

**Memo**

**Specifications of BRT-220**

Measuring Range	Barometric pressure: 100 ~ 1,100 mBar Temperature: - 30 ~ +70.0°C · -22 ~ +158°F	
Analog Output	DC 4 ~ 20 mA (at DC- 9V · RL < 10 Ω ; DC- 24V · RL < 700 Ω)	
Digital Output	RS-485 / Modbus / RTU	
Accuracy	Barometric pressure (300 ~ 1,100 mBar)	Absolute Pressure ± 1.5 mBar (at + 25°C) Relative Pressure ± 1.0 mBar (0 ~ + 50°C) Relative Pressure ± 5.0 mBar (Beyond 0 ~ + 50°C)
	Temperature	± 0.5°C (at + 20°C)
Power source	DC 9 ~ 32V · >150mA (Max. DC40V)	
Long-term stability	< 1.0 mBar/year	
Housing / Protection	IP65 rated for dust and Water intrusion	
Operating environment	-40 ~ + 85°C ; 0 ~ 100 %RH	
Dimensions	128 × 80 × 50 mm (L×W×D)	
Weight	Approx. 210 g	
Accessories	Cable gland, Mounting Kits, Instruction manual.	
Approvals	CE & RoHS	

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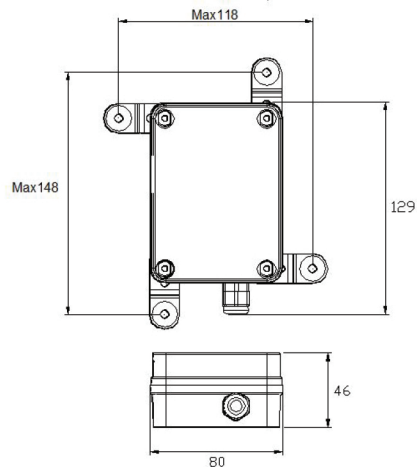
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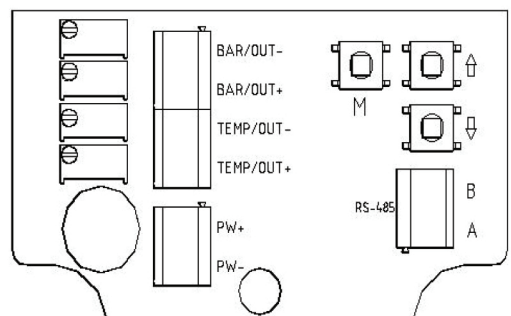
**Setting Mode Instructions**

- A. mbar-Ref mode:  
Deviation adjustment of barometric value  
- 127 ~ + 127 mbar
- B. °C-Ref mode:  
Deviation adjustment of temp. value  
- 12.7 ~ + 12.7 °C
- C. 100 mbar (-30°C)-CAL Simulation low-point output calibration:  
Through VR1 to adjust the output will be 100mBar => 4mA  
VR3 to adjust the output will be - 30 °C => 4mA
- D. 1100 mbar (+70°C) -CAL Simulation high-point output calibration:  
Through VR2 to adjust the output will be 1100m Bar => 20mA  
VR4 to adjust the output will be + 70 °C => 20mA
- E. Adds communication address mode:  
0 ~ 255 adds can be set up; it will be 0 adds when it leaves the factory.
- F. Baud transmission rate mode:  
00 ~ 03 there are 4 kinds of transmission can be set up, it will be 03 add when it leaves the factory.  
00 => Baud Rate 9600  
01 => Baud Rate 19200  
02 => Baud Rate 38400  
03 => Baud Rate 57600

