

Room thermostat BACnet/Modbus

RDF400BN, RDF440BN, RDF460BN



For 2-pipe, 2-pipe with electric heater and 4-pipe fan coil units

- Selectable bus communication protocol: BACnet MS/TP or Modbus RTU Server
- Slim design with touch button and frameless backlit display
- Fan output:
 - 1-speed and 3-speed fan (RDF400BN, RDF440BN)
 - DC 0...10 V fan (RDF440BN, RDF460BN)
- Control output:
 - 2-wire or 3-wire On/Off valve actuator (RDF400BN, RDF460BN)
 - 3-position valve actuator (RDF400BN, RDF460BN)
 - DC valve actuator (RDF440BN)
- 2 multifunctional inputs for keycard, external sensor, etc.
- Operating modes: Comfort, Economy and Protection
- Automatic or manual fan speed control
- Automatic or manual heating/cooling changeover
- Commissioning via local HMI, bus or Siemens smartphone app Quick Config
- Mounting on recessed square 86 mm conduit box with 60.3 mm fixing centers
- Operating voltage:
 - AC 100...230 V (RDF400BN, RDF460BN)
 - AC/DC 24 V (RDF440BN)

Use

The thermostat is designed for use with the following:

- **Fan coil units** with 1-/3-speed fan controlling (RDF400BN):
 - 2-pipe system, 2-wire On/Off valve actuator
 - 2-pipe system, 3-wire On/Off valve actuator
 - 2-pipe system, 3-position valve actuator
 - 2-pipe system with electric heater, 2-wire On/Off valve actuator
 - 4-pipe system, 2-wire On/Off valve actuator

- **Fan coil units** with 1-/3-speed or DC 0...10 V fan controlling (RDF440BN):
 - 2-pipe system, DC 0...10 V valve actuator
 - 4-pipe system, DC 0...10 V valve actuator and 1-/3-speed fan only

- **Fan coil units** with DC 0...10 V fan controlling (RDF460BN):
 - 2-pipe system, 2-wire On/Off valve actuator
 - 2-pipe system, 3-wire On/Off valve actuator
 - 2-pipe system, 3-position valve actuator
 - 2-pipe system with electric heater, 2-wire On/Off valve actuator
 - 4-pipe system, 2-wire On/Off valve actuator

Functions

- | | |
|-----------------------|---|
| General functions | <ul style="list-style-type: none">● Room temperature control via built-in temperature sensor, external room temperature sensor or temperature from bus● Selection of operating modes via operating mode button: Comfort or Economy● Selection of automatic or manual fan mode● Changeover between heating and cooling mode (automatic via local sensor or bus, or manually)● Measured value adjustment of built-in or external temperature sensor● Key lock function● Configurable operating mode after power-up: Previous mode, Comfort or Protection● Surge protection at power-up |
| Setpoints and display | <ul style="list-style-type: none">● Min. and max. limitation of room temperature setpoint:<ul style="list-style-type: none">– Comfort limitation (min. and max. limitation)● Display of current room temperature or setpoint in °C, °F or both● Display of time of day from bus |
| Setting | <ul style="list-style-type: none">● Setting of commissioning and control parameters via:<ul style="list-style-type: none">– Local HMI– BACnet/Modbus commissioning tool– Siemens smartphone app Quick Config● Reloading factory settings● User settings and control parameters are retained in case of power failure● Parameter protection by password (disabled by default) |

- Fan
 - 1-speed, 3-speed or DC 0...10 V fan control
 - Configurable fan kick in Economy
 - Configurable fan start kick
 - Configurable fan operation in zero energy zone (dead zone)
 - Fan operating hours counter

- Inputs
 - 2 multifunctional inputs, X1 (for sensor/dry contact/DC 0...10 V) and D1 (for dry contact), selectable for:
 - External room temperature sensor
 - Sensor for automatic heating/cooling changeover
 - Switch for remote heating/cooling changeover
 - Window contact to switch operating mode to Protection
 - External alarm source for status reporting via bus
 - Presence detector to switch operating mode to Comfort
 - Hotel presence detector to switch operating mode to Economy and lock the screen when the room is unoccupied
 - DC 0...10 V feedback signal of modulating valve state (RDF440BN)

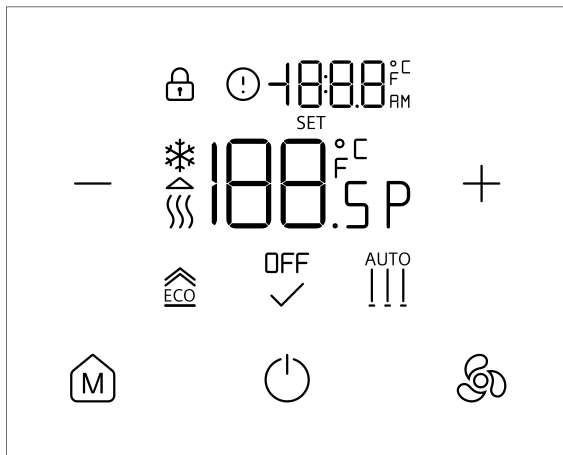
- Communication
 - Selectable communication protocol: BACnet MS/TP or Modbus RTU Server
 - Central control of setpoints and operating mode from bus
 - Monitoring of device status via bus
 - Parameter read/write via bus
 - Forced operating mode to Protection via bus

Mechanical design

The thermostat consists of two parts:

- Control unit with user interface and I/O module
- Mounting plate to fit onto a square conduit box with 60.3 mm fixing centers.

