

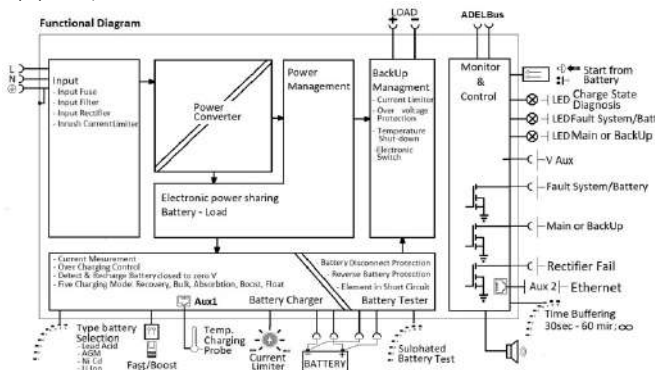
New revolutionary product, with Ethernet on board provided with protocol connections: HTTPS, SNMPv3, Modbus TCP. The device also features the ADELBus protocol for connecting other ADELSYSTEM devices.

**Power Management:** Thanks to the All In One units (DC-UPS), it will be possible to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority of the unit thus it is not necessary to double the power, because also the power going to the battery will go to the load if the load so requires. The maximum available current on the load output is 3 times the value of the device rated current In.

**Battery Care:** it's the concept base on algorithms that implement rapid and automatic charging, four state of charge, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Auto-diagnostic system, monitoring battery faults such as, battery Sulfated, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led or through web server; during the installation and after sell. The continuous monitoring of battery efficiency, reduces battery damage risk and allows a safe operation in permanent connection. Each device is suited for all battery types, by means of manual configuration by push button or web server it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for five charging levels, recovery, boost, bulk, absorption, float and trickle charge, but they can be changed by the user. A rugged casing for DIN rail mounting, IP20 protection degree. They are extremely compact and cost effective.

**Interconnections:** The platform communication for ADELSYSTEM devices, allows the connection of all components in a simple but very powerful way, by Ethernet. A protocols communication are based on, MODbus TCP/IP, SNMP or HTTPS. You can select any of the buses depending on your application. It allows to communicate with all the accessories provided by ADELSYSTEM and to develop an independent system for electrical continuity. At the same time, it allows monitoring and control all parameters in the system, even from the other side of the world, by means of application tools on the cloud. ADELSYSTEM allows you to implement very simple but sophisticated monitoring and control for your energy system and opens your mind to new ways to approach your applications.

**Norms and Certifications:** The CE mark in conformity to EMC 2014/30/EU: Electromagnetic Compatibility Directive; 2014/35/EU: Low Voltage Directive; ROHS 2011/65/EU: Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS), as amended by 2015/863/EU. EMC Immunity: EN61000-6-2; EMC Emission: EN61000-6-3. According to: Electrical Equipment for Machinery EN 60204; Electrical safety (of information technology equipment) IEC/EN EN62368-1.



**Input:** Single-phase 115 - 230 - 277 Vac

**Output Selectable Load:** 12Vdc 4.5 A

**Output Battery charging:** 12 Vdc 4.5 A

**Suited for the following battery types:** Open Lead Acid, Sealed Lead Acid, lead Gel, Ni-Cd, Li-Ion

**Automatic diagnostic of battery status, Battery Life Test function (internal Battery Impedance)**

**Charging curve IUoU, constant voltage and current**

**Four charging levels:** Boost, Bulk, Trickle, Recovery

**Protected against short circuit and inverted polarity**

**Signal output:** for battery Fault, Mains or Back-UP

**Ethernet:** SNMP V3, Modbus TCP/IP, HTTPS

**DIN rail and Wall mount**

### Climatic Data

Ambient temperature (operation)	-25 ÷ +70°C
De Rating T <sup>3</sup> > 55°C	- 2.5%(In) / °C
Ambient temperature Storage	-40 ÷ +85°C
Humidity at 25 °C - no condensation	95% to 25°C
Altitude: 0 to 2 000m - 0 to 6 560ft	No restrictions
Altitude: 2 000 to 6 000m - 6 560 to 20 000ft	De-rating 5°C/1000m
Cooling	Auto convection

