Tartı ve Elektronik Sistemler

T360L - PN

Electronic Weighing Indicator
Technical/User Manual

WARNING

1. This product is precision measure equipment; make sure equipment is properly grounded before use.
2. Only authorized person is allowed to debug, test and maintain system.

CAUTION

Observe precaution for handling electrostatic sensitive Devices.

CAUTION

Always remove power and wait at least eight (8) seconds before any connection or disconnection. Regardless of this precaution could result in damage to the equipment and/or body.

Contents

1 Attentions

Thank you for choosing T360L-PN Electronic Weighing Indicator. For proper application please read this manual carefully before installation.

Check the package be well and make sure the package contents is comply with the packing list.

Check the product model and type is accordance with your order. The product model information is on the label brand above the enclosure.

If there is any parts missed, broken, or model in-conformity in new carton, please prepare the evidence (such as order No., the date of receive goods, product serial No.) and contact our branch office, authorized agency, or service department to deal with.

Ground connection: to ensure the measuring performance and prevent shock hazard, the terminal must be well grounded.

Power supply: This terminal is powered by DC24V.

Environment: This terminal is suitable for industrial use environments. It is not an intrinsic safe terminal and can not be used in hazardous area of explosive dust and gas directly.

2 Model and Specification

T360L-PN weighing controller is designed specially focused on industrial weighing control application. The terminal is equipped with 24-bit Σ-Δ A-D converter, isolated RS232 and RS485 interface. This terminal can be widely used for such as metallurgy, chemical industry fields.

2.1 Features

* 24 bits high resolution Σ - Δ A-D conversion
* 1~9 level filter depth
* Isolated RS232 and RS485 serial interface
* 6-digits LED display with 0.4' height
* Standard MODBUS RTU protocol
* Continuous outputs via RS232 or RS485 for Remote display

2.2 Technical Specification

* Load cell: 5.0VDC Excitation with 4 parallel 350Ω-analog cells.
* Load cell sensitivity: >0.2uV/d
* Linearity: <0.01%FS