Operating and setting elements



| Information | Description | Information | Description |
|-------------|---------------------------------------|-------------|---------------------|
| | Keylock | | Alarm |
| | Fan mode | | Economy mode |
| | Heating mode | | Valve on |
| | Cooling mode | SET | Setpoint adjustment |
| P | Parameter setting | | Confirm |
| OFF | Protection mode | | Exit |
| | Temperature or parameter values, etc. | | Secondary display |

| Button | Description | Button | Description |
|--------|----------------------------|--------|------------------------------|
| | Switch fan mode | | On / Off or confirm (✓) |
| | Mode selection or exit (⇧) | + - | Increase, decrease or select |

Type summary





| Product no. | Stock no. | Operating voltage | Control outputs | | | | Fan types | | Description |
|-------------|-------------|-------------------|-----------------|-------|-------------|-----------------|-----------|-------------|----------------------------------|
| | | | On/Off | 3-pos | DC 0...10 V | On/Off (3-wire) | 3-speed | DC 0...10 V | |
| RDF400BN | S55770-T508 | AC 100...230 V | ✓ | ✓ | - | ✓ | ✓ | - | Room thermostat BACnet/Modbus |
| RDF440BN | S55770-T509 | AC/DC 24 V | - | - | ✓ | - | ✓ | ✓ | Room thermostat BACnet/Modbus |
| RDF460BN | S55770-T510 | AC 100...230 V | ✓ | ✓ | - | ✓ | - | ✓ | Room thermostat BACnet/Modbus |

Ordering




When ordering, specify both product number / stock number and name: e.g. **RDF400BN / S55770-T508 Room thermostat BACnet/Modbus**

Order valve actuators and external sensors separately.






Equipment combinations

| Type of units | | Product no. | Data sheet ¹⁾ |
|--|--|-------------|--------------------------|
| Cable temperature sensor or changeover sensor, cable length 2.5 m NTC (3 kΩ at 25 °C) |  | QAH11.1 | N1840 |
| Room temperature sensor NTC (3 kΩ at 25 °C) |  | QAA32 | 1747 |
| Cable temperature sensor, PVC cable length 2 m NTC (10 kΩ at 25 °C) |  | QAP1030.200 | N1831 |
| Room temperature sensor NTC (10 kΩ at 25 °C) |  | QAA2030 | 1745 |





On/Off actuators
(RDF400BN,
RDF460BN)

| Type of units | | Product no. | Data sheet ¹⁾ |
|--|--|---------------|--------------------------|
| Electromotive ON/OFF valve and actuator (only available in AP, UAE, SA and IN) |  | MVI.../MXI... | A6V11251892 |
| Electromotive ON/OFF actuator |  | SFA21... | N4863 |
| Zone valve actuator (only available in AP, UAE, SA and IN) |  | SUA... | A6V10446174 |

3-position
actuators
AC 230 V
(RDF400BN,
RDF460BN)

| Type of unit | | Product no. | Datasheet ¹⁾ |
|--|--|-------------|-------------------------|
| Electric actuator, 3-position (for radiator valves) AC 230 V |  | SSA331.. | A6V11858276 |
| Electric actuator, 3-position (for 2- and 3-port valves/V..P45) AC 230 V |  | SSC31 | 4895 |
| Electric actuator, 3-position (for small valves 2.5 mm) AC 230 V |  | SSP31.. | 4864 |
| Electric actuator, 3-position (for small valves 5.5 mm) AC 230 V |  | SSB31.. | 4891 |
| Electric actuator, 3-position (for small valve 5 mm) AC 230 V |  | SSD31.. | 4861 |
| Electric actuator, 3-position (for valves 5.5 mm) AC 230 V |  | SAS31.. | 4581 |

DC 0...10 V
actuators
(RDF440BN)

| Type of unit | | Product no. | Datasheet ¹⁾ |
|--|--|-------------|-------------------------|
| Electric actuator, DC 0...10 V (for radiator valves) |  | SSA161.. | A6V11858278 |
| Electric actuator, DC 0...10 V (for 2- and 3-port valves/V..P45) |  | SSC161.. | A6V12681511 |
| Electric actuator, DC 0...10 V (for small valves 2.5 mm) |  | SSF161.. | A6V12681511 |
| Electric actuator, DC 0...10 V (for small valves 5.5 mm) |  | SSB161.. | A6V12681511 |

| Type of unit | | Product no. | Datasheet ¹⁾ |
|---|--|-------------|-------------------------|
| Electromotive actuator, DC 0...10 V (for valves 5.5 mm) |  | SAS61.. | 4581 |
| Electrothermal actuator, AC 24 V, NC, DC 0...10 V, 1 m |  | STA161.. | A6V14028280 |
| Electrothermal actuator, AC 24 V, NO, DC 0...10 V, 1 m |  | STP161.. | A6V14028280 |

¹⁾ All documents can be downloaded from <http://siemens.com/bt/download>.

