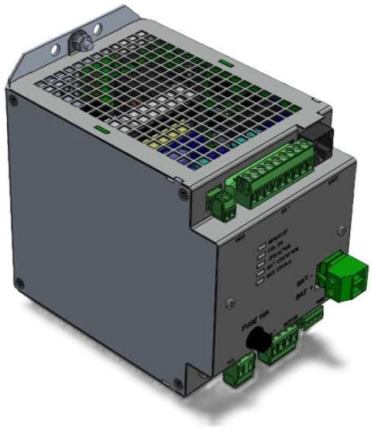
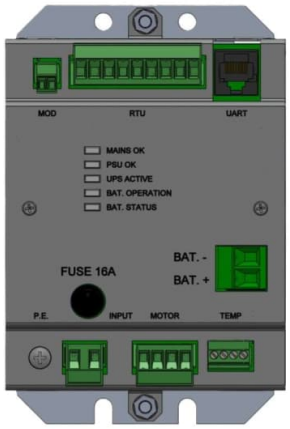
MAB1256-CB-X

FEATURES

- Digital Power Regulation
- Integrated Battery Charger Algorithm
- Automatic Sensing of Input Voltage, Load Current and Battery Current. Multiple User Settable Parameters
- RTU/Motor VOLTAGE Settable Via MODBUS: 24V or 48V
- Maximum Battery Capacity 150Ah
- Current Load: 8 A Max.
- Multiple Protections
- Modem Remote ON/OFF
- Battery Protection Against Reverse Polarity Connection and Overcurrent Internal BMS
- Battery Health Monitoring System: Measuring Battery Internal Resistance, Battery Temperature, Charge/Discharge Cycles and Coulomb Counter
- Optional 2 PT1000 Temperature Probe for Battery
- Temperature Measurement (Basic Isolation from Battery)





EMBEDDED USER INTERFACE

- MODBUS communication for remote monitoring and configuration
- LED display to immediately capture the status of the unit
- Interface with reinforced isolation to grid, basic isolation to output.

APPLICATION



DESCRIPTION

MAB1256 is a microprocessor-controlled converter with a nominal AC input voltage between 85 ÷ 276Vac. There are three DC outputs: MODEM, RTU and MOTOR.
The converter is powered by/can charge a battery, whose voltage is in the range 10,5 ÷ 15Vdc, 12A (Peak 80A).

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BASIC CHARACTERISTICS

Parameter	Note	Min.	Typ.	Max.
Input				
Input AC Rated Voltage (Nominal)	85VAC-276VAC	110VDC		240VAC
Frequency			50/60Hz	
PFC			>0.9	
Input AC Rated Current				
Standby Power				
Battery				
Rated Battery Voltage			12VDC	
Battery Volage Limit		10.4V		15.0V
Battery Chemistries	Lead Acid			
Programmable Battery Charges Current		0.5A		8A
Allowed Battery Capacity			Up to 150Ah	
Maximum Battery Current				8A
Buffering Time			25ms	
Battery Protections	Yes			
Switching Time	Between AC Mains to Battery Mode		≤10ms	
Battery Internal Resistance Range		1mΩ		300mΩ
Additional Monitoring Functions	Coulomb Counter, Battery Temperature Through PT1000 Sensor (Optional), battery Operating Time Since Installation, Number of Cycles			
User Interface				
LED Display	5 LEDs Shows the Actual Status of the Unit (See Table 1)			
Mod Bus Communication	MODBUS – UART over RS485			
Output				
Motor Output	Reinforced Isolated from Grid Output Power Time Limit (See Table 2)	24VDC±10%		48VDC±10%
Modem Output	Output Current 2A Reinforced Isolated from Grid Basic Isolated from RTU / Motor		12VDC±10%	
RTU Output	Output Current 2.6A (48VDC-1.3A) Reinforced Isolated from Grid	24VDC±10%		48VDC±10%
Efficiency	Full Load, Output Power 100W		90%	
Maximum Backup Time	USER Programmable, Up to Battery Deep Discharge Threshold			
Temperature Sensors	2x PT1000 Can Be Connected to the Unit (Optional) Reinforced Isolated from Grid Basic Isolated from RTU/Motor			

BATTERY PROTECTION

Parameter	Conditions	Min.	Typ.	Max.
Overcurrent				
Over Voltage				
Over Charging / Deep Discharge				
Over-Temperature				

