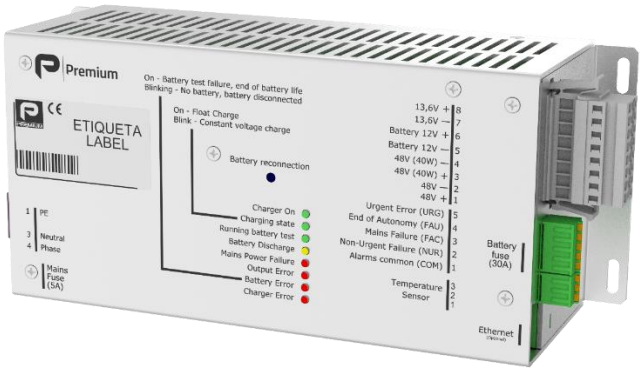
Premium
Powering Your Challenge

EDT-150

150W DC OUTPUT UPS

GENERAL CHARACTERISTICS:

- Uninterruptible power supply for 12V lead-acid batteries
- Three-state battery charging
- Configurable load parameters
- Two independent +48V outputs
- Alarm signaling via 4 potential-free relays
- Ethernet port for remote configuration and monitoring.
- Integrated web server
- Battery test without heat dissipation
- Battery connection via solid-state relay



3 YEAR WARRANTY INDUSTRY

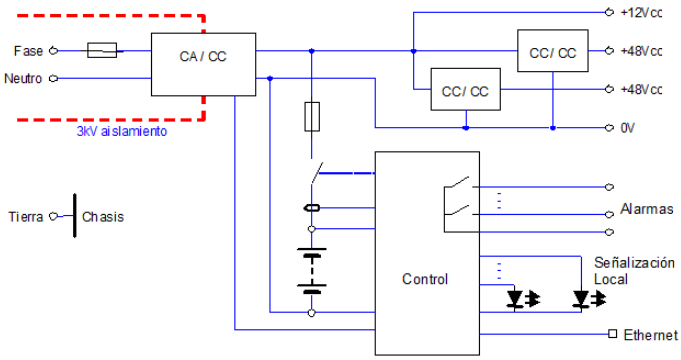
ROHS REACH

Product Reference	Nominal input voltage	Output voltages	Maximum output power	Peak output power (10 sec.)
EDT-150-5191	230Vac	12V/48V/48V	150W	275W

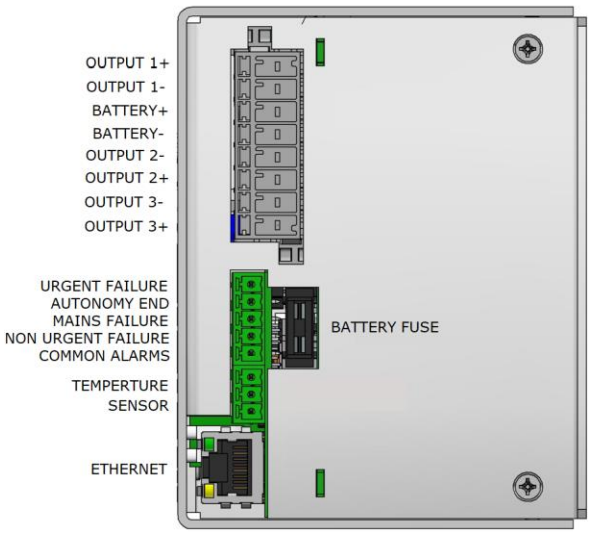
INPUT				
Rated input voltage	230Vac			
Input voltage range	184 … 264Vac			
Mains frequency range	47 … 63Hz			
Inrush current	<12A			
Power factor	>0.6			
OUTPUTS	**1**	**2**	**3**	
Rated output voltage	13.6	48	48	V
Output voltage range	9.6 … 15	± 1	± 1	V
Maximum permanent current	15.7	0.83	3.2	A
Maximum peak current (10s)	28.6	0.83	5.2	A
Line regulation	< 0,1	< 0,1	< 0,1	%
Ripple	< 50	< 100	< 100	mVpp
Noise (BW 20 MHz)	< 100	< 200	< 200	mVpp
Total output power	150W Continuous, with no battery support 275W 10s no battery support 300W 200ms, no battery support 300W 60s with battery support			
BATTERY				
Charging method	Constant Current / Absorption / Float			
Battery type	Lead acid			
Rated battery voltage	12V			
Maximum battery capacity	38Ah			
Maximum charging current	15.7A (configurable)			
Standby battery self-consumption	< 0.5mA			
Battery test	By measure of capacity discharged to load			
ENVIRONMENTAL				
Storage temperature	-25 … 70ºC			
Operating temperature	-25 … 60ºC			
Maximum relative humidity	95% without condensation			
Cooling	Natural convection			
Environmental requirements	RoHS according to directive 2015/863/EU and REACH			
Mechanical and temperature tests	See table 1			
EMC				
Emission	See table 2			
Immunity	See table 3			
SAFETY				
Safety	IEC62368-1			
Dielectric strength: • Input / Output • Input / Earth • Output / Earth	 3kVac 50Hz 1 min 3kVac 50Hz 1 min. 2.5kVac 50Hz 1 min			
MECHANICAL				
Dimensions	247 x 115 x 115 mm			
Weight	<1.65Kg			
CONTROL				
Battery reconnect button	Allows to start the equipment in the absence of input AC voltage			
LEDs	• Charger ON • Charging state (fast charging or float) • Running battery Test • Battery discharge • Mains Power Failure • Output Error • Battery Error • Charger Error			
Mains Failure Alarm (FAC)	Contact closed in case of alarm: • Input voltage out of range • Input voltage fault			

