



Master room unit for RRV... controllers

QAX850

2 wire bus connection

Multifunctional, digital room unit for installer and end-user interface with RRV... controllers.

Use

Use

Room unit in combination with an RRV... controller for HVAC plants in:

- Residential apartments
- Residential single house
- Autonomous light commercial applications

Application

For use with RRV... controllers in air based plants including heating, cooling and ventilation (HVAC) equipment. Suitable for Standard, Duo-zone, Duo-switch and Multi-zone applications.

Functions

Primary functions

- Remote control and monitoring of an RRV... controller
- Parameter adjustments by installer
- Room temperature measurement

Operator functions

- Time clock operation
- Comfort temperature setpoint adjustment
- Energy saving temperature setpoints adjustment
- Auto timer selection
- Fan speed selection
- Zone selection and settings (only for RRV controllers with zone outputs)
- Display of operating mode, temperature, time, fan speed and zone values.

Type summary

ASN	Type reference	Compatible with
QAX850	Room unit	RRV851, RRV852, RRV856, QAW850

Note: Not usable with Desigo RX range of controllers.

Mechanical design

Type of unit The QAX850 is the installer/OEM/end-user master MMI for RRV controllers.

The unit consists of the following components:

- Room unit with integrated electronics and operating elements
- Internal temperature sensor
- Base for wall mounting with the connection terminals
- Operator interface buttons (high use)
- Operator interface buttons behind door (low use)

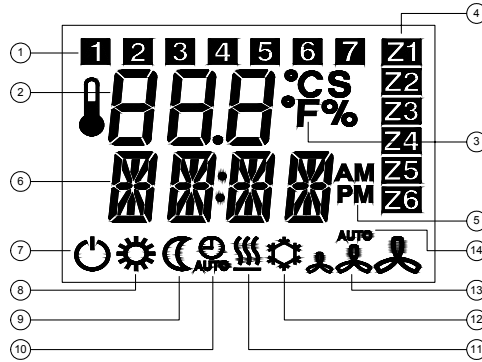
Operating elements



Legend

- 1 LED for heat/cool output status
- 2 LCD display with EL backlight for control and monitoring of modes, setpoints, zone conditions etc
- 3 Operating mode selection – Comfort, energy saving and auto timer (RRV852 Day/Night zone selection for Duo-zone application)
- 4 Temporary setpoint and value increase/decrease
- 5 System off and fan speed control
- 6 Heat, cool, heat/cool changeover and ventilation only selection
- 7 Time and weekday setting
- 8 Auto timer schedule setting
- 9 Zone output selection (RRV856 and RRV852 for Duo-switch application)
- 10 Permanent comfort and energy saving setpoints (Day/Night/Both setpoints for RRV852 Duo-zone application)
- 11 Button for confirming values and scrolling through parameter sets

LCD display



Legend

- 1 Day indication
- 2 Actual temperature
- 3 Fahrenheit/Celsius
- 4 Zone indication (RRV856 and RRV852 for Duo-switch application)
- 5 AM/PM indication
- 6 Time display
- 7 System off
- 8 Comfort mode (Day zone in Duo-zone application)
- 9 Energy saving mode (Night zone in Duo-zone application)
- 10 Auto timer mode
- 11 Heating mode
- 12 Cooling mode
- 13 Fan speed indication (low, medium and high)
- 14 Auto fan mode

Commissioning notes

Response on start-up

When powering up, the QAX850 will display all LCD icons for approximately 3 seconds and then the software version number for another 3 seconds. It will then revert to normal display. The time segments will be blinking if time needs to be set. Set time as per operation instructions. There will be a delay before operation commences due to polling of all values.

Sensor calibration

Generally there is no need to calibrate sensor; however the displayed room temperature on the LCD can be calibrated if there is any discrepancy from the actual temperature measured with a certified thermometer. Calibration function can be accessed by pressing the ▲ and ▼ buttons simultaneously for 5 seconds. Displayed value can then be adjusted via the same buttons in 0.1K steps. Range is +/- 3K.

Commissioning

Initial application set-up of RRV controller to match the connected HVAC equipment is made by the selection of dip switch positions. Dip switches are located on the top of the RRV controller. Further settings can be made via the QAX850 by modifying parameters as per list below. Default values are dependant on application selected and RRV controller model. Refer to installation/commissioning guide for set-up details and application sheets for default parameter values.

