UNIVERSAL PROCESS CONTROLLER
UC-820

DESCRIPTION

The UC-820 is a digital universal controller used in the automation of industrial processes. It is ideally suited for use with our range of instrumentation, electric and pneumatic control valves and other electrical equipments.

The controller includes a set of universal type inputs for RTD, thermocouple (TC), logic (binary) and analog inputs. The controller has options for relay, open-collector (OC) and analog outputs using the innovative SMART PID algorithm.

MAIN FEATURES

- Universal measuring input: Resistance thermometer (RTD), thermocouples (TC), 0/4 to 20 mA and 0 to 5/10 V.
- Binary input control.
- Set point value: constant, programmed or from the additional analog input.
- On/off, PID, PID three-step and two-step control (valve control) or PID of heating-cooling type.
- 2 NO relay outputs and 2 other outputs of choice between relay, OC or analog outputs (0/4 to 20 mA or 0 to 10 V).
- Soft-start function.
- 8 types of alarm functions.
- 24 V DC loop power supply output.
- Signal retransmission.
- "Gain scheduling" function.
- Timer function.
- Auto-tuning using the smart PID algorithm.
- Measurement of heating current and monitoring of heater overheating or shortening of the control element.
- Galvanically isolated inputs and outputs.
- Password protection.
- Fully programmable from the front panel.
- RS-485 Modbus RTU communication.
- IP rating IP 65.

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TECHNICAL DATA

| GENERAL	
Supply Voltage	85 to 253 V AC/DC or 20 to 40 V AC/DC
Ambient temperature	0 to 50 ºC
Storage temperature	- 20 to 70 ºC
Humidity	< 85% without condensation
Operating Position	Any

EXTERNAL FEATURES	
Readout field	2 x 4 digits; Digit height: 10 mm; Colors: red and green
Weight	< 0.2 kg
IP rating	From frontal side: IP 65; From rear side: IP 20
Bargraph	2 x 21 points; Colors: red and green

INPUT		
TYPE	RANGE	ERROR
PT100	- 200 to 850 ºC	0,2%
PT1000	- 200 to 850 ºC	0,2%
Fe-CuNi (J)	- 100 to 1200 ºC	0,3%
Cu-CuNi (T)	- 100 to 400 ºC	0,3%
NiCr-NiAl (K)	- 100 to 1372 ºC	0,3%
PtRh10-Pt (S)	0 to 1767 ºC	0,5%
PtRh13-Pt (R)	0 to 1767 ºC	0,5%
PtRh30-PtRh6 (B)	200 to 1767 ºC	0,5%
NiCr-CuNi (E)	- 100 to 1000 ºC	0,3%
NiCrSi-NiSi (N)	- 100 to 1300 ºC	0,3%
Chromel-kopel (L)	- 100 to 800 ºC	0,3%
Current channels (I)	0/4 to 20 mA	0,2% +/-1 digit
Voltage channels (U)	0 to 5/10 V	0,2% +/-1 digit
Binary	Voltageless	

| OUTPUT		
TYPE	PROPERTIES	LOAD CAPACITY
Relay (voltageless)	NO contacts	2 A/ 230 V AC
OC open-collector	0/5 V	Max. 40 mA
Continuous voltage	0 to 10 V	Rload ≥ 1kΩ
Continuous current	0/4 to 20 mA	Rload ≤ 500Ω
Transducer supply output	24 V DC	Max. 30 mA