Product documentation



| Title | Product | Document ID |
|-----------------------------------|--|---|
| Mounting instruction | <ul style="list-style-type: none"> • RDF400BN • RDF440BN • RDF460BN | <ul style="list-style-type: none"> • A6V13989826 • A6V12905642 • A6V14064629 |
| Basic documentation | All | A6V14153583 |
| CE declaration | All | A5W00725824A |
| RCM declaration | All | A5W00727514A |
| UKCA declaration | All | A5W00725826A |
| Environmental product declaration | All | A5W00718438A |

Related documents such as environmental declarations, CE declarations, etc., can also be downloaded at the following Internet address:

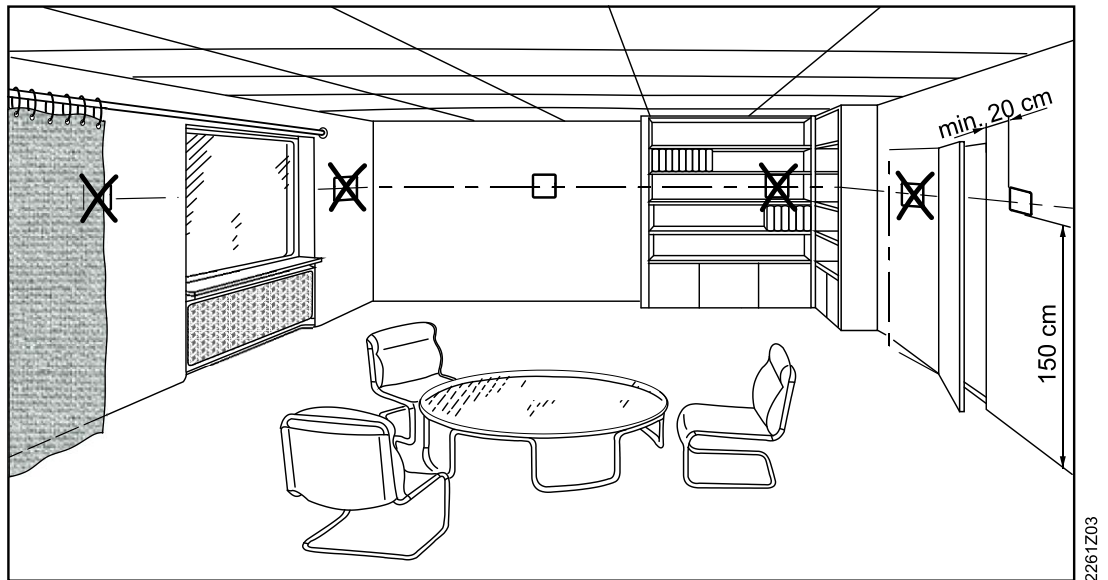
www.siemens.com/bt/download

Notes

Security

|  CAUTION | |
|--|---|
|  | <p>National safety regulations</p> <p>Failure to comply with national safety regulations may result in personal injury and property damage</p> <ul style="list-style-type: none"> • Observe any national provisions and comply with the appropriate safety regulations. |

Mounting and installation



Mounting

- The device is suitable for mounting on a recessed square conduit box with 60.3 mm fixing centers.
- Recommended height: 1.5 m above the floor.
- Do not mount the devices in recesses, shelves, behind curtains or doors, or above or near heat sources.
- Avoid direct solar radiation and drafts.
- Avoid unheated (uncooled) building area such as outside walls.
- Seal the conduit box or the installation tube if any, as air currents can affect sensor readings.
- Adhere to allowed ambient conditions.

| ⚠ WARNING | |
|------------------|---|
| | <p>Device damage</p> <p>Carefully read all wiring diagrams prior to installation to avoid damage to the device caused by incorrect wiring of high or low voltages.</p> |

See Mounting Instructions A6V13989826 (RDF400BN), A6V12905642 (RDF440BN) or A6V14064629 (RDF460BN) enclosed with the thermostat.

