COMPACT
DIN RAIL CONTROLLER

CD AUTOMATION

powered by innovation

COMPACT Din Rail Controller

Single Loop Industrial Pid Controller

COMPACT is a single-loop back-of-board controller that can be connected to an operator panel, an industrial PC or a PLC. It can be used stand alone or in multi-zone systems.

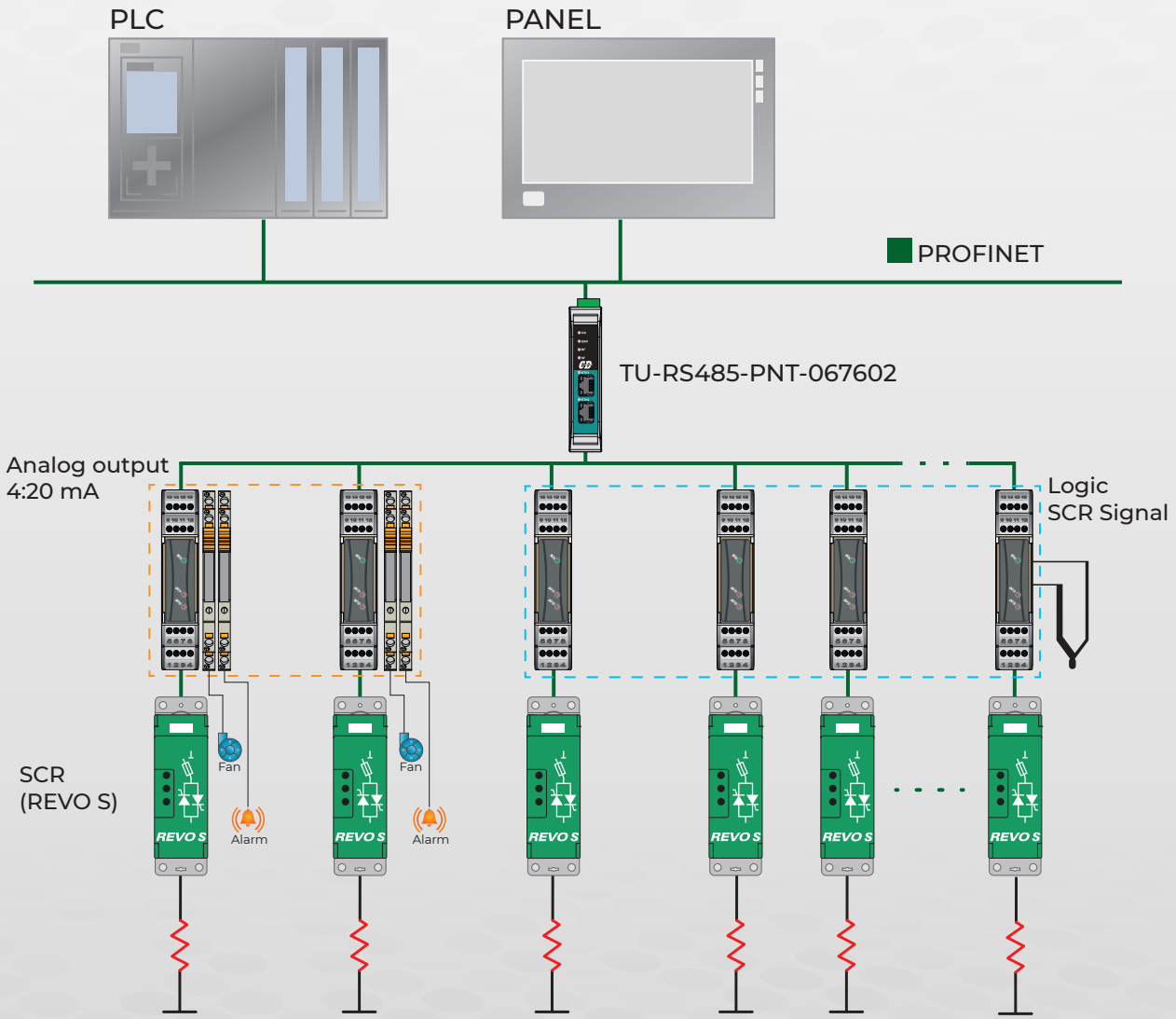
COMPACT presents:

- Analogue process variable input, programmable for temperature sensors (resistance thermometers and thermocouples) and current and voltage signals.
- Current monitoring is possible via TA input for current sensors.
- Two logic outputs are configurable for single or double intervention PID control loops (hot/cold), alarm functions, open/close logic for valve control and soft-start for controlled power.
- An analogue output is also available for control or retransmission.
- modbusRTU and CANOpen are the native communication protocols present on the models. Other fieldbuses are available via termination module.

The control system meets the needs of various sectors: plastic extrusion, injection moulding, packaging, ovens, textile machines and multi-zone heat treatment plants in general.

This series is suitable for industrial applications in the following sectors:

- Packaging
- Laboratory extruders
- Multizone tunnel ovens (metalworking, glass, ceramics)
- Drying and Roasting food
- Flow control (motorized/proportional valves)



Functions

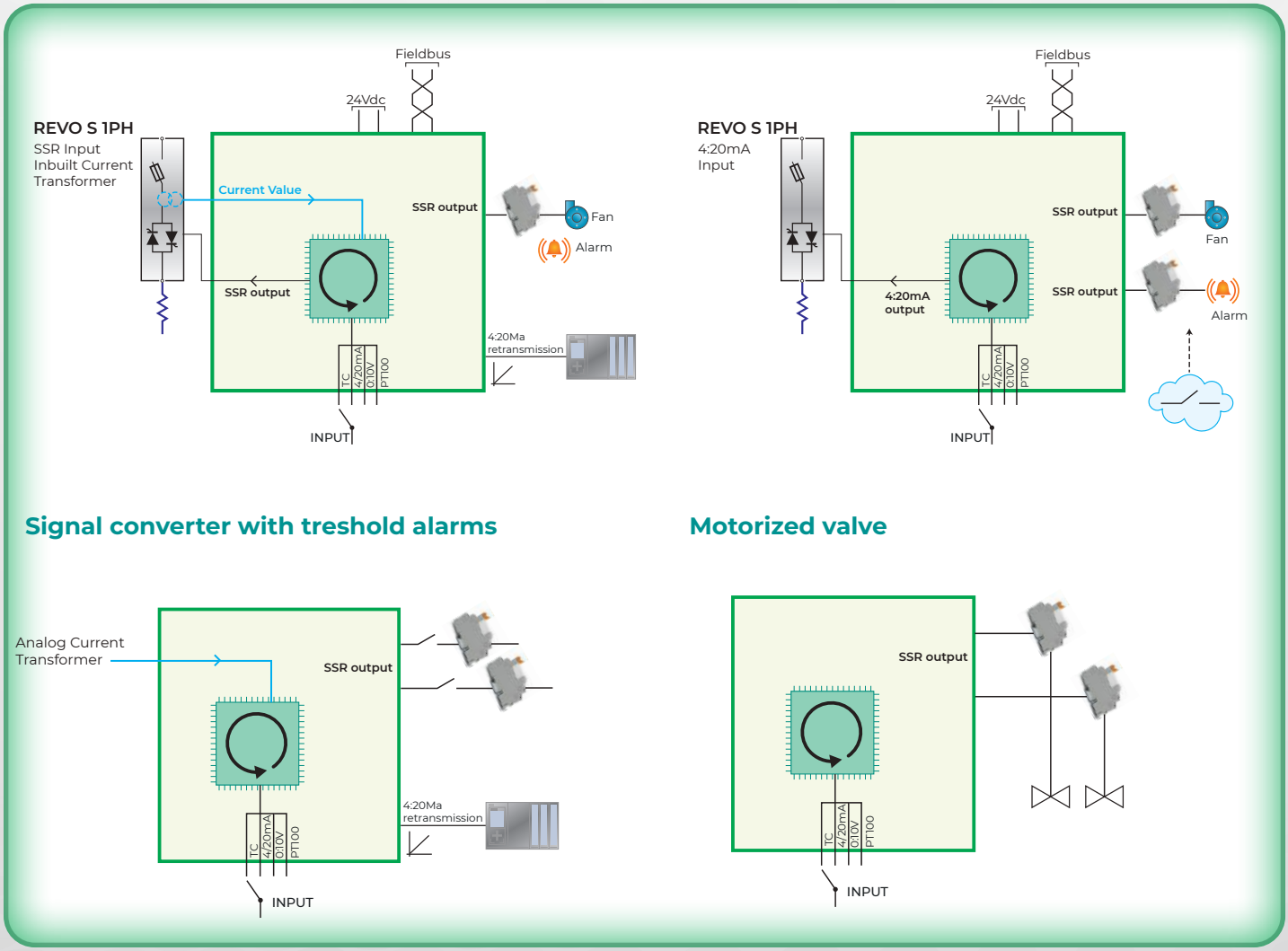
Controller Start / Stop and setpoint modification
User can decide if at power-on the unit starts regulation or not.

