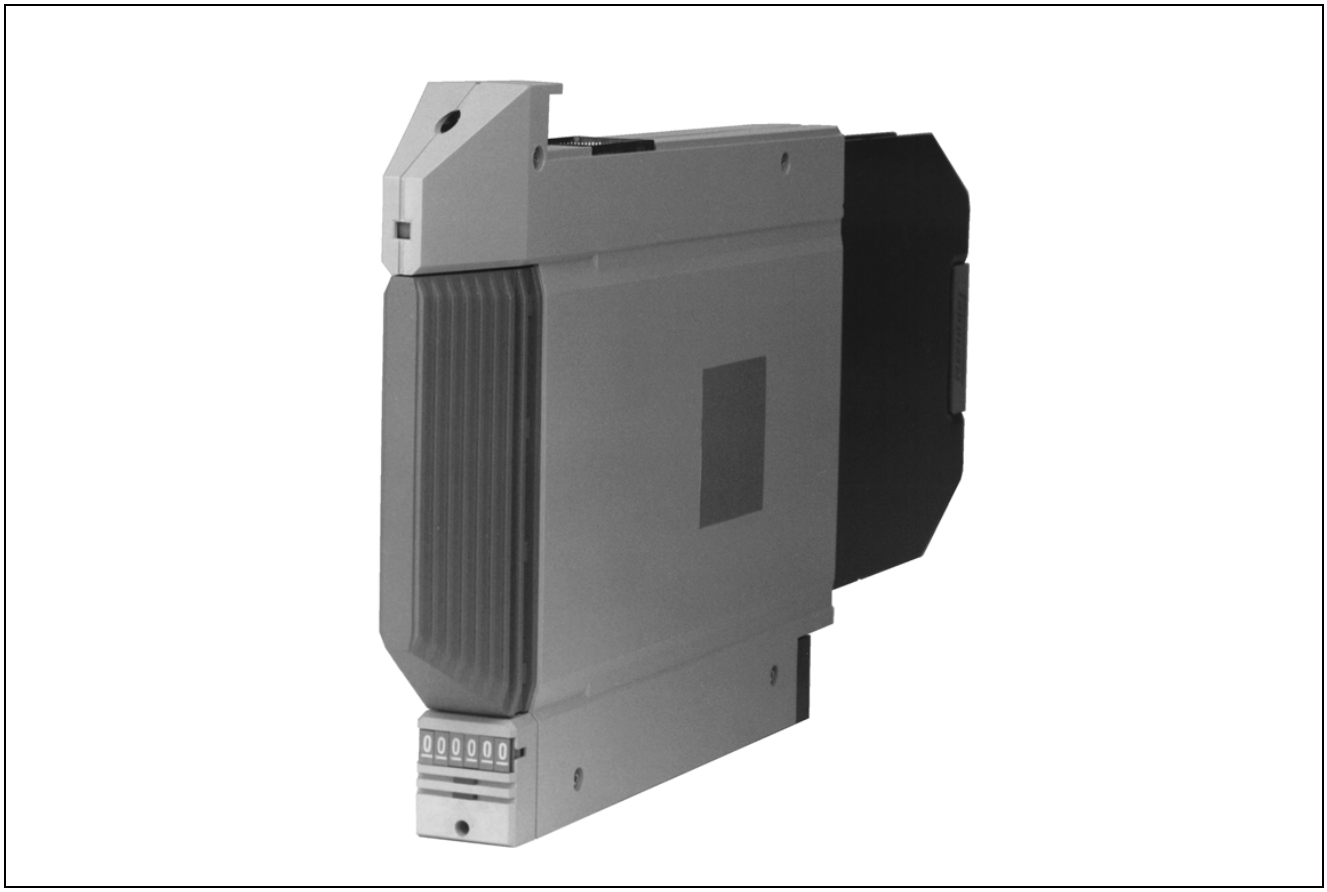
FOXBORO®

PSS 21H-1E1 B3

I/A Series® Hardware
Tank Processor 10



The Tank Processor 10 (TP10) is a station on the I/A Series System network that interfaces Foxboro Hydrostatic Tank Gauging (HTG) systems with the I/A Series Nodebus.

An HTG system consists of one or more Hydrostatic Interface Units (HIUs) with associated temperature and pressure sensors, and may include one or more Fieldbus Modules (FBMs). A single TP10 can support a combination of 24 (maximum) HIUs and FBMs.

Fieldbus Flexibility

The TP10 connects to the HIUs and FBMs via either of two types of Fieldbus communications media: twinaxial (dual-conductor coaxial) cable or fiber optic cable. The twinaxial version of the Fieldbus is optionally redundant and has a maximum length of 1800 m (6000 ft). Figures 1 and 2 show typical twinaxial Fieldbus configurations.

