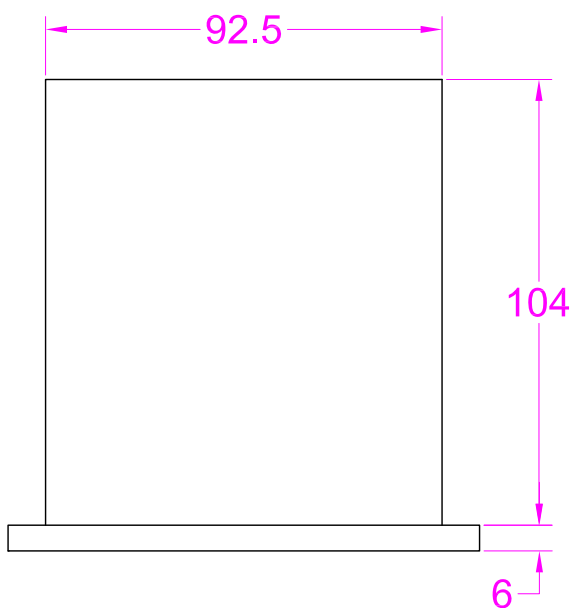
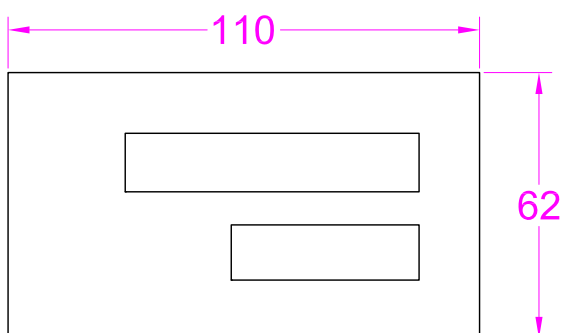
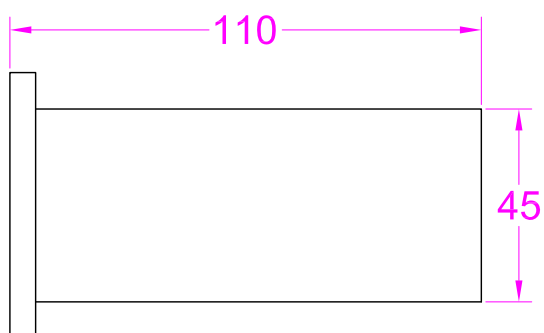


User manual of indicator FXT

Index

1---Dimenions -----	1
2---Brief introduction-----	2
2.1 Technical parameters-----	2
2.2 Panel introduction-----	2
2.3 Connection introduction-----	2
3---Parameters interpretation-----	3
3.1 Calibration parameters-----	3
3.2 Parameters setting-----	4
4---Calibration-----	5
5---Analog output adjustment-----	6
6---Communicaion protocol-----	6
6.1 CB920 communicaion-----	6
6.2 MODBUS communication-----	8
7---Ordering code-----	9

1---Dimensions



2---Brief introduction

2.1 Technical parameters

1. Working temperature: $-20\ldots+70^{\circ}\text{C}$
2. Relative humidity: $\leq 90\%$
3. Power supply: $185\sim 265\text{V AC}$, $50\text{Hz}/60\text{Hz}$
4. Combined error: $\leq \pm 0.1\%$
5. Output voltage: 9V DC
6. Output port: 3 relays, load $10\text{A}/250\text{V}$ or $10\text{A}/30\text{V}$
7. Communication interface: RS232 or RS485
8. Analog output: $4\text{-}20\text{mA}$ or $0\text{-}10\text{V}$
9. Display range: $-9999\sim 50000$

2.2 Panel introduction

1. U: Effective light of upper limit
2. M: Effective light of middle limit
3. D: Effective light of lower limit
4. **Set** : Enter into calibration. As confirm key when setting
5. **Ent** : Enter into parameter setting. As jump key when setting
6. **↗** : Adding number when setting. Manual peak resetting
7. **↖** : Changing position when setting. Manual resetting button

2.3 Connection instruction



The upper line

- | | | | |
|----------------|----------------|-------------|--------------------|
| 1--Shield | 2--Excitation- | 3--Signal- | 4--Signal+ |
| 5--Excitation+ | 6--Null | 7--RS485-B- | 8--RS485-A+ |
| 9--RS232/RXD | 10--RS232/TXD | 11--GND | 12/13/14--AC power |

