

2.1 Power Supply Set

The H-S81-HS control panel can be equipped with the following power supply sets:

- S81-PU001 power supply set for base plate installation.
- S81-PU002 power supply set for rack installation.



NOTE: The power supply set S81-PU002, for rack installation, can only be used in the version with ground-floor steelwork.

2.1.1 S81-PU001 Power Supply Set

This is a power supply set to be fitted on a base plate. It consists of a maximum of 4 x 25 Watt power supply units, PU-A0005-1 model, plus one PU-A0004-1 battery charger module able to supply a 2 or 4 ampere adjustable battery charge current. Power supply units are connected in parallel, up to a maximum of four units amounting to a total of 16 amperes. Under normal operating conditions, a simplified test is carried out every 30 seconds in order to check the proper presence of the batteries. A full test, instead, is carried out every hour in order to check electrical connections and battery efficiency. During battery trickle charge, battery voltage is compensated automatically according to the temperature. In case of mains voltage failure, batteries are automatically switched to the load without any interruptions. Should the full charge stage exceed 24 hours, the power supply unit will signal a battery fault. In case of primary power supply failure, the system will shut batteries down when the on-load voltage is lower than 18VDC in order to avoid damaging the batteries. The set features three open collector outputs for replicating the various types of faults to the alarm control panel, along with a RS232 port for the connection to a supervisory system.



Figure 2.1 S81-PU001 Power Supply Set

Technical Features

- Input voltage: 110-240V~ (-15% - 10%)
- Free-air operating temperature: -5 °C - 50 °C
- Relative humidity: 93% non-condensing
- Protection class: IP20
- Nominal output voltage: 25VDC
- Max. output current: 4A/8A/16A
- Protections: Line fuse T6.3A H 250V (5x20)
- Battery voltage: 26.2 to 28.7 VDC, compensated automatically
- VBAT Ripple: < 100mV pK-pK at maximum current
- Resistance to mains voltage dips: >=20mS at maximum current (with PU-A0005)
- Maximum battery current: 4A
- Protections: Over-voltage, short circuit and battery reverse polarity
- Reference standards: EN54-4
- EC reference standards: EN50081-2 & EN50082-2 (industrial environment)
- Safety: EN60950 (CEI-74-2)

Technical features of the S81-PU001 power supply set according to the different configurations:

Features	S81-PU001-1	S81-PU001-2	S81-PU001-4
Number of PU-A0005-1 power supply units	1	2	4
Power supply voltage	110-240V~	110-240V~	110-240V~
Rated frequency	50-60Hz	50-60Hz	50-60Hz
Max. input current at 110V~	1.6A	3.3A	6.4A
Max. input current at 240V~	0.79 A	1.8 A	3.2A
Nominal output voltage	25VDC \pm 2%	25VDC \pm 2%	25VDC \pm 2%
Max. residual ripple	266mV	704mV	704mV
Minimum output voltage ¹	18.9VDC	18.9VDC	18.9VDC
Max. output current ²	4A	8A	16A
Maximum battery resistance ³	1.5	1.5	1.5
Max. battery current	2A	4A	4A
Maximum battery capacity	26A/h	26A/h	65A/h

- 1 Full load output voltage with low batteries in case of main voltage failure
- 2 Current for the loads plus the current required by the control panel.
- 3 Internal resistance of the batteries and relevant circuits (Cables, terminals, fuses, etc.)

2.1.2 PU-A0005-1 Power Supply Module

It is a universal switching power supply unit able to provide a maximum current of 4A at 25VDC. It is used in combination with the PU-A0004-1 battery charger in compliance with EN54-4 standard provisions. The power supply unit features a circuit for load distribution which allows the parallel connection of multiple power supply units, up to a maximum of four units.



Technical Features

- Input voltage: 110-240V~ (-15% - 10%)
- Max. absorbed current at 110V~: 1.6A
- Max. absorbed current at 240V~: 0.79A
- Free-air operating temperature: -5 °C - 50 °C
- Relative humidity: 93% non-condensing
- Frequency: 50-60 Hz
- Power factor (W/VA): 0.6 Typical
- Efficiency: > 80%
- Protection class: IP20
- Dimensions: 200mm x 110mm x 60mm
- Insulation between input and output: >2 M (500VDC)
- Insulation between input and ground: >2 M (500VDC)
- Dielectric strength between input and output: 3000 VAC for 1 minute
- Dielectric strength between input and ground: 1500 VAC for 1 minute
- Output voltage: 25VDC
- Max. output current: 4A
- Ripple: <266mV
- Protections: Line Fuse, over-current, short circuit

