

VECTOR MOTOR CONTROL

T-260 Series

PMSM MOTOR CONTROLLER



Datasheet

DATASHEET · EN

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DATASHEET

T-260 PMSM Motor Controller

260

Specifications, functions, block diagram, dimensions, pinout and typical wiring for quick selection and system design.

Model: T-260

2026.10.14

260 A

Peak phase current

7.5 kW

Peak power

48/60/72 V

Rated voltage

IP67

Ingress protection

1 Overview

The T-260 is a permanent magnet synchronous motor (PMSM) controller. It uses field-oriented control (FOC) with SVPWM modulation to drive the motor with sinusoidal current. A 32-bit Cortex®-M4 MCU runs the power, torque, flux and speed loops in real time and responds promptly to all protection events.

- Advanced algorithms: dead-time compensation, feed-forward control, harmonic injection, active field weakening, torque estimation, anti-jerk start
- Multiple control loops (speed, power, torque, flux) for consistent performance under complex operating conditions
- Online motor parameter identification (Ld, Lq, flux linkage, resistance) with sensor + PLL fusion for a precise model, better NVH and wider motor compatibility
- Interfaces: CAN, RS-485, UART; PC tuning software, OBD fault diagnostics, BootLoader and OTA updates
- IP67 enclosure, UL94-V2 flame rating, ambient temperature -40 to +85 °C

2 Compliance Standards

FUNCTIONAL SAFETY

Item	Standard
EMC	EN 13309 / ISO 14982 / ISO 11452-2
ESD	IEC 61000-4-2 / ISO 10605
Electrical Load	GB/T 28046.2-2011
Mechanical Load	GB/T 28046.3-2011
Environmental Load	GB/T 28046.4-2011

3 Specifications

SPECIFICATIONS

Item	Parameter	Unit
Overall Dimensions (Max.)	166 × 93 × 47.1	mm
Weight	≤1.0	kg
Ingress protection	IP67	—
Flammability Rating	UL94-V2	—
Waterproof Vent	≥2.9 L/min @7 kPa	—
Heat Sink Material	ADC12	—
Housing Material	PA66 + GF30	—
Connector Mating/Unmating Force	≥15	N
Connector Pin Count	34	Pin
Cooling	Natural convection	—
Ambient Temperature	−40 ~ +85	°C
Operating Altitude	≤4000	m
HV/LV Isolation	No	—
Rated voltage	48/60/72	V
Peak Voltage	84	V
Min. Voltage	36	V
Max. Quiescent Current	≤30 @72 VDC	mA
Rated Power	3.5	kW
Peak power	7.5	kW
Peak DC Bus Current	≤80	A
Peak phase current	≤260	A
Switching Frequency	≤16	kHz
Precharge Capacitance	≤1320	μF
Insulation Leakage Current	≤10 mA @500 VDC	—
Control Method	FOC	—
Operating Modes	Speed / Torque / Power	—
Communication Interfaces	CAN, RS-485, UART	—
CAN Termination Resistor	120	Ω
Motor Feedback Interface	HALL ABC/GMR ABZ	—

4 Functions

BASIC FEATURES

Feature	Feature
Start / Stop	Gear Selection
Reverse	Cruise Control
Eco Mode	Power Mode
Limp-Home Mode	Brake Cut-Off
Kickstand Cut-Off	Charging Cut-Off
Anti-Theft Lock	Runaway Detection
Acceleration Curve	Regenerative Braking
CAN Communication	RS-485 Communication
Push Assist	Boost Mode (Nitro)
Emergency Brake Alarm	Field-Weakening Boost
Motor Parameter Learning	Traction Control (TCS)
Hill Hold Control (HHC)	Hill Descent Control (HDC)

PROTECTION FEATURES

Feature	Feature
Undervoltage Protection	Overvoltage Protection
Short-Circuit Protection	Stall Protection
FOC Execution Fault Monitoring	Software Fault Monitoring
DC Bus Current Sensing Fault Monitoring	Phase Current Sensing Fault Monitoring
Throttle Voltage Fault Monitoring	Controller Temp. Monitoring
Motor Temp. Monitoring	Motor Hall Fault Monitoring
Motor Phase-Loss Monitoring	Gate-Drive Voltage Fault Monitoring

