

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 60079-0 and BSEN 60079-17 when dealing with hazardous area equipment. 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!

DO NOT open boxes in high humidity or corrosive gas atmospheres, this starts corrosion

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

CABLING



Cable type to consider PUR H07RN-F, CY – 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 addressable – 4 core screened (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

DO NOT 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

DON'T use tape for weatherproofing

DON'T hide bad workmanship under shrouds

DON'T 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

EARTHING	✓
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	

RFI SCREENING	✓
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	

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

EQUIPMENT	✓
DO NOT APPLY POWER PRIOR TO COMMISSIONING	
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	

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

DOCUMENTATION	✓
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)	
The Gas Detection Practitioner®	GDS

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