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TABLE 1

LED	COLOR	STATUS
MAINS OK	Green	Mains OK
	Off	Mains NOK
PSU OK	Green	PSU OK
	Red	PSU NOK (failure detected)
UPS ACTIVE	Green	UPS Active Stand By
	Yellow	UPS in Operation
	Off	Battery Not Connected
BATT OPERATION	Green	Idle Fully Charged; SOC 100%
	Yellow	Battery in Charging
	Off	Battery Not Connected
BATT STATUS	green	Battery OK
	Red	Battery NOK

TABLE 2

VOUT	TIME [s]	DC CURRENT [A]
24VDC	0.07	30
	20	16
48VDC	0.07	15
	20	8

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RELIABILITY

Function	Minimum	Typical	Maximum	Condition
MTBF	TBC	TBC	TBC	TBC
Life	>10 Years			

EMC

	Standard
EMC Emission	CISPR 32
EMC Immunity – Enclosure Ports	IEC 61000-4-2 IEC 61000-4-8 IEC 61000-4-10 IEC 61000-4-9
EMC Immunity – Auxiliary Power Supply Ports	IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-12
Vibration Sinusoidal	IEC 60068-2-6 2Hz ÷ 500Hz 20 cycles Constant Displacement ±3mm from 2Hz to 9Hz Constat Acceleration 1g from 9Hz to 200Hz Constat Acceleration 1.5g from 200Hz to 500Hz Axis X,Y,Z Unit Operational 2Hz ÷ 500Hz 20 cycles Constant Displacement ±3mm from 2Hz to 9Hz Constat Acceleration 1g from 9Hz to 200Hz Constat acceleration 1.5g from 200Hz to 500Hz Axis X,Y,Z Unit non Operational
Shock	IEC 60068-2-27 10g, 11ms, 6 Shocks/axis, 3 axis, Unit Operational 15g, 11ms, 6 Shocks/axis, 3 axis, Unit non Operational
Bumb	IEX 600068-2-27 10g, 16ms, 1000 Bumbs in Each Direction