The fiber optic version of the Fieldbus is also optionally redundant and has a maximum length of 20 km (12.4 mi). Figure 3 shows a typical fiber optic fieldbus configuration. (A non-redundant configuration is shown for simplicity.) Refer to Fiber Optic Fieldbus Product Specification Sheet PSS 21H-7P1 B4 for additional Fiber Optic Fieldbus application information.

HTG Interfacing

Per configuration, the TP10 supports the bidirectional transfer of data between the I/A Series control database and the HIUs and associated FBMs. HTG parameter values (mass, volume, level, density, and temperature) are transferred from the HIUs to the I/A Series control database via the TP10 and other processor stations. Likewise, alarm data are transferred bidirectionally between the I/A Series control database and the HIUs and associated FBMs.

Display of HTG parameter values and alarm status, and adjustment of HTG alarm settings, are implemented through operator interface devices (video monitors, keyboards, touchscreens, etc.) in the I/A Series System. The TP10 interacts with these devices by communicating with the workstation processors and/or application processors to which they are connected. Communication takes place via the Nodebus and via a higher-level Local Area Network (LAN), if implemented. Various other system stations also communicate with each other over these links.

The control engineer can choose from the following block types when configuring Hydrostatic Tank Gauging control functions:

- Analog Input (AIN)
- Multiple Contact Input (MCIN)
- Boolean Alarm (BLNALM)
- Real Alarm (REALM)
- Programmable Logic Block (PLB)

Enhanced Reliability

To ensure reliable communications, each Tank Processor 10 incorporates built-in redundancy, as well as error detection and address verification tests, in its Nodebus and Fieldbus interfaces.

Diagnostics

The TP10 uses three types of diagnostic tests to detect and/or isolate faults:

- Power-up self-checks
- Run-time and watchdog timer checks
- Off-line diagnostics

Power-up self-checks are self-initiated when power is applied to the TP10. These checks perform sequential tests on the various TP10 functional elements. Red and green indicators at the front of the TP10 module reflect the successful (or non-successful) completion of the various phases of the TP10 startup sequence.

The runtime and watchdog timer checks provide continuous monitoring of TP10 functions during normal system operations. The operator is informed of a malfunction by means of printed or displayed system messages.

Off-line diagnostics are loaded into the system for the purpose of performing comprehensive tests and checks on various system stations and devices. Using the off-line diagnostics, a suspected fault in the TP10 can be isolated and/or confirmed.

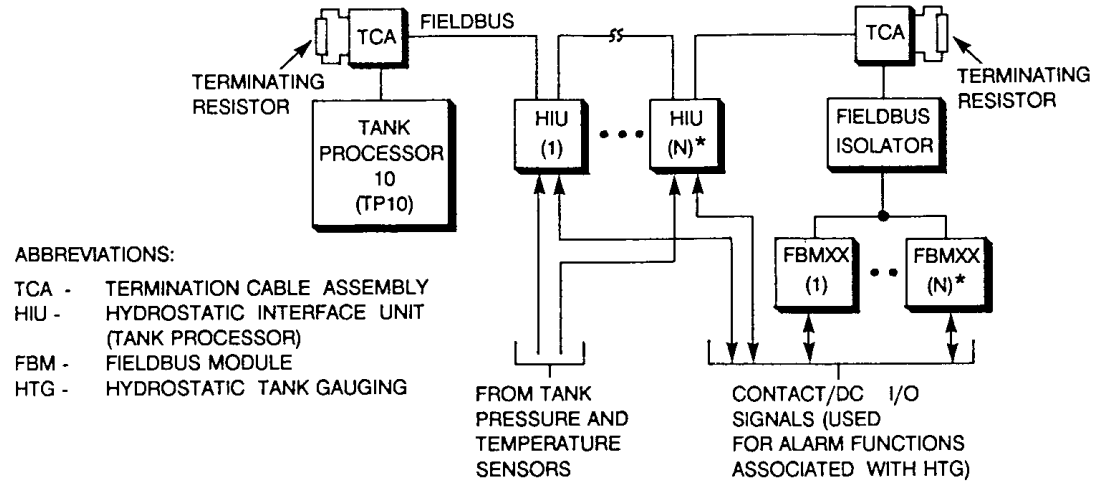


Figure 1.
HTG Interface Cabling with Non-Redundant Twinaxial Fieldbus (Typical)

