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Ss_75_70_54_25

Electricity metering systems

Systems

Ss_75_70_54_25 Electricity metering systems

1. Description: Electrical energy meter
2. System performance: [Ss_75_70_54/215 Meter data](#)
3. Number and location of meters: As Per drawings.
4. Monitoring period: 15 minute intervals
5. Reporting: Information shall be shared with, and integrated too, the building energy management systems.

System performance

Ss_75_70_54/215 Meter data

1. Software functions: Display of additional electrical data such as power factor, frequency, reactive power. Historical analysis of energy consumptions. Instant access on demand to data from individual meters. Retrieval, checking and collation of metered data. Review of data in flexible format, allowing comparison between different time periods and meter locations.

Ω End of System

Pr_60_70_22_22 Distribution boards

Products

Pr_60_70_22_22 Distribution boards

1. **Manufacturer:** Submit proposals in line with preferred manufacturers and suppliers.
2. **Standards:** To IEC/EN 61439
3. **Third-party certification:** Required for modifications or additions to existing equipment. Allow for validation and certification of the additions to the existing distribution.

Undertake a full validation report of the existing switchboard, including thermal imaging, so that any defects identified can be recorded and presented to the client and engineer.

4. **Rated operational voltage (Ue):** 250 V a.c and 415 V a.c.
5. **Incoming device:** [Pr_60_70_48_47 Low-voltage switch-disconnectors](#);
[Pr_65_72_27_53 Moulded case circuit breakers](#);
and [Pr_65_72_27_72 Residual current circuit breakers](#).
6. **Outgoing devices**
 - 6.1. **Type:** [Pr_65_72_27_52 Miniature circuit breakers](#);
[Pr_65_72_27_73 Residual current circuit breakers with integral overcurrent protection](#);
[Pr_65_72_27_47 Low-voltage fuse links](#);
 - 6.2. **Quantity:** Submit proposals or as indicated on the drawings and schedules where provided.
7. **Busbars and connections**
 - 7.1. **Type:** Fully shrouded.
 - 7.2. **Rated current (InA):** Submit proposals or as indicated on the drawings and schedules where provided.
 - 7.3. **Rated short-time withstand current (Icw):** Submit proposals or as indicated on the drawings and schedules where provided.
8. **Neutral and earth bars:** Individual terminal for each outgoing circuit.
9. **Neutral terminations:** Match current carrying capacity of phase conductor.
10. **Spare ways:** Submit proposals or as indicated on the drawings and schedules where provided.
To be fitted with blanks.
11. **Enclosure**
 - 11.1. **Ingress protection (minimum):** To I.S. EN 60529 , IP31, for consumer units
and To I.S EN 60529, IP44, for distribution boards.
 - 11.2. **Material:** Non-conductive and Steel. sd
 - 11.3. **Finish:** Polyester powder coated.
 - 11.4. **Colour:** Manufacturer's standard unless stated elsewhere.
 - 11.5. **Locking mechanism:** Manufacturer's standard .
12. **Accessories:** Current transformers;
Distribution connectors to I.SEN 61984;
Digital metering equipment;
Padlocks and keys;
Padlock and key cabinets;
and Time switches for tariff and load control.
13. **Execution:** [Pr_60_70_22/665 Installing switchgear generally](#) and [Pr_60_70_22/676 Circuit schedules](#).

