MOORE HAWKE
FIELDBUS WORLDWIDE

TG300

TRUNKGUARD™ Series Fieldbus Device Couplers
(Flameproof Zone 1 and Zone 2 Locations)

August 2006

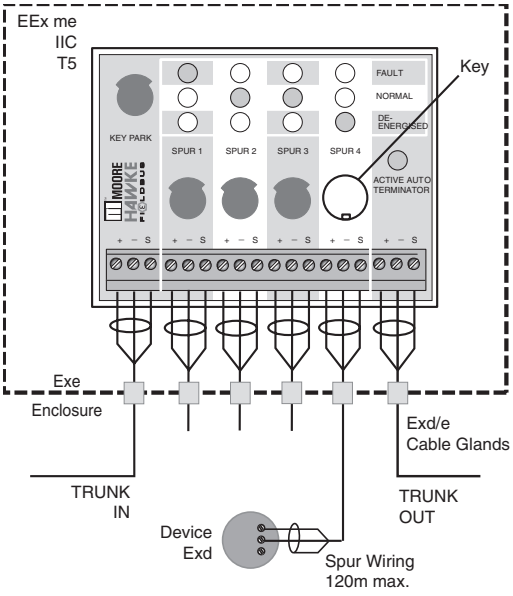
Description

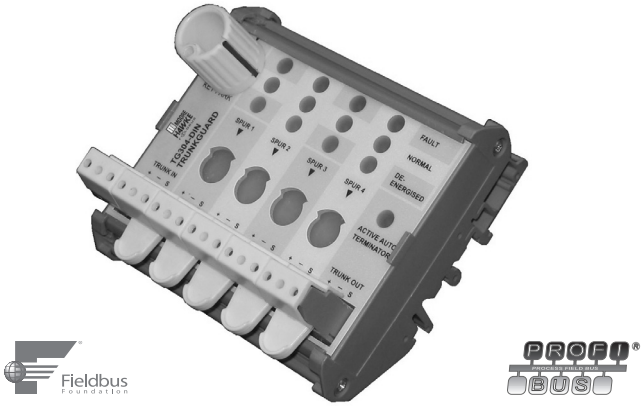
TRUNKGUARD Series 300 Device Couplers (TG300) simplify the use of Exd/Flameproof fieldbus devices in Zone 2 and Zone 1 by allowing "live" access for maintenance and eliminating the need for expensive Exd/Flameproof junction boxes. They enable fast and easy implementation of fieldbus systems by connecting multiple devices to a main fieldbus trunk in FOUNDATION fieldbus™ (H1) and PROFIBUS PA networks. TG300 Device Couplers are available in models that handle four and eight fieldbus devices.

Protect Segments from Spur Faults

TRUNKGUARD Device Couplers provide electronic and fully auto-resetting spur short-circuit protection that prevent segment failure caused by single device faults. Utilizing a unique "Fold-Back" technique, any spur that attempts to draw more than approximately 48mA and has an impedance of less than 200 ohms is automatically switched off and not permitted any current flow until the fault is removed. This is a significant advantage to "current-limiting" designs on competing units which hold a fault permanently on the segment at a higher than normal current level. This often results in segment failure by overloading the segment power supply. With removal of the short, TRUNKGUARD automatically reconnects the spur to the fieldbus segment.

Figure 1. *TRUNKGUARD Series 300 Device Couplers enable fast and easy implementation of Exd/Flameproof FOUNDATION fieldbus and PROFIBUS PA systems.*





TRUNKGUARD Fieldbus Device Couplers*, to speed specification and installation, are available in ready-to-install, field-mount enclosures complete with cable glands, or as DIN-rail mount units.*

Features

- **Perform "Live" maintenance in Zone 1.** A key-operated magnetic interlock on the TG300 permits individual fieldbus devices to be de-energized and worked on without de-powering the entire segment.
- **Reduce commissioning delays.** Patented "Automatic Segment Termination" eliminates the most common installation error: segment failure from under or over termination, and assures local parts of a segment will continue to function if remote parts are accidentally disconnected.
- **Speed diagnostics and device configuration.** Diagnostic LEDs positively indicate status of spur power, spur short circuits and status of auto termination.

Easy hazardous area installation. Housed in simple Exe enclosures, ATEX approvals allow installation in Zone 1 and 2 locations with flameproof Exd devices.