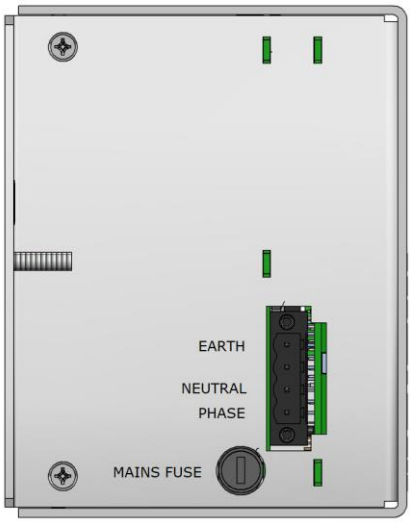
Urgent failure alarm (URG)	Contact closed in case of alarm: • Battery failure • Charger failure • Failures involving battery disconnection or charging
Non-Urgent Failure alarm (NUR)	Contact closed in case of alarm: • Battery voltage above its maximum value • Voltage at outputs 1.2 or 3 out of range • Temperature probe error • Battery temperature out of range
End of Autonomy Alarm (FAU)	Contact closed in case of alarm: • The battery reaches the minimum voltage value (Acts before battery disconnection)
FAU, FAC, NUR alarm Specification:	
Tipo	Solid State Relay
Maximum switching voltage	200V
Maximum switching current	0.2A
URG alarm specification:	
Tipo	Electromechanical relay
Maximum switching voltage	220V
Maximum switching current	8A
PROTECTIONS	
Outputs overcurrent	Electronic current limitation
Battery overcurrent	Accessible fuse
Overcurrent or overvoltage at the inlet	Accessible fuse
Battery reverse polarity	By solid state relay

BLOCK DIAGRAM



CONNECTIONS





DESCRIPTION

The equipment consists of a rectifier-charger that, in case of having input AC voltage, provides a regulated output voltage and charges the battery in a controlled way.

The equipment comprises a switched power supply and a three-state battery charger. It also incorporates alarm circuits that signal failures in the input voltage, in the battery or in the charger. Alarm outputs are potential-free relay contacts.

Mains supply operation

In normal operation, the equipment provides the output current and at the same time charges the battery in a controlled way until it is brought to the floating state. The maximum charging current, as well as the rest of the parameters related to battery charging, are configurable by the user through the Ethernet connection of the equipment. In case the sum of the charging current and the output current exceeds the maximum current of the equipment, the output power is prioritized.