Pr_60_70_48_47 Low-voltage switch-disconnectors

1. **Manufacturer:** Submit proposals in line with preferred manufacturers and suppliers..
2. **Standards:** To IEC 60947-3:2020
3. **Rated operational voltage (U_e):** Submit proposals or as indicated on the drawings and schedules where provided.
4. **Rated operational current (I_e):** Submit proposals or as indicated on the drawings and schedules where provided.
5. **Utilization category:** AC-20A;
AC-20B;
AC-21A;
AC-21B;
AC-22A;
AC-22B;
AC-23A;
AC-23B;
and DC-21A as required by the installation.
6. **Rated operational frequency:** 50 Hz.
7. **Rated short-time withstand current (I_{cw}):** Not less than twelve times the maximum rated operational current.
8. **Service conditions:** Normal.
9. **Terminals:** Suitable for the connection of copper and aluminium conductors.
10. **Mechanical interlocking:** Rotary handle capable of accepting up to three padlocks.
11. **Enclosure**
 - 11.1. **Ingress protection (minimum):** To EN 60529, IP44 or match switchgear assembly associated with the the disconnecter.
 - 11.2. **Material:** Sheet steel.
 - 11.3. **Finish:** Powder-coated.
 - 11.4. **Colour:** Manufacturer's standard unless specified elsewhere.
 - 11.5. **Gland plates:** Fully removable to top and bottom faces.
12. **Execution:** [Pr_60_70_22/665 Installing switchgear generally.](#)

Pr_65_72_27_47 Low-voltage fuse links

1. **Manufacturer:** Submit proposals .
2. **Standards:** To EN IEC 60269-1 and HD 60269-2.
3. **Third-party certification:** NSAI certified.
4. **Breaking range and utilization categories:** aM;
gG;
and gM.
5. **Rated current (I_n):** As Circuit schedules.
6. **Rated operational voltage (U_e):** 230 V a.c and 400 V a.c.
7. **Rated breaking capacity:** As Circuit schedules and schematics where provided.
8. **Verification**
 - 8.1. **Submittals:** Manufacturers certification

Pr_65_72_27_52 Miniature circuit breakers

1. **Manufacturer:** As distribution board.
2. **Standards:** IEC, NSAI
3. **Third-party certification:** ASTA Type test certification.

4. Rated current (InA): As Circuit schedules.
5. Rated operational voltage (Ue): 230 V a.c and 400 V a.c.
6. Rated impulse withstand voltage (Uimp) : As Circuit schedules.
7. Rated frequency: 50 Hz.
8. Number of poles: As Circuit schedules.
9. Rated short circuit capacity (Icn): As Circuit schedules.
10. Tripping characteristic: As Circuit schedules.
11. Service conditions: 3.
12. Features: Adjustable thermal release short-time delay setting and Supply connection either side.
13. Mounting method: Plug-in.
14. Accessories: Arc fault detection device
Locking kit;
Phase barriers;
Terminal covers;
Undervoltage release and as indicated on the distribution board schedules.

Pr_65_72_27_53 Moulded case circuit breakers

1. Manufacturer: As distribution board and As cubicle switchboard.
2. Standards: To IEC 60947
3. Third-party certification: ASTA Type test certification.
4. Rated operational current (Ie): As Circuit schedules.
5. Number of poles: One;
Two;
Three;
Four;
and As Circuit schedules.
6. Rated operational voltage (Ue): 230 V a.c and 400 V a.c.
7. Rated insulation voltage (Ui): 690 V a.c. 500 V a.c.
8. Rated impulse withstand voltage (Uimp) : 8 kV. 12 kV.
9. Rated frequency: 50 Hz.
10. Rated ultimate short circuit breaking capacity (Icu): Match existing distribution.
11. Rated service short circuit breaking capacity (Ics): 80% of Icu.
12. Utilization category: B.
13. Protection
 - 13.1. Type: Thermal/ magnetic.
 - 13.2. Characteristics: Integral.
 - 13.3. Settings: Fully adjustable.
 - 13.4. Parameters: Thermal adjustment. Short-time delay. Magnetic adjustment. Long-time delay. Earth leakage time delay. Earth leakage sensitivity.
 - 13.5. Special features: Submit Proposal.
14. Measurement: Total harmonic distortion (THD). RMS values of current and voltage. Power factor. Number of operations. Leakage current. Instantaneous and maximum demand. Frequency. Active, apparent and reactive powers.
15. Visual indication: LED indication of overload conditions. LED indication of earth leakage levels. LCD screen.
16. Adjustment: Rotary dials.
17. Communications

