DIN rail
- Extremely small size

Figure	Input	Output	Protection	Features
Q.PS-AD1 	Single phase 24 VAC / 40 VDC	24 VDC, 3 A 24 VDC, 5 A 24 VDC, 7 A	Short circuit Overload	
Q.PS-AD2-24xxF 	Single phase 115 / 230 VAC	24 VDC, 1,5…3 A 24 VDC, 5…7.5 A 24 VDC, 10…14 A	Short circuit Overload Overvoltage	Adjustable output voltage 22…27 VDC
Q.PS-AD3 	Double-phase 230 / 400…500 VAC	24 VDC, 5…7.5 A	Short circuit Overload Overvoltage	Adjustable output voltage 22…26 VDC
Q.PS-ADB 	Single phase 115 / 230 VAC / 24 VDC battery	24 VDC, 5 A	Short circuit Overload Overvoltage	Adjustable charging current 1…5 A, battery diagnostic and different charging modes

Applications

Control panels, where 24 VDC is required to supply PLC's, actors, sensors etc. But also power demanding loads such as solenoid valves, motors, lamps, etc. Can be used in applications for:

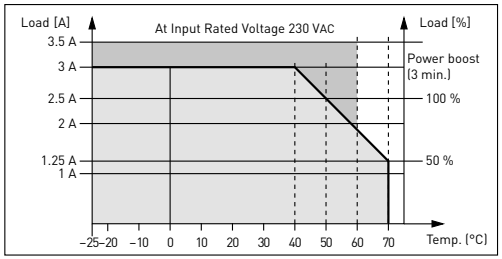
- Building automation
- Industrial automation
- Infrastructure plants, such as water or sewage treatment
- Machineries
- Material handling
- etc.

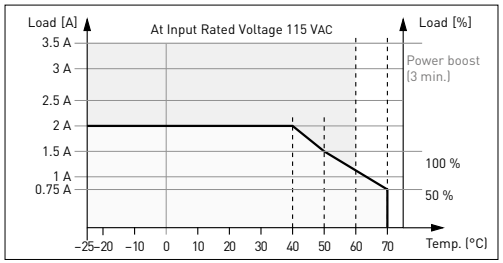
Functions

	Q.PS-AD2-2402F
Input data	
Input voltage	115…230 VAC
Input Voltage Range	90…264 VAC
Inrush Current (at U_n and I_n)	≤ 7 A ≤ 5 ms
Frequency	47…63 Hz ± 6 %
Input Current (Input Rated Voltage)	1.0…0.7 A
Internal Fuse	4 A
External Fuse	Fast 6 A
Output data	
Output Voltage (U_n) / Nominal Current (I_n)	24 VDC ±3 % / 2.5 A
Adjustment range (U_{adj})	22…27 VDC
Turn-On delay after applying mains voltage	2 s (max.)
Start up with capacitive load	≤ 50.000 µF
Continuous running current	
Max. continuous current at ≤ 40 °C	2 A (115 VAC), 3 A (230 VAC)
Max. continuous current at ≤ 50 °C	1.5 A (115 VAC), 2.5 A (230 VAC)
Power reserve (power boost) (within 3 min. ≤ 60 °C)	3,5 A
Short-circuit current (Icc)	7 A
Hold-up Time (at 100…240 VAC)	in general 20 ms
Residual Ripple	≤ 80 mVpp
Minimum load	No
Efficiency (at 50 % I_n)	≥ 88 %
Short-circuit protection	Yes
Overload protection	Yes
Over Voltage Output protection	Yes (max 35 VDC)
Parallel connection	Yes
Climatic data	
Ambient Temperature (operation)	–25…+70 °C (Derating >50 °C, 2.5%/°C)
Ambient Temperature (storage)	–40… +85 °C
Humidity; no moisture condensation	95 % at +25°C
General data	
Isolation Voltage (Input/Output)	3000 VAC
Input / Ground isolation PE	1605 VAC
Output / Ground isolation PE	500 VAC
Degree of protection	IP 20
Pollution Degree Environment	2
Protection class	I, with PE connected
Dimension (w × h × d)	50 × 120 × 50 mm
Weight	approx 0.30 kg

