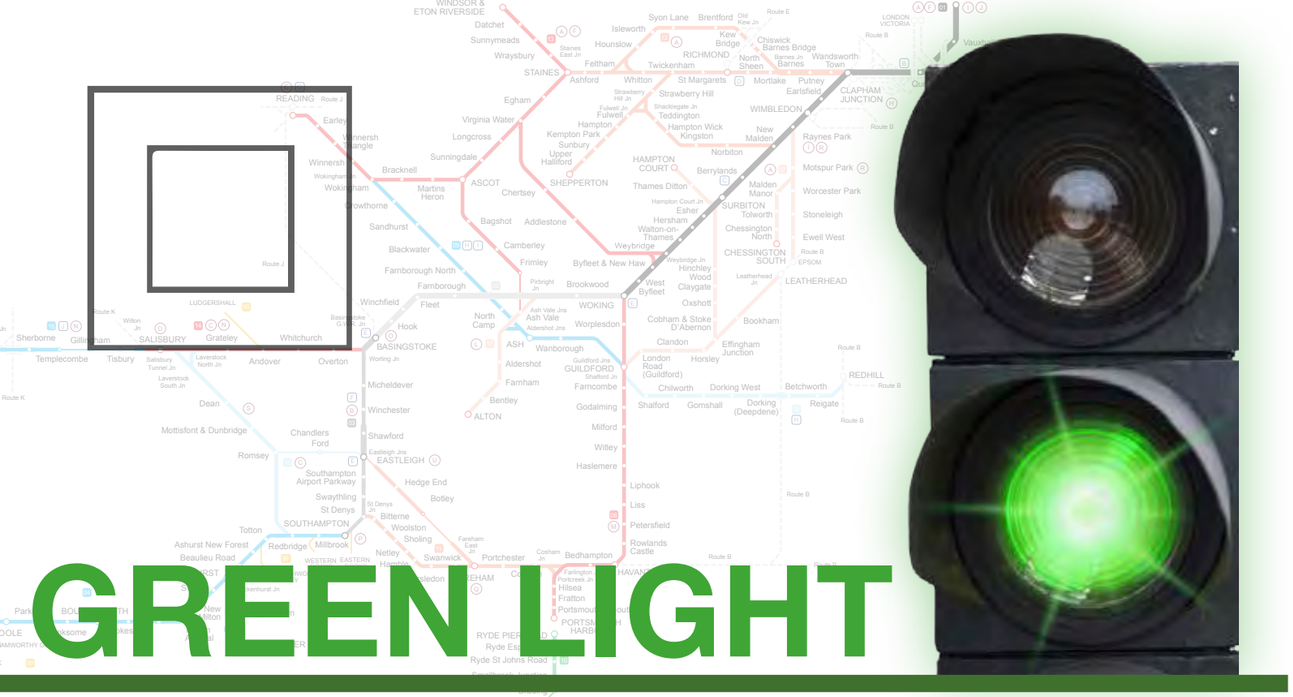
Legacy Power NEWS

Issue 02 | September 2015



GREEN LIGHT

for Class II at Wessex

Bagshot

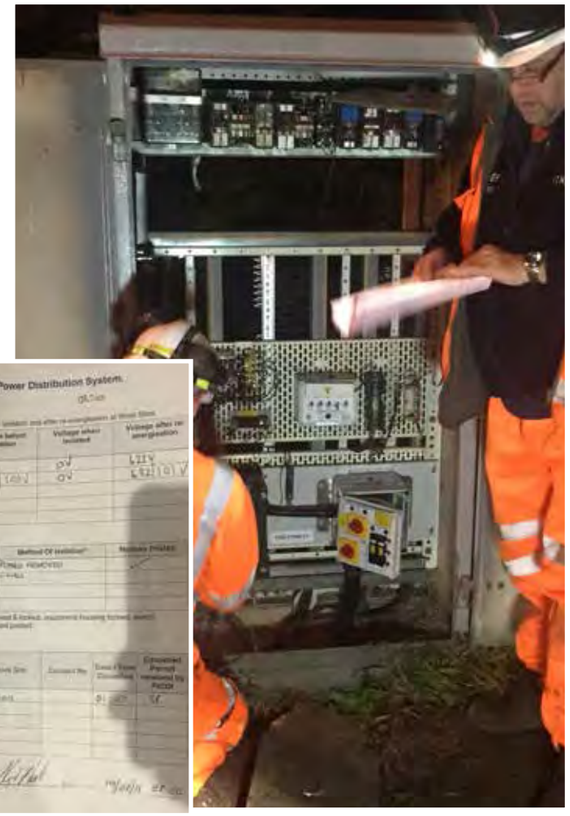
Based on a number of factors including existing case equipment condition, space available for a new base and the possession time scale benefits of larger scale prep works, a separate Class II pedestal was installed.