### General Data

Insulation voltage (IN/OUT)	3000 Vac
Insulation voltage (input / ground)	1605 Vac
Insulation voltage (Output / ground)	500 Vac
Protection Class (EN/IEC 60529)	IP20
Reliability: MTBF IEC 61709	> 300.000 h
Pollution Degree Environment	2
Protection class	II
Dimensions (w-h-d) DIN 43880	70x90x55 mm
Weight (Approx.)	0.40 kg

### Input Data

Nominal Input Voltage (2 x Vac)	115 – 230 – 277
Input Voltage range (Vac)	90 – 305
DC Input Range (Vdc)	95 – 370
Power Factor typ. (115 – 230 Vac)	0.6 – 0,47
Input Inrush Current Limiter	NTC
Inrush Current (Vn – In nom. Load) I <sup>2</sup> t	≤ 10 A ≤ 5 msec.
AC Frequency	47 ÷ 63 Hz
DC Frequency	0 Hz
Input Current (115 – 230 Vac)	1 – 0.7 A
Internal fuse (not replaceable)	4 A
External Fuse (recommended) MCB curve B	6 A

Input Current (No Load and Alarm)	Input 110Vac	Input 230Vac	Back Up
Quiescent Current	20	34	27
Ethernet Enabled	22	34.5	33.5
CAN Enabled	21	34	30
ETH+CAN Enabled	23	34.5	36.5

### Output Data

Output Voltage 12 Vdc	12 Vdc
Nominal current I <sub>n</sub>	4,5 A ± 5%
Turn-On delay after applying mains voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Efficiency (at 50% of rated current)	≥ 83 %
Ripple and Noise (20 MHz Bandwidth)	80 mV <sub>pp</sub> (max)
Dissipation power load max (W)	6
Start from Battery only, without main	Push Button
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 35 Vdc)
Overheating Thermal protection	Yes

### Load Output 12 Vdc (jumper selection)

Output voltage (at I <sub>n</sub> )	10 - 14.4 Vdc (17Vdc Ni-Cd)
Nominal Current I <sub>n</sub>	1.1 x In A ± 5%
Continuous current (without battery) I <sub>load</sub> = I <sub>n</sub>	5 A
Continuous current ( With battery) I <sub>load</sub> = I <sub>n</sub> + I <sub>batt</sub>	2 x I <sub>n</sub>
Max. Output Load (Main with Battery) I <sub>load</sub> = I <sub>n</sub> + I <sub>batt</sub> (4 sec.)	3 x I <sub>n</sub> max. (A)
Max. current Output Load (Back Up) I <sub>load</sub> (4 sec.)	2 x I <sub>n</sub> max.
Output On/Off	Yes: Drive by Ethernet
Push Button –Terminal Input "Start from Battery without main"	Yes

Time Buffering; (switch output off without main input)	0.5;2;5;10;15; 20; 30; 45;60;∞
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### Battery Output

Output Voltage Battery	Follow the Out Load
Boost-Fast charge Configuration 25°C (V/cell). Jumper	Lead Acid: 2.4
Configuration battery type	NiCd:1.51; Li-ion: 3.65
Float Charge Configuration 25°C (V/cell)	Lead Acid:2.23;2.25;2.27;
Jumper Configuration battery type	2.3NiCd:1.4; Li-ion: 3.45
Min. Time Boost/Fast charge (Typ. at IN)	1 min.
Max. Time Bulk charge (Typ. at IN)	15 h
Min. Time Bulk charge (Typ. At IN)	1 min.
Trickle Charge: Depend on Battery type (V cell)	2.23;2.25;2.27;2.3
Ni-Cd: Trickle – Boos charging V/cell (20 cell)	1.4V – 1.45V
Recovery Charge	2 -10 V
End of charging Current (Bulk & Absorption charge)	6% of current limiting
Charging current max $I_{batt}$	$I_n \pm 5\%$
Charging current limiting $I_{adj}$	$10 \div 100\% / I_{bat}$
Reverse battery protection	Yes
Sulfated battery check	Yes (by Jumper)
Detection of element in short circuit	Yes
Quiescent Current on the battery	$\leq 5$ mA
Charging Curve automatic: IUoU	4 stage
Fast Charge	Boost /Float
Threshold alarm Battery almost flat	11.5 – 12 Vdc batt
Protections against total discharge	10 – 11 Vdc batt