Automatic Tuning
Automatic tuning is always active and analyses constantly the difference setpoint-process. If this difference is greater than the value selected on parameter the unit decides autonomously when to modify PID parameters.

Manual Tuning
The manual procedure allows the user a greater flexibility on deciding when to update PID algorithm parameters.

AutoTuning launch “Once”
Autotuning procedure is executed only once at next controller restart.

Synchronized Tuning
This procedure has been conceived to calculate correct PID values on multi-zone systems, where each temperature is influenced by the adjacent zones.



Automatic/Manual regulation for % output control

This function allows to select automatic functioning or manual command of the output percentage.

Heater Break Alarm on CT (Current Transformer)

This function allows to measure monophase load current to manage an alarm during a malfunctioning with:

- power in short circuit, always open
- partial break of the charge.

Dual Action Heating-Cooling

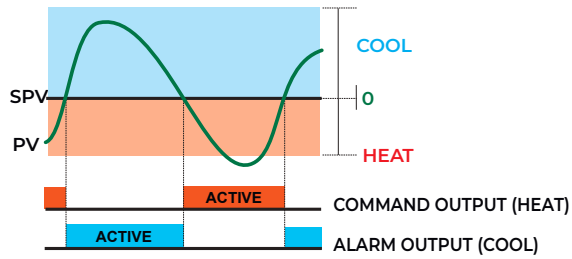
The controller is suitable also for systems requiring a combined heating-cooling action.

Parameters to be configured for the **heating PID** are:

- Heating proportional band
- Integral time of heating and cooling
- Derivative time of heating and cooling
- Heating time cycle

Parameters to be configured for the **cooling PID** are:
AL. 1 o AL. 2 = Alarm selection (Cooling).

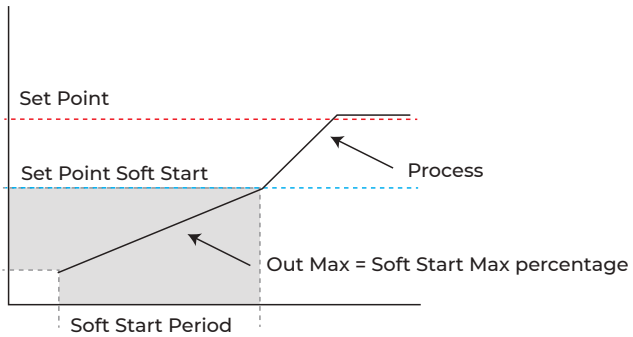
- Proportional band multiplier
- Overlapping / Dead band
- Cooling time cycle

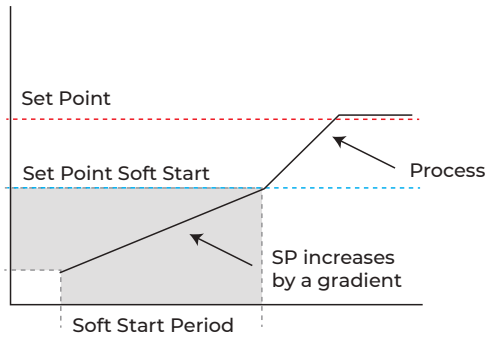


Soft-Start function

COMPACT controller is provided with two types of softstart selectables

- First selection enables gradient softstart.
- Second selection enables output percentual softstart.





