SIL 3 HART® Multiplexer Modem suitable for Termination Board, Model 5700

gmi technology for safety

HART COMMUNICATION PROTOCOL

5700

Characteristics:

General Description:

The HART® Multiplexer Modem 5700 interfaces up to 256 smart devices (transmitters, I/P, proportional valves, etc…) in a HART® Network. Each device can be fully identified, configured and monitored by a remote PC running an FDT-based software package (PACTware™, etc...) through a dedicated Device Type Manager (DTM).

Up to 63 Multiplexer Modem 5700 (16128 loops) can be connected in multi-drop mode to the PC through the RS485 HART® Protocol, whose baudrate can be configured via software.

The module is intended to be mounted on the following Termination Boards:

- TB-D5001-HRT-003: to be used with G.M. International AI/AO Termination Boards;
- TB-D5001-HRT-004: to be used with DIN-Rail mounted barriers/isolators or direct field connections, for 4-20mA loop signal;
- TB-D5001-HRT-005: to be used with DIN-Rail mounted barriers/isolators or direct field connections, for 1-5V loop signal.

Termination board types can be combined to manage different interfaces at the same time, simply respecting maximum number of connected channels.

The HART® Multiplexer Modem 5700 is SIL 3 certified as non-interfering with the signal loops.
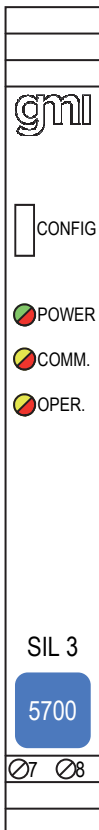
The module guarantees three-port (supply/interface/channels) isolation.

Functional Safety Management Certification:

G.M. International is certified by TUV to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3.

FSM SIL 3

Front Panel and Features:

gmi

CONFIG

POWER
COMM.
OPER.

SIL 3

5700

⊘7 ⊘8

- SIL 3 according to IEC 61508:2010 Ed. 2.
- Systematic capability SIL 3.
- Input from Zone 2, installation in Zone 2.
- High Density, 256 Input channels.
- HART® field device input, revision 5 to 7.
- Three port isolation, Supply/Interface/Channels.
- EMC Compatibility to EN61000-6-2, EN61000-6-4, EN61326-1 for safety system.
- ATEX, IECEx, TÜV Certifications (pending).
- TÜV Functional Safety Certification.
- Simplified installation using standard customized Termination Boards.
- RS-485 Interface.

Ordering Information:

Model: 5700

Technical Data:

Supply:
24 Vdc nom (18 to 30 Vdc) reverse polarity protected, via Termination Board.
Current consumption @ 24 V: 40 mA (in full topology configuration) typical.
Power dissipation: 0.5 W @ 24 V typical (modem only), 1 W @ 24 V typical (in full topology configuration).

Isolation (Test Voltage):
Interface/Power Supply: 500 Vrms.
Interface/Field channels: 500 Vrms.
Power Supply/ Field channels: 500 Vrms.

Input:
Number of channels: 256.
HART® field device Input: revision 5 to 7.

Interface:
Baudrate: from 1200 to 115200 bps, software configurable.
Address: 0 - 62, software configurable.
Type: RS-485 differential pair and grounding.
Topology: multi-drop, master/slave connection.

Compatibility:
CE mark compliant, conforms to Directives:
2014/34/EU ATEX, 2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

Environmental conditions:
Operating: temperature limits – 40 to + 70 °C, relative humidity 95 %, up to 55 °C.
Storage: temperature limits – 45 to + 80 °C.

Safety Description:

Ex   IECEx   TÜV

ATEX: II 3G Ex nA IIC T4 Gc
IECEx: II 3G Ex nA IIC T4 Gc
non-sparking electrical equipment.