The lower line

- | | |
|-----------------------------|--|
| 1--Analog output+ | 2--Analog output- |
| 3/4--Null | 5/6--Upper limit relay(NO) |
| 7/8--Middle limit relay(NO) | 9/10--Lower limit relay(NO) |
| 11--Null | 12~15--three inputs, reserved function |

3---Parameters interpretation

3.1 Calibration parameters

Code	Parameter	Interpretation	Setting range	Default value
DD	division	Minimum weight value of indicator can distinguish	1/2/5	1
POINT	Decimal	Select decimal position	0~4	0
ADS	A/D transfer rate	0 -- the slowest 13 -- the fastest	0~13	5
FLT	Filtration grade	0 -- the lowest 31 -- the highest	0~31	25
SPAN	Load cell capacity	The sum of sensor capacities if several load cells are connected	0-50000	5000
COO	Zero point calibration	Add no weight(or weight you want to take it as 0) to the load cell	Press  after stabilized	
CSP	Full scale calibration	Add 70~100% of F.S weight to the load cell	Press  to set the the main screen into the value you want under loaded weight,press  after stabilized	
Pass	Press 			

3.2 Parameters setting

Code	Parameter	Interpretation	Setting Range	Default Value
ALA1	Zero clearing range	For manual resetting	0~59999	2
ALA2	Upper limit value		0~59999	5500
ALA3	Middle limit value		0~59999	4000
ALA4	Lower limit value		0~59999	2500
ALA5	Peak value auto resetting range	Resetting range for sub-screen, if peak value is higher than set value, it will hold until next peak	0~59999	1000
ALA6	Judgement way of upper/middle/lower limit value	The higher digits control H/M/L limit respectively. 1/0 means the corresponding relay will be activated if measured value is higher/lower than set value	0000~1111	0000
ALA6.1	Output options for upper/middle/lower limit	0-Level output 1-Pulse output	0/1	0
ALA6.2-ALA6.4	Output pulse time of upper/middle/lower limit	1-0.1s, 199-19.9s, when ALA6.1=1, the relay will output a set-time pulse signal when activated, then close	0~199	5
ALA7	Analog output setting	Taking 0-10V analog output for example, when ALA7=1, it will output 0V at negative full scale, 5V under 0 loading, 10V at positive full scale	0/1	0
ALA7.1	Analog output adjustment at zero		0~3999	650
ALA7.2	Analog output adjustment at full scale		0~3999	3250
ALA8	Auto resetting range	Measured value within resetting range & Lasting for resetting time, indicator will auto reset	0~59999	0
ALA9	Auto resetting time		0-9	9
ALA10	Power-on zero clearing time	Indicator will do zero clearance every time power on	OFF, 1~9	OFF

Code	Parameter	Interpretation	Setting Range	Default Value
SC	Communication protocol	0-CB920 continuous 1-CB920 order 3-MODBUS continuous 4-MODBUS RTU	0/1/2/3	1
BAUD	Baud rate		600~19200	9600
ST	Data transmission rate	The number of data transmission under continuous mode or automatic mode	20/33/40/50/66/100	100
ADDR	Indicator address		00~99	01

In setting and calibration status, the sub screen displays the parameter, the main screen displays the parameter value.  and  is used to change the parameter value. Press  to confirm the parameter value and jump to the next parameter until all the parameters are set.

4---Calibration

- 1--Press  at measuring state, it will display CAL, press  to set the main screen into 52000 by using  and . Then press .
- 2--Set parameters DD/POINT/ADS/FLT/SPAN according to sheet 3.1.
- 3--When it comes to COO, add no weight (or some weight you want to take is as 0) onto the load cell, press  after the displayed inner code is stable.
- 4--When it displays CSP, add 70~100% of F.S. weight onto the load cell, press  and set the main screen into the weight you added by using  and , press  to confirm after stabilized.
- 5--Press  when see PASS to get back to measuring state.

5---Analog output adjustment

Using a multimeter to measure the analog output, calibrating the zero output first, add no weight to the load cell and adjust parameter ALA7.1 to get expected output. Then add full scale weight to the load cell and adjust parameter ALA7.2 to get expected output.