Retransmission function on analogue output

If not used as command, the anaolgue output can be used to retransmit process/ setpoint/ current read by the C.T. input/ output percentage.

LATCH ON Function

For use with potentiometer input and with linear input (0..10 V, 0..60 mV, 0/4...20 mA), it is possible to associate start value of the scale to the minimum position of the sensor and value of the scale end to the maximum position of the sensor.

Main features

Order Code

	1	2	3	4	5	6	7		8	9	10	11	12	13	14	15	16
ORDER CODE	C	O	M	P	A	C	T	-	_	_	_	_	_	_	_	_	_

INPUT	1 | 2 | 3 | 4 | 5 | 6 | 7
description	cod.
N° 1 configurable input (Single Loop Controller)	C O M P A C T

OUTPUT 1 - Heating or Alarm	8
description	cod.
SSR Logic 0:24V	S
OUTPUT 2 - Cooling PID or Alarm	**9**
description	cod.
SSR Logic 0:24V	S

OUTPUT 3 - Control Output or Retransmission	10
description	cod.
4-20 mA	A

Integrated Communication - Wiring	11
description	cod.
RS485 Modbus RTU - Screw Terminal Wiring	M
CANopen - Screw Terminal wiring	C

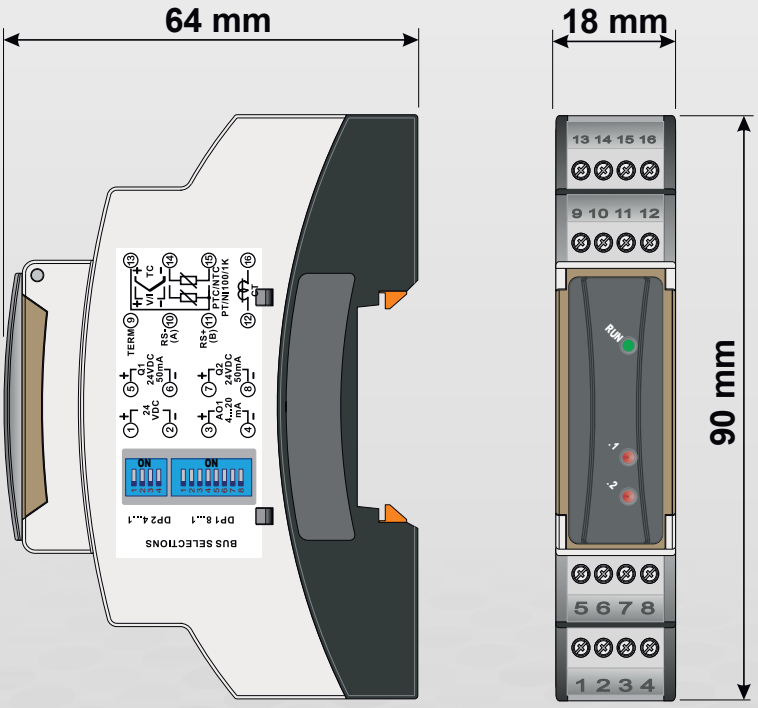
HEATER BREAK Input	12
description	cod.
Heater Break Alarm input for Current Transformer (CT not included)	H

