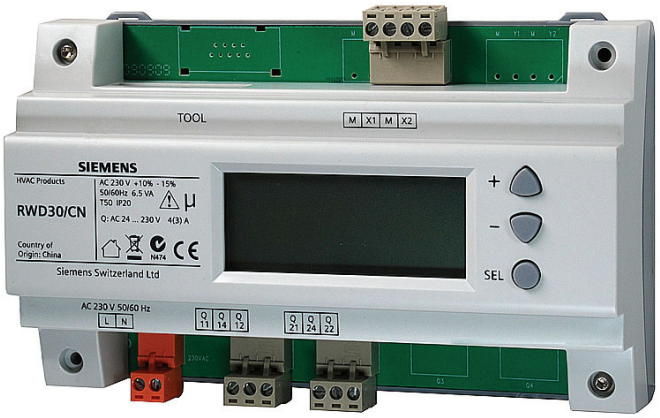
SIEMENS

3348



RWD30/CN

Universal Controller RWD30/CN

For comfort control in HVAC&R-Systems

- **Standalone electronic temperature controller with P or PI response**
- **Operating voltage in accordance to type AC 230 V**
- **Control application is selectable via Application Number**
- **Active input scale is selectable**
- **Two universal inputs for Ni 1000, Pt 1000 temperature sensors and DC 0…10 V signals**
- **Unit can be set as °C, °F, % or no specified unit**
- **One 3-position output or two 2-position outputs, direct or reverse action**
- **Entering or changing of all data via operating buttons on the controller, no additional tools are needed**
- **LCD text is in simplified Chinese**

Use

The universal controllers are intended for Heating, Ventilating, Air-Conditioning and Refrigeration systems in comfort control plants. It can be mounted in a control cabinet or in the ARG62.21/ARG62.22 housing for ducts, walls or plant room installation.

HVAC&R Application

Measurement and control for temperature, relative humidity, absolute humidity, enthalpy, pressure differential, volumetric airflow and indoor air quality. The input scale can be set from −100 to 8,000.

Functions

- Controller
  Stand-alone controller with one 3-position or two 2-position (ON/OFF) outputs and independent adjustment on each sequence for direct acting and/or reverse acting. In 3-position operation, the controller exhibits PI response.
- Selectable auxiliary function
  Universal input X2 for one of the following functions:
  - PI limiter function (absolute and relative)
  - Remote setpoint function
  - Cascade control function
  - Setpoint compensation
  - Winter/summer operation
  - Maximum priority

Type summary

Inputs		*Outputs (either)*		*Operating voltage*	*Type reference*
Universal	*Digital*	*3-position*	*2-position*		
2	0	1	2	AC 230 V	RWD30/CN

Accessories

Name	*Type*
Protective small enclosure for wall mounting	ARG62.21
Protective big enclosure for wall mounting	ARG62.22
Software tool	Not Applicable

Equipment combinations

The following Siemens units can be connected to RWD30/CN universal controller.

Units	*Data sheet no.*
Sensor with LG-Ni 1000 temperature sensing element	N17… to N19…
Sensor with Pt 1000 temperature sensing element	N1846
Sensor with DC 0…10 V measuring signal	N17… to N19…
Room temperature sensor with setpoint adjuster QAA25 or QAA25/AP	N1721/N1728
Remote setpoint adjusters FZA21.11 and FZA61.11	N19…
Air damper actuators with 3-position input	N46…
Valve actuators with 3-position input	N45…

Other combinations with third-party units are possible, provided the input and output specifications match the RWD30/CN.

Functions

Controller type

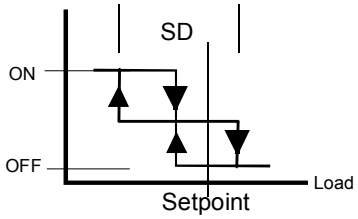
The RWD30/CN is a stand-alone universal controller, which perform both primary and auxiliary control functions. The respective mode can be defined by entering the corresponding configuration and setting parameters via the operating buttons on the controller or the software tool.