EXTENDED FEATURES

Feature
Fault Buzzer Alert
OBD Fault Diagnostics
PC Tool Parameter Tuning
Bootloader Update
OTA Update

5 Block Diagram

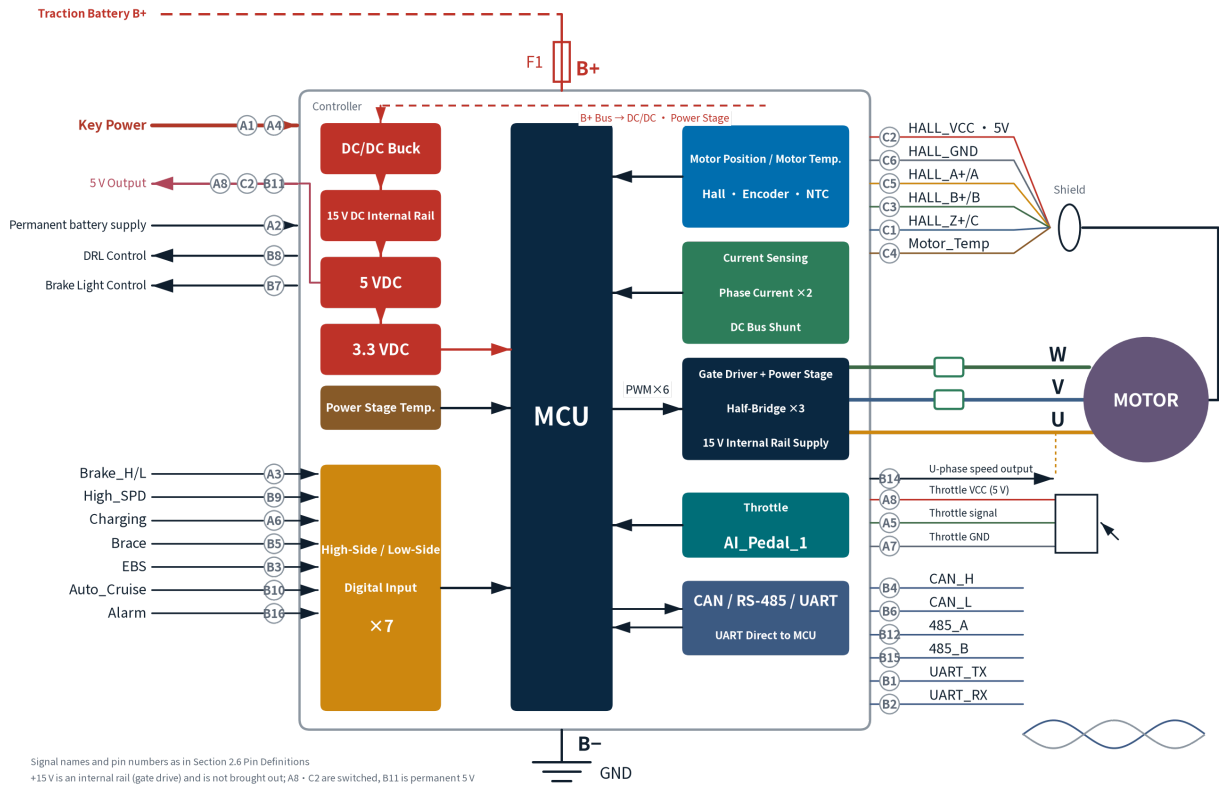


Figure 5-1 T-260 System Block Diagram

Note: +15 V is an internal rail (gate-drive supply) and is not brought out.

