



Solar Controller

RVA78.690

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- **Multifunctional solar controller for applications and residential/commercial buildings with plain text display**
 - **Modulating pump control for optimum energy utilization**

Application

Fields of use

Typical fields of use:

- Detached and semidetached houses
- Small multiple dwelling units
- Commercial buildings

Application

For regulation and control of thermal solar systems. Suitable for flat and tube collectors. Along with the basic functions, the RVA78 controller provides a wide variety of additional options and functions for optimum usage of the solar system.

Market

The controller was developed for the OEM market. It is delivered directly to the manufacturer.

Functions

- | | |
|-----------------------|--|
| Controller functions | <ul style="list-style-type: none">• One or two collector fields using the independent delta T-function• Power on and off differential gap for collector pump• Integration of drinking water tanks• Integration of buffer storage tanks• Overtemperature and frost protection for drinking water tanks• Overtemperature and frost protection for buffer storage tanks• Collector overtemperature and frost protection, recooling function• Solar yield measurement• Integration of solid material boiler using the delta T-function• Power on and off differential gap for the solid material boiler• Heat requirement for an external heat generator (for example, boiler, electronics unit)• Timer with power reserve (minimum of two hours) |
| Operational functions | <ul style="list-style-type: none">• Plain text display with background illumination• Different user levels derived from ergonomic and functional principles• Simple access to the key information for the system user• User-friendly commissioning thanks to preset hydraulic schemes (preselection) |
| General functions | <ul style="list-style-type: none">• Compact housing for wall mounting or DIN rail mounting• Easy installation |

Product documentation

Detailed information and descriptions can be obtained from the user manual U2396.

Notes

Product liability

- The unit must only be used in building service systems and only for the applications described.
- To use the unit, all requirements described in the Technical Data chapter must be satisfied.
- All local safety regulations (installation, etc.) must be observed.
- The unit must not be opened. Contravention of the regulations will void warranty.

Electrical installation

- The electrical power must be disconnected prior to the installation.
- The connection terminals for low-voltage and mains voltage are arranged on different sides of the unit.
- The requirements stipulated by protection class II for the wiring must be satisfied – i.e., sensor and mains power lines are not allowed to be routed in the same cable duct.

Configuration

- Air circulation around the unit must be ensured at all times so that the heat produced by the controller can be dissipated.
- The unit is designed in compliance with the guidelines set out in protection class II and must be mounted accordingly.
- Power may be applied to the unit only when the installation/electrical installation is complete. Otherwise, there is a risk of electric shock at the connection terminals.
- The unit must not be exposed to dripping water.
- Permissible ambient temperature for installed operational unit: 0...50 °C.
- Power lines must be clearly separated from low-voltage lines (sensor) when being laid (minimum clearance: 100 mm).

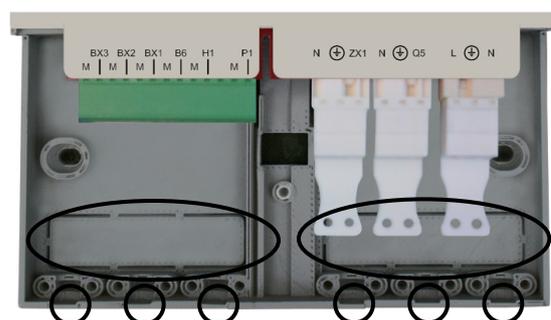
Installation

Mounting location

- Wall installation
- Control panel

Installation preparations

The unit has two prepunched connection openings at the rear and six on the underside. The required openings for the connections must be broken open before installation.



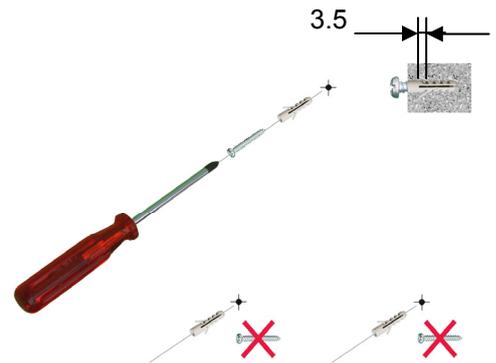
Installation methods

Wall installation

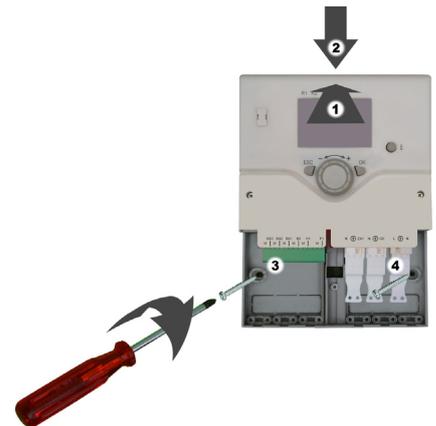
Drill holes using the drilling figure (see dimension figures)



Insert all dowels (if required).
Screw the upper screw in until a gap of 3.5 mm is left.



