PX230-T
Operating Manual

Sub-Zero Precision Control, always

Introduction

PX230-T is a Single Line Digital Timer. It can function in ON / INTERVAL/CYCLIC Timer mode as per configuration. Also, various time ranges can be defined. Single display can give alternate indication of present value and set value. Flat and Thin Surface provides easy cleaning and ensures high level of Hygiene in compliance of HACCP standards.

Field of Application

PX230-T is widely used in:

- Starters / Control Panel
- Moulding Machines
- Textile Industries
- Offset Printing Machines

Caution for your Safety

WIRING: The probe and its corresponding wires should never be installed in a conduit next to control or power supply lines. The electrical wiring should be done as shown in the diagram. The power supply circuit should be connected to a protection switch. The terminals admit wires of upto 2.5sq mm with U-type lugs.

WARNING: Improper wiring may cause irreparable damage and personal injury. Kindly ensure that wiring is done by qualified personnel only.

Maintenance: Cleaning: Clean the surface of the controller with a soft moist cloth. Do not use abrasive detergents, petrol, alcohol or solvents.

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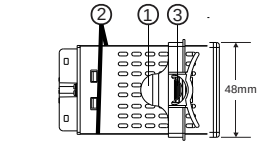
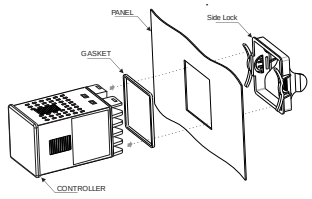
Controller: Controller should be installed in a place protected by vibration, water and corrosive gasses and where ambient temperature does not exceed the values specified in the technical data.

Dimensions & Panel Cutout

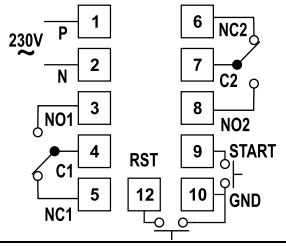
Product Mounting

Installation: Fixing and dimensions of panel models: To fix the unit, slide the fastener ① through the guides ② as per the position shown in the figure. Move the fastener in the direction of the arrow, pressing tab ③ it permits to move the fastener in the opposite direction of the arrow.





Connection Diagram (for PX230-T-W2011)



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5	tmI/tn	To select unit for toF in on Delay or ton in cyclic /Interval mode.
6	rS1/rS	To select resolution for tof in on Delay or ton in cyclic /Interval mode.
7	tmI	To select unit for toF in cyclic mode
8	rS2	To select decimal point for toF in cyclic mode.
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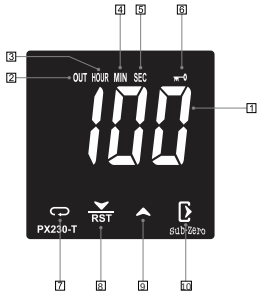
User Interface



S.No.		Description
1		**Process Time (During timer running)** Displays presents process time.
		Set Time (During timer stops) Normal Mode: Display Set time (ton/toF).
		Programming Mode: Displays set value of parameter.
2	OUT	Turns ON while Output cycle is on and also indicates control output is ON.
3	HOUR	Timer is configured in hours unit.
4	MIN	Timer is configured in minute unit.
5	SEC	Timer is configured in second unit.
6		Turns ON when keypad is locked.
7		**Next Key:** Used to enters parameters level, moves to next parameters. Press & release this key within 2 seconds to enter in set point mode. Press & hold this key atleast 3 seconds to enter in Programming Mode.
8	RST	**Down / Reset Key:** **Down Key:** Used in Program mode to decrement parameter value.
		Reset Key: If pressed for 3 seconds used to reset the timer from front panel.
9		**Up Key:** Used in Program mode to increment parameter value.
10		**Start / Exit Key:** **Exit Key:** Press this key to save the setting value and to exit the programming mode.
		Start Key: If pressed for 3 seconds in normal mode to simulate start pulse from front panel. **NOTE:** Only applicable for Pulse Type.

