FIXINST

E1601 0001/3

Panel Mount Digital Display

· Instruction Manual ·

Version: 1.02

Experts in Compressed Air & Fluid Measurement

Fast · Accurate · Management

Preface

- Dear customer, thank you for choosing our products.
- This manual is a description of the use range, functions, installation and operation methods, troubleshooting, and maintenance of the product.
- The user must read this operation manual completely before using the device to properly use the product.
- After you read it, keep it in an accessible place for the next operational reference.

Notice

- Fix Instruments is not responsible for damage caused by unauthorized changes to the equipment without reviewing the operation manual or violating the provisions of this operation manual, and the instrument guarantee will be automatically voided.
- Fix Instruments is not responsible for incidental damage caused by transportation, equipment performance, or mishandling.
- Fix Instruments do not promise the suitability of this equipment for any application not described herein.
- Fix Instruments have tried to make the information in this manual correct. If you find any problems, you are welcome to contact us.
- The contents of this manual are forbidden to be reproduced, copied, or modified without permission.

Contents

Preface 3
Notice 3
1 Safety Instructions 5
1.1 General Safety Instructions 5
1.2 Storage and Transport Safety 5
2 Product Overview 7
2.1 Application 7
2.2 Features 7
3 Dimension & Installation 8
3.1 Dimension 8
3.2 Installation Procedure 8
3.3 Electrical Wiring 8
4 Operation 10
4.1 Back to Operating Mode 10
4.2 L1 Parameters Setting 10
4.3 L2 Parameters Setting 11
5 Order Information 15
6 Digital Communication 16
7 Warranty Terms 17
7.1 Warranty Period 17
7.2 Warranty Coverage 17
7.3 Warranty Certificate 17
7.4 Warranty Channels 17

1 Safety Instructions

1.1 General Safety Instructions

	**Danger!** **Compressed air!** **Any contact with rapid air leaks or pressurized parts of the compressed air system can lead to significant injury or even death.**

- Never exceed the recommended pressure range.
- Make sure air tools & hoses are in good condition.
- Ensure the system is not under pressure when performing repair & maintenance.

	**Danger!** **Power voltage!** **Any contact with the electrical parts of the product can lead to significant injury or even death.**

- Consider all electrical installation-related regulations.
- Any power connections must be disconnected when performing repair & maintenance.
- Any electrical work on the system is to be performed by authorized personnel only.

	**Attention!** **Operating conditions!** **Please check the permissible operating conditions. Any operation beyond these limits could potentially cause measurement failure or even damage the instrument or the entire system.**

- Please review national standards and regulations during the preparation and installation process.
- The product is prohibited for use in explosive areas.
- Ensure the product operates within the allowed working conditions.

	**Caution!** **Product malfunction!** **Incorrect handling and improper transport could cause product malfunction.**

- Unauthorized disassembly of the product is prohibited.
- Use correct and appropriate tools to operate to product.
- In case the product malfunctions, please stop using it and contact customer support.

1.2 Storage and Transport Safety

- Ensure the product is transported at a temperature of -30 ··· +70 °C.
- It is recommended to use the product's original packaging for storage and transport.
- Make sure the product is stored at a temperature of 0 ··· +40 °C.
- Avoid exposure to sunlight and UV rays.
- The storage humidity must be 5 ··· 70 %RH and free of condensation.

2 Product Overview

2.1 Application

Single-circuit digital display controller provides easy operation with measurement precision of 0.3%; 7 types of dimensions available; double four-digit LED display, supporting thermocouple, thermal resistance, voltage (extraction operation available), current (extraction operation available), and transducer input; applicable to measurement of industrial process quantifiers including temperature, pressure, flow, liquid level, and humidity etc. Supporting 2-way alarm, 1-way control output or RS485 communication interface adopting standard MODBUS protocol, 1-way DC 24 V feed output; photoelectric isolation between input, output and power end; 100~240 V AC/DC or 12~36 V DC switch power supply; standard snap-in installation; operating temperature: 0-50℃, relative humidity: 5-85% RH without coagulation.

