

Fused Battery Transition Boxes and Battery Isolator Switches

TransiBox Transition Boxes

Uninterruptible Power Supplies and Solar PV energy storage solutions use battery sets to store their DC power. To comply with IEE 17th Edition Wiring Regulations (BS7671), installations using more than one battery string (parallel arrangement) must be installed with a Battery Transition Box (BTB) to:

- provide electrical separation and isolation of individual battery strings for individual battery block testing, maintenance and replacement.
- provide over current and short circuit protection for the DC links and cabling.
- simplify the connection of multiple battery cables to the main battery circuit breaker.
- allow periodic battery testing without disturbing bolted battery connections - which could reduce connection integrity over time.

Total isolation is achieved by removing the appropriate fuse from the enclosure and its carrier, using the puller provided - mounted inside the housing. The enclosures are key-locked to prevent unauthorised access and protect exposure to live parts. For future expansion, spare ways can be provided to which to connect additional battery strings.

Renewables and Smart Grids

Our standard Battery Transition Box range is designed for use with single and three-phase uninterruptible power supplies. Versions are available for use within renewable applications including solar and wind power, and for use within smart-grid systems. Thamesgate also supply static switches featuring both automatic and manual transfer, metering and smart communications capabilities.



NICEIC Certified Installations

Battery Transition Boxes, LV switch gear and maintenance bypass arrangements must be installed and tested by electrically competent and certified engineers. As an NICEIC electrical contractor, Thamesgate provides a complete electrical installation service for sites across the UK and Eire. The company also provides a complete design and build service for renewable energy storage. Thamesgate TransiBox Battery Transition Boxes and manufactured at our UK facility and include:

- withdrawable fuses for battery isolation
- durable rigid steel enclosures with hinged door
- large viewing window for fuse inspection
- key-lockable for security and safety
- sealed to IP55
- conservatively rated for long-term reliability
- solid copper busbar, tin plated
- supplementary insulation over live parts
- highest quality components and materials
- integral fuse puller stowing point
- standard sizes for up to seven battery strings
- standard ratings up to 3600A

SPECIFICATIONS - Battery Transition Boxes

TransiBox Selection

The model selected should have a sufficient number of ways appropriate to the number of battery strings and the fuse ratings. The maximum UPS current at the end of discharge should be less than the maximum current rating of the Battery Transition Box. DC voltages are hazardous and the TransiBox approach is to maximise the physical separation of terminals of opposite polarity. This is achieved by having the positive and negative battery polarities in separate enclosures (sold in pairs) or Combi boxes with both polarities in a single enclosure, with a 'flip-over' safety barrier.

Model Selection

Select a SKU with a number of ways (connection points) to match or exceed the number of battery strings and the fuse ratings as per the table. The maximum UPS current at end of battery discharge should be less than the maximum current rating of the unit.

Fuse Selection

Battery strings are normally protected by fuses at end of each string. The fuses may be replaced by solid links at one or both ends if required. Where battery ratings permit, the fuse rating should be such that the normal operation of the UPS can be sustained with one battery string disconnected (for maintenance or a fault condition). A factor of a further 25% should be added to the fuse rating to allow for imbalanced current sharing between strings. The fuse rating should be the next available standard rating greater than the 'ideal' rating. To comply with Wiring Regulations, fuse ratings should not exceed the current carrying capacity of the battery cables.

Standard Fuse Ratings

TransiBox uses continental 'knife blade' fuses with a breaking capacity of 25kA which are suitable for nominal system voltages up to 440Vdc. Special fuses are available for voltages up to 550Vdc.

Cable Glands

TransiBox enclosures are supplied pre-drilled and fitted with cable glands for commonly-specified cable types. Non-standard cable glands or undrilled enclosures can be requested.

Terminals

All terminals are threaded studs for heavy-duty ring terminals. Standard stud sizes are shown in the relevant table.

