

ELMDENE

Protecting People & Property

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ACCESS-UL-PSU1

(UL294 Access Control G Enclosure with UL294-12V 4A FOM4 Module)

ACCESS-UL-PSU2

(UL294 Access Control D Enclosure with UL294-12V 4A FOM4 Module)

UL294-G Enclosure

P/N: CAS996997-1

UL294-D Enclosure

P/N: CAS958959-1

UL294-12V 4A FOM4 MODULE

P/N: SAS138936

FEATURES

High efficiency cost effective UL294-listed power supply/charger designed for use in Access Control systems enclosed in two spacious cabinet choices each fitted with locks and tamper switch. Regulated 13.8Vdc output with battery stand-by supplying rated current to 4 independently PTC Fused Outputs (resettable fuses) individually configured for continuous or switched output current via a fire relay switch with flexible trigger options, capable of operating with any external control signal. PSU Universal mains input. Two dry (volt free) contacts are provided to signal loss of mains and battery / output faults.

- Continuous full rated current to load at 12V 4A
- Universal mains input voltage 100-240Vac
- Full electronic short circuit and overload protection
- Individual battery and output fuse protection
- High efficiency electronics for reduced running costs and operating temperatures
- Installer safe design with all high voltage electronics fully shrouded
- Mains transient protection circuit
- Dry contact indicating AC mains failure (EPS).
Required to be monitored by UL listed control unit in UL294 application.
- Dry contact for output and battery faults (GEN)
- Green Mains present LED
- Red Fault diagnostic LED
- **Versatile fire relay functionality**
- 4-way Class 2 fused outputs with health LED's
- Enclosure fitted with a tamper switch and lock(s)
- UL294 UL Listed for Access Control Systems
Destructive Attack – I; Endurance – IV;
Line Security – I; Stand-by Power - II

SPECIFICATION

Input Specification

Rated Voltage	100-240Vac
Frequency	50-60Hz
Max Current	2.0Amax @ Full load
Mains Input Fuse	T3.15A (20mm IEC 250Vac HBC)

Output Specification

Voltage	12.8 – 14.2V dc (13.8V dc nominal) on mains power 9.8 – 13.0V dc on battery standby
Total load current	4A maximum (4 outputs at 1.0A each)
Ripple	< 150 mV pk-pk max
Module Output Fuse	F4.0A (20mm IEC Glass)
FOM Fuses	4 off 1.35A PTC Fused Outputs Class 2 (resettable)
Overload	Electronic shutdown until overload or short circuit removed (under AC mains power only)

Standby Battery

Battery Type	12V Valve Regulated Lead Acid
Battery Capacity	Designed for 8.5Ah (G-box) or 18Ah* (D-box) VRLA
Battery Charging Fuse protection	F4.0A (20mm IEC Glass)

Mechanical

Product Reference	External Dimensions h x w x d (mm)	Battery Capacity	Weight (kg) Battery Excluded
ACCESS-UL-PSU1	"G" Enclosure (440 x 250 x 115)	8.5Ah	4.5
ACCESS-UL-PSU2	"D" Enclosure (505 x 407 x 80)	8.5Ah or 18Ah*	7.5

* Hold-up not tested by UL294

Environmental

Temperature	-10 to +49°C (operating) 75% RH non-condensing -20 to +80°C (storage)
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SIGNALLING OUTPUTS

Type:	Solid state relay contacts, volt free (dry)
EPS Fault:	Open if Loss of mains for >8s
GEN Fault:	Open if Battery terminal voltage < 11.5V dc (when operating in standby with no mains present), battery not present or Output and/or battery fuse blown

Fault Diagnostic Table:

Red LED (Fault)	Green LED (Mains)	PSU Status
OFF	ON	Normal: Battery fully charged
One short flash every second	ON	Normal: Battery charging but not fully charged
Flashing: 1second On 1 second Off	ON	Fault: Output fuse or battery fuse blown, or battery missing
	OFF	Fault: No mains, output fuse blown
One short flash every 3 seconds	OFF	Fault: No mains, battery supplying load.
OFF	OFF	Fault: No mains, No output, Batteries disconnected or completely discharged

LOCAL INDICATORS

MAINS LED (Green)	Mains present
FAULT LED (Red)	Fault present: Output or Battery fuse failed. Battery shorted, reversed, or low voltage.
OUTPUT LEDS - 4off (Red)	Indicates output voltages (1 to 4) present when ON
RELAY LED (Orange)	Indicates Control Relay energised when ON