2.2 Features

- ✓ Class 0.3 measuring accuracy
- ✓ Set-and-forget operation
- ✓ Dual 4-digit LED
- ✓ 24 VDC power supply output

3 Dimension & Installation

3.1 Dimension

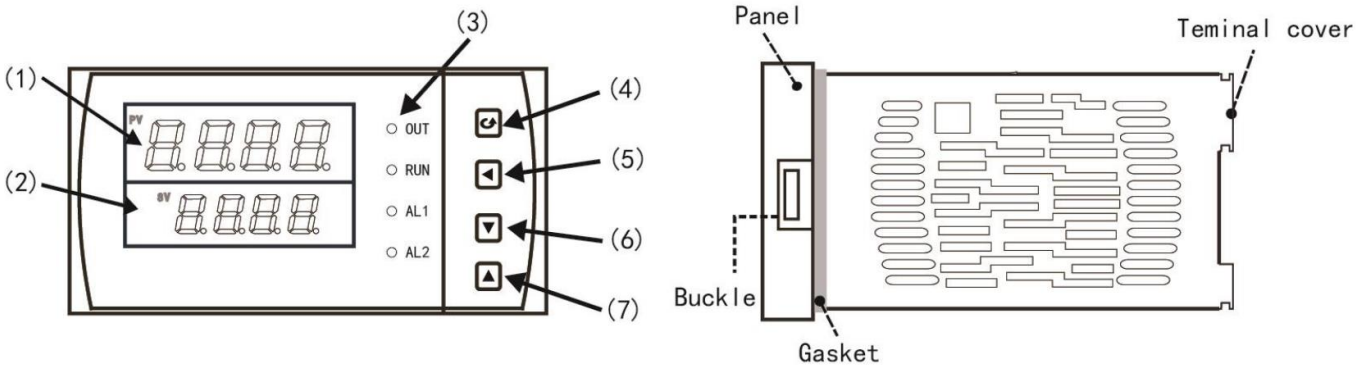

Figure 3-1 Diagram of E1601 0001/3

(1) PV Display (measured value)

(2) SV Display

Display parameters like input type in measurement mode;

Display setting value in parameters setting mode;

(3) Primary alarm (AL1) and secondary alarm indication lamp, running lamp (RUN) and output lamp (OUT);

(4) Confirmation

(5) Shift

(6) Decrease

(7) Increase

3.2 Installation Procedure

How to get the core out of shell

The core of instrument can be taken out from the shell. Push buckles on both sides of the front panel aside, and push the front panel to separate core and shell. For installation, put the core into the shell and lock it with buckles to meet protection standard.

Table 3-1 Instrument Size and Hole Size

Outline Dimensions/ Code	Hole Size
96*48mm (horizontal) / E1601 0001	92*45mm
48*96mm (vertical) / E1601 0003	45*92mm