Approvals:
ATEX conforms to EN60079-0, EN60079-15 (pending).
IECEx conforms to IEC60079-0, IEC60079-15 (pending).
SIL 3 conforms to IEC61508:2010 Ed. 2 (pending).
TÜV Certificate No. C-IS-236198-09, SIL 3 Functional Safety Certificate conforms to IEC61508:2010 Ed.2, for Management of Functional Safety.

Mounting:
on customized Termination Board.
Weight: about 100 g.
Location: installation in Safe Area or Zone 2, Group IIC T4.
Protection class: IP 20.
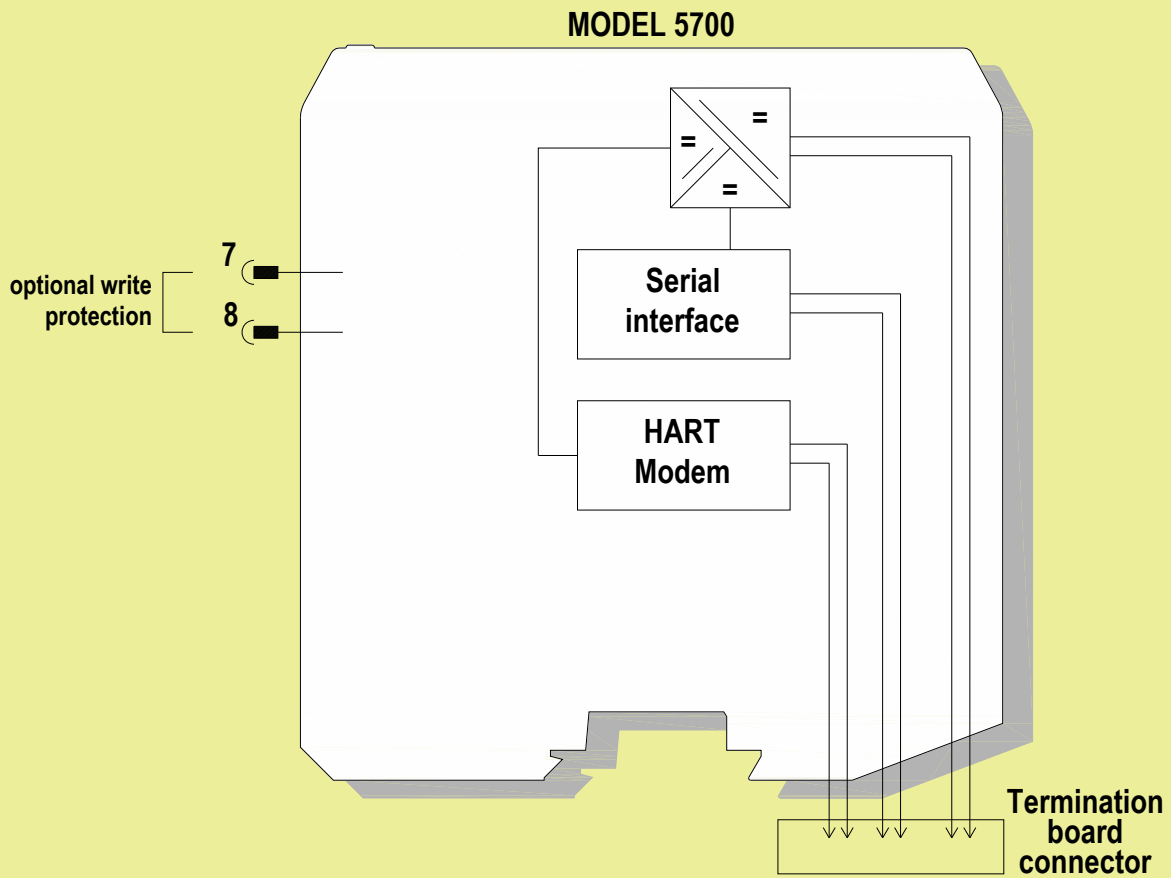*Dimensions:* Width 12.5 mm, Depth 123 mm, Height 120 mm.