Wiring

| ⚠ WARNING | |
|------------------|--|
| | <p>Wire, protect and earth in compliance with local regulations.</p> <p>Risk of fire and injury due to short-circuits!</p> <ul style="list-style-type: none"> • Adapt the line diameters as per local regulations to the rated value of the installed overcurrent protection device. • The power supply line (AC 100...230 V or AC 24 V) must have an external circuit breaker with a rated current of no more than 10 A. • Disconnect from supply before removing the device from its mounting plate. • Isolate the cables of all SELV terminals for AC 100...230 V, e.g., BACnet/Modbus communication input BN+, BN- and REF for AC 100...230 V. • Nominal power of electrical heater needs to be lower than 0.8 kW, additional security element must be installed. (RDF400BN, RDF460BN) |

Commissioning

After first power-up, all LCD segments light up for about 3 seconds. Afterwards, the device enters parameter setting mode and is ready for commissioning by qualified HVAC staff. When commissioning is finished and user exits parameter setting mode, the device restarts and is ready for normal operation.

The control parameters of device can be adjusted to ensure optimum performance of the entire system (see Control parameters in [Basic documentation](#)).

Applications and settings

The room thermostats are delivered with a fixed set of applications and related parameters. Select and activate the relevant application and settings during commissioning using one of the following tools:

- Local HMI
- BACnet/Modbus commissioning tool
- Siemens smartphone app Quick Config

Commissioning via smartphone application Quick Config

The setting via the smartphone application Quick Config is used to set the application and parameters settings of the thermostat.

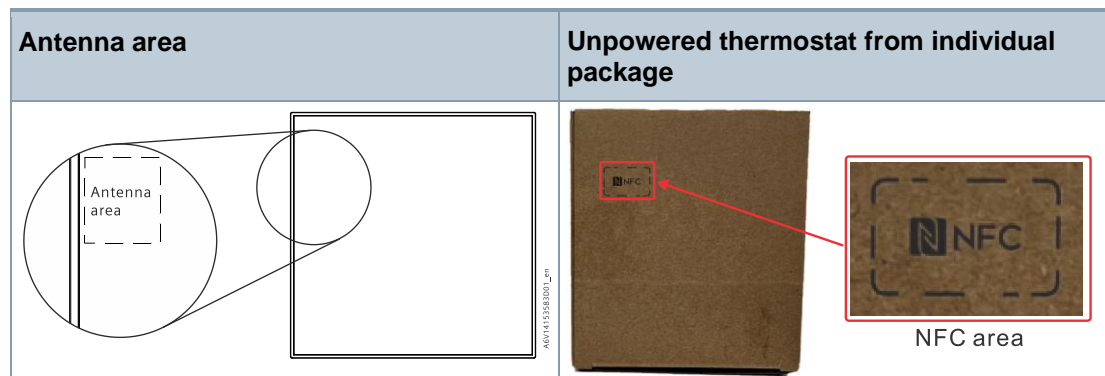
This tool allows for wireless setting of the thermostat with smartphone and read/write parameters.

The commissioning tool works directly after users scan either the antenna area of the thermostat or the NFC area on the individual package box.

NOTICE! Before scanning, users need make sure smartphone NFC area to ensure communication between smartphone and thermostat.

In addition, users can:

- Scan the antenna area without powering on the thermostat.
- Scan the NFC area without unpacking the thermostat from the individual box.



Notes

- The commissioning via smartphone application Quick Config can be disabled via parameters to avoid unexpected changes of the thermostat.

Control sequence

Set the control sequence via parameter P02 depending on the application. Factory setting:

| Application | Factory setting (P02) |
|-------------|-------------------------|
| 2-pipe | 2 = Cooling only |
| 4-pipe | 5 = Heating and cooling |

Surge protection at power-up

When the thermostats are powered, the control outputs start at random to protect the electric system against overload. It takes up to 3 seconds for all thermostat outputs to function properly.

| | |
|-------------------------------|--|
| Measured value adjustment | The device has an internal sensor or external sensor connected via X1 for accurate temperature display. If the temperature reading is affected by the installation location, adjust the sensor via parameter P13 to correct the readings. |
| Setpoint and range limitation | For comfort and to save energy, we suggest to review all setpoint related parameters and adapt them as needed. |
| MAC address (BACnet) | The MAC address is assigned to "4" (factory setting). If necessary, engineer/installer can change the address value using the parameter P93. |
| Device address (Modbus) | The device address is assigned to "1" (factory setting). If necessary, engineer/installer can change the address value using the parameter P93. |
| Baud rate | The Baud rate is selectable. Five options, auto, 9600 bps, 19200 bps, 38400 bps and 76800 bps, are available for the BACnet network (38400 bps is default). Four options, auto, 9600 bps, 19200 bps and 38400 bps, are available for the Modbus network (19200 bps is default). |
| Modbus data frame format | Modbus data frame format can be set to 1 = 1/8/E/1, 2 = 1/8/O/1, 3 = 1/8/N/1 or 4 = 1/8/N/2 (1/8/E/1 is default). |

Disposal



This symbol or any other national label indicate that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation.
For additional details, refer to [Siemens information on disposal](#).