Internal Connections

INPUT POWER SUPPLY CONNECTIONS			
Tag.	Terminal	Name	Function
TB1	M1	L input	Phase (protected by internal fuse)
	M2	N input	Neutral
	M3	PE	Earth
CURRENT SHARE AND STATUS REPLICATION CONNECTIONS			
Tag.	Terminal	Name	Function
TB2	M1	RL-COM1	Status relay 1 common
	M2	RL-NO1	Status relay 1 NO
	M3	RL-COM2	Status relay 2 common
	M4	RL-NO2	Status relay 2 NO
	M5	SHARE (+)	Signal for load distribution
OUTPUT POWER SUPPLY CONNECTIONS			
Tag.	Terminal	Name	Function
TB3	M1	- V. OUT	Output voltage negative
	M2	- V. OUT	Output voltage negative
	M3	+V. OUT	Output voltage positive
	M4	+V. OUT	Output voltage positive

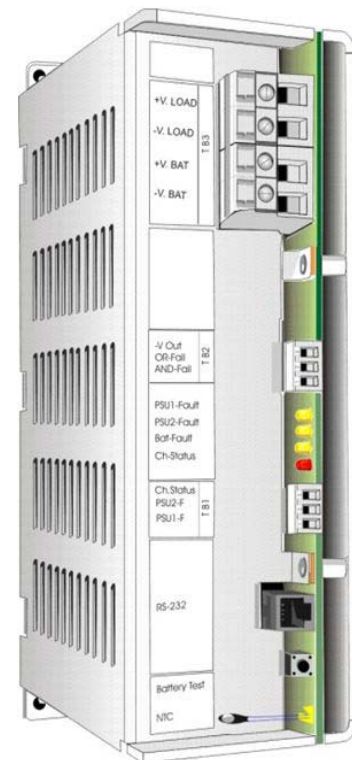


WARNING: HIGH VOLTAGE

THIS MODULE INCLUDES CIRCUITS WITH VOLTAGE AND CURRENT VALUES POTENTIALLY DANGEROUS FOR PEOPLE.

2.1.3 PU-A0004-1 Battery Charger Module

This is a UPS able to control and charge two 12 Volt batteries with a maximum capacity of 65Ah. Battery maximum charge current can be set through a dip-switch on the module. Under normal operating conditions, a simplified test is carried out every 30 seconds in order to check the proper presence of the batteries. A full test, instead, is carried out every hour in order to check electrical connections and battery efficiency. During battery trickle charge, battery voltage is compensated automatically according to the temperature. In case of mains voltage failure, batteries are automatically switched to the load without any interruptions. Should the full charge stage exceed 24 hours, the power supply unit will signal a battery fault. In case of primary power supply failure, the system will shut batteries down when the on-load voltage is lower than 18VDC in order to avoid damaging the batteries. The set features three open collector outputs for replicating the faults to the alarm control panel, two inputs for monitoring the power supply units and one RS232 port for the connection to a supervisory system. It can be used together with one or more PU-A0005-1 power supply units. In this case, the resulting power supply set will be fully compliant with the EN54-4:1997/A2:2006 standard.



Technical Features

- Input voltage 22-28 VDC
- Free-air operating temperature -5 °C - 50 °C
- Relative humidity 93% non-condensing
- Efficiency > 83%
- Protection class IP20
- Dimensions 200mm x 110mm x 60mm
- Flammability UL94V2
- Battery voltage 26.2 to 28.7 VDC, compensated automatically
- Battery current (1/2/4A) Adjustable through dip switch
- VBAT Ripple < 100mV pK-pK at maximum current
- Resistance to main voltage dips $\geq 20\text{ms}$ at maximum current (with PU-A0005)
- Maximum battery circuit resistance 1.5 ohm
- Maximum battery capacity 65 Ah
- Maximum current to batteries Limited automatically
- Current to the load protected by 20A internal fuse

Internal Connections

CONNECTION OF STATUS OPEN COLLECTOR OUTPUTS			
Terminal block	Terminal	Name	Function
TB1	M1	PSU1 Fault	Open collector output - power supply unit section fault
	M2	PSU2 Fault	Open collector output - battery charger section fault
	M3	Charge Status	Battery charge status output (energized during the full charge stage).
CONNECTION OF POWER SUPPLY UNIT STATUS INDICATION			
Terminal block	Terminal	Name	Function
TB2	M1	AND-Failure	Input of voltage failure to all power supply sets
	M2	OR-Failure	Input of voltage failure to one power supply set
	M3	-V Out	M1 and M2 input common
CONNECTIONS TO THE BATTERIES AND TO THE LOAD			
Terminal block	Terminal	Name	Function
TB3	M1	- V. Bat	Battery negative
	M2	+V. Bat	Battery positive
	M3	- V. Load	Negative of power supply to the Load
	M4	+V. Load	Positive of power supply to the Load

2.1.4 S81-PU002 Power Supply Set

This power supply set is able to supply a maximum current of 32 amperes, duplicated to the load, and to control and charge two 12 Volt batteries with maximum capacity of 120Ah. Battery maximum charge current is 6 amperes. Under normal operating conditions, a simplified test is carried out every 30 seconds in order to check the proper presence of the batteries. A full test, instead, is carried out every hour in order to check electrical connections and battery efficiency. During battery trickle charge, battery voltage is compensated automatically according to the temperature. In case of mains voltage failure, batteries are automatically switched to the load without any interruptions. Should the full charge stage exceed 24 hours, the power supply unit will signal a battery fault. In case of primary power supply failure, the system will shut batteries down when the on-load voltage is lower than 18VDC in order to avoid damaging the batteries. The set features seven open collector outputs for replicating the various types of faults to the alarm control panel, along with a RS232 port for the connection to the configuration program Test-PUA009. Hot-swapping is possible for both the 4 AC/DC converters and the battery charger (Hot Plug).



