



ELECTRIFYING THE FUTURE



## ELECTROMOBILITY POWER DEVICES



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# DC/DC Converter

LINEAR VOLTAGE REGULATOR

12V→5V    100mA



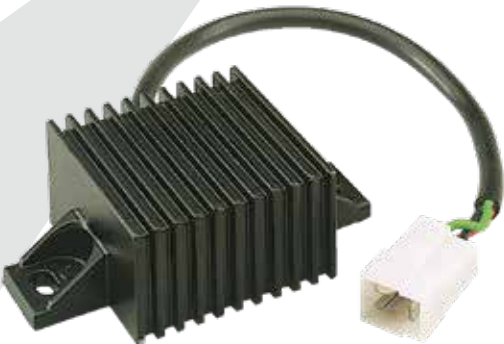
TECHNICAL SPECIFICATIONS			
Input voltage	12V		
Output voltage	5V		
Maximum current output	100mA		
Short circuit protected output	Yes		
Reverse polarity protected input	Yes		
Dimensions	30mm x 51mm x 31,5mm		
Operating temperature	-20°C ÷ +65°C		
Storage temperature	20°C ÷ +85°C		
Sealing degree	IP66		
Connector	JWPF 3 pins		

Purchase code	Pkg	20	1030773				
Drawing code	Q.ty		34-0188-0000				
Input voltage			12V				
Output voltage			5V				

# DC/DC Converter

VOLTAGE CONVERTER

24V→12V



TECHNICAL SPECIFICATIONS			
Input voltage	19 - 30V	Sealing degree	IP65
Output voltage	13,2V ± 1,5V	Connector	AMP 3 pins
Nominal current output (1 hr. rating)	3A		
Nominal current	3,5A		
Stand-by current	35mA		
Short circuit protected output	Yes		
Reverse polarity protected input	Yes		
Dimensions	108mm x 35mm x 62mm		
Operating temperature	-30°C ÷ +60°C		
Storage temperature	-40°C ÷ +85°C		

Purchase code	Pkg	1031509					
Drawing code	Q.ty	39-0030-0000					
Input voltage		19 - 30V					
Output voltage		13,2V ± 1,5V					

# DC/DC Converter

LINEAR VOLTAGE CONVERTER

24V→12V



TECHNICAL SPECIFICATIONS							
Input voltage	16 - 32V			Sealing degree	IPX5		
Output voltage	13,6 ± 0,5V			Connector	AMP 4 pins		
Nominal current	20A						
Stand-by current	100mA closed contact 1mA open contact						
Short circuit protected output	Yes						
Reverse polarity protected input	Yes						
Dimensions	193,8mm x 41,5mm x 97,6mm						
Operating temperature	-30°C ÷ +80°C						
Storage temperature	-40°C ÷ +85°C						
Purchase code	Pkg	1	1031511				
Drawing code	Q.ty		39-0031-0000				
Input voltage	16 - 32V						
Output voltage	13,2V ± 1,5V						

# DC/DC Converter

VOLTAGE CONVERTER

24V→12V



TECHNICAL SPECIFICATIONS			
Input voltage	18 - 32V	Maximum peak power	130W
Output voltage	13,5V	Nominal power rating	100W
Maximum current	10A	Frequency	62kHz
Nominal current output (1 hr. rating)	7,4A	Shock and vibration	SAE J1378
Output voltage regulation	+ / - 0,5V	Dimensions	110mm x 56mm x 105mm
Output ripple voltage	200mVpk-pk	Operating temperature	-30°C ÷ +60°C
Short circuit protected output	Yes	Storage temperature	-40°C ÷ +70°C
Reverse polarity protected input	Yes	Sealing degree	IP64
Overload protection	Yes	Connector	DEUTSCH 3 pins
Thermal protection	Yes		

Purchase code	Pkg	1031521					
Drawing code	Q.ty	39-015-000					
Input voltage		18 - 32V					
Output voltage		13,5V					

# DC/DC Converter

VOLTAGE CONVERTER

48 - 80V → 24V



TECHNICAL SPECIFICATIONS			
Input voltage	48 - 80V	Nominal power rating	200W
Output voltage	24V	Frequency	62kHz
Maximum current	10A	Shock and vibration	SAE J1378
Nominal current output (1 hr. rating)	8,3A	Dimensions	110mm x 56mm x 105mm
Output voltage regulation	+ / - 1V	Operating temperature	-30°C ÷ +55°C
Output ripple voltage	100mVpk-pk	Storage temperature	-40°C ÷ +70°C
Short circuit protected output	Yes	Sealing degree	IP64
Reverse polarity protected input	Yes	Connectors	BPF 2 pins + BPM 2 pins
Overload protection	Yes		
Maximum peak power	250W		