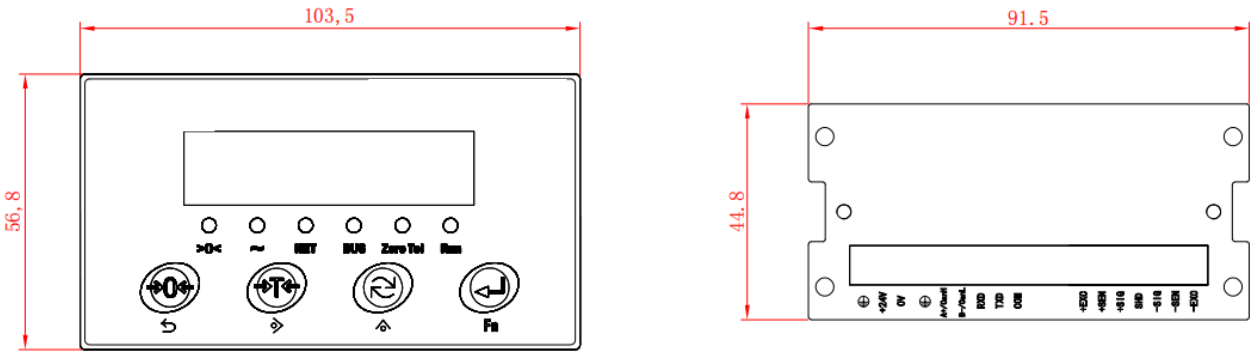
2.3 Temperature and Humidity

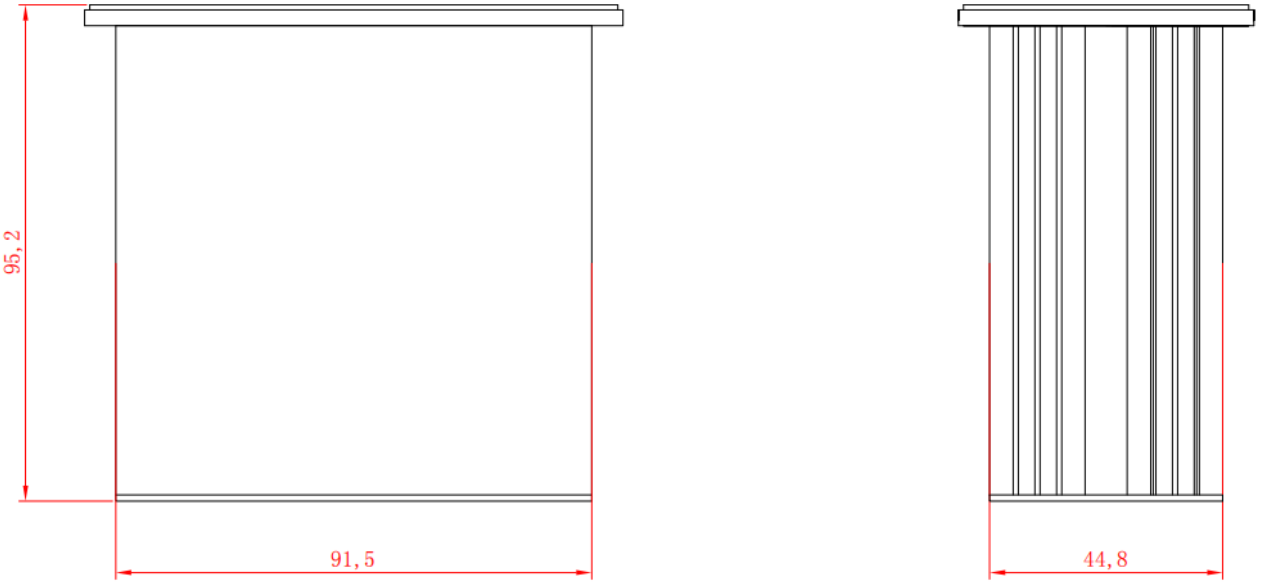
Operation temperature: 0ºC~40ºC, <85％RH, non-condensation.

Storage temperature: -20ºC~60ºC, <85％RH, non-condensation.

2.4 Enclosure & mounting size

Dimension(Panel, unit: mm): 103.5×56.8×95.2. Cutout(mm):46×93




95, 2
91, 5
44, 8

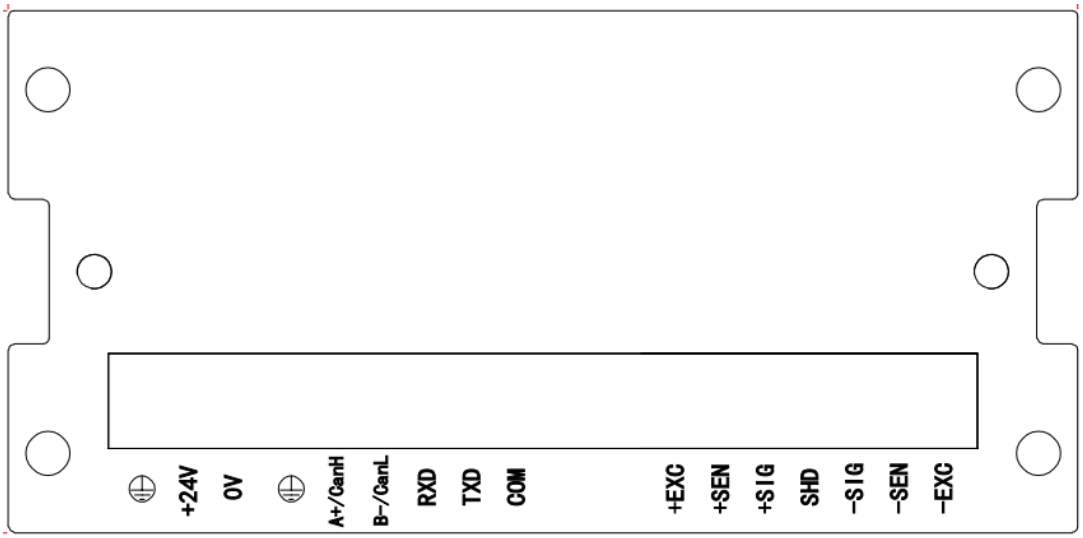
3 Installation and Connection

3. 1. Installation

For Panel mount model, the thickness of mounting door should be less than2mm and box depth should be over 180mm.

3. 2. wiring Connection

Backplate connection drawing (Panel)



3.2.1. Power connection

For DC model, connect the24VDC power line with terminal +24V and 0V.

