XT220C - XT221C

Two Stages Digital Controllers with Multi Probe Input



1. GENERAL WARNING

1.1 APLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.

1.2 A SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "DIXELL s.r.l." (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

2. GENERAL DESCRIPTION

The XT220C and XT221C are two-stage ON/OFF controllers for temperature, humidity and pressure applications with direct or inverse action, user-selectable. The analogue input type can be set by parameter between the following, according to the model:

- PTC, NTC;
- PTC, NTC, Pt100, Thermocouple J, K, S;
- 4÷20mA, 0÷1V, 0÷10V.

3. FIRST INSTALLATION

3.1 PROBE SETTING



The pre-set probe type is written on the label of the instrument, see picture. If it is different from the probe that

has be used, set the probe following procedure below

3.1.1 How to set the probe.

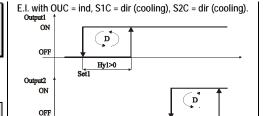
- Enter the programming menu by pressing the SET+ ▼ for 3s
- Select the Pbc (Probe configuration) parameter and push the SET key.
- Set the kind of probe:
 - a. Controller for temperature: Pt= Pt100, J = J thermocouple, c = K thermocouple, S = S thermocouple; Ptc = PTC; ntc = ntc.
 - b. Controller with current or voltage inputs: $cur=4 \div 20mA$, 0-1= $0 \div 1V$, 10= $0 \div 10V$
- 4. Push the SET key to confirm it.
- 5. Switch the controller off and on again.

NOTE: Before proceeding check and, if necessary; set with appropriate values the Minimum Set Points (LS1 e LS2) and Maximum Set Points (US1 e US2). See also the paragraphs concerning the programming.

4. REGULATIONS

4.1 2 INDEPENDENT OUTPUTS (OUC=IND)

Two independent control stages (ouC=ind): output #1 at direct (S1C=dir) or inverse (S1C=in) action; output #2 at (S2C = dir) direct or inverse (S2C =in) action.



4.2 2 DEPENDENT OUTPUTS (OUC=DIP)

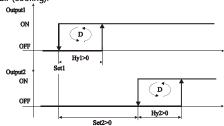
With dependent control stages (ouC=diP) SET2 is related to SET1:

Hy2>0

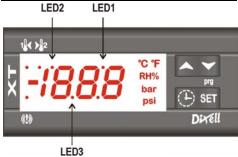
therefore SET2 is: SET1+SET2

output #1 with direct or inverse action according to the S1C parameter; output #2 with direct or inverse action according to the S2C.

E.I. with ouC=diP (dependent), S1C = dir (cooling), S2C = dir (cooling).



5. FRONT PANEL COMMANDS



SET: To display and modify target set point1 and 2; in programming mode it selects a parameter or confirm an operation.

TO SWITCH THE INSTRUMENT ON/OFF: If the function is enabled (par. onF=yES), by pressing the SET key for more than 4s the controller is switched OFF. To switch the instrument on again press the SET key.

- UP: in programming mode it browses the parameter codes or increases the displayed value. Hold it pressed for a faster change
- DOWN: in programming mode it browses the parameter codes or decreases the displayed value. Hold it pressed for a faster change
- CLOCK To set the timer and to start/stop a cycle

KEY COMBINATIONS:

- ▲ + ▼ To lock & unlock the keyboard.
- SET + ▼ To enter in programming mode
- SET + A To return to the room temperature display.

5.1 USE OF LEDS

A series of light points on the front panels is used to monitor the loads controlled by the instrument. Each LED function is described in the following table.

	LED	MODE	FUNCTION
	1 ON Output 1 enabled		Output 1 enabled
	▶ ON Output 2 enabled		Output 2 enabled
0 0 0		Flashing	- Programming Phase (flashing with LED2)
		Flashing	- Programming Phase (flashing with LED1)
	LED3	LED3 Flashing - The cycle is running	
	(!))	ON	- ALARM signal
			- In "Pr2" indicates the parameter is also
			present in "Pr1"

5.2 TO SEE AND MODIFY THE SETPOINT1 (OR SETPOINT2)



- Push and release the SET key, the St1 label is displayed, push again the SET key to see the value.
- To change the Set1 value push the ▲ or ▼ arrows within 10s and confirm it with SET key.
- The St2 label is displayed, push the SET key to see the value and use the ▲ or ▼ arrows within 10s to modify it.

EXIT: push the **SET** + keys or wait for 15s without pushing any keys.

5.3 HOW TO SET THE TIMER

Hold pressed the CLOCK key for 3s.

The duration (hh:mm) will be displayed

Use the UP and DOWN keys to adjust it.

Confirm the value pushing again the SET key or waiting 10s.

5.4 HOW TO START A CYCLE

Push and release the CLOCK key.

The remaining time of the cycle will be displayed and the timer is started.

5.5 CYCLE END

The end of the cycle is signalled by the "End" message on the display and by the activation of the buzzer.

The buzzer go on noising till a key is pressed...

5.6 HOW TO MANUALLY STOP A CYCLE

When a cycle is in progress push and release the CLOCK key. The controller come back to display the temperature and the timer is erased.

5.7 HOW TO CHANGE THE TIMER WHEN A CYCLE IS RUNNING.

Hold pressed the CLOCK key for 3s, the remaining time starts blinking.

Use the UP and DOWN keys to adjust it.

Confirm the value pushing again the SET key or waiting 10s.

5.8 HOW TO SEE THE TEMPERATURE DURING A CYCLE

When the cycle is running, the controller displays the remaining time to the end of the cycle.

Push the **DOWN** key, the temperature will be displayed for 5s.

5.9 POSSIBILITY OF SELECTING THE KIND OF REGULATION: CONTINUOS OR ONLY DURING THE CYCLE.

By means of the **trM** parameter the kind of regulations is set:: With **trM** = **oFF** the regulation is enabled only during the cycle. With **trM** = **on** the regulation is always active, the cycle consists of starting the timer and signalling when this is expired.