Function Diagram:

SAFE AREA, ZONE 2 GROUP IIC T4

MODEL 5700

optional write protection

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8

= =

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Serial interface

HART Modem

Termination board connector
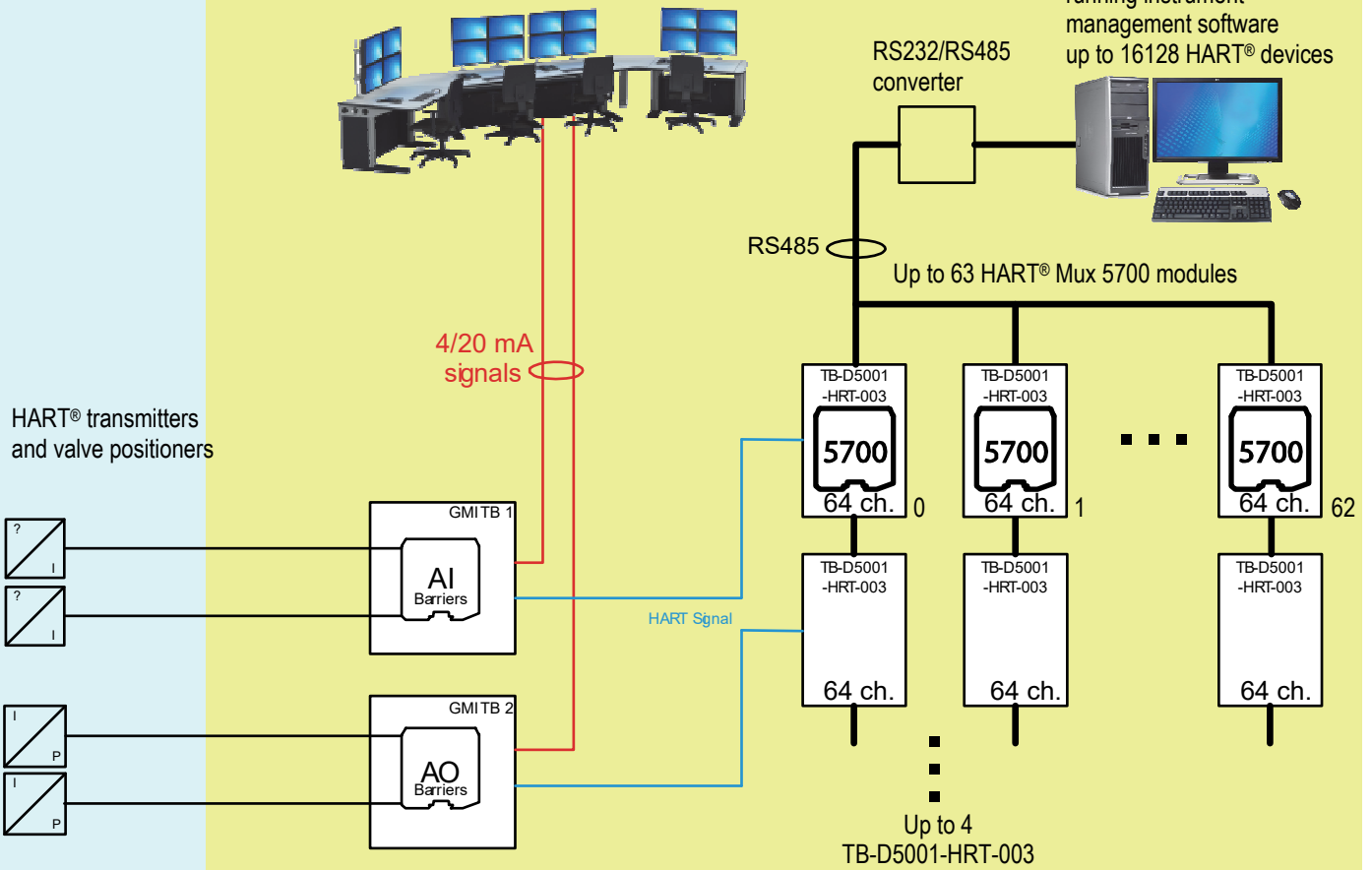
Loop Diagrams (IS Applications):