6 Connector Terminals

Symbol	Parameter	Typ.	Min.	Max.	Unit
W	Contact Width	1.12	—	—	mm
T	Contact Thickness	1.12	—	—	mm
I _C	Current per Contact	1.5	—	3	A
T _{OP}	Operating Temperature	25	-40	125	°C

Note: Mating plug housings: 5557-8Y (A), 5557-16Y (B), 5557-6Y (C); row D is a 2×2 debug socket (factory use only)

Note: Mating female terminals: 5556

Note: Wire size for female terminals: insulated wire, 0.5 mm² to 0.75 mm² recommended

7 Outline & Interface Dimensions

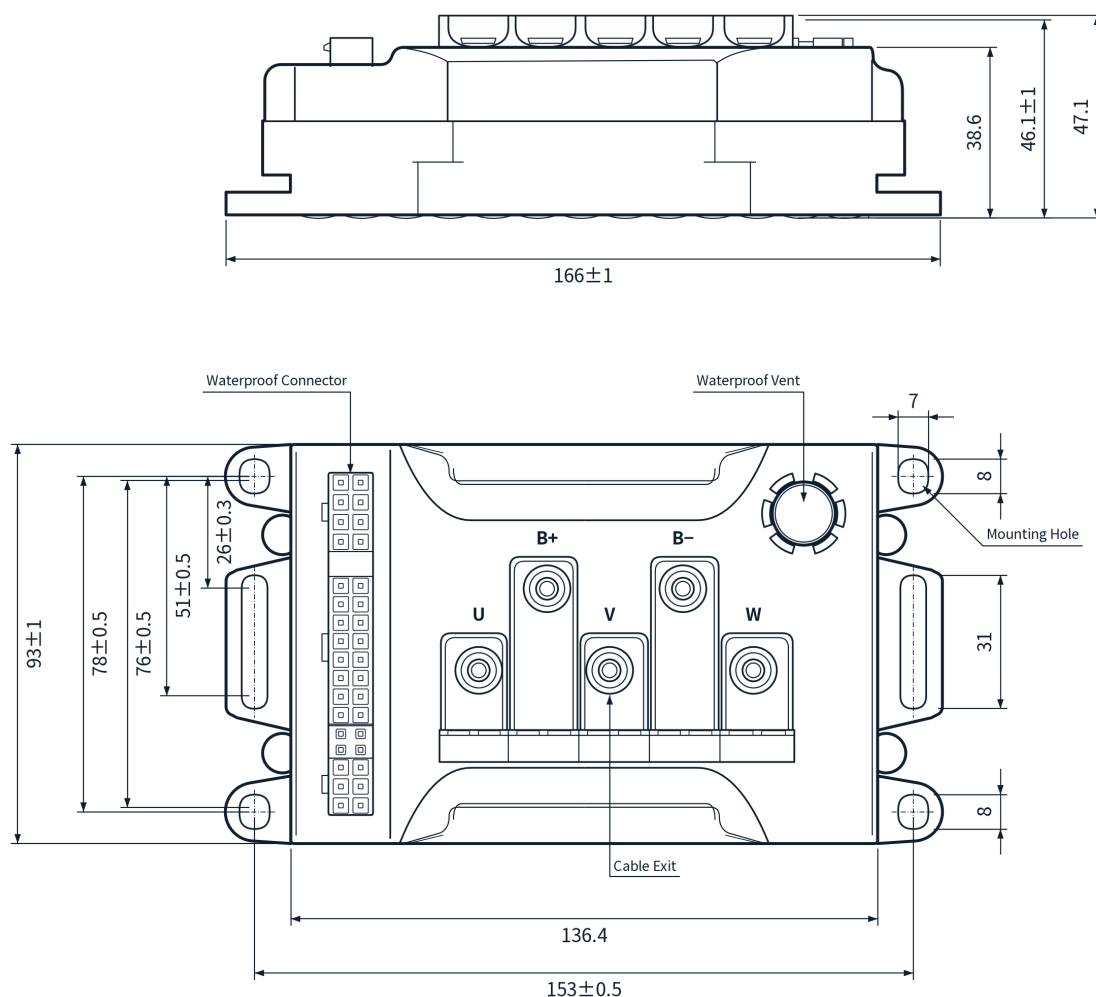


Figure 7-1 Outline and Interface Dimensions (mm)

8 Mounting Guidelines

- Fix the controller to the frame with M6 bolts, recommended torque 9–12 N·m. Keep the heat-sink face flat against the mounting surface; do not mount it suspended or under load.
- Connect the U / V / W / B+ / B– power cables to the terminal posts with M4 combination bolts, recommended torque 1.2 N·m; do not over-torque.
- Prefer an open, well-ventilated position, ideally with ram air over the heat sink. Do not block, coat or remove the breather valve.

