

## VT-AGV-3588J AGV Controller



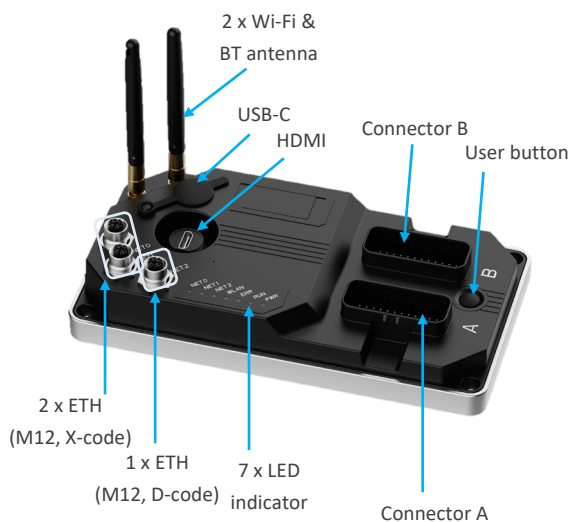
### Product Brief

VT-AGV-3588J AGV controller is dedicated for the Automated Guided Vehicle (AGV) and Autonomous Mobile Robot (AMR) industries, boasting outstanding performance and powerful functions for the automation of vehicles, such as standard lift trucks and mobile robots. It comes with an 8GB memory and 64GB storage, with option for larger capacity configurations, easily handling complex computations and large-scale data storage requirements. Equipped with an STM32 series MCU, it provides a reliable control foundation for the entire system, enabling rapid and accurate data processing and instruction execution.









VT-AGV-3588J features three Gigabit Ethernet ports (M12 aviation plugs), dual-band (2.4GHz&5GHz) Wi-Fi, and Bluetooth 5.4, ensuring stable network communication to meet the rapid data transfer needs. The USB Type-C interface supports OTG for device debugging and firmware flashing. An HDMI interface is provided for UHD video output. In addition, the controller offers rich interfaces for connection of various peripherals, including USB Type-A, CAN 2.0, DI, DO, AI, AO, isolated RS232, RS485, and SSI, ensuring efficient and stable operation of AGVs.

VT-AGV-3588J runs on Ubuntu 22.04 system, with flexible integration of Codesys Runtime and ROS 2 Humble, which enables customers to develop AGV/AMR control solutions for different application scenarios according to their specific needs, achieving more function expansions.

### Exterior and Features



#### VT-AGV-3588J

-  Arm-based Octa-core processor
-  6 TOPS NPU for AI acceleration
-  AI/AO/DI/DO for industrial data automation
-  Wi-Fi/BT/ETH for network connectivity
-  Low-latency, low-jitter motion control
-  9V-36V wide input voltage range
-  IP65-rated for demanding environments
-  Ubuntu 22.04 + Codesys Runtime & ROS 2 Humble