POWER SUPPLY	13
description	cod.
12-24V ac dc	4

Approval	14
description	cod.
CE EMC for European market	0

MANUAL	15
description	cod.
None	0
Italian	1
English	2

VERSION	16
description	cod.
Version 1	1



Inputs

1 configurable	Res. 16 bit, selectable for TC type K, S, R, J, T, E, N, B (automatic compensation of the cold junction 0..50°C, ±0,2% F.S. ±1 digit F.S.), thermoresistances PT100, PT500, PT1000, Ni100, PTC1K, NTC10K (β3435K), process signals 0..10 V (23000 points), 0/4..20mA (26000 points), 0..60 mV (24000 points), potentiometer 1..150 KΩ (50000 points)
Sampling time	100mS (10Hz)
1 Current Transformer (T.A.) input	C.T. 50 mAac, 50/60Hz - 100 µs - 4096 points

Outputs

2 Digital	PNP 24 Vdc - 50 mA max
1 Analogue	0/4..20 mA (34000 points ± 0,2% F.S.) for command or retransmission PV/SPV
Serial communication	RS485 Modbus RTU Slave (4800..115200Baud) - CANopen slave (50K..1Mb/s)

Software

Control algorithms	ON - OFF with hysteresis, P., P.I., P.I.D., P.D. time proportioned
Tuning	Manual or automatic
Alarm modes	Absolute / Threshold, Band, High / Low deviation. Alarm with optional manual reset. Heater Break Alarm function
Double P.I.D.	Heating / Cooling P.I.D.
Soft-Start	Rising gradient expressed as Degrees / Hour or fixed output percentage
Open / Close logic	Open / Close logic for motorized valves

Fieldbus Terminal Unit

A system with the most common fieldbuses can be realised by adding a termination node from the TU series. Each of these modules can manage a maximum number of 24 zones.

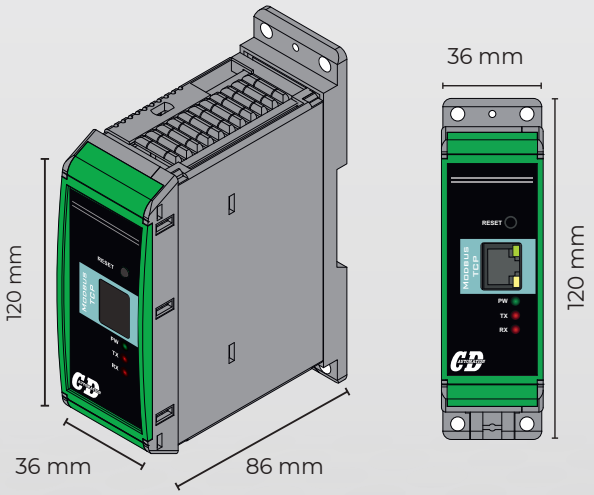
Order Code

	1	2		3	4	5	6	7		8	9	10		11	12	13	14	15	16
ORDER CODE	T	U	-	R	S	4	8	5	-	_	_	_	-	_	_	_	_	_	_

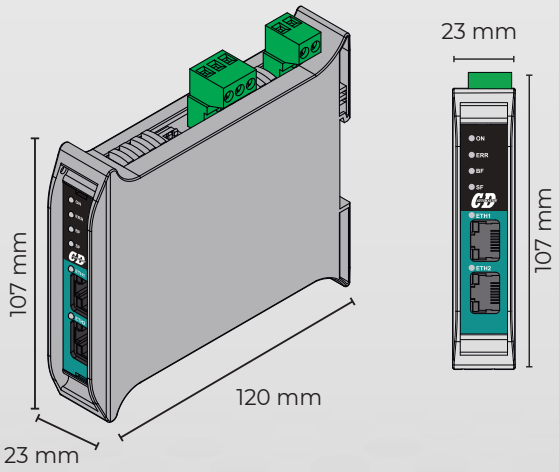
COMMUNICATION				3	4	5	6	7
Modbus RTU				R	S	4	8	5

FIELDBUS, COMMUNICATION OR OTHER FUNCTIONS		8	9	10		11	12	13	14	15	16
Modbus TCP Protocol Converter	-	T	C	P	-	3	5	8	0	M	B
Modbus TCP, Modbus Slave, IO, Data Logger, Logic	-	E	T	H	-	I	O	D	L	0	0
Profinet	-	P	N	T	-	0	6	7	6	0	2
Ethernet IP	-	E	I	P	-	0	6	7	5	9	2
RS232	-	2	3	2	-	3	5	8	0	2	W

