REVO TC

PID TEMPERATURE CONTROLLER

- Temperature controller with 4 Output and PID
- Fuse & Fuse holder
- Solid state relay
- Current Transformer
- Single loop Integrity
- Dramatic reduction for wiring using multiple cable with connector
- Reduction of use space saving cabinet cost

CD AUTOMATION

POWERED BY INNOVATION

PID Temperature Controller and SCR Power Controller All in One Product

www.cdautomation.com

Revo TC Catalog 2018

Release n.1

REVO TC family

The new REVO TC is an integrated solution that offers the following advantages:

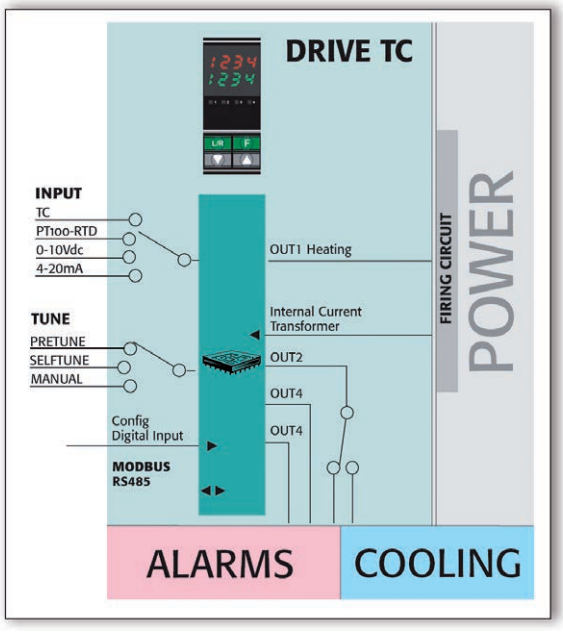
- Wiring & Labour Savings.
- An immediate cost saving in reduced labour of 2 hours by not connecting 11 wires per zone.
- Each wire takes 11 mins when considering the following:
  - Schematic reading and understanding
  - Distance and path measuring
  - Wire cutting
  - Wire strapping
  - Wire labelling on two terminations
  - Wire crimping
  - Terminals block wiring
  - Panel drilling
- Plus the actual material cost of 11 wires.

How much is the cost of one labour hour plus over-heads in your company?

How many control zones do you use in one year?

Make your calculation and see
how much you save in one year
Is there really a decision to be made!

- A smaller system solution means less cabinet space required both on the front cabinet area and internally. Again you save money.
- Take the advantage of the single loop integrity, high fault tolerability and very easy maintenance.



REVO TC 1PH 35/40A

This integrated solution includes all you need for a complete control zone at 240-480-600V AC to drive a single phase load.

- Fuse & fuse holder
- Solid state relay
- Current transformer
- Heater Break Alarm
- Temperature Controller

H121 x W72 x D185 - 1,15Kg

REVO TC 1PH 60/90/120/150/180/210A

This integrated solution includes all you need for a complete control zone at 240-480-600V AC to drive a single phase load.

- Internal fixed fuse
- Solid state relay
- Current transformer
- Heater Break Alarm
- Temperature Controller

60A/90-210A: H269/273 x W93 x D170 - 3,4/3,6Kg

REVO TC 2PH 30/35/40A

This integrated solution includes all you need for a complete control zone at 480-600V AC to drive a three phase load in delta and star without neutral connection.

- 2 Off Fuse & fuse holder
- 2 Off Solid state relay
- 2 Off Current transformers
- 1 Off Heater Break Alarm
- 1 Off Temperature Controller

H121 x W108 x D185 - 1,76Kg

REVO TC 3PH 30/35/40A

This integrated solution includes all you need for a complete control zone at 480-600V AC to drive a three phase load in delta and star with neutral connection.

- 3 Off Fuse & fuse holder
- 3 Off Solid state relay
- 3 Off Current transformers
- 1 Off Heater Break Alarm
- 1 Off Temperature Controller

H121 x W144 x D185 - 2,4Kg

REVO TC 2PH 60/90/120/150/180/210A

This integrated solution includes all you need for a complete control zone at 480-600V AC to drive a three phase load in delta and star without neutral connection.