5.10 TO ENTER THE PARAMETERS LIST "PR1

To enter the parameter list "Pr1" (user accessible parameters) operate as follows:



- 2. The controller will display the first parameter present in the Pr1 menu..

5.11 TO ENTER THE PARAMETERS LIST "PR2"

The "Pr2" parameter list contains the configuration parameters A security code is required to enter it.

- 1. Enter the "Pr1" level, see above paragraph.
- Select "Pr2" parameter and press the "SET" key.
- The "PAS" flashing message is displayed, shortly followed by "0 - -" with a flashing zero.
- Use ▲ or ▼ to input the security code in the flashing digit; confirm the figure by pressing "SET".

The security code is "321".

If the security code is correct the access to "Pr2" is enabled by pressing "SET" on the last digit.

Another possibility is the following:

After switching ON the instrument, within 30 seconds, push SET + ▼ keys together for 3s: the Pr2 menu will be entered.

5.12 HOW TO MOVE A PARAMETER FROM THE "PR2" MENU TO "PR1" AND VICEVERSA.

Each parameter present in "Pr2" MENU can be removed or put into "Pr1", user level, by pressing "SET + ▼ ".

In "Pr2" when a parameter is present in "Pr1" the LED ((1) is on.

5.13 HOW TO CHANGE A PARAMETER

To change a parameter value operates as follows:

- Enter the Programming mode
- Select the required parameter.
- 3. Press the "SET" key to display its value.
- 4. Use "UP" or "DOWN" to change its value.
- Press "SET" to store the new value and move to the following parameter.

TO EXIT: Press SET + UP or wait 15s without pressing a key. NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

5.14 HOW TO LOCK THE KEYBOARD



- Keep pressed for more than 3 s the the ▲ and ▼ keys.
- The "POF" message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point or the MAX o Min temperature stored
- If a key is pressed more than 3s the "POF" message will be displayed.

5.15 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the the ▲ and ▼ keys, till the "Pon" message will be displayed.

5.16 ON/OFF FUNCTION

TO SWITCH THE INSTRUMENT ON/OFF: If the function is enabled (par. onF=yES), by pressing the SET key for more than 4s the controller is switched OFF. To switch the instrument on again press the SET key.

6. PROBES AND MEASURING RANGE Probe Down Scale Full Scale

Probe	Down Scale	Full Scale	
NTC	-40°C/-40°F	110°C / 230 °F	
PTC	-50°C / -58°F	150°C / 302°F	
Pt100	-200°C / -328°F	600°C / 1112°F	
TcK	0°C / 32°F	1300°C / 1999°F	
TcJ	0°C / 32°F	600°C / 1112°F	
TcS	0°C / 32°F	1400°C / 1999°F	

7. LIST OF PARAMETERS

REGULATION

- Hy1 Intervention differential for set point1 (-Full Sc. / Full Sc.). It can be set with positive value or with negative value. The kind of action depends on the S1C parameter: dir = direct or in = inverse.
- **Hy2 Intervention differential for set point2**: (-Full Sc.). It can be set with positive value or with negative value. The kind of action depends on the S2C parameter: **dir** = direct or **in** = inverse.
- **LS1 Minimum set point1:** (Down Sc.÷ Set1) Sets the minimum acceptable value for the set point1.
- **LS2 Minimum set point2:** (Down Sc.÷ Set2) Sets the minimum acceptable value for the set point2.
- **US1 Maximum set point1:** (Set1÷ Full Sc.) Sets the maximum acceptable value for set point1.
- **US2 Maximum set point2:** (Set2÷ Full Sc.) Sets the maximum acceptable value for set point2.
- ouC Output connections (diP=dependent; ind=independent) select if SET2 is independent from SET1 or if the SET2 depends on SET1 (so Set2= SET1+SET2).
- S1C Action type output 1: S1C=in inverse action (heating/humidifying /increase pressure); S1C=dir direct action (cooling / dehumidifying /decrease pressure).

- S2C Action type output 2: S2C=in inverse action (heating/humidifying /increase pressure); S2C=dir direct action (cooling / dehumidifying /decrease pressure).
- AC Anti-short cycle delay: (0÷250 sec) Minimum time between the switching off and the following switching on
- on Minimum time a stage stays switched ON (0÷250 sec)
- ono: Minimum time between 2 following switching ON of the same load (0 \div 120 min).

CYCLE REGULATION

trd Cycle length setting (0÷19.59h)

trM Regulation setting

oFF the regulation is enabled <u>only</u> during the cycle. on the regulation is always active, the cycle consists of starting the timer and signalling when this has expired.

trS Timer exhausted signallin

no the buzzer is not activated; **yES:** the buzzer is activated.

ALARMS

- ALC Alarms configuration: it determines if alarms are relative to set point1 or referred to absolute values.
 - rE relative to set point1; Ab absolute temperature

ALL Minimum alarm:

with ALC=rE: relative to set point1, (0+|Down Sc.-Set1|) this value is subtracted from the set point1. The alarm signal is enabled when the temperature goes below the "SET1-ALL" value.

with ALC=Ab absolute temperature, (Down Scale ÷ ALu) minimum alarm is enabled when the temperature goes below the "ALL" value.

ALU Maximum alarm:

with ALC=rE: alarm relative to set point1, (0÷|Full Sc.-Set1|) Maximum alarm is enabled when the temperature exceeds the "SET1+ALU" value.

with ALC=Ab: absolute alarm, (ALL+Full Sc.) Maximum alarm is enabled when the temperature exceeds the "ALU" value.