CONNECTIONS

MAINS INPUT	L N	LIVE and NEUTRAL
MAINS FAIL	EPS FAULT	Dry contact. Open at loss of mains input
GENERAL FAULT	GEN FAULT	Dry (Volt-free) contact. Open on fault
OUTPUTS	1,2,3,4	O/P action configured by Jumpers ON, OFF or RELAY TRIGGER Controlled Note: Observe polarity
BATTERY	BATT +-	Connection to standby battery. Use cables provided. Note: Observe polarity
RELAY TRIGGER	TRIG +-	Configured by Jumpers as +VE, NC or NO Note: Polarity must be observed for +VE connection

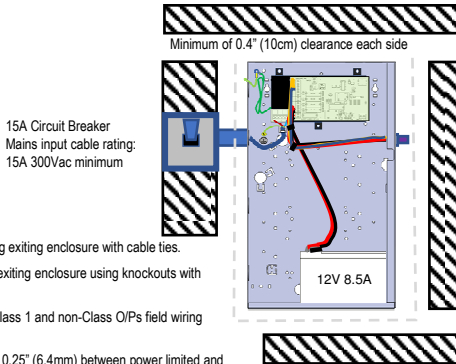
INSTALLATION INSTRUCTIONS

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/NFPA 72/ANSI, and with all local codes and authorities having jurisdiction. Use a minimum spacing of 0.25" between power limited and non-power limited wiring. This unit is only suitable for installation as permanently connected equipment. This PSU is NOT SUITABLE for external installation. This unit must be fed from a mains power source having a separate (approved) disconnect device and fitted with a fuse or other over-current protection device rated at 15A maximum. Ensure that the disconnect device used has appropriate earth fault protection to the applicable standard. **EQUIPMENT MUST BE EARTHED.** Before installation or servicing, ensure that external disconnect device is OFF.

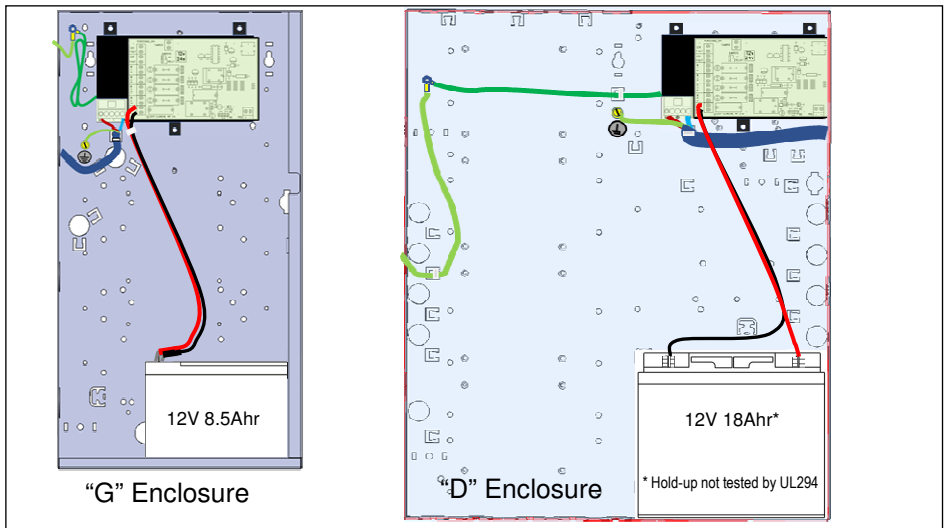
Mounting

- 1) Mount securely in a suitable enclosure with the correct orientation allowing minimum clearance – see Figure 1
- 2) Route mains and low voltage output cables via different knockouts and/or cable entry holes.
- 3) Use bushes and cable glands rated to UL94 HB minimum.

Figure 1 Typical Installation



- Secure all field wiring exiting enclosure with cable ties.
- Protect field wiring exiting enclosure using knockouts with bushes or similar.
- Use conduit for all Class 1 and non-Class O/Ps field wiring exiting enclosure.
- Minimum spacing of 0.25" (6.4mm) between power limited and non-power limited wiring.
- Output wiring rated for maximum load current.



Mains Power Up

- 4) Attach correctly rated mains cable (minimum 2.5mm² [15A], 300/500Vac). Fasten with cable ties.
- 5) Apply mains power. Check for 13.8Vdc on load outputs and Green Mains LED is ON.
- 6) Disconnect mains power.