- 2 Off Internal fixed fuse
- 2 Off Solid state relay
- 2 Off Current transformers
- 1 Off Heater Break Alarm
- 1 Off Temperature Controller

60A/90-210A: H269/273 x W186 x D170 - 6,8/7,0Kg

REVO TC 3PH 60/90/120/150/180/210A

This integrated solution includes all you need for a complete control zone at 480-600V AC to drive a three phase load in delta and star with neutral connection.

- 3 Off Internal fixed fuse
- 3 Off Solid state relay
- 3 Off Current transformers
- 1 Off Heater Break Alarm
- 1 Off Temperature Controller

60A/90-210A: H269/273 x W279 x D170 - 10,2/10,6Kg

REVO TC philosophy

- Labour for wiring reduced dramatically using multiple cable with connector
- Reduction of used space, saving cabinet cost
- Single loop integrity with easy local identification of the faulty zone
- REVO TC up to 40A is normally used for plastics machinery
- REVO TC over 60A in one, two and three phase versions is normally used in Furnaces

PID temperature controller with Pre Tune, Self Tune and Manual tuning

- 3 Off PID pallets to be enabled at programmed temperature
- RS485 communication from 19200 to 57600 Baud Modbus RTU protocol
- Dual Display to read PV, Set Point and load current
- Auto/Manual bump less balances
- Universal input for Thermocouples, RTD and linear Signal
- Four configurable outputs Relay, SSR
- Cooling Output selection for Water, Oil or Ventilation
- Programming port with CD Automation programming cable (CCA)

REVO Thyristor unit

- The temperature controller can be connected with different sized REVO Thyristor units
- If using SSR output from the controller use REVO S family

REVO TU-RTC Terminal Unit for flat cable connection

The REVO TU-RTC is a termination unit with the following capabilities:

- Provides the power supply & RS485 comms (Modbus RTU) for up to a max 12 REVO TC units
- Collects alarm & digital input status from all connected REVO TC units