DIGITAL INTERFACE	
Interface type	RS-485
Protocol	Modbus RTU 8N2, 8E1, 8O1, 8N1
Baud rate	4.8, 9.6, 19.2, 38.4, 57.6 kbit/s
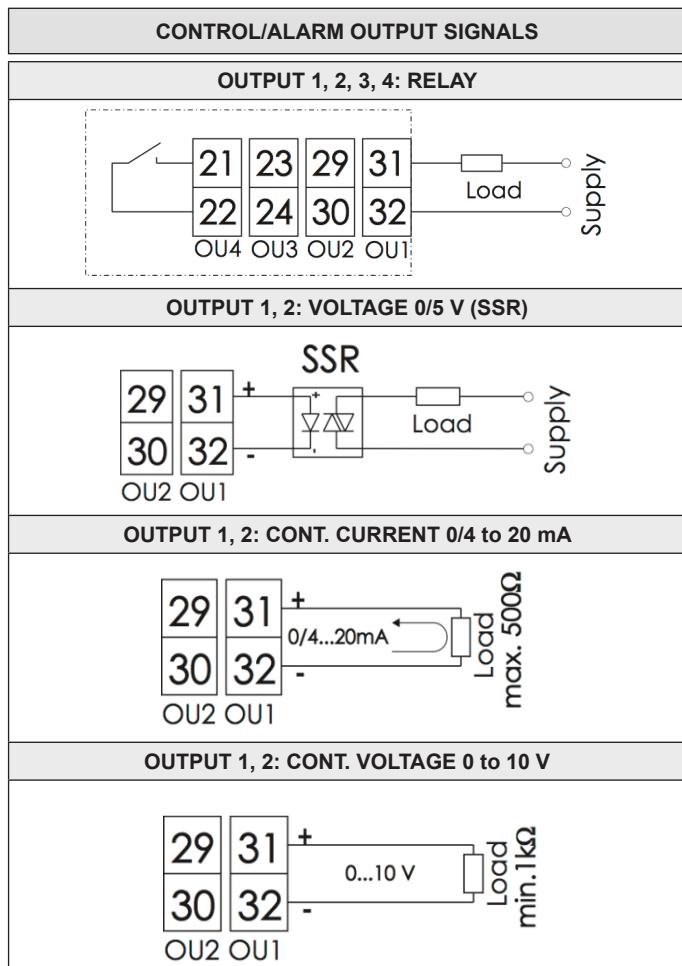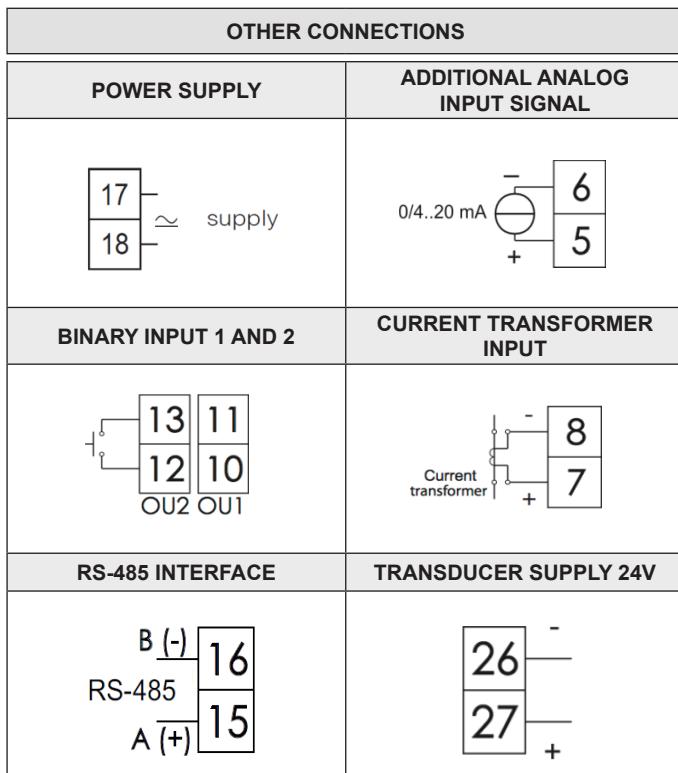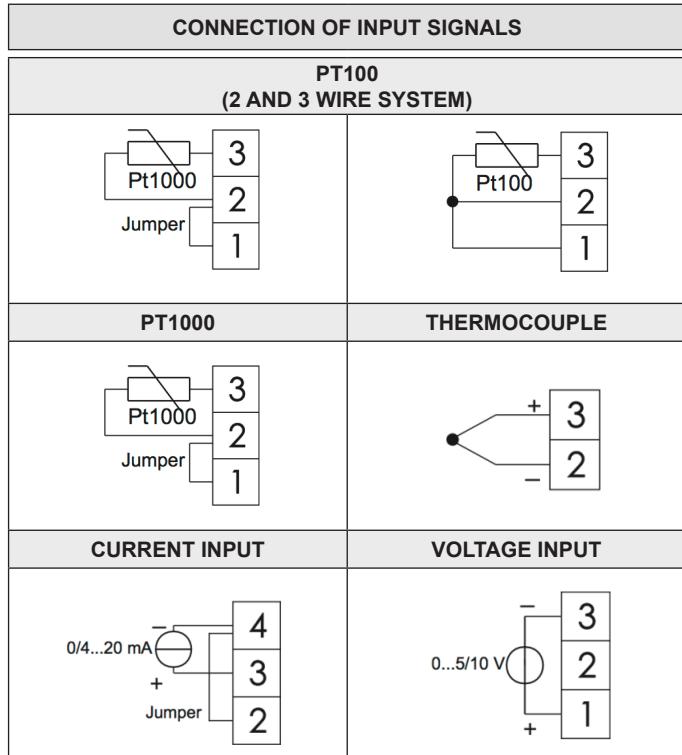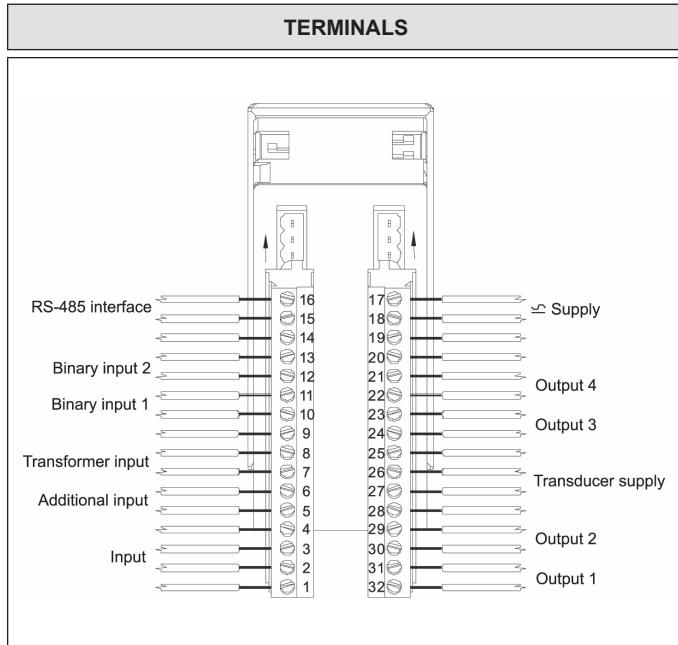
SAFETY AND COMPATIBILITY REQUIREMENTS	
Electromagnetic compatibility	Noise immunity acc. to EN 61000-6-2
	Noise emissions acc. to EN 61000-6-4
Pollution level	Level 2 acc. to EN 61010-1
Installation category	Cat. III acc. to EN 61010-1
Maximal phase-to-earth operating voltage	Supply / Output circuits: 300 V; Input circuits: 50 V acc. to EN 61010-1