The pedestal was installed in a 4 hour possession on the 17th-18th August.

Frimley

Using a pre-assembled Class II integrated assembly, the end of line site at Frimley was completed without issue. The pre-tested plate assembly mounts directly over the original admiralty tray used to mount the legacy fuses.

Pre work for the site included the attachment of the mounting pillars and assessment of the heater relocation. A range of pre punched holes are provided on the integrated plate for optional heater location, another time saver on the night...

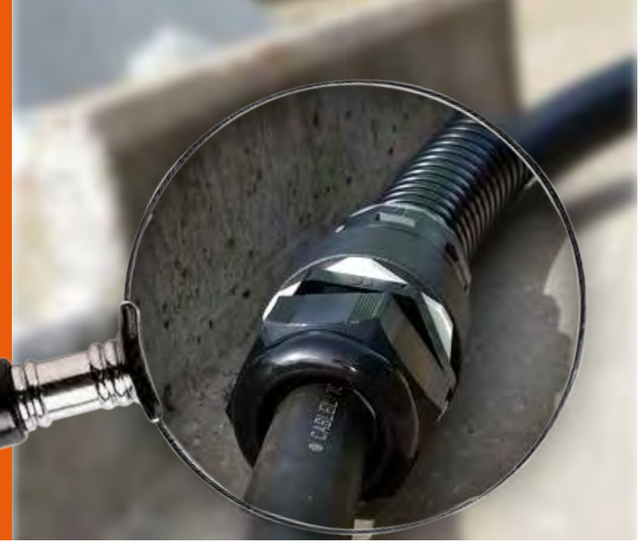


Bookham

An opportunity was taken to re-use an existing on site case in good condition, a Class II MICRO FSP replaced legacy switchgear and the TX was replaced with a legacy bracketed ATL Class II Transformer.

Construction was carried out on the night, aided by a pre manufactured FSP backplate to align with the space availability within the existing runs of Beta duct.

Product Focus



PADS Approved Glands & Conduit

PURPOSE

To provide enhanced cable protection in Class II installations within signalling power supply applications. The conduit and glands will interface with all types of FSP in accordance with Network Rail standards NR/L2/SIGELP/27409 issue 2 & NR/L2/SIGELP/27410 for the Switching and distribution of 650V Signalling power systems.
The components are used within the signalling power distribution system located within Network Rail apparatus case BRS-SM440, Annexe or REB. The units are designed to provide compliant Class II constructibility within a defined mechanical frame or backplate.

NetworkRail

Certificate of Acceptance PA05/06425

Manufacturer:
PMA AG
(PART OF ABB GROUP)

Issue : 1
Valid From : 10-07-2015

Insulated Flexible Conduits, Mating Glands and Accessories.

Product Description

i) Flexible Insulating Conduits, Standard and Divisible, with a dielectric withstand of 3.5kV, in accordance with NR/L2/SIGELP/27421 Issue 1, Product Specification – Flexible Conduits for Class II Based Signalling Power Distribution Systems.
ii) Conduit Glands in accordance with NR/L2/SIGELP/27422 Issue 1, Product Specification – Cable Glands for use in Class II Based Signalling Power Distribution Systems.

