

Specifications

Case	<input type="checkbox"/> 'H', <input type="checkbox"/> 'V'
Inputs	programmable, one per channel
Outputs:	up to 2, one per channel
Electromechanical relay	5A/250VAC with NO/NC contact
SSR	1A/250VAC
MOS gate	0.1A/60V, optically isolated
Output for external SSR	5...24 VDC, 30 mA
- K1	<input type="checkbox"/> relay, <input type="checkbox"/> SSR, <input type="checkbox"/> MOS gate, <input type="checkbox"/> for ext. SSR
- K2	<input type="checkbox"/> relay, <input type="checkbox"/> SSR, <input type="checkbox"/> MOS gate, <input type="checkbox"/> for ext. SSR
Serial Interface	<input type="checkbox"/> RS485, isolated, <input type="checkbox"/> RS485 for "PolyMonitor", isolated
Power Supply	<input type="checkbox"/> 230 VAC, <input type="checkbox"/> 90...250 VAC/DC, <input type="checkbox"/> 24 VDC, <input type="checkbox"/> 12...24 VAC/DC, <input type="checkbox"/>
Auxiliary Supply Output	<input type="checkbox"/> $\leq U_p$ (DC); $\leq 1.2 \cdot U_p$ (AC), <input type="checkbox"/> 24 VDC, 60 mA
Consumption	less than 7 VA
Measurement Error	0.3% from span
Temperature Drift	0.01% from span for 1 °C
Operating Temperature / Humidity	-10...65 °C / 0...85% RH
Storage Temperature / Humidity	-10...75 °C / 0...95% RH
Protection Class: front / terminals	<input type="checkbox"/> IP65, <input type="checkbox"/> IP54 / IP20

Warranty and Support

.....
serial number

.....
manufacturing date

QC check mark(passed)
(stamp)

88 Slavyanska Str.
P.O.Box 378
Plovdiv 4000, BULGARIA
tel: +359 32 646523, 646524
fax: +359 32 634089, 646517
e-mail: support@comeco.org

QD-8.2.4-WC

Warranty

COMECO warrants this product to be free from defects in materials and workmanship for 2 years. If your unit is found to be defective within that time, we will promptly repair or replace it. This warranty does not cover accidental damage, wear or tear, or consequential or incidental loss. This warranty does not cover any defects caused by wrong transportation, storage, installation, or operating (see 'Specifications').

Technical support

In the unlikely event that you encounter a problem with your COMECO device, please call your local dealer or contact directly our support team.

TWO-CHANNEL PROGRAMMABLE CONTROLLER

RT180N

OPERATION MANUAL



Please read this Operation Manual before mounting and operating!
Save the Manual for future references!

Parameter Programming

! If no adjustments have been made, the unit operates with its default settings.

***** - Changing Point Position value reflects the real value of all parameters with ISU!

E.g.: changing Point Position value from 1 to 100 would change a Set-point value of 100 to 10.0!!!

Controller parameters

RT180 is a programmable device whose service behavior is determined by a set of parameters. Controller operation requires the user to assign a value for each parameter and save it in the device non-volatile memory. All the parameters, along with their names, symbols, and value ranges, are given in Table 1.

Setting parameter value

- To increase / decrease the displayed digital value, use or respectively. Press once to change the value with 1 point or hold down to speed the increase / decrease.
- When setting Point Position value, use to select among the 3 possible values (decimal point positions):
 - indicating whole numbers;
 - indicating tenths;
 - indicating hundredths.
- To set the displayed value, press respectively or .
- The next parameter in the line along with its current value shows up. Adjust the value if necessary.
- Go on until completing parameter adjustment.

Program Levels

Basic level

- After power-on, the unit enters Basic level. At this level, RT180N displays the measured input value (PV) for each channel, and controls the respective outputs (to find if such are installed, see 'Specifications').
- If the signal of either of the channels is out of range, the device shows a blinking message on the respective display – $5n \uparrow$ (for CH1) or $5n \downarrow$ (for CH2). If necessary, correct PV by changing Offset value (see 'Parametric level').

Program Levels

Parametric level

This level contains the control algorithm parameters.

- Enter from Basic level by pressing (for CH1) or (for CH2).
- The current Set Point value for the selected channel appears on the corresponding display, and the parameter symbol shows on the other one.
- To adjust the blinking parameter value and/or access and adjust the other control algorithm parameters, follow the procedure described in 'Setting parameter value'.
- If no key has been pressed for a while, the device automatically returns to Basic level, storing all changes made.

Configuration level

This level contains the configuration parameters of the device.

- Enter from Basic level by pressing simultaneously + + (for CH1) or + + (for CH2).
- The current Input Type value for the selected channel appears on the corresponding display, while the parameter symbol ($i_n P$) shows on the other display.
- To assign new value to the parameter and/or access and adjust the other configuration parameters, follow the procedure described in 'Setting parameter value'.
- If no key has been pressed for a while, the device automatically returns to Basic level, storing all changes made.

! If RTD or T/C input type is set, RT180N returns to Basic level. Otherwise, parameter adjustment continues.

Overview

The programmable controller RT180N has 2 independent channels (CH1 and CH2) and offers an exceptionally convenient and inexpensive solution for 2 loop control applications within 1 machine or 2 adjacent ones. The device universal programmable inputs make sensor change easy and convenient, and allow configuring a variety of inputs and controlled physical values on-site.

Electro-Magnetic Interference (EMI) Issues



Important note:

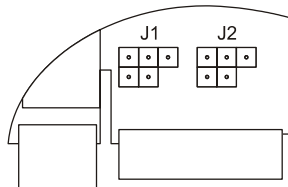
A built-in RC noise suppression circuit is connected in parallel with relay contacts. Full AC voltage isolation is NOT provided when relay contacts are open. Small AC current (≈ 1.5 mA at 230 VAC) still flows through the RC circuit!