Cyber security disclaimer

Siemens provides a portfolio of products, solutions, systems and services that includes security functions that support the secure operation of plants, systems, machines and networks. In the field of Building Technologies, this includes building automation and control, fire safety, security management as well as physical security systems. In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art security concept. Siemens' portfolio only forms one element of such a concept.

You are responsible for preventing unauthorized access to your plants, systems, machines and networks which should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place. Additionally, Siemens' guidance on appropriate security measures should be taken into account. For additional information, please contact your Siemens sales representative or visit:


<https://www.siemens.com/global/en/products/automation/topic-areas/industrial-cybersecurity.html>

Siemens' portfolio undergoes continuous development to make it more secure. Siemens strongly recommends that updates are applied as soon as they are available and that the latest versions are used. Use of versions that are no longer supported, and failure to apply the latest updates may increase your exposure to cyber threats. Siemens strongly recommends to comply with security advisories on the latest security threats, patches and other related measures, published, among others, here:


<https://www.siemens.com/cert/> => 'Siemens Security Advisories'

Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

| Power supply (RDF400BN) | |
|---|-----------------|
| Operating voltage | AC 100...230 V |
| Frequency | 50/60 Hz |
| Power consumption | Max. 5 VA / 3 W |
| Standby power consumption | 1 VA / 0.5 W |
|  <ul style="list-style-type: none"> • No internal fuse! <p>External preliminary protection with max. C 10 A circuit breaker in the supply line required under all circumstances.</p> | |

| Power supply (RDF440BN) | |
|--------------------------------------|--|
| Operating voltage | AC/DC 24 V |
| Power consumption | Max. 5 VA / 3 W |
| Standby power consumption | 1.2 VA / 0.5 W |
| External supply line protection (EU) | Circuit breaker max. 10 A Characteristic B, C, D according to EN 60898 or Power source with current limitation of max. 10 A |

| Power supply (RDF460BN) | |
|---|-----------------|
| Operating voltage | AC 100...230 V |
| Frequency | 50/60 Hz |
| Power consumption | Max. 5 VA / 3 W |
| Standby power consumption | 1 VA / 0.5 W |
|  <ul style="list-style-type: none"> • No internal fuse! <p>External preliminary protection with max. C 10 A circuit breaker in the supply line required under all circumstances.</p> | |

| BACnet interface | |
|---------------------------|--|
| Type | RS485 |
| Transmit mode | MSTP |
| Connection | Up to 60 |
| Baud rate | Auto, 9600, 19200, 38400 (default), 76800 |
| MAC address | 0...127, 4 (default) |
| Cable length | Max.1200 meters |
| Supported BACnet services | Read property-B, Read propertyMultiple-B, Write property-B, Write propertyMultiple-B, Who-is, Who-has, subscribe COV-B, subscribe COVP-B, etc. |

| Modbus interface | |
|--|---|
| Type | RS485 |
| Transmit mode | RTU |
| Connection | Up to 32 |
| Baud rate | Auto, 9600, 19200 (default), 38400 |
| Device address | 1...127, 1 (default) |
| Cable length | Max.1200 meters |
| Identity | Server |
| Transmission format (start bit – data – parity – stop) | 1 = 1-8-E-1 (default) / 2 = 1-8-O-1 / 3 = 1-8-N-1 / 4 = 1-8-N-2 |



| Near field communication | |
|---------------------------------|---|
| NFC | 13.56 MHz |
| Max. magnetic field strength | <42 dB μ A/m@10 m (depending on the NFC reader) |

| Wiring connections (RDF400BN) | |
|---|----------------------------|
| Diameter | 1.0...1.5 mm ² |
| Power, input, and output (L, N, Q1, Q2, Q3, Y1, Y2) | |
| SELV signal (BN+, BN-, Ref, X1, M, D1) | 0.5...1.5 mm ² |
| Wire | Solid or prepared stranded |

| Wiring connections (RDF440BN) | |
|--|----------------------------|
| Diameter | 1.0...1.5 mm ² |
| Power, input, and output (L1, Q1, Q2, Q3) | |
| SELV signal (G, G0, M, Y10, Y20, BN+, BN-, Ref, X1, M, D1) | 0.5...1.5 mm ² |
| Wire | Solid or prepared stranded |

| Wiring connections (RDF460BN) | |
|--|----------------------------|
| Diameter | |
| Power, input, and output (L, N, Y1, Y2) | 1.0...1.5 mm ² |
| SELV signal (BN+, BN-, Ref, X1, M, D1, M, Y50) | 0.5...1.5 mm ² |
| Wire | Solid or prepared stranded |