SAFETY & CERTIFICATIONS

	Standard
Safety Standards	IEC/EN61010

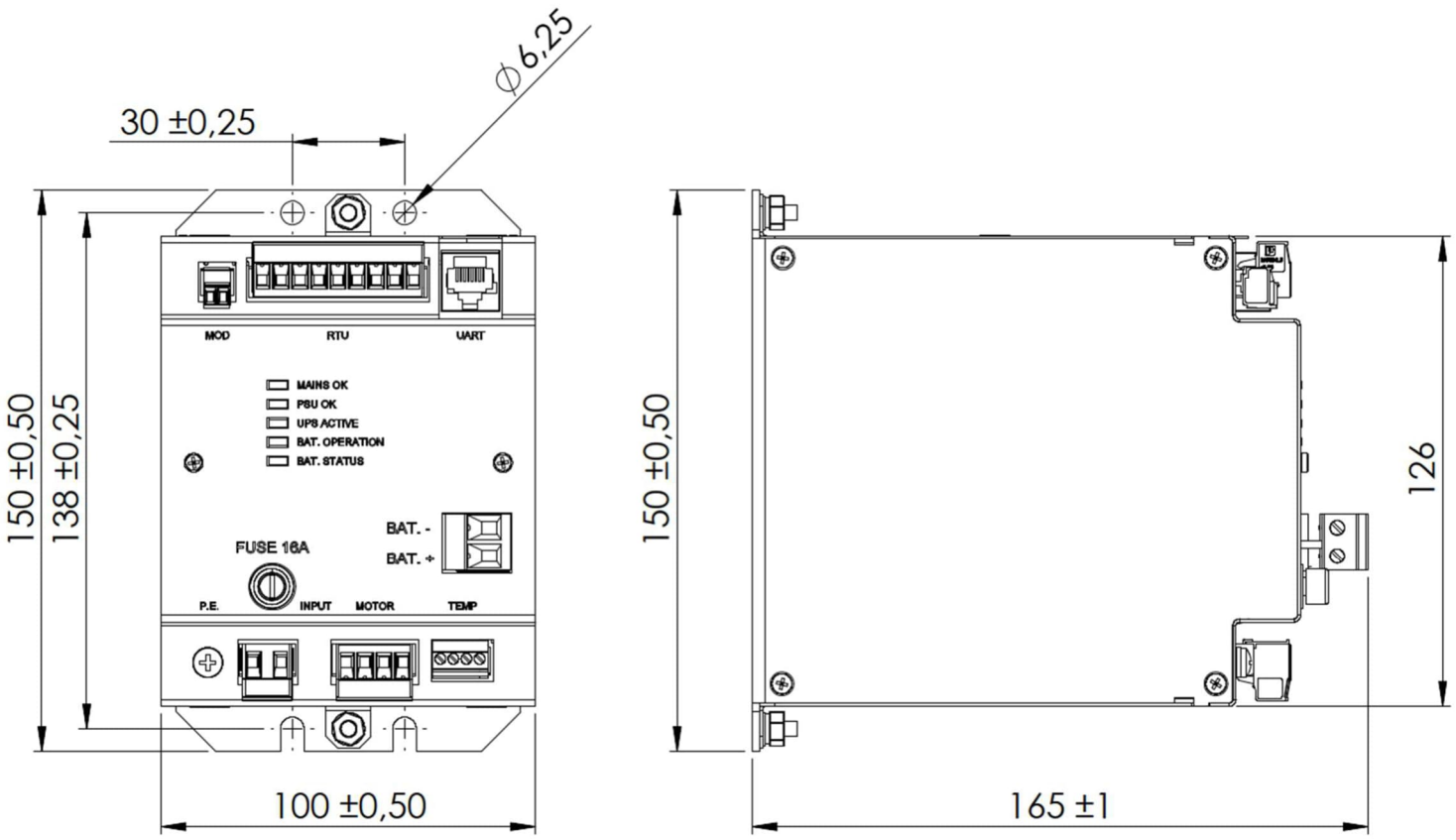
ENVIRONMENTAL

Parameter	Conditions	Value
Operating Temperature Range		-40°C to 70°C
Storage Temperature Range		-40°C to +85°C
Humidity	Non-Condensing	5%-95%
Pollution Degree		PD2
Isolation Again Enclosure		2.2kVAC
Protection Degree		EN60529 - IP20

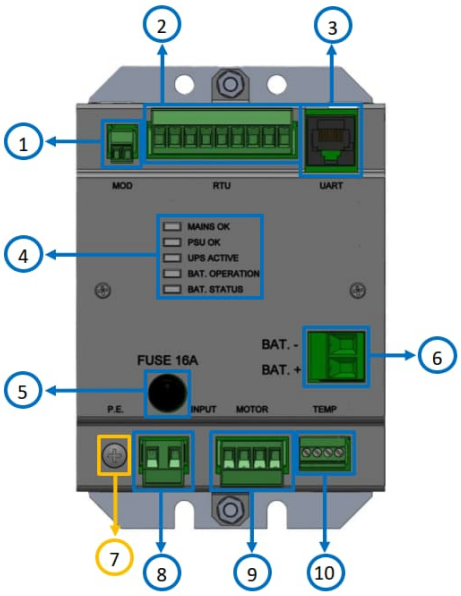
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CHARACTERISTIC & MECHANICAL DRAWING

IN/Battery/OUT Connection Terminals	2.5mm², screw type pluggable (24...12AWG)
Auxiliary Connection Terminals	Up to 0.5mm², Fast Pluggable Type (20AWG)

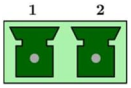
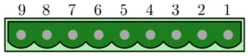
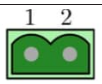
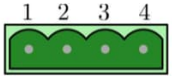
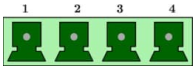


PIN CONFIGURATION AND FUNCTIONS



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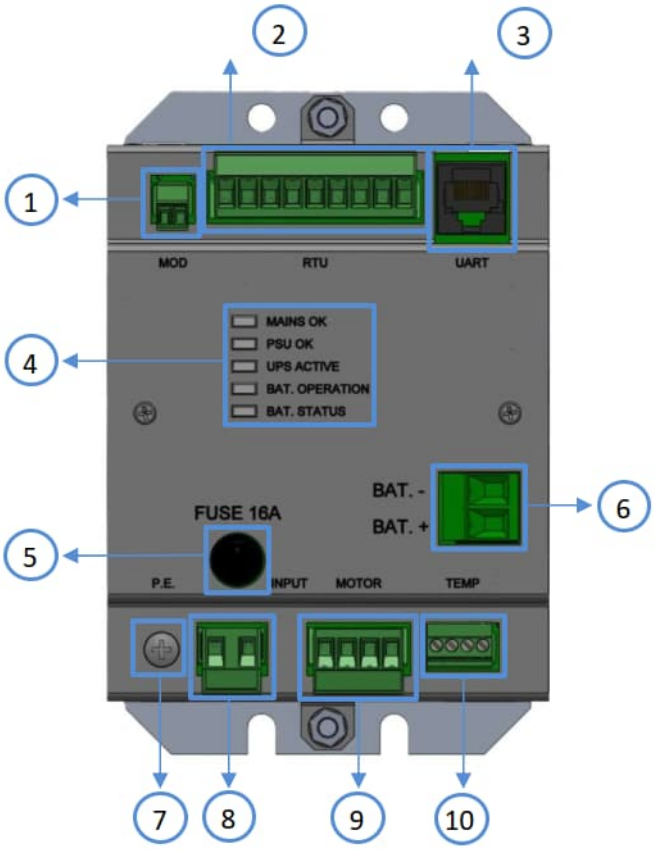
PIN DESCRIPTION

