

AGV-TMR25xx

High-Frequency, High-Sensitivity AGV Magnetic Guide Sensors

Description

AGV-TMR25 series are 16-channel digital output magnetic guide sensors that support RS-485, CAN, and customizable CAN protocol. Users can customize specifications using the RS-232 interface. It is available as standard with N pole, S pole and N/S pole magnetic modes including corresponding LED indicators. With 16-channel digital signal and 1 mm accuracy absolute position output, AGV-TMR25 series sensors are adaptive to installation height and tape width with excellent protection against magnetic material interference. Incorporating tunneling magnetoresistance (TMR) technique, AGV-TMR25 series sensors are designed to provide excellent temperature characteristics, good consistency, fast frequency response, high sensitivity and low power consumption performance



AGV-TMR25XC, AGV-TMR25X4



AGV-TMR25LC

Features and Benefits

- Customizable CAN protocol and RS485 protocol
- RS-232 customizable
- Magnetic pole indicator
- 16-channel digital output
- 1 mm accuracy absolute position output
- Support 3 magnetic tracks detection
- N pole, S pole and N/S poles detection modes
- Reverse polarity protection, overload protection, surge suppression
- Adaptive installation height

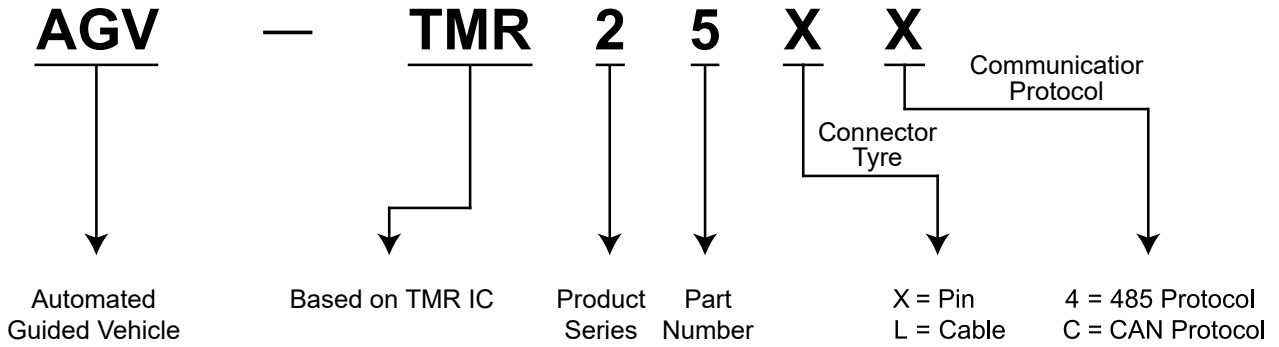
Applications

- Magnetic navigation with tape/marker
- Automated guided vehicle (AGV)
- Automated guided cart (AGC)
- Trackless mobile shelving
- Logistics sortation

Selection Guide

Part Number	Detection Accuracy	Output Mode	Output Signal	Connector Type	Dimensions	Protection
AGV-TMR25X4	1 mm	RS-485 protocol	16 channels digital signal	Pin	178 mm × 17 mm × 50 mm	IP65
AGV-TMR25XC	1 mm	CAN customizable protocol	16 channels digital signal	Pin	178 mm × 17 mm × 50 mm	IP65
AGV-TMR25LC	1 mm	CAN customizable protocol	16 channels digital signal	Cable	178 mm × 17 mm × 50 mm	IP67

Part Number Description



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1. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply voltage	V_{CC}	10	30	V
Output voltage	V_{OUT}	-	V_{CC}	V
Magnetic flux density	HE	-	1200	Gs
Operating ambient temperature	T_A	-25	80	°C
Storage ambient temperature	T_{STG}	-25	80	°C
Operating ambient humidity	HMD	35	95	%

2. Specifications

$V_{CC} = 24\text{ V}$, $T_A = 25\text{ °C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{CC}	10	24	30	V
Supply current	I_C	-	50	-	mA
Accuracy	-	-	1	-	mm
Effective detection range	-	-	-	150	mm
Detection height	-	10	35	60	mm
Response time	t_R	-	5	-	ms
Operating magnetic field	B	5	15	25	Gs
Magnetic tape width	-	30	-	50	mm
Detectable tracks	-	-	-	3	-
Operating modes	N pole: green LED stays lit, S pole: red LED stays lit N/S pole: red and green LED blink alternatively				
Housing material	Metal, epoxy resin				
Circuit protection	Reverse polarity protection, overload protection, surge suppression				

Note: Product accuracy will decrease within the 15 mm area at both ends of the product. If possible, please avoid this area when using it.