TU-RS485-TCP-3580MB

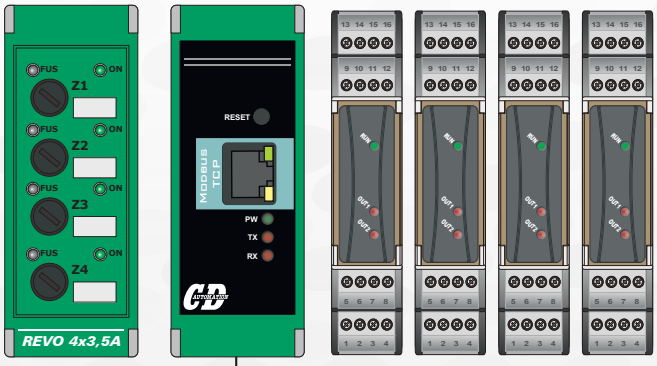


TU-RS485-PNT-067602

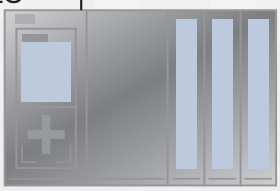


N°4 zones Modbus TCP

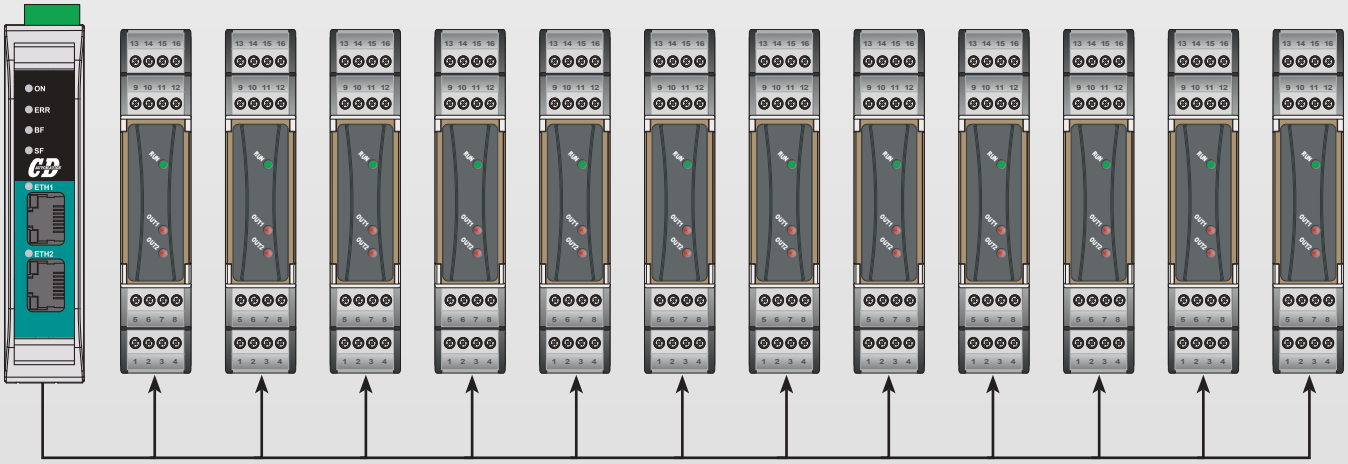
REVO Sx 4x3,5A
4 thyristor units
with fuse



PLC



N°12 zones Profinet



Selection fo REVO S with integrated CT

REVO S 1ph: size and dimensions

SR6
H 121 x W 36 x D 185 - 0,61kg.

SR12
H 269 x W 93 x D 170 - 3,4kg.

SR15
H 273 x W 93 x D 170 - 3,6kg.