- 17.1. Connectivity: Modbus™ RTU. Ethernet.
- 17.2. Displays: Bluetooth™.
- 18. Suitable for isolation: Required.
- 19. Operating handle
 - 19.1. Operating handle: Manufacturer's standard .
 - 19.2. Manual: Rotary direct. Rotary with extension. Toggle.
- 20. Mechanical interlocking: Captive key exchange type with square faced key and alphabetical or numerical coded operating face.
- 21. Method of installation: Withdrawable.
- 22. Service conditions: Normal.
- 23. Ingress protection (minimum): To IEC 60529 , IP30 and To IEC 60529, IP 40.
- 24. Connections
 - 24.1. Position: To suit existing switchgear.
 - 24.2. Configuration: Screw-type. Universal terminal.
- 25. Accessories: Auxiliary contacts
 - Locking kit;
 - Multi-wire cable connectors;
 - Interphase barriers;
 - Remote access unit;
 - Shunt trip release;
 - Terminal shields;
 - and Undervoltage release.As Circuit schedules and schematics where provided.

Pr_65_72_27_72 Residual current circuit breakers

- 1. Manufacturer: As distribution board.
- 2. Standards: To NSAI
- 3. Operating characteristic: Submit proposals .
- 4. Rated current (InA): As Circuit schedules.
- 5. Rated operational voltage (Ue): 230 V a.c and 400 V a.c.
- 6. Rated frequency: 50 Hz.
- 7. Number of poles: Double;
Triple;
Four;
and As Circuit schedules.
- 8. Rated residual operating current: 10 mA;
30 mA;
100 mA;
300 mA;
500 mA;
and As Circuit schedules.
- 9. Time delay: 50-70 ms;
80 ms;
100 ms;
200 ms;
Adjustable;
As Circuit schedules;
and Not required.
- 10. Service conditions: Normal.
- 11. Features: Auto testing and Leakage current measurement.

12. **Mounting method:** DIN rail.
13. **Accessories:** Arc fault detection device to I.S. 10101:2020;
Auxiliary switch;
Locking kit;
Phase barriers;
Remote control switching device;
Shunt trip release;
Terminal covers;
and Undervoltage release.

Pr_65_72_27_73 Residual current circuit breakers with integral overcurrent protection

1. **Manufacturer:** Submit proposals .
2. **Standards:** To EN 61009-1
3. **Operating characteristic:** C. B.
4. **Tripping characteristic:** Type C.
5. **Rated current (InA):** As Circuit schedules.
6. **Rated operational voltage (Ue):** 230 V a.c and 400 V a.c.
7. **Rated impulse withstand voltage (Uimp) :** Submit proposals .
8. **Rated frequency:** 50 Hz.
9. **Number of poles:** Double;
Triple;
Four;
and As Circuit schedules.
10. **Rated short circuit capacity (Icn):** 6 kA;
10 kA;
and As Circuit schedules.
11. **Rated residual operating current:** 10 mA;
30 mA;
300 mA;
and As Circuit schedules.
12. **Time delay:** 50-70 ms;
80 ms;
100 ms;
200 ms;
As Circuit schedules;
and Not required.
13. **Service conditions:** Submit proposals .
14. **Features:** Leakage current measurement and Supply connection either side.
15. **Mounting method:** DIN rail.
16. **Accessories:** Arc fault detection device to EN 62606;
Auxiliary switch;
Locking kit;
Phase barriers;
Remote control switching device;
Shunt trip release;
Terminal covers;
and Undervoltage release.