3.3 Electrical Wiring

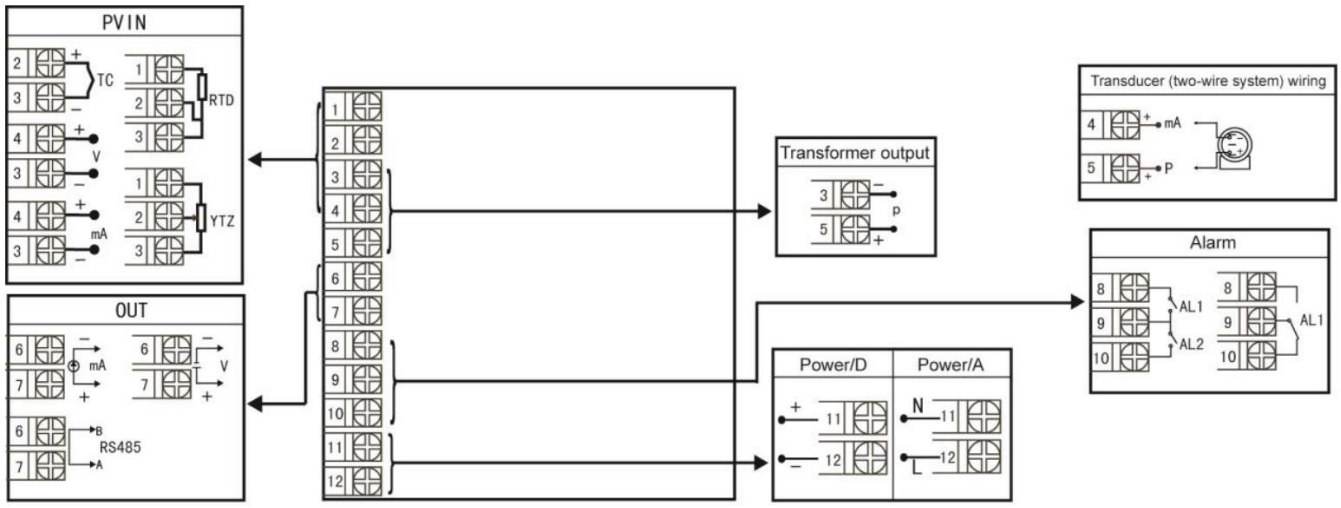

Figure 3-2 Wiring Diagram

Note: The wiring terminal directions at rear cover of horizontal and vertical instrument are different, see **Figure 3-3**.

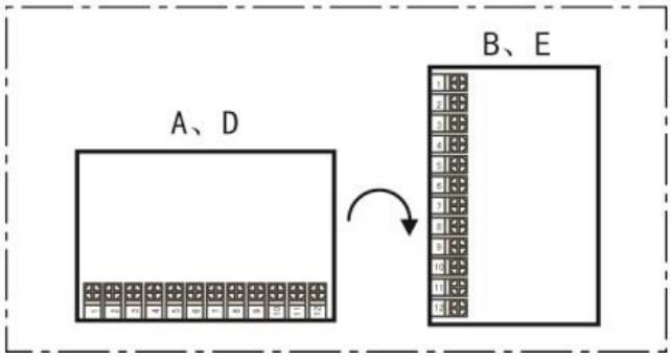

Figure 3-3

Note: In the above diagram, if one group of terminals has different functions, only one of them may be available. Take RS485 for example, communication and transducing output are on the same group of OUT terminals, so only one of them may be selected.

4 Operation

After power-on self-test, the instrument will enter operating mode automatically. Press for parameters setting.

(1) Press and hold for reset;

(2) In any other menu, press and hold for 5 seconds to go back to measurement menu;

4.1 Back to Operating Mode

There are two ways to back to operating mode.

(1) Manual return: in parameters setting mode, hold for 5 seconds to return to real-time measurement mode;

(2) Automatic return: in parameters setting mode, inaction for 60 seconds will bring the instrument back to real-time measurement mode.

4.2 L1 Parameters Setting

In the operating mode, press PV will display LOC and SV will display parameter symbol: press increase/decrease key for setting.

See table below for L1 parameters (parameters in the table correspond to the functions of the ordering model. If a function is not available, the corresponding parameter will not be displayed):

Table 4-1 L1 Parameters

Parameter	Symbol	Name	Setting Range (Value)	Description	Preset Value
Loc	LOC	Parameter lock	LOC=00 LOC≠00，132 LOC=132	No lock (valid for change of L1 parameters) Lock (valid for change of L1 parameters) No lock (valid for change of L1 and L2 parameters)	00
AL1	AL1	Primary alarm value	-1999 ~ 9999	Setting value for primary alarm	50 or 50.0
AL2	AL2	Secondary alarm value	-1999 ~ 9999	Setting value for secondary alarm	50 or 50.0
AH1	AH1	Return difference of primary alarm	0 ~ 9999	Return difference value of primary alarm	02 or 2.0
AH2	AH2	Return difference of secondary alarm	0 ~ 9999	Return difference value of secondary alarm	02 or 2.0

SdI S	SdiS	SV display screen content in measurement mode	SdiS=0	Input graduation	0
			SdiS=1	Primary alarm value	
			SdiS=2	Secondary alarm value	
			SdiS=4	No content	
			SdiS=5	PH	
			SdiS=6	℃	
			SdiS=7	No content	

4.3 L2 Parameters Setting

In the operating mode, press , then PV will display LOC and SV will display parameter symbol: press increase/decrease key for setting. Loc=132 and hold to enter L2 parameters interface.
See table below for L2 parameters (parameters in the table correspond to the functions of the ordering model. If a function is not available, the corresponding parameter will not be displayed):