6---Communication protocol

6.1 CB 920 communication

Choose communication protocol by setting parameter SC. Two working modes for CB920 communication.

6.1.1 Continuous output mode

Set SC as 0. At this mode, when the indicator is on measuring state, it will automatically send real-time measured value to serial port. For example: current display +123456, the indicator will send the data in the form:

ST,GS,+0123456[OD][OA]

6.1.2 Command output mode

Set SC as 1, at this mode, the meaning of the return codes that indicator responds to upper computer is as follows:

!+[OD][OA]----- Command performed correctly

?+[OD][OA]----- Can't perform command

#+[OD][OA]----- Checksum is wrong

The communication has following commands:

1---Command of reading data

Upper Computer: READ[OD][OA]

Controller: ST,GS,+0123456[OD][OA]

OL==over load

ST==stable

US==unstable

NT==Net weight

GS==Gross weight

The above “+” means positive, it also can be “-”.

The following '+' is connection symbol, just for easy to check the command structure, doesn't exit at actual command.

2---Set BAUD

Upper computer: BAUD + BAUD CODE (1char) +[OD][OA]

BAUD CODE and corresponding baud

1--->1200 2--->2400 3--->4800 4--->9600 5--->19200

Controller: !+[OD][OA]

?+[OD][OA]

3---Operation at zero

3.1. Read zero value

Upper computer: ZERO+[OD][OA]

Controller: X+[OD][OA]

X: zero value of present indicator

3.2. Set zero value

Upper computer: ZERO+ “Space”+ON+[OD][OA]

Controller: !+[OD][OA]

?+[OD][OA]

3.3. Clear zero value

Upper computer: ZERO+ “Space” +OFF+[OD][OA]

Controller: !+[OD][OA]

?+[OD][OA]

4---Command mode

Upper Computer: CONT+[OD][OA] set as continuous mode

Upper Computer: PROG+[OD][OA] set as command mode

Controller: !+[OD][OA]

?+[OD][OA]

5---Weight output mode

Upper Computer:

DSEL + “Space”+ AUTO + [OD][OA] automatic serial port output

DSEL + “Space”+ GROSS + [OD][OA] gross weight output

DSEL + “Space”+ NET+[OD][OA] net weight output

Controller: !+[OD][OA]

?+[OD][OA]

6---Read and write decimal position

Upper Computer: RDDP+ “Space”+1char+[OD][OA]

Controller: !+[OD][OA]

?+[OD][OA]

Note: when indicator no. is 0, there is always answer for any command. If answer is RDDP+ “Space”+1+[OD][OA], it means that there is 1 digit after decimal

6.2 MODBUS communication

6.2.1 MODBUS Continuous Mode

Set SC as 2, indicator will continuously output measured value

IDD	Read	NO. Of bytes	Word H	Word L	Verification H	Verification L
XX	03	2	XX	XX	CRCH	CRCL

6.2.2 MODBUS RTU communication protocol

MODBUS is master-slave form communication, the indicator work as slave and called by the upper computer. Data format is RTU, support “03” and “06” function.

Set SC as 3 to use MODBUS RTU communication protocol.

1---Read data

The upper computer (Send):

IDD	Read	Register address H	Register address L	Register qty. H	Register qty. L	Verification H	Verification L
XX	03	XX	XX	XX	XX	CRCH	CRCL

Indicator(Send back):

IDD	Read	No. of bytes	Word H	...	Word L	Verification H	Verification L
XX	03	XX	XX	...	XX	CRCH	CRCL

2---Write data

The upper computer(Send):

IDD	Read	Register address H	Register address L	Word H	Word L	Verification H	Verification L
XX	06	XX	XX	XX	XX	CRCH	CRCL

Indicator (Send back):

IDD	Read	Register address H	Register address L	Word H	Word L	Verification H	Verification L
XX	06	XX	XX	XX	XX	CRCH	CRCL

If the register address sent to indicator is incorrect or CRC verification is wrong, the indicator won't send any data back

Indicator parameters map to MODBUS (Function address is 2 bytes decimal number)

03 --- read 06 --- write

7---Ordering code

Part No.	Communication		Analog output		3 relays
	RS232	RS485	4-20mA	0-10V	
FXT1		•			•
FXT2	•				•
FXT3		•	•		•
FXT4	•		•		•
FXT5		•		•	•
FXT6	•			•	•