Execution

Pr_60_70_22/665 Installing switchgear generally

1. General requirements: [Pr_60_70_22/675 Labelling switchgear](#) .
2. Switchgear cubicles: Arrange in modular form to facilitate future extension.
3. Clearance (minimum)
 - 3.1. Front access switchgear: Minimum of 1000 mm in front of switchgear or as indicated on the drawings.
 - 3.2. Rear access switchgear: As indicated on the drawings.
4. Fixing equipment
 - 4.1. Generally: Fix independently of wiring installation with zinc electroplated fasteners.
 - 4.2. Indoor equipment: Fix using internal lugs.
 - 4.3. Outdoor equipment: Fix using external lugs.
5. Orientation: Accurate and square to vertical and horizontal axes. Align adjacent items of switchgear on the same horizontal axis.
6. Extension boxes: Provide where necessary.
7. Gland plates: Non-ferrous for single core cables.
8. Interconnection of close-coupled switchgear
 - 8.1. Cable type: Single core PVC insulated cables for switchgear and controlgear and Copper busbar links.
 - 8.2. Containment: Manufacturer's enclosure.
9. Identification
 - 9.1. Neutral and earth bar terminals: Label with the outgoing circuit reference.
 - 9.2. Cable terminations: Label with circuit reference, with push-on plastics markers.

Pr_60_70_22/675 Labelling switchgear

1. Switchgear terminals: To I.S. EN 60445:2021
2. Anti-condensation heaters: Provide caution notices advising against accidental switching off.
3. Standby power: Provide danger warning notices stating that assemblies may be energized from more than one source.
4. Indicator lamps: Label each lamp describing its function.
5. Fuses, terminal blocks and other assembly components: Label describing their purpose.
6. Spare fuses: Label, describe their rating and associated outgoing ways.

Pr_60_70_22/676 Circuit schedules

1. Circuit schedules: Include an A4-sized typed circuit schedule within a clear plastic wallet, securely fixed to the inside cover of each cubicle switchboard and distribution board. The circuit schedule is to include a description of each outgoing circuit, its circuit reference number, the rating of the circuit breaker or fuse and the size and type of cable.

Ω End of Product

Pr_60_70_48_62 Photovoltaic array junction boxes

Products

Pr_60_70_48_62 Photovoltaic array junction boxes

1. Manufacturer: Submit proposals .
2. Standard: To EN 61439
3. Enclosure
 - 3.1. Material: Polycarbonate.
 - 3.2. Degree of protection: To I.S. 10101:2020, Class II.
 - 3.3. Ingress protection (minimum): To EN 60529, IP 65.
 - 3.4. Impact protection (minimum): To EN 62262, IK10.
4. Busbar rating: Manufacturer's standard .
5. String fuses
 - 5.1. Fuse type: gR d.c. to I.S. HD 60269-2:2013/A2:2024/AC:2026-01
 - 5.2. Ratings: Submit proposals .
6. Labelling
 - 6.1. Identification labels: 'PV array junction box'.
 - 6.2. Safety labels: 'Danger, contains live parts during daylight'.

Ω End of Product

Pr_60_70_65_63 Photovoltaic modules

Products

Pr_60_70_65_63 Photovoltaic modules

1. Manufacturer: Submit proposals .
2. Standards: To EN 61215 and 61730
3. Third-party certification: Microgeneration Certification Scheme approved
4. Application class: To I.S. 10101:2020, Class II.
5. Cell type: Monocrystalline to EN 61215
6. Format: Welded frame modules.
7. Framework
 - 7.1. Material: Anodized aluminium.
 - 7.2. Colour: Standard RAL colour to Architects specification
8. Module interconnections
 - 8.1. Standard: To IEC TS 62548
 - 8.2. Module connectors: Polarized and suitably rated for the applicable d.c. voltage and current.
 - 8.3. Ingress protection (minimum): To EN 60529, IP65.
9. Nominal output of module
 - 9.1. Peak power: Manufacturer's standard .
 - 9.2. Power output tolerance: 0/3%.
10. Bypass diodes: Two, integral to panel.
11. Output warranty: Minimum of 80% power output after 25 years.