Purchase code	Pkg	1031517					
Drawing code	Q.ty	39-013-000					
Input voltage		48 - 80V					
Output voltage		24V					

**DC/DC Converter**

VOLTAGE CONVERTER

48 - 80V → 24V



TECHNICAL SPECIFICATIONS			
Input voltage	48 - 80V	Nominal power rating	200W
Output voltage	24V	Frequency	62kHz
Maximum current	10A	Shock and vibration	SAE J1378
Nominal current output (1 hr. rating)	8,3A	Dimensions	140mm x 61mm x 80mm
Output voltage regulation	+ / - 1V	Operating temperature	-30°C ÷ +55°C
Output ripple voltage	100mVpk-pk	Storage temperature	-40°C ÷ +80°C
Short circuit protected output	Yes	Sealing degree	IP64
Reverse polarity protected input	Yes	Connectors	2 X Faston AMP + BPM 8 pins
Overload protection	Yes		
Maximum peak power	250W		

Purchase code	Pkg	1031518					
Drawing code	Q.ty	39-014-000					
Input voltage		48 - 80V					
Output voltage		24V					



# DC/DC Converter

VOLTAGE CONVERTER

12V → 24V



TECHNICAL SPECIFICATIONS			
Input voltage	9 - 18V	Dimensions	160mm x 181mm x 88,5mm
Output voltage	27,5 - 28,5V	Operating temperature	-30°C ÷ +45°C
Input current @ POUT 700W Vin 13,5V	56V	Sealing degree	IP66
Maximum peak power	750W	Connector	DEUTSCH 4 pins
Nominal power rating	700W		
Frequency	60kHz		
Nominal input voltage	13,5V		
Nominal output voltage (lin bus)	22 - 32V		
Output voltage regulation	+ / - 0,5V		
Output ripple voltage	50mVpk-pk		

Purchase code	Pkg	1	1031505				
Drawing code	Q.ty		39-0028-0000				
Input voltage		9 - 18V					
Output voltage		27,5 - 28,5V					

# DC/DC Converter

VOLTAGE CONVERTER

48V → 12V

24V → 12V



TECHNICAL SPECIFICATIONS			
Maximum current output	14,5A	Frequency	64kHz
Nominal current output	12,5A	Shock and vibration	SAE J1378
Output voltage regulation	+ / - 1V	Dimensions	180mm x 88,5mm x 160mm
Output ripple voltage	100mVpk-pk	Operating temperature	-30°C ÷ +45°C
Short circuit protected output	Yes	Storage temperature	-40°C ÷ +70°C
Reverse polarity protected input	Yes	Sealing degree	IP65
Overload protection	Yes	Electromagnetic compatibility (EMC)	61000-6-3 for emission 61000-6-2 for immunity
Maximum peak power	350W	Connector	DEUTSCH 4 pins
Input/output isolation (1000vrms)	Yes		
Nominal power rating	300W		

Purchase code	Pkg	1031501	1031502	1031503	1031504		
Drawing code	Q.ty	39-0022-0000	39-0023-0000	39-0026-0000	39-0027-0000		
Input voltage	1	48V	48V	24V	24V		
Output voltage		12V	12V	12V	12V		
Load sharing (max 5 units)			X		X		

# Traction Controllers General Features

VALID FOR ALL INVERTER TC MODELS

( S – M – M+ – L )

Designed to drive Asynchronous Motors and Permanent Magnet Synchronous Motors (Surface or Internal technology)

Battery range from 24V to 96V

Traditional Lead acid battery or Lithium battery

From 1KW size motor to 30KW size motor

CAN open compatible protocol

Designed to work as a standalone drive with wired commands, or like a slave drive with CAN bus commands

**Very high efficiently Autotuning function to match the controller with general market motors**

**Field Oriented Control architecture, very good accuracy on the control speed**

Speed control mode, Torque control mode

Regenerative braking functions

Dynamic current limiter to preserve the battery

Hill hold control, line or curve acceleration and deceleration profiles

Electronic differential controller for double traction motors

The controller can be used to manage a traction motor or a pump motor

CAN isolated version is mandatory for machines with 48V ÷ 96V battery

# TC - S

## Traction Controller

INVERTER



The ordering P/N shown on the brochure are referred to the standard version, CAN open compatible (non isolated CAN hardware)