| Output | |
|-----------------------------------|------------------------------|
| 1-/3-speed fan (RDF400BN) | Q1...Q3 |
| Type | On/Off |
| Voltage | AC 100...230 V |
| Maximum current | Min. 5(2) A |
| 1-/3-speed fan (RDF440BN) | Q1...Q3 |
| Type | On/Off |
| Voltage | AC 24...230 V |
| Maximum current | Min. 5(2) A |
| ECM fan (RDF440BN, RDF460BN) | RDF440BN: Y20, RDF460BN: Y50 |
| Type | DC |
| Voltage | DC 0...10 V |
| Maximum current | Min. ±5 mA |
| Valve output (RDF400BN, RDF460BN) | Y1 (N.O.), Y2 (N.O.) |
| Voltage | AC 100...230 V |
| Maximum current | Min. 5(2) A |
| Valve output (RDF440BN) | Y10, Y20 |
| Voltage | DC 0...10 V |
| Maximum current | Min. ±1 mA |

|  CAUTION | |
|---|---|
|  | If fans must be connected in parallel, connect one fan directly, for additional fans, one relay for each speed. |

| Multifunctional input | |
|--------------------------|-------------|
| X1-M | |
| Temperature sensor input | |
| Type | NTC 3k |
| Temperature range | -20...70 °C |
| Temperature sensor input | |
| Type | NTC 10k |
| Temperature range | -20...70 °C |

| Multifunctional input | |
|------------------------------|-----------------------|
| Digital input | |
| Operating action | Selectable (NO/NC) |
| Contact sensing | DC 0...5 V, max. 5 mA |
| Insulation against mains | SELV |

| Operational data | |
|--|--|
| Hysteresis - Heating mode (P43) - Cooling mode (P44) | 0.5...6 K (factory setting: 2 K) 0.5...6 K (factory setting: 1 K) |
| P-band Xp - Heating mode (P43) - Cooling mode (P44) | 0.5...6 K (factory setting: 2 K) 0.5...6 K (factory setting: 1 K) |
| Setpoint setting range - Comfort mode (P20, P21) - Economy mode (P22, P23) - Protection mode (P50, P51) | 5...40 °C Off, 5...40 °C Off, 5...40 °C |
| Built-in room temperature sensor - Measuring range - Accuracy at 25 °C - Temperature calibration range | 0...50 °C < ±0.5 K - 5.0...+5.0 K |
| Resolution of settings and display - Temperature setpoints - Current temperature value displayed | 0.5 °C 0.5 °C |

| Ambient conditions and protection classification | |
|--|--|
| Classification as per EN 60730 Function of automatic control devices Degree of pollution Overvoltage category Action type Rated impulse voltage Maximum altitude Software class | Type 1 2 III 1 as per EN 60730-1 4 kV as per EN 60730-1 3000 m as per EN 60730-1 A as per EN 60730-1 |
| Classification of protection against electric shock | Device suited for use with equipment of protection class II. |

| Ambient conditions and protection classification | |
|---|---|
| Degree of protection of housing to EN 60529 (after mounting in position) Room automation station With terminal cover | IP30 IP30 |
| Climatic ambient conditions - Storage as per EN 60721-3-1 Temperature range Humidity range - Transport (packaged for transport) as per EN 60721-3-2 Temperature range Humidity range - Operation as per EN 60721-3-3 ¹⁾ Temperature range Humidity range | -5...+50 °C 5...95 % r.h. -25...+70 °C 5...95 % r.h. 0...50 °C 5...95 % r.h. |
| Mechanical ambient conditions Storage as per EN 60721-3-1 Transport as per EN 60721-3-2 Operation as per EN 60721-3-3 | Class 1M2 Class 2M2 Class 3M2 |

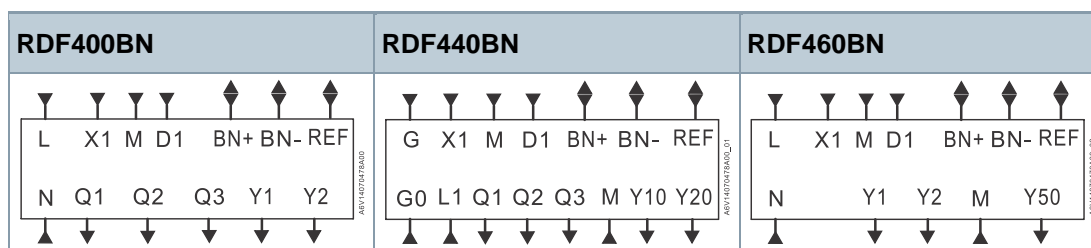
¹⁾ No condensation permitted.

| Standards, directives and approvals | |
|--|---|
| Electromagnetic compatibility | For residential, commercial environments |
| EU conformity (CE) | A5W00725824A *) |
| RCM | A5W00727514A *) |
| UKCA | A5W00725826A *) |
| REACH | Regulation (EC) No 1907/2006 Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) |
| RoHS | Directive 2011/65/EU restriction of the use of certain hazardous substances in electronic equipment |
| Environmental compatibility | The product environmental declaration (A5W00718438A *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal). |

| General | |
|--|---|
| Weight without/with package <ul style="list-style-type: none"> • RDF400BN • RDF440BN • RDF460BN | <ul style="list-style-type: none"> • 162.8 g / 256.4 g • 155 g / 248.4 g • 151.9 g / 247.4 g |
| Materials <ul style="list-style-type: none"> • Control unit • Mounting plate | <ul style="list-style-type: none"> • PC • PC + 10% GF |
| Colors <ul style="list-style-type: none"> • Frame • Screen | <ul style="list-style-type: none"> • White RAL 9016 • Black RAL 9005 |
| Housing flammability class according to UL94 | V-0 |

*) The documents can be downloaded from <http://siemens.com/bt/download>.