Ω End of Product

Pr_65_70_11_14 Cable ladders

Products

Pr_65_70_11_14 Cable ladders

1. Manufacturer: Contractor's choice
2. Standard: To I.S. EN 61537.
3. Material: Hot dip galvanised steel
4. Resistance against flame propagation: Non-flame-propagating.
5. Electrical properties
 - 5.1. Continuity characteristics: With electrical continuity.
 - 5.2. Conductivity characteristics: With electrical conductive system component.
6. Coating material: Hot-dip-galvanized.
7. Temperature properties for transport, storage, installation and application
 - 7.1. Minimum: -20°C.
 - 7.2. Maximum: +120°C.
8. Mechanical properties
 - 8.1. Resistance to impact: Up to 20 J.
9. Width: As indicated on drawings
10. Features
 - 10.1. Segregation: Not required.
 - 10.2. Protective cover: Not required.
11. Execution: [Pr_65_70_11/621 Installing cable tray and cable ladder](#)

Execution

Pr_65_70_11/621 Installing cable tray and cable ladder

1. Standards: In accordance with BS 7671 and IET Guidance Note 1.
2. Preparation
 - 2.1. Burrs and sharp edges: Make smooth.
 - 2.2. Cutting: Minimize and make good edges. Cuts to cable tray to be square along an unperforated line.
 - 2.3. Treatment of cut surface: Extend 25 mm beyond the cut. Match finish of cable supports.
3. Access: Provide space around cable ladder and tray to permit access for installing and maintaining cables.
4. Joints and expansion couplers
 - 4.1. Position: Locate between the bracket support and the quarter point.
 - 4.2. Number of joints: Minimize.
 - 4.3. Lengths of cable ladder and tray: Maximize.
 - 4.4. Ends: Blank with end plates.
5. Changes of size and direction: Manufacturer's accessories of the same material type, pattern, finish and thickness as cable supports.
6. Fire barriers: Provide where required to maintain fire performance of fabric.
7. Protective covers: Provide to cables requiring mechanical protection.

8. Support
 - 8.1. Fixing arrangement:
 - 8.2. Clearance from building fabric (minimum): 20 mm.
9. Components: Avoid contact between dissimilar metals.
10. Routing of cable ladder and tray: Submit drawings showing the proposed routes of cable ladder and cable tray.

Ω End of Product

Pr_65_70_11_15 Cable ties

Products

Pr_65_70_11_15 Cable ties

1. Manufacturer: Contractor's choice
2. Standard: To I.S.EN IEC 62275.
3. Format: Wrap around self-locking non-releasable.
4. Material: Non-metal. Nylon.
5. Loop tensile strength (minimum): 80 N.
6. Temperatures for application
 - 6.1. Maximum: 85°C.
 - 6.2. Minimum: -25°C.
7. Contribution to fire : Non-flame-propagating.
8. Environmental influences
 - 8.1. Non-metallic and composite components: Resistant to ultraviolet light.

Ω End of Product

Pr_65_70_11_17 Cable trays

Products

Pr_65_70_11_17 Cable trays

1. Manufacturer: Contractor's choice
2. Standard: To I.S. EN 61537.
3. Material: Metal.
4. Resistance against flame propagation: Non-flame-propagating.
5. Electrical properties
 - 5.1. Continuity characteristics: With electrical continuity.
 - 5.2. Conductivity characteristics: With electrical conductive system component.
6. Coating material: Hot-dip-galvanized.
7. Mechanical properties
 - 7.1. Resistance to impact: Up to 20 J.
8. Width: As indicated on drawings
9. Features
 - 9.1. Flange type: Plain.
 - 9.2. Segregation: Not required.
 - 9.3. Protective cover: Not required.
10. Execution: [Pr_65_70_11/621 Installing cable tray and cable ladder Type A](#)