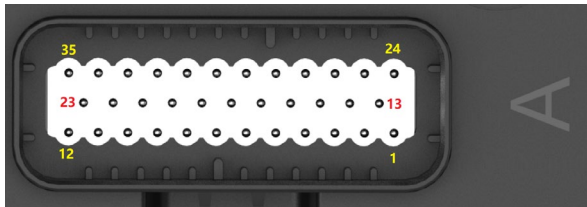
## Specifications

VT-AGV-3588J			
<b>System</b>	CPU	Quad-core ARM Cortex-A76 MPCore processor (Max. 2.0GHz) + Quad-core ARM Cortex-A55 MPCore processor (Max. 1.7GHz)	
	GPU	ARM Mali-G610 MC4, OpenGL ES 1.1/2.0/3.2, OpenCL 2.2, and Vulkan1.2 supported	
	NPU	6 TOPS, INT4/INT8/INT16/FP16 supported	
	Memory	16GB LPDDR5 (Optional: 8GB)	
	Storage	128GB eMMC V5.1 (Optional: 64GB)	
<b>Communication</b>	Ethernet	2 x M12 (X-code), 1000Mbps	1 x M12 (D-Code), 100Mbps
	Wi-Fi & Bluetooth	Wi-Fi IEEE 802.11 a/b/g/n/ac + BT 5.4	
<b>Media</b>	Video processing	8K@60fps H.265 / 8K@30fps H.264 decoder, 8K@30fps H.265/H.264 encoder	
	Display	1 x HDMI, up to 8K@60FPS/4K@120FPS	
<b>I/O</b>	USB	4 x USB 2.0 Host	1 x USB 3.0 Type-C (OTG)
	Serial port	2 x RS232, isolated (Max. 235kbps)	
		2 x SSI, isolated (Max. 10mbps)	
	CAN	2 x CAN 2.0	
	Analog input	4 x AI, isolated (2 x 0-20mA, 2 x 0-24V)	
	Analog output	2 x AO, isolated (0-20mA)	
	Digital input	8 x DI, isolated (0-24V at 50mA)	
	Digital output	8 x DO, isolated (0-24V at 0.5A)	
	Relay	2 x All_Ok relay output	
Antenna	2 x SMA male antenna connector for Wi-Fi and Bluetooth (distance: 3cm)		
<b>Miscellaneous</b>	RTC	Supported	
	Watchdog timer	Supported	
<b>System Control</b>	Button	1 x User button (user definable)	
	LED indicator	1 x Power indicator	
		3 x ETH connectivity indicator	
		1 x Error indicator	
	1 x Codesys running status indicator (Green: Normal operation; Red: Stopped)		
<b>Power</b>	Input	9V-36V DC (over-voltage / power failure protection, reverse polarity protection)	
	Consumption	~6W (Power on without applications running)	
<b>Software</b>	OS	Ubuntu 22.04 + Codesys Runtime & ROS 2 Humble	
	Protocol	CANOpen, EtherCAT	
<b>Mechanical</b>	Dimensions	239.93mm x 124.93mm x 54.5mm (Without antennas)	
	Weight	~960g	
	Installation	4 x M5-16mm screw recommended	
	IP rating	IP65	
<b>Environmental Condition</b>	Temperature	Operating: -20°C~70°C	Storage: -40°C ~ +80°C
	Humidity	5%~95% RH (non-condensing)	
<b>Compliance</b>	Certification	FCC, CE	

**Connector Pinout & Mating Connector Recommendation**

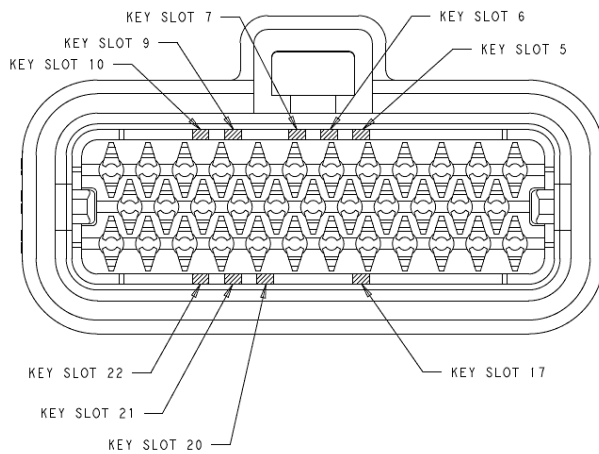


**Connector A Profile**



**Mating Connector Recommended**

**TE** TE Connectivity 776164-2 or equivalent

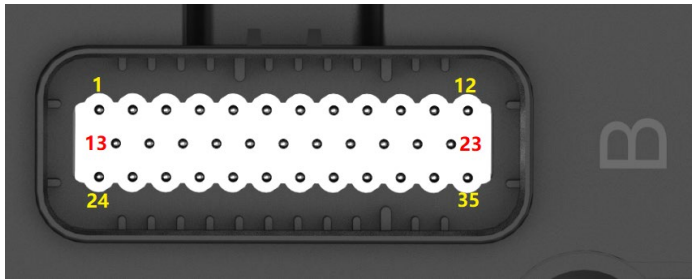


7 & 22	ORANGE	776164-6
5, 10, 22	BLUE	776164-5
9 & 21	GREY	776164-4
7 & 17	NATURAL	776164-2
6 & 20	BLACK	776164-1
KEY SLOT LOCATION (SEE VIEW ABOVE)	COLOR	PART NUMBER