- **ALH Temperature alarm for alarm recovery:** (0,1÷Full scale) Differential for alarm reset, always positive.
- ALd Alarm delay:(0÷999 min) time interval between the detection of an alarm condition and alarm signalling.
- dAo Delay of alarm at start-up: (0÷23.5h) time interval between the detection of the alarm condition after instrument power on and alarm signalling.
- So1 Output 1 status with faulty probe: So1=oFF open; So1=on closed.
- So2 Output 2 status with faulty probe: So2=oFF open; So2=on closed.
- tbA Status of alarm relay after pushing a key. (XT221C only): oFF = relay disabled; on = relay enabled.
- AS Alarm relay configuration (XT221C only): cL = 5-6 terminals open with alarm; oP = 5-6 terminals closed with alarm.

PROBES AND DISPLAY

- LCI Start of scale, only with current or voltage input: (-1999÷1999) Adjustment of read out corresponding to 4mA or 0V input signal.
- UCI End of scale, only with current or voltage input (-1999÷1999) Adjustment of read out corresponding to 20mA or 1V or 10V input signal.
- **oPb Probe calibration**: (-Full sc..+Full sc.) allows to adjust possible offset of the probe.
- rES Decimal point ON/OFF: (rES=in OFF; rES=dE ON; rES= cE with 2 decimal points, only for current or voltage input) select the resolution of the controller.
 - **NOTE:** the decimal point selection is not available on models with thermocouple input.
- UdM Measurement unit: it depends on models:
 for temperature: °C = Celsius; °F = Fahrenheit.
 with 4÷20mA, 0÷1V, 0÷10V input : 0= °C; 1= °F, 2=
- %RH, 3=bar, 4=PSI, 5=no measurement unit.

 PbC Probe selection: it sets the kind of probe. It depends on models

for temperature NTC/PTC: Ptc = PTC; ntc = ntc. for temperature standard: Pt= Pt100, J = J thermocouple, c = K thermocouple; S = S thermocouple; Ptc = PTC; ntc = ntc.

with $4 \div 20mA$, $0 \div 1V$, $0 \div 10V$ input : cur= $4 \div 20mA$, $0 - 1 = 0 \div 1V$, $10 = 0 \div 10V$.

P3F Third wire presence for Pt100 probe: for using 2 or 3 wires Pt100 probes: no = 2 wires probe; yES = 3 wires probe.

DIGITAL INPUT

HES Set point 1 changes during the Energy Saving cycle:
(Down Sc./Full Sc.) sets the variation of the set point 1
during the Energy Saving cycle.

- i1F Digital input operating mode: configure the digital input function: c-H = to invert the kind of action: direct reverse; oFF = to switch the controller off.; AUS = Not used; HES = Energy Saving; EAL = generic external alarm; bAL = serious external alarm: it switches off the loads.
- i1P Digital input polarity:

CL: the digital input is activated by closing the contact; OP: the digital input is activated by opening the contact

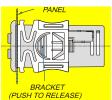
did Digital input alarm delay: (0÷120 min) delay between the detection of the external alarm condition (i1F= EAL or i1F = bAL) and its signalling.

OTHER

- Adr RS485 serial address (0÷247) identifies the instrument within a control or supervising system.
- onF Swithching ON/OFF enabling from keyboard: (no = disabled; yES=enabled) It permits the switching ON/OFF of the instrument by pressing the SET1 key for more than
- Ptb Parameters table: (read only) Shows the code of the parameters map.
- rEL Software release: (read only)
- Pr2 To access the Pr2 parameter programming menu.

8. INSTALLATION AND MOUNTING

Instrument XT220C and XT221C shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special brackets supplied.



To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-C).

The temperature range allowed for correct operation is 0÷60 °C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

9. ELECTRICAL CONNECTIONS

The instruments are provided with screw terminal block to connect cables with a cross section up to 2,5 mm². Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the input connection cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relav.

10. SERIAL CONNECTIONS

All models can be connected to the monitoring and supervising system XJ500 using the serial port. The external XJ485 serial module to interface the instrument with the monitoring and supervising system XJ500 is required.

The standard ModBus RTU protocol it is used.

NOTE: Instruments with current or voltage input and 230V or 115V supply, cannot be connected to the XJ485 serial module.

11. HOW TO USE THE HOT KEY

11.1 HOW TO PROGRAM A HOT KEY FROM THE INSTRUMENT (UPLOAD)

- 1. Program one controller with the front keypad.
- When the controller is <u>ON</u>, insert the "Hot key" and push key; the "uPL" message appears followed a by flashing "End"
- 3. Push "SET" key and the End will stop flashing
- Turn OFF the instrument remove the "Hot Key", then turn it ON again.

NOTE: the "Err" message is displayed for failed programming. In this case push again A key if you want to restart the upload again or remove the "Hot key" to abort the operation.

11.2 HOW TO PROGRAM AN INSTRUMENT USING A HOT KEY (DOWNLOAD)

Turn OFF the instrument.

- Insert a programmed "Hot Key" into the 5 PIN receptacle and then turn the Controller ON.
- Automatically the parameter list of the "Hot Key" is downloaded into the Controller memory, the "doL" message is blinking followed a by flashing "End".
- 4. After 10 seconds the instrument will restart working with the new parameters.
- Remove the "Hot Key"...

NOTE the message "Err" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "Hot key" to abort the operation.

12. DIGITAL INPUT

XT220C and XT221C have 1 free contact digital input. It is programmable in 5 different configurations by the "i1F" parameter.

12.1 INVERT THE KIND OF ACTION: HEATING-COOLING (I1F = C-H)

This function allows to invert the regulation of the controller for both the outputs: from direct to inverse and viceversa.

12.2 REMOTE ON/OFF (I1F = OFF)

This function allows to switch ON and OFF the instrument.

12.3 GENERIC ALARM (I1F = EAL)

As soon as the digital input is activated the unit will wait for "did" time delay before signalling the "EAL" alarm message. The outputs status don't change. The alarm stops just after the digital input is de-activated.

12.4 SERIOUS ALARM MODE (I1F = BAL)

When the digital input is activated, the unit will wait for "did" delay before signalling the "bAL" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is de-activated.