TECHNICAL SPECIFICATIONS							
Digital input	7			Sealing degree	IP65		
Analog input	3			Can interface	Can open compatible		
Power output (contactor)	3			Can option	Can isolated (Option suggested)		
Digital outputs	1			Dimensions	160mm x 200mm x 75mm		
Encoder type	Sin/cos or incremental			Connector	AMPSEAL 35 pins		
Motor thermal input	1						
Switching frequency	8kHz						
Motor frequency (max)	600Hz						
Regulation	EN12895 - EN1175						
Operating temperature	-30°C ÷ +40°C						

Purchase code	Pkg	1093253	1093256	1093435	1093438	FOR MORE DETAILS	FOR MORE DETAILS
Drawing code	Q.ty	40-0036-0000	40-0039-0000	40-0043-0000	40-0046-0000	please contact sales referent or mail info	please contact sales referent or mail info
Battery voltage	1	24 ÷ 48V	60 ÷ 96V	24 ÷ 48V	60 ÷ 96V	24 ÷ 48V	60 ÷ 96V
Nominal current		130A	75A	130A	75A	130A	75A
Peak current (2 min)		250A	140A	250A	140A	250A	140A
Type of motor		3 phase AC motor	3 phase AC motor	PMS motor	PMS motor	IPM motor	IPM motor

# TC - M

## Traction Controller

INVERTER



The ordering P/N shown on the brochure are referred to the standard version, CAN open compatible (non isolated CAN hardware)

TECHNICAL SPECIFICATIONS							
Digital input	7			Sealing degree	IP65		
Analog input	3			Can interface	Can open compatible		
Power output (contactor)	3			Can option	Can isolated (Option suggested)		
Digital outputs	1			Dimensions	200mm x 200mm x 75mm		
Encoder type	Sin/cos or incremental			Connector	AMPSEAL 35 pins		
Motor thermal input	1						
Switching frequency	8kHz						
Motor frequency (max)	600Hz						
Regulation	EN12895 - EN1175						
Operating temperature	-30°C ÷ +40°C						
Purchase code	Pkg	1093254	1093257	1093436	1093439	FOR MORE DETAILS	FOR MORE DETAILS
Drawing code	Q.ty	40-0037-0000	40-0040-0000	40-0044-0000	40-0047-0000	please contact sales referent or mail info	please contact sales referent or mail info
Battery voltage		24 ÷ 48V	60 ÷ 96V	24 ÷ 48V	60 ÷ 96V	24 ÷ 48V	60 ÷ 96V
Nominal current		230A	140A	230A	140A	230A	140A
Peak current (2 min)		450A	270A	450A	270A	450A	270A
Type of motor		3 phase AC motor	3 phase AC motor	PMS motor	PMS motor	IPM motor	IPM motor

**TC – M+**  
**Traction Controller**  
INVERTER



The ordering P/N shown on the brochure are referred to the standard version, CAN open compatible (non isolated CAN hardware)

TECHNICAL SPECIFICATIONS							
Digital input	7			Sealing degree	IP65		
Analog input	3			Can interface	Can open compatible		
Power output (contactor)	3			Can option	Can isolated (Option suggested)		
Digital outputs	1			Dimensions	250mm x 200mm x 75mm		
Encoder type	Sin/cos or incremental			Connector	AMPSEAL 35 pins		
Motor thermal input	1						
Switching frequency	8kHz						
Motor frequency (max)	600Hz						
Regulation	EN12895 - EN1175						
Operating temperature	-30°C ÷ +40°C						
Purchase code	Pkg	1093255	1093258	1093437	1093440	FOR MORE DETAILS	FOR MORE DETAILS
Drawing code	Q.ty	40-0038-0000	40-0041-0000	40-0045-0000	40-0048-0000	please contact sales referent or mail info	please contact sales referent or mail info
Battery voltage		24 ÷ 48V	60 ÷ 96V	24 ÷ 48V	60 ÷ 96V	24 ÷ 48V	60 ÷ 96V
Nominal current		330A	230A	330A	230A	330A	230A
Peak current (2 min)		600A	450A	600A	450A	600A	450A
Type of motor		3 phase AC motor	3 phase AC motor	PMS motor	PMS motor	IPM motor	IPM motor

# TC - L

## Traction Controller

INVERTER



The ordering P/N shown on the brochure are referred to the standard version, CAN open compatible (non isolated CAN hardware)