The product range comprises:
- Standard flexible insulating conduits;
- Divisible (split) flexible insulating conduits;
- Mating Glands (Straight, 90° and 45°);
- System supports (clips and clamps);
- Fibre washers

Product Image

Scope of Acceptance

Full Acceptance

Insulating conduit system with a minimum dielectric strength of 3.5kV. For use in new and upgraded Signalling Power Distribution Systems in accordance with NR/L2/SIGELP/27410 Issue 2.

Refer to Users Conditions for further information and constraints of use.

Network Rail Acceptance Panel (NRAP) hereby authorises the product above for use and trial use on railway infrastructure for which Network Rail is the Infrastructure Manager.
Authorised by:

Vanessa Cumine
Product Acceptance Specialist

Alex Buchinger
Head of Power Distribution HV/LV (Acting)

PA05/06425

NetworkRail

Certificate of Acceptance PA05/06433

Manufacturer:
Interflex S.L.

Distributor (UK):
iLECSYS Rail Ltd.

Issue : 1
Valid From : 23/08/15

Insulated Flexible Conduits, Mating Glands and Accessories.

Product Description

The product certificate comprises;

i) Flexible Insulating Conduits in accordance with NR/L2/SIGELP/27421 Issue 1, Product Specification – Flexible Conduits for Class II Based Signalling Power Distribution Systems.

ii) Conduit Glands in accordance with NR/L2/SIGELP/27422 Issue 1, Product Specification – Cable Glands for use in Class II Based Signalling Power Distribution Systems.

The product range comprises;
i) Standard flexible insulating conduits;
ii) Straight mating glands;
iii) 90° mating glands;
iv) Conduit sealing system;
v) System supports (clips and clamps);
vi) IP68 sealing washers and O-rings.

Product Images

Scope of Acceptance

Full Acceptance

Insulating conduit system with a minimum dielectric strength of 3.5kV, for use in new and upgraded Signalling Power Distribution Systems constructed in accordance with NR/L2/SIGELP/27410 Issue 2.

Network Rail Acceptance Panel (NRAP) hereby authorises the product above for use and trial use on railway infrastructure for which Network Rail is the Infrastructure Manager.

Vanessa Cumine
Product Acceptance Specialist

Jerry Morling
Head of Signalling

Alex Buchinger
Head of Power Distribution HV/LV (Acting)

PA05/06433

KEY FEATURES

The Conduits and Glands provides an enhanced protection between existing legacy feeder cable routes and the MICRO FSP assembly as part of Class II 650V insulated switchgear assembly fitted inside a standard Network Rail apparatus case.
The range of products can also provide an enhanced level of cable protection on new feeder projects.

Conduit glands and reducers allow of a range of matches size components to suit all feeder cable sizes and types. Elbow or 90° glands allow for guided conduit routes between switchgear and Class II transformers.

End of line Conduit gland assemblies provide both rodent and environmental protection to the feeder cable routes within existing trough routes.

A range of light and heavy duty conduit clips provide lateral and lineal support for both feeder cables and functional circuit connection.

Heavy duty clamp blocks are provided for feeder cable support in conjunction with the lower Loc cleat bar.

The range of conduits have been tested to 3.5kV, in addition these provide high mechanical and ingress protection levels for all 650V cabling within the apparatus case.

Conduit glands are threaded directly into MICRO FSPs or removable gland plates

All external connections to MICRO FSPs and Class II Hybrid Transformers must be made using approved conduit and gland components

With larger sizes the conduit is secured within the gland using fixing clips

These clips are located within the gland body and lock across the helix in the conduit

The combined gland and compression fitting is then tightened up to make the internal compression seal on the outer cable sheath

This shows an M63 reducer and M50 conduit gland secured within the removable gland plate

CABLE CONNECTION

Incoming & outgoing cables are installed in accordance with NR installation handbook and in accordance with NR/L2/SIGELP/27410. Glands are to be suitably selected to maintain the IP integrity of the assembly.
These components must be in accordance with NR/L2/SIGELP/27421 & 22.

PRODUCT OPERATION

The conduit gland assemblies are designed to interface with both split and solid conduit types. The Glands are mounted directly or via thread reducers into the FSP. After cable alignment the conduit is secured within the gland using the internal support ribs. IP68/69 O-rings are available for enhanced environmental performance. Cable clip or clamp blocks are secured to the existing internal bar work or mounting plates via Stainless steel fasteners.