Table 4-2 L2 Parameters

Parameter	Symbol	Name	Setting Range (Value)	Description	Preset Value
Pn	PN	Input graduation	0~35	Set input graduation type (see L2 Parameters Pn Lookup Table)	27
dP	DP	Decimal point	dp=0 dp=1 dp=2 dp=3	No decimal point Ten decimal places (XXX.X) One hundred decimal places (XX.XX) One thousand decimal places (X.XXX) (Note: Instrument type 1104 does not have this parameter)	0
AL1	ALM1	Primary alarm mode	ALM1=0 ALM1=1 ALM1=2	No alarm Lower-limit alarm Upper-limit alarm	2
AL2	ALM2	Secondary alarm mode	ALM2=0 ALM2=1 ALM2=2	No alarm Lower-limit alarm Upper-limit alarm	1
FK	FK	Filter coefficient	0-4	To prevent flopping of displayed value	0
Addr	Addr	Equipment code	0-250	Setting of equipment code of the instrument in communication	1
bAUd	Baud	Baud rate	1200	Baud rate: 1200bps	9600

			2400 4800 9600	Baud rate: 2400bps Baud rate: 4800bps Baud rate: 9600bps	
Pb	Pb	Display input zero shift	Full range	Set and display shift of input zero	0
PK	PK	Display input range scale	0-1.999 times	Set and display amplification scale of input range	1.000
oUL	OUL	Lower limit of measurement range of transducing output	Full range	Set lower limit of measurement range of transducing output	0
ouH	OUH	Upper limit of measurement range of transducing output	Full range	Set upper limit of measurement range of transducing output	1000
PL	PL	Lower limit of measurement range	Full range	Set lower limit of measurement range of input signal	0
PH	PH	Upper limit of measurement range	Full range	Set upper limit of measurement range of input signal	1000
Cut	CUT	Small measuring signal cutting	0.000-1.000	This function only works for voltage/current extraction signal; when input signal<lower limit of input signal+(upper limit of input signal-lower limit of input signal>*set percentage, the instrument displays lower limit of measurement range.	0.000
out	OUT	Transducing output type	Signal type 0-20mA 0-10mA 4-20mA	Parameter symbol 20mA 10mA 4-20	Signal type 0-5V 1-5V No output Parameter symbol 0-5V 1-5V 0mA	4-20mA
T-Pb	T-Pb	Zero correction at cold junction	Full range	Set zero correction value at cold junction	0

r-PE	T-Pk	Gain correction at cold junction	0-1.999 times	Set gain correction value at cold junction	1.000
o-Pb	o-Pb	Zero shift of the transmitting output	Full range	Setting of the zero shift of the transmitting output	0
o-PE	o-PK	Magnification of the transmitting output	0-1.999 times	Setting of the magnification of the transmitting output	1.000
FSEL	FSEL	Power frequency selection	FSEL=0 FSEL=1	The power frequency is 50 Hz. The power frequency is 60 Hz.	0
dISt	DIST	Sample filtering	1 ~ 5	Setting of the sampling filter: Low value leads to faster sampling; larger value leads to slower sampling.	5