### Pinout of Connector A

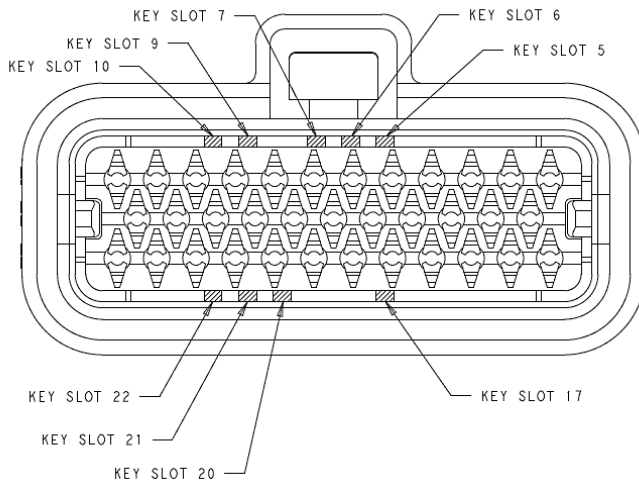
Pin	Signal	Description
Pin 1	P_GND	Power ground
Pin 2	RS232_RX0	RS232 receive (Channel 0)
Pin 3	RS232_RX1	RS232 receive (Channel 1)
Pin 4	RS232_TX1	RS232 transmit (Channel 1)
Pin 5	RS485_A0	RS485 A signal (Channel 0)
Pin 6	RS485_B0	RS485 B signal (Channel 0)
Pin 7	RS485_B1	RS485_1 B signal
Pin 8	RS485_A1	RS485_1 A signal
Pin 9	DAC_GND	DAC analog output ground
Pin 10	AO_OUT2	DAC analog output (Channel 2, 0–20mA)
Pin 11	AO_OUT1	DAC analog output (Channel 1, 0–20mA)
Pin 12	ALL_OK_CO	Self-test OK output (short connect CO & NO)
Pin 13	GND_ISO_232	RS232 signal ground
Pin 14	RS232_TX0	RS232 transmit (Channel 0)
Pin 15	CAN0_L	CAN0 differential signal L
Pin 16	CAN0_H	CAN0 differential signal H
Pin 17	GND_ISO_485	RS485 signal ground
Pin 18	USB20_CONN_2_DP	USB2.0-2 DP
Pin 19	USB20_CONN_2_DM	USB2.0-2 DM
Pin 20	GND	Digital ground
Pin 21	AI_V1	ADC analog input (0–24V, Channel 1)
Pin 22	AI_A0	ADC analog input (0-20mA, Channel 0)
Pin 23	AGND	ADC analog ground
Pin 24	B+	Power input (+)
Pin 25	CAN1_H	CAN1 differential signal H
Pin 26	CAN1_L	CAN1 differential signal L
Pin 27	CAN_GND	CAN signal ground
Pin 28	GND	Digital ground
Pin 29	USB20_CONN_1_DP	USB2.0-1 DP
Pin 30	USB20_CONN_1_DM	USB2.0-1 DM
Pin 31	VBUS 5V0_USB_1	USB2.0-1 5V VBUS
Pin 32	VBUS 5V0_USB_2	USB2.0-2 5V VBUS
Pin 33	AI_V0	ADC analog input (0–24V, Channel 0)
Pin 34	AI_A1	ADC analog input (0-20mA, Channel 1)
Pin 35	ALL_OK_NO	Self-test OK output (short connect CO & NO)

### Connector B Profile



### Mating Connector Recommended

**TE** TE Connectivity 776164-5 or equivalent



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5, 10, 22	BLUE	776164-5
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KEY SLOT LOCATION (SEE VIEW ABOVE)	COLOR	PART NUMBER

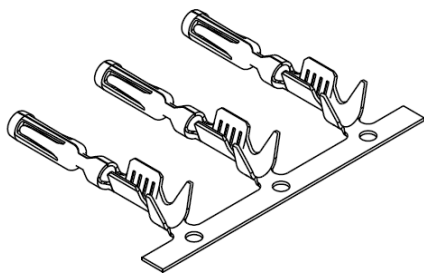
### Pinout of Connector B

Pin	Signal	Description
Pin 1	D_IN1	Digital input (Channel 1)
Pin 2	D_IN2	Digital input (Channel 2)
Pin 3	D_IN6	Digital input (Channel 6)
Pin 4	D_IN5	Digital input (Channel 5)
Pin 5	D_IN4	Digital input (Channel 4)
Pin 6	D_IN3	Digital input (Channel 3)
Pin 7	D_IN8	Digital input (Channel 8)
Pin 8	D_IN7	Digital input (Channel 7)
Pin 9	D_OUT1	Digital output (Channel 1)
Pin 10	D_OUT2	Digital output (Channel 2)