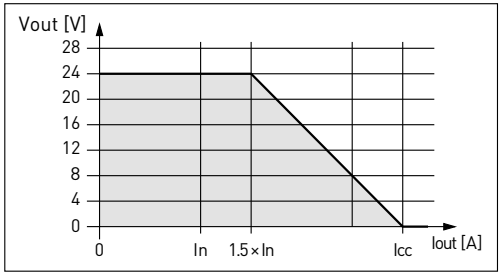
Output characteristics

Output Derating Curve

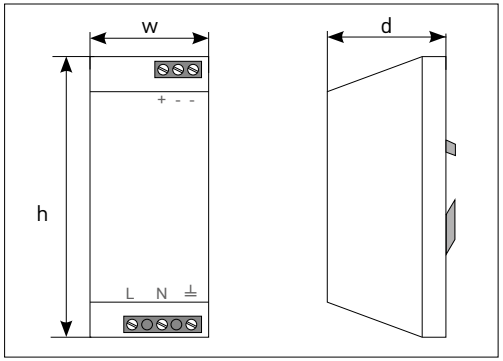




Output Characteristic Curve U/I



Dimensions



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Instruction manual 4 319 5131 0e 09.2015 Subjects to change without notice.

SAIA BURGESS CONTROLS

1 Phase Power supplies Q.PS-AD2-24xxF

Primary switched power supply

Thank you for having chosen one of our products for your work. We are certain that it will give the utmost satisfaction and be a notable help on the job.

Application

The power supplies Q.PS-AD2-24xxF can be used in areas with extreme industrial environment, and complies with the latest technical standard. Before working with the unit, read these instructions carefully and completely. All these power supplies are single output, IP20 and have Mounting DIN Rail IEC60715/TH35. Class 1 isolation devices suitable for SELV and PELV solutions.

Installation

WARNING!

Explosion Hazard! Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

Explosion Hazard! Substitution of components may impair suitability for class I, Division 2. Switch off the system before connecting the module. Never work on the machine when it is live. The device must be installed in according with EN60950. The device must have a suitable isolating facility outside the power supply unit, via which can be switched to idle. Danger of fatal Injury!

Connection

The following cable cross-sections may be used:

	Solid (mm^2)	Stranded (mm^2)	AWG	Torque (Nm)	Stripping Length
Input	0.2÷2.5	0.2÷2.5	24 …14	0.5…0.6 Nm	7 mm
Output	0.2÷2.5	0.2÷2.5	24 …14	0.5…0.6 Nm	7 mm
Signal	0.2÷2.5	0.2÷2.5	24 …14	0.5…0.6 Nm	7 mm

The connection is made by screw type 2.5 mm^2 terminal blocks. Use only copper cables that are designed for operating temperatures of >75 °C. Wiring terminals shall be marked to indicate the proper connection for the power supply.

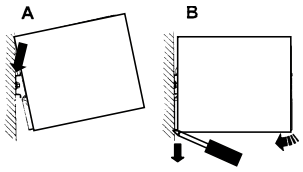
Input: The input connection is made by L, N, ⏚.
Output: 24 VDC is made via the + (+), - (-).