Load Output

- 7) Attach correctly rated load cable and fasten using cable ties. Note polarity.
- 8) Apply mains power.
Check Green Mains LED is ON.
NOTE: Red Fault LED may flash to indicate no battery has been connected, this is normal. Verify load is operating correctly.

- 9) Disconnect mains power.

Signalling

- 10) Connect EPS and GEN fault outputs to appropriate inputs of Access Control or Indicating Equipment. Wiring to "EPS" and "GEN" should be less than 98.5ft (30m) in length from controller.

Standby Battery

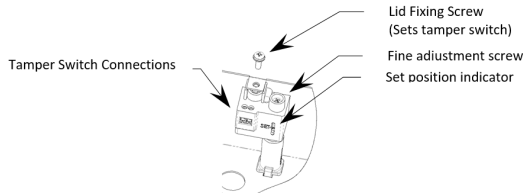
- 11) Attach supplied battery cables to terminal block before connecting the battery.
NOTE: ensure correct polarity of battery connections: **+ve** use **Red** lead, **-ve** use **Black** lead.

Fire Relay Configuration

- 12) See "OUTPUT FIRE RELAY OPERATION" - Typical Application below.

Tamper

- 13) Connect tamper switch to appropriate inputs of control and indicating equipment.



- 14) Close the lid and fasten with screw supplied.
- 15) With the unit mounted on the wall check that the rear tamper is not in a position that will affect its operation, for example over a mortar course, recess or raised area on the wall.

Check that the tamper switch is:

- CLOSED when the lid/cover is closed, and the retaining screws are fitted.
- OPEN when the retaining screws are removed, and the lid/cover is open.

Use the fine adjustment screw if necessary, to align indicator with set point.

- 16) Close the lid/cover and fasten. Re-check tamper circuit is closed at the control panel.

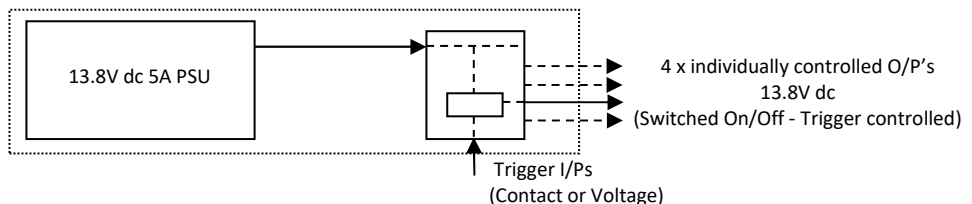
OPERATING INSTRUCTIONS

In the event of loss of AC mains, a battery fault or a GEN fault, the corresponding Fault signal contacts will open (see Fault diagnostic table for LED indicator status).

If the output of the PSU fails, the cause of the failure should be investigated e.g. short circuit load, connection of a deeply discharged battery. The fault should be rectified before restoring power to the PSU. If any of the fuses require replacing, ensure the correct fuse rating and type is used.

OUTPUT FIRE RELAY OPERATION

The power module Fire Relay functionality gives the installer the choice of continuous or switch external control of the PTC fused Class 2 outputs, by the means of either a Volt Free contact (N/O or N/C) or a low voltage signal (12Vdc/24Vdc), as shown in the block diagram below:



Typical Application:

Power must be removed from certain parts of the system in the event of a Fire Alarm activation, i.e. door lock power removed whilst Auxiliary Control Unit (ACU) equipment remains powered.

FIREFOM CONNECTIONS & JUMPERS

TRIG:	+	Trigger I/P from control device (+VE or Contact)
	-	Trigger I/P from control device (0V or Contact)
Note: Wiring to "TRIG" should be less than 98.5ft (30m) in length from controller		

Note: Fail safe mode shall be employed in UL294 applications

In case of fail secure configuration, panic hardware should be employed to allow exit from secured location.
Contact local authorities having jurisdiction.

The device has 3 modes of trigger (TRIG) operation set by the on-board jumpers:

Contact Mode (NO) - Jumper across: 2 & 3



FAIL SAFE

Contact Mode (NC) - Jumpers across: 1 & 2 and 3 & 4



FAIL SECURE

Voltage Mode - Jumper across 3 & 4



FAIL SAFE

Each output (O/P) can then be set using the jumpers next to the relevant fuse:

Output (O/P) always ON (+V)



Output (O/P) Isolated on TRIGGER (Relay)



Note: Removing the jumper completely, will disable the output (no output).

Table 1 below defines the output state for the Normal Closed and "Normal Open Contact Modes with Trigger (TRIG) selection.