Technical Specification

Housing	: Polycarbonate Plastic
Dimensions	: Frontal: 48 X 48 mm Depth: 78 mm
Panel cutout	: 45.5 X 45.5 mm
Mounting	: Flush panel mounting with fasteners
Protection	: IP65 Front
Connections	: Terminal connectors. < 2.5sq mm terminal only with U-type lugs.
Display	: 3 X 20mm 7 segment White display 5 Iconic LEDs for Indication
Data Storage	: Non-volatile flash memory
Operating Temperature	: 0°C to 60°C (non-condensing)
Operating Humidity	: 20% to 85% (non-condensing)
Storage Temperature	: -25°C to 60°C (non-condensing)
Power Input	: 230 Vac ±15 %, 50/60Hz, 12/24Vdc on request.
Control Output	: 2 c/o SPDT Relay:5A, 230V AC (Resistive)
Input Type	:
Start Input	: **Pulse Type:** Remote (Potential Free) Front (Configurable) **Gate Type:** Remote (Potential Free)
Reset Input	: Remote (Potential Free) Front (Configurable) On Power Interruption
Resolution	: 9.99/99.9/999sec, 9.99/99.9/999 Min, 9.99/99.9/999 Hours
Accuracy	: ± 0.05% of set time/ 50 m sec whichever greater
Counting Direction	: Up/Down (Programmable)

Working

Depending upon Input type Gate or Pulse there are four different modes in Timer: Cyclic ON, Cyclic OFF, On Delay, Interval

Type:

1)Pulse: It works in two approach.

a) Impulse: Every time timer will start once pulse is sent even after reset.

b) Continuous: In this mode pulse will be continuously present. And timer will restart counting after reset pulse.

2) Gate: Timer counts pauses during gate signal applied and resumes once gate signal is removed.

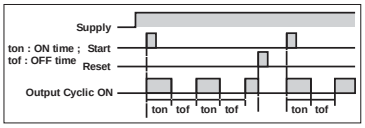
Function:

a) For Input Type: Start Pulse

Cyclic ON (Con)

- Timer signal (output cycle) will On for ton period and will Off for toF period.
- Signal starts on start Pulse.
- Signal starts with ON cycle.
- During cycle if reset Pulse is sent then signal will be Off.
- And will not start until new Start Pulse is sent.

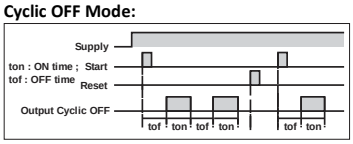
Cyclic ON Mode:



Cyclic OFF (CoF)

- Timer signal (output cycle) will On for ton period and will Off for toF period.
- Signal starts on start Pulse.
- Signal starts with OFF cycle.
- During cycle if reset Pulse is sent then signal will be Off.
- And will not start until new Start Pulse is sent.

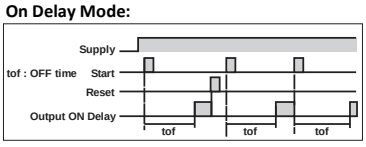
Cyclic OFF Mode:



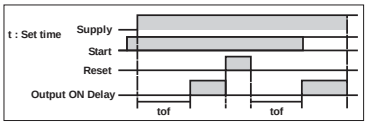
On Delay (on)

- Timer signal(output) will start on START pulse.
- Signal start with OFF state for toF period.
- Once toF delay period overs, Timer cycle remains in ON state, unless "RESET" or "START" pulse is sent.
- After "RESET" Timer signal will start only after START pulse is generated.

On Delay Mode:



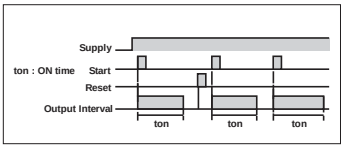
On Delay Mode with continuous Start Signal:



Interval Mode (int)

- Timer signal(output) will start on START pulse.
- Signal start with ON state for ton period.
- Once ton period overs, Output remains in OFF state, unless "RESET" OR "START" pulse is sent.
- After "RESET" Timer signal will start only after START pulse is generated.

