

### EN54-4 +A1 +A2 Certified Power Supply Units Compliant with Fire Detection and Alarm systems

HAY-PSUEN54-1A

HAY-PSUEN54-2A

HAY-PSUEN54-5A

HAY-PSUEN54-2AL

HAY-PSUEN54-5AL



- Compliant to EN54-4:1997, A1:2002 & A2:2006
- Input Voltage – 110-240V AC
- 27.6VDC uninterruptible power supply for compliant Fire Systems
- 1A / 2A / 5A versions available in small metal enclosures for 7Ah batteries
- 2A / 5A versions available in large metal enclosures for 18Ah batteries
- Overload protection circuit to avoid damage to the PCB during short circuit or overload
- Deep discharge protection will disconnect batteries to avoid battery damage if draining too low (Below 21VDC)
- Battery Monitoring checks status of batteries (low voltage, incorrect connection, short circuit and temperature)
- Voltage free outputs: EPS (Mains fail), GEN (Battery low/battery fuse blown)

# 27.6VDC Power Supply Series

## Specifications

|                      |                                                                                       | HAY-PSUEN54-1A                                                                                                                                                                       | HAY-PSUEN54-2A | HAY-PSUEN54-5A | HAY-PSUEN54-2AL | HAY-PSUEN54-5AL |
|----------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|-----------------|-----------------|
| Mains Input          | Rated Voltage/Frequency                                                               | 110~240V AC ,47~63Hz                                                                                                                                                                 |                |                |                 |                 |
|                      | Input Current                                                                         | 0.3A                                                                                                                                                                                 | 0.5A           | 1.2A           | 0.5A            | 1.2A            |
|                      | Fuse Ratings                                                                          | F3A                                                                                                                                                                                  |                |                |                 |                 |
| Low Voltage Output   | Voltage (Mains Power)                                                                 | 22.0 ~ 27.6 Vdc                                                                                                                                                                      |                |                |                 |                 |
|                      | Voltage (Battery Standby)                                                             | 20.0 ~ 26.0Vdc                                                                                                                                                                       |                |                |                 |                 |
|                      | Ripple                                                                                | <100 mV                                                                                                                                                                              | <150 mV        | <150 mV        | <180 mV         | <180mV          |
|                      | Output Fuse                                                                           | F1A                                                                                                                                                                                  | F2A            | F5A            | F2A             | F5A             |
|                      | Battery Fuse                                                                          | F1A                                                                                                                                                                                  | F2A            | F5A            | F2A             | F5A             |
|                      | Imax A (With Charging )                                                               | 1A                                                                                                                                                                                   | 2A             | 5A             | 2A              | 5A              |
|                      | Imax B (No Charging)                                                                  | 1.5A                                                                                                                                                                                 | 2.8A           | 5.8A           | 2.8A            | 5.8A            |
|                      | Battery Capacity                                                                      | 2 x 7Ah                                                                                                                                                                              |                |                | 2 x 18Ah        |                 |
|                      | Ri max                                                                                | The maximum internal resistance of the battery and its associated circuitry is 5Ω                                                                                                    |                |                |                 |                 |
|                      | I min                                                                                 | 0.1 Amp                                                                                                                                                                              |                |                |                 |                 |
|                      | Battery Charging                                                                      | Two stage charging: Constant current bulk charging to 80% capacity within 24 hours. Float charging to 100% within 48 hours                                                           |                |                |                 |                 |
|                      | Constant Current Charge                                                               | 0.5A                                                                                                                                                                                 | 0.8A           |                |                 |                 |
|                      | Temperature Compensation                                                              | Coefficient for charging voltage: -30mV/ °C (0~50 °C)                                                                                                                                |                |                |                 |                 |
|                      | Low Battery Voltage Trigger                                                           | Threshold voltage – 23V                                                                                                                                                              |                |                |                 |                 |
|                      | Deep Discharge Protection Cut Out                                                     | Threshold voltage – 21V                                                                                                                                                              |                |                |                 |                 |
| Terminal connections | L  | Mains Input                                                                                                                                                                          |                |                |                 |                 |
|                      | +OP -                                                                                 | Voltage output to load                                                                                                                                                               |                |                |                 |                 |
|                      | + BATT -                                                                              | Connection to batteries using leads (supplied)                                                                                                                                       |                |                |                 |                 |
|                      | TEMP                                                                                  | Connection to battery temperature sensor (supplied)                                                                                                                                  |                |                |                 |                 |
|                      | GEN                                                                                   | GEN Fault output normally closed; 0.50 A @ 60Vdc 0.9Ω solid state relay contacts, volt free; Open if Mains failed and battery voltage < 23V or fault PSU fault condition (see below) |                |                |                 |                 |
|                      | EPS                                                                                   | EPS Fault output normally closed; 0.50 A @ 60V dc 0.9Ω solid state relay contacts, volt free; Open if loss of mains for > 10 seconds                                                 |                |                |                 |                 |
| Environmental        | Operating Temperature                                                                 | - 20 to +45°C (operating), 20%~90% RH non-condensing                                                                                                                                 |                |                |                 |                 |
| Conditions           | Storage Temperature                                                                   | -25 to +85°C (storage),10%~90% RH non-condensing                                                                                                                                     |                |                |                 |                 |
| Enclosure            | Material                                                                              | 1.2 mm steel white powder coated                                                                                                                                                     |                |                |                 |                 |
|                      | Enclosure Dimensions w*h*d (mm)                                                       | 275 x 330 x 80                                                                                                                                                                       |                |                | 420 x 400 x 80  |                 |
|                      | Weight excluding batteries (KG)                                                       | 3.1                                                                                                                                                                                  | 3.1            | 3.3            | 5               | 5.2             |

