

Load Cell Amplifier/Transmitter User Manual

ATO-LCTR-OAR-DY610



I. Specification

Model	ATO-S-LCTR-DY610
Accuracy	$\pm 0.2\%FS \pm 1$ byte
Input signal	$0 \sim \pm 20mV$
Excitation voltage for load cell	DC 5-15V
Output signal	DC 4-20mA/DC 0-10V/RS485 (Modbus-RTU)
Sampling rate	20 times/s, 80 times/s
Power supply	DC 12-30V
Power consumption	< 1W
Display	6 digit red LED, -99999~999999

II. Key Instruction

- K1 key: Set key
- K2 key: Shift key or confirm key
- K3 key: Tare key or add key

III. Operation Instruction

1. Press K1 key for more than two seconds to display "SL". No load is applied, long press K2 key, use K2 key to shift, and use K3 key to modify the current digit value. And then zero calibration can be performed.
2. Press K1 key to display "SH". Long press K2 key, use K2 key to shift, and use K3 key to modify the current digit value. And then load calibration can be performed. (The load should be at least half of the full scale. Enter the corresponding display value, and press and hold the K1 key to complete the calibration. If it's not accurate, you can calibrate once again.)

3. Press K1 key to display "FIL" and set degree of filtering. The degree can be set from 1 to 99. The bigger the value, the slower the display speed. This value affects the stability, the larger the value, the lower the stability.
4. It's the same operation for "Sd", "SZE", "AS", "Id", etc.
5. Restore factory parameters: power off, long press the K2 key, keep unchanged, then power on, wait more than 2 seconds, then release the key K2.
6. Under display interface, long press K2 key will display current AD value, long press K2 key again to exit.

IV. Parameter List

Number	Code	Content	Range	Communication address (decimal)	Communication function code
01	SL	Zero calibration value	00000		
02	SH	Load calibration value	More than half of full scale		
03	FIL	Digital filtering	1~99	04H	0x03 , 0x10
04	Sd	Decimal point position	0-5	06H	0x03 , 0x10
05	SZE	Power-on reset zero	0: Don't reset zero 1: Reset zero	08H	0x03 , 0x10
06	AS	Collecting speed	0:	0AH	0x03 , 0x10
07	Id	Division value	1, 2, 5, 10, 20	0CH	0x03 , 0x10
08	CZ	Zero calibration	0-16382	0EH	0x03 , 0x10
09	CF	Full scale calibration	0-16383	10H	0x03 , 0x10
10	Cr	Transmitting range calibration	Corresponding to the actual load cell range	12H	0x03 , 0x10
11	CP	Communication mode	0: Active upload 1: Modbus	14H	0x03 , 0x10
12	CA	Communication address	1-128	16H	0x03 , 0x10
13	bd	Communication baud rate	0: 0 1: 4800 2: 9600 3: 19200	18H	0x03 , 0x10
14	SP	Communication stop bit	1: Stop bit 1 2: Stop bit 2		
15	HL	High and low switch	0: High bit first 1: Low bit first		
		Current weight value	Read current weight value	00H	0x03
		Clear display value	(When 0x05 , 0x10 function code, write FF)	00H	0x05 , 0x10
		Restore factory setting	(When 0x05 , 0x10 function code, write FF)	03H	0x05 , 0x10

V. Communication Instruction

Communication format adopts MODBUS-RTU format: address domain + function domain + data domain + verification domain

Functional domain:

Function code	Definition	Action
0x03	Read data register	Read data register value
0x05	Modify switch value	Quickly modify switch value
0x10	Modify data register	Rewrite multi-bit data register value

Note: Function code 0x05 only supports "clear display value" and "restore factory setting". Function codes 0x03 and 0x10 support the rest of parameters.

Read 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	0x01	CRC0	CRC1

Modify switch value:

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 data register:

Address	Function	Data start reg hi	Data start reg lo	Data # of Reg hi	Data # of Reg lo	Byte count	Value DATA 1	Value DATA 2	Value DATA 3	Value DATA 4	Crc-16 lo	Crc-16 hi
0x01	0x10	0x00	0x00	0x00	0x02	0x04	0x00	0x00	0x03	0xE8	0xF3	0x22

VI. Transmitting output

1. The transmitting output resolution is 1/16384. Current output is 4-20mA. Voltage output is 0-10V.
2. Transmitting zero: Change the transmitting zero point will cause the change of zero point output voltage and output current. It has been adjusted to appropriate values before leaving the factory.
3. Transmitting full scale: Change the "transmitting full scale" will result in a change in the maximum output voltage and maximum output current. The maximum transmitting full scale is 16383.
4. Transmitting range: The default value is the current load cell range. Modify the transmitting range can change the rate of change of the transmitting output. Take a 50KG load cell as an example. When the transmitting range is adjusted to 10kg, the output voltage is full-scale output when the load cell is loaded a weight more than 10kg. But it is not recommended to use transmitter in over-range.