SMART Devices with CL6800-Series Cards, Termination Panels, and Modules

CL6800-Series smart device cards, termination panels, and modules are members of the PROVOX® Control I/O family. They integrate HART® compatible smart field devices into a PROVOX Process Management System.

Through these instruments, primary variables, non-primary variables, and device status information of smart field devices are accessible to SR90 and SRx controllers, and through the controllers, to other PROVOX highway devices, such as consoles and CHIP.

These instruments allow you to develop application specific, sophisticated control strategies, using register values and status information from smart field devices.

Input and Output Cards
- The Type CL6827 SMART Device Input Card provides process variable signals and smart transmitter status information to SR90 and SRx controllers for controller and other highway device use.
- The Type CL6828 SMART Device Output Card provides SR90 and SRx controller outputs to smart final control elements and returns smart final-control-element status information to controllers for controller and other highway device use.

The cards can interface either smart field devices or traditional analog field devices. You can mix the smart and traditional field devices on the same card.

Termination Panels
- Type CL6895 Single-Ended Analog/SMART Device Input Termination Panel
- Type CL6896 Redundant Single-Ended Analog/SMART Device Input Termination Panel
- Type CL6885 Analog/SMART Device Output Termination Panel
- Type CL6886 Redundant Analog/SMART Device Output Termination Panel
Input Module
Type CL6859 Analog or SMART Device Input Modules are used on an analog/smart device input termination panel to match the termination panel to the input card. Two module versions are available: an analog version and a smart device version.

The smart device version matches a Type CL6895 or a Type CL6896 analog/smart device input termination panel to a Type CL6827 SMART Device Input Card. Either smart transmitters or traditional analog transmitters may be connected to the panel when the smart device version of the module is installed to interface these transmitters to the Type CL6827 input card.

Cable Interface Panels
- Type CL6841 Analog Input Cable Interface Panel
- Type CL6842 Analog Output Cable Interface Panel

SMART Device Application
Input termination panels accept single-ended input signals in either simplex or redundant applications from smart transmitters or from traditional analog transmitters. Output termination panels provide single-ended output capability in either simplