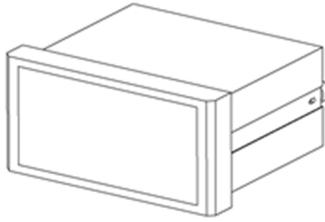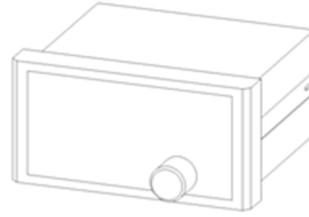# Q03H01A/Q03H02A Instruction Manual for Signal Generator with Feedback Voltage V1.02

Key - press version model: Q03H01A

Knob version model: Q03H02A

1. Product Introductio

1.1 Voltage signal input/output with integrated digital display generator.

1.2 Universal power supply supporting both AC and DC.

1.3 One-channel relay alarm function triggered when feedback input meets set conditions.

1.4 On-site manual adjustment + RS485 remote control.

1.5 Applications: Valve opening control, frequency converter control, etc.

1.6 Key-press version: Advantages include better panel waterproofing, but key stickers may wear with frequent use.

1.7 Knob version: Advantages include easy adjustment, but there are gaps around the knob.

2. Technical Specifications

2.1 Power supply: Both high voltage 220VAC and low voltage 24VDC are acceptable.

Power Supply	220VAC	24VDC(standby)
Range	85-264VAC or 110-370VDC	24VDC±10%
Power	Less than 5W	Less than 5W
Terminal Block	⑪ ⑫	① ③

2.2 The adjustable range of current output is 0-10V, which can be set arbitrarily (factory setting: 0-10V);

2.3 Input feedback accuracy < 0.03V, input impedance 50K ohms;

2.4 Output control accuracy < 0.03V, maximum load capacity 20mA;

2.5 Operating environment: 0-40℃, relative humidity < 80%;
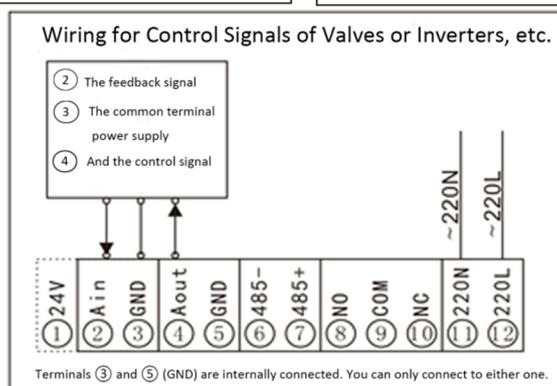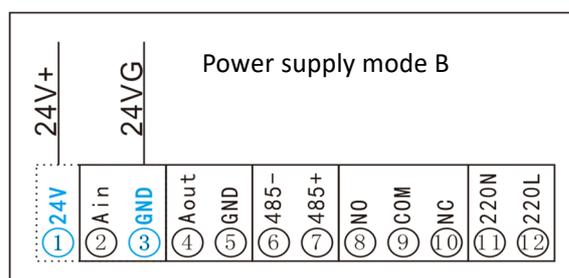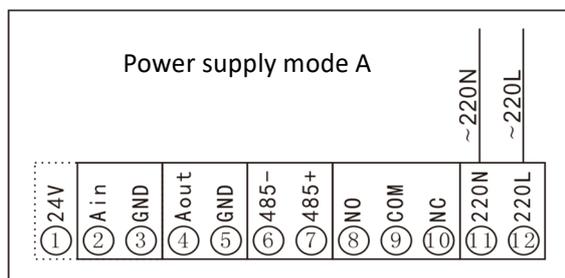
3. Dimension Drawing (Unit: mm)

Key-press Version
Q03H01A

Knob Version
Q03H02A
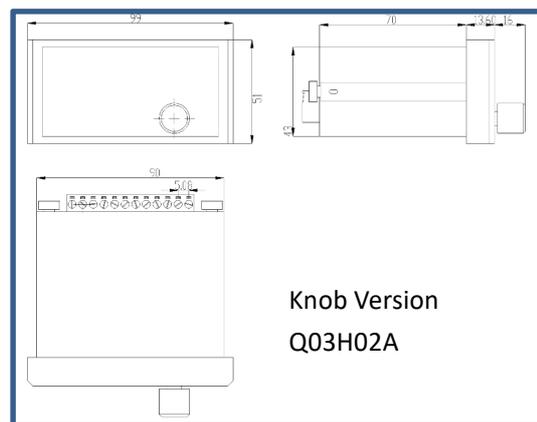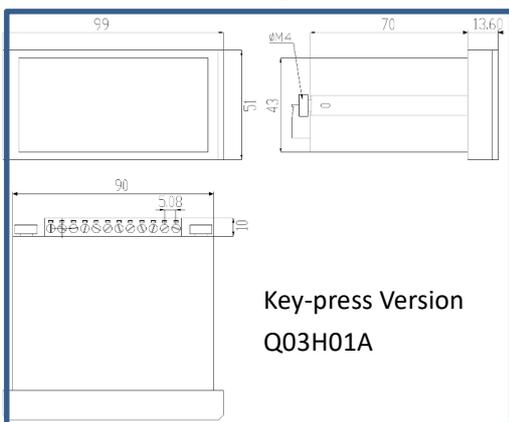
Recommended hole size：90.5*43.5mm