Pin	Type	Description	
1	MOD	MODEM Output Connection 12VDC – 2A Connector: 1843606 Phoenix Contact Counterpart: 1840366 Phoenix Contact	 1: GND MODEM 2: +VOUT MODEM
2	RTU	Output Voltage to the RTU System 24VDC – 2.6A (48VDC – 1.3A) Connector: 1755804 Phoenix Contact Counterpart: 1757080 Phoenix Contact	 1: GND RTU 2: +VOUT RTU 3: GND RTU 4: +VOUT RTU 5: GND RTU 6: +VOUT RTU 7: Relay NC 8: Relay COM 9: Relay NO
3	UART	Communication port, Mod-bus Protocol Connector: RJ45	
4	LED Display	MAINS OK	GREEN: Mains Voltage OK OFF: Mains Fail / Not Present
		PSU OK	RED: PSU FAIL GREEN: PSU OK
		UPS ACTIVE	YELLOW: UPS in Operation GREEN: UPS Active Stand By OFF: Battery Not Connected
		BAT. OPERATION	YELLOW: Charging GREEN: Idle, Fully Charged, SOC 10% OFF: Battery Not Connected
		BAT. STATUS	RED: Battery NOK GREEN: Battery OK
5	FUSE	16 AC Fuse Protection	
6	BAT	Battery Terminal Connection Connector: 1766770 Phoenix Contact Counterpart: 1804904 Phoenix Contact	 1: Positive Battery Terminal 2: Negative Battery Terminal
7	P.E.	Protective Earth Connection	M4 x 1 Screw
8	INPUT	Input Connector for AC Line Connector: 1766770 Phoenix Contact Counterpart: 1766990 Phoenix Contact	 1: Line AC Input 2: Neutral AC Input ! Don't' swap Line and Neutral input!
9	MOTOR	Motor Output Connection Connector: 1755752 Phoenix Contact Counterpart: 1757035 Phoenix Contact	 1: +Vout 2: GND 3: +Vout 4: GND
10	TEMP	Temperature Sensor Connection Connector: 1843622 Phoenix Contact Counterpart: 1863178 Phoenix Contact	 1: PTC2 2: PTC2 3: PTC1 4: PTC1

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SYSTEM DESCRIPTION

MAB1256 is a microprocessor-controlled converter with a nominal AC input voltage 110V/240VAC. There are three DC outputs: MODEM, RTU and MOTOR outputs (see list below for more details). The converter charges a battery, whose voltage is in the range 10,5 ÷ 15Vdc, 8A.