Place the unit on the protruding screw (1) and press it gently downwards (2).
Fasten the unit with the remaining two screws (3) and (4).

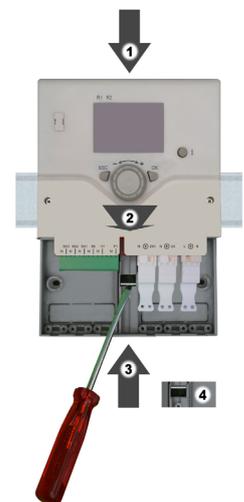


DIN rail installation

The base contains an opening for installation on a DIN rail.

Place the unit with the upper part of the opening on the DIN rail (1) and press the lower section onto the rail (2).

Push the mounting slider upwards (3) to its final position (4).



Technical data

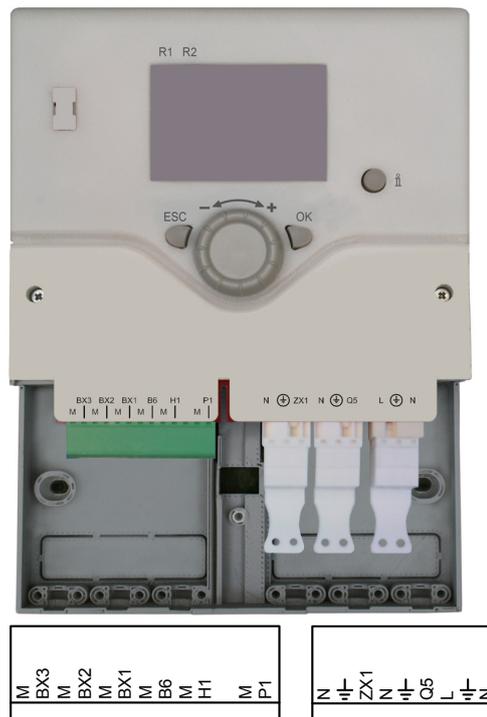
Power supply	Rated voltage	AC 230 V (± 10%)
	Rated frequency	50/60 Hz
	Maximum power consumption	RVA78.690: 2 VA
	Fuse protection for supply lines	max. 10 AT
Terminal wiring	Power supply and outputs	Wire or strand (twisted or with crimp sleeve): 1 wire: 0.5 mm ² ...2.5 mm ² 2 wires: 0.5 mm ² ...1.5 mm ² 3 wires: Not allowed
Functional data	Software class	A
	Operation according to EN 60730	1.B (automatic operation)
Inputs	Sensor inputs B6, BX1...BX3	NTC10k Pt1000 (optional for collector sensor)
	Permissible sensor lines (Cu)	
	For line diameters: Maximum length:	0.25 0.5 0.75 1.0 1.5 mm ² 20 40 60 80 120 m
Outputs	Triac outputs Q5, ZX1	
	Rated current range	AC 0.05...1 (1) A
	ON/OFF operation (in zero-crossing)	AC 0.05...0.8 (0.8) A
	Speed control	4 A for <1 s
	Maximum power-on current	30 A for < 20 ms
	PWM output P1	
	Signal frequency	3 kHz
	Output voltage	V _{out_high} > + 4 V (unloaded) V _{out_low} < + 1 V
Modulation depth	3% ... 97%	
Protection type and class	Housing protection class according to EN 60529	IP 00
	Protection class according to EN 60730	Low-voltage carrying parts comply when correctly installed with the requirements for protection class II
	Level of contamination according to EN 60730	Normal contamination
Standards, safety, EMC, etc.	CE conformance according to EMC directives	89/336/EWG
	Noise immunity	EN 61000-6-2
	Emissions	EN 61000-6-3
	Low-voltage directive	73/23/EWG
	Electrical safety	EN 60730-1, EN 60730-2-9
Climatic conditions	Storage according to IEC721-3-1, class 1K3	Temp. -20...65 °C
	Transport according to IEC721-3-2, class 2K3	Temp. -25...70 °C
	Operation according to IEC721-3-3, class 3K5	Temp. 0...50 °C (no condensation)
Weight	Net weight	RVA78.690: 530 g

Circuit diagrams

Connection terminals

The wiring is implemented using connectors that are inserted into the relevant sockets of the controller.