Connection terminals



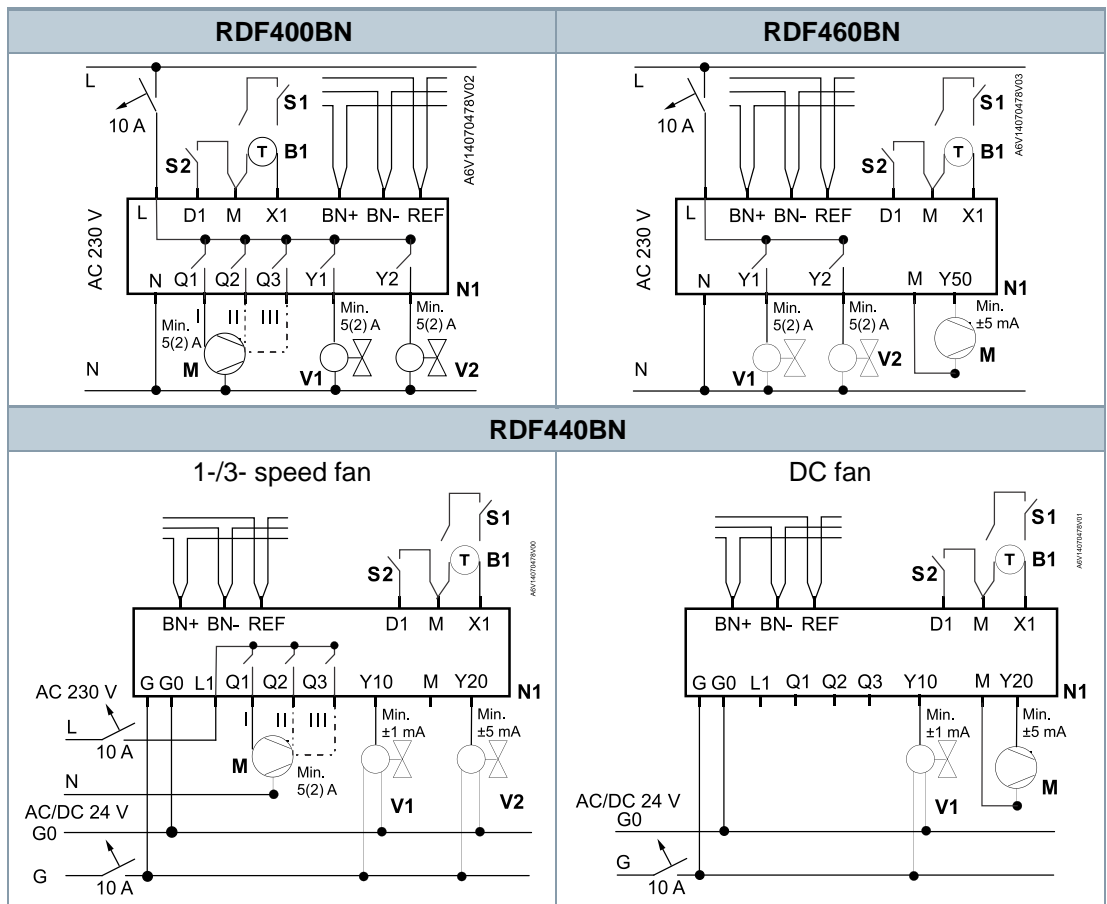
| | |
|-----------------|---|
| L, N | AC 100...230 V power supply, mains and neutral |
| G, G0 | AC/DC 24 V power supply |
| L1 | Feed for relays AC 24...230 V |
| Q1 ** | Fan control output (relay output), Q1-low (AC 100...230 V) |
| Q2 ** | Fan control output (relay output), Q2-middle (AC 100...230 V) |
| Q3 ** | Fan control output (relay output), Q3 -high (AC 100...230 V) |
| Y1 * | SPST relay output, 2-pipe cooling/heating, or 4-pipe heating, normally open (AC 100...230 V) |
| Y2 * | SPST relay output, 2-pipe with electric heater, or 4-pipe cooling, normally open (AC 100...230 V) |
| Y10 | Control outputs "valve" DC 0...10 V, 2-pipe cooling/heating, or 4-pipe heating |
| Y20 | Control outputs "valve" DC 0...10 V, 4-pipe cooling, and 2-pipe DC fan |
| Y50 | Control output "Fan" DC 0...10 V |
| X1 | Multifunctional input, e.g., sensor, switch or DC 0...10 V signal (actuator feedback) |
| M | Input reference ground for X1, D1 |
| M | DC fan reference |
| D1 | Digital input, e.g., switch |
| BN+, BN- *** | BACnet or Modbus terminals |
| REF | BACnet or Modbus reference ground |

* 3-wire valve and 3-position valve actuators can also be used for 2-pipe application with Y1 and Y2 connected and P04 configured.