4. Wiring Diagram (Detachable Terminal Blocks)

⑪	220N	220N: Commonly used for AC mains power supply.
⑫	220L	220L: Commonly used for AC mains power supply.
①	24V	Reserved for 24V input or output terminal.
②	Ain	Positive input for feedback signal.
③	GND	Negative output for control signal.
④	Aout	Positive output for control signal.
⑤	GND	Negative output for control signal.
⑥	485-	RS485 communication line B- (from host computer).-
⑦	485+	RS485 communication line A+ (from host computer).
⑧	NO	Relay Normally Open.
⑨	COM	Relay Common Terminal.
⑩	NC	Relay Normally Closed.

Conventional wiring diagram:

Wiring for Control Signals of Valves or Inverters, etc.

② The feedback signal
③ The common terminal power supply
④ And the control signal

Terminals ③ and ⑤ (GND) are internally connected. You can only connect to either one.
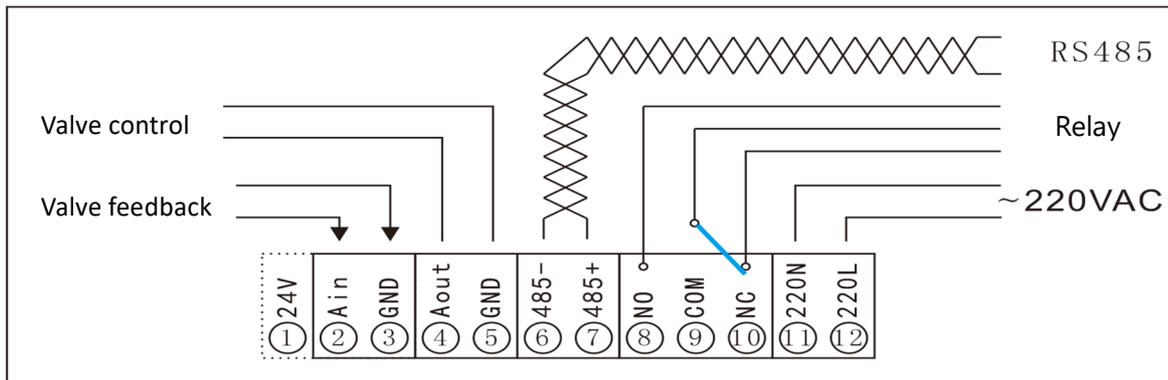
① Notes for using the 24V terminal as output:

1、It can supply power to the transmitter, with a maximum output current of 50mA. If the rated current of the transmitter is greater than 50mA, this 24V terminal cannot be used, and an additional 24V power supply must be provided for the transmitter.

2、Do not use it simultaneously with the relay function of this meter, as it will reduce the 24V output current.

5. System Function Settings and Parameter Table

5.1 Operation Diagram
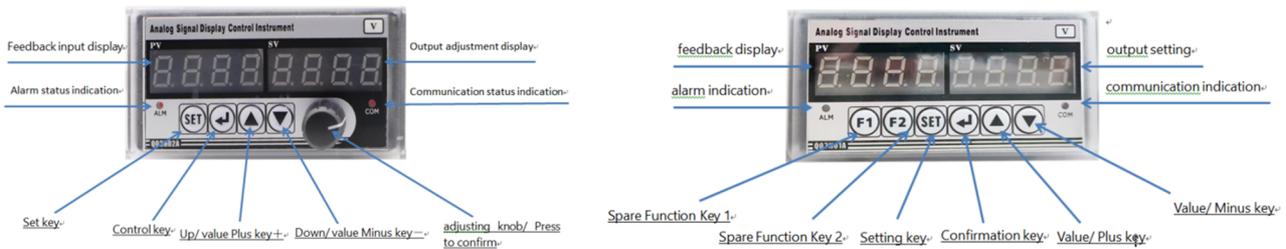
5.2 Power-on digital tube display: 4-digit software version number + 1-digit baud rate code + 3-digit 485 device address.

5.3 After power-on, the digital tube displays the feedback value and the output setting value. Use the up/down keys to adjust the output setting value. Hold the up/down keys for 1 second to adjust rapidly.

5.4 Press and hold the setting key for 2 seconds to view parameters. The parameter number "F00X" and its value will be displayed. Use the up/down keys to switch between parameter numbers.

5.5 Press the confirmation key once to make the parameter value blink, entering the parameter setting state.

5.6 Use the up/down keys to modify the parameter value. After modification, press the confirmation key to save and exit the setting state, or press the setting key to exit without saving.