TECHNICAL SPECIFICATIONS							
Digital input	7	Sealing degree	IP65				
Analog input	3	Can interface	Can open compatible				
Power output (contactor)	3	Can option	Can isolated (Option suggested)				
Digital outputs	1	Dimensions	320mm x 200mm x 75mm				
Encoder type	Sin/cos or incremental	Connector	AMPSEAL 35 pins				
Motor thermal input	1						
Switching frequency	8kHz						
Motor frequency (max)	600Hz						
Regulation	EN12895 - EN1175						
Operating temperature	-30°C ÷ +40°C						
Purchase code	Pkg	1093259	1093441	FOR MORE DETAILS			
Drawing code	Q.ty	40-0042-0000	40-0049-0000	please contact sales			
				referent or mail info			
Battery voltage		60 ÷ 96V	60 ÷ 96V	60 ÷ 96V			
Nominal current		300A	300A	300A			
Peak current (2 min)		600A	600A	600A			
Type of motor		3 phase AC motor	PMS motor	IPM motor			

## Traction Controllers Applications

VALID FOR ALL INVERTER TC MODELS

( **S** - **M** - **M+** - **L** )

### ELECTRIC - PUMP DRIVE

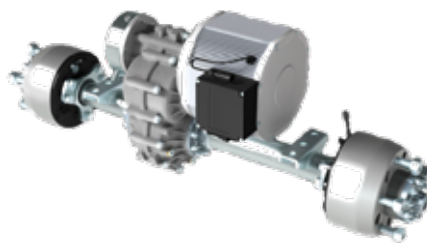


Electric pump



Articulated boom lift

### TRACTION DRIVE



Electric power unit



Road sweeper



The background of the slide is a light gray with a subtle, stylized pattern of white lightning bolts. The bolts are jagged and branch out across the frame, creating a dynamic and energetic feel.

# **Traction Module TM**

CHOPPERS

( **plus 1 GP – 2 GP – 3 GP** )



# TM plus 1 GP

## Traction Module

CHOPPER



TECHNICAL SPECIFICATIONS							
Power supply	24V	Pump motors	DC brushed				
Regulation	EN12895 / EN1175						
Operating temperature	-40°C ÷ +40°C						
Sealing degree	IP65						
Dimensions	170mm x 201mm x 68mm						
Connector	AMPSEAL 26 pins						
Traction motors	DC brushed						
Purchase code	Pkg	1	1091431				
Drawing code	Q.ty		40-0032-0000				
Power output	5						
Digital output	3						
Battery voltage	14,5 - 32V						
Pump nominal current (1h) [Arms]	90						
Traction nominal current (1h) [Arms]	70 + 70						
Pump max current (2 min) [Arms]	200						
Traction max current (2 min) [Arms]	150 + 150						

# TM 2 GP

## Traction Module

CHOPPER



TECHNICAL SPECIFICATIONS							
Power supply	24V	Pump motors	DC brushed				
Regulation	EN12895 / EN1175						
Operating temperature	-40°C ÷ +40°C						
Sealing degree	IP65						
Dimensions	177mm x 220mm x 68mm						
Connector	AMPSEAL 26 pins						
Traction motors	SepEx						
Purchase code	Pkg	1	1091433				
Drawing code	Q.ty		40-0034-0000				
Power output	5						
Digital output	3						
Battery voltage	14,5 - 32V						
Pump nominal current (1h) [Arms]	125						
Traction nominal current (1h) [Arms]	70 + 70						
Pump max current (2 min) [Arms]	275						
Traction max current (2 min) [Arms]	180 + 180						
Maximum excitation current [Arms]	40						

# Traction Module Applications

( TM 1 plus GP – TM 2 GP)

Designed to manage 2 traction motors 24V + hydraulic pump motor 24V

Typical application field: indoor AWP or compact scissors

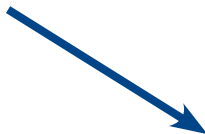
Slave configuration, all of commands via CAN



Wheel motor left



Wheel motor right



Hydraulic pump



Compact scissor

**TM 3 GP**  
**Traction Module**  
CHOPPER



TECHNICAL SPECIFICATIONS							
Power supply	24V						
Regulation	EN12895 / EN1175						
Operating temperature	-40°C ÷ +40°C						
Sealing degree	IP65						
Dimensions	170mm x 201mm x 68mm						
Connector	AMPSEAL 26 pins						
Pump motors	DC brushed or series						
Purchase code	Pkg	1	1091432				
Drawing code	Q.ty		40-0033-0000				
Power output	2						
Digital output	3						
Battery voltage	14,5 - 32V						
Pump nominal current (1h) [Arms]	125						
Pump max current (2 min) [Arms]	275						

# Traction Module Applications

[ TM 3 GP ]

Hydraulic pump motor 24V (DC permanent magnet or series)

Typical application field: indoor AWP or compact scissors

Slave configuration, all of commands via CAN



Hydraulic pump



Compact scissor

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