12.5 ENERGY SAVING (I1F = HES)

The Energy Saving function allows to change the set point1 value as the result of the SET1+ HES (parameter) sum. This function is enabled until the digital input is activated.

13. ALARM SIGNALS

Message	Cause	Outputs
"PFo"	Probe broken or	Alarm output ON; Output 1 and
	absence	2 according parameters "So1" and "So2" respectively.
		_ ,
"PFc"	Probe short	Alarm output ON; Output 1 and
	circuited	2 according parameters "So1"
		and "So2" respectively.
"HA"	Maximum	Alarm output ON; Other outputs
	temperature alarm	unchanged.
"LA"	Minimum	Alarm output ON; Other outputs
	temperature alarm	unchanged.
"EAL"	External alarm	Output unchanged.
"bAL"	Serious external	Output OFF.
	alarm	·

13.1 ALARM RELAY STATUS (XT221C)

Status of the instrument	AS = CL	AS = oP	
Instrument off	5-6 closed	5-6 closed	
Normal operating	5-6 closed	5-6 open	
Alarm present	5-6 open	5-6 closed	

13.2 SILENCING BUZZER / ALARM RELAY OUTPUT

Once the alarm signal is detected the buzzer, if present, can be disabled by pressing any key.

XT221C: the alarm relay status depends on the tbA parameter: with tbA=yES the relay is disabled by pressing any key, with tbA=no the alarm relay remains enabled as long as the alarm lasts. The display signal remains as long as the alarm condition remains.

13.3 ALARM RECOVERY

Probe alarms "PFo", "PFc" start few seconds after the fault in the probe; they automatically stop few seconds after the probe restarts normal operation. Check connections before replacing the probe.

Max. and min. alarms "HA" and "LA" automatically stop as soon as the variable returns to normal values.

Alarms "bAL" and "EAL" recover as soon as the digital input is disabled.

14. TECHNICAL DATA

Housing: self extinguishing ABS

Case: frontal 32x74 mm; depth 60mm;

Mounting: panel mounting in a 71x29 mm panel cut-out. Protection: IP20.

Frontal protection: IP65 with frontal gasket RG-C (optional). Connections: Screw terminal block $\leq 2.5 \text{ mm}^2$ heat-resistant wiring.

Power supply: 12Vac/dc, $\pm 10\%$ or: 24Vac/dc $\pm 10\%$ or 230Vac $\pm 10\%$, 50/60Hz or 110Vac, $\pm 10\%$, 50/60Hz Power absorption: 3VA max.

Display: 3 ½ digits, red LED

Inputs: according to the order: NTC/PTC or NTC/PTC /Pt100 /Thermocouple J, K, S or $4 \div 20 \text{mA} / 0 \div 1 \text{V} / 0 \div 10 \text{V}$

Relay outputs:

Output1: relay 8(3)A, 250Vac Output2: relay 8(3)A, 250Vac Alarm: (XT221C), 8(3)A, 250Vac Other output: buzzer (optional)

Kind of action: 1B.; Pollution grade: normal;

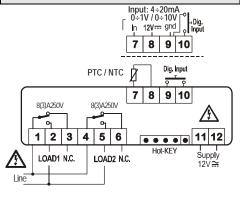
Software class: A.

Data storing: on the non-volatile memory (EEPROM). Operating temperature: 0÷60 °C (32÷140°F). Storage temperature: -30÷85 °C (-22÷185°F). Relative humidity: 20÷85% (no condensing)

Measuring and regulation range: according to the probe Controller Accuracy a 25°C: better than $\pm 0.5\%$ of full scale

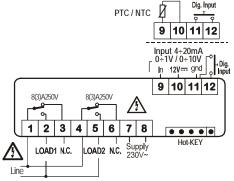
15. CONNECTIONS

5.1 XT220C - 12V AC/DC OR 24V AC/DC



Probe: Pt100= 7 - 9 (8); Thermocouple J, K, S = 7(+); 9(-) 24Vac/cd supply: 11-12

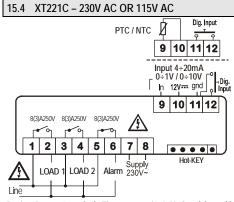
15.2 XT220C - 230V AC OR 115V AC



Pt100=9 -11 (10); Thermocouple J, K, S = 9(+) -11(-) 115Vac supply: 7-8

15.3 XT221C - 12VAC/DC OR 24VAC/DC Input: 4÷20mA 0÷1V / 0÷10V In 12V--- gnd 7 8 9 10 PTC/NTC D 8 9 10 8(3)A250V 8(3)A250V 8(3)A250V /{\ ر م **^**9 3 4 11 12 1 2 5 6 Hot-KEY LOAD 1 LOAD 2 ALARM

Probe: Pt100= 7 - 9 (8); Thermocouple J, K, S = 7(+); 9(-) 24Vac/cd supply: 11-12