Technical specification

- Load Type: Normal resistance, infrared lamps long and medium waveform
- Input: Standard SSR
- Firing: Zero Crossing
- Operating temperature: 0 to 40°C without derating
- Comply with EMC, cUL® as option
- 100 KA: Short Circuit Current rating (SCCR) up to 600V

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
ORDER CODE	R	S	1	_	_	_	-	_	_	_	_	_	_	_	_	_	_

CURRENT	4	5	6	
description	cod.			
30A	0	3	0	SR3-SR6
35A	0	3	5	SR3-SR6
40A	0	4	0	SR3-SR6
60A	0	6	0	SR12
90A	0	9	0	SR15
120A	1	2	0	SR15
150A	1	5	0	SR15
180A	1	8	0	SR15

MAX VOLTAGE	7	
description	cod.	
480V	4	
600V	6	

AUX VOLTAGE SUPPLY	8	
≤ 210A	cod.	
No Aux.	0	

INPUT	9	
description	cod.	
SSR	S	

FIRING	10	
description	cod.	
Zero Crossing	Z	To get single cycle

CONTROL MODE	11	
description	cod.	
Open Loop	0	

FUSES & OPTIONS	12	
≤ 40A	cod.	
Fuse + Fuse holder + CT	Y	
> 40A		
Fixed Fuses std. + CT	Y	

FAN VOLTAGE	13	
description	cod.	
No fan < 90A	0	
Fan 115V ≥ 90A	1	
Fan 230V ≥ 90A standard	2	
Fan 24Vdc ≥ 90A	3	

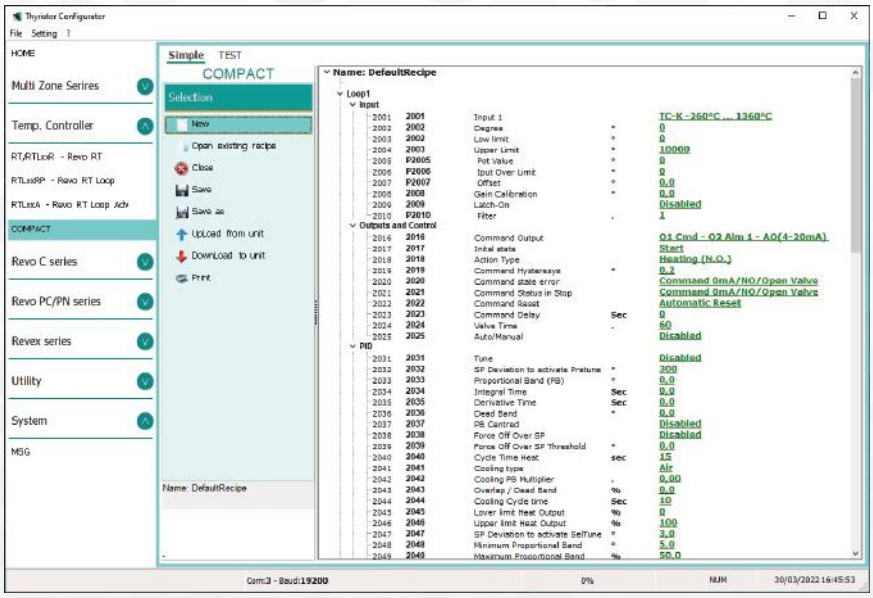
APPROVAZIONI	14	
description	cod.	
CE EMC for european market	0	
CE EMC + cUL® listed e cULus 508® listed	L	

MANUAL	15	
description	cod.	
None	0	
Italian	1	
English	2	
German	3	
French	4	

VERSION	16	
description	cod.	
Standard unit	1	

Configurator software

Our configurator software is free and can be downloaded from our website.



Configuration cable

A standard Micro USB cable (our code is CCX) is required to connect COMPACT to the computer. The Windows driver for the USB connection is installed by the setup software installer.

6A relay to be connected to SSR Output

Pre-assembled relay module with push-in connection, consisting of: relay base with ejector and power contact relay. Contact type: 1 N/O contact. Input voltage: 24 V DC.

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