- ♦ All signal wires must be shielded. They must not be packaged together with power cables!
- ♦ Never lay the signal wires close to inductive or capacitive noise sources, such as relays, contactors, motors, etc.!
- ♦ All shields have to be grounded ONLY at one end, as closer as possible to the indicator terminals!
- ♦ Avoid sharing supply lines with powerful consumers, especially with inductive loads, switched on and off.
- ♦ To stop unwelcome interference signals entering through the power supply lines, use shielded 1:1 isolation transformer!
- ♦ Shunt all switched (not only those switched by the controller) inductive consumers with special suppression networks: RC group and varistor - for AC loads, or diode - for DC loads.
- ♦ If the controller operates in a very powerful EMI area, it has to be mounted inside a grounded metal shielding box!

Mounting

- ♦ Place RT180 into a 90x42 mm (for case 'H') or 42x90 mm (for case 'V') panel cut-out.
- ♦ Tighten it into place using the enclosed mounting brackets.

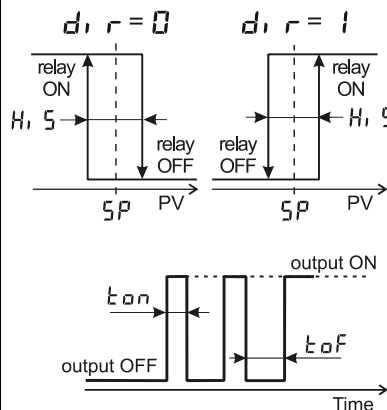
Input Setting



Input type	Jumper connections
RTD, T/C, voltage	
current	
from current transmitter	
from voltage transmitter	

- ♦ Open the case to expose the configuration jumpers J1 (for CH1) and J2 (for CH2) located on the main board, close to the device terminals.
- ♦ To configure either input, connect the pins of its respective jumper as illustrated in the table.

Output Control

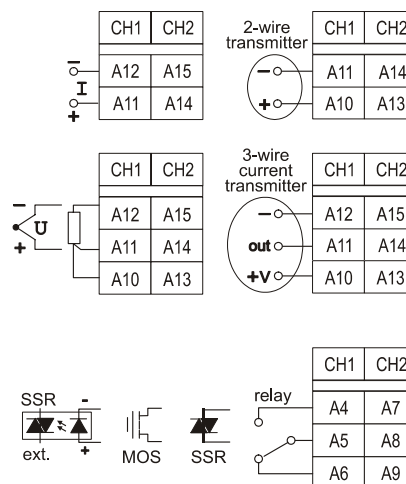


- ♦ RT180 controls one output (if installed) per each of the channels using ON/OFF algorithm and according to the following parameters - Set Point, Hysteresis, Control Direction, Time On, and Time Off.
- ♦ The static characteristic of a relay controlled by an ON/OFF algorithm is shown on the left.
- ♦ When a relay is forced to ON by the control algorithm, it can either stay ON or pulse depending on Time On and Time Off parameter values. Setting either parameter to '0' disables Pulse mode.

Table 1

Parameter	Symbol	Description	Value	Unit	Notes
Configuration Parameters (These parameters are part of Configuration level)					
Input Type	i, n, P	Type of signal that can be connected to the device input	0 ... 15	-	P100, ranges: -19.9...99.9 °C (0'), -99...500 °C (1'); P150, ranges: -99...500 °C (2); Cu100, ranges: -9.9...99.9 °C (3), -50...200 °C (4); Cu50, range: -99...200 °C (5); N/A (6); T/C "K", range: 0...999 °C (7); T/C "J", range: 0...900 °C (8); T/C "L-GOST", range: 0...600 °C (9); T/C "L", range: 0...600 °C (10); N/A (11); linear voltage, 0...50 mV (12); linear current, 0...20 mA (13), 4...20 mA (14); N/A (15)
Point Position	d, P, P, P	Display decimal point position	0.00.000	-	when indicating values w/ the input-signal measurement unit (ISU)
Input Low	L, a	Low display limit	-199 ... 999	ISU	display low range, corresponding to the low signal range
Input High	H, i	High display limit	-199 ... 999	ISU	display high range, corresponding to the high signal range
Parameters of the control algorithm (These parameters are part of Parametric level)					
Set Point	S, P	Set-point value of a respective output	within input range	ISU	
Hysteresis	H, i, S	Relay switching differential	0.0 ... 10.0	ISU	
Control Direction	d, i, r	Control action direction of a respective output	0, 1	-	'heating' - relay ON below set-point (0'); 'cooling' - relay ON above set-point (1')
Time On	t, o, n	ON duration of a respective output	1 ... 250	sec.	'0' disables Pulse mode
Time Off	t, o, f	OFF duration of a respective output	0 ... 250	sec.	'0' disables Pulse mode
Offset	a, f, f	Display correction	-199 ... 199	ISU	adds a constant to the display value

Wiring



- ♦ Connect the inputs for CH1 and CH2 with regard to their types through the respective terminals on the device back.

- ♦ Connect the outputs with regard to their types (see 'Specifications') via the respective terminals.

- ♦ Connect the right power supply voltage for your device (see 'Specifications') through terminals A1 and A3.

- ♦ In order to minimize measuring errors, make sure the connecting screws are tightened enough.



Important notes:

- ♦ Power supply must be turned off during the wiring!
- ♦ Strictly observe the supply voltage requirements and relay contact specifications.
- ♦ With DC power supply, the polarity does not matter.
- ♦ In case of 90...250 VAC/DC power supply, grounding the device through terminal A2 is mandatory for covering safety standards.