Certifications

Zone 1	**Zone 2**
Sira 03ATEX5500X	Sira03ATEX449X
II 2 GD	II 3 GD
EEx me IIC T5	EEx nC IIC T5
Ta - 40°C to +70°C	Ta - 40°C to +70°C

CE Conformant – EMC Directive 89/336/EEC
EN 61326

TG300

TRUNKGUARD™ Series Fieldbus Device Couplers
(Flameproof Zone 1 and Zone 2 Locations)

Specifications

Communications	FOUNDATION fieldbus™ (H1) and PROFIBUS PA
Performance	**Supply Voltage:** 9.5 to 32Vdc **Spur Voltage Drop:** 0.2V@20mA spur current (typical), 0.5V maximum **Maximum Spur (Trip) Current:** 48mA **Sensing Current While Tripped:** 2mA **Power Consumption:** 2.5mA/spur (nominal), plus 3mA with Auto-Terminator **Terminator:** 100 ohms/1 microfarad **Activation:** Automatic on final unit
Indicators	**Fault Indicators:** GREEN (normal) RED (fault) AMBER (de-energized) **Auto-Terminator Indicator:** GREEN LED is on when auto-termination is activated
Terminals	**Type:** Exe-approved terminals with IP30 shrouds and fillers **Wire Size:** Handles sizes between 0.8-2.5mm²/12-24AWG
Cable Glands (Device Couplers with Enclosures)	**Type:** Armored/Unarmored **Material:** Nickel-plated brass
Ambient Conditions	**Operating:** -40°C to +70°C (-40°F to +158°F) **Storage:** -40°C to +85°C (-40°F to +185°F) **Relative Humidity:** 0-95%, non-condensing **Surge Protection:** EN61326, EN61000-4-5 1KV (1.2/50µsec) **RFI/EMI Immunity:** 10V/m@80-1000MHz, 1kHz AM (IEC61326)

Segment Design Considerations

TRUNKGUARD Device Couplers offer environmental and functional advantages that simplify fieldbus segment design.

Environmental Advantages—TRUNKGUARD Device Couplers (TG300) can be ordered in ready-to-install, field-mount enclosures designed for applications in rugged and hazardous field conditions. Options include GRP (Glass Reinforced Polyester) and stainless steel enclosures. Both offer IP66 protection. Standard cable glands are nickel-plated, and can be ordered for use with un-armored or armored cable. Compound seal glands (for cable with inter-core spaces, i.e., unfilled cable), and quick-connect plugs and sockets are also available.

Functional Advantages—MooreHawke TG300 Device Couplers offer functional advantages over the competition. This includes our unique short circuit protection (see page 1) and patented automatic segment termination, which also enables easy extension of the segment through additional device couplers without re-termination issues. Other advantages include convenient field test points for hand-held communicators.

Complete Systems Compatibility for Hazardous Areas

MooreHawke offers the isolated TRUNKGUARD FPS200 Fieldbus Power Conditioner for powering our TRUNKGUARD Fieldbus Device Couplers for complete compatibility in Zone 1 locations. The FPS200 provides up to 350mA per segment with load-sharing duplex modes and optional surge protection..

Wiring the TG300 in Zone 1

Each TG300 Device Coupler has terminals for up to four spurs, plus TRUNK IN and TRUNK OUT (See Figure 1). For multiple units, TRUNK OUT can be looped into the next TRUNK IN. Segment termination is automatically provided by the final TG300 unit in the segment. There is no need to provide an external terminator.

LEDs Indicate Spur Status—The TG300 features bright LEDs that indicate the status of each spur as “Normal” (GREEN), “Fault” (RED) or “De-Energized” (AMBER). “Normal” indicates that the spur has sufficient voltage for device operations, and that the spur current is within limits. “Fault” indicates that the short-circuit protection mechanism is active for that spur. “De-Energized” is ON only when the DISCONN Key has positively isolated that spur.

Exe-Approved Terminals—The TG300 terminals are protected to IP30 by special plastic terminal shrouds and entry fillers. This allows access to the unit “live” in Zone 1 areas. The shrouds have holes for a small screwdriver (blade <2.5mm) and do not need to be removed for wiring. Wiring should be locally acceptable in Zone 1. Typically, steel wire armored or toughened sheath cable is appropriate.

