

FV12 Torque transmitter use instructions

1. brief introduction:

The instrument uses the ARM kernel processor as the main controller. Connecting to the dynamic torque sensor with the signal output as the frequency, you can quickly read the current torque value, the default torque frequency acquisition speed is 100 times per second, with an OLED screen, showing the current torque and speed value, and can also display the current input frequency. Support torque to current or voltage with speed. Supports the RS485 output. The RS485 can be directly connected to our UPC to obtain the curve data, or it can also be incorporated into the RS485 network using the MODBUS RTU. Read the value of torque and rotational speed in real time. Current and voltage output: 4-20MA, 4-12-20MA, 0-10V, 0-5-10V, + -5V.



2. technical parameter:

work environment certainty of measurement	temperature : -20-55℃	show	OLED (128*64)
	humidity : 20-90%RH	supply voltage	For 12-30V, 24V power supply of its current <120MA
picking rate	±0.05%F.S	consumed power	Less than or equal to 2.5W
levels of protection	100 Every second	Torque display range	-99999~99999
Torque input signal	IP65(Front panel protection)	RPM display range	0~99999
work environment	3000~18000Hz	Speed input signal	1—20000Hz

3. material particulars:

- Do not use life-related devices such as atomic energy devices and medical devices.
- The instrument is equipped with the main power supply fuse, but please also install the fuse and other safety circuit breakers in the main power supply circuit.
- Please observe the parameters and precautions recorded in the instructions.
- Do not use it in flammable and explosive liquid or gas places.
- Do not remove or transform the product, which may cause electric shock, fire and other safety accidents.
- The installation, commissioning and maintenance of the product shall be conducted by qualified engineering personnel.
- If there is any change in this manual, it will be corrected at any time, and the latest version of the manual shall prevail. If you have any questions, please contact our company as soon as possible.
- The Company is not liable for any direct or indirect loss other than the product itself.

4. pay attention to:

- Do not connect the signal output input terminal directly to the AC220V power supply.
- Please mark the normal connection corresponding terminal line according to the meter.
- Connect the signal output input terminal without the power supply to avoid electric shock.
- Note that DC24V power.
- Please note that carefully confirm that the terminal line is correct before turning the power on.

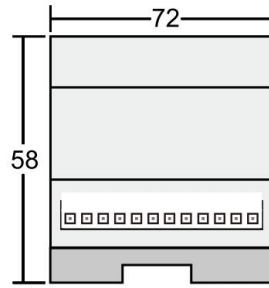
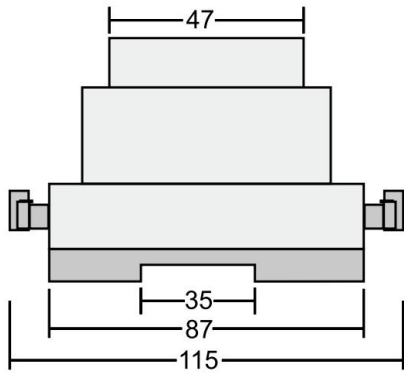
5. Keynote introduction

K1: Set the menu interface switch, and set the data display interface switch.

K2: Switch the setting parameters and switch the parameter setting bits.

K3: Set the parameter current position and zero clearance torque value.

6. Overall dimension and opening size



Cable specification: 0.3-0.5mm² multiple flexible cable
Shark tooth E0508 tube type pre-insulated end



7. Parameter description:

Order number	Name	Span	default value	mailing address	Adapter to the communication function code	explain
01	digital filtering	1~99	30	04H	0x03 , 0x10	When the torque measurement fluctuation is large, increase the setting value appropriately. The larger the setting value, the slower the display refresh speed is.
02	Torque degree	0~4	0	06H	0x03 , 0x10	Setting to 0 indicates a minimum degree of torque change of 1. 1: Represents the change amount of 2.2:5 Changes.3:10 Changes.4:20 Changes.
03	Power zero	000000~full range	0	08H	0x03 , 0x10	The torque zero is set automatically established after the instrument is charged.
04	display mode	0~99	Factory commissioning	0AH	0x03 , 0x10	Modify the reserved location.
05	Torque range	0~99999	Factory commissioning	0CH	0x03 , 0x10	Actual range of torque.
06	Torque decimal	0~4	Factory commissioning	0EH	0x03 , 0x10	Number of torque decimal places.
07	Torque zero frequency	00000~99999	Factory commissioning	10H	0x03 , 0x10	Torque sensor zero-point frequency value.
08	Torque frequency upper limit	00000~99999	Factory commissioning	12H	0x03 , 0x10	Frequency value corresponding to the positive full range.
09	Lower limit of torque frequency	00000~99999	Factory commissioning	14H	0x03 , 0x10	Frequency value corresponding to the negative full range.
10	Torque direction	0~1	0	16H	0x03 , 0x10	Positive and negative switching of torque values
11	Speed decimal	0~1	0	18H	0x03 , 0x10	Number of rotational speed decimal places.
12	Single circle pulse	000~999	Factory commissioning	1AH	0x03 , 0x10	The torque sensor turns a circle, the number of pulses at the rotational speed.
13	Change to send way	0~1	0	1CH	0x03 , 0x10	The 0 It means that the transmission output is not directional.1 Represents that the transmission output has a direction, when the zero point is generally greater than 0.
14	Torque transfer zero point	0~17999	Factory commissioning	1EH	0x03 , 0x10	The torque value is 0.
15	Torque is full	0~17999	Factory commissioning	20H	0x03 , 0x10	Output point of the transmission when the torque value is the range maximum value.

16	Speed range	0~99999	6000	22H	0x03 , 0x10	Maximum rotational speed measuring range.
17	Speed to zero	0~17999	Factory commissioning	24H	0x03 , 0x10	The transmission and output point when the speed value is 0.
18	The speed changes to full	0~17999	Factory commissioning	26H	0x03 , 0x10	Output point of the transmission when the speed value is the maximum range value.
19	Communication mode	0~1	0	28H	0x03 , 0x10	The communication mode is 1, which means that the output mode is modbus_RTU, and the communication mode is 0, which means that the output mode is ASCII active upload
20	parity check bit	0~2	0	2AH	0x03 , 0x10	0 Is no check bit, 1 odd, 2 parity
21	data bit	0~1	0	2CH	0x03 , 0x10	0 For 8 data bits and 1 means 9 data bits
22	stop bit	0~1	1	2EH	0x03 , 0x10	RS485 communication stop, 1 indicates stop 1 and 0 indicates stop 2.
23	mailing address	0~128	1	30H	0x03 , 0x10	The Modbus_RTU communicates with the current meter address.
24	Baud rate	0~4	0	32H	0x03 , 0x10	RS485 Communications Baud rate.0: Turn off the communication, 1:4800. 2:9600. 3:19200. 4:38400
25	High and low in the front	0~1	0	34H	0x03 , 0x10	0 High means the top, 1 means the top.
	zero clearing			36H	0x05 , 0x10	Establish the current torque zero, communication write 00
	factory data reset			38H	0x05 , 0x10	Return to the factory parameters, communication write 00
	Real-time torque			00H	0x03	Real-time torque value.
	Real-time speed			02H	0x03	Real-time speed value.

Note: (The parameter address offset value is 4000, and a multiple of 4000 increase can also read the current value directly.)

8. Basic operation instructions:

Modify parameters: Long press for a second to enter the menu, press again, you can switch back and forth in several parameter interfaces. Press the key can switch the modification bit of the current parameter, and the long press can jump around the parameters in the current display interface. Press key to modify the current bit of the current parameter. After the modification is completed, you can directly jump back with the key to the main interface, and automatically save the modified parameters.

Displays the interface switch: There are three display interfaces, the main display interface shows the current torque speed, the second display interface shows the torque frequency, the third display interface shows the speed frequency, and the three display interface can switch around after pressing the key in the main interface.

Modify numerical filtering: When customers need more stable torque values or react to faster torque values, they can turn the digital filtering up or down. The larger the digital filtering, the more lagging and stable the torque value changes. When the digital filter value is changed to 1, the torque value is the fastest reaction speed, at 100 times per second. Curves can be collected in real time using MODBUS RTU or computer protocol.

Torque value zero: Press the long key at the main interface to establish the zero point.

factory data reset: This table power time is pressed on the key to restore the factory setting.

9、Newsletter profile

The instrument data is 32 bits, with the high level before and the low level after, please read the multiple of 2. This instrument is equipped with RS485 interface, which can use the company autonomous protocol and modbus RTU protocol. The communication mode set to 0 indicates the company autonomous protocol, which is applicable to connect the company upper computer. Communication mode set to 1 indicates using the modbus RTU protocol. Changing the port rate needs to take effect after a restart.

Communication adopts the instrument active upload protocol: The protocol has six bytes, D0~D5, D0D1 two bytes for torque, D2D3 two bytes for rotational speed, and D4D5 for the CRC16 check bit of the first four bytes of data. The highest position of D2 indicates positive or negative torque value, and 1 indicates negative torque value.0 Is a positive number. Depending on the Baud rate, the protocol uploads data at different speeds, 9600 —— 50 times, 19200 —— 19200, and 200 times 38400 —— per second.

Communication uses the MODBUS-RTU protocol: Address domain + functional domain + data domain + check domain
functional domain :

function code	meaning	action
0x03	Read the data register	Read the data register values
0x05	Modify the amount of switch	Quickly modify the switch quantity value

0x10	Modify the data register	Override the multibit data register value
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(Note: 0x05 function code only supports reset and recovery operation. When the read torque data is negative, the data is the secondary complement code, and the number is reduced by 1, which is the absolute value)

for instance

transmit by radio: 01 03 00 00 00 04 44 09

Return data: 01 03 08 FF FF FF FF 00 00 00 00 D5 C7 It indicates a torque of -1 and a speed of 0.

Read the data register

address	function	Data start reg hi	Data start reg lo	Data # of Reg hi	Data # of Reg lo	Crc-16 lo	Crc-16 hi
0x01	0x03	0x00	0x00	0x00	0x02	CRC0	CRC1

Modify the amount of switch

address	function	Data start reg hi	Data start reg lo	Data # of Reg hi	Data # of Reg lo	Crc-16 lo	Crc-16 hi
0x01	0x05	0x00	0x00	0xFF	0x00	CRC0	CRC1

Modify the data register

address	function	Data start reg hi	Data start reg lo	Data # of Reg hi	Data # of Reg lo	Byte count	Value DATA1	Value DATA2	Value DATA3	Value DATA4	Crc-16 lo	Crc-16 hi
0x01	0x10	0x00	0x00	0x00	0x02	0x04	0x00	0x00	0x03	0xE8	0xF3	0x22

address: From the machine address

function: function code

Data start reg hi: Register start address is high bytes

Data start reg lo: Register Start Address Low bytes

Data # Of reg hi: Read the register number of high bytes

Data # Of reg lo: Read the register number is low in bytes

Crc -16 lo: Check code low byte

Crc -16 hi: Calibration code high byte

Note: The number of bytes sent or received once cannot exceed 32.

10、 Transform output

This instrument is standard equipped with current and voltage transmission output, transmission output resolution of 1 / 16384, output mode of 4-20MA, 4-12-20MA, 0-10V, 0-5-10V, ± 5V.

Parameter introduction

Transmission mode: Transmission mode set output mode is data directional output or absolute value output. The transmission mode 0 means the transmission to the absolute value mode output, and the transmission mode 1 indicates that the transmission has a directional output, which is generally used on the 0-5-10V transmission. The directional output is only effective when the transmission source is to torque.

Transmission zero point: The change of the transmission zero point will lead to the change of the zero-point output voltage and the output current, which has been adjusted to the appropriate value before leaving the factory.

Supply capacity: Changing the "supply capacity" will result in the change of the maximum output voltage and the maximum current, with a maximum supply capacity of 16383.

Range: the torque sensor range or the speed range, modify the range can change the change rate of the transmission output, corresponding to the current used torque sensor range.

11、 Calibration Settings

The first step is to input the current sensor range, with 20NM for example, a range set to 2000 and a display accuracy of 20.00.

Step 2 Long press the key to establish the current torque zero. Or enter the parameter to modify the torque zero frequency

The third step is the frequency of the sensor's full range output, i. e., the upper and lower limit frequencies, in Hz. This calibration operation is complete.

12、 Connection definition

