



TM4 Schwarzmüller™ Low-Voltage Inverters

AC Motor Controller

The TM4 Schwarzmüller Inverter family is designed to control AC-motors in all types of electric vehicles. Adaptable motor control, using a Flux Vector Control algorithm, offers best performance for drive systems.

Mobile Machine Management

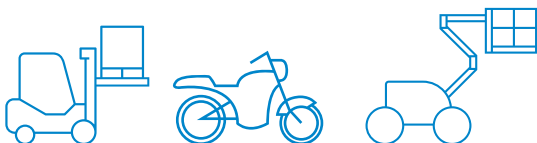
TM4 Schwarzmüller is both a motor inverter and a vehicle controller in one unit. With configurable I/O functionality and analog, digital, and CAN communication ports, the inverter is able to interface with a wide range of external devices.

Vehicle Application Development

Users develop applications with PLUS+1® GUIDE. This user-friendly, Microsoft Windows based development environment features a field proven graphical programming tool, application downloader, and service tool. Software application blocks for typical applications are available in the Schwarzmüller software library and can simply be adapted and expanded for individual vehicle applications.



Ideal for Off-Highway Applications.



TM4 Schwarz Müller™ Low-Voltage Inverter

Features

Advanced motor control performance

- Flux Vector Control for best drive performance in all speed modes and minimal power losses in the drive system
- Easy Motor Characterization for any AC motor using the PLUS+1® Service tool.







Designed for quality and reliability

- Superior thermal performance by using Integrated Power Modules
- Redundant watchdog timers
- Protected I/O and Wire Off detection
- Powerful computing capability with DSP (Digital Signal Processor)

Integrated vehicle control functionality

- All functions are user-programmable with PLUS+1®

Interface		Number	Specifications	
Digital input		8 (Max 15)	Switching frequency	adjustable 4, 8, 12, 16 kHz
Analog input unipolar 0...10V		1	Efficiency	min 98% at nominal output and 4 kHz switching frequency
Analog input bipolar ± 10V		2	Output frequency	0...300 Hz
Digital output 2A1)		5 (Max 8)	Ambient temperature range	-40°C - 50°C
Digital output for safety relevant components 2A1)		1	Maximum heat-sink temperature @ full current	85°C
Current controlled output 0...2A2)		1	Operation signal	2 built-in LEDs (red and green)
Current controlled output for safety relevant components 0...2A2)		1	Signal line connectors	AMPSEAL 35 pins
Motor temperature sensor		1	IP protection	IP67 with membrane
Incremental encoder		1 (Max 2)	EMC / ESD	100V/m / 15kV
Encoder power supply 13V		1	Safety	EN 1175-1
Sensor power supply, 5/10/12V programmable		1	Vibration IEC 60068-2-64 Shock IEC 60068-2-27 Bump IEC 60068-2-29	5g 50g 25g
CAN interface		1	UL	UL583 listed

Model		Nom. Voltage (V)	Nom. Current S2-2 min. (Arms)	Cont. Current (Arms)	Boost Curr. 10 Sec. (Arms)	Heat Sink Types available	Size LxWxH_P / LxWxH_Fx (mm)	Weight (kg / lb)
	MI01-S-24/80	24	80	40	90	plate	140x165x70	1,4 / 3,1
	MI01-S-48/60	48	60	40	65			
	MI02-S-24/160	24	160	80	180	plate	140x165x70	1,5 / 3,3
	MI02-S-48/120	48	120	70	130			
	MI03-S-24/240	24	240	120	260	plate, finned horizontal/vertical	140x200x90 140x200x110	2,4 / 5,29 plate 2,5 / 5,51 finned
	MI03-S-48/180	48	180	100	200			
	MI03-X1-80/80	80	80	40	90			
	MI06-S-24/400	24	400	200	420	plate, finned horizontal/vertical	140x200x100 140x200x120	3,5 / 7,72 plate 3,7 / 8,16 finned
	MI06-S-48/400	48	400	200	420			
	MI08-S-24/550	24	550	275	600	plate, finned horizontal/vertical	150x225x100 150x225x120	4,0 / 8,82 plate 4,1 / 9,04 finned
	MI08-S-48/550	48	550	275	600			
	MI08-S-80/300	80	300	150	330			
	MI08-S-80/400	80	400	200	440			
	MI08-S-96/300	96	300	150	330			
	MI08-S-96/400	96	400	200	440			
	MI20-S-80/650	80	650	325	715	plate, finned vertical	280x280x100 280x280x141	9 / 19,84 plate 10,5 / 23,15 finned
	MI20-S-80/1000	80	1000	450	1100			
	MI20-S-96/650	96	650	325	715			

*PLUS+1® is a registered trademark of Danfoss Power Solutions Inc.

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Application Policy

Capacity ratings, features, and specifications vary depending upon the model and type of service. Application approvals must be obtained from Dana TM4; contact your representative for application approval. We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.