Probe: Pt100=9-11 (10); Thermocouple J, K, S= 9(+) - 11(-) 115Vac supply: 7-8

16. DEFAULT SETTING VALUES

Set1 Set point1 LS1+US1 0/32	16. DEFAULT SETTING VALUES						
Set1 Set point1 LS1+US1 0/32	COD	Name	Range	°C/°F	Lev		
Hy1 Differential 1	Set1	Set point1	LS1÷US1		-		
Hy2					-		
L\$1 Minimum set point1 Down Sc./ Set1 min Pr L\$2 Minimum set point1 Down Sc./ Set2 min Pr US1 Maximum set point1 Set1/Full Sc. max Pr US2 Maximum set point2 Set2/Full Sc. Set	_				Pr1		
LS2 Minimum set point2 Down Sc. / Set2 min Pr Maximum set point1 Set1 / Full Sc. max Pr US2 Maximum set point2 Set2 / Full Sc. max Pr OuC Output configuration inde independent; diP = dependent S1C Action type output 1 in = Inverse; dir=direct in Pr S2C Action type output 2 in = Inverse; dir=direct in Pr S2C Action type output 2 in = Inverse; dir=direct in Pr S3C Action type output 2 in = Inverse; dir=direct in Pr S4C Anti-short cycle delay: 0+250 sec 0 Pr On Minimum time a stage stays switched ON 0no Minimum time between 2 0+250 sec 0 Pr On Minimum time between 2 0+250 sec 0 Pr On Minimum time between 2 0+120 min 0 Pr On Minimum time between 2 0+120 min 0 Pr On Minimum time on pregulation 0 Pr On Minimum time between 2 0+120 min 0 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr S4D Stays Switched ON 0 Pr On Minimum time on pregulation 0 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time a stage state 1 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time a stage state 1 Pr On Minimum time between 2 0+125 (0 = 0,00 Pr On Minimum time a stage state 1 Pr On Probe calibration Prus Preparence 1 Pr On Probe calibration Prus Preparence 1 Probe Probe calibration Prus Preparence 1 Probe Probe Probe Calibration Probe					Pr1		
US2 Maximum set point1 Set1/Full Sc. max Pr					Pr2		
US2 Maximum set point2 Set2/ Full Sc. max Prounce Output configuration ind= independent diP Pedependent d					Pr2		
ouc Output configuration ind=independent; diP = dependent ind Pr S1C Action type output 1 in= Inverse; dir=direct in Pr S2C Action type output 2 in= Inverse; dir=direct in Pr Ac Anti-short cycle delay: 0+250 sec 0 Pr on Minimum time a stage stays switched ON 0+250 sec 0 Pr ono Minimum time between 2 0+20 min following switching ON of the same load 0 + 19:59 (0 = 0,00 Pr trd Cycle length setting 0 + 19:59 (0 = 0,00 Pr Gisable) trM Regulation setting OFF = stop regulation continues oFF = stop regulation continues trS Timer exhausted no = buzzer off yES = buzzer on YES = buzzer on ALC Alarm configuration rE=relat.; Ab= absolute rE Pr ALL Minumum alarm (ALC=rE) 0 + Full ScaSet1 10.0/ Pr Pr ALL Alarm configuration PF-III scale 2.0/4 Pr ALH Alarm recovery differential Alch + Full Scale 2.0/4 Pr ALH Alarm delay at start up 0+23h 50min 1.3 Pr					Pr2		
STC Action type output 1 in= Inverse; dir=direct in Property of the Anti-short cycle delay: 0+250 sec 0 Property of the Stays switched ON on Minimum time a stage stays switched ON on the same load of the Same l					Pr2		
Action type output 2 in= Inverse; dir=direct in Pr Ac Anti-short cycle delay: 0+250 sec 0 Pr Shaws switched ON 0+250 sec 0+250 sec 0 Pr Children Switching ON of the same load 0+250 sec 0		, ,					
Ac Anti-short cycle delay: 0÷250 sec 0 Promodifimition On Minimum time a stage stays switched ON minimum time between 2 following switching ON of the same load 0÷120 min 0 Promodifimition trd Cycle length setting 0÷19:59 (0 = disable) 0,00 Promodifimition Promodifimition trM Regulation setting 0FF = stop regulation continues 0FF = stop regulation continues 0FF = stop regulation continues Promodifimition ALC Alarm configuration rE=relat: Ab= absolute rE promodifimition					Pr2		
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stays switched ON Minimum time between 2 following switching ON of the same load trd Cycle length setting					Pr2		
ono following switching ON of the same load 0+120 min following switching ON of the same load 0+19:59 (0 = disable) 0,00 Profollowing switching ON of disable) Profollowing switching OFF = stop regulation on = regulation continues OFF = stop regulation on = regulation continues OFF = stop regulation on = regulation continues OFF = stop regulation continues OFF = stop regulation continues Profolia Science Scie	UII		0-230 Sec	U	FIZ		