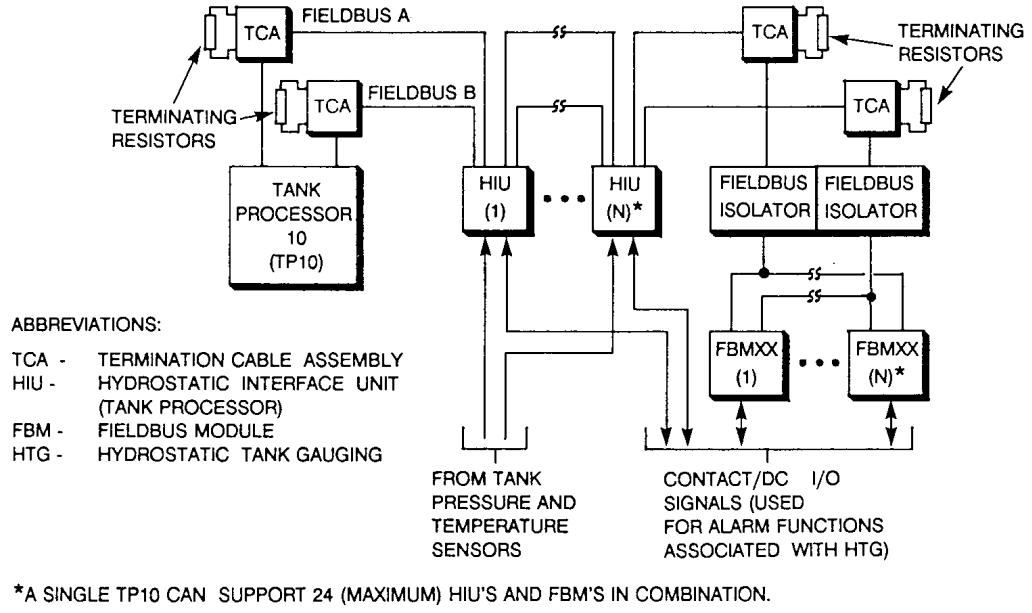


Figure 2.
HTG Interface Cabling with Redundant Twinaxial Fieldbus (Typical)

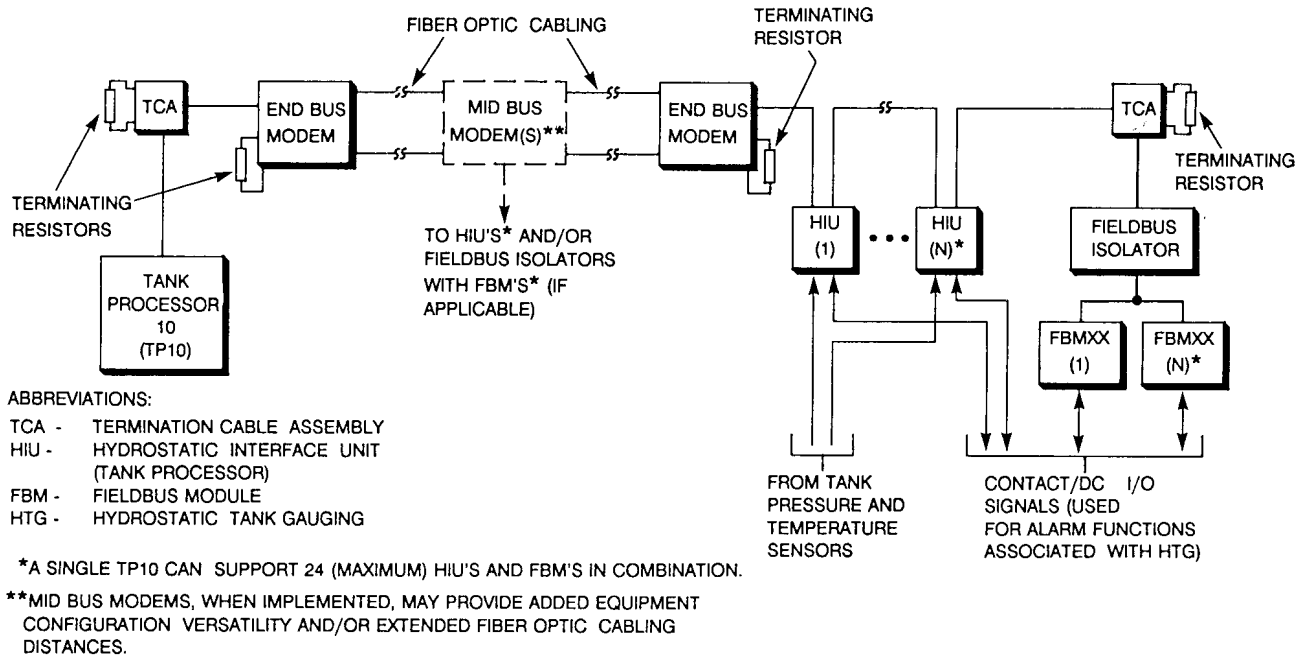


Figure 3.
HTG Interface Cabling with Non-Redundant Fiber Optic Fieldbus (Typical)

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