3. AGV-TMR25XC, AGV-TMR25LC Communication Protocol

CAN is based on customizable protocol, details as follows:

Protocol Function	Specification
Interface	CAN BUS 2.0A
Node ID	1 to 127 (default 4)
Baud rate	125 kbps, 250 kbps, 500 kbps, 800 kbps, 1000 kbps (default)
Transfer rate	50 Hz, 80 Hz, 100 Hz (default), 125 Hz, 200 Hz (active reporting mode only)
Frame type	Standard
Frame format	Data frame
Communication Protocol	CAN customizable (default), CANOPEN

Note: RS-232 protocol is customizable to communicate with host computer

4. AGV-TMR25X4 Communication Protocol

RS-485 is based on Modbus-RTU, details as follows:

Protocol Function	Specification
Interface	RS-485 half duplex
Baud rate	4800, 9600, 19200, 38400, 115200 (default)
Character setting	11 bits: 1 start bit + 8 data bits + 1 check bit + 1 stop bit (no check)
Slave address	1 to 128 (default 0X01)
Host send	Address + function code + start address + data length requested + CRC16 (low byte) + CRC16 (high byte)
Slave return	Address + function code + data length returned + data 1.....data n + CRC16 (low byte) + CRC16 (high byte)

5. Pin Configuration

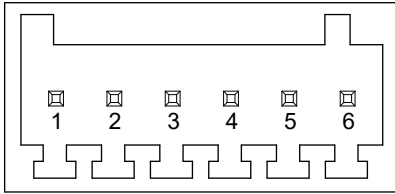


Figure 1. AGV-TMR25X4, AGV-TMR25XC pin configuration (top view)

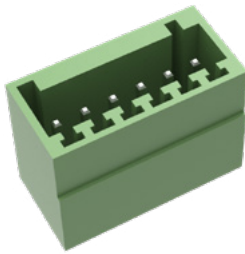


Figure 2. AGV-TMR25X4, AGV-TMR25XC sensor connector
Connector model: GSP002RC-2.5-06P-11-600A(H)

Pin ID	AGV-TMR25X4 Pin Configuration	AGV-TMR25XC Pin Configuration
1	V _{CC}	V _{CC}
2	GND	GND
3	232_RX	232_RX
4	232_TX	232_TX
5	485_A	CAN_H
6	485_B	CAN_L

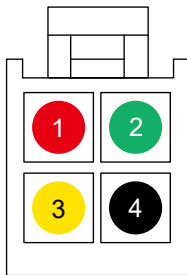


Figure 3. AGV-TMR25LC connector configuration (top view)
Connector model: 5557HP-2*2P

Cable ID	Cable Color	AGV-TMR25LC
1	Red	V _{CC}
2	Green	CAN_H
3	Yellow	CAN_L
4	Black	GND

