

Intelligent Analog 0-22mA 0-±10V Signal Generator

BRT LB02G

Technical Parameters

Terms	Typical Value
Current output	0-22mA adjustable, support fast output. Default 0-20mA, switchable
Current output accuracy	0.05mA, can be calibrated, 0.5% TYP.
Current sampling resistance	10-500 Ω , can be short-circuit.
Voltage output	-10V - +10VDC adjustable, support fast output. Default 0-10V, switchable
Voltage output accuracy	0.03V, can be calibrated, 0.5% TYP.
Voltage output current	driving current <20mA, max. 100mA, have short-circuit protection
Operating power supply	15-30V external power supply via wiring terminals; 5V, 0.5A micro-USB, etc.
LED display	4 digits, two decimal points
Display mode	Current/volt. value display; 0-100% percentage display; 0-50.0Hz display, etc.
Adjusting mode	One turn: 20 x pulses, precision encoder.
Power consumption	External 15-30V power supply: about 4W; Micro USB 5V power supply: 0.5A/0.8A
Dimension & Weight	L x W x H: 100x60x20mm, Knob height: 15mm; 105g
Operating temperature	-20 to +45 $^{\circ}\text{C}$
Storage temperature	-25 to +65 $^{\circ}\text{C}$
Humidity	80% R.O. non-condensation

Functions Description

Terminal Code	Functions	Note
GND	Operating power supply input 24V +	Operating power supply terminal 24VDC
24V	Operating power supply GND-	
AI+	Sink current mode 24V external power supply input	Sink current signal output: AI+ is connecte to external 24V+, output signal via AIO to contorl external current from 24V.
AIO	Current signal output +	Source current signal output: AIO is signal output +, GND is the common GND. Voltage signal output: AVO is volt signal output+, GND is the common GND.
AVO	Voltage signal output +	
GND	Current/volt. signal output GND-	

[Mode] button: Press once, switch between adjusting current output mode and adjusting voltage output mode

[Battery SW ON/OFF]: Battery power supply switching ON/OFF.

[Voltage] indicator: the signal generator is in voltage signal output and adjusting mode, the voltage indicator is ON.

[Current] indicator: the signal generator is in current signal output and adjusting mode, the current indicator is ON.

[MicroUSB-5V]: USB Port power supply recommended 5V 0.5A, DO NOT use quicker charger or higher than 2A power supply. * Battery recharging time recommended 4-5 hours based on power adapter used.

Battery Lamp Color	Green color	Yellow color	Red Color	Flashing	Steady green (Connect Micro USB)
Battery capacity	Fully charged	95%-50%	<40% Low battery	In charging	Fully charged

How to know the devices (PLC, transmitter, etc.) wiring mode is source current or sink current connection?

1. Check the devices (PLC, transmitters, etc.) application diagram, if its terminal I+ is connected 24V+, its wiring mode is passive current wiring mode, if I- is connected to 24V G, its wiring mode is active current wiring.
2. User multimeter to measure the voltage between I+ and I- terminals, if its voltage is 0V, the wiring mode is active current wiring, if its voltage measured is 24V, the wiring mode is passive current wiring.

System Operation Instruction

1. Knob functions definition

Functions	Actions/Operations
[Confirm/OK]	Press down the knob once
[+/Add]	Rotate the knob in clockwise direction
[-/Subtract]	Rotate the knob in counter-clockwise direction
Password + - - +	Rotate the knob in clockwise direction once, then rotate the knob in counter-clockwise direction twice, next rotate the knob in clockwise direction. Last press down the knob.
Password + - - - (Fast output mode password*)	Rotate the knob in clockwise direction once, then rotate the knob in counter-clockwise direction once, next rotate the knob in clockwise direction, rotate the knob in counter-clockwise direction once again. Last press down the knob.

2. **Save Parameters Setting:** In normally status, short press down the knob once, user can save the output value setting; then release the knob, LED screen displays "...", it indicates save it successfully, user can use it directly next time. In signal debugging process, the parameters will not be saved, if user has not done PRESS knob action.

3. Parameters Setting Steps:

3.1 In normally operating status, long press the knob for 2 seconds to make the signal generator enter into parameters setting status, the LED screen display F001 (Referential code: F001).

3.2 Rotate the knob clockwise again, user needs to enter passwords. Before entering into F002 referential code setting, please enter password: "+ - - +", rotate the knob to enter the password, refer to knob function definition above. Then user can change referential code from F002 to F003 and next referential code.

(*Enter password: "+ - - -", the signal generator enters into F100 fast output setting mode. Refer to code table 1.1/1.2 below.)