| HAZARDOUS AREA ZONE 0 (ZONE 20) GROUP IIC | SAFE AREA, ZONE 2 GROUP IIC T4 |

1) Barriers on Termination Boards

Process control system e.g. DCS,PLC

Workstation PC
running instrument
management software
up to 16128 HART® devices

RS232/RS485 converter

RS485

Up to 63 HART® Mux 5700 modules

4/20 mA signals

HART® transmitters
and valve positioners

HART Signal

GMI TB 1

AI Barriers

GMI TB 2

AO Barriers

TB-D5001-HRT-003 **5700** 64 ch. 0
TB-D5001-HRT-003 **5700** 64 ch. 1
TB-D5001-HRT-003 **5700** 64 ch. 62

TB-D5001-HRT-003 64 ch.
TB-D5001-HRT-003 64 ch.
TB-D5001-HRT-003 64 ch.

Up to 4
TB-D5001-HRT-003

2) Barriers on DIN-Rail

RS232/RS485 converter

Workstation PC
running instrument
management software
up to 16128 HART® devices

DIN-Rail

AI/AO Barriers

RS485

Up to 63 HART® Mux 5700 modules

Process control system e.g. DCS,PLC

HART® transmitters
and valve positioners

DIN-Rail

AI/AO Barriers

TB-D5001-HRT-xxx **5700** 32 ch. 0
TB-D5001-HRT-xxx **5700** 32 ch. 1
TB-D5001-HRT-xxx **5700** 32 ch. 62

TB-D5001-HRT-xxx 32 ch.
TB-D5001-HRT-xxx 32 ch.
TB-D5001-HRT-xxx 32 ch.