6. Dimensions

AGV-TMR25X4, AGV-TMR25XC Package dimensions diagram

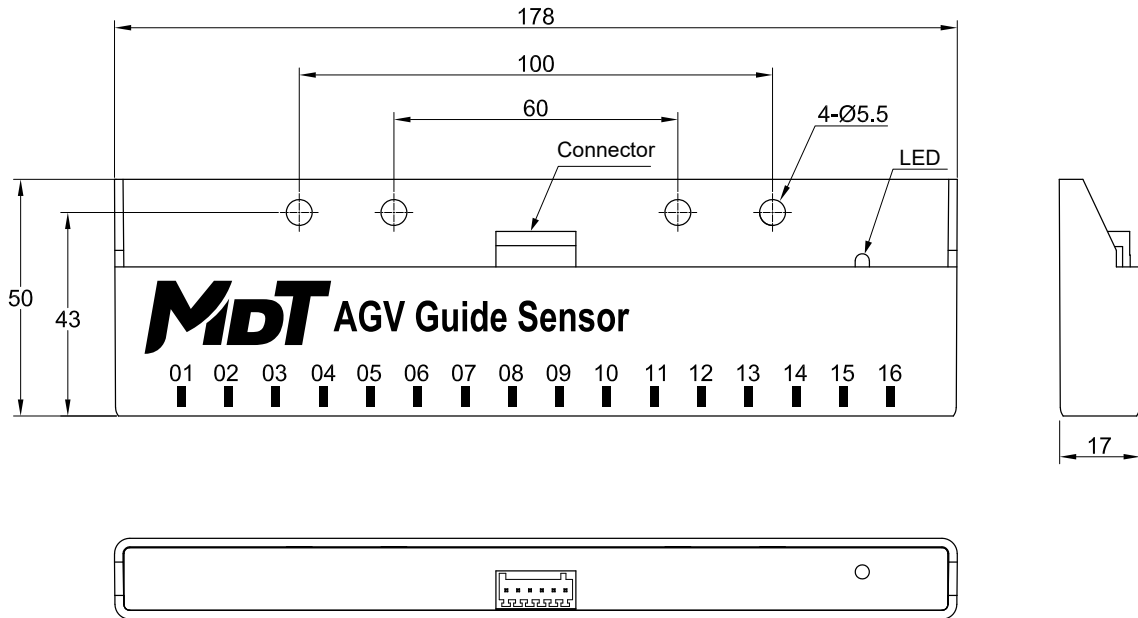


Figure 4. AGV-TMR25X4, AGV-TMR25XC Package dimensions diagram (unit: mm)

AGV-TMR25LC Package dimensions diagram

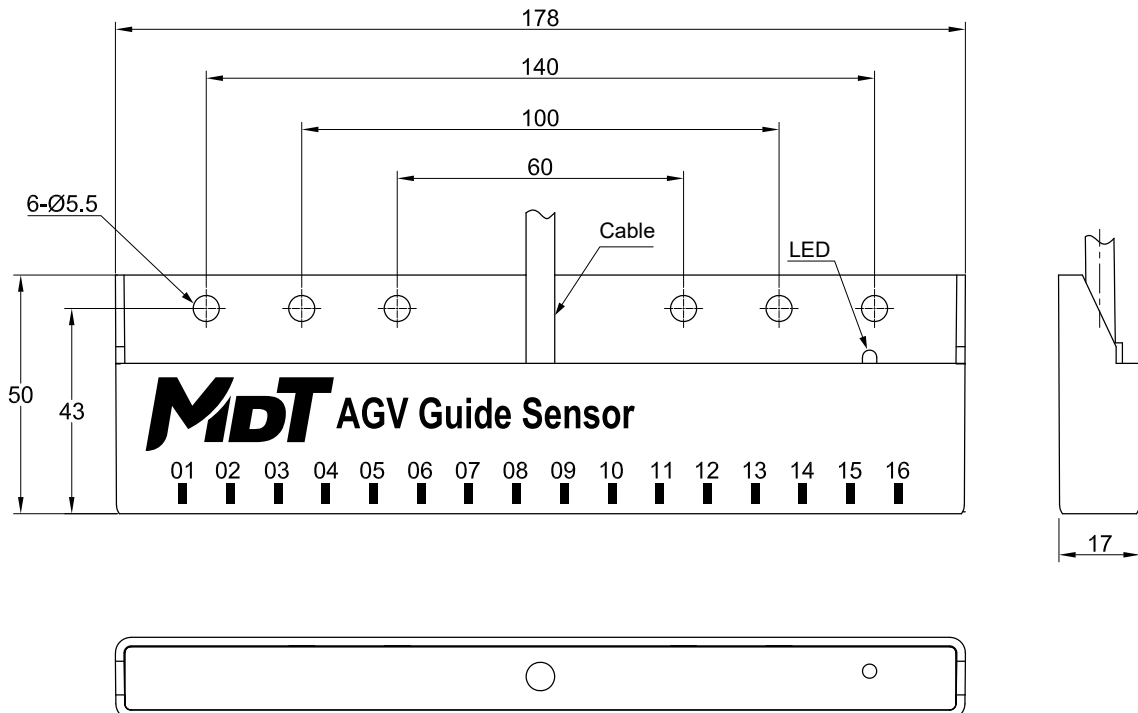


Figure 5. AGV-TMR25LC Package dimensions diagram (unit: mm)

7. Sensor Installation Schematic Diagram

Vertical distance between 10 mm to 40 mm is recommended between the bottom of AGV-TMR25 series AGV guide sensor and magnetic tape with width of 30 mm to 50 mm.