Main functions

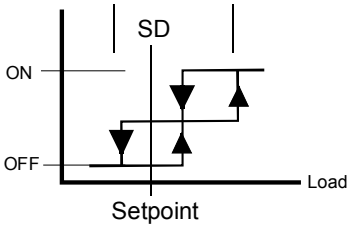
The RWD30/CN controller can be programmed as follows:

- 2-position controller: Q1 and Q2 (reverse and/or direct acting on each step)
- 3-position controller: Q1 or Q2 (reverse or direct acting)

Dependent Control Loops

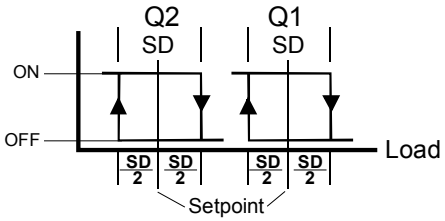


2 reverse acting sequences
(dependent loops)
(application No.: 10…19)

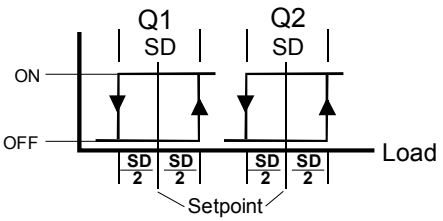


2 direct acting sequences
(dependent loops)
(application No.: 50…59)

Independent Control Loops

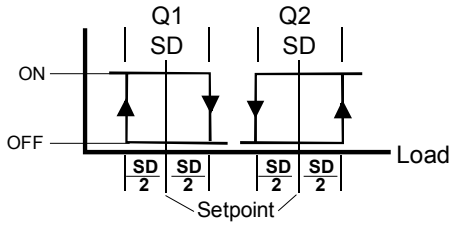


2 reverse acting sequences
(independent loops)
(application No.: 20…29)



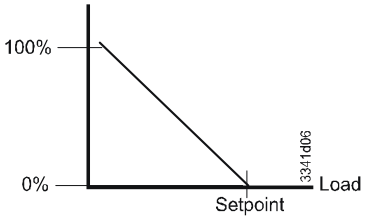
2 direct acting sequences
(independent loops)
(application No.: 60…69)

Reverse and Direct Acting Control Loops

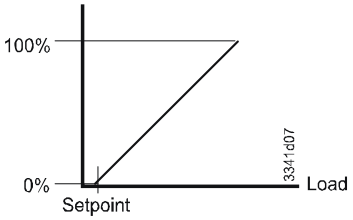


Reverse and direct acting sequences
(application No.: 40…49)

3-point Control Loop



Reverse acting sequence
(application No.: 30…39)



Direct acting sequence
(application No.: 70…79)

Universal input X1

The universal input X1 is used as the primary input for a LG-Ni 1000 temperature sensor, a Pt 1000 temperature sensor or a DC 0…10 V active input.

Universal input X2

The universal input X2 is used as the secondary input for a LG-Ni 1000 temperature sensor, a Pt 1000 temperature sensor, an active/passive remote setpoint transmitter or a DC 0…10 V active input.

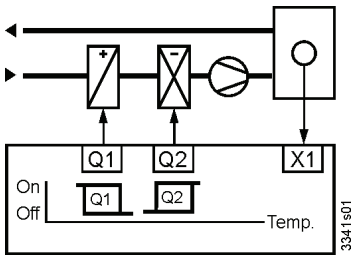
Digital outputs Q

Each output Q (Q1, Q2) can be configured for either reverse or direct acting.