Ordering Information

Unit	Mounting/Enclosure Type	Number of Spurs	Gland/Connector Type	Gland Entry Size
TG3 TRUNKGUARD Device Coupler for Flameproof Zone 1 and Zone 2 Locations	**0** DIN-Rail Mount (No enclosure)	**4** Fieldbus Spurs **8** Fieldbus Spurs	Not Applicable	**-DIN** (No cable glands) Universal DIN-style enclosure mounts on 32mm (EN50035) G-type and 35mm (EN50022) Top Hat DIN-rails
	2 Stainless Steel 316, IP66 Enclosure **3** Standard GRP (Glass Reinforced Polyester), IP66 Enclosure	**4** Fieldbus Spurs **8** Fieldbus Spurs	**-A** Unarmored Cable Glands (standard) **-B** Armored Cable Glands **-C** Compound Seal Cable Glands **-D** No Cable Glands **-E** M12 Turck Eurofast™ Sockets **-F** 7/8-in Turck Minifast™ Sockets NOTES: 1. Gland/connector selection is for all entry ports. 2. Choices "-E" and "-F" have male sockets for "Trunk In" and female sockets for "Trunk Out" and "Spurs". 3. Weatherproof seals are provided for all glands, but not sockets.	GLAND ENTRY SIZE FOR: **-O** (standard) Unarmored Cable (7.5-11.9mm O.D.); Armored Cable (9.5-16.0mm O.D.) **-S** Unarmored Cable (3.0-8.0mm O.D.); Armored cable (5.5-12.0mm O.D.)
	4 Stainless Steel 316, IP66 Enclosure with E-Z vertically removable lid and bottom entry cable gland plate	**4** Fieldbus Spurs **8** Fieldbus Spurs		

NOTE: Device Couplers with 8 Spurs are composed of two 4-Spur (TG-304) units. They may be used independently (i.e., for two segments)

When ordering, specify: Unit • Mounting or Enclosure Type • Number of Channels -Gland/Connector Type -Gland Entry Size
Model number example: TG334-A-O
(4-Spur Device Coupler in GRP Enclosure with Cable Glands for Unarmored Cable)

TG304-DIN
(4-Spur Device Coupler for DIN-Rail Mounting)

Figure 2. *DIN-Rail Mounting Installation Dimensions (Base Units).*

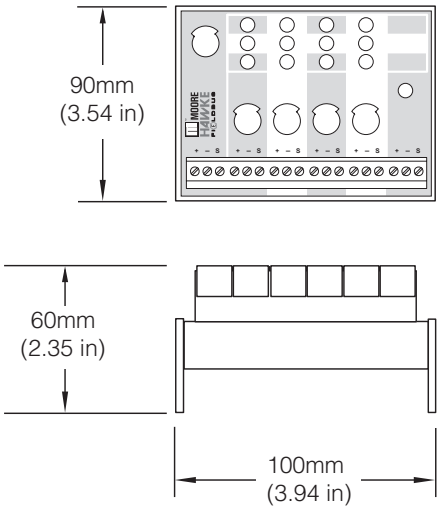


Figure 3. *GRP (Glass Reinforced Polyester) Enclosure Installation Dimensions for TG334 (4-Spur) Models.*

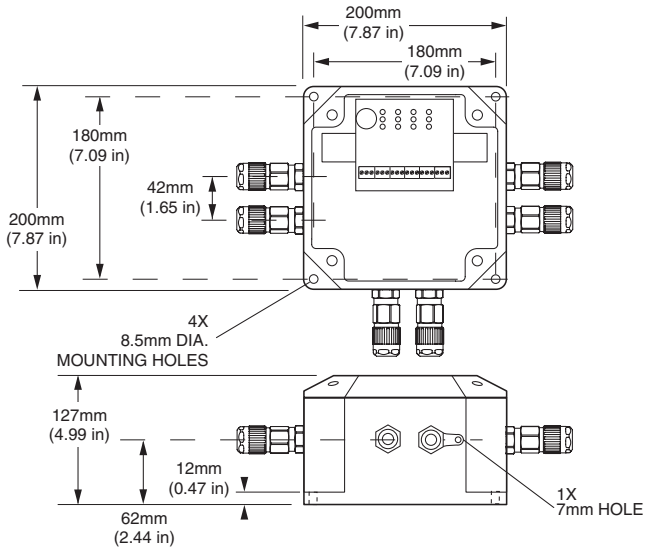


Figure 4. *GRP (Glass Reinforced Polyester) Enclosure Installation Dimensions for Dual 4-Spur (TG338) Configuration.*