DIMENSIONS (mm)						
MODEL	A	B	C	D	E	F
UC-820	48	96	93 (max.)	70	8	15 (max.)

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We reserve the right to change the design and material of this product without notice.

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ELECTRICAL CONNECTIONS

TERMINALS

RS-485 interface	16	17	Supply
	15	18	
	14	19	
Binary input 2	13	20	
	12	21	Output 4
Binary input 1	11	22	
	10	23	Output 3
	9	24	
Transformer input	8	25	
	7	26	Transducer supply
Additional input	6	27	
	5	28	
	4	29	Output 2
Input	3	30	
	2	31	Output 1
	1	32	

CONNECTION OF INPUT SIGNALS

PT100 (2 AND 3 WIRE SYSTEM)

Pt1000 — 3 2 1 Jumper

Pt100 — 3 2 1

| PT1000 | THERMOCOUPLE |

Pt1000 — 3 2 1 Jumper

Thermocouple + 3 − 2

| CURRENT INPUT | VOLTAGE INPUT |

0/4...20 mA — 4 3 2 Jumper

0...5/10 V — 3 2 1

OTHER CONNECTIONS

POWER SUPPLY

17 18 ~ supply

ADDITIONAL ANALOG INPUT SIGNAL

0/4..20 mA — 6 5

BINARY INPUT 1 AND 2

13 11
12 10
OU2 OU1

CURRENT TRANSFORMER INPUT

Current transformer — 8 7 +

RS-485 INTERFACE

B (−) 16
RS-485
A (+) 15

TRANSDUCER SUPPLY 24V

26 −
27 +

CONTROL/ALARM OUTPUT SIGNALS

OUTPUT 1, 2, 3, 4: RELAY

21 23 29 31
22 24 30 32
OU4 OU3 OU2 OU1
Load — Supply

OUTPUT 1, 2: VOLTAGE 0/5 V (SSR)

SSR
29 31 +
30 32 −
OU2 OU1
Load — Supply

OUTPUT 1, 2: CONT. CURRENT 0/4 to 20 mA

29 31 +
30 32
OU2 OU1
0/4...20mA Load max. 500Ω

OUTPUT 1, 2: CONT. VOLTAGE 0 to 10 V

29 31 +
30 32 −
OU2 OU1
0...10 V Load min.1kΩ

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ORDERING CODES UC-820					
Group designation	**UC820**	**.1**	**3**	**1**	**.1**
Universal process controller	**UC820**				
Output 1					
Relay		.1			
OC open collector (0/5 V)		.2			
Continuous current (0/4 to 20 mA)		.3			
Continuous voltage (0 to 10 V)		.4			
Output 2					
Relay **a)**			1		
OC open-collector (0/5 V)			2		
Continuous current (0/4 to 20 mA)			3		
Continuous voltage (0 to 10 V)			4		
Transducer Supply 24 V					
None				0	
Supply for transducers 24 V DC 1 W				1	
Power Supply					
85 to 253 V AC/DC					.1
20 to 40 V AC/DC					.2

a) Only when a relay or OC voltage output is selected on output 1.

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