



STARKSTROM Ltd

Single Isolated Power System

SIPS-F-EDS-16

The standard Isolated Power System Type SIPS-F-EDS-16 consists of two distinct items:

- Floor-standing Monitoring & Distribution Panel (1-off)
- Remote Alarm Annunciator (1-off) – choice of RA006, RA004 or RA003 (see separate datasheet)

Floor-standing Distribution Panel includes:

- 1-off Webserver with TCP/IP functionality (standard network connection required)
- 1-off Steel Enclosure
- 1-off EDS400 Integrated Insulation Monitor and Automatic Earth Fault Detection System (EDS)
- 1-off Medical Isolation Transformer (4, 6.3, 8 or 10kVA)
- 1-off Main Isolator
- 16-off 20A “B type” DP Miniature Circuit Breakers (MCB)
- 1-off Load current Transformer
- 1-off Equipotential Earth Bar
- 1-off Terminals for Alarm Annunciator & field wiring
- 1-off Thermostatically controlled ventilation fan
- 1-off Ventilation filter

To fully comply with HTM06-01 section 16.32 Starkstrom IPS panels have been designed to be fully independent single systems with no shared equipment. This also applies to EDS circuit evaluators.

Standards

Starkstrom IPS systems fully comply with the following standards:

- HTM06-01
- IEC60364-7-710
- MEIGaN v2.0
- Annex 1 MEIGaN
- IEE Guidance Note 7
- BS7671:2008

Product construction complies with European Standards and Technical Specifications (ESTS).

Wherever reference is made to a British Standard a corresponding ESTS (generally ISO series) shall be equally acceptable.

SIPS Enclosure Construction

Maximum Dimensions (mm)	1600h x 300w x 380d (door closed) or 680d (door open)
IP Rating	IP54
Material	6112 Grade Mild Steel
Finish	Powder Coated RAL7032W
Front Door Fixing	Lockable Handle and Interlocking Mechanism
Fan & Filter arrangement	Upper Fan & Filter unit and a lower Filter unit
Fan & Filter Size (mm)	105w x 105h
Gland Plate	Top Mounted 140mm x 230mm
Copper Earth Bar	15mm x 3mm with M5 threaded connections



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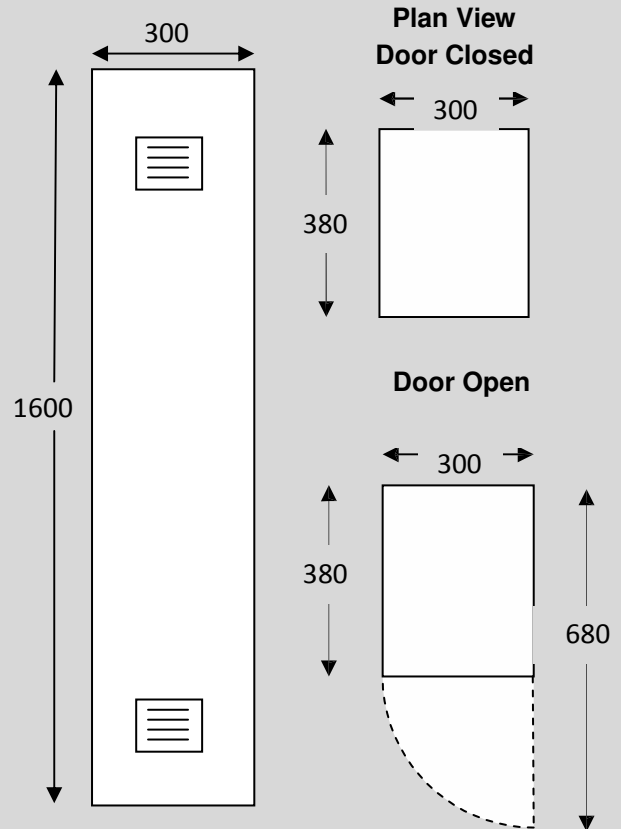
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Maximum weight of IPS System 120kg (for 10kVA)

Medical Isolation Transformer

Transformers in accordance with IEC 61558-2-15, with the following additional requirements:

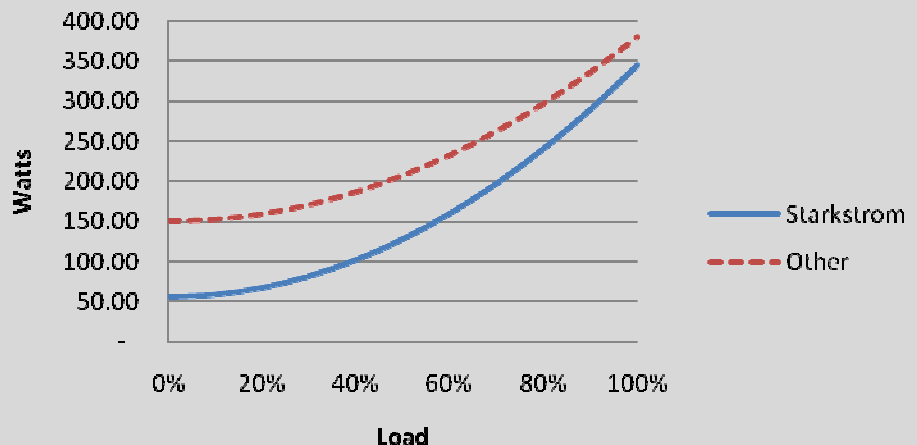
The leakage current of the output winding to earth and the leakage current of the enclosure, when measured in no-load condition and the transformer supplied at rated voltage and rated frequency, shall not exceed 0.5 mA. Single-phase transformers shall be used to form the medical IT systems for portable and fixed equipment and the rated output shall not be less than 0.5 kVA and shall not exceed 10 kVA.

The medical isolation transformers are installed into the IPS panels at our manufacturing facility. The IPS system is then tested, shipped, installed and commissioned as a complete system without any subsequent transformer removal and re-installation.

Heat Losses per Transformer

Starkstrom has invested in a range of transformers that are more efficient over their entire working range, and especially in the 0-50% loading area where the majority of the transformers operating life are spent.

10kVA Transformer - Heat Losses



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Starkstrom transformers can generate energy savings of up to 63% compared to other suppliers of medical isolated transformers (see 10KVA comparison graph). This has the benefits of reducing direct energy costs and reducing the cost of removing the excess heat.

Size	No Load Heat Losses	Full Load Heat Losses	Efficiency
4kVA	37w	146w	96%
6.3kVA	53w	254w	96%
8kVA	50w	270w	97%
10kVA	56w	345w	97%

Starkstrom medical isolation transformers have been engineered to give a maximum of 8 times “in rush”. We would suggest considering the following MCB’s to allow adequate circuit protection. However, this must be confirmed with your project electrical designer.

4kVA Transformer	40 Amp ‘C’ Curve
6.3kVA Transformer	50 Amp ‘C’ Curve
8kVA Transformer	63 Amp ‘C’ Curve
10kVA Transformer	63 Amp ‘D’ Curve

Insulation Monitor and Earth-Fault Detection System

Each SIPS is fitted with a single integrated insulation monitor and Earth-Fault Detection System (EDS) unit. This has an embedded LCD display screen (minimum 2 lines of 15 characters) and be navigated using 4 separate HMI buttons. The fascia is to be protected against accidental operation and physical damage using an integral clear top hinged Perspex cover.

The unit provides a continuous readout of insulation levels (displayed in k Ω) and transformer load (displayed in VA). It has a pulsing green LED to indicate a working system and a red LED to indicate a fault is present.

Each unit has a minimum of 4 digital inputs to accept, monitor and display signals from remote equipment e.g. UPS alarms.

The unit complies with both IEC 61557-8 and IEC 61557-9 with the following specific requirements:

- The a.c. internal impedance will be at least 100k Ω
- The test voltage will not be greater than 25 V d.c.
- The injected current, even under fault conditions, will not be greater than 1 mA peak
- Indication will take place at the latest when the insulation resistance has decreased to 50 k Ω .
- A test device will be provided
- Indication is required if the earth or wiring connection is lost

Earthing

An earth conductor of a minimum 4 or 6mm² is required to connect all earth potentials to the main earth reference bar. Site specific calculations must be carried out to determine the cable specification. The maximum permissible resistance of the earth conductor between any given socket and the ERB (Earth Reference Bar) shall not exceed 0.1 Ω .



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Wiring & Sockets

For IPS circuits, both conductors should be coloured brown and identified as L1 and L2. In composite cables, conductors can be sleeved brown. This applies to conductors in the field as well as within the IPS panel. All socket outlets should be wired in a radial fashion from the IPS panel, such that each bed or patient area is supplied by at least two circuits.

It is recommended that the IPS socket outlets shall be double pole un-switched, clean earth sockets, colour-coded blue, engraved in white lettering 'MEDICAL EQUIPMENT ONLY'.

If white sockets are preferred, they shall be mounted on a blue background, approximately 2 cm larger than the socket. The socket to be engraved 'MEDICAL EQUIPMENT ONLY' in blue.

Commissioning

All field wiring should be fully proven, tested (to the relevant standards) and documented by the contractor. The contractor shall then employ the equipment supplier to commission the IPS system to the requirements of IEC60364-7-710.



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