



FEATURES

- THE INPUT IS ISOLATED FROM THE POWER AND FROM THE RS485 MODBUS RTU PORT
- ACCEPTS LINEAR -10 TO +100 mV SIGNAL OR 11 TYPES OF THERMOCOUPLES, PROGRAMABLE
- DETECTS DISCONNECTED OR BROKEN INPUT
- BUILT-IN COLD JUNCTION COMPENSATION WITH 0.2 °C ERROR, CAN BE DISABLED
- RS485 MODBUS RTU, FULLY COMPLIANT, FULLY PROGRAMMABLE. ISOLATED FROM THE POWER AND FROM THE INPUT
- 1/8 LOAD, ALLOWING UP TO 247 DEVICES ON THE NETWORK
- HIGH ACCURACY AND RESOLUTION
- ALL CONFIGURATIONS ARE DONE OVER THE RS485 COMMUNICATION
- HIGH PROTECTION ON BOTH INPUT AND COMMUNICATION PORT
- NEEDS 21.6 – 26.4V DC POWER
- QUICK AND SIMPLE WIRING
- LxWxH = 90x17.5x56 mm (3.55"x0.69"x2.21")
WEIGHT = 55 g (1.9 oz)

APPLICATIONS

- ACCURATE TEMPERATURE MEASUREMENT
- VARIOUS mV SENSORS MEASUREMENT
- LABORATORY MEASUREMENTS
- SCADA
- PROCESS CONTROL
- INDUSTRIAL AUTOMATION



1. DESCRIPTION

GTT203 is a DIN rail low power transmitter for various sensors producing linear mV signal in the range of -10 to +100 mV, or 11 types of thermocouples. The input is isolated from the power and from the communication port, so it accepts isolated or non-isolated thermocouples. It detects disconnected wires or broken thermocouple. GTT203 has high accuracy and a built-in cold junction compensation based on Pt1000 RTD. The communication port is a 5V isolated RS485 MODBUS RTU. It represents 1/8 load allowing up to 247 devices connected to the same network. The input signal can be read many times a second. The programmable settings can be written at any time. The temperature compensation can be disabled.

Using high quality materials and our proprietary circuits and algorithms ensures high accuracy, reliability, flexibility and long time without service.



2. ABSOLUTE MAXIMUM RATINGS *

Ambient temperature	0 °C to +50 °C
Power supply voltage	26.4 V DC
Input voltage	200 V DC, negative or positive

* **NOTE: Stresses above those ratings may cause permanent damage to the device.**

3. CHARACTERISTICS

Parameter	Conditions	Min	Typical	Max	Units
Power					
Voltage	24V DC regulated and filtered is strongly recommended	21.6	24	26.4	V DC
Consumption	24.0 V DC, RS485 receiving		10		mA
mV, thermocouples Input					
Input resistance	DC voltage		1		Mohm
Resolution	-10.00 to +100.00 mV		10		uV
Error	25 °C		0.03		% FS
Cold Junction Compensation					
Resolution	0 °C to +50 °C		0.1		°C
Error	0 °C to +50 °C		0.2	0.4	°C
Communication port	Isolated, 5 V, two-wire RS485, MODBUS RTU, 1/8 load				

4. INPUT

GTT203 input can be used to accurately measure a general purpose mV signal, dissolved oxygen and many other sensors. It can be programmed at any time to accurately measure 11 types of thermocouples with or without cold junction compensation.

5. PROGRAMMING AND COMMUNICATION

GTT203 has a two wire isolated RS485 MODBUS RTU communication port. All programming is available through this port. It can be connected to a lap top or a PC through a USB to RS485 converter or to a PLC through RS232 to RS485 converter.

The settings are:

- The baud rate is 9600 or 19 200, programmable. Default is 19 200.
- The character is 8 bit
- The parity is none, odd or even, programmable. Default is even.
- Stop bits are 1 or 2, not programmable. MODBUS standard requires 1 stop bit with odd or even parity and 2 stop bits with no parity.
- No handshaking.

MODBUS address is programmable from 1 to 247. Default is 1. The protocol for communication is MODBUS RTU. Functions 0x03 (read holding registers), 0x04 (read input registers) and 0x06 (write single register) are implemented. GTT203 handles exceptions 1, 2 and 3.



Here are the registers used:

Register address	Register Type	Read/Write	Description	Format
20	Input	R	Input voltage with 10 uV resolution, NOTE 1	1538 = 15.38 mV -234 = -2.34 mV
21	Input	R	Cold Junction Temperature with 0.1 degree resolution, NOTE 1	346 = 34.6 degrees -53 = -5.3 degrees
22	Input	R	Temperature with 0.1 degree resolution, NOTE 1	4574 = 457.4 degrees -247 = -24.7 degrees
1003	Holding	R/W	Cold Junction Compensation, NOTE 4 0 = disabled, 1 = enabled	Default is 0 = disable
1004	Holding	R/W	Degree type 0 = °C, 1 = °F	Default is 0 = °C
1005	Holding	R/W	Input type, NOTE 3 0 to 11	Default is 0 = mV
1053	Holding	W	Baud Rate: 0 = 19 200, 1 = 9 600, NOTE 2	Default is 0 = 19 200
1054	Holding	W	Parity: 0 = even, 1 = odd, 2 = none, NOTE 2	Default is 0 = even
1200	Holding	W	MODBUS address , 1 to 247	Default is 1

NOTE 1: This is a 16 bit signed integer

NOTE 2: When changing the baud rate, the MODBUS address or the parity, GTT203 will first do the change and then reply to the master with the new setting already in effect.

NOTE 3: 0 = -10 to +100 mV, linear
 1 = thermocouple B, NIST Monograph 175, IEC 584
 2 = thermocouple C, W5Re/W26Re, type W5, ASTM E 988-96
 3 = thermocouple E, NIST Monograph 175, IEC 584
 4 = thermocouple J, NIST Monograph 175, IEC 584
 5 = thermocouple K, NIST Monograph 175, IEC 584
 6 = thermocouple L, DIN 43710
 7 = thermocouple N, NIST Monograph 175, IEC 584
 8 = thermocouple R, NIST Monograph 175, IEC 584
 9 = thermocouple S, NIST Monograph 175, IEC 584
 10 = thermocouple T, NIST Monograph 175, IEC 584
 11 = thermocouple U, DIN 43710

NOTE 4: Has no effect if the input is programmed for linear mV signal

6. APPLICATION

6.1. MECHANICAL

Mounting GpH141-MB on the DIN rail requires an area of 98 x 17.5 mm (3.86" x 0.69").

6.2. ELECTRICAL

Here are the terminals of GpH141-MB

Power: 1 is NC (no connect)
 2 is 24V DC "+"
 3 is 24V DC "-"

Use regulated 24V DC power. The voltage must be between 21.6 and 26.4V DC.

Input: 5 and 6 are "+" of the input signal
 7 is "-" of the input signal



RS485: 10 is A (D+)
11 is RS485 ground (isolated from all other grounds)
12 is B (D-)

NOTE: Use 3 wire connection, preferably STP

7. ORDERING

For ordering please use G Instruments part number 30269.



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