9 Pin Definitions

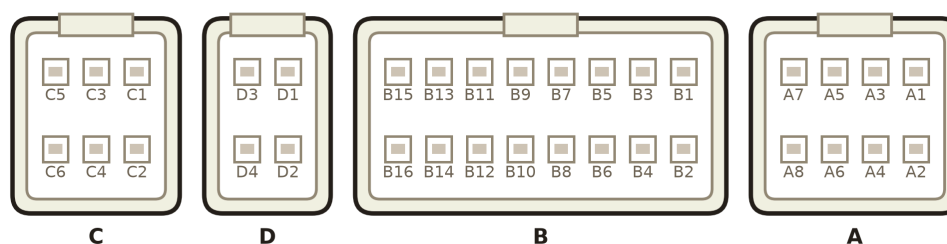


Figure 9-1 Connector Pin Numbering (Viewed from the Controller Connector Face)

Pin	Signal	Type	Signal Type	Description	Signal Range
A1	Key_Power_In	PWR	Power Control	Key-switch signal input	36~84 V
A2	VBAT+	PWR	Power Input	Permanent battery supply input	36~84 V
A3	Brake_H/L	AI	Analog Input	Brake input (high / low active)	H: 12 V / L: 0 V
A4	Key_Power_In	PWR	Power Control	Same net as A1	36~84 V
A5	Pedal_1	AI	Analog Input	Throttle analog input	0~5 V
A6	Charging	AI	Analog Input	Charge-port detect (high / low)	12 V or 0 V active
A7	GND	GND	Signal GND	Signal reference ground (throttle)	0~0.2 V
A8	+5V_Out	PWR	5 V Output	Switched 5 V output, throttle supply	5 V
B1	MCU_TX/IO	BUS	UART	UART TX (configurable as I/O)	0~5 V
B2	MCU_RX/IO	BUS	UART	UART RX (configurable as I/O)	0~5 V
B3	EBS	DI	Digital Input	Regen. braking enable detect	ON=0 V, OFF=open
B4	CAN_H/IO	BUS	CAN Bus	CAN bus high	0~5 V
B5	Brace	DI	Digital Input	Kickstand enable detection	ON=0 V, OFF=open
B6	CAN_L/IO	BUS	CAN Bus	CAN bus low	0~5 V
B7	WD_CTRL/IO	DO	Open-Drain	Brake / tail lamp (low-side)	0~30 V
B8	DRL_CTRL/IO	DO	Open-Drain	DRL control (low-side)	0~30 V
B9	High_SPD	DI	Digital Input	High-speed enable detection	ON=0 V, OFF=open
B10	Auto_Cruise	DI	Digital Input	Cruise enable detection	ON=0 V, OFF=open
B11	5V_OUT	PWR	5 V Output	Permanent 5 V (via diode)	5 V
B12	485A/RX	BUS	RS-485 Bus	RS-485 bus line A (+)	0~5 V
B13	GND	GND	Signal GND	Signal reference ground	0~0.2 V
B14	U_VS	AO	Phase Output	U-phase voltage via 100 kΩ	0 V~BAT+
B15	485B/TX	BUS	RS-485 Bus	RS-485 bus line B (-)	0~5 V
B16	Alarm	DI	Digital Input	Anti-theft alarm input, active low	ON=0 V, OFF=open
C1	HALL_Z+/C	PI	Pulse Input	Encoder Z+ / Hall C input	0~5 V
C2	+5V_Out	PWR	5 V Output	Switched 5 V, motor Hall supply	5 V
C3	HALL_B+/B	PI	Pulse Input	Encoder B+ / Hall B input	0~5 V
C4	Motor_TEMP	AI	Analog Input	Motor NTC input, internal pull-up	0~3.3 V
C5	HALL_A+/A	PI	Pulse Input	Encoder A+ / Hall A input	0~5 V
C6	GND	GND	Signal GND	Motor Hall reference GND	0~0.2 V
D1	+3.3V	PWR	3.3 V Output	Debug-port 3.3 V supply	3.3 V
D2	BT_TXD/SWDIO	BUS	Debug	SWD data (factory use)	0~3.3 V
D3	GND	GND	Signal GND	Debug-port ground	0~0.2 V
D4	BT_RXD/SWCLK	BUS	Debug	SWD clock (factory use)	0~3.3 V

