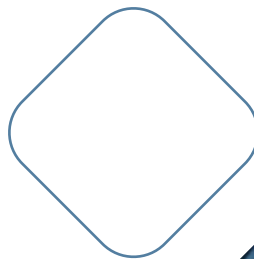


POWER

VERSION 1.0



ENERGY IN MOTION

ADVANCED POWER ELECTRONICS FOR EFFICIENT ENERGY CONVERSION
AND MANAGEMENT

As electrification continues to reshape the mobility and industrial landscape, efficient energy conversion and integration become critical. MTA develops a complete range of power electronics solutions designed to support next generation electric architectures, ensuring high performance, reliability and flexibility across applications.

From on-board chargers enabling efficient and bidirectional energy flow, to inverters driving electric propulsion systems, as well as DC/DC converters and boosters ensuring optimal energy distribution and compatibility across different voltage levels, MTA solutions cover the entire energy chain.

Each product is engineered to integrate seamlessly into the vehicle architecture, supporting increasingly demanding systems and contributing to more efficient, robust and future-proof electrical platforms.

ON-BOARD CHARGERS

MTA's range of On-Board Chargers combines power, efficiency and flexibility, addressing the needs of sectors in which electrification is both a demanding challenge and an essential step forward. Whether used for on-board charging, off-vehicle mobile solutions or advanced bidirectional functionalities, these systems serve as key enablers for new electrical architectures, increased vehicle operability and the broader energy transition within the industrial world.

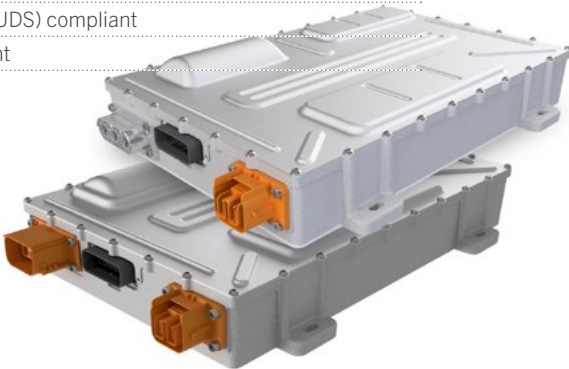
GEN5

- Single P/N to support 19.2/22 kW AC single phase and three-phase bidirectional operation.
- Parent/Child management up to 44 kW.
- AC charger - SAE J1772 and EN 61851 compliance
- Export power (V2L) and V2G (ISO 15118 compliance)
- HVIL monitoring
- Support for SAE-J3400 (NACS plug)
- Typical efficiency >94%
- AC/DC galvanic isolation
- Functional safety (ASIL-B) and cybersecurity compliant
- IP67, IP6K9K protection rating
- Power supply LV: 12/24V
- Fully CAN monitored and controlled (v2.0B and FD)
- SAE J1939 and ISO 14229 (UDS) compliant.



BHP22 & BHP19

- BHP22: 22 kW AC three-phase bidirectional operation (7.3 kW AC single phase)
- BHP19: 19.2 kW AC single-phase bidirectional operation
- Parallelable in charge and export power mode
- AC charger - SAE J1772 and EN 61851 compliance
- DC fast charging (CCS) communication – ISO 15118 and DIN 70121 compliance
- Export power (V2L) and V2G (ISO 15118 compliance)
- AC plug locking/unlocking management
- HVDC interlock monitoring
- Typical efficiency >94%
- AC/DC galvanic isolation
- Functional safety (ASIL-B) and cybersecurity compliant
- IP67, IP6K9K protection rating
- HVDC outputs are short-circuit and reverse polarity protected
- Fully CAN monitored and controlled (v2.0B and FD)
- SAE J1939 and ISO 14229 (UDS) compliant
- UL1741, IEEE1547 compliant



HPC22

- 22 kW AC three-phase 400/480 Vac
- 7.3 kW AC single-phase 230/240 Vac
- Parallel connections up to 5 units
- SAE J1772 and EN 61851 fully compliant
- DC fast charging (CCS) communication (optional)
- HVDC connector external interlock monitoring
- Typical efficiency >94%
- High AC input power factor and low THD
- AC/DC galvanic isolation assures a definitive safety separation between the vehicle and grid
- IP67, IP6K9K protection rating
- Outputs are short-circuit and reverse polarity protected
- Fully CAN controlled by MTA proprietary protocol (v2.0B)
- SAE J1939 compliant