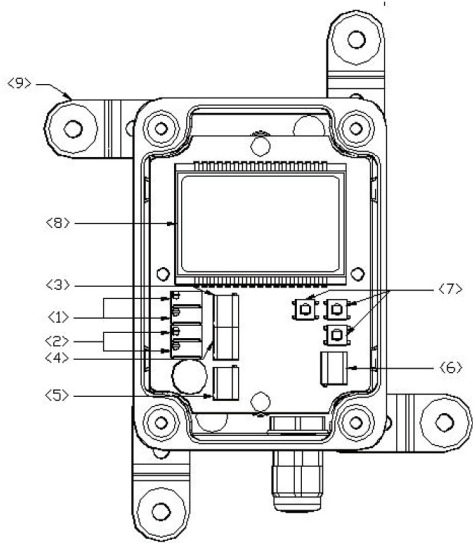
**Wall Mount Type (mm)**



**BRT-220 Internal Wiring**

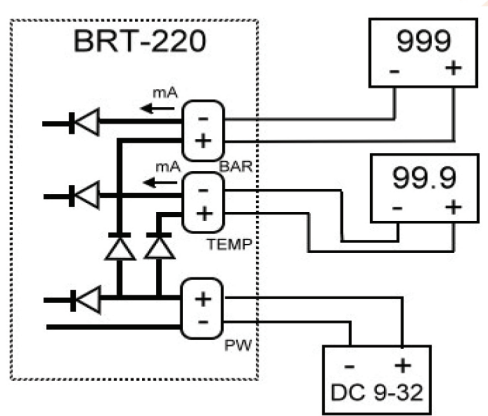


## Diagrams of Parts

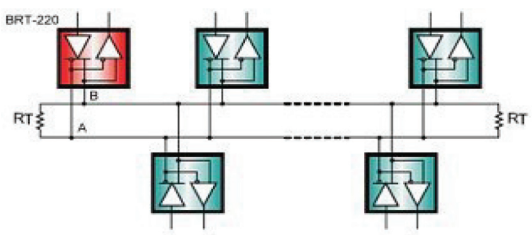


1. Fine tuning for barometric output: VR1=ZERO; VR2 =SPAN
2. Fine tuning for temperature output: VR3=ZERO; VR4 =SPAN
3. Barometric OUTPUT terminal block
4. Temperature OUTPUT terminal block
5. POWER terminal block
6. RS-485/MODBUS terminal block
7. Setting keys
8. LCD display
9. Fixed central block

## Current Output Wiring



## RS-485/Modbus RTU Wiring



☆ RT is the end of resistance against noise => It's suggested to use 100Ω. (BRT-220 has been supplied with RT already.)

## RS-485/Modbus RTU

### Communication protocol

Read the instructions by Function 03H (Read Holding Registers)

A. Data format of reading instructions (Request Data Frame)

E.X. Reading 00 adds display value (0000H starts 1 Word)

SLAVE Address	FUNCTION	Starting Address Hi	Starting Address Lo	No. of Word Hi	No. of Word Lo	CRC Lo	CRC Hi
00H	03H	00H	00H	00H	01H	85H	DBH

Response Data Frame

EX: Response time is 2-Byte; data is 10037

SLAVE Address	FUNCTION	Byte count	Data Hi	Data Lo	CRC Lo	CRC Hi
00H	03H	02H	27H	35H	5EH	63H

(= 1003.7mBar)

B. Data format of continuously reading instructions (Request Data Frame)

EX: Reading 03 adds display value (0000H starts 2 Word)

SLAVE Address	FUNCTION	Starting Address Hi	Starting Address Lo	No. of Word Hi	No. of Word Lo	CRC Lo	CRC Hi
03H	03H	00H	00H	00H	02H	C5H	E9H

Continuously reading response data format (Response Data Frame)

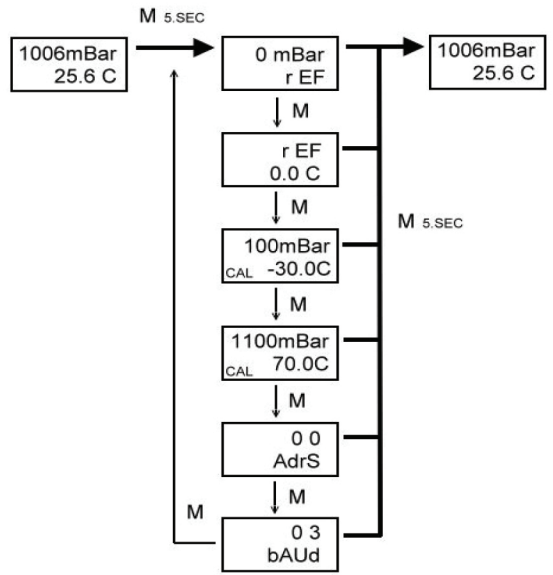
EX: Response value is 4-Byte; data is 10037& 257

SLAVE Address	FUNCTION	Byte count	Data(1) Hi	Data(1) Lo	Data(2) Hi	Data(2) Lo	CRC Lo	CRC Hi
03H	03H	04H	27H	35H	01H	01H	03H	19H

(= 1003.7mBar & 25.7 °C)

- ☆BRT-220 only has start adds 0000H=barometric & 0001H. temperature reading. The remaining value is invalid.
- ☆CRC is the transmission testing code; the error data of testing code will be judged as an invalid data.

## Key Functions (Internal motherboard)



- A. Under normal measurement mode, press M key for 5 seconds to enter the setting mode.
- B. There are 6 types of setting modes, press M key can switch setting mode circularly.
- C. Under any setting mode, press M key for 5 seconds to return to normal measurement mode.

☆ Without LCD display type: Please DO NOT touch the keys to avoid abnormal reading.(If touch the keys inadvertently, please kindly contact with the supplier.)