Execution

Pr_65_70_11/621 Installing cable tray and cable ladder Type A

1. Standards: In accordance with BS 7671 and IET Guidance Note 1.
2. Preparation
 - 2.1. Burrs and sharp edges: Make smooth.
 - 2.2. Cutting: Minimize and make good edges. Cuts to cable tray to be square along an unperforated line.
 - 2.3. Treatment of cut surface: Extend 25 mm beyond the cut. Match finish of cable supports.
3. Access: Provide space around cable ladder and tray to permit access for installing and maintaining cables.
4. Joints and expansion couplers
 - 4.1. Position: Locate between the bracket support and the quarter point.
 - 4.2. Number of joints: Minimize.
 - 4.3. Lengths of cable ladder and tray: Maximize.
 - 4.4. Ends: Blank with end plates.
5. Changes of size and direction: Manufacturer's accessories of the same material type, pattern, finish and thickness as cable supports.
6. Fire barriers: Provide where required to maintain fire performance of fabric.
7. Protective covers: Provide to cables requiring mechanical protection.
8. Support
 - 8.1. Fixing arrangement:

- 8.2. Clearance from building fabric (minimum): 20 mm.
9. Components: Avoid contact between dissimilar metals.
10. Routing of cable ladder and tray: Submit drawings showing the proposed routes of cable ladder and cable tray.

Ω End of Product

Pr_65_70_11_19 Channel cable supports

Products

Pr_65_70_11_19 Channel cable supports

1. Manufacturer: Contractor's choice
2. Standard: To BS 6946.
3. Format: Plain.
4. Material: Stainless steel.
5. Finish: Hot-dip-galvanized.
6. Accessories
 - 6.1. Manufacturer: As channel cable support.
7. Execution: [Pr_65_70_11/610 Installing channel cable supports](#)

Execution

Pr_65_70_11/610 Installing channel cable supports

1. Standards: In accordance with BS 7671, IET Guidance Note 1 and BEAMA Best practice guide to cable ladder and cable tray systems: Channel support systems and other associated supports.
2. Preparation
 - 2.1. Burrs and sharp edges: Make smooth.
 - 2.2. Cutting: Minimize and make good edges. Cuts to slotted channel cable supports to be square along an unperforated line.
 - 2.3. Treatment of cut surface: Extend 25 mm beyond the cut. Match finish of cable supports.
3. Access: Provide space around channel cable supports to permit access for installing and maintaining cables.
4. Joints and expansion couplers
 - 4.1. Position: Locate between the bracket support and the quarter point.
 - 4.2. Number of joints: Minimize.
 - 4.3. Lengths of cable supports: Maximize.
5. Fire barriers: Provide where required to maintain fire performance of fabric.
6. Changes of size and direction: Manufacturer's accessories of the same material type, pattern, finish and thickness as channel cable supports.
7. Support
 - 7.1. Fixing arrangement: Independently fix and support from building structure using threaded rod fixed into expanding anchors.
 - 7.2. Clearance from building fabric (minimum): 20 mm.
8. Components: Avoid contact between dissimilar metals.
9. Routing of channel cable supports: Submit drawings showing the proposed routes.

Ω End of Product

Pr_65_70_11_96

Wall and ceiling-mounted cable trunking and ducting Type A

Products

Pr_65_70_11_96 Wall and ceiling-mounted cable trunking and ducting Type A

1. Manufacturer: Contractor's choice
2. Standards: To I.S.EN 50085-1 and I.S.EN 50085-2-1.
3. Installation position: Surface-mounted on the ceiling. Surface-mounted on the wall.
4. Format: 2.
5. Electrical properties: With electrical continuity characteristics.
6. Access method: With tools.
7. Sizes: As required
8. Compartments: One.
9. Accessories and fittings
 - 9.1. Generally: Factory-made by the cable trunking or ducting manufacturer and of the same material type and finish as the cable trunking or ducting.
 - 9.2. Types: Hanger brackets,.
10. Execution: [Pr_65_70_11/741 Installing trunking generally Type A](#)