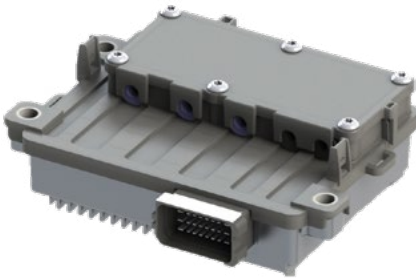
INVERTERS

Inverters represent the core of the electric propulsion system, converting the battery’s direct current into alternating current to power high-performance motors and actuators. Precise motor control, high energy efficiency and the ability to handle peak currents make these devices essential for ensuring smooth, powerful and responsive driving. Each inverter is developed to withstand the stresses typical of the automotive environment – such as extreme temperatures, vibrations and harsh operating conditions – ensuring long-term reliability.

PEAK POWER 190 KW 48-900 VDC

The traction inverter is a solution created for medium-sized commercial vehicles but can be adapted to various applications up to 150 kW. The extended power supply range from 48 V to 1000 V guarantees the versatility of the product.

3-phase motor controller / inverter	Liquid cooling, 10-15 L/min
Voltage range 48-900 VDC	Out spare, 4 Low Side + 2 Hi Side; configurable for alarms or other use
DC current measure	
Max electrical output power 190 kW	Connectors: PowerLok Amphenol G2 (1 x 3P + 1 x 2P), 1 x RTS014N19P03 19P Circular connector for Motor Signals, 1 x ATV04-38PC-S2 38P rectangular connector for signals
Multiple resolver / encoder compatibility	
Four quadrant operation	
Variable switching frequency	Configurable bleed resistor
High power and current densities	High voltage leakage measurement (optional)
Adaptable to different types of three-phase motors	IP65
11 internal / external temperature sensors	Gore valve



INVERTER/CONTROLLER LEV 3 KW-60 V

Phase current range ± 300 A
Field oriented control
Fully calibrable KERS and regenerative brake
Integrated 120 W DC/DC power converter for 12 V-system power supply
Magnetic-position sensor management
Fully protected low-side power out
Limit and derating management
CAN communication management (ISO11898-1; 500 kbit/s)
PCB temperature measurement
Motor temperature measurement
Diagnosis and recovery management
UDS management and reprogramming
Safety mechanisms and diagnostic checks

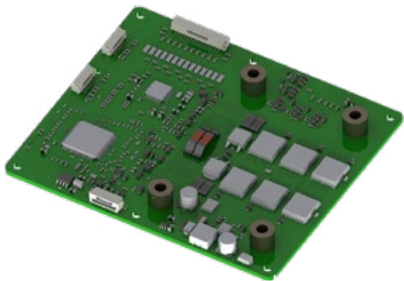


INVERTER/CONTROLLER LEV 5 KW-60 V

Phase current range ± 400 A
Field oriented control
Fully calibrable KERS and regenerative brake
Integrated 120W lead-acid battery charger for auxiliary 12 V battery
Control pilot charging management function (Mode-3 IEC 61851-1 Standard)
Magnetic-position sensor management
Fully protected high-side power out
Fully protected low-side power out
Limit and derating management
CAN communication management (ISO11898-1; 500 kbit/s)
PCB temperature measurement
Motor temperature measurement
Diagnosis and recovery management
UDS management and reprogramming

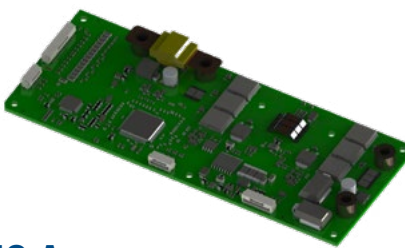
BATTERY MANAGEMENT SYSTEMS

The Battery Management System (BMS) monitors and manages the lithium battery, optimizing performance and minimizing aging. BMS is designed for overseeing and controlling the high voltage battery in hybrid and electric vehicles and motorcycle / stationary application.