10 Typical Wiring

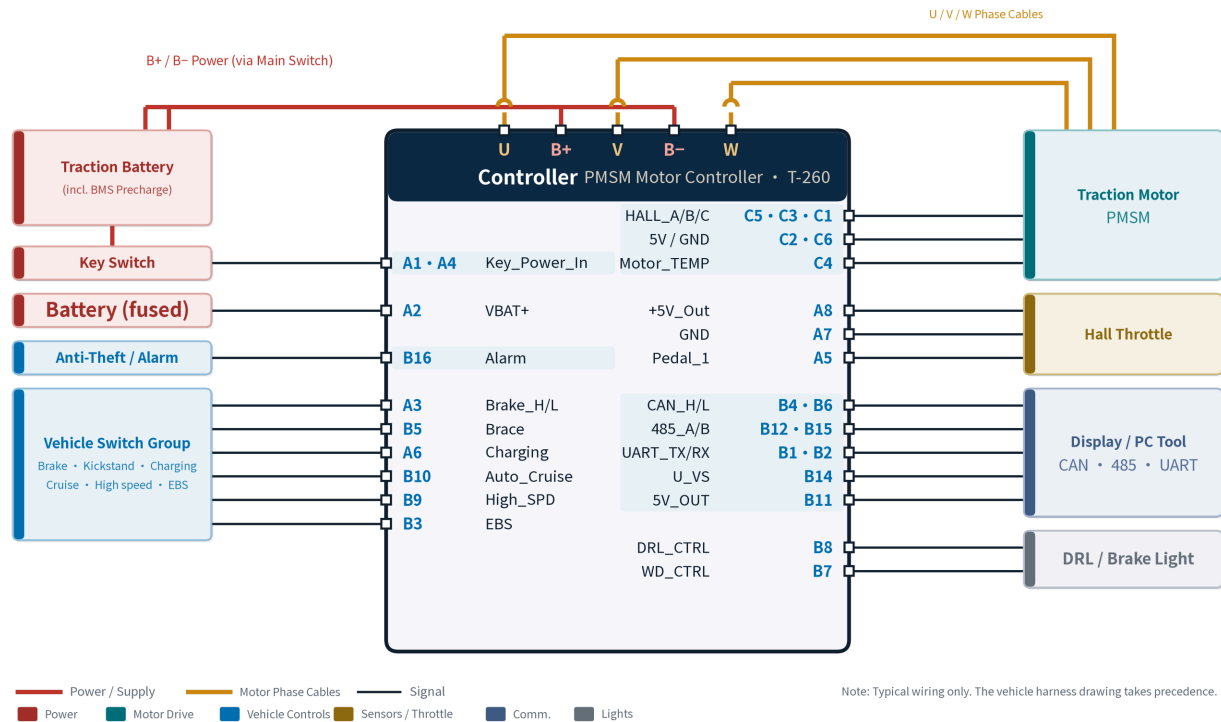


Figure 10-1 T-260 Typical Vehicle Wiring Diagram

- Route B+ / B- through the main battery switch and size the cables for the peak bus current. With a BMS, the pre-charge circuit must be enabled.
- All signal ports reference the controller GND (pins A7, B13, C6, D3); never connect them directly to the battery negative.
- The CAN bus needs a 120 Ω terminator at each end; one is integrated in the controller. Use shielded cable for Hall / encoder harnesses, shield grounded at the controller end only.
- For detailed port electrical characteristics and the Reference Circuit sections, see the T-260 User Manual (VT_RD4_023).

11 Revision History

Date	Rev.	Description of Change
2026.10.11	V1.0	Initial release: unified layout; data, functions and figures aligned with User Manual VT_RD4_023 V1.0
2026.10.14	V1.1	Added weight, quiescent current, rated/peak power, peak DC-bus current and mounting-hole spacing (per T260 reference); start/stop and reverse added to key features; power terminal bolts changed to M4
2026.10.14	V1.1	Power-terminal bolt corrected to M4; torque revised per GB/T 14048.1 (1.2 N·m)
2026.10.14	V1.1	Cross-reference renamed to the Reference Circuit sections