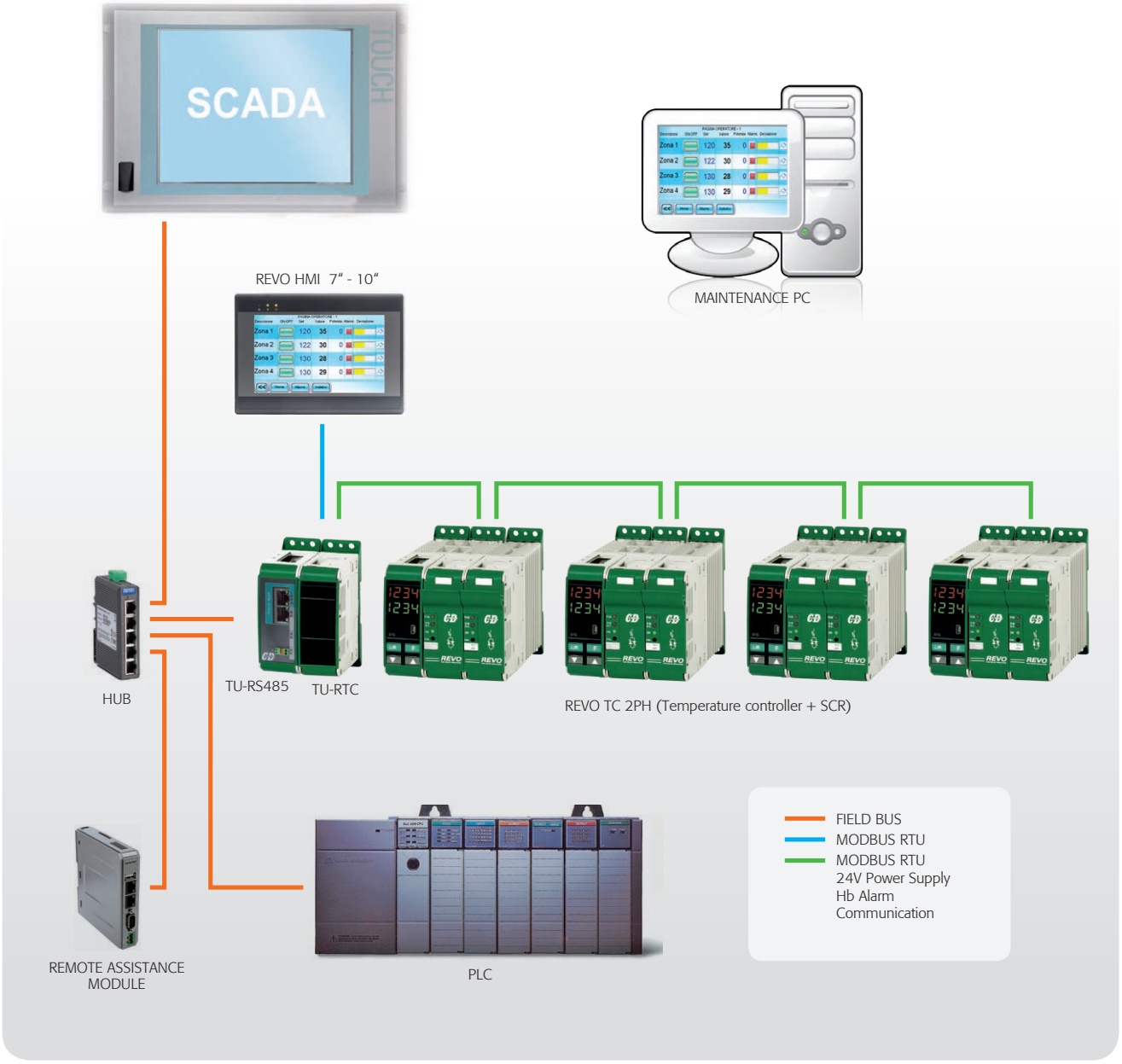
REVO TU-RS485 Field Bus Module

The REVO TU-RS485 is a termination unit with the following capabilities:

- Provides Field Bus communication for up to max 12 REVO TC units
- Additional Modbus RTU port for REVO HMI
- Available with Profinet PN, Profibus DP and Modbus TCP

System architecture with REVO TC

MASTER - SLAVE CONNECTION



OPERATOR INTERFACES

REVO HMI

CD Automation offers a wide range of touch panels from 7 to 10"
Each panel includes application software that allow:

- Managing temperature control
- Trend display
- Recipy management

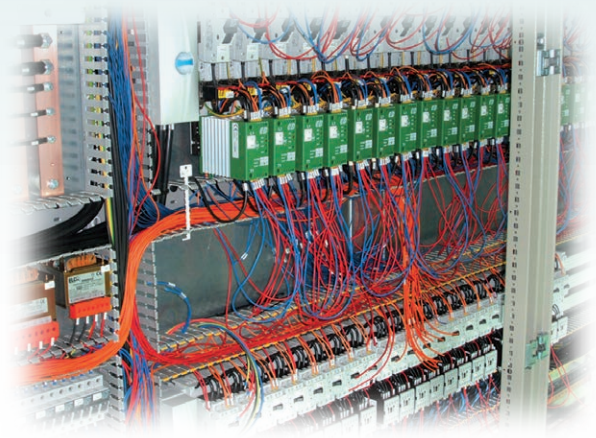
Dramatic reduction for wiring cables

Compare the new REVO TC to a traditional system and you save:

- 11 wires for each zone
- Each zone takes 11 minutes (see the diagram)
- For each zone you save 11 wires x 11 minutes = 121 minutes in total
- If you use descrete controllers you also avoid the panel cutting/drilling, that is another 15 minutes per controller.

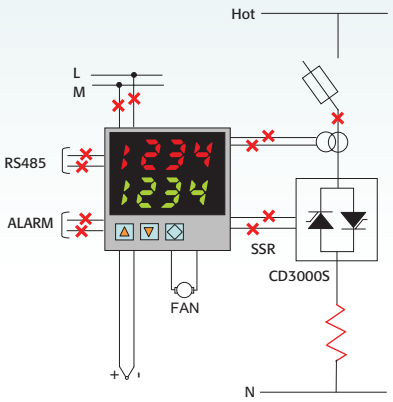
Total time saved of 136 minutes for zone.

SO HOW MANY ZONES/LOOPS DO YOU SELL IN ONE YEAR?
DO A CALCULATION OF WHAT YOU CAN SAVE.
AFTER CALCULATION TAKE YOUR DECISION.