3.3 After correctly enter the password, the referential code F002 (e.g.: F001, F002...) is displayed in LED screen, then press the knob to enter into parameters changing status, next rotate the knob to change the parameter value to the value you need (refer to table 1.1/1.2 below).

3.4 Press down the knob to save the parameters which have been set and exit current referential code setting status. Then the signal generator will display next referential code (e.g.: F003). (If user has not entered the password "+ - - +" correctly, the signal generator will be returned into normally operating status.)

3.5 Referential code F004, F005, F008, F100, etc. setting methods are the same to that above (refer to table 1.1/1.2).

3.6 Rotate the knob till the LED screen displays **FEnd**, then press the knob to complete and save the parameters setting and return to normally operating status.

3.7 In parameters setting procedures, if there are no any actions taken, the signal generator will exit parameters setting status and return to normally operating status in 10 seconds.

(*Fast output points setting methods are the same as the setting methods above.)

In Current Adjustment Mode to set current signal

Referential Code Definition (Table 1.1)

Referential code	Parameters Setting	Value Description	Default factory setting value
F001	Fine or rough adjustment	0: Rough adjustment 1: Fine adjustment 3: Fast output mode (*must set F100>0 firstly)	0
F002	Output range	0: 0-20mA 1: 4-20mA 2: 0-22mA	0
F003	Display mode	0: current signal display 1: 0-100.0 percentage display 2: 0-50Hz display	0
F004	Add or subtract value in rough adjustment per pulse	1 to 50: the output value changing step for each pulse. No decimal points. Rotating the knob one turn (360 degree) equals 20 pulses. Can be ten times 10 x (1 to 50).	1
F005	Add or subtract value in fine adjustment per pulse	1 to 50: the output value changing step for each pulse. No decimal points. Rotating the knob one turn (360 degree) equals 20 pulses.	1
F008	Output accuracy calibration value	-999 to +999, 20mA \pm 4mA. Not recommend to set this code. if it must be set, this function is only for professionals.	*Must adjust output to 12mA/20mA firstly.
F100	Fast output points	0: no fast output; 2—9: output points setting	0
F101-F109	9 points current value	Range:0-22mA, set based on user requirements	--

* Before entering into F002 parameters setting status, user must rotate the knob to enter password: + - - +

Table 1.1

In Voltage Adjustment Mode to set voltage signal

Referential Code Definition (Table 1.2)

Referential code	Parameters Setting	Value Description	Default setting
F001	Fine or rough adjustment	0: Rough adjustment 1: Fine adjustment 3: Fast output mode (*must set F100>0 firstly)	0
F002	Output range	0: \pm 10V 1: \pm 5V 2: 0-10V 3: 2-10V; 4: 0-5V 5: 1-5V 6: 0-3.3V 7: 0-2.5V 8: 0-1V 9: -10V -0V	2

F003	Display mode	0: voltage value display 1: 0-100.0 percentage display 2: 0-50Hz display 3: 0-1500	0
F004	Add or subtract value in rough adjustment per pulse	1 to 50: the output value changing step for each pulse. No decimal points. Rotating the knob one turn (360 degree) equals 20 pulses. Can be ten times 10 x (1 to 50).	1
F005	Add or subtract value in fine adjustment per pulse	1 to 50: the output value changing step for each pulse. No decimal points. Rotating the knob one turn (360 degree) equals 20 pulses.	1
F006	-10V output calibration	-999 to +999. Not recommend to set this code if output accuracy is normal. if it must be set, this function is only for professionals.	--
F007	0V output calibration		--
F008	+10V output calibration		--
F100	Fast output points	0: no fast output; 2—9: output points setting	0
F101-F109	9 points voltage value	Range: -10V to +10V, set based on user requirements	--

* Before entering into F002 parameters setting status, user must rotate the knob to enter password: + - - +

Table 1.2

* When doing F006, F007, F008 output precision calibration, user must have a high precision multimeter to calibrate it, and **DO adjust output to let the screen display 12mA or 20mA or -10V, 0V, 10V, etc. firstly.**

Battery Information

* For No Battery inside type, user can add a 3.7V rechargeable battery by doing DIY.

The battery information recommended below:

- Higher or lower than 1000mAH, 3.7V voltage, Lithium battery.
- Size: Length 50mm x Width 35mm x Thickness \leq 5mm or similar size
- Connector: XH2.54mm 2pin connector.
- Thickness \leq 5mm, Flat square shape.
- Only professional developer is recommended to do that DIY.



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*Specification is subject to change without notice.