Up to 8
TB-D5001-HRT-xxx

xxx   ≥ 004

—— RS485 HART®

—— 4/20 mA or 1-5 V

—— HART®

—— 4/20 mA + HART®
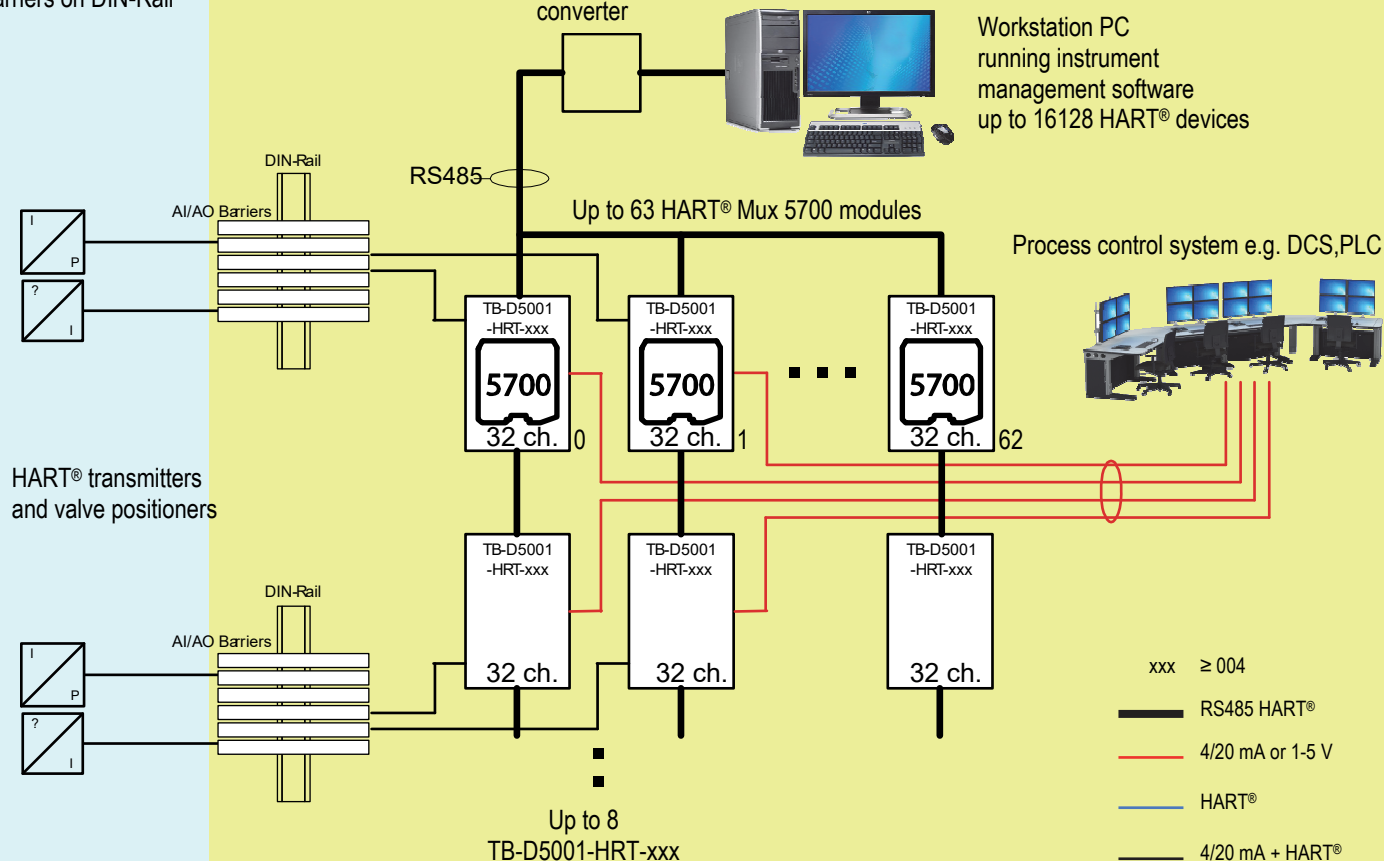
Loop Diagrams (Non-IS Applications):