3.2.2. Load cell interface

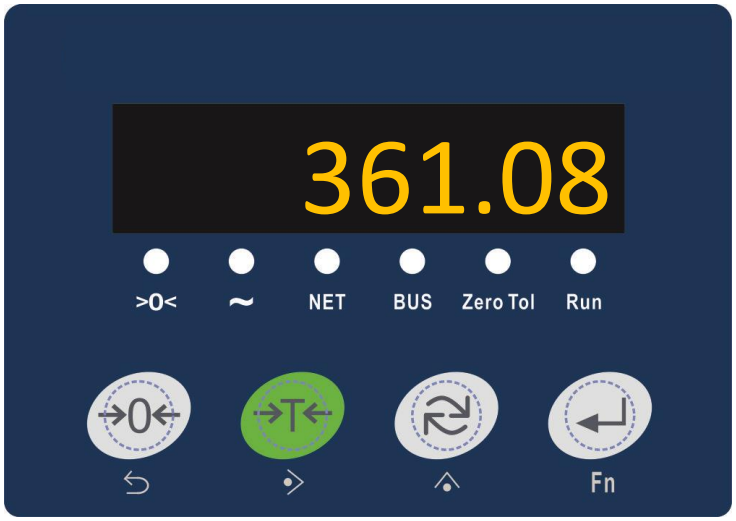
Terminal	Description
+EXC	positive excitation
+SEN	positive senser
+SIG	positive signal
SHD	shield ground
-SIG	negative signal
-SEN	negative senser
-EXC	negative excitation. short with -SEN if connecting 6-wire cell

3.2.3. Serial Port

The indicator includes 2 serial ports, one is RS232, one RS485.

Pin definition	Description	Function
RXD	RS232 receive data	Continuous output, print output, command output, MODBUS RTU.
TXD	RS232 transmit data	
COM	Common ground	
A+	RS485 T/R +	Same selections with RS232 port.
B-	RS485 T/R -	

4 Display & Panel



4.1 Keypad

The T360L-PN panel includes 4 function keys to accomplish basic operation and setting menu navigation.	Definition	Description

Keypad		
→0←	Zero key	Normal: Short press: zero scale. Long press: Clear total batch & weights. Menu: Return；
→T←	Tare key	Normal: Tare/ Clear tare of the scale. Menu : shift the active edit digit right.
C	Select key	Normal: Short press: view statistic qty/weight, tare weight. Long press: Short setpoint editing entry. Menu: scroll selection or increase numeric.
	Enter key	Normal: Long press: Enter into setup menu. Menu : Enter, confirm the selection or number.

4.2 Led Cursors

Cursors	Description
>0<	Current display weight is near center of zero.
~	Current weight is in motion.
NET	Current display weight is net weight with non-zero tare weight
BUS	The RS485 comm is active
Zero Tol	The weight is under zero tolerance
Run	The sequence is running

4.3 View statistic information.

Press  key to view available information.

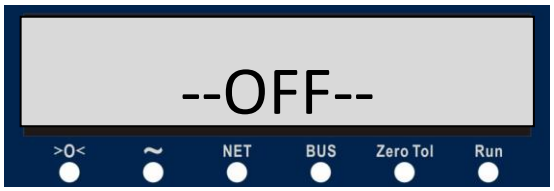
【Tare weight】

【Total Counts】

【Total weight】

4.4 Clear total statistics

The display will show【--OF--】if the total statistics grow over flow. The operator can press and hold →0← zero key to reset the statistics data in this condition.

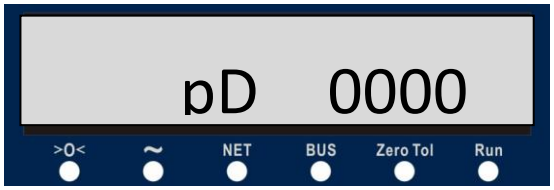


5 Setup Configuration

Note:

To protect the metrological parameters from destroyed by mistake, there is a password entry validation to access the scale capacity, increments, calibration and other sensitive paras.

The fixed password is “2000” . if you are trying to enter F1.1 the password entry will show as below. Do not enter code or incorrect code will cause the terminal skip to next branch menu F2.



Press and hold ENTER key till **{F1 }** displayed.

In setup menu, press SELECT key to shift next branch menu F2. Press ZERO key →0← to return to upper level.

Menu F1 -- Scale parameters

F1.1 Scale Capacity ----- Default: 10

Range:1 ～ 100000.

the entry value is limited equal or less than 60000 if configure this value via MODBUS.