Example

Ventilating plant with temperature control

X1 Room temperature
Q1 Heating, reverse action
Q2 Cooling, direct action



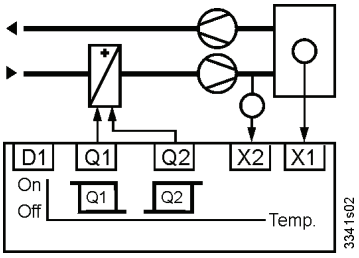
Auxiliary functions

One of the following auxiliary functions can be selected:

- PI limiter function (absolute and relative)
- Remote setpoint function
- Cascade control function
- Setpoint compensation
- Winter/summer operation
- Maximum priority

PI limiter function

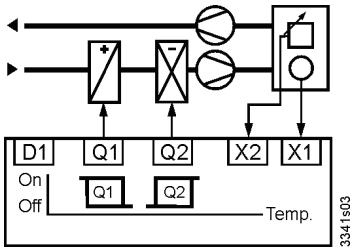
The limiter function with PI control enables absolute (or relative) maximum or minimum limitation of the supply air temperature (X2). When the value drops below or exceeds the limiter setpoint, the limiter function works and takes priority over the main setpoint.



Remote setpoint

A remote setpoint transmitter (FZA21.11, QAA25 or QAA25/AP), which is connected to X2 and configured accordingly, enables setpoint adjustment.

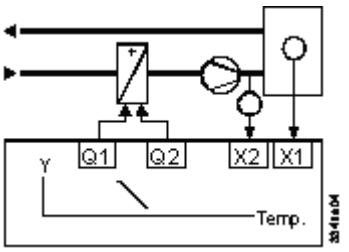
Active measurement from DC 0…10 V corresponds to adjustable range from −100 to 8000
Passive measurement from 0…1000 Ω corresponds to adjustable range from −100 to 8000



Cascade control

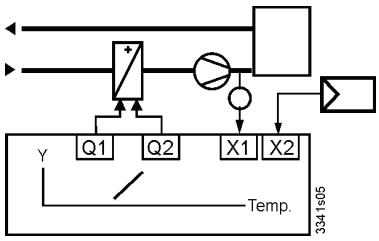
X2 supply air temperature sensor

You can select the **PI/PI room/supply air temperature cascade control**. In this case, the virtual PI room temperature controller determines the setpoint within the limiter setpoints for the PI supply air temperature controller.



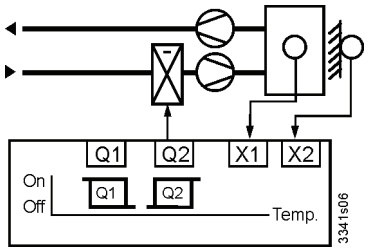
Maximum priority

Maximum priority, cooling
If the value (DC 0…10 V) of the input X2 is greater than the calculated output of the 3-point cooling sequence, the output will use the X2 input value as output value.



Setpoint compensation

The setpoint of room temperature X1 is influenced by the outside temperature X2. Configuration of the RWD30/CN defines the influence of X2 on setpoint X1.

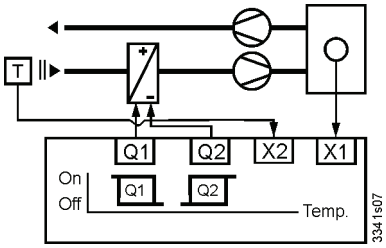


Winter/summer operation

A digital switch or analog input between terminals X2 and M can be used to implement winter/summer changeover.

Digital changeover
When the contact is closed, summer operation is selected. Reverse acting output (Q1 only) is set to direct action (cooling).

Analog changeover
When the X2 input exceeds the setpoint, summer operation is selected. Reverse acting output (Q1 only) is set to direct action (cooling).



Mechanical design

Housing

The RWD30/CN universal controller is as per DIN 43 880 Gr. 1 requirements.