SAFE AREA, ZONE 2 GROUP IIC T4

1) Isolators on Termination Boards

Process control system e.g. DCS,PLC

Workstation PC running instrument management software up to 16128 HART® devices
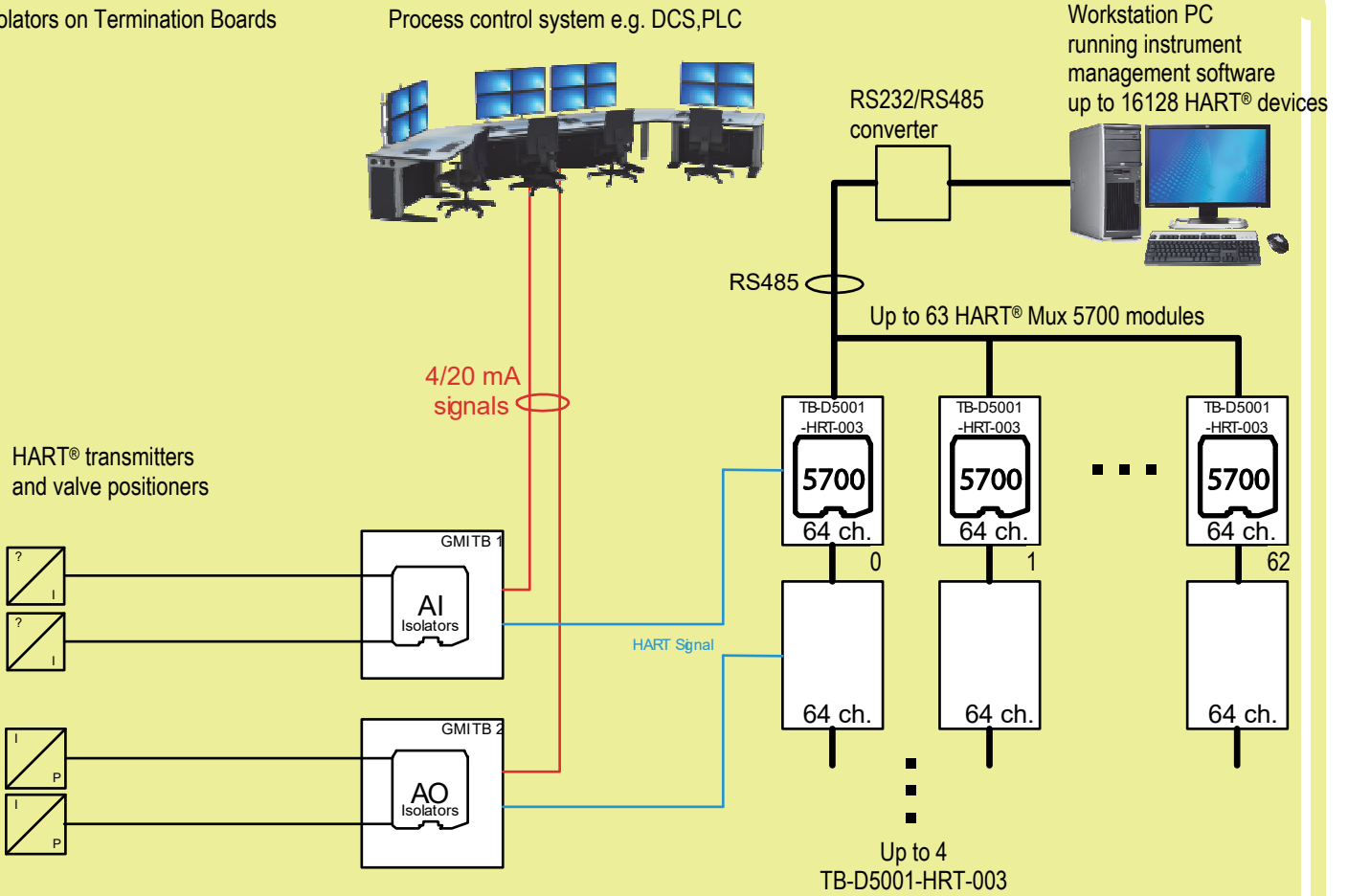
RS232/RS485 converter

RS485

Up to 63 HART® Mux 5700 modules

4/20 mA signals

HART® transmitters and valve positioners

GMI TB 1

AI Isolators

HART Signal

TB-D5001 -HRT-003	TB-D5001 -HRT-003	· · ·	TB-D5001 -HRT-003
5700	5700		5700
64 ch. 0	64 ch. 1		64 ch. 62

GMI TB 2

AO Isolators

64 ch.   64 ch.   64 ch.

Up to 4 TB-D5001-HRT-003

2) Isolators on DIN-Rail or Direct Field Connections

RS232/RS485 converter

Workstation PC running instrument management software up to 16128 HART® devices

DIN-Rail

AI/AO Isolators

RS485

Up to 63 HART® Mux 5700 modules

Process control system e.g. DCS,PLC

TB-D5001 -HRT-xxx	TB-D5001 -HRT-xxx	· · ·	TB-D5001 -HRT-xxx
5700	5700		5700
32 ch. 0	32 ch. 1		32 ch. 62

HART® transmitters and valve positioners

| TB-D5001 -HRT-xxx | TB-D5001 -HRT-xxx | TB-D5001 -HRT-xxx |
| 32 ch. | 32 ch. | 32 ch. |

Up to 8 TB-D5001-HRT-xxx

xxx   ≥ 004

━━━ RS485 HART®

─── 4/20 mA

─── HART®

━━━ 4/20 mA + HART®