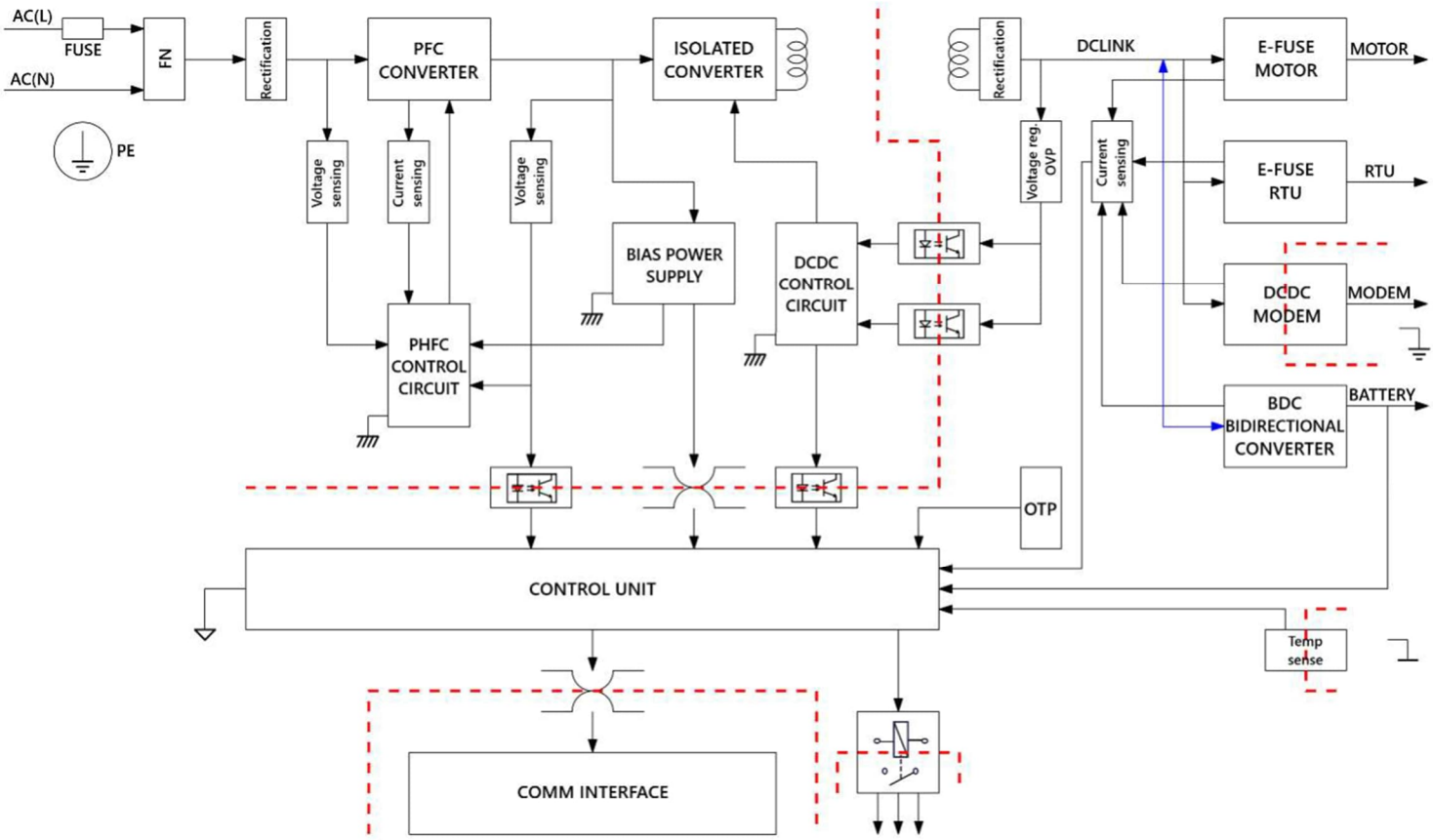
1. MODEM Output Connection: Two poles are provided for MODEM output connection. 12VDC - 2A.
2. RTU Output Connection: Six poles are provided for MODEM output connection and three poles for relay dry contacts (a relay is present for remote monitoring). 24VDC - 2.6A (48VDC - 1.3A)
3. UART Port: Used for remote monitoring and controlling. Firmware update is also possible through UART connection.
4. Alarm LED Indicator: there are 5 alarm LED indicators:
   - MAINS OK: Green (mains ok), Off (main fail)
   - PSU OK: Green (PSU Ok), Red (PSU fail)
   - UPS ACTIVE: Green (UPS Active Stand By), Yellow (UPS in Operation)
   - BATT OPERATION: Green (idle fully charged), Yellow (charging)
   - BATT STATUS: Green (Ok), Red (Ko)
5. FUSE 16A: For Input Protection
6. BATTERY Connection: Two poles are provided for battery connection. This must be connected to the battery. Although the unit is protected, please respect the correct polarity
7. PE Connection
8. Input Connection: Two poles are provided for AC input connection. 110V - 240VAC
9. MOTOR Output Connection: Four poles are provided for MODEM output connection

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VOUT	TIME [s]	CURRENT [ADC]
24VDC	0.07	30
	20	16
48VDC	0.07	15
	20	8

10. Temperature Sensor Connection: Used to connect two PT1000 temperature sensors to measure the battery temperature for protection and temperature compensated charge method. This is an optional feature.

BLOCK DIAGRAM



MAB1256 is a power supply with UPS function. The input voltage is continuously monitored by the microprocessor. In the event of a power failure, the battery provides power to the outputs. It includes a battery charger capable of charging batteries with a rated 12V voltage and able to deliver a charge current up to 8A. The product offers additional features to improve the performance and the reliability of the system, which are described below.

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