Execution

Pr_65_70_11/741 Installing trunking generally Type A

1. Changes of direction: Manufacturer's bends and tees.
2. Joints
 - 2.1. Generally: Manufacturer's jointing fittings. Maintain rigidity of trunking across joint.
 - 2.2. Number of joints: Minimize.
 - 2.3. Lengths of trunking: Maximize.
 - 2.4. Open ends: Blank using manufacturer's removable end caps.
 - 2.5. Metal edging: Protect with PVC edging strip.
 - 2.6. Electrical continuity: Maintain at each joint with a copper link fitted on the outside of the trunking.
3. Connections to conduit, boxes, equipment and accessories: Screwed couplings, adaptors, connectors and glands, with rubber bushes at open ends.
4. Connections to trunking covers: Minimize.
5. Electrical continuity of covers: Electrically continuous with the trunking or provide protective conductors.
6. Access: Provide space around trunking to permit access for installing and maintaining cables. Set out access with covers on a continuous face to allow cabling to be laid in throughout its entire length.
7. Penetrations : Ensure all penetrations are fire stopped in accordance with manufacturer guidelines
8. Trunking passing through building fabric openings: Provide fixed trunking covers. Extend covers 50 mm from both sides of the opening.

Pr_65_70_11_96

Wall and ceiling-mounted cable trunking and ducting Type

A

9. Cable-retaining straps: Required except when trunking cover is on top.

Ω End of Product

Pr_65_70_48_89

Thermosetting-insulated and PVC-sheathed armoured cables

Products

Pr_65_70_48_89 Thermosetting-insulated and PVC-sheathed armoured cables

1. Manufacturer: Submit proposals .
2. Standard: To I.S. 10101:2020
3. Third-party certification: Provide certification in accordance with latest addition of I.S. 10101
4. Size: Manufacturer's standard .
5. Insulation: GP 6 and GP 8.
6. Sheath colour: Black.
7. Reaction to fire class
 - 7.1. Reaction to fire class: To I.S. 10101:2020
 - 7.2. Fire behaviour: To I.S. 10101:2020
8. Execution: [Pr_65_70_48/680 Installing low-voltage armoured cables](#);
[Pr_65_70_48/735 Cable installation on channel cable supports, cable tray, cable ladder and cable basket](#);
[Pr_65_70_48/715 Excavations](#);
[Pr_65_70_48/720 Cables in ducts](#);

Execution

Pr_65_70_48/635 Installing low-voltage cables

1. Standard: In accordance with I.S. 10101.
2. Timing: Do not start internal cabling until building enclosure provides permanently dry conditions.
3. Preparation: Store cables above 5°C for 24 hours before installation.
Clear cable path of debris.
4. Installation temperature (minimum): 5°C.
5. Cables: Install in one length. Dress cables flat, free from twists, kinks and strain.
6. Cable pulling: Do not overstress. Prevent kinks and twisting of the cable.
7. Cable protection: Cables passing through walls and floors to be sleeved with conduit or pipeduct to a minimum of 300 mm. Bush at both ends. Ensure that appropriate fire stopping materials are used to maintain the original fire integrity of the wall or floor around the penetration.
8. Concealed cable runs to wall accessories: Run vertically from the accessory.
9. Exposed cable runs: Direct to surface.
10. Distance from other services running parallel (minimum): 150 mm. Position cables below heating pipes.
11. Jointing and termination
 - 11.1. Final circuit cables: At electrical accessories only.
 - 11.2. Core connections: Using compression lugs to equipment without integral clamping terminals.
 - 11.3. Terminating cables when not using glands: Take sheathing of cables into accessory boxes and equipment and protect against abrasion with grommets.

Pr_65_70_48_89

Thermosetting-insulated **and PVC-sheathed armoured**
cables

Pr_65_70_48/680 Installing low-voltage armoured cables

1. General requirements: [Pr_65_70_48/635 Installing low-voltage cables](#).
2. Earthing: Bond armour to equipment and main earthing system.
3. Connections to apparatus: Moisture proof, sealed glands and shrouds.