### Signal Output

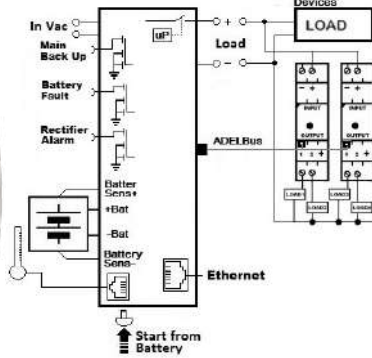
Main or Backup Power (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
Fault Battery / System (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
Rectifier Failure "Device" (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
V Aux: Auxiliary Output Voltage	22 - 28.8 Vdc / 50 mA
Acoustic Buzzer selectable, for:	Alarm features

### Signal Input

Battery Start by:	Terminal Block or Push Button
Temp. Comp. Battery (with external probe)	RJ temp (RJ11)

### Digital Input / Output

Communication Protocol (Ethernet)	TCP/IP - SNMP V3 - HTTPS
ADELSBus	CAN Open



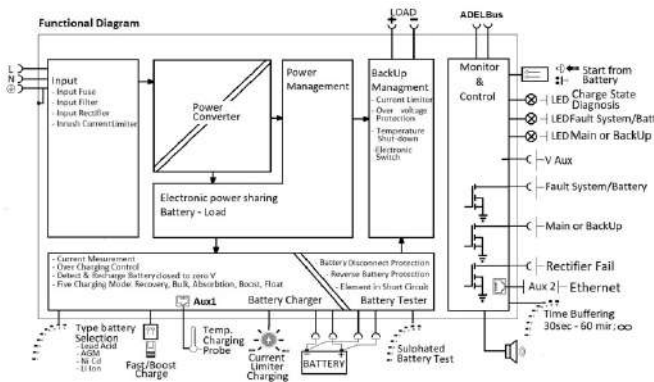
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**Battery Care:** it's the concept base on algorithms that implement rapid and automatic charging, four state of charge, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Auto-diagnostic system, monitoring battery faults such as, battery Sulfated, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. The continuous monitoring of battery efficiency, reduces battery damage risk and allows a safe operation in permanent connection. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle, but they can be changed to single charging level by the user. A rugged casing for DIN rail mounting, IP20 protection degree. They are extremely compact and cost effective.

**Interconnections:** The platform communication for ADELSYSTEM devices, allows the connection of all components in a simple but very powerful way, Ethernet. A protocol communication based on MODbus TCP/IP or SNMP technology. You can select any of the two buses depending on the application. It allows to communicate with all the accessories provided by ADELSYSTEM and to develop an independent system for electrical continuity. At the same time, it allows monitoring and control all parameters in the system, even from the other side of the world, by means of application tools on the cloud. ADELSYSTEM allows you to implement very simple but sophisticated monitoring and control for your energy system and opens your mind to new ways to approach your applications.

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Input: Single-phase 115 - 230 - 277 Vac

Output Selectable Load: 24Vdc 2.5A

Output Battery charging: 24 Vdc 2.5A

Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel, Ni-Cd, Li-Ion

Automatic diagnostic of battery status, Battery Life test function (internal Battery Impedance)

Charging curve IUoU, constant voltage and current

Four charging levels: Boost, Bulk, Trickle, Recovery

Protected against short circuit and inverted polarity

Signal output for: Battery Fault, Mains, Rectifier fail

Ethernet: SNMP V3, Modbus TCP/IP, HTTPS

DIN rail and Wall mount

### Climatic Data

Ambient temperature (operation)	-25 ÷ +70°C
De Rating T <sup>3</sup> > 55°C	- 2.5%(In) / °C
Ambient temperature Storage	-40 ÷ +85°C
Humidity at 25 °C - no condensation	95% to 25°C
Altitude: 0 to 2 000m - 0 to 6 560ft	No restrictions
Altitude: 2 000 to 6 000m - 6 560 to 20 000ft	De-rating 5°C/1000m
Cooling	Auto convection

### General Data

Insulation voltage (IN/OUT)	3000 Vac
Insulation voltage (input / ground)	1605 Vac
Insulation voltage (Output / ground)	500 Vac
Protection Class (EN/IEC 60529)	IP20
Reliability: MTBF IEC 61709	> 300.000 h
Pollution Degree Environment	2
Connection Terminal	IEC
Protection class	II
Dimensions (w-h-d) DIN 43880	70x90x55 mm
Weight (Approx.)	0.40 kg