** For RDF440BN, the relay voltage for Qx is AC 24...230 V.

*** Isolated for RDF440BN

Connection diagrams



| | |
|------------------|---|
| N1 | RDF400BN/RDF440BN/RDF460BN |
| L, N | AC 100...230 V power supply, mains and neutral |
| G, G0 | AC/DC 24 V power supply |
| L1 | Feed for relays AC 24...230 V |
| Q1, Q2, Q3 ** | Fan control output (relay output), Q1-low, Q2-middle, Q3-high (AC 100...230 V) |
| Y1 * | SPST relay output, 2-pipe cooling/heating, or 4-pipe heating, normally open (AC 100...230 V) |
| Y2 * | SPST relay output, 2-pipe with electric heater, or 4-pipe cooling, normally open (AC 100...230 V) |
| Y10 | Control outputs "valve" DC 0...10 V, 2-pipe cooling/heating, or 4-pipe heating |
| Y20 | Control outputs "valve" DC 0...10 V, 4-pipe cooling, and 2-pipe DC fan |
| Y50 | Control output "Fan" DC 0...10 V |
| X1 | Multifunctional input, e.g., sensor, switch or DC 0...10 V signal (actuator feedback) |
| M | Input reference ground for X1, D1 |
| M | DC fan reference |
| D1 | Digital input, e.g., switch |
| BN+, BN- *** | BACnet or Modbus terminals |
| REF | BACnet or Modbus reference ground |

* 3-wire valve and 3-position valve actuators can also be used for 2-pipe application with Y1 and Y2 connected and P04 configured.

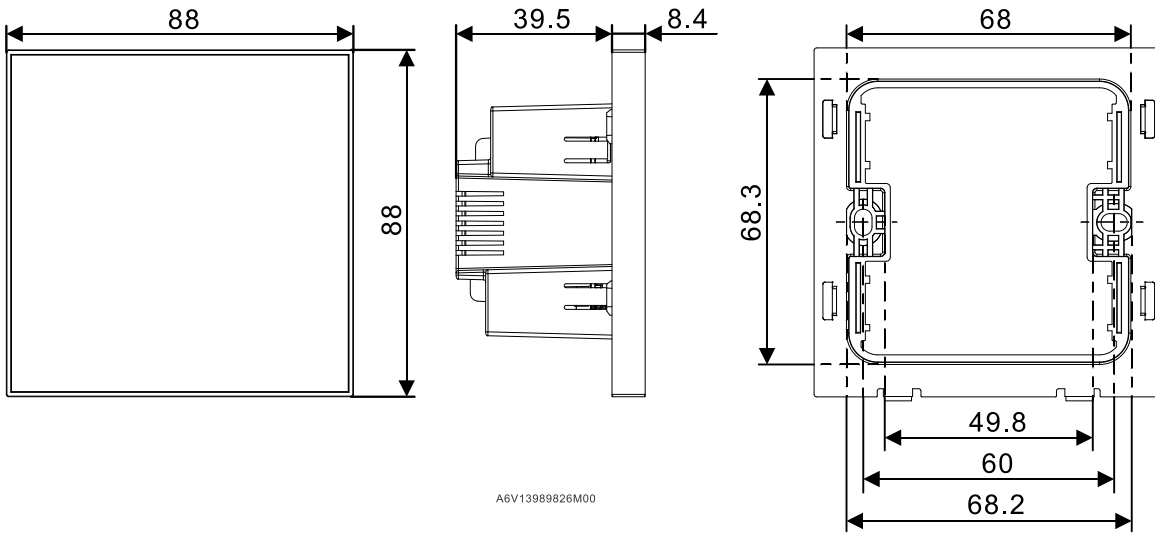
** For RDF440BN, the relay voltage for Qx is AC 24...230 V.

*** Isolated for RDF440BN

| Application and diagram | |
|---|----------------------|
| 2-pipe fan coil unit | 4-pipe fan coil unit |
| | |
| 2-pipe fan coil unit with electric heater | |
| | |

| | |
|--|---------------------------------|
| YHC Heating/cooling valve actuator | YE Electric heater |
| YH Heating valve actuator | YC Cooling valve actuator |
| B1 External room temperature sensor (optional) | B2 Changeover sensor (optional) |
| M1 1-speed or 3-speed fan | |

Dimensions (mm)



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