Interval Mode:

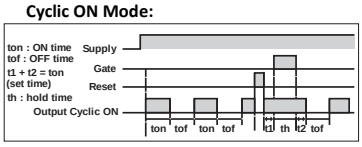


b) For Input Type: Gate Signal

Cyclic ON (Con)

- Timer signal (output cycle) will On for ton period and will Off for toF period.
- Signal starts if and only if gate signal is low.
- Signal starts with ON cycle.
- During cycle if reset Pulse is sent then signal will be restart provided that gate signal is low.
- During cycle if Gate signal is made high then timer counting pauses until gate signal is made low.

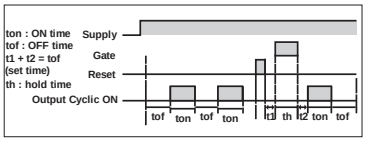
Cyclic ON Mode:



Cyclic OFF (CoF)

- Timer signal (output cycle) will On for ton period and will Off for toF period.
- Signal starts if and only if gate signal is low.
- Signal starts with OFF cycle.
- During cycle if reset Pulse is sent then signal will be restart provided that Gate signal is low.
- During cycle if Gate signal is made high then timer counting pauses until gate signal is made low.

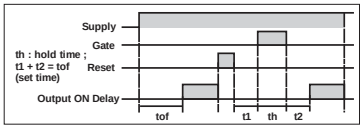
Cyclic OFF Mode:



On Delay (on)

- Timer signal(output) will start if and only if gate signal is low.
- Signal start with OFF state for toF period.
- Once toF delay period overs, Timer signal remains in ON state, unless "RESET" pulse is sent
- After "RESET" Timer signal will restart provided that Gate signal is low.
- During delay period if Gate signal is made high then timer counting pauses until gate signal is made low.

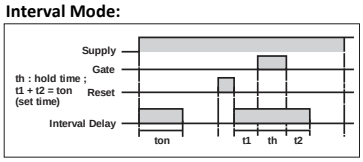
On Delay Mode:



Interval Mode (int)

- Timer signal(output) will start if and only if gate signal is low.
- In ton period, Timer signal is in ON state.
- Once ton period overs, Output remains in OFF state, unless "RESET" OR "START" pulse is sent.
- After "RESET" Timer signal will restart provided that Gate signal is low.
- During delay period if Gate signal is made high then timer counting pauses until gate signal is made low.

Interval Mode:



Set Mode

Press & hold ⏎ key for 2 secs to enter into Set Mode. SP will be displayed. When the key is released, ton (or) toF will be displayed upon the function selected.

1 ton — **Function:** To set On Time

In case of Cyclic Mode and Interval mode it will show On time cycle value.

Min.	Max.	Fac.
0	999	0

NOTE: Not applicable in On Delay Mode.

2 toF — **Function:** To set Off Time

In case of Cyclic Mode and On Delay mode it will show Off time cycle value.

Min.	Max.	Fac.
0	999	0

NOTE: Not applicable in Interval Mode.

Programming Mode

Press & hold ⏎ key for 3 sec to enter into Program Mode. PrG will be displayed. When the key is released, FnC will be displayed.

3 FnC — **Function:** To select Function.

User can select any of the four modes – Cyclic On (Con), Cyclic OFF (Cof), On Delay (On) and Interval Mode (int). Please see working details for description of Each Mode.

Min.	Max.	Fac.
Con	Int	Con

Con - Cyclic On
CoF - Cyclic OFF
on - On Delay
Int - Interval Mode

4 tYP — **Function:** To select Input Type.

User can select type of input either Gate or Pulse. Please see working details for description of Each Type.

Min.	Max.	Fac.
PUL	GAt	PUL

PUL - Pulse Type Input
GAt - Gate Type Input

5 tm1/tm — **Function:**
- To select unit for ton in Cyclic/Interval Mode. (appeared as tm1 in cyclic mode & tm in interval mode)
- To select unit for toF in On delay Mode. (appeared as tm in On delay Mode)

Here time period unit is configured in sec, min or Hour for On-Cycle in Cyclic/Interval mode and Off-Cycle in On delay mode.