### Input Data

Nominal Input Voltage (2 x Vac)	115 – 230 – 277		
Input Voltage range (Vac)	90 – 305		
DC Input Range (Vdc)	95 – 370		
Power Factor typ. (115 – 230 Vac)	0.6 – 0,47		
Input Inrush Current Limiter	NTC		
Inrush Current (Vn – In nom. Load) I <sup>2</sup> t	≤ 10 A ≤ 5 msec.		
AC Frequency	47 ÷ 63 Hz		
DC Frequency	0 Hz		
Input Current (115 – 230 Vac)	1 – 0.7 A		
Internal fuse (not replaceable)	4 A		
External Fuse (recommended) MCB curve B	6 A		
<b>Input Current (No Load and Alarm)</b>	<b>Input 110Vac</b>	<b>Input 230Vac</b>	<b>Back Up</b>
Quiescent Current	24.8	34.0	18.5
Ethernet Enabled	27.5	34.5	22.5
CAN Enabled	26	34.5	22.5
ETH+CAN Enabled	28.5	35	23.7

### General Output Data

Output Voltage 24 Vdc	24 Vdc
Nominal current I <sub>n</sub>	2.5 A ± 5%
Turn-On delay after applying mains voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Efficiency (at 50% of rated current)	≥ 83 %
Ripple and Noise (20 MHz Bandwidth)	80 mV <sub>pp</sub> (max)
Dissipation power load max (W)	6
Start from Battery only, without main	Push Button
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 35 Vdc)
Overheating Thermal protection	Yes

### Load Output 24 Vdc (jumper selection)

Output voltage (at I <sub>n</sub> )	22 – 28.8 Vdc (31 Vdc Ni-Cd)
Nominal Current I <sub>n</sub>	1.1 x In A ± 5%
Continuous current (without battery) I <sub>load</sub> = I <sub>n</sub>	2.5 A
Continuous current ( With battery) I <sub>load</sub> = I <sub>n</sub> + I <sub>batt</sub>	2 x I <sub>n</sub>
Max. Output Load (Main with Battery) I <sub>load</sub> = I <sub>n</sub> + I <sub>batt</sub> (4 sec.)	3 x I <sub>n</sub> max. (A)
Max. current Output Load (Back Up) I <sub>load</sub> (4 sec.)	2 x I <sub>n</sub> max.
Output On/Off	Yes: Drive by Ethernet
Push Button –Terminal Input "Start from Battery without main"	Yes

Time Buffering; (switch output off without main input)	0.5;2;5;10;15; 20; 30; 45;60;∞
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### Battery Output

Output Voltage Battery	Follow the Out Load
Boost-Fast charge Configuration 25°C (V/cell). Jumper	Lead Acid: 2.4
Configuration battery type	NiCd:1.51; Li-ion: 3.65
Float Charge Configuration 25°C (V/cell)	Lead Acid: 2.23; 2.25; 2.27;
Jumper Configuration battery type	2.3; NiCd:1.4; Li-ion: 3.45
Min. Time Boost/Fast charge (Typ. at IN)	1 min.
Max. Time Bulk charge (Typ. at IN)	15 h
Min. Time Bulk charge (Typ. At IN)	1 min.
Trickle Charge: Depend on Battery type (V cell)	2.23;2.25;2.27;2.3
Ni-Cd: Trickle – Boos charging V/cell (20 cell)	1.4V – 1.45V
Recovery Charge	2 -20 V
End of charging Current (Bulk & Absorption charge)	6% of current limiting
Charging current max $I_{batt}$	$I_n \pm 5\%$
Charging current limiting $I_{adj}$	$10 \div 100\% / I_{bat}$
Reverse battery protection	Yes
Sulfated battery check	Yes (by Jumper)
Detection of element in short circuit	Yes
Charging Curve automatic: IUoU	5 stage
Fast Charge	Boost /Float
Threshold alarm Battery almost flat	20 – 21 Vdc batt
Protections against total discharge	19 – 20 Vdc batt

### Signal Output (Open Collector)

Main or Backup Power (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
Fault Battery / System (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
Rectifier Failure “Device” (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
V Aux: Auxiliary Output Voltage	22 - 28.8 Vdc / 50 mA
Acoustic Buzzer selectable, for:	Alarm features


