



STARKSTROM Ltd

Single Wall Mounted Isolated Power System

SIPS-W-EDS-16

The standard Isolated Power System Type SIPS-W-EDS-16 consists of three distinct items:

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

Wall Distribution Panel includes:

1-off	Webserver with TCP/IP functionality (standard network connection required)
1-off	Fibreglass Enclosure
1-off	EDS400 Integrated Insulation Monitor and Automatic Earth Fault Detection System (EDS)
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

Isolation Transformer Enclosure includes:

1-off	Medical Isolation Transformer (4, 6.3, 8 or 10kVA)
1-off	Steel Enclosure

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
- BS7671:200

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

Medical Isolation Transformer

Starkstrom transformers are manufactured 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 shall be installed into the IPS panels at the manufacturer’s facility. The IPS system is then tested, shipped, installed and commissioned as a complete system without any subsequent transformer removal and re-installation.



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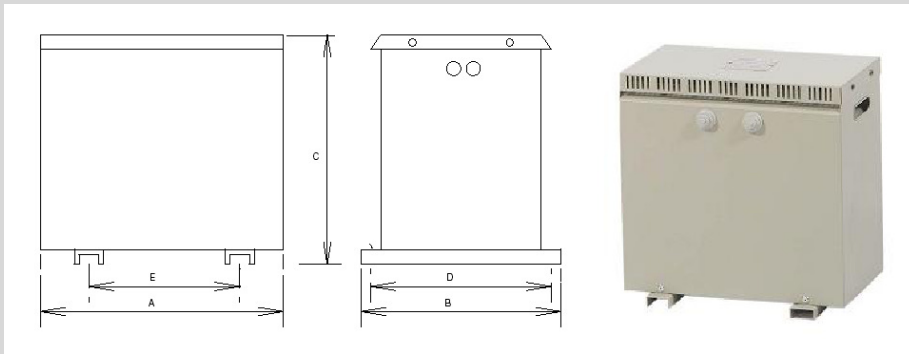
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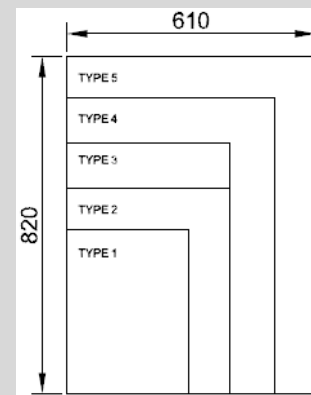
Transformer Enclosure Sizing

Weights & Dimensions						
Rating	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
4 kVA	440	430	535	390	180	42
6.3 kVA	440	430	535	390	180	53
8 kVA	440	430	535	390	180	70
10 kVA	440	430	535	390	180	82

Transformer Enclosure



Distribution Board



Distribution Board Sizing Options

Distribution Board Size					
		Height [mm]	Width [mm]	Depth [mm]	Weight [kg]
Type 1	4 Way Standard	400	300	206	20
Type 2	4 Way with extras or 8 way standard	500	400	206	30
Type 3	8 Way with extras or 12 way standard	610	400	257	40
Type 4	12 Way with extras or 16 way standard	720	510	250	50
Type 5	16 Way with extras	820	610	300	60

Possible extras are primary side MCBs, auto changeover, in rush limiters, and energy meters.



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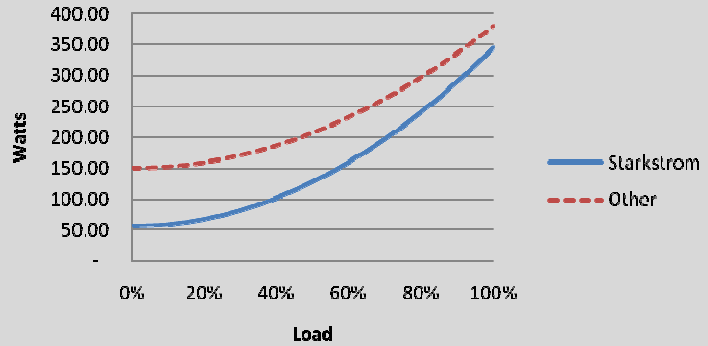
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Heat Losses per Transformer

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.

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.

10kVA Transformer - Heat Losses



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 can be navigated using 4 separate HMI buttons. The fascia is 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 kΩ) 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.



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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 100kΩ
- The test voltage will not be greater than 25V d.c.
- The injected current, even under fault conditions, will not be greater than 1mA peak
- Indication will take place at the latest when the insulation resistance has decreased to 50kΩ.
- 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 0.1Ω.

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.

Blue Starkstrom double pole, switched or unswitched, clean earth sockets, engraved in white lettering 'Medical equipment only' are recommended for all IPS socket outlets. 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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