Signalling

Jumper Settings	Standard Conditions "LED VDC ok"	Overflow conditions "LED VDC ok"
MANUAL RESET	Lights up permanently when the output voltage is OK.	Switches off when there is an overload
HICCUP MODE		Blinks when there is an overload
CONTINUOUS OUT MODE		Switches off when there is an overload

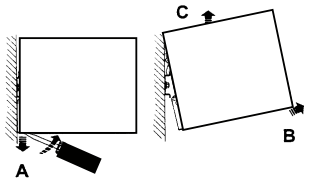
Rail Mounting

Mounting <u>on</u> the Rail



With <u>PLASTIC</u> Hook

Dismounting <u>from</u> the Rail

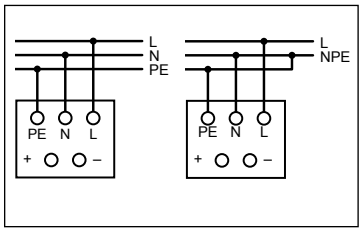


Other modules must have a minimum vertical distance of 10 cm to this power supply in order to guarantee sufficient auto convection. Depending on the ambient temperature and load of the device, the temperature of the housing can become very high!

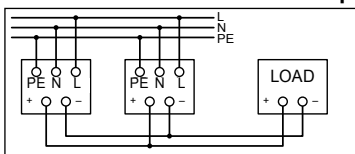
Protection

On the primary side: the device is equipped with an internally fuse. If the internal fuse is activated, it is most probable that there is a fault in the device. If happen, the device must be checked in the factory.
On the secondary side: the device is electrically protected against: Over-load, output over-voltage and short circuit automatically. It is not possible to set the overload mode on the Q.PS-AD2-2402F.

Connection



Parallel Connection for increased capacity



With Q.PS-AD2-2402F and Q.PS-AD2-2405F
To result a good current share between all devices in parallel, adjust the output voltage in a tolerance of ± 20 mV. Therefore applying 1…2 A load to adjust the output-voltage. Then connect them in parallel. Use only power supplies of the same model.

With Q.PS-AD2-2410F
Change the jumper position to enable the "Easy parallel connection"

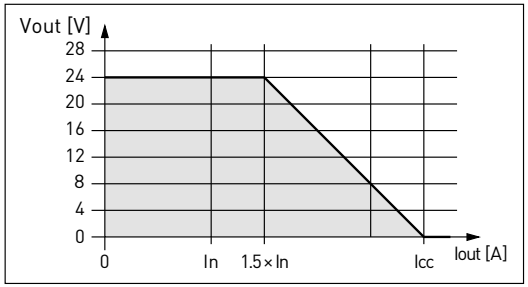
Easy Parallel connection OFF
(factory selection)

Easy Parallel connection ON
In this mode it can be put up to 4 power supply in parallel

Characteristic Curves

Short circuit and overload

The output of the device is electrically protected against overload and short circuit. At nominal voltage the device can supply 1.5 the nominal Current without switching off. In the case of higher overload, the operating point traces the curve illustrated in figure. As the overload increases, the output voltage is reduced until zero.



Thermal behaviour

The rated maximal air temperature @ nominal current is 60 °C (the Q.PS-AD2-2402F 50 °C). For ambient temperature above 60 °C, the output current must be reduced by 2.5 % per Kelvin increase in temperature. At the temperature of 70 °C, the output current will be 3/4 × In (by the Q.PS-AD2-2402F In/2). The equipment does not switch off in case of ambient temperature up to 70 °C or thermal overload. The devices are protected for excess temperature conditions. In conditions where the power-supply inside temperature is over 70°C will the device shut-down the output and will be automatically restarted when the temperature inside the power-supply is decreased.

Standards and Certification

Electrical Safety:
Assembling device: UL508, IEC/EN60950 (VDE0805) and EN50178 (VDE0160)
Isolation according: IEC/EN60950
Input/Output separation: SELV EN60095-1 and PELV EN60204-1. Double or reinforced insulation

EMC Standards (Surge, Transient Immunity):
Immunity: EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-6-2
Emmission: EN61000-6-4, ENC61000-3-2

Standards Conformity:
Safety of Electrical Equipment Machines: EN60204-1.

CE In according to EMC2004/108/EC and EMC93/68/EEC
Low voltage directive 2006/95/EU + ROHS 2011/65/EU

EAC Mark of Conformity for Machinery Exports to Russia, Kazakhstan or Belarus

cULus LISTED 508 Industrial Control Equipment