WHY 11 MIN. FOR EACH WIRE?

Schematics reading and understanding, distances and path measuring.
Wire cutting - Wire stripping - Wire labeling
Crimpling the lug with the copper
Terminal block wiring - Panel drilling



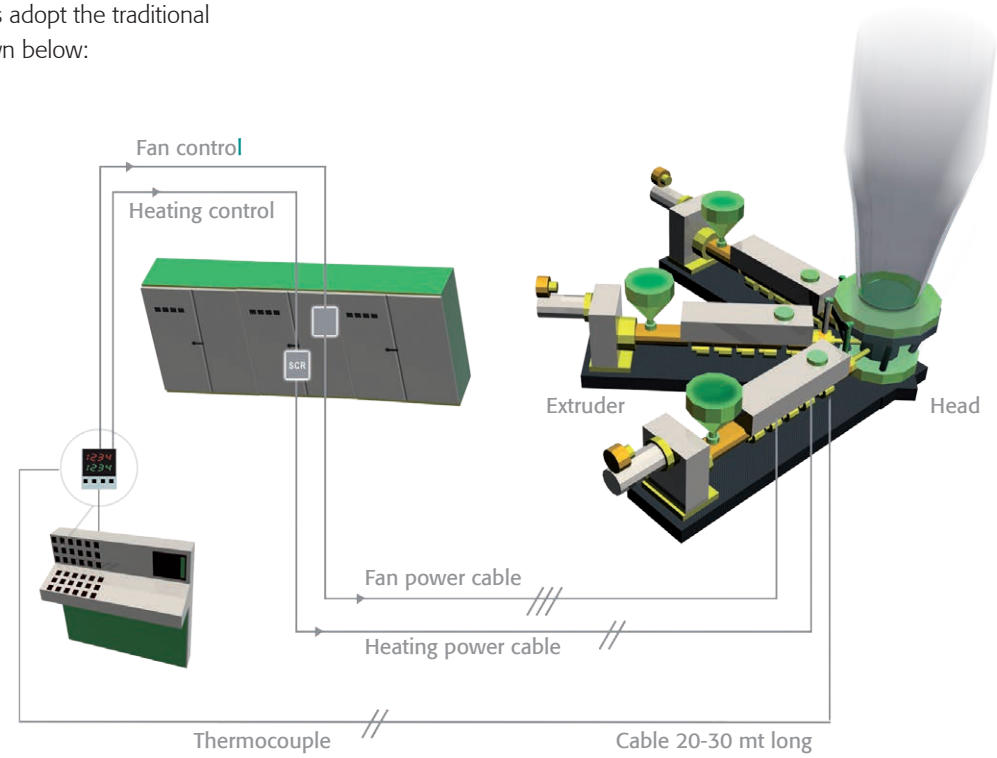
Traditional system

REVO TC system

REVO TC system

Traditional system

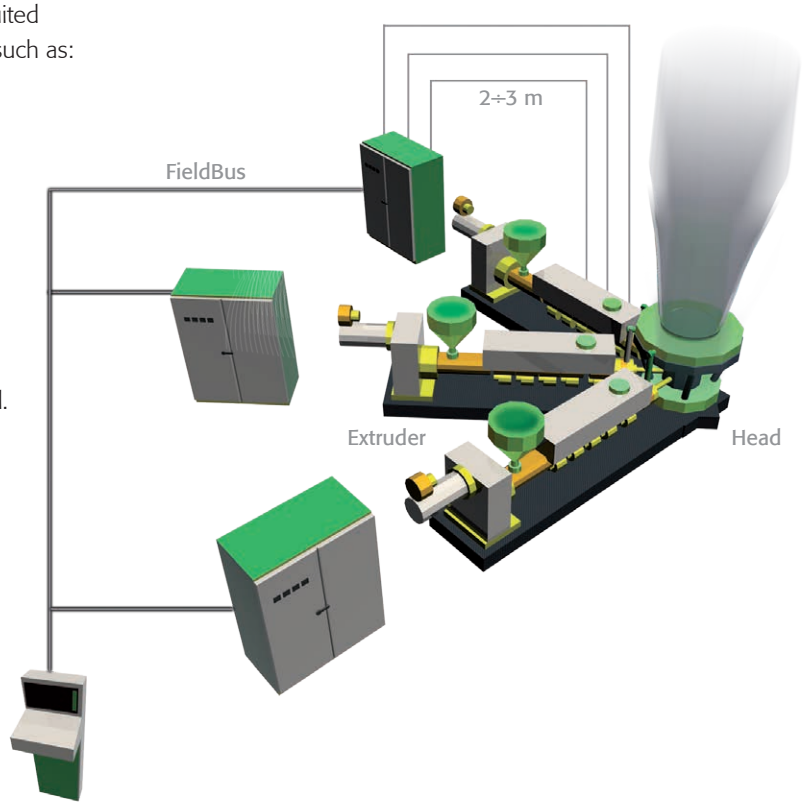
Today many machines adopt the traditional system layout as shown below:



REVO TC system

As can be seen, the new REVO TC distribuited hardware solution, will give crucial saving such as:

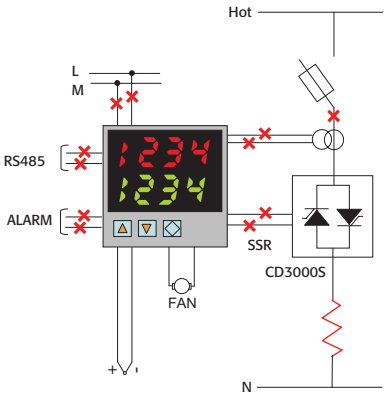
- Number of wires (cable and labour cost)
- Errors in wiring the machine
- No wire channels
- Cable lenght reduced by 80%
- Cabinet's space reduced
  Consider that each cabinet section saves 500 Euro.
- The cabinet space used is a key factor.
  If the space of components used is doubled then the cabinet size is doubled.



REVO TC controller + thyristor

SIZE SR9

SIZE SR15 Depth: 200 mm



Technical Specification

- **Dimensions:** SR9 | SR10 | SR11 | SR15 | SR16 | SR17 See size and dimensions at page 16-17
- **Load type:** Normal resistance with one or three phase loads
- **Inputs:** Thermocouple, PT100, 0:10V, 4-20mA
- **Firing mode:** Zero Crossing
- **Operating temperature:** 40°C without derating see page 110
- **Control mode:** PID temperature controller
- **Two outputs std and configurable. Output 3 see code. Output 4 Std no relay contact**
- **RS485 port. RTU Modbus Protocol**
- **Comply with EMC**
- **Data sheet:** More details on "REVO TC" bulletin

Option

- HB heater break alarm including internal current transformer

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
ORDERING CODE	T	C	_	_	_	_	-	_	_	_	_	_	_	_	_	_	_

PHASE CONTROLLED	3	
description		
1 Phase Unit 1PH	1	
2 Phase Unit 2PH	2	
3 Phase Unit 3PH	3	

CURRENT 1PH - 2PH - 3PH	4	5	6	
description	code			note
30A	0	3	0	1
35A	0	3	5	
40A	0	4	0	
60A	0	6	0	
90A	0	9	0	
120A	1	2	0	
150A	1	5	0	
180A	1	8	0	
210A	2	1	0	

MAX VOLTAGE	7	
description	code	note
480V	4	
600V	6	

VOLTAGE SUPPLY AUX	8	
description	code	note
12:24V ac dc	4	

INPUT	9	
description	code	note
Thermocouple	T	
PT 100	N	
0:10V dc	V	
4:20mA	A	

OUTPUT 2	10	
description	code	note
Relay output 2	R	
Heating only	O	

OUTPUT 3	10	
description	code	note
1 off D/I 24V dc	1	
1 off D/O relay contact	2	

FUSES & OPTION	12	
≤40A	code	note
Fuse + Fuse Holder for all Units with screw terminals	F	
Fuse + Fuse Holder + CT + HB with screw terminals	H	
Fuse + Fuse Holder + CT + HB with flat cable connection	X	
>40A		
Fixed Fuses Std for all Units with screw terminals	F	
Fixed Fuses Std + CT with screw terminals	Y	
Fixed Fuses Std + CT + HB with screw terminals	H	

FAN VOLTAGE	13	
description	code	note
No Fan <90A	0	
Fan 100V ≥90A	1	
Fan 220V ≥90A	2	