5.7 Press the setting key again to exit parameter viewing.

5.8 Parameter Table：

No.	Description	Remarks	Default
F001	Key adjustment of increment/decrement multiples	1-500 The increment/decrement multiples for changing the output setting value via the plus/minus keys	5
F002	Knob adjustment of increment/decrement multiples	1-500 The increment/decrement multiples for adjusting the output setting value via the knob	10
F003	* Reserved *	F1/F2 functions: maximum value, minimum value, ON/OFF, etc	*---*
F004	Relay function	0 No control (disconnected) 1 Turn on when the feedback value is within the upper and lower limits 2 Turn off when the feedback value is within the upper and lower limits	0
F005	Relay lower limit	0−10. 00V	4.00
F006	Relay upper limit	0−10. 00V	8.00

F007	Relay trigger delay	0-10.0seconds	1.0
F008	* Reserved *	0Manual 1 Automatic output	0
F009	Output adjustment range	0:0-10V 1:0-5V −1:Custom	0
F010	Custom output lower end	0-10V	0
F011	Custom output upper end	0-10V	10.00
F012	Input/output display mode	0: Actual voltage value 1:0-100.0% 2:0-50.0hz −1: Custom	0
F013	Custom display lower limit	Range: -1999 to 9999 (Decimal point ignored, set in F015)	0
F014	Custom display upper limit	Range: -1999 to 9999 (Decimal point ignored, set in F015)	1000
F015	Custom decimal point position	0-4 0/1: None 2:999.9 3:99.99 4:9.999	3
F016	Display when input is below lower limit	0： Show minimum value (F013) 1： Calculate by linear proportion	0
F017	Display when input is above upper limit	0： Show maximum value (F014) 1： Show maximum value (F014)	0
F018	Input filtering level	1-3	1
F019	*Reserved*	Allow broadcast mode	*---*
F020	Communication - Device ID (restart required)	1-127	1
F021	Communication - Baud rate (restart required)	0-2400 1-4800 2-9600 3-19200 4-38400 5-57600 6-115200	2
F022	Communication - Parity bit (restart required)	0:8-1-n 1:8-2-n 2:8-1-odd odd parity 2:8-1-even even parity	0
F023	Output 10V calibration value	-999 -- +999 is for internal reference only. Please be cautious when modifying.	
F024	* Reserved *		
F025	* Reserved *		
F026	* Reserved *		*---*
F027	Zero calibration (0V)	Do not connect the input or short it to ground, then press the "Confirm" button to automatically calibrate the zero point.	
F028	Range calibration (3-50V)	Connect the signal, adjust the increment/decrement buttons to make the meter display value consistent with the multimeter reading.	

5.9 Relay Function Description

5.9.1 F004=0: The relay is not controlled by the feedback value.

5.9.2 F004=1 or 2: Compare the feedback value with the trigger thresholds (F005 & F006) for relay output control.

5.9.3 F007 Relay Trigger Delay: When the feedback value reaches the set trigger threshold, the relay will activate after a specified delay to enhance anti-interference capability and reduce frequent operations, thereby extending its lifespan.

5.9.4 When the relay is activated, the alarm LED on the control panel will light up; otherwise, it remains off.

5.9.5 Relay Contact Rating: 10A/250VAC 30VDC

5.10 RS485 MODBUS Communication

5.10.1 Adopts the standard MODBUS-RTU message format. Factory default settings: slave mode address 1, baud rate 9600, check bit 8-N-1 (modifiable).

5.10.2 There is no built-in 120Ω termination resistor. When the bus distance is long or there are many nodes, users need to connect external termination resistors to ensure more stable transmission.

5.10.3 Using high-quality shielded twisted-pair cables can enhance the anti-interference capability of communication.

MODBUS-RTU Message Format, Commands, and Examples:

RS485 Slave Address	1byte
Function Code	1byte Command 03 or 06
Data	N byte
CRC Checksum	2byte Standard CRC16, Initial Value 0xFFFF

03 ERead Multiple Registers Command，For example：Query 20 registers starting from address 0，returning 40 bytes of data (2 bytes per register).

Send	01 03 00 00 00 14 45 C5
Return	01 03 28 00 00 04 B0 04 B0 04 B0 00 01 00 00 00 01 00 01 00 02 00 00 00 00 00 00 01 03 20 00 0A 00 00 00 00 00 00 00 00 00 00 00 00 98 EE

06 Write Single Register Command Example：Set the value of register 3 to 2000, and the command will be returned directly.

Send	01 06 00 03 07 D0 7A 66
Return	01 6 00 03 07 D0 7A 66

5.11 Register Table

Register Address	Description	Read/ Write	Notes or Remarks
0	None		Not used as some PLC data addresses start from 1
1	Current feedback voltage value	r	No decimal point, e.g.: 20 = 0.20V, 1000 = 10.00V
2	Current feedback nixie tube display value	r	No decimal point
3	Current output nixie tube display value	r/w	No decimal point

5.12 When a packet of data is successfully received via communication, the communication LED indicator will flash once.

6. Precautions

6.1 This instrument carries high voltage. Please turn off the power supply before wiring; do not operate with power on. Pay attention to safety and prevent electric shock.

6.2 Please read this manual first. Exceeding the range specified in the technical indicators may cause damage to the instrument.