Min.	Max.	Fac.
SEC	Hr5	SEC

SEC - Configured in Seconds
MIn - Configured in Minutes
Hr5 - Configured in Hours

6 rS1/rS — **Function:**
- To select decimal point of ton in Cyclic mode/Interval mode. (appeared as rS1 in cyclic mode & rS in interval mode)
- To select decimal point of toF in On delay mode. (appeared as rS in On Delay Mode.)

Here decimal point is selected where by adjust the timing range/ resolution of ton in Cyclic mode/Interval mode and toF in On delay mode.

Min.	Max.	Fac.
9.99	999	999

7 tm2 — **Function:** To select unit of toF in Cyclic.

Here delay period unit is configured in sec, min or Hour for Off-Cycle.

Min.	Max.	Fac.
SEC	Hr5	SEC

SEC - Configured in Seconds
MIn - Configured in Minutes
Hr5 - Configured in Hours

NOTE: Not applicable in non-cyclic modes.

8 rS2 — **Function:** To select decimal point of toF in Cyclic mode.

Here decimal point is selected where by adjust the timing range/ resolution of tof in Cyclic mode.

Min.	Max.	Fac.
9.99	999	999

NOTE: Not applicable in non-cyclic modes.

9 nCL — **Function:** To select no. of cycles in cyclic mode.

If selected,
0 – Cycle will be continuous.
Between
1 to 999 – No. of cycles will be as per the selected value

Min.	Max.	Fac.
0	999	0

Example:
If selected 10, then On-Off Cycle will repeat for 10 times and then stops and relay will get OFF. (Only Applicable for Cyclic Function)

10 dir — **Function:** To select timer counting direction.

If selected,
uP - Timer will increment in running mode.
dn - Timer will decrement in running mode.

Min.	Max.	Fac.
dn	uP	dn

11 FPS — **Function:** To select for front panel START.

If selected,
YES - Front panel START key will be used to give start pulse.
no - Front panel START key won't work.

Min.	Max.	Fac.
no	YES	no

12 FPr — **Function:** To select for front panel RESET.

If selected
YES - Front panel RESET key will be used to give Reset pulse.
no - Front panel RESET key won't work.

Min.	Max.	Fac.
no	YES	no

13 nEn — **Function:** Power ON Reset.

If selected,
nPL - Timer Output Signal will resume on Power ON, where it was stopped during Power OFF but for pulse type it will not run unless start input is given.
ALL - Timer Output Signal will resume on Power ON, where it was stopped during Power OFF.
no - Timer Output Signal will start from beginning depending upon input conditions.

Min.	Max.	Fac.
no	nPL	no

14 LFG — **Function:** To Lock Parameter in Programming Mode.

If selected,
LCK - not possible to change any parameter in Programming Mode.
uLC - Possible to change parameter in Programming Mode.
Hence, no one can alter any parameter in Programming Mode.

Min.	Max.	Fac.
uLC	LCK	uLC

15 SEt — **Function:** To Lock Parameter in Set Mode.

If selected,
LCK - not possible to change any parameter in Set Mode.
uLC - Possible to change parameter in Set Mode.
Hence, no one can alter any parameter in Set Mode.

Min.	Max.	Fac.
uLC	LCK	uLC

16 FS — **Function:** Revert to factory Set Parameter.

If selected,
YES - Default parameter settings will be retrieved.
no - Default parameter settings won't be retrieved.

Min.	Max.	Fac.
no	YES	no

LED Indication

LED	STATUS	DESCRIPTION
OUT	ON	Output Cycle & both Relays will be ON.
	OFF	Output Cycle & both Relays will be OFF.
SEC	ON	Timer configured in seconds.
	FLASHING (for 500ms)	Timer running in seconds.
MIN	ON	Timer configured in minutes.
	FLASHING (for 500ms)	Timer running in minutes.
HOUR	ON	Timer configured in hours.
	FLASHING (for 500ms)	Timer running in hours.
	STEADY	**Normal Mode:** Either or both Programming Mode & Set Mode parameters are locked.
	FLASHING	**Set Mode:** Keypad is locked. **Programming Mode:** Keypad is locked.
HLd	FLASHING (for 2 seconds with Process Time)	Timer is paused during gate type selected.

01 / 18.03.2020