

PMS Motor Controllers

Controller for brushless permanentmagnet Synchronous Motors (PMSM Motor)

DESCRIPTION

The **PMS DRIVE** family of motor controllers have been developed for use in a wide range of electric vehicle applications such as Material handling, airport ground support; industrial Utility and Mobile Elevating Platforms.

The **PMS DRIVE** is available in a **24-48 V DC**, **72-80 V DC** and **96 V DC** version providing different battery voltages and power outputs up to **25 kW** continuous and **50 kW** peak power

CANbus communication (*OPTIONAL*) allows safe and reliable vehicle operations. Dual traction application for all PMS Drives can easily be configured using 2 individual traction controllers linked by CANbus.

Multiple **PMS DRIVE** can be interfaced via the CANbus to provide control of all vehicle functions, and also allows direct interface with ancillary products.

The **PMS DRIVE** based system can be quickly configured using the powerful Hand Held Programmer, this device allows easy set-up using 'real' units such as Volts, Hz; Amps and Seconds.



Advanced Design and Functionality

- The **SI-PMS DRIVE** is compact, efficient and offers outstanding performance regardless if it is applied for traction, lift or steering applications
- The drive is designed for use in the challenging environments typical of electric vehicles, providing excellent protection against dust and water in an incredibly low profile, rugged package.
- Reliable, single board IMS construction, integral heat sinking of all controller components.
- High efficiency, minimal switching losses
- Exceptional thermal performance and high continuous current rating
- Silent high frequency operating and superior power of size ratio
- CANbus communications (*OPTIONAL*)

For more informations:

PERM Motor GmbH
Brand 24/1
79677 Schönau
Tel.: +49 7673 82087-00
Fax.: +49 7673 82087-29
info@perm-motor.de
www.perm-motor.de



TECHNICAL Specifications

Model	Input Voltage (V DC)	Absolute Operating Voltage range	Current rms (1 hour rating)	Peak Current (1 min rating)	Frame Size
PMS 950 L	96 V	52,5 – 124 V	240 A rms	460 A	Large
PMS 865 L	72-80 V	43,0 – 97 V	240 A rms	460 A	Large
PMS 835 M	72-80 V	43,0 – 97 V	120 A rms	250 A	Medium
PMS 465 L	24-48 V	14,5 – 60 V	260 A rms	460 A	Large
PMS 445 M	24-48 V	14,5 – 60 V	180 A rms	320 A	Medium

OPERATING ENVIROMENT

Impact Protection (IP)	The enclosure is protected to IP 54
Vibration	60G, 40-200 Hz for 1 hour, in x, y and z-planes
Operating Temperature	-30°C to +40°C ambient around controller
Humidity	95% maximum, non-condensing
Machine directive	EN 1175-1
EMC	EN 61000-6-2 :2001 ; EN 61000-6-4 :2001 and EN 60950-1 :2001

POWER CONNECTIONS

Terminal	Description
B+	Supplies battery power for the power stage
B –	Battery return connection
M1	Phase U of the PMS motor
M2	Phase V of the PMS motor
M3	Phase W of the PMS motor

I/O INTERFACE

CONNECTOR

- Molex MicroFit 3.0 Series (1 x 16 pin ; 1 x 8 pin ; 1 x 6 pin Connector)

GENERAL I/O

- 7 off low impedance digital inputs
- 3 off high resolution analogue inputs
- 3 off protected contactor drives (2 off on small frame size)

MOTOR Feedback INTERFACE

- Encoder with 12 bit resolution

MOTOR TEMPERATURE SENSOR

- KTY 84 series

COMMUNICATION

- CANbus communication (*OPTIONAL*)

FEATURES

- Short circuit and open circuit contactor detect
- Throttle mapping and electromagnetic brake control
- Thermal current limit compensation
- Regenerative and plug braking
- Braking proportional to accelerator position
- Brake pedal analogue input mode
- Under and over-voltage protection
- Throttle wire off protection
- 3 traction cutback speed
- +12 V output pin; max. 20 mA
- Independent power steer speed and compensation

Dimensions

Frame Size	Length	Width	Height	Weight
Large	320 mm	200 mm	56 mm	6,1 kg
Medium	225 mm	200 mm	56 mm	4,1 kg
Small	177 mm	155 mm	38 mm	1,2 kg

LCD-Display

The LCD Display is a highly versatile vehicle display, which can be easily configured and customized to meet OEM requirements. The backlit, dot-matrix display receives its information via CANbus from the PMS SI controller and presents vehicle status and diagnostic information to the operator using a graphic icon system.

- Large backlit dot-matrix LCD Display
- Field upgradeable flash software
- CANBus communication
- Configurable membrane operator push buttons
- Programmable Battery Discharge Indication (BDI)
- Keyswitch ON Time and Drive Time hour counter
- Service Timer with truck performance settings
- Full icon based diagnostic display



Calibrator –Handheld Programmer



The Handheld Programmer is a powerful programming tool used to configure all PMS SI Drive Controller and the LCD Vehicle Display.

It allows simple and easy matching of motors to the controllers to produce the desired vehicle driving characteristics.

It also has a built in RS 232 interface which allows it to re-flash the controllers, I/O modules and LCD in the field to update the operating system and software.

Main Contactor –Heavy Duty contactors

The main contactor are available with different coil voltage from 24 V DC up to 96 V DC and with a continuous current up to 250 A.



Model ref	Continuous Current	Description
SW 180	150 A	1 power switch 1 x NO: normally open
SW 181	150 A	2 power switch 1 x NO and 1 x NC (normally closed)
SW 200	250 A	1 power switch 1 x NO: normally open
SW 201	250 A	2 power switch 1 x NO and 1 x NC (normally closed)