The connector sockets are assigned according to the image below:



Terminal designations

Low voltage

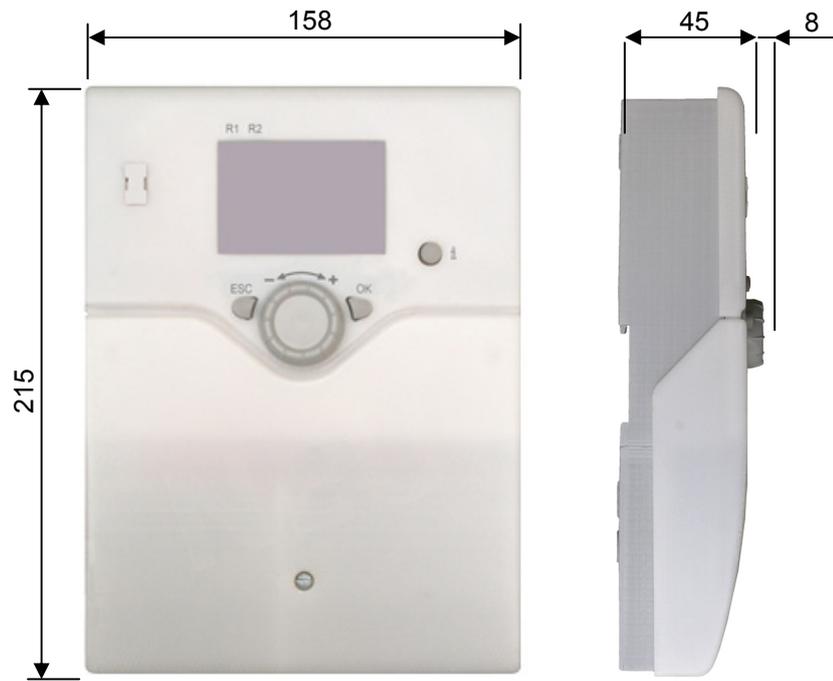
	Use	Connector type
M	Ground	Supplied 13-pin connector
BX3	Multifunctional sensor input 3	
M	Ground	
BX2	Multifunctional sensor input 2	
M	Ground	
BX1	Multifunctional sensor input 1	
M	Ground	
B6	Collector sensor 1	
M	Ground	
H1	Digital input (pulse measurement)	
M	Ground	
P1	Output pulse width modulation (PWM)	

Power

	Use	Connector location	Connector type
N	Neutral	U	AGP8S.03C/109
⏏ ZX1	Protective ground Multifunctional output (Triac)		
N	Neutral	U	AGP8S.03C/109
⏏ Q5	Protective ground Collector pump 1 (Triac)		
L	AC 230 V phase for basic unit	N ⏏ L	AGP4S.03E/109
⏏ N	Protective ground Neutral		

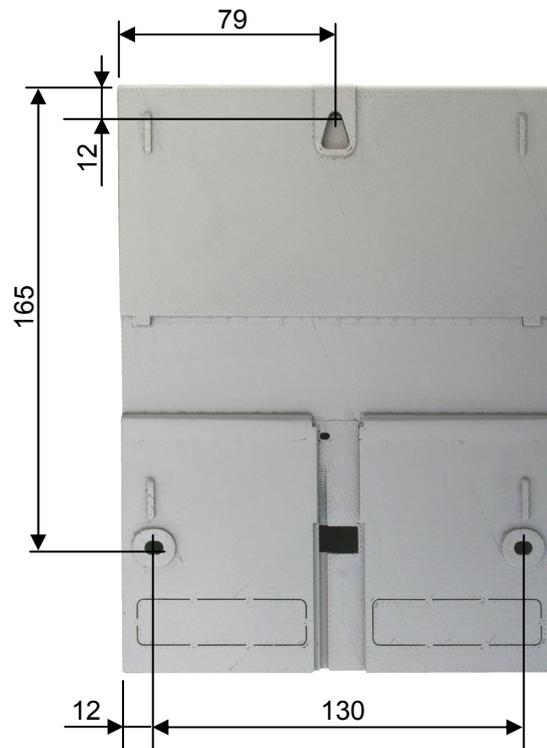
Dimension figures

Dimension figure



Dimensions in mm

Drilling figure



Dimensions in mm