The equipment allows, with battery support, to provide current peaks above the maximum temporarily.

The average of this extra current provided by the battery should not be higher than the average of the charging current since, if so, the battery would end up discharging.

If the equipment is not able to provide output voltage, either due to a failure in the input AC voltage or due to the failure of the charger, the corresponding alarm will be activated.

Operation without input AC voltage

In the absence of mains voltage, the battery feeds the output and the charger control. The output voltage will then depend on the discharge curve of the battery.

If the battery is discharged below a certain level (configurable), the end of autonomy alarm will be activated and, after a certain time, it will be permanently disconnected from the charger to prevent a situation of deep discharge that could damage it. Once the mains voltage is reset, charging starts again.

Battery test

The charger has a system that periodically and automatically checks the status of the batteries. Starting from the float state, the load connected to the output is used to discharge the battery down to 40%. If the battery is able to maintain the voltage above a certain threshold until it reaches the required depth of discharge, the test is considered successful. Since the discharge current depends on the load connected to the equipment (and is not so much controllable), the duration of the battery test is limited. If after the time limit it has not been possible to discharge the battery to the required level, the test is considered correct as well. The test parameters (time between tests, maximum test duration, depth of discharge and/or threshold voltage) are configurable by the user.

Battery temperature sensor

The equipment includes a temperature sensor that can be attached to the battery. If used, the fast charging and flotation voltages will be optimally adjusted depending on the temperature of the battery. In this way it is possible to preserve the useful life of the battery.

ETHERNET PORT

The configuration and monitoring of the status of the equipment is carried out through the Ethernet port. The system has the following characteristics:

- IPv4 support
- M2M communication based on SNMP protocol to configure, consult and update the equipment.
- User authentication through user and Web pass
- User authentication using LDAP
- Consultation/modification of firmware, alarms and configuration via remote from Web interface
- DHCP Dynamic Host Configuration Protocol
- Clock synchronization using SNTP protocol

In addition to the indicated characteristics, the system has a function that allows the computer to boot with a specific fixed IP address, by mean of button (Battery reconnection) placed on the front plate

INSTALLATION

Perform the installation of the equipment following the connection drawings. The value of the charging current c be changed from the default value via the Ethern connection.

For safety reasons it is required:

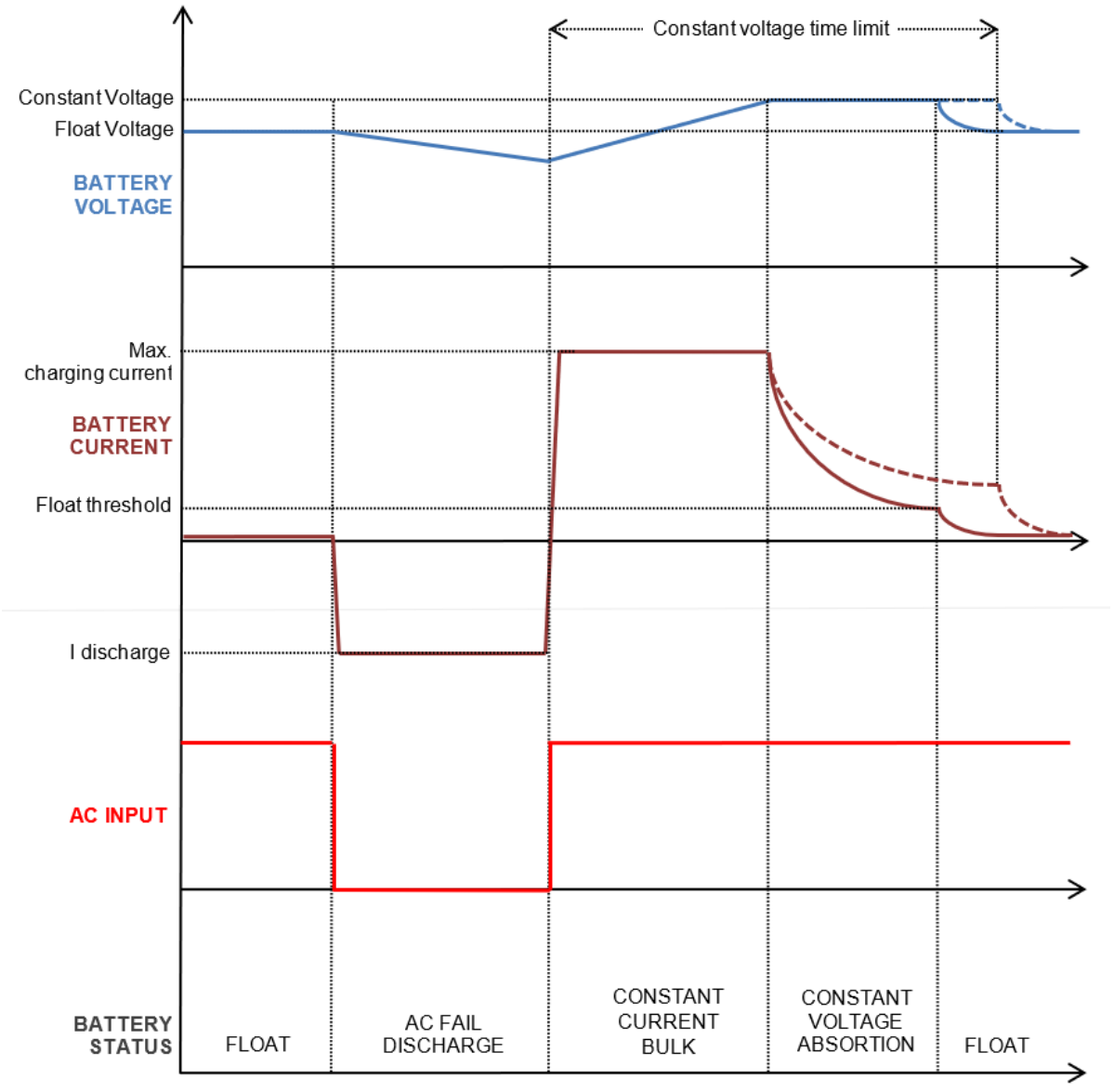
Make it accessible and easy to disconnect the equipment from the mains.

In case of replacement of input fuse and / or battery fuse, make sure to use one of the same features and perform the installation with the equipment disconnected from the mains.