Protective housing ARG62.21/ARG62.22

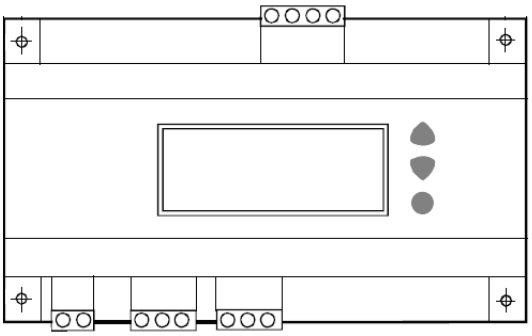
A protective housing is used to protect the controller when mounted outside a control cabinet, such as on ducts, walls and in plant rooms. Furthermore, the protective housing prevents inadvertent contact with voltage supplying parts such as the connecting terminals.
The controller clips into the protective housing.
The cable entries are located at the top and the bottom of the protective housing.
The housing front has an opening for the LCD display and operating buttons.

Terminals

Plug-in screw terminals

Operating and display elements

The RWD30/CN is operated by the buttons on the controller. Additional tools are not necessary.



RWD30/CN

LCD

The LCD shows the following information for normal operation:

- Current operating values (maximum 4 digits)
- Current setpoint
- Application number
- Control sequencing diagram
- Auxiliary input value
- Selected auxiliary function

Operating buttons

The controller has three operating buttons for the following functions:

●

The SELECT ● button is used to enter or save the value adjustment.

▲ and ▼

The operating buttons ▲ and ▼ are used for viewing and adjusting parameters.

Configuration

To configure the controller, please refer to the instructions supplied with the controller.

Engineering notes

Intended use

Use this controller only for applications as described in the description on the title page (bold print) and the section "Use". Additionally, observe all conditions and restrictions imposed in this section and in "Technical data".

⚠

The sections marked with a warning symbol contain technical safety requirements and restrictions. Please observe all of these warnings strictly as they directly relate to the protection of person and equipment.

Installation notes

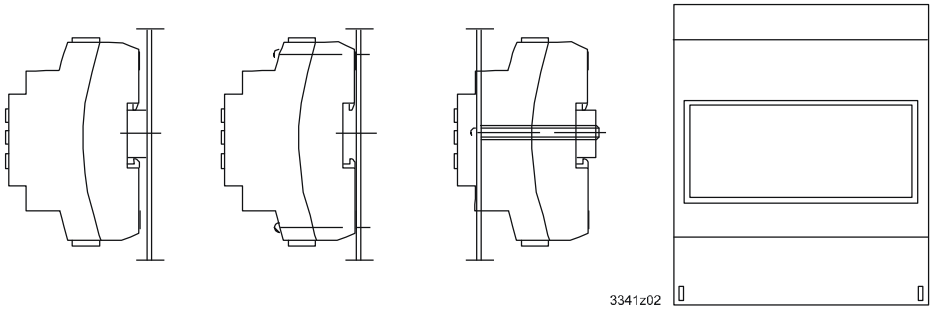
The RWD30/CN controller can be mounted as follows:

A On a top hat rail (EN60715, 35 × 7.5) at least 170 mm long for RWD30/CN

B Wall mounted with 2 screws

C Front mounted using standard elements, e.g.
1 × top hat rail 195 mm long for RWD30/CN
2 × hexagonal placeholders 50 mm
washers and screws

D In the ARG62.21/ARG62.22 protective housing



A B C D

Please observe all current local mounting regulations.

Electrical installation

Standard cables can be used for the controller. However, when mounting in an environment greatly exposed to Electro-Magnetic Interference (EMI), shielded cables must be used.

⚠ The RWD30/CN is designed for AC 230 V operating voltage.
Use safety insulating transformers with double insulation as per EN 60742; they must be designed for zero downtime.

When using several transformers in one system, the connection terminals G0 must be electrically identified as a common connection for all transformers to prevent short-circuits.

Supplying voltages above AC 230 V to low voltage connections may damage or destroy the controller or any other connected devices. Additionally, connections to voltages exceeding AC 230 V endanger personal safety.