trd Cycle length setting 0 ÷ 19:59 (0 = disable) trM Regulation setting 0FF = stop regulation on = regulation continues trS Timer exhausted no = buzzer off yES = buzzer on ALC Alarm configuration re=relat.; Ab= absolute ALL Minumum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Start Sc.÷ ALu 20 ALU Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr Start Sc.÷ ALu 20 ALU Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr Start Sc.÷ ALu 20 ALU Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr Start Sc.÷ ALu 20 ALU Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr Start Sc.÷ ALu 20 ALU Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr Start Sc.÷ ALu 20 ALU Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr Start Sc.÷ ALu 20 ALU Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr Start Sc. ÷ ALu 20 ALI Halarm recovery 0 ÷ Full Scale 20.0/4 Pr Start Sc. ÷ ALu 20 ALI Alarm delay 0 ÷ 999 min 15 Pr Scale 20 Out2 status with faulty pr OFF=open on=closed 0FF Pr Scale 20 Out2 status with faulty pr OFF=open on=closed 0FF Pr Scale 20 Out2 status with faulty pr OFF=open on=closed 0FF Pr Scale 20 Out2 status with faulty pr OFF=open on=closed 0FF Pr Scale 20 Out2 status with faulty pr OFF=open on=closed 0FF Pr Scale 20 Out2 status with faulty pr OFF=open on=closed 0FF Pr Scale 20 Out2 status with relative proper or yoltage input 0 OFF=open on=closed 0FF Pr OPP Pr Scale 20 Out2 status with current or 1999÷1999 Various Pr Various Pr Voltage input 0 OPP Pr Debe calibration 10 OPP Pr Pr OPP 10 OPP Pr OPP Calibration 10 OPP 10 OPP Pr OPP Calibration 10 OPP 10	ono		0÷120 min	0	Pr2		
trd Cycle length setting 0 ÷ 19:59 (0 = disable) 0,00 Pr disable) trM Regulation setting oFF = stop regulation continues oFF = stop regulation continues oFF = stop regulation continues trS Timer exhausted signalling yES = buzzer on Yes Pr signalling yES = buzzer on Yes Pr pr absolute ALL Minumum alarm (ALC=rE) (ALC=Ab) 0 ÷ [Start ScSet1] start ScSet1] 10.0/ Pr 20 ALU Maximum alarm (ALC=rE) (ALC=Ab) 0 ÷ Full Scale 2.0/4 Pr 20 ALH Alarm recovery differential 0 ÷ Full Scale 2.0/4 Pr 20 ALH Alarm recovery differential 0 ÷ Full Scale 2.0/4 Pr 20 ALD Alarm delay dat start up o +23h 50min 1.3 Pr 20 So1 Out1 status with faulty pr oFF=open on=closed oFF pr 20 0 oFF pr 20 0 oFF pr 20 ALA Alarm relay disabling no; yES yES pr 20 9 pr 20 9 pr 20 AS1 Alarm relay polarity CL÷oP oP pr 20 0 p Pr 20 Pr 20 Pr 20 Lci² Start scale with current or voltage input 10 pp ÷ 1999 various pr 20 9 pr 20 9 pr 20							
disable							
trM Regulation setting oFF = stop regulation on = regulation continues trS Timer exhausted no = regulation continues ALC Alarm configuration rE=relat.; Ab= absolute ALL Minumum alarm (ALC=rE) (ALC=Ab) ALU Maximum alarm (ALC=rE) 0 + Full ScSet1 10.0/ Pr Start Sc.+ ALu 20 ALU Maximum alarm (ALC=rE) 0 + Full ScSet1 20 ALU Maximum alarm (ALC=rE) 0 + Full ScSet1 30.0/ Pr Start Sc.+ Alu 30 ALH Alarm recovery differential Alarm delay data start up 0+23h 50min 1.3 Pr So1 Out1 status with faulty pr oFF=open on=closed oFF Pr So2 Out2 status with faulty pr oFF=open on=closed oFF Pr So2 Out2 status with faulty pr oFF=open on=closed oFF Pr So3 Alarm relay plarity CL+oP oP Pr Start scale with current or voltage input Uci² End scale with current or 1999+1999 various Pr voltage input Uci² End scale with current or -1999+1999 various Pr voltage input 0Pb Probe calibration Full Sc./ Full Sc. 0.0 Pr rES Resolution in=NO; dE=0,1; cE=0,01 in pr CE=0,01	trd	Cycle length setting		0,00	Pr2		
regulation	+r1 A	Dogulotic 4'			D-C		
trS Timer exhausted no = buzzer off signalling yES = buzzer on rE=relat.; Ab= absolute ALL Minumum alarm (ALC=RE) (ALC=Ab)	LI IVI	keguiation setting		UFF	Pr2		
trS Timer exhausted signalling yES = buzzer on ALC Alarm configuration rE=relat; Ab= absolute							
trS Timer exhausted signalling yES = buzzer on							
ALC Alarm configuration FE=relat.; Ab= absolute ALL Minumum alarm (ALC=rE)	trS	Timer exhausted		Yes	Pr2		
ALL Minumum alarm 0 ÷ Start ScSet1 10.0/ Pr Start Sc. + ALu 20 Start Scale (ALC=Ab) ALL + Full Scale 2.0/4 Pr ALL + Full Scale 2.0		signalling	yES = buzzer on				
ALL Minumum alarm (ALC=RE) 0 ÷ [Start ScSet1] Start ScSet1] 10.0/ Pr 20 Pr 20 ALU Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr 20 Pr 20 ALH Maximum alarm (ALC=RE) 0 ÷ [Full ScSet1] 10.0/ Pr 20 Pr 20 ALH Alarm recovery differential 0 ÷ Full Scale 2.0/4 Pr 20 Pr 20 ALD Alarm delay 0 ÷ 999 min 15 Pr 20 Pr 20 ALD Alarm delay dat start up 30 ÷ 23h 50min 1.3 Pr 30 Pr 30 Out1 status with faulty pr 30 ÷ 29h 50min 1.3 Pr 30 Pr	ALC	Alarm configuration	rE=relat.; Ab=	rE	Pr2		
ALU Maximum alarm (ALC=Ab)		N.P		10.07	D. C		
ALU Maximum alarm (ALC=rE) 0 ÷ Full ScSet1 . ALL÷ Full Scale (ALC=Ab) ALL÷ Full Scale 20 Pr ALL÷ Full Scale 20 ALL÷ Full Scale 30 AL	ALL				Pr2		