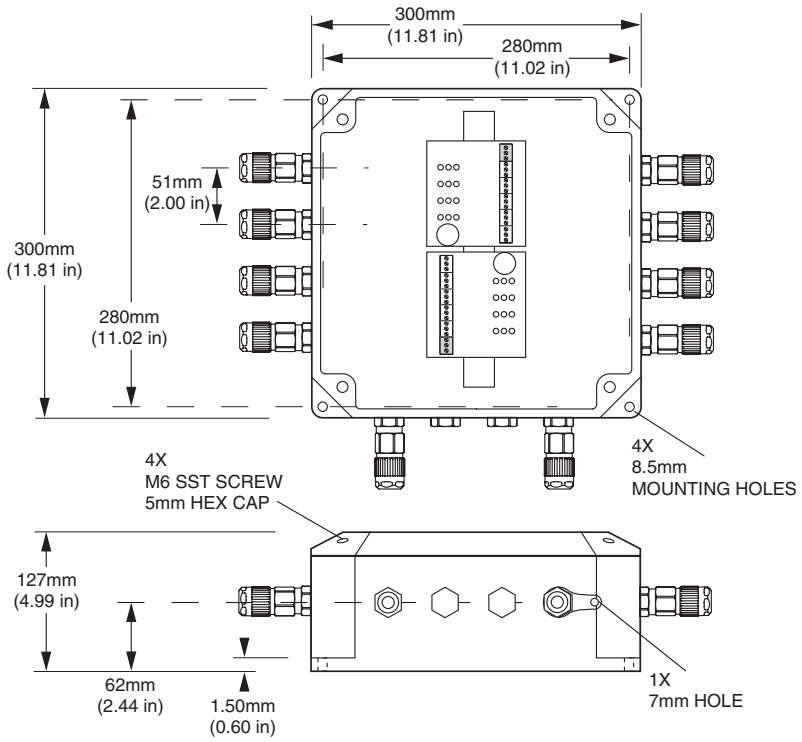
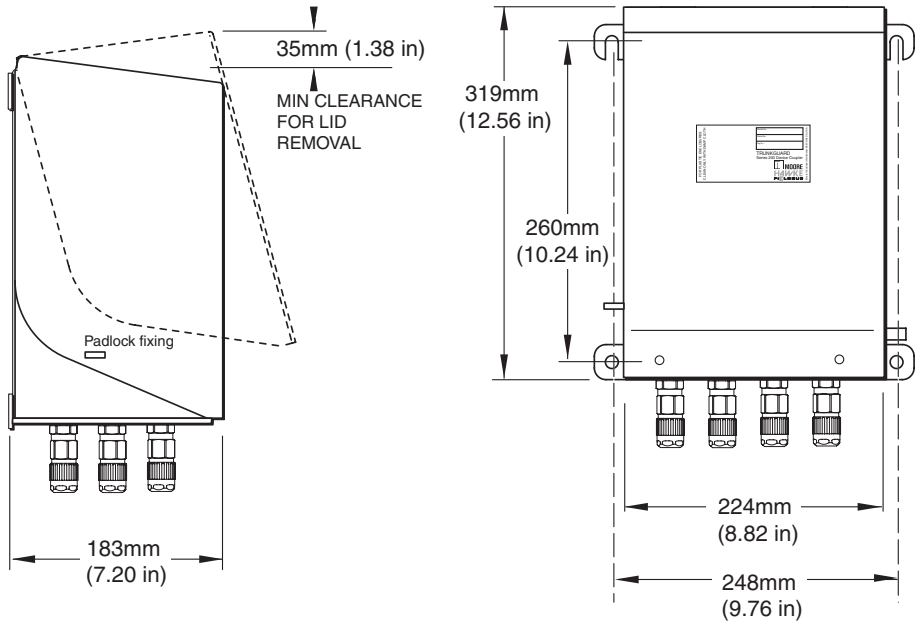
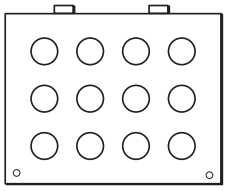


Figure 5. *Stainless Steel 316 with E-Z Vertically Removable Lid and Bottom Entry Cable Gland Plate Installation Dimensions for 4-Spur (TG348), Dual 4-Spur (TG348) Configurations.*





Removable Gland Plate
135mm x 175mm
(5.31 in x 6.89 in)
Pre-Drilled
M20 Entries 2x Plates