To access parameters press the ▲ and ▼ buttons simultaneously for 3 seconds, then within 2 seconds press the ▲ button for 3 seconds and release. Parameters cannot be accessed if system is in off mode.

Set-up parameters

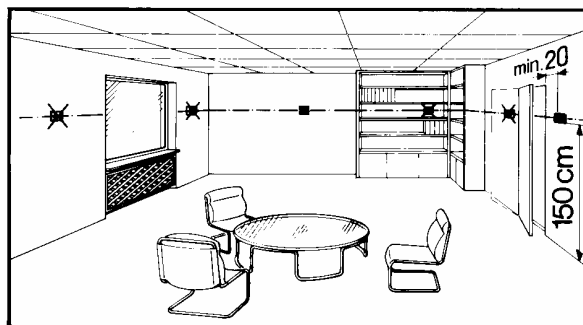
No	Parameter	Range
P00	Temperature scale	°C/ F°
P01	Frost protection limit in OFF mode	Off/5...8°C
P02	Over-temperature limit in OFF mode	Off/30...35°C
P03	Min. OFF time delay	0...600s
P04	Min. ON time delay	0...600s
P05	Dead band between cool and heat OFF points	0.5...6K
P06	RV ON in heat or cool mode	Heat/Cool
P07	Fan run ON after heat output turns Off	0...300s
P08	Fan run ON after cool output turns Off	0...300s
P09	FCU flush pipe time	120...600s
P10	Zone Heat / Cool Inhibit	Heat/Cool/No
P11	Water temp. heat mode changeover	22...32 °C
P12	Water temp. cool mode changeover	10...21 °C
P13	Fan auto-speed high range	H:80...100%
P14	Fan auto-speed medium range	M:30...75%
P15	Fan auto-speed low range	L:1...15%
P16	Window contact	NO/NC
P17	2-p or 3-p control selection	2-p/3-p
P18	P-band in heat mode /Switching differential	0.5...10K
P19	P-band in cool mode /Switching differential	0.5...10K
P20	Integration time	0...60.0 min in 0.5 min steps
P21	3-p valve actuator running time	50...300s
P22	Zone capacity weight	None Small Medium Large
P23	Ventilation in dead zone	Off, H/C, C only

Internal sensor

QAX850 internal sensor can be replaced by connecting an external NTC resistor sensor (QAA32 or QAH11) to the RRV controller B1 input. In this case the QAX850 automatically recognizes and displays the external sensor value.

Mounting and installation notes

The QAX850 should be mounted in a location where the air temperature can be measured as accurately as possible without getting adversely affected by direct solar radiation or other heating or cooling sources. There is no need to consider air temperature conditions if external sensor is connected to the RRV controller. In this case the QAX850 would serve as a master control unit only.



- Mounting height is about 1.5 m above the floor.
- QAX850 must not be located in the direct path of air conditioning air flow.
- The unit can be fitted to a recessed conduit box.
- The specified ambient conditions must be complied with.
- Only authorized staff may disconnect the QAX850 unit from base plate.
- Do not mount in recesses, shelves, behind curtains or doors.
- Refer to mounting instructions included in packaging box.

When mounting the unit, fix the base-plate first and then make the electrical connections. To avoid any damage during construction works only install QAX850 unit when all construction works have been completed. The QAX850 must be mounted on a flat surface and in compliance with local regulations.

Local installation regulations must be observed.



Note!

The room unit is not protected against connection to AC 230 V.

Technical data

Interfaces	HCC bus	Proprietary
	Baud rate	9.6 kbit/s
	Permissible cable length	Max. 60m where $A \geq 0.5\text{mm}^2$
		Max. 100m where $A \geq 1\text{mm}^2$
Cable type	2-wire standard installation cable (unshielded)	
Note: Twisted pair (unshielded) is recommended for enhanced immunity to external electromagnetic interference, for example, in the vicinity of radio transmitters or frequency inverters		
Protection	Safety class	III to EN 60730 (when mounted correctly)
	Degree of protection	IP 30 to EN 60529
Environmental conditions	Operation	IEC 721-3-3 class 3K 5
	Temperature	0...50 °C
	Humidity	< 85 % r.h. (non condensing)
	Transport	IEC 721-3-2 class 2K 3
	Temperature	-25...60 °C
	Humidity	< 95 % r.h. (non condensing)
	Storage	IEC 721-3-1 class 1K 3
	Temperature	-25...60 °C
Humidity	< 95 % r.h. (non condensing)	
Standards	CE -conformity	
	EMC directive	89/336/EEC
	Immunity and Emissions	EN 60730-1, EN 50081-1, EN 61000-6-2
	Low-voltage directive	73/23/EEC
	Electrical safety	EN 60730-1, EN 60730-2-9
	C ^{N474} conformity to	
	Australian EMC Framework Radio Interference Emission Standard	Radio communication act 1992 AS/NZS 4251.1
Room temperature measurement	Measuring range	0...49 °C
	Setpoint range	5...35 °C
	Maximum power	2VA
	Accuracy at 20°C	± 0.5K max.