ALU Maximum alarm (ALC=rE) 0 ÷ Full ScSet1 . ALL÷ Full Scale 10.0/ Pr Pr ALH Alarm recovery differential 0 ÷ Full scale 2.0/4 Pr Pr ALH Alarm recovery differential 0 ÷ Full scale 2.0/4 Pr Pr ALD Alarm recovery differential 0 ÷ Full scale 2.0/4 Pr Pr ALD Alarm delay 0 ÷ 999 min 15 Pr Pr GAO Alarm delay at start up 0 ÷ 23h 50min 1.3 Pr So1 Out1 status with faulty pr oFF=open on=closed oFF Pr DO Out2 status with faulty pr oFF=open on=closed oFF PP AS1 Alarm relay polarity CL÷oP oP Pr Lci² Start scale with current or voltage input CL÷oP oP Pr Lci² Start scale with current or voltage input			Start Sc ALu	20			
ALH Full Scale 20	ALU	Maximum alarm (ALC=rE)	0 ÷ Full ScSet1 .	10.0/	Pr2		
ALH Alarm recovery differential 0÷Full scale 2.0/4 Pr differential ALd Alarm delay 0÷999 min 15 Pr delay AOA Alarm delay at start up 0÷23h 50min 1.3 Pr delay So1 Out1 status with faulty pr. oFF=open on=closed oFF Pr delay oFF Pr delay Pr delay Pr delay So2 Out2 status with faulty pr. oFF=open on=closed oFF Pr delay oFF Pr delay oFF Pr delay Pr dela				20			
differential							
ALd Alarm delay 0÷999 min 15 Pr dAO Alarm delay at start up 0÷23h 50min 1.3 Pr So1 Out1 status with faulty pr. oFF=open on=closed oFF Pr So2 Out2 status with faulty pr. oFF=open on=closed oFF Pr tbA1 Alarm relay disabling no; yES yES Pr AS1 Alarm relay polarity CL÷0P OP Pr Lci² Start scale with current or voltage input -1999÷1999 various Pr Uci² End scale with current or voltage input -Full Sc./ Full Sc. 0.0 Pr Resolution -Full Sc./ Full Sc. 0.0 Pr Resolution -Full Sc./ Full Sc. 0.0 Pr Resolution -Full Sc./ Full Sc. 0.0 Pr UdM Measurement unit (temp.) 0=°C; 1=°F; 2=RH; various Pr PbC Kind of probe Pt=P1100; J=tcJ; c= tck; various Pr PbC Kind of probe Pt=P1100; J=tcJ; c= tck; various Pr <	ALH		0÷Full scale	2.0/4	Pr2		
dAO Alarm delay at start up 0÷23h 50min 1.3 Pr So1 Out1 status with faulty pr. oFF=open on=closed oFF Pr Pr So2 Out2 status with faulty pr. oFF=open on=closed oFF Pr Pr tbA¹ Alarm relay disabling no; yES yES Pr AS¹ Alarm relay polarity CL÷oP oP Pr Lci² Start scale with current or voltage input -1999÷1999 various Pr Uci² End scale with current or voltage input -Full Sc./ Full Sc. 0.0 Pr Pr Fresolution -Full Sc./ Full Sc. 0.0 Pr Pr Resolution -Full Sc./ Full Sc. 0.0 Pr UdM Measurement unit (temp.) 0°C; 1°F°F; 2=RH; 3=brr various Pr PbC Kind of probe Pl=Pl100; J=tc.); c= tck; various Various Pr Fr Fr Pr Pr Pr Pr PbC Kind of probe Pl=Pl100; J=tc.); c= tck; various various Pr	ΛIΑ		0 · 000 min	15	Pr2		
So1 Out1 status with faulty pr. oFF=open on=closed oFF Pr Pr So2 Out2 status with faulty pr. oFF=open on=closed oFF Pr tbA¹ Alarm relay disabling no; yES yES Pr AS¹ Alarm relay polarity CL÷oP oP Pr CLci² Start scale with current or voltage input OPb Probe calibration Full Sc./ Full Sc. 0.0 Pr voltage input OPb Probe calibration Full Sc./ Full Sc. 0.0 Pr Pr CE-0,01 UdM Measurement unit (temp.) 0=°C; 1=°F; 2=RH; 3=bar; 4=PSI, 5=off Pr CLC; 0+10					Pr2		
So2 Out2 status with faulty pr. oFF=open on=closed oFF Pr.					Pr2		
AS¹ Alarm relay polarity CL÷oP oP Pr Lci² Start scale with current or voltage input -1999÷1999 various Pr Uci² End scale with current or voltage input -1999÷1999 various Pr OPb Probe calibration -Full Sc./ Full Sc. 0.0 Pr FES Resolution -Full Sc./ Full Sc. 0.0 Pr Lore (temp.) 0°C°C; Fe°F; P°F; P°F; P°F; P°F; P°F; P°F; P°F; P	So2		oFF=open on=closed		Pr2		
Lci ² Start scale with current or voltage input Uci ² End scale with current or voltage input OPb Probe calibration Full Sc./ Full Sc. 0.0 Probe calibration in=NO; dE=0,1; in Probe calibration Full Sc./ Full Sc. 0.0 Probe calibration in=NO; dE=0,1; in Probe calibration in=NO; d				,	Pr2		
Voltage input				_	Pr2		
Uci ²	Lci ²		-1999÷1999	various	Pr1		
voltage input voltage input OPb Probe calibration -Full Sc./ Full Sc. 0.0 Pr rES Resolution in=NO; dE=0,1; c=0,01 in Pr UdM Measurement unit (temp.) °C=°C; °F= °F; 0=°C; 1=°F; 2=RH; 3=bar; 4=PSI, 5=off various Pr PbC Kind of probe Pt=Pt100; J=tc.; c= tck; S=tcs; Ptc=PTC; ntc=NTC; 0-1=0+1V; 10=0+10V; cur=0+20mA no=2 wires; yES=3 wires no Pr P3F 3rd wire presence no=2 wires; yES=3 wires no.0 Pr HES Energy saving differential Down Sc./ Full Sc. 0.0 Pr i1F Digital input configuration / EAL / bAL EAL Pr i1P Digital input polarity cL=closing; oP=opening cL Pr did Alarm delay for dig. input 0+120m 0 Pr Adr Serial address RS485 address 1 Pr OnF oF function enabling oF=enabled no=not enabled; oF=enabled no Pr Ptb Parameter table Readable only Pr	Hci2		1000 - 1000	various	Dr1		
OPb Probe calibration -Full Sc./ Full Sc. 0.0 Pr rES Resolution in=NO; dE=0,1; cE=0,11 in pr UdM Measurement unit (temp.) °C=°C; °F=°F; 2=RH; dCurrent/voltage) various Pr PbC Kind of probe Pt=Pt100; J=tcJ; c= tck; S=tcS; Ptc=PTC; ntc=NTC; 0-1=0+1V; 10= 0+10V; cur=0+20mA various Pr P3F 3rd wire presence no=2 wires; yES=3 wires no Pr HES Energy saving differential Down Sc./ Full Sc. 0.0 Pr i1F Digital input configuration C-H / oFF / AuS / HES EAL Pr i1P Digital input polarity cL=closing; OP=opening cL Pr idd Alarm delay for dig. input 0+120m 0 Pr Adr Serial address RS485 address 1 Pr OnF oF function enabling oF=enabled no not enabled; of F=enabled no pr Ptb Parameter table Readable only Pr	JCI-		177771777	various	111		