Blanking plugs are provided on all Class II switchgear, these are 25mm diameter and designed to accept the M25 in line or elbow conduit glands for outgoing functional circuit supplies.

Corresponding 25mm entries will be found on the primary winding connection boxes within all manufacturers Class II transformers.

End of Line Compression Gland

The anti-rodent end of line conduit gland MUST be located on all legacy feeder cable prior to the placement of conduit over the cable and location within the trough route. The compression gland must be placed in the trough route at a minimum distance of 2m. This provides a complete seal on the cable, protection from rodents and protection against water ingress. This also allows for the safe termination of Non-CPC active armouring within the conduit.

CASE STUDY Teddington

Remit

To retrofit a Class II Integrated Backplate into an existing high priority location case. To identify requirements and develop working methods for a safe and efficient installation.

Constraints

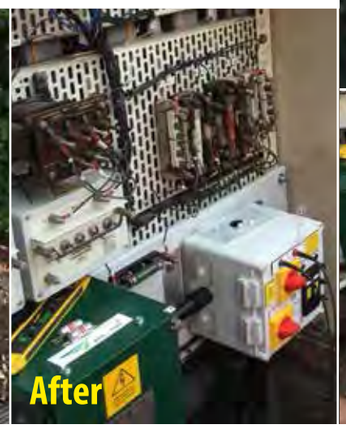
To integrate Class II within the existing legacy location whilst retaining the admiralty tray supporting the signalling circuit ducting.

Solution

Using the integrated Legacy backplate mounted on pre-fitted M8 studs allowed for a rapid fitment of the Class II equipment.

Conclusion

The installation was made Class II in less than two hours with minimal mechanical work within the case. The pre-tested Class II integrated plate assembly saved valuable site time in wiring and testing.