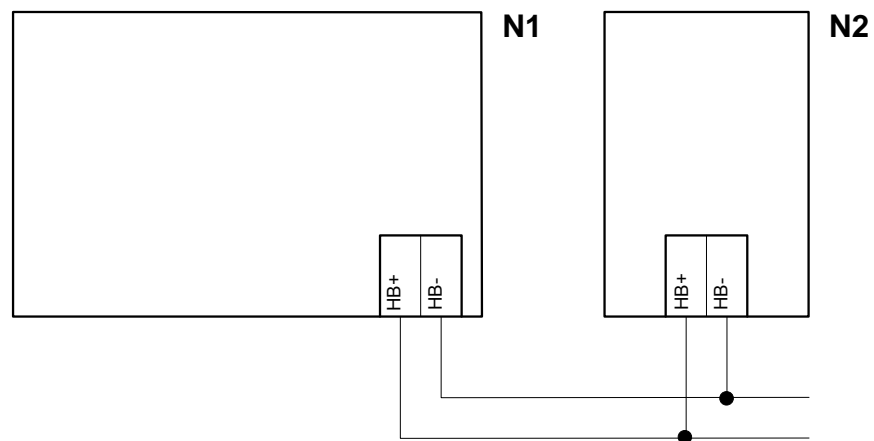
	Temperature calibration range	± 3.0K max in step of 0.1K.
	Room temperature display resolution	0.5K
Other features	Software class	A to EN 60 730
	Weight	Approx. 0.1 Kg

Notes

Product liability

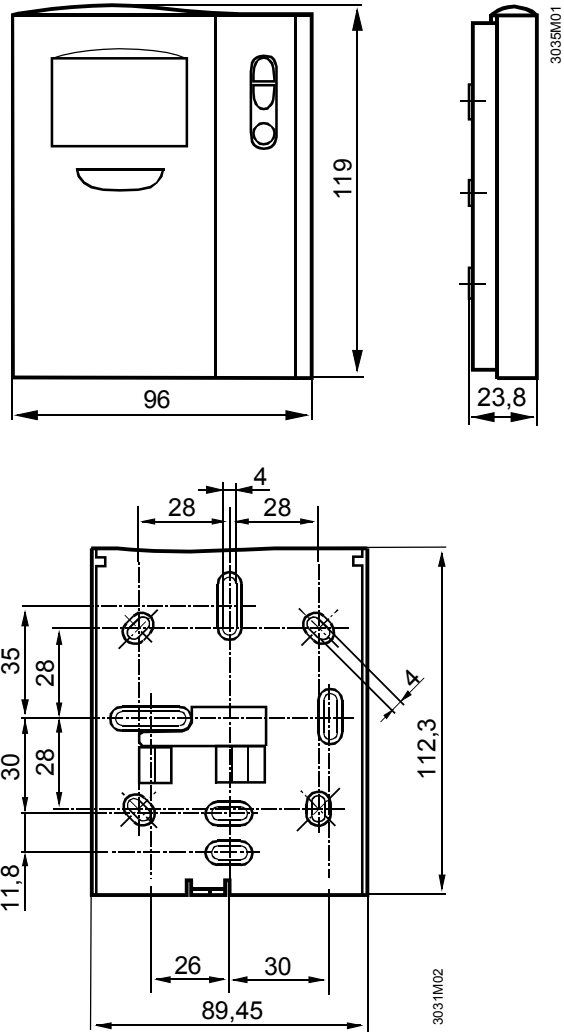
- The products may only be used in building services plant and applications as described above.
- When using the products, all requirements specified under "Technical data" must be observed.
- The local regulations for electrical installation must be complied with.

Connection diagram



N1 RRV... controller
 N2 QAX850 master room unit
 HB+ HB- Communication bus

Dimensions



Dimensions in mm