APPROVALS	14	
description	code	note
CE EMC For European Market	0	

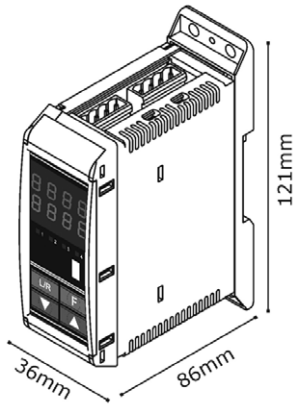
MANUAL	15	
description	code	note
None	0	
Italian	1	
English	2	
German	3	
French	4	

VERSION	16	
description	code	note
Std unit with a single fuse	1	

Note (1) Available on 2 - 3 PH only

TCM temperature controller

SIZE SR11



Technical Specification

- PID temperature controller
- Automatic tuning of PID parameters with self tune or pretune procedure
- Manual setting when requested of PID parameters
- Three pallets of PID parameters can be enabled at programmed PV value
- Dual Display to read PV, set point, load current and all parameters
- Universal input for thermocouple, RTD and linear input
- Four configurable outputs as relay and SSR
- Heating and cooling controller with possibility to select the type of cooling for fan, water and oil
- RS485 communication from 19200 to 57600 Bauds Modbus RTU protocol
- The controller can be configured from front push button or via RS485 comm. or via port on front controller using CD Automation programming cable
- Auto/Manual with bumpless transfer facility
- Screw terminals as standard
- DIN rail mounting
- Dimensions Width: 36 Height: 121 Depth: 86

Option

- Flat cable and connectors for multiple controller system

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

INPUT	4	
description	code	note
Thermocouple	T	
PT 100	N	
0:10V dc	V	
4:20mA	A	

OUTPUT 1 MAIN CONTROL	5	
description	code	note
SSR	S	
Relay	R	

OUTPUT 2 PID COOLING OR ALARM	6	
description	code	note
None	0	
SSR	R	
Relay	S	

OUTPUT 3	7	
description	code	note
None	0	
Relay output	R	
Digital input	1	

OUTPUT 4	8	
description	code	note
None	0	
Relay output	R	
Digital input	1	

COMMUNICATION	9	
description	code	note
None	O	
Communication Module RTU	M	

WIRING SYSTEM	10	
description	code	note
Screw terminal	0	
RJ45 (RS485 - 1 DI; need TU flat module)	1	
RJ45 (RS485 - 1 DO; need TU flat module)	2	

OPTIONS	11	
description	code	note
None	O	
Input CT for HB alarm	H	

AUXILIARY VOLTAGE	12	
description	code	note
12-24V ac dc	4	

APPROVALS	13	
description	code	note
CE EMC	1	

MANUALS	14	
description	code	note
None	0	
Italian	1	
English	2	
German	3	
French	4	

VERSION	15	
description	code	note
Version 1	1	

Terminal Unit for Flat Cable Connection

	1	2		3	4	5
ORDERING CODE	T	U	-	R	T	C

REVO HMI

Graphic Operating terminals for modular control

REVO HMI for REVO TC with HB option

- Up to 16 zone can be managed
- For Revo TC 1-2-3PH and REVO TCM
- 7.0" or 10" Colour Display
- Trend display
- Recipy Management
- Multi Language Interface (EN, DE, IT and FR)

Operator Page

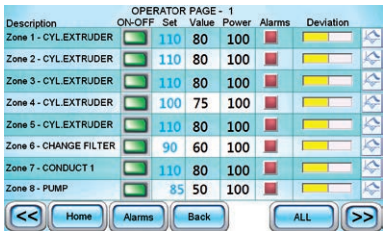
Each project can manage up to 16 loops. The operator Page can display 4 or 8 loops depending by the HMI and by the setup of the project. Pushing the zone description area is possible to see the advanced parameter and setting page for each zone.