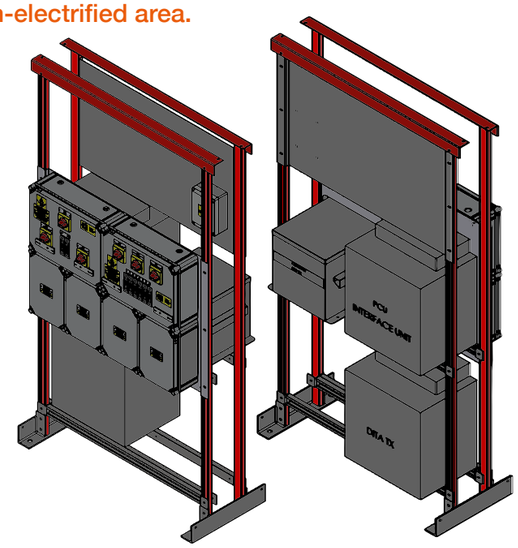


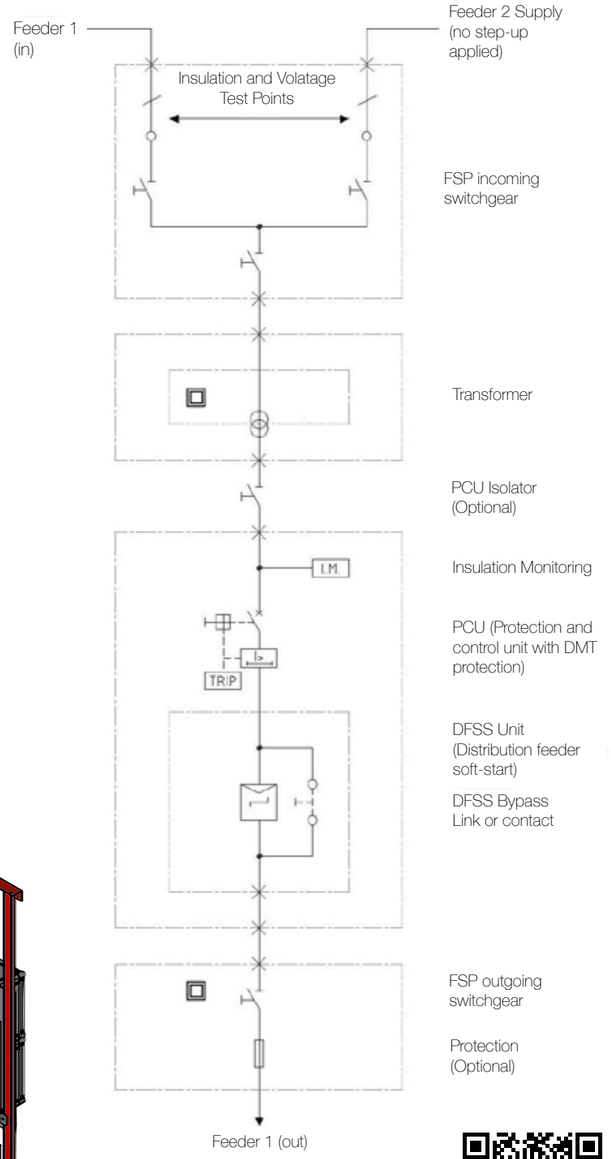
21st Century Technology for Legacy Feeders

Distribution Interface Transformer Assemblies (DITA)

A DITA (Distribution Interface Transformer Assembly) is an electrical assembly consisting of an arrangement of interconnected modules that can be used for the following:

- **Segregation between a Class I and a Class II installation to preserve the integrity of a Class II based feeder when interfaced with a Class I feeder.**
- **Segregation between feeders and spurs or branches to divide a signalling power system feeder into sections, particularly long feeders or those having multiple spurs or branches.**
- **To step-up the voltage (voltage boost)**
- **First fault current reduction (FFCR)**
- **To minimise the flow of stray current between different designs of a railway traction system with different traction earthing arrangements, e.g. at the interface between an auto transformer traction system and classical a.c. Traction system, between a.c. And d.c. Traction systems, or between a traction power system and a non-electrified area.**





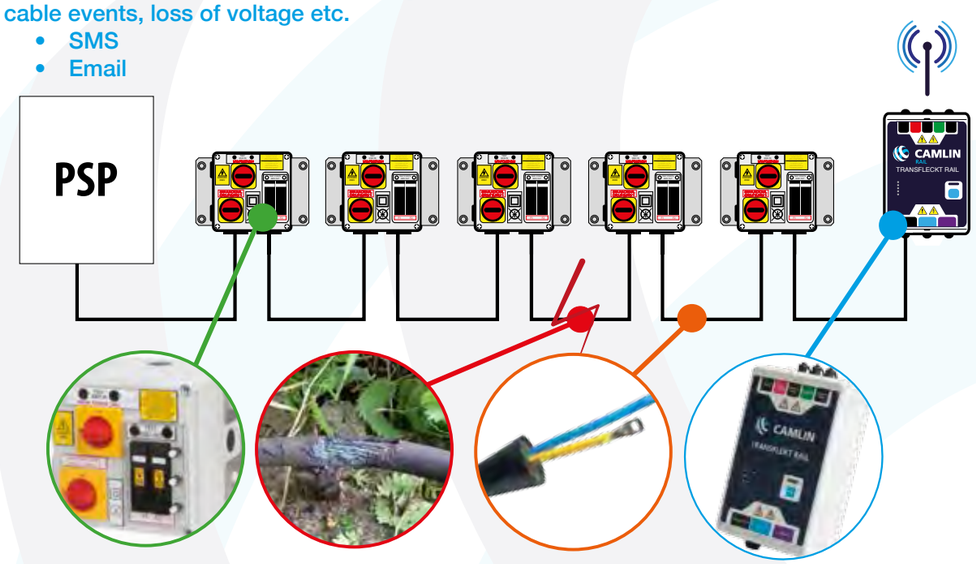
To find out more about the DITA unit and applications visit our online catalogue by scanning the QR code

Transflekt - Fault Location and Theft Detection

TDR uses the same principle as radar to identify, characterise and locate faults on cables with more than one conductor. It operates by sending a pulse down the cable, any changes in the impedance of the cable will result in reflections being sent back down the cable. Any connection, change of cable type, break in the cable or fault will cause a change in impedance. Each type of change has a different effect on the display of the TDR; a positive reflection shows a higher impedance, a lower reflection shows a lower impedance. In using a TDR you are not only capable of identifying faults on the cable but also find the distance to the fault.