Table 1	Trigger Select	Jumper(s)	Trigger + & -	Output	Orange LED
Contact Mode Normal Closed	NO	2 & 3	Open	No output	OFF
			Closed	12V dc	ON
Contact Mode Normal Open	NC	1 & 2 3 & 4	Open	12V dc	ON
			Closed	No output	OFF
Voltage Mode	+VE*	3 & 4	+V Applied**	12V dc	ON
			Removed	No output	OFF

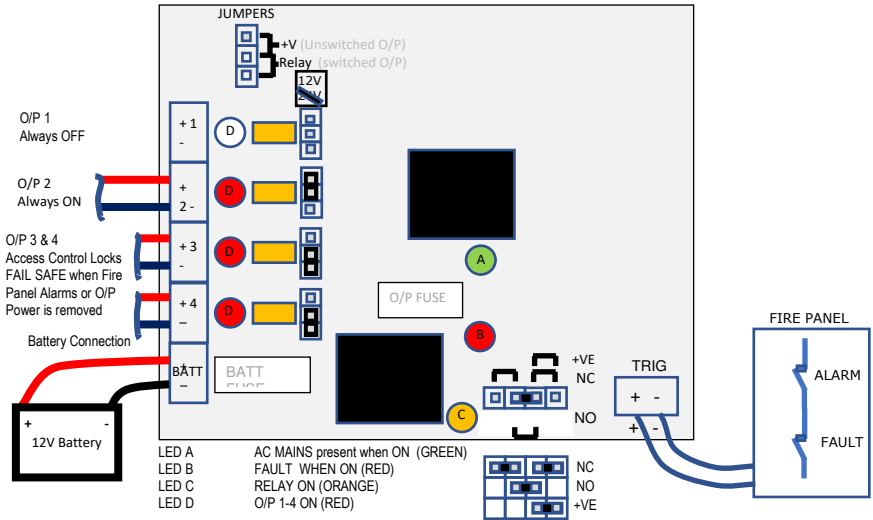
* Note: Trigger Input terminals (TRIG) + and - are polarity conscious when used in Voltage Mode only.

** In Voltage Mode the "+V Applied" can be used with voltages between 10.0V to 28.4V.

Typical Fire Relay Fail-Safe Setup for a Fire Panel Alarm:

In this example the power to the access control lock is FAIL-SAFE when the Fire Panel alarms, or O/P power is removed.

- O/P 3 & 4 configured to be "Relay(switched O/P)".
- Contact Mode Normal Closed - "Trigger Select" TRIG : configured as NO (2 & 3 Linked)
- O/P 2 configured as always ON (+V linked)
- O/P1 configured as always OFF (No link)



Note: Listed panic hardware may be required for fail secure configuration. Consult local authority having jurisdiction.

MAINTENANCE

This unit is intended for use by Service Personnel only and must be disconnect Power Prior to Service. There are NO USER SERVICEABLE parts inside. There is no regular maintenance required of the PSU other than periodic testing, and replacement of the standby battery. **Reference should be made to the battery manufacturer's documentation to determine typical/expected battery life with a view to periodic replacement of the battery.**

COMPLIANCE

This power supply unit meets the essential requirements of the following European Directives:

CPR:	305/2011/EU
Low Voltage	2014/35/EU
EMC	2014/30/EU
WEEE	2012/19/EU
RoHs2	2011/65/EU



DISPOSAL OF PRODUCT AT END OF LIFE

This product falls within the scope of EU Directives 2012/19/EU Waste Electrical and Electronic Equipment (WEEE) and 2013/56/EU (Battery). At the end of life, the product must be separated from the domestic waste stream and disposed via an appropriate approved WEEE disposal route in accordance with all national and local regulations. Before disposal of the product, any batteries must be removed, and disposed separately via an appropriate approved battery disposal route in accordance with all national and local regulations. Package used batteries safely for onward transport to your supplier, collection point or disposal facility.

**Caution: Risk of fire or explosion
if bare battery wires are allowed to touch.**

See Specification for battery type information. The battery is marked with the crossed out wheellie bin symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). *For more information see: www.recyclethis.info*

Explanation of symbols: *(Not all may apply)*



Fault Indication



Shock Risk - isolate before attempting access



Certification Level



Mains Present



Protective Earth



Do not dispose of in unsorted waste

Specifications subject to change without notice

The packaging supplied with this product may be recycled. Please dispose of packaging accordingly.