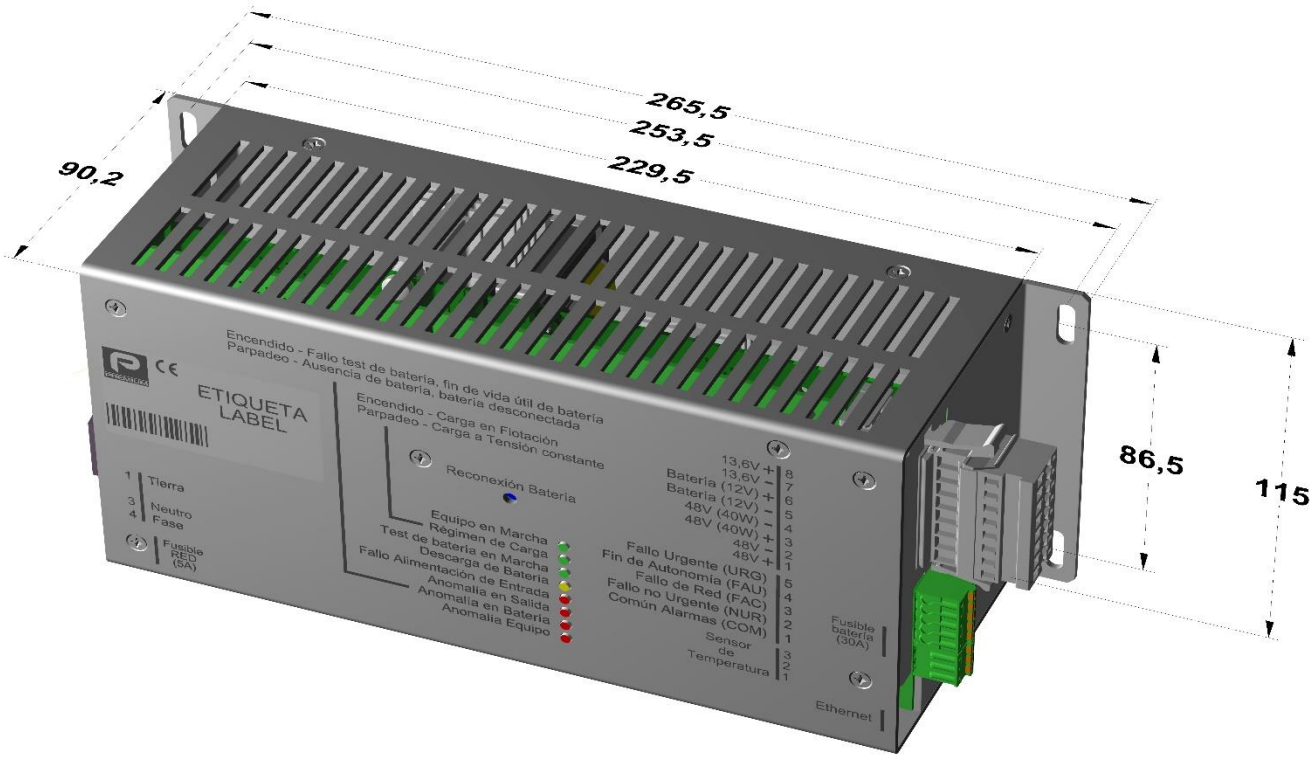
Perform the installation of the equipment in a safe environment according to the regulations and directives of electrical safety that apply in the country where it is installed.

Use a mains connection cable with a minimum section of 0.75mm².

CHARGING CHARACTERISTIC



DIMENSIONS



Dimensions in mm.

Table 1 - Mechanical and temperature tests

Tests	Severity	Conditions	Acceptance criteria
Humid heat	Temperature: 40ºC Humidity: 93% Duration of the test: 4 days (accelerated aging)	Equipment connected	Criterion A
Dry heat	Temperature: 60º C. Duration of the test: 16 hours.	Equipment connected	Criterion A
Temperature variation	Cold temperature: -25º C. Hot temperature: 60º C. Transition time: 2 minutes. 5 cycles of 3h each	Equipment disconnected	Criterion A
Vibration	According to EN60870-2-2 Table 3 Class Bm. Frequency range and severity: From 2Hz to 9 Hz: constant displacement = 3mm (peak). From 9Hz to 200Hz: constant acceleration = 10m/s². From 200Hz to 500Hz: constant acceleration = 15m/s². Test direction: On all 3 axes.	Equipment connected	Criterion A
	According to ETSI EN 300 019-2-2 Public Transportation: Environmental Class 2.3 Random	Equipment disconnected, installed in cabinet and packed for shipment	Criterion B
Drop	According to ETSI EN 300 019-2-2 Public Transportation: Environmental Class 2.3 (Characteristic severity; <20kg)	Equipment disconnected, installed in cabinet and packed for shipment	Criterion B

Table 2 - EMC Specification: Emissions

Test	Port	Regulations
Radiated emissions	Enclosure	EN 55032 class B. Measurements made at 3m between antenna and equipment with boundary conversion
Conducted emissions	12V and 48V power terminals	EN 55032 Class A
	Alternating input power terminals	EN 55032 Class B