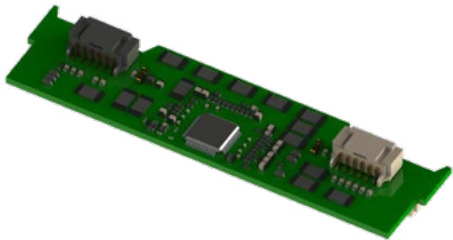
BMS 13S - 32 A

Max 54.6 V; discharge current 50 A
Management 13 cells
Analog front end for coulomb counting
More than 100 calibration parameters (scalars, curves, maps)
Limit and derating management
CAN communication management (ISO11898-1; 500 kbit/s)
State of charge and real capacity calculation
Battery temperature measurement
Equalization management
Diagnosis and recovery management
UDS management and reprogramming
Datalogging and state of health (EU2023 / 1542 regulations)



BMS 14S - 50 A

Max 58.8 V; discharge current 60 A
NCM and LFP cell type management
Configurable cell numbers, up to 14
More than 150 calibration parameters (scalars,curves,maps)
Limit and derating management
CAN communication management (ISO11898 - 1,500 kbit/s)
State of charge and real capacity calculation
Battery temperature measurement
Equalization management
Diagnosis and recovery management
UDS management and reprogramming
Datalogging and state of health (EU2023 / 1542 regulations)
Multiple battery parallel system applications



CELL CONTROL UNIT (CCU)

1 board per battery module
Stackable up to 15 modules (800 V total battery voltage)
Isolated communication interface to master BMS
Up to 14 voltage cells
Up to 5 cell temperatures
Passive cell balancing
Safety mechanisms and diagnostic checks
Ultra low power stand by mode
ISO 26262 – Up to Asil Level C
CAN communication management



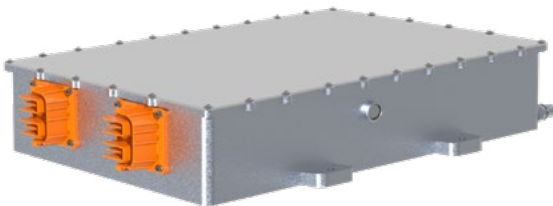
HIGH VOLTAGE BMS

6 HV voltage sense
6 temperature reading (of which 4 on busbars)
6 contactor drivers (precharge, discharge, recharge)
4 CAN communication to vehicle powertrain
Isolated communication interface to CSC Stack
Support for external current monitor
2 HVIL active management
Pyroswitch driver
HV insulation monitoring
ISO 26262 – Up to Asil Level C
CAN communication management



DC-DC CONVERTERS

Bidirectional DC-DC Converter
HV input range: 250 V - 850 V
Nominal output voltage: 48 V / 12 V
Output power: up to 3 kW
Output parallelable with LVDC current sharing
HVDC interlock monitoring
Typical efficiency >94%
Air or Liquid cooled system
HV/LV Galvanic isolation
Functional safety (ASIL-B) and cybersecurity compliant
IP67, IP6K9K protection
Rating HVDC output is short-circuit and reverse polarity protected
Over & under voltage and over current monitoring
Fully CAN monitored and controlled (v2.0B and FD)
SAE J1939 and ISO 14229 (UDS)



DC-DC BOOSTERS

HV bidirectional DC-DC Converter
HV booster 400 V to 800 V
HV bybass 800 V to 800 V
HV boost input range 200 V - 500 V
HV output range 550 V - 850 V
Bypass maximum power available: 300 kW
Boost maximum power available: 150 kW
HVDC interlock monitoring
Typical efficiency >98%
Liquid cooled system
Functional safety (ASIL-B) and cybersecurity compliant
IP67, IP6K9K protection
Rating HVDC outputs are short-circuit and reverse polarity protected
Over & under voltage and over current monitoring
Fully CAN monitored and controlled (v2.0B and FD)
SAE J1939 and ISO 14229 (UDS)



POWER

**PROTECT &
DISTRIBUTE**

DISPLAY

CONTROL

CONNECT

POWER

Version 1.0
September 2026
P/N 9951246

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