### Signal Input

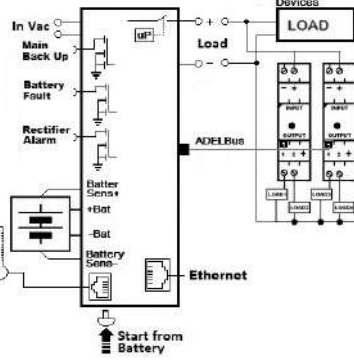
Battery Start by: Terminal	Terminal Block or Push Button
Temp. Comp. Battery (with external probe)	RJ temp (RJ11)

### Digital Input / Output

Communication Protocol (Ethernet)	TCP/IP - SNMP V3 - HTTPS
ADELBus	CAN

### Mechanics Data

Screw type connection torque	0.6 - 0.8 Nm
Connections Input and Output: L, N: 1	1 x 0.05 - 2.5 mm <sup>2</sup>
Solid and Stranded	(30 – 12 AWG)
Stripping Length 	5.5 – 6.5 mm
Protection class	II
MTBF at 40°C	> 4.300.000 h
Housing material	Polycarbonate
Dimension (WxHxD) DIN 43880	18 x 90 x 55 mm
Weight (approx.)	0.1 Kg



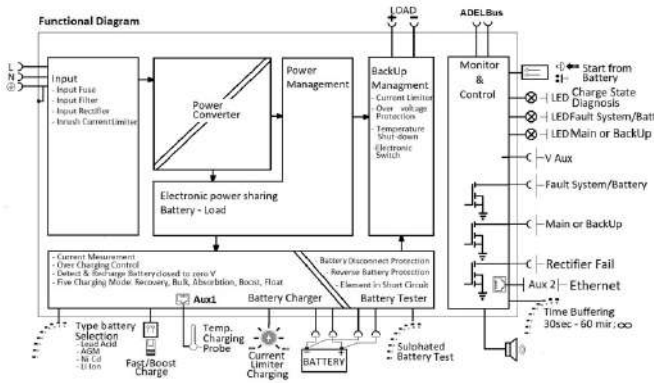
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**Input:** Single-phase 115 - 230 - 277 Vac  
**Output Selectable Load:** 48Vdc 1.25A  
**Output Battery charging:** 48 Vdc 1.25A  
 Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel, Ni-Cd, Li-Ion  
 Automatic diagnostic of battery status, Battery Life test function (internal Battery Impedance)  
 Charging curve IUoU, constant voltage and current  
 Four charging levels: Boost, Bulk, Trickle, Recovery  
 Protected against short circuit and inverted polarity  
 Signal output for: Battery Fault, Mains, Rectifier fail  
 Ethernet: SNMP V3, Modbus TCP/IP, HTTPS  
 DIN rail and Wall mount

### Climatic Data

Ambient temperature (operation)	-25 ÷ +70°C
De Rating T <sup>3</sup> > 55°C	- 2.5%(In) / °C
Ambient temperature Storage	-40 ÷ +85°C
Humidity at 25 °C - no condensation	95% to 25°C
Altitude: 0 to 2 000m - 0 to 6 560ft	No restrictions
Altitude: 2 000 to 6 000m - 6 560 to 20 000ft	De-rating 5°C/1000m
Cooling	Auto convection

### General Data

Insulation voltage (IN/OUT)	3000 Vac
Insulation voltage (input / ground)	1605 Vac
Insulation voltage (Output / ground)	500 Vac
Protection Class (EN/IEC 60529)	IP20
Reliability: MTBF IEC 61709	> 300.000 h
Pollution Degree Environment	2
Connection Terminal	IEC
Protection class	II
Dimensions (w-h-d) DIN 43880	70x90x55 mm
Weight (Approx.)	0.40 kg

### Input Data

Nominal Input Voltage (2 x Vac)	115 – 230 – 277		
Input Voltage range (Vac)	90 – 305		
DC Input Range (Vdc)	95 – 370		
Power Factor typ. (115 – 230 Vac)	0.6 – 0,47		
Input Inrush Current Limiter	NTC		
Inrush Current (Vn – In nom. Load) I <sup>2</sup> t	≤ 10 A ≤ 5 msec.		
AC Frequency	47 ÷ 63 Hz		
DC Frequency	0 Hz		
Input Current (115 – 230 Vac)	1 – 0.7 A		
Internal fuse (not replaceable)	4 A		
External Fuse (recommended) MCB curve B	6 A		
<b>Input Current (No Load and Alarm)</b>	<b>Input 110Vac</b>	<b>Input 230Vac</b>	<b>Back Up</b>
Quiescent Current	24.8	34.0	18.5
Ethernet Enabled	27.5	34.5	22.5
CAN Enabled	26	34.5	22.5
ETH+CAN Enabled	28.5	35	23.7