F1.2 Division value ----- Default: 0.001

0.0001 / 0.0002 / 0.0005 / 0.001 / 0.002 / 0.005 / 0.01 / 0.02 / 0.05 / 0.1 / 0.2 / 0.5 / 1 / 2 / 5 / 10 / 20 / 50 optional

F1.3 display unit ----- Default: kg

0：kg 1：kN (the decimal point is fixed as 3 in this unit) 2：g

F1.4 Zero Calibration

{E_SCAL }: prompts to empty scale before calibration.

Following the prompts to move loads on the scale then press ENTER key to start sample the empty scale signal. during the calibration, there maybe display any prompt messages. For detailed explanation, please refer to sheet <prompts table> in the end of this manual.

F1.5 Load Calibration

Step 1.

[dot 2] In this prompt to select 2-point or 3-point calibration.

[dot 2] 2-point capacity calibration.

[dot 3] 3-point linearity calibration.

Step 2.

[LOAd] prompt to add calibration weight WT.

Place weight on the scale and wait till the scale be stable. Press ENTER key entering into load weight input dialog. Input corresponding weight value then press ENTER key to calibrate the added load. In calibrating dialog a number will count down from 10~0.

Step 3. (This step shows only selecting 3-point linearity calibration.)

[LOAd2] prompt to add second load weight WT2.

Place weight on the scale and wait till the scale be stable. Press ENTER key entering into load weight input dialog. Input corresponding weight value then press ENTER key to calibrate the added load. In calibrating dialog a number will count down from 10~0.

Note: The calibrating unit is fix as kg.

The add load weight should not less than 1% of Capacity (F1.1).

F1.6 filter depth ----- Default:4

Range:0 ～ 8. the bigger the number, the stable the weight.

F1.7 Motion Range ----- Default:OFF.

OFF(no motion detect) / 1d / 2d / 3d / 4d / 5d

F1.8 Over load range ----- Default: 10

9d / 5 / 10 / 20 (±9d / 5％Capacity / 10％Capacity / 20％Capacity)

F1.9 Extended Display ----- Default: OFF

OFF/ON

F1.10 Power-up Zero Range ----- Default: OFF

OFF / 5 / 10 / 20 (disable / 5％Capacity / 10％Capacity / 20％Capacity)

F1.11 Keypad zero range ----- Default: 5

OFF / 5 / 10 / 20 (Disable / 5％Capacity / 10％Capacity / 20％Capacity)

F1.12 Auto Zero Maintain Range ----- Default: OFF

OFF(disable) / 1d / 2d / 3d / 4d / 5d

F1.13 Auto Zero tracking speed----- Default:0.5d

0.5d/1d / 2d / 3d / 4d / 5d (Per second)

F1.14 Tare key function ----- Default:2

0:Forbid

1: Continuous tare

2:Clear tare

F1.15 Second filter depth ----- Default:OFF

Range:OFF,1～6

F1.16 Traffic update interval ----- Default:OFF

Range:0～20 (Per 0.1second)

F1.17 Traffic cycle ----- Default:10

Range:0～20 (Per 0.1second)

Menu F2 -- Application parameters: Reserve

Menu F3 -- PLC interfaces: Reserve

Menu F4 -- Serial ports

F4.1 COM1 Baud Rate (RS232) ----- Default: 9600

600,1200, 2400, 4800, 9600, 19200,38400,57600,115200。

F4.2 COM1 Data bit (RS232) ----- Default: 8_N

7_O /7_E /8_N / 8_O/ 8_E

F4.3 COM1 Stop bit (RS232) ----- Default: 1

1/1.5/2

F4.4 COM1 output format (RS232)----- Default: 2

0: N/A

1: Continuous output.

2: MODBUS-RTU

3: MT Continuous output.

4: Print output

5: ASCII Command model

F4.5 COM1 Node Address (RS232) ----- Default: 11

Address Range: 1 ～ 254.

F4.6 COM2 Baud Rate (RS485) ----- Default: 9600

600,1200, 2400, 4800, 9600, 19200,38400,57600,115200。

F4.7 COM2 Data bit (RS485) ----- Default: 8_N

7_O /7_E /8_N / 8_O/ 8_E

F4.8 COM2 Stop bit (RS485) ----- Default: 1

1/1.5/2

F4.9 COM2 output format (RS485)----- Default: 2

0: N/A

1: Continuous output.