Figure 2.2 S81-PU002 Power Supply Set - Front View

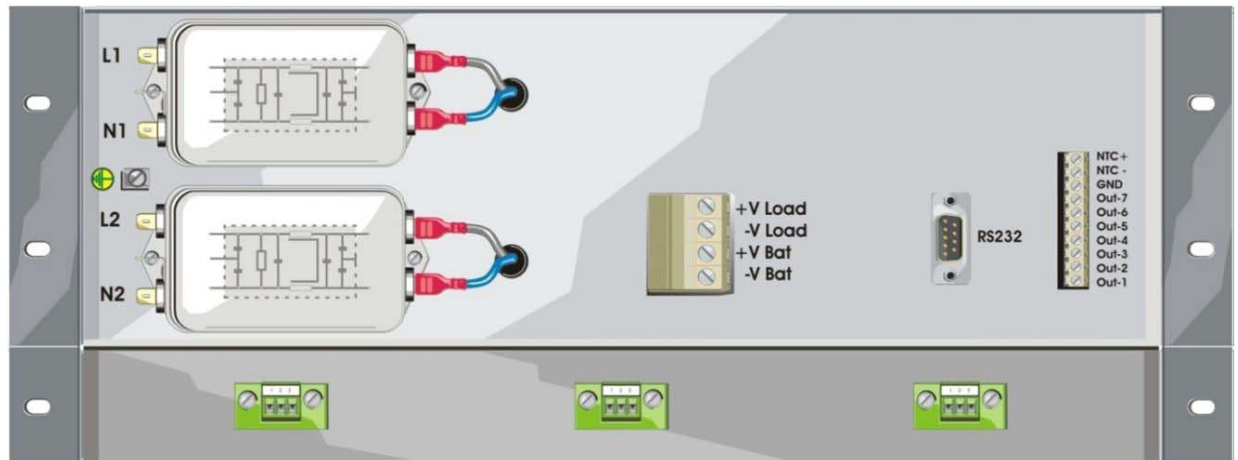


Figure 2.3 S81-PU002 Power Supply Set - Rear View

Technical Features

- Dimensions (H x W x D): 178 x 482 x 355mm
- Input voltage: 110-240V~ (-15% - 10%)
- Max. input current: See tab.1
- Free-air operating temperature: -5 °C - 50 °C
- Relative humidity: 93% non-condensing
- Input voltage frequency: 50-60 Hz
- Power factor (W/VA): 0.6 Typical
- Protection class: IP20
- Insulation between input and output: >2 M (500VDC)
- Insulation between input and ground: >2 M (500VDC)

Power Supply Unit Section

- VLOAD voltage: 25VDC \pm 2%
- VLOAD maximum current: 32A duplicated
- VLOAD ripple: < 110mV pK-pK at maximum current

Battery Charger Section

- Battery voltage: 26.2 - 28.7 VDC compensated automatically
- Resistance to mains voltage dips: \geq 20mS at maximum current
- Maximum battery current: 6A
- Maximum battery resistance: Internal resistance of the batteries and of the relevant circuits (Cables, terminals, fuses, etc.)

Cooling Unit

- Type of cooling: Forced ventilation (3 fans)
- Fan absorption: 100mA per fan
- Fan average life at 40° C: 80,000 hours

Protections

- Line Fuse: T10A H 250V (5x20)
- Protections: Over-voltage, short circuit and battery reverse polarity

Reference Standards

- EN54-4
- EN50081-2
- EN50082-2
- EN60950 (CEI-74-2)

Possible Configurations

Features	S81-PU002-2	S81-PU002-4
Number of PU-A0008-1 power supply units	2	4
Power supply voltage	110-240V~	110-240V~
Rated frequency	50-60Hz	50-60Hz
Max. input current at 110V~	6A	12A
Max. input current at 240V~	2.7A	5.25A
Nominal output voltage	25VDC \pm 2%	25VDC \pm 2%
Max. residual ripple	<115mV	<115mV
Minimum output voltage ¹	18.9VDC	18.9VDC
Min. output current ²	8A duplicated	20A duplicated
Max. output current ²	12A duplicated	32A duplicated
Maximum battery resistance ³	0.1	0.05
Max. battery current	6A	6A
Maximum battery capacity	2x12V 120Ah	2x12V 120Ah

- 1 Full load output voltage with low batteries in case of mains voltage failure
- 2 Current for the loads plus the current required by the control panel
- 3 Internal resistance of batteries and relevant circuits. (Cables, terminals, fuses, etc.)