Table 3 - EMC Specification: Immunity

TEST	NORM	PORT	SEVERITY	CONDITIONS	CRY.
Magnetic field	IEC61000-4-8	Enclosure	100A/m	50/60Hz 1minute	A
		Enclosure	1000A/m	50/60Hz 1… 3s	A
Radiated high-frequency	IEC61000-4-3	Enclosure	30V/m	80M - 1GHz M. 80% 1kHz	A
Conducted RF	IEC61000-4-6	Input	10V	0.15-80MHz M. 80% 1kHz	A
		Output	10V	0.15-80MHz M. 80% 1kHz	A
		Signal	10V	0.15-80MHz M. 80% 1kHz	A
Electrostatic discharge	IEC61000-4-2	Case	±15kV	Air	A
		Case	±8kV	Contact	A
Fast transients	IEC61000-4-4	AC Input	±4kV	Tr/Th: 5/50ns	B
		Output	±500V	Tr/Th: 5/50ns	B
		Signal	±2kV	Tr/Th: 5/50ns	B
Surges	IEC61000-4-5	AC Input diff.	±2kV	Tr/Th: 1.2/50µs	B
		AC Input comm.	±4kV	Tr/Th: 1.2/50µs	B
		Output diff	-	-	B
		Output comm.	±500V	Tr/Th: 1.2/50µs	B
		Signals diff	±1kV	Tr/Th: 1.2/50µs	B
		Signals comm.	±2kV	Tr/Th: 1.2/50µs	B
Magnetic field	IEC61000-4-10	Enclosure	100Am		A
Voltage DIPS/SAGS	IEC61000-4-11	AC Input	70%	10ms (zero crossing)	B
		AC Input	40%	0.1s (zero crossing)	B
		AC Input	5%	5s (zero crossing)	B
		AC Input	0%	4s (zero crossing)	B
Ring wave	IEC61000-4-12	AC Input	2kV Between the lines 4kV Ground Line		A
		Output and signals	2kV Between the lines 4kV Ground Line		A
Harmonics	IEC61000-4-13	AC Input	Class 2		A

Insulation tests

Method

Equipment disconnected from power, earthed, with the terminals of each group short-circuited together.

I/O groups formed:

- AC power terminals.
- DC power terminals.
- Ethernet and Alarms.

Insulation resistance

> 100Mohm with ±500Vdc between each group and earth. Reading performed 5 seconds after applying voltage.

Note: The test is performed at the beginning and end of all isolation measures. Difference between the two measures is <20%.

Dielectric strength

The voltage is applied for 1 minute without producing any disruptive discharge or a change in the insulation resistance.

- AC power terminal = 3kVac / 50Hz between active parts and GND (*) and 10 lightning pulses (±5kV 1.2/50µs)
- DC power terminals = 2.5kVca / 50Hz between active parts and GND (*) and 10 lightning pulses (5kV 1.2/50µs) 5 in each polarity.

  Test carried out by applying voltage to all points: GND, output s Vdc, other signals ... short circuited together (in groups) with the AC power input earthed

(*) GND is considered to be a metallic sheet covering totally the outer part of the equipment connected to the metallic parts of the enclosure.

EU, UKCA DECLARATION OF CONFORMITY

The undersigned, representing the following:

Manufacturer: PREMIUM, S. A.,
Address: C/ DolorsAleu 19-21, 08908 L'Hospitalet de Llobregat, SPAIN

herewith declares that the product:

Type: DC UPS
Models: **EDT-150-5191**

is in conformity with the provisions of the following EU directive(s):

2014/35/EU YES 2016 No 1101	Low voltage / The electrical equipment (safety) regulations
2014/30/EU YES 2016 No 1091	EMC / Electromagnetic compatibility regulations
2015/863/EU SI 2012 No. 3032	RoHS / Restriction of the use of certain hazardous substances in electrical and electronic equipment

and that standards and/or technical specifications referenced overleaf have been applied:

IN 62368-1: 2014	Safety Audio/video, information and communication technology equipment
See table 2	Emission
See table 3	Immunity

CE marking year: **2020**; UKCA marking year: **2021**

Notes:

For the fulfillment of this declaration the product must be used only for the aim that has been conceived, considering the limitations established in the instructions manual or datasheet.

L'Hospitalet de Llobregat, 31-05-2021

Miguel Angel Fernandez
Chief Research & Development Officer

PREMIUM S.A. is an ISO9001and ISO14001 certified company by **Bureau Veritas**