FOUR & EIGHT LOOP PAGE DISPLAY

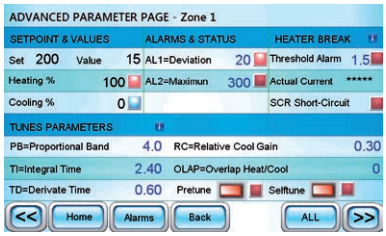
- Zone description (editable by user)
- ON/OFF Push Button
- Setpoint display and setting
- Temperature measured display
- Power Output Value
- Generic Alarm Status
- Deviation Graph
- Trend Display Push Button for each zone

Four Loop Page 7.0" and 10" HMI

Eight Loop Page 7.0" and 10" HMI



Advanced Operating Page



For each loop is available an advanced page with the following parameters and alarm. The parameters with light blue colour can be setted on this page. This page can be displayed touching the zone name on the main operating page. Touching the arrov keys, is possible to move to the next zone or to move on the previous zone.

CONTROL PARAMETERS

- Proportional Band
- Integral Time
- Derivative Time
- Cooling gain
- OLAP
- Pre Tune Activation
- Self Tune Activation

SETPOINT and MEASURE

- Setpoint
- Measure
- % Heat and % Cool

ALARM STATUS

- Alarm 1 Deviation (default)
- Alarm 2 Max Temperature (default)
- Alarm 3 not configured (default)

HEATER BREAK ALARM

- HB Alarm Status
- Short Circuit Alarm Status
- Alarm threshold
- Current Value Setting

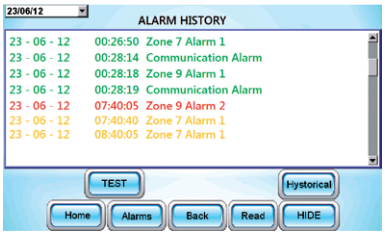
Trend Page

For each loop is available Trend page dedicated to the graphical display of setpoint value and temperature con-trol, view over time. Each square represents 1 minute, then the screen will show every 15 minutes. With 24 loop ope-rating page, includes the graphical display of 4 loops.

Description of the fields:

- Set: View here the temperature set point adjustment. At the time here is touched at a point graph.
- Value: Displays the value of temperature in the area. At the time here is touched at a point graph.
- Power: Power adjustment percentage of the temperature zone.
- Minimum Show: It 'an adjustable value, where the opera-tor decides the minimum visible scale.
- View Maximum: It 'an adjustable value, where the opera-tor decides the maximum visible scale.

Alarm Page



Recipes Page

REVO HMI Orderig Code

	1	2	3	4	-	5	6	7	8	9	10	11	12	13	14	15	16
ORDERING CODE	**R**	**H**	**M**	**I**	-	_	_	M	0	0	_	0	_	_	**R**	**T**	**C**

Monitor Dimension	5	6	
description	code		note
7.0"	0	7	
10"	1	0	

Controller Type & Comm.	7	
description	code	note
REVO TC 1-2-3PH and REVO TCM Controller	4	

VERSION - OPERATING PAGE	10	
description	code	note
4 Loop Display on Operating Page	4	
8 Loop Display on Operating Page	8	

Approval & Comunication	12	13	
description	code		note
CE Version, Modbus RTU.	0	0	
CE & UL Version, Modbus RTU & Ethernet.	E	L	

FIELD BUS Module

Technical Specification

- Up to n°12 REVO TC can be connected for each terminal module
- Secondary communication port to connect REVO HMI
- Main process variable available
- 24V dc Power Supply
- Simplified configuration

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

Field Bus or Communication	8	9	10	
description	code			note
N° 1 Modbus TCP + N° 1 Modbus RTU slave	T	C	P	
N° 1 ProfiNet PN + N° 1 Modbus RTU slave	P	N	T	
N° 1 ProfiBus DP + N° 1 Modbus RTU slave	P	D	P	
N° 1 Ethernet IP + N° 1 Modbus RTU slave	E	I	P	

Secondary Communication Port	11	
description	code	note
None	0	
Modbus TCP	1	1

Configuration	12	13	14	
description	code			note
Revo TC1, TC2, TC3 and TCM	T	C	M	

N° zones	15	16	
description	code		note
Not configured	0	0	
1 zone	0	1	
2 zones	0	2	
3 zones	0	3	
4 zones	0	4	
5 zones	0	5	
6 zones	0	6	
7 zones	0	7	
8 zones	0	8	
9 zones	0	9	
10 zones	1	0	
11 zones	1	1	
12 zones	1	2	

Note (1): Not available with Modbus TCP Field Bus Communication (T-C-P on digit 8-9-10)

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