Commissioning notes

A booklet is supplied with the RWD30/CN controller for commissioning.
Pay attention to the following conditions and restrictions during commissioning:

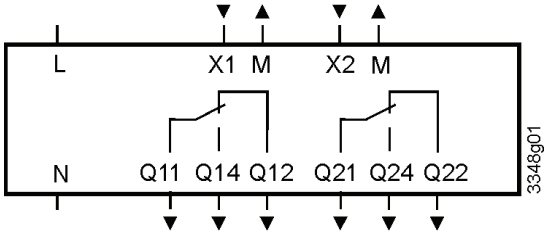
- The controller must be configured for plant-specific operation using standard application number.
- Plant specific fine tuning can be performed if required (refer to the commissioning booklet).
- Please make sure the controller and other devices is connected to AC 230 V power supply
- Values and settings entered will be saved automatically on power failure.

Technical data

Power Supply⚠	Operating voltage RWD30/CN	AC 230 V ±15%
	Safety extra-low voltage (SELV) as per	EN 60730
	Frequency RWD30/CN	50 Hz/60 Hz
	Power consumption	6.5 VA
LCD	Actual and nominal values	4 digits
Resolution (not relate to the controller accuracy)	LG-Ni 1000	0.5 °C
	Pt 1000	0.5 °C
	Active sensor	Depends on the setting range
Environmental conditions	Transport	IEC721-3-2
	Climatic conditions	Class 2K3
	Temperature	–25…70 °C
	Humidity	< 95% r.h.
	Mechanical conditions	Class 2M2
	Operation	IEC721-3-3
	Climatic conditions	Class 3K5
	Temperature	0…50 °C
	Humidity	< 95% r.h.
IP code	Housing	IP 20 as per EN 60529
	with ARG62.21	IP 30 as per EN 60529
	with ARG62.22	IP 30 as per EN 60529
Standards and directives	Automatic electrical controls for household and similar use	EN 60730
	CE Conformity	In accordance with European Union directives
	Electromagnetic compatibility EMC	2004/108/EC
	Low voltage directive	2006/95/EC
	Emissions	EN 61000-6-3 [2007]
	Immunity	EN 61000-6-1 [2007], EN61000-6-2 [2005]
	Safety	EN60730
	Other international approval	N474
Terminals	Screw terminals for cables with	Min. 0.5 mm dia. Max. 2 x 1.5 mm^2 or 2.5 mm^2
Analog inputs X1, X2		
LG-Ni 1000 Ω at 0 °C	Controller Measuring Range	–50…150 °C
	Max. cable length for dia. 0.6 mm	Max. 300 m
Pt 1000 Ω at 0 °C	Controller Measuring Range	–20…180 °C
	Max. cable length for dia. 0.6 mm	Max. 300 m
Analog voltages (for measured variables in °C, % or no unit)	Range	DC 0…10 V corresponds to adjustable range from –100 to 8000 (°C, °F, % or no unit)
	Max. cable length for dia. 0.6 mm	Max. 300 m