Transflekt – Online cable monitoring

- Uses TDR principles to routinely test the cable
  - Identifies changes to the cable/system
  - Faults
  - Cable cuts/damage
  - Cable splices
  - Water Ingress
- Monitors Voltage/Current levels
- Monitors temperature
- Full remote control and configuration of system
  - Web based
  - Server application
- Server sends Alarm or warning messages based on cable events, loss of voltage etc.
  - SMS
  - Email



Class II for Legacy Installations

Any integration of Class II equipment into legacy installations shall comply with the requirements specified in NR/L2/SIGELP/27410.

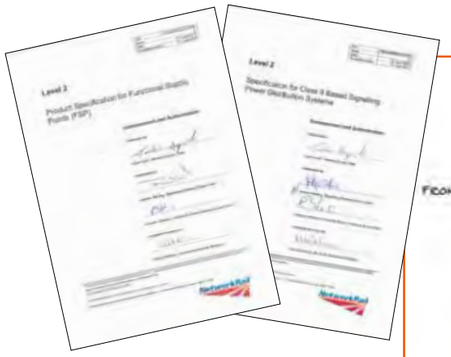
Class II Retro-Fitting

When retro-fitting factory made Class II equipment or components into apparatus housings on legacy installations. Consideration shall be given to space availability, non-disruptive installation, and poor legacy practices and components.
The FSP04 legacy circuit configuration may be considered as an alternative to an FSP01/02 where space constraints prohibit the installation of larger FSP switchgear assemblies. Examples of these are shown below.

FSP Switchgear Assembly Types

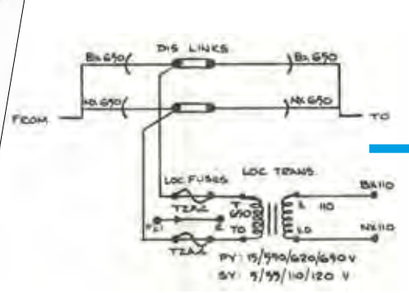
Type	Distribution Topology Power Supply	FSP Supply Architecture
FSP04 (legacy)	Single end fed (or sub-fed from main distribution centre)	Suitable as a direct replacement for existing isolation or fusing arrangements within legacy installations

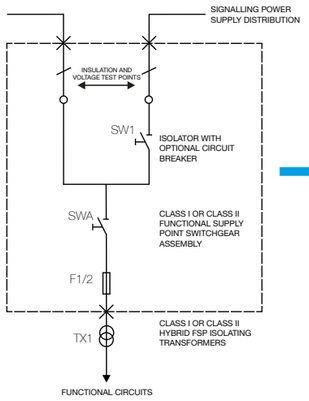
FSP04 switchgear assemblies may be part of a stand-alone self-contained apparatus housing or integrated (co-located) with signalling equipment



To support the installation of Class II within legacy locations, the Micro FSP has been developed to align with the FSP04 circuit and when used in conjunction with the range of integrated backplates provides a solution for constructable Class II in legacy locations.
The new standards continue to support and drive the development of new Class II designs. This allows greater flexibility in design and implementation across all signalling power projects.

TYPICAL EXAMPLE OF LEGACY CIRCUIT





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In the next edition...

- Product Focus - Class II Annexes & Pedestals
- The old meets the new - Legacy jointing kits
- One size fits all - PADS Approved Connection Boxes
- Online legacy 'Project Tracker'
- Case Study - Siddenham Hill
- MICRO FSPs North of the border

Legacy Power
NEWS
Issue 03

Missed Issue 01?

If you missed the first edition of Legacy Power News please contact Lewis at:

lewis@ilecsys.co.uk or 07837 506725

Legacy Power

NEWS

Issue 02

September 2015