2: MODBUS-RTU

3: MT Continuous output.

4: Print output

5: ASCII Command model

F4.10 COM2 Node Address (RS485) ----- Default: 12

Address Range: 1 ～ 254.

F4.11 Printout Format ----- Default: 3

1:En narrow row 2:En wide row

3:Cn narrow row 4:Cn wide row

F4.12 Continuous output cycle ----- Default: 10

Address Range: 1～255. (Per 0.01second)

F4.13～ F4.17: Reserve

Menu F5 : Reserve

Menu F6

F6.1 Key protection password ----- Default: Null

The password can be set to 4 digits from 0000 to 9999.

Enter password with Pd prompt, set password with PA prompt.

F6.2 Scale calibration parameter protection password ----- Default: 2000

The password can be set to 4 digits from 0000 to 9999.

Enter password with Pd prompt, set password with PA prompt.

F6.3 Application parameter protection password ----- Default: Null

The password can be set to 4 digits from 0000 to 9999.

Enter password with Pd prompt, set password with PA prompt.

F6.4 Set AD sample frequency ----- Default: 800

100 / 200 / 400 / 800 / 1600

F6.5 Set display brightness ----- Default: 5

Range:0~7. The larger the number, the brighter the display.

F6.6 Sensor internal code value----- Default: 250

Range:220~65535.

Menu F7

F7.1 Display program version number

F7.2 Display the last change date of the software

F7.3 Key test

F7.4 Serial port 232/485 test

F7.5 : Reserve

F7.6 : Reserve

F7.7 Test Display

Press ENTER key to test display. The display will display from “000000” ~ “999999”. watching the display to make sure if there is any segment is burned.

F7.8 View and Modify calibration parameters

Pd xxxx: Input password. The mismatched password will be denied.

Axxxxxx: Zero point calibration counts.

dxxxxxx: loaded weight point calibration counts.

Exxxxxx: Loaded weight value.

The calibrating data can be view or modified if needed. The operator is suggested to write down the calibration data for reference.

F7.9 Cal-Free operation

Pd xxxx: input access password.

Cxxxxxx: input the total loadcell capacity. E.g. the terminal connect 4 load cells and each load cell’s capacity is 100kg. The operator should input the total capacity 100kg * 4 = 400kg.

n 2.000: input the load cell’s sensitivity.

【E_SCAL 】: Calibrating empty scale.

F7.10 Easy-to-use calibration

Pd xxxx: Input access password.

E 05.000: Input the estimated load weight.

[LOAD]: Prompt to add load weight on the scale.

L 01.000: Input added weight value.

The easy-to-use calibration completed.

F7.11 Load default parameters

Pd xxxx：Enter password

Enter:

All parameters will be restored after confirmation.

Appendix 1 Prompt or Error Messages

Number	Prompts	Explanations
1	[ᒥ‾‾‾‾ᒣ]	Over capacity
2	[ᒪ____ᒧ]	Under zero
3	[ad Err]	AD channel initialize failed
4	[EP Err]	EEPROM Readout error
5	[EEE]	Power up zero failed for out of positive zero range
6	[EEE^^^]	Target value too large
7	[EEE___]	Target value too small
8	[Err 00]	No application mode set
9	[Err 01]	Exceeding target tolerance during filling
10	[Err 02]	Below target tolerance during filling
11	[Err 03]	Input weight value is too small when calibrating span via communication.
12	[err 05]	Input weight value is too big when calibrating span via communication.
13	[Err 06]	The added load weight is too small when calibrating span via communication.
14	[Err 07]	The scale is in motion when calibration
15	[Err 08]	Sensor error unable to complete calibration
16	[E_SCAl]	Prompt to empty scale when calibration
17	[LOAD]	Prompt to added load when calibration

18	[--NO--]	Invalid operation.
19	[--OF--]	The total quantity/weight overflow.
20	[Print]	When F2.1 not 0,press [ENTER] key will show

Appendix 2 Packing list

T360L-PN weighing Indicator Packing List

Number	Product	Model	Qty.	Note
1	Weighing Indicator	T360L-PN	1	
2	Manual	T360L-PN	1	
3	Certification Card	T360L-PN	1	
4	Power supply terminal	3.81-3P	1	
5	Load Cell Terminal	3.81-7P	1	
6	UART and/or DA terminal	3.81-6P	1	

Package: _____ Check: _____

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