Mounting

The TransiBox enclosures can be fixed directly to a vertical surface through pre-drilled holes in the rear of the enclosure. Zinc plated steel fixing brackets are optional for uneven surfaces (add 10mm to the enclosure depth).

Specification

Individual specification sheets are available for each model if required.

Ordering

TransiBoxes are sold as a complete set for one installation. 'C' units are a single enclosure, whilst 'S' units are sold in pairs, marked 'Positive' and 'Negative'.

Other Thamesgate products available include:

- Off-load Fused Battery Isolator Switches
- On-load Fused Battery Isolator Switches
- Fully Enclosed Battery Circuit Breakers
- Fused Battery Transition Boxes with Integral On-load Battery Isolator Switches
- Splitter Boxes to break down a battery string into 120Vdc sections and to meet the ELV regulations

SPECIFICATIONS - Battery Transition Boxes



Notes:

1. (*) nominal continuous current ratings are continuous and should allow for UPS at full load, on one less battery string than the number of ways installed
2. (**) max ratings are 15 minute ratings
3. (***) typical ratings shown for guidance only
4. Units can be ordered with an integral battery isolator switch - option

SPECIFICATIONS - Battery Isolator Switches

Off-load Fused Battery Isolator Switches/Splitters - see note 6						
SKU	Max Fuse	Fuse Type	Conductors	Max Cable Size	Terminal Size	HxW**xD (mm)
PD-100	100A	22x58	1	18/35mm ²	-	200x150x107 closed, 140 open
PD-160	160A	NH00	1	18/35mm ²	M8	400x200x165 closed, 290 open
PD-250	250A	NH1	1	26/120mm ²	M10	500x300x175 closed, 355 open
PD-400	400A	NH2	1	26/120mm ²	M10	500x300x 180 closed, 385 open
PD-630	600A	NH3	1	32/185mm ²	M12	600x400x180 closed, 405 open
On-load Fully Enclosed Battery Isolator Switches - see note 6						
SKU	Fuse Rating	Endurance *	Conductors	Max Cable Size	Terminal Size	HxW**xD (mm)
I-100	100A	30,000	1	18/50mm ²	M6	300x200x120
I-160	160A	20,000	1	18/50mm ²	M8	300x200x120
I-250	250A	10,000	1	25/95mm ²	M8	400x200x120
I-400	400A	6,000	1	25/120mm ²	M10	500x200x120
I-630	630A	4,000	1	32/185mm ²	M10	500x200x120
I-800	800A	2,000	1-2	47/400mm ²	2xM12	700x500x210
I-1250	1250A	2,000	1-3	47/400mm ²	3xM12-M16	700x500x210
I-1600	1600A	1,000	1-4	47/400mm ²	4xM12-16	700x500x210
Fully Enclosed Battery Circuit Breakers - see note 6						
SKU	Fuse Rating	Endurance *	Conductors	Max Cable Size	Terminal Size	HxW**xD (mm)
CB-63	63A	30,000	-	18/50mm ²	M6	300x200x120
CB-80	80A	30,000	-	18/50mm ²	M6	300x200x120
CB-100	100A	30,000	-	18/50mm ²	M6	300x200x120
CB-125	125A	20,000	-	18/50mm ²	M8	300x200x120
CB-160	160A	20,000	-	18/50mm ²	M8	300x200x120
CB-200	200A	10,000	-	25/95mm ²	M8	400x200x120
CB-250	250A	10,000	-	25/95mm ²	M8	400x200x120

Notes:

- (*) Endurance - break cycles at full load, 500Vdc
- (**) Excluding mountings, glands and switches
- CB and I series - Lever t standard, for HOR7N cable
- Trip speeds CB series 70-700s 2xrating, 7-70s 5x rating, instantaneous trip 10x rating
- I series, Shunt trip standard operating voltages DC (12/24/30/48/125/250) and AC 50-60Hz (24/48/120/220/400)
- These ranges can be ordered with a Shunt Trip and/or Auxiliary Contact. Add ST or AUX or ST+AUX to SKU.

PD series



I series



CB series