Table 4-3 L2 Parameters Pn Lookup Table

Degree no .Pn	Signal Type	Measuring Range	Degree no .Pn	Signal Type	Measuring Range
0	Thermocouple B	400 ~ 1800℃	18	Remote Resistance 0 ~ 350Ω	-1999 ~ 9999
1	Thermocouple S	0 ~ 1600℃	19	Remote Resistance 30 ~ 350Ω	-1999 ~ 9999
2	Thermocouple K	0 ~ 1300℃	20	0 ~ 20mV	-1999 ~ 9999
3	Thermocouple E	0 ~ 1000℃	21	0 ~ 40mV	-1999 ~ 9999
4	Thermocouple T	-200.0 ~ 400.0℃	22	0 ~ 100mV	-1999 ~ 9999
5	Thermocouple J	0 ~ 1200℃	23	Internal Reserved	-1999 ~ 9999
6	Thermocouple R	0 ~ 1600℃	24	Internal Reserved	-1999 ~ 9999
7	Thermocouple N	0 ~ 1300℃	25	0 ~ 20mA	-1999 ~ 9999
8	F2	700 ~ 2000℃	26	0 ~ 10mA	-1999 ~ 9999
9	Thermocouple Wre3-25	0 ~ 2300℃	27	4 ~ 20mA	-1999 ~ 9999
10	Thermocouple Wre5-26	0 ~ 2300℃	28	0 ~ 5V	-1999 ~ 9999
11	Thermocouple Cu50	-50.0 ~ 150.0℃	29	1 ~ 5V	-1999 ~ 9999
12	RTD Cu53	-50.0 ~ 150.0℃	30	Internal Reserved	-1999 ~ 9999
13	RTD Cu100	-50.0 ~ 150.0℃	31	0 ~ 10V	-1999 ~ 9999
14	RTD Pt100	-200.0 ~ 650.0℃	32	0 ~ 10mA square	-1999 ~ 9999
15	RTD BA1	-200.0 ~ 600.0℃	33	4 ~ 20mA square	-1999 ~ 9999
16	RTD BA2	-200.0 ~ 600.0℃	34	0 ~ 5V square	-1999 ~ 9999
17	Linear resistance 0 ~ 500Ω	-1999 ~ 9999	35	1 ~ 5V square	-1999 ~ 9999

Note: how to fast switch graduation: change L2 parameter Pn; move decimal place to 1000 or 100, press increase/decrease key to switch first place and last place of graduation; when the decimal point is at 10, switch graduation at unit of ten; when the decimal point is at unit place, switch graduation at unit of one.

5 Order Information

Table 5-1 E1601 0001/3 Order Information

Model	Description
E1601 0001	Panel mount digital display meter, 96 x 48 mm (Horizontal), With 24V 100mA power output
E1601 0001A	Panel mount digital display meter, 96 x 48 mm (Horizontal), With 24V 100mA power output, 4~20 mA output
E1601 0003	Panel mount digital display meter, 48 x 96 mm (Vertical), With 24V 100mA supply output

6 Digital Communication

Digital communication allows communication between the instrument and PC/PC network. MODBUS RTU protocol has been adopted. Please visit www.modbus.org for information about the protocol. It's not suggested to non-separated interface board, as it may cause disturbance or influence communication for earth potential difference. Shielded twisted pair shall be used as the lead.

Refer to **Instrument Communication Manual** for specific parameters.

7 Warranty Terms

Dear Customer：

Thank you for choosing FixInst products. We have always been committed to providing our customers with high-quality, high-performance instrumentation products to meet your needs in a variety of application scenarios.

In order to ensure your satisfaction after purchasing the product, please read the following after-sales terms and conditions carefully, so that you can correctly and efficiently apply for the warranty service when needed.

7.1 Warranty Period

12 months from product shipment.

7.2 Warranty Coverage

1、Warranty period due to the product's own problems caused by performance failures, confirmed by the seller's test, will provide free maintenance services; human misuse or due to the site of the product working conditions and the product type does not match the damage caused by the exceptions.

The following are not covered by warranty：

① Product damage caused by force majeure factors (such as natural disasters, etc.).

② Products due to natural wear and tear, rough handling caused by the appearance of damage, scratches or wear (such as impact caused by the loss of paint, surface bumps, etc.).

③ Damage caused by disassembling the product without the Company's consent or unauthorized changes in the use of the product.

④ Damage to the product caused by repair or modification not authorized by the company.

⑤ Damage caused by improper use of the product by the user or operation in violation of the instructions.

⑥ Products purchased from unauthorized sources.

2、For non-warranty or non-warranty product failure, we will provide paid repair services, the specific cost depends on the actual situation.

7.3 Warranty Certificate

Users are required to provide valid proof of purchase (e.g., invoice, receipt, etc.) and product serial number when applying for warranty service.

7.4 Warranty Channels

Users can apply for after-sales warranty service by filling out our after-sales treasure system or contacting customer service personnel.

https://www.fix-instruments.com/h-col-143.html

Experts in Compressed Air &
Fluid Measurement

Fix Instruments (Shenzhen) Co., Ltd.

A: 2/F,Middle Block, Building B, TG Science Park, No. 2 Luozu Industrial Avenue, ShiYan Subdistrict, Baoan District, Shenzhen, GuangDong, China

M: sales@fix-instruments.com

P: 0755-2359-1123