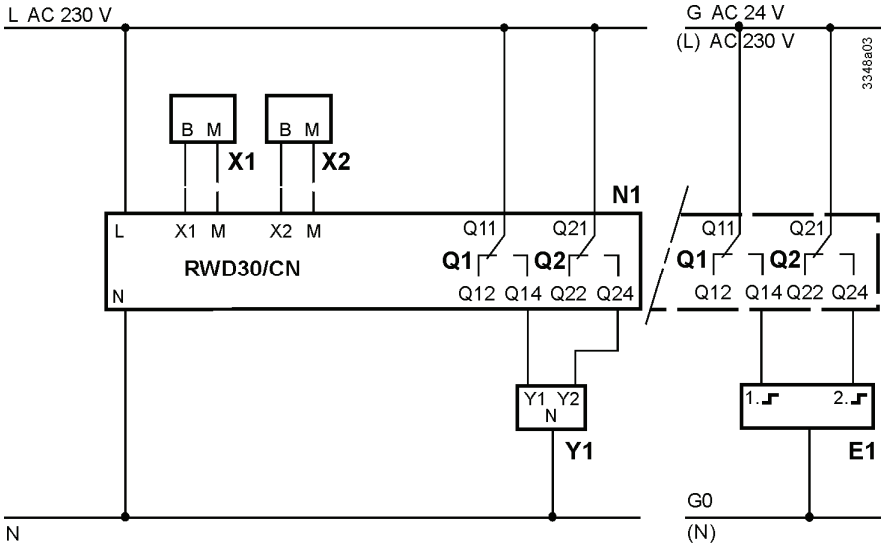
Remote setpoints X2	Range	0…1000 Ω corresponds to adjustable range from –100 to 8000 (°C, °F, % or no unit)
	Max. cable length for dia. 0.6 mm	Max. 300 m
Digital outputs Q1, Q2	Relay contacts (potential-free)	
	Voltage	AC 24…230 V
	Maximum rating	AC 230 V, 4 A resistive, 3 A ind. (per relay terminal)
		DC 30 V, 4 A
	Minimum rating	AC 19.2 V, 20 mA
		DC 5 V, 100 mA
General	Dimensions	174.0 x 106.0 x 56.5 mm (L x W x H)
	Weight without packaging	476 g

Internal diagram



L, N AC 230 V supply
M Ground for signal inputs and universal inputs
Q… Digital output, various voltages permissible AC 24…230 V
X1 Signal input (main input: LG-Ni 1000, Pt 1000 and DC 0…10 V)
X2 Signal input (aux. Input: LG-Ni1000, Pt 1000, DC 0…10 V and 0…1000 Ω or DC 0…10 V remote setpoint)

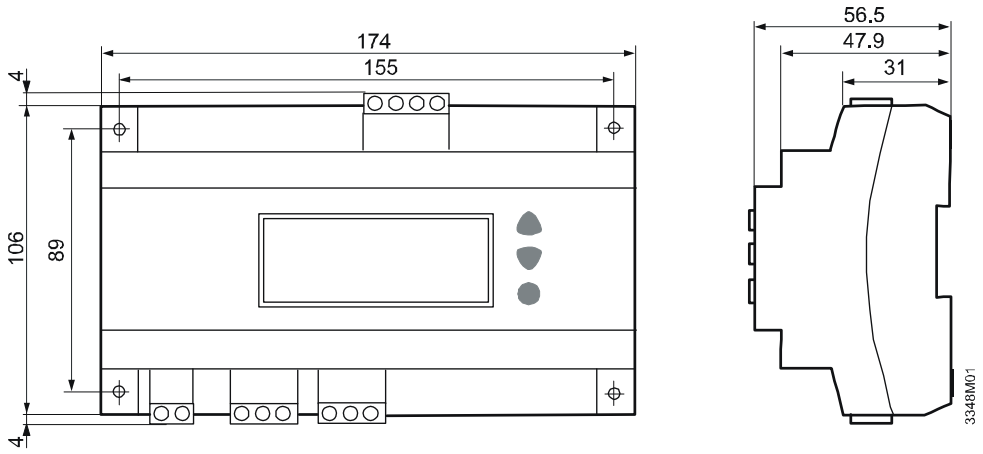
Connection diagram



E1 Electrical load 2-position control
N1 RWD30/CN controller
Q1/Q2 Potential-free relay contacts for 3-position or 2-position control in 2 steps
X1 Main input (Termination G appears when X1 is an active sensor)
X2 Auxiliary input or remote setpoint (Termination G appears when X2 is an active sensor)
Y1 Actuator with 3-position control AC 24…230 V

Dimensions (mm)

RWD30/CN



ARG62.21 / ARG62.22