AGV-TMR25X4, AGV-TMR25XC Installation Schematic Diagram

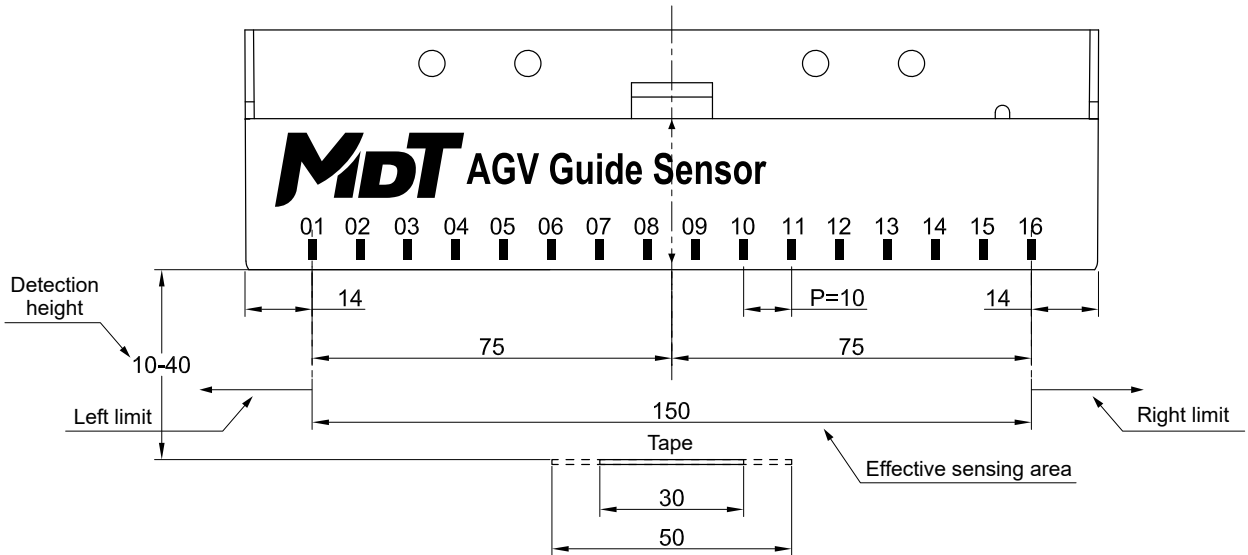


Figure 6. AGV-TMR25X4、AGV-TMR25XC Installation schematic diagram (unit: mm)

AGV-TMR25LC Installation Schematic Diagram

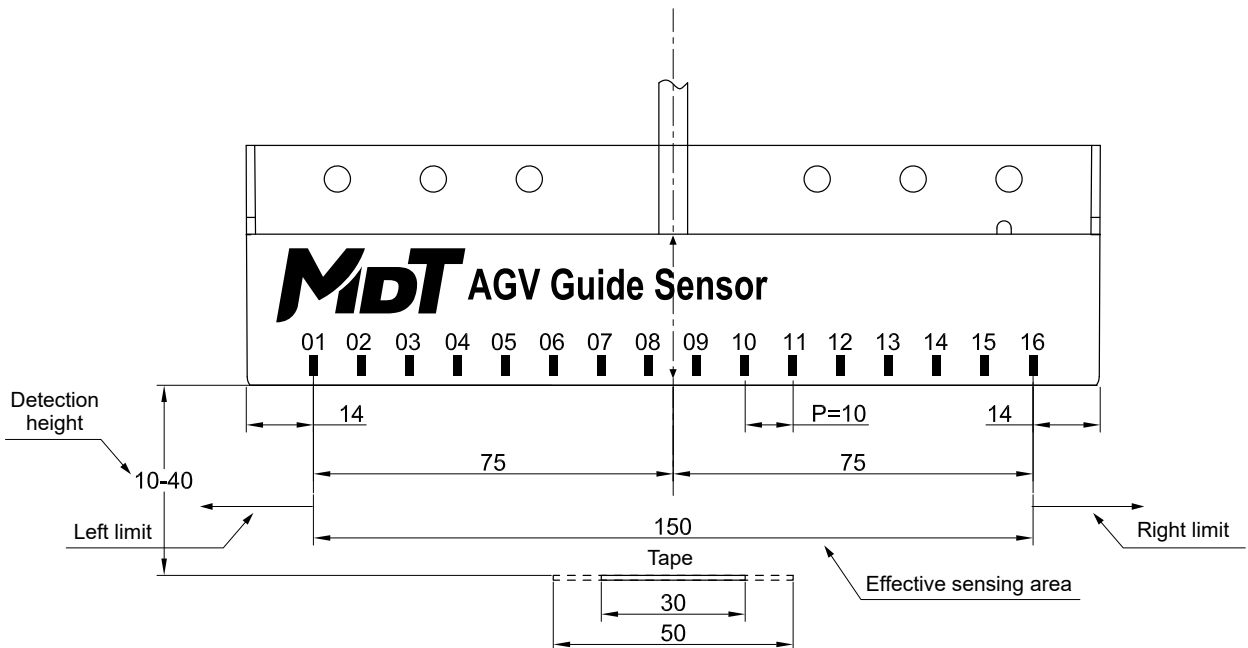


Figure 7. AGV-TMR25LC Installation schematic diagram (unit: mm)

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