### General Output Data

Output Voltage 48 Vdc	48 Vdc
Nominal current I <sub>n</sub>	1.25 A ± 5%
Turn-On delay after applying mains voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Efficiency (at 50% of rated current)	≥ 83 %
Ripple and Noise (20 MHz Bandwidth)	80 mV <sub>pp</sub> (max)
Dissipation power load max (W)	6
Start from Battery only, without main	Push Button
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 72 Vdc)
Overheating Thermal protection	Yes

### Load Output 48 Vdc (jumper selection)

Output voltage (at I <sub>n</sub> )	44 – 57.6 Vdc (60.4 Vdc Ni-Cd)
Nominal Current I <sub>n</sub>	1.1 x In A ± 5%
Continuous current (without battery) I <sub>load</sub> = I <sub>n</sub>	1.25 A
Continuous current ( With battery) I <sub>load</sub> = I <sub>n</sub> + I <sub>batt</sub>	2 x I <sub>n</sub>
Max. Output Load (Main with Battery) I <sub>load</sub> = I <sub>n</sub> + I <sub>batt</sub> (4 sec.)	3 x I <sub>n</sub> max. (A)
Max. current Output Load (Back Up) I <sub>load</sub> (4 sec.)	2 x I <sub>n</sub> max.
Output On/Off	Yes: Drive by Ethernet
Push Button –Terminal Input "Start from Battery without main"	Yes

Time Buffering; (switch output off without main input)	0.5;2;5;10;15; 20; 30; 45;60;∞
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### Battery Output

Output Voltage Battery	Follow the Out Load
Boost-Fast charge Configuration 25°C (V/cell). Jumper	Lead Acid: 2.4
Configuration battery type	NiCd:1.51; Li-ion: 3.65
Float Charge Configuration 25°C (V/cell)	Lead Acid: 2.23; 2.25; 2.27;
Jumper Configuration battery type	2.3; NiCd:1.4; Li-ion: 3.45
Min. Time Boost/Fast charge (Typ. at IN)	1 min.
Max. Time Bulk charge (Typ. at IN)	15 h
Min. Time Bulk charge (Typ. At IN)	1 min.
Trickle Charge: Depend on Battery type (V cell)	2.23;2.25;2.27;2.3
Ni-Cd: Trickle – Boos charging V/cell (20 cell)	1.4V – 1.45V
Recovery Charge	6 -42 V
End of charging Current (Bulk & Absorption charge)	6% of current limiting
Charging current max $I_{batt}$	$I_n \pm 5\%$
Charging current limiting $I_{adj}$	$10 \div 100\% / I_{bat}$
Reverse battery protection	Yes
Sulfated battery check	Yes (by Jumper)
Detection of element in short circuit	Yes
Charging Curve automatic: IUoU	5 stage
Fast Charge	Boost /Float
Threshold alarm Battery almost flat	44 – 46 Vdc batt
Protections against total discharge	40 – 42 Vdc batt

### Signal Output (Open Collector)

Main or Backup Power (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
Fault Battery / System (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
Rectifier Failure “Device” (Sink 20 mA max)	ON: 0 Vdc OFF: Vout (Alarm)
V Aux: Auxiliary Output Voltage	44 – 57.6 Vdc / 50 mA
Acoustic Buzzer selectable, for:	Alarm features


### Signal Input

Battery Start by:Terminal	Terminal Block or Push Button
Temp. Comp. Battery (with external probe)	RJ temp (RJ11)

### Digital Input / Output

Communication Protocol (Ethernet)	TCP/IP - SNMP V3 - HTTPS
ADELBus	CAN

### Mechanics Data

Screw type connection torque	0.6 - 0.8 Nm
Connections Input and Output: L, N: 1	1 x 0.05 - 2.5 mm <sup>2</sup>
Solid and Stranded	(30 – 12 AWG)
Stripping Length 	5.5 – 6.5 mm
Protection class	II
MTBF at 40°C	> 4.300.000 h
Housing material	Polycarbonate
Dimension (WxHxD) DIN 43880	18 x 90 x 55 mm
Weight (approx.)	0.1 Kg