Rev: April 25

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## Diagnostic Chart

| End User Basic Fault Finding Guide |                   |                        |                                     |                                                                  |
|------------------------------------|-------------------|------------------------|-------------------------------------|------------------------------------------------------------------|
| Fault LED (Yellow)                 | Mains LED (Green) | Power Supply Status    | Potential Issue                     | Investigation                                                    |
| OFF                                | ON                | Normal Operation       | Mains & Battery Operating Correctly | No action required - PSU ok                                      |
| Continual Flash                    | On Or Off         | System Fault           | Internal Power Fault                | Call Service Provider                                            |
| 1 Flash                            | OFF               | System in battery mode | Mains Power is disconnected         | Check mains power to PSU<br>Call service provider where required |

| Service Engineer Fault Finding Guide |                    |                   |                                                     |                                                                            |                                                                                         |
|--------------------------------------|--------------------|-------------------|-----------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Diagnostics LED (Amber)              | Fault LED (Yellow) | Mains LED (Green) | Power Supply Status                                 | Potential Issue                                                            | Investigation Required by Engineer                                                      |
| OFF                                  | OFF                | ON                | Status normal                                       | Mains & battery power ok                                                   | No action required - PSU ok                                                             |
|                                      | 1 Flash            | OFF               | Battery standby mode                                | Mains failure - batteries in use                                           | Investigate mains power loss to PSU                                                     |
| Continual Flash                      | Continual Flash    | ON/OFF            | No 24v power at output                              | Overload<br>Fuse blown<br>Cable or auxiliary device short circuit          | Check fuses, cable and auxiliary device for short circuit                               |
| 1 Flash                              | OFF                | ON                | PSU charging batteries                              | PSU operating normally - batteries are charging but not fully charged      | No action required - PSU ok and charging batteries                                      |
| 2 Flashes                            | Continual Flash    | ON                | PSU not seeing batteries                            | Batteries not fitted<br>Batteries discharged too low<br>Battery fuse blown | Test and replace discharged batteries - check battery fuse                              |
|                                      |                    | OFF               | Battery power low                                   | Mains power off and batteries running low (<23V)                           | Reinstate mains power and check battery charging                                        |
| 3 Flashes                            | Continual Flash    | ON/OFF            | PSU is registering a battery fault                  | Possible battery fault<br>Poor battery connection                          | Replace batteries if required<br>Check battery connections are tight and not corroded   |
| 4 Flashes                            | Continual Flash    | ON/OFF            | PSU is registering a battery charging fault         | PSU charging circuit is faulty                                             | Replace power supply unit                                                               |
| 5 Flashes                            | Continual Flash    | ON/OFF            | PSU is registering battery temperature sensor fault | Battery temperature sensor either faulty or disconnected from input        | Check TEMP input connections on PCB. If connected ok, replace battery and sensor leads. |

| LED Indicators         |                                                   |
|------------------------|---------------------------------------------------|
| LED Colours & Function | LED Function                                      |
| Green LED              | Mains power present                               |
| Yellow LED             | Fault present (See Fault Finding Guide Above)     |
| Amber LED              | Fault diagnostics (See Fault Finding Guide Above) |

| Power Supply Fault Reporting Outputs |           |                      |                                               |                                           |
|--------------------------------------|-----------|----------------------|-----------------------------------------------|-------------------------------------------|
| GEN Fault                            | ESP Fault | Status               | Potential Issue                               | Investigation Required by Engineer        |
| Closed                               | Closed    | Status normal        | Mains & battery power ok                      | No action required - PSU ok               |
| Closed                               | Open      | Battery standby mode | Mains failure - batteries in use              | Investigate mains power loss to PSU       |
| Open                                 | Closed    | System Fault         | General fault/Faulty batteries/Internal Fault | Fault - Use Fault finding guide above     |
| Open                                 | Open      | Total power loss     | Mains Power off and batteries too low         | Restore mains power and replace batteries |