Pr_65_70_48/715 Excavations

1. Excavations next to existing underground services: In accordance with HSA
2. Existing underground services: Expose and identify.

Pr_65_70_48/720 Cables in ducts

1. Cable installation from cable drums: Submit method statement.
2. Single-core trefoil cable groups and protective conductors: Install within a single duct and bind at 1 m intervals.

Pr_65_70_48/735 Cable installation on channel cable supports, cable tray, cable ladder and cable basket

1. Cabling: Install when cable supports are complete.
2. Position: Place single and multicore cables side by side.
3. Fastening
 - 3.1. Fastenings generally: Secure cables, do not indent sheaths. Position to enable any submain cable to be individually removed.
 - 3.2. Submain cables <95 mm²: Cable bands at 350 mm (maximum) horizontal spacing and 450 mm (maximum) vertical spacing and Cable cleats at 350 mm (maximum) horizontal spacing and 450 mm (maximum) vertical spacing.
 - 3.3. Submain cables >95 mm²: Cable bands at 900 mm (maximum) horizontal spacing and 1100 mm (maximum) vertical spacing and Cable cleats at 900 mm (maximum) horizontal spacing and 1100 mm (maximum) vertical spacing.
 - 3.4. Final circuit cabling: Cable ties at 250 mm (maximum) spacing.
 - 3.5. Extra-low-voltage and fibre-optic cabling: Cable ties at 250 mm (maximum) spacing.

Ω End of Product

Pr_65_70_48_89

Thermosetting-insulated **and PVC-sheathed armoured cables**

Pr_65_72_43_42 Inverters

Products

Pr_65_72_43_42 Inverters

1. Manufacturer: Submit proposals .
2. Standard: In accordance with EN 62109, EN 50549 and I.S. 10101
3. Input
 - 3.1. Voltage range: 200–500 V d.c.
 - 3.2. Current (maximum): Submit proposals .
4. Output
 - 4.1. Power rating: Submit proposals .
 - 4.2. Nominal voltage: Submit proposals .
 - 4.3. Nominal frequency: 50 Hz.
 - 4.4. Voltage harmonic distortion: < 2% with linear load.
 - 4.5. Overall efficiency (minimum): 97% at rated capacity.
 - 4.6. Maximum power point tracker (MPPT): Required.
5. Topology: Galvanic isolation via integral transformer.
6. Enclosure
 - 6.1. Material: Carbon steel.
 - 6.2. Ingress protection (minimum): To I.S. EN 60529 , IP 65.
7. Verification
 - 7.1. Submittals: Drawings, schedules, technical information.
 - 7.2. Timing: Before placement of order.

Ω End of Product

Pr_80_77_27_72 Roof anchors for solar modules Type A

Products

Pr_80_77_27_72 Roof anchors for solar modules Type A

1. **Manufacturer:** Submit proposals .
2. **Material:** Extruded aluminium.
3. **Anchor type:** Review existing roof style/material on site to ensure correct anchors are used.
Penetrations through the roof shall be coordinated with the roof supplier to ensure no leakage.
Penetrations shall be limited where possible and sealed with the appropriate material based on roof supplier recommendation.
4. **Verification**
 - 4.1. **Submittals:** Drawings, schedules, technical information, structural loading calculations for the complete PV system installation on the roof
 - 4.2. **Timing:** Before placement of orders. Coordination with the roof supplier to be complete in advance of submitting documentation to design team for review.

Ω End of Product

Pr_80_77_27_80 Solar module support rails Type A

Products

Pr_80_77_27_80 Solar module support rails Type A

1. **Manufacturer:** Submit proposals .
2. **Material:** Extruded aluminium.
3. **Accessories:** Connector rails;
Module clamps;
Suitable for installation on roof,
and End clamps.
4. **Verification**
 - 4.1. **Submittals:**

Drawings, schedules, technical information, structural loading calculations for the complete
PV system installation on the roof
 - 4.2. **Timing:** Before placement of orders.

Ω End of Product