Resolution	OPb			0.0	Pr1		
Measurement unit (temp.)	rES		in=NO; dE=0,1;		Pr2		
(temp.) 0=°C; 1=°F; 2=RH; 3=bar; 4=PSI, 5=off PbC Kind of probe Pt=Pt100; J=tc.); c= tck; various Pt S=tcs; Ptc=PTC; ntc=NTC; 0-1e0+TV; 10=0+10V; cur=0+20mA Pt=Pt100; J=tc.); c= tck; various Pt S=tcs; Ptc=PTC; ntc=NTC; 0-1e0+TV; 10=0+10V; cur=0+20mA Pt=Pt100; J=tc.); c= tck; various Pt S=tcs; Ptc=PTC; ntc=NTC; 0-1e0+TV; 10=0+10V; cur=0+20mA Pt P3F 3rd wire presence no=2 wires; yES=3 wires no Pt HES Energy saving differential Down Sc./ Full Sc. 0.0 Pr i1F Digital input configuration C-H / oFF / AuS / HES Pt EAL Pr i1P Digital input polarity cL=closing; oP=opening cL Pr did Alarm delay for dig. input 0+120m 0 Pr Adr Serial address RS485 address 1 Pr no=not enabled; oFF=enabled no oFF Pr Ptb Parameter table Readable only Pr rEL Software release Readable only Pr					.		
Current/voltage 3=bar; 4=PSI, 5=off PbC Kind of probe	UdM			various	Pr1		
PbC Kind of probe Pt=Pt100; J=tc.]; c= tck; various Pr S=tcs; Ptc=PTC; ntc=NTC; 0-1=0+1V; 10= 0+10V; cur=0+20mA P3F 3rd wire presence no=2 wires; yES=3 wires no_Pr yES=3 wires HES Energy saving differential Down Sc./ Full Sc. 0.0 Pr Digital input configuration c-H / oFF / AuS / HES / EAL / bAL EAL / bAL Pr / EAL / BAL PR							
S=tcS; Ptc=PTC; ntc= NTC; 0-1=0+1V; 10= 0+10V; cur=0+20mA P3F	PbC			various	Pr1		
0÷10V; cur=0÷20mA P3F 3rd wire presence no=2 wires; yES=3 wires no Pr		'	S=tcS; Ptc=PTC; ntc=				
P3F 3rd wire presence no=2 wires; yES=3 wires no Pr HES Energy saving differential Down Sc./ Full Sc. 0.0 Pr i1F Digital input configuration / FAL / bAL EAL Pr Pr i1P Digital input polarity cL=closing; oP=opening cL Pr did Alarm delay for dig. input 0+120m 0 Pr Adr Serial address RS485 address 1 Pr OnF oFF function enabling oFF=enabled no no end enabled; oFF=enabled no end enabled; oFF=enabled Pr Ptb Parameter table Readable only Pr FEL Software release Readable only Pr							
YES=3 wires	D3E	3rd wire presence	no-2 wires:	no	Pr2		
HES Energy saving differential Down Sc./ Full Sc. 0.0 Pr i1F Digital input configuration c-H / oFF / AuS / HES EAL Pr i1P Digital input polarity cl=closing; oP=opening cL Pr did Alarm delay for dig. input 0÷120m 0 Pr Adr Serial address 1 Pr OnF oFF function enabling oFF=enabled oFF=enabled no=not enabled; oFF=enabled no Pr Ptb Parameter table related Readable only Pr FEL Software release Readable only Pr	. 31	WITC PICSCINC		IIU	112		
i1F Digital input configuration c-H / oFF / AuS / HES EAL Pr i1P Digital input polarity cL=closing; oP=opening cL Pr did Alarm delay for dig. input 0+120m 0 Pr Adr Serial address 1 Pr OnF oFF function enabling oFF=enabled oFF=enabled no pr Pr Ptb Parameter table related Readable only Pr FEL Software release Readable only Pr	HES	Energy saving differential		0.0	Pr2		
i1P Digital input polarity oP=opening cL=closing; oP=opening cL Pr oP=opening did Alarm delay for dig. input 0÷120m 0 Pr oP=opening Adr Serial address RS485 address 1 Pr oF=opening OnF oFF function enabling oF=enabled oF=enabled oF=enabled no oF=opening no oP=opening Ptb Parameter table rable rable related of the period of the period opening Readable only opening FEL Software release Readable only opening	i1F			EAL	Pr2		
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did Alarm delay for dig. input 0÷120m 0 Pr Adr Serial address RS485 address 1 Pr OnF oFF function enabling of F=enabled no=not enabled; oF=enabled no Pr Ptb Parameter table Readable only Pr rEL Software release Readable only Pr	i1P	Digital input polarity		cL	Pr2		
Adr Serial address RS485 address 1 Pr OnF oFF function enabling oFF=enabled no=not enabled; oFF=enabled no Pr Ptb Parameter table Readable only Pr rEL Software release Readable only Pr	did	Alarm delay for dig. input		0	Pr2		
OnF oFF function enabling of F=enabled; oFF=enabled no enot enabled; oFF=enabled no enot enabled; oFF=enabled no enot enabled; oFF=enabled no enot enabled; oFF=enabled Province Ptb Parameter table Readable only Province					Pr2		
Ptb Parameter table Readable only Pr FEL Software release Readable only Pr					Pr2		
rEL Software release Readable only Pr			oFF=enabled				
			Readable only		Pr2		
Pr2 10 access the Pr2 Readable only 321 Pr					Pr2		
	Pr2	To access the Pr2	Readable only	321	Pr1		

 $^{^1}$ Only for XT221C; 2 Only for instrument with $4\div 20mA$ or $0\div 1V$ or $0\div 10V$

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