

# EQUIPMENT INSTALLATION GUIDELINES

## IMPORTANT INFORMATION

Installation of GDS products must be carried out by suitably trained and qualified personnel who must be aware of BSEN 60079 and BSEN 50014 requirements when dealing with hazardous area equipment IEC 61241. Follow the correct electrical installation procedure and legislation (IEEE Regs). FP200 Cable – the drain wire should be used for isolated electromechanical screening and not for safety earth continuity – see GDS Document C1770. On completion of installation, equipment must be commissioned by personnel trained on electronic gas monitoring equipment.

### DO NOT APPLY POWER PRIOR TO COMMISSIONING

JUNCTION BOXES	✓
Check area classification for junction box suitability	✓
Use boxes appropriate to the environment	✓
Ensure correct IP rating for the environment	✓
Use adequate sizes of field junction boxes	✓
Allow for spare ways and future expansion	✓
Mount field junction boxes at working height	✓
Remember that water can't get out of weatherproof boxes once it is inside!	✓
Employ a weather resistant tag to identify the equipment	✓
Prevent water/product ingress through the cables/glands – enter box from side or bottom	✓
Plug all unused ports with appropriate stoppers	✓
Clean all junction boxes of debris after installation	✓
<b>DO NOT</b> open boxes in high humidity, this starts corrosion	✓

CABLING	✓
FP200 Cable – the drain wire should be used for isolated electromechanical screening and not for safety earth continuity – see GDS Document C1770	✓
Check area classification for cable type	✓
Ensure cable runs and distances to sensors are as recommended by the manufacturer of the equipment	✓
Use the correct size and type of cable for the application – screened cable for instrumentation	✓
COMBI – 4 core screened CY or SY type (see product manual)	✓
For addressable systems the screen should be connected throughout the daisy chain	✓
GDS404/404+ / Defender – 3 core screened (see product manual)	✓
Connect screens from sensor cables to equipment 0V and isolated from safety earths – see C1770	✓
Use standard cores where possible	✓
Maintain separation of safety earths and screening	✓
Keep signal cables segregated from power cables	✓
Keep cable away from electromagnetic interference, motors etc.	✓
Cable within enclosures should be kept away from circuit boards and components	✓
Ensure that loop resistance values are not excessive (see product manual)	✓
Ensure that the cable is of suitable quality for its intended use	✓
Ensure cable sheath makes waterproof seal (where applicable)	✓
Avoid major sources of electromagnetic interference when planning cable runs, away from motors etc.	✓
Ensure the cable is not run over sharp edges or around overly tight bends	✓
<b>DO NOT</b> overstress cable support cleats/ties	✓
Document and record all cable routes	✓

GLANDING	✓
Check area classification for gland type	✓
Get it right first time. It is very difficult to correct it later	✓
Use the right type of gland for the application	✓
Leave generous service loops in the sensor cables	✓
Fit a sealing washer if required for weatherproofing	✓
Ensure that any RFI shield is properly isolated from safety earth metalwork and gland body	✓
Ensure that the SWA earthing is continuous and vibration proof	✓
Ensure that the cable sheath makes a weatherproof seal	✓
Fully tighten all fittings	✓
<b>DON'T</b> use tape for weatherproofing	✓
<b>DON'T</b> hide bad workmanship under shrouds	✓
<b>DON'T</b> overstress cable support cleats/ties	✓
TERMINATIONS	✓
Terminate cables to the correct points to prevent damage to the system	✓
Sleeve and terminate earth wires correctly	✓
Remain consistent in the allocation of wire colours	✓
Remember to attach cable and termination markers to aid maintenance	✓
Ensure that cable insulation extends right up to the throat of the terminal	✓
Ensure that there are no bare wires or wire strands	✓
Use the correct tool for crimp connections	✓
Pull test every one before termination	✓
Use the correct width terminal screwdriver to avoid cracking terminal blocks	✓
Ensure that terminal screws are adequately tight	✓

<b>EARTHING</b>	✓
Maintain separation of Safety, Instrument and IS Earths	✓
Ensure that earth continuity is maintained through field junction boxes	✓
Ensure that metallic outer enclosures are adequately earthed for safety	✓
Allow for any IS Barriers in systems with earth fault monitoring	✓

<b>RFI SCREENING</b>	✓
Use suitably screened instrument cable for sensor runs	✓
Ensure that any RFI shield is properly isolated from safety earth metalwork and gland body	✓
Maintain separation of safety earths and screening – see C1770	✓
Connect screening as advised by equipment manufacturers (see document C1770)	✓
Ensure continuity through junction boxes/equipment housings	✓

<b>LIGHTNING</b>	✓
Keep instrument cables away from susceptible power and earth cables	✓
Fit surge protectors in areas subject to severe electric storms	✓

<b>EQUIPMENT</b>	✓
<b>DO NOT APPLY POWER PRIOR TO COMMISSIONING</b>	
Check area classification for equipment suitability	✓
Ensure correct IP rating for the environment	✓
Check power requirements	✓
Power from a separate fused spur (AC)	✓
Locate away from sources of heat	✓

Mount gas sensors in accessible locations, at the correct height for the target gas type, where necessary use aspirated sensors mounted at chest height with sample tube located within the target areas	✓
Note position of end of line addressable sensors	✓
Where possible and unless otherwise advised mount at accessible working height for ease of commissioning and maintenance	✓
Protect the equipment from paint/steam and other contaminants	✓
Ensure easy access to the interior of the equipment and ensure sensors are accessible for future service	✓
Mount in easy reach and audible distance of operating personnel	✓
Protect from vibration	✓
Employ a combination of sun and rain shields in all outdoor locations	✓
Power from a clean adequately rated AC/DC supply (no inverters fed from the same supply)	✓
Run cable within equipment enclosure away from components and circuit boards	✓
Keep cables within the equipment enclosure as short as possible and away from circuit boards and components	✓
Keep operating manuals adjacent to the equipment	✓
Ensure PCB's are not in contact with conductive surfaces when powered up	✓
Ensure that electro-static precautions are taken when handling PCB's	✓
Ensure PCB's are powered OFF when removing or installing	✓

<b>TESTING</b>	✓
Complete the cable installation testing BEFORE final termination at either end	✓
Record the cable loop resistance values to aid troubleshooting later	✓

<b>DOCUMENTATION</b>	✓
Prior to commissioning obtain a client cause and effect chart	✓
Record cable routing and equipment/junction box locations	✓
Record cable loop resistance values	✓
System information and manual left adjacent to control panel	✓

### ASSOCIATED DOCUMENTS

C1770	Wiring & Terminations for Sensors & Panels
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### REFERENCE MATERIAL

EEMUA Publication 186 A Practitioner's Handbook for potentially explosive atmospheres	ISBN 9780859312127
CoGDEM Guide to Gas Detection	ISBN 9781906799168
EH40/2005 Workplace Exposure Limits	ISBN 9780717667031
BS EN 60079 Series (Standards)	

**For any additional information please contact the manufacturer.**

This document is for guidance only and may be modified at any time without prior notice.