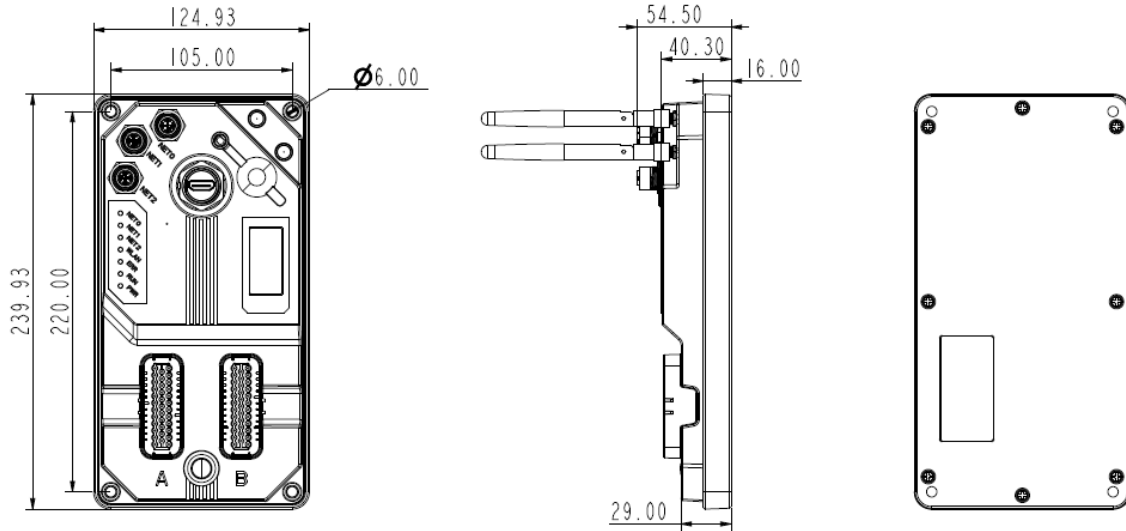
Pin	Signal	Description
Pin 11	D_OUT3	Digital output (Channel 3)
Pin 12	D_OUT4	Digital output (Channel 4)
Pin 13	GND	Digital ground
Pin 14	VBUS 5V0_USB_4	USB2.0-4 5V VBUS
Pin 15	VBUS 5V0_USB_3	USB2.0-3 5V VBUS
Pin 16	DGND	Digital input ground
Pin 17	DATA0+	SSI_0 differential data+
Pin 18	DATA0-	SSI_0 differential data-
Pin 19	CLK1+	SSI_1 differential clock +
Pin 20	CLK1-	SSI_1 differential clock -
Pin 21	EX_GND	Digital output ground
Pin 22	D_OUT5	Digital output (Channel 5)
Pin 23	D_OUT6	Digital output (Channel 6)
Pin 24	USB20_CONN_4_DP	USB2.0-4 DP
Pin 25	USB20_CONN_4_DM	USB2.0-4 DM
Pin 26	GND	Digital ground
Pin 27	USB20_CONN_3_DP	USB2.0-3 DP
Pin 28	USB20_CONN_3_DM	USB2.0-3 DM
Pin 29	ISO_GND	SSI signal ground
Pin 30	CLK0-	SSI_0 differential clock -
Pin 31	CLK0+	SSI_0 differential clock +
Pin 32	DATA1-	SSI_1 differential data -
Pin 33	DATA1+	SSI_1 differential data +
Pin 34	D_OUT7	Digital output (Channel 7)
Pin 35	D_OUT8	Digital output (Channel 8)

### Bare Wire Terminal Recommended

**TE** TE Connectivity 770520 - 1 or equivalent



## Product Outlines



## Ordering Information

### Nomenclature

**VT-AGV-RK3588J-[MS]-[IS]**

**MS (Memory & Storage):** L-8GB+64GB; H-16GB+128G

**IS (Integrated System):** CS-Codesys Runtime; RS-ROS 2 Humble

Ordering No.	Memory & Storage	Operating System	Protocol
VT-AGV-RK3588J-L-CS	8GB + 64GB	Codesys Runtime	CANOpen, EtherCAT
VT-AGV-RK3588J-L-RS	8GB + 64GB	ROS 2 Humble	CANOpen, EtherCAT
VT-AGV-RK3588J-H-CS	16GB + 128G	Codesys Runtime	CANOpen, EtherCAT
VT-AGV-RK3588J-H-RS	16GB + 128G	ROS 2 Humble	CANOpen, EtherCAT

### Packing List

VT- AGV-3588J AGV Controller	1
Wi-Fi & Bluetooth antenna	2