SIEMENS

Master room unit   QAX850

for RRV… controllers

**Multifunctional, digital room unit for installer and end-user interface with RRV…
controllers.**
2 wire bus connection

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

Type reference	Description	Compatible with*
QAX850	Master room unit	• Temperature controller RRV851 • Temperature controller RRV852 • Temperature controller RRV856 • Zone room unit QAW850

* Not usable with Desigo RX range of controllers

Product documentation

Document	Document number
Data sheet	N2722
Mounting instructions	M2721
Operating instructions for use with RRV81	B2725en01
Operating instructions for use with RRV82	B2726en01
Operating instructions for use with RRV82 (duo-switch)	B2726en03
Operating instructions for use with RRV86	B2727en01
Declaration of conformity	T2722

Mechanical design

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

Components

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

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
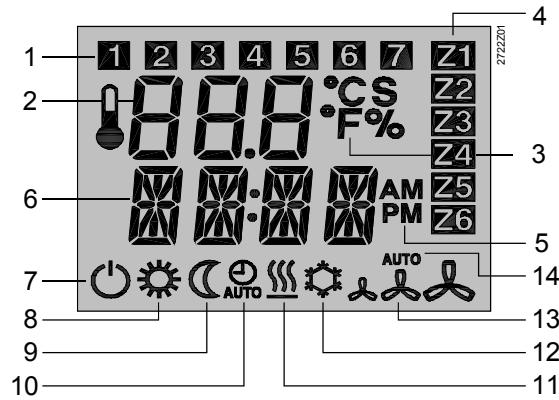
1   Day indication
2   Actual temperature
3   Fahrenheit/Celsius
4   Zone indication (RRV856 and RRV852 for Duo-switch application)
5   AM/PM indication
6   Time display
7   System off
8   Comfort mode (Day zone in Duo-zone application)
9   Energy saving mode (Night zone in Duo-zone application)
10   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 ±3 K.

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 Instructions 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…600 s
P04	Min. ON time delay	0…600 s
P05	Dead band between cool and heat OFF points	0.5…6 K

No.	Parameter	Range
P06	RV ON in heat or cool mode	Heat/Cool
P07	Fan run ON after heat output turns Off	0…300 s
P08	Fan run ON after cool output turns Off	0…300 s
P09	FCU flush pipe time	120…600 s
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…10 K
P19	P-band in cool mode /Switching differential	0.5…10 K
P20	Integration time	0…60.0 min in 0.5 min steps
P21	3-p valve actuator running time	50…300 s
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.
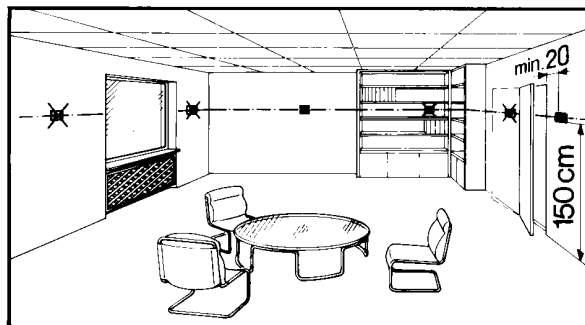
- Mounting height is about 1.5 m above the floor.
- QAX850 must not be located in the direct path of air conditioning air flow.
- The unit can be fitted to a recessed conduit box.
- The specified ambient conditions must be complied with.
- Only authorized staff may disconnect the QAX850 unit from base plate.
- Do not mount in recesses, shelves, behind curtains or doors.
- Refer to Mounting Instructions M2721 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.

(⬡ stop) **Note**   The room unit is not protected against connection to AC 230 V!

Technical data

Interfaces (S+, SG)	HCC bus	proprietary protocol
	Bus power supply voltage	DC 12 V, +10, –15% (supply RRV85x controller)
	Baud rate	9.6 kbit/s
	Room unit power consumption	2 VA

Permissible cable lengths	For bus communication	
	A ≥0.5 mm²	max. 60 m
	A ≥1 mm²	max. 100 m
	Type of cable	2-wire standard installation cable (unshielded)

Note:
Twisted pair (unshielded) is recommended for enhanced immunity to external electromagnetic interference, e.g. in the vicinity of radio transmitters or variable speed drives

Electrical connections (HB+, HB–)	Connection terminals	screw terminals
	For wires	0.6 mm dia. … 2.5 mm^2

Degrees of protection	Degree of protection of housing to IEC 60 529	IP 30
	Safety class to EN 60 730	device suited for use with equipment of safety class II

Environmental conditions	Operation to	IEC 721-3-3
	Climate conditions	class 3K5
	Temperature (housing and electronics)	0…50 °C
	Humidity	5…95 % r. h. (non-condensing)
	Mechanical conditions	class 3M2
	Transport to	IEC 721-3-2
	Climate conditions	class 2K3
	Temperature	–25…+70 °C
	Humidity	<95 % r. h.
	Mechanical condition	class 2M2

Classification to EN 60 730	Mode of operation, automatic controls	type 1B
	Degree of contamination, controls Environment	2
	Rated surge voltage	4000 V
	Software class	A

Materials and colors	Top housing	Polycarbonate, RAL 9003 (signal-white)
	Bottom housing and base plate	Polycarbonate, RAL 7035 (lightgrey)
	Packaging	corrugated cardboard

Norms and standards	Product safety	
	Automatic electrical controls for household and similar use	EN 60 730-1
	Special requirements for temperature sensing controls	EN 60 730-2-9

Electromagnetic compatibility		
Immunity domestic section, light industry	EN 61 000-6-1	
Emissions domestic section, light industry	EN 61 000-6-3	

CE-conformity

EMC directive	89/336/EEC
Low-voltage directive	73/23/EEC

🅒 N474 conformity to

Australian EMC framework	Radio Communication Act 1992
Radio interference emission Standard	AS/NZS 4251.1

Room temperature measurement

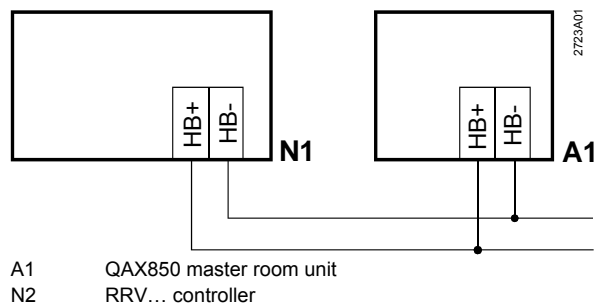|	
Measuring range	0…49 °C
Setpoint range	5…35 °C
Accuracy at 20 °C	max. ±0.5 K
Temperature calibration range	max. ±3.0 K in increments of 0.5 K
Room temperature display resolution	0.5 K

Weight

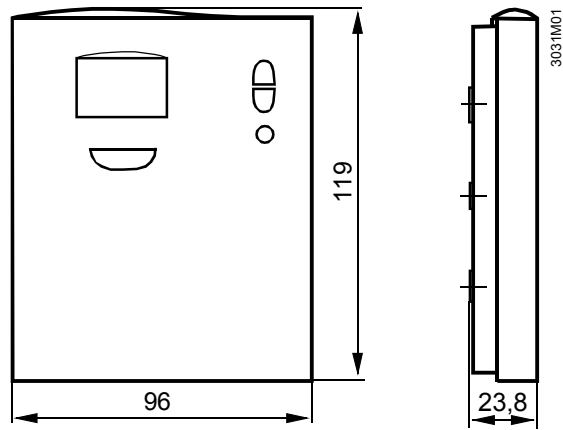|	
Excluding packaging	approx. 0.1 kg

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.
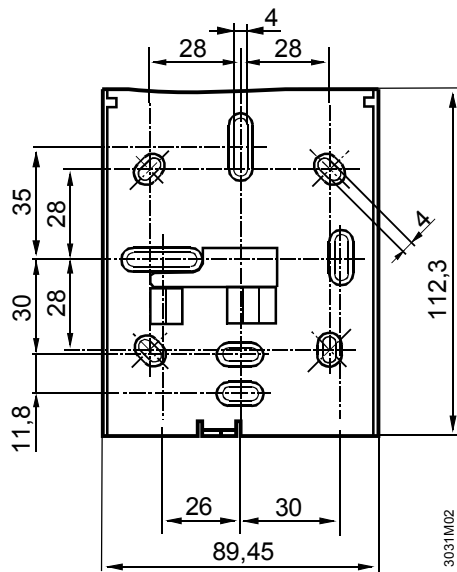- Local regulations for electrical installations must be complied with.

Connection diagram

A1   QAX850 master room unit
N2   RRV… controller

Dimensions

Room unit

Base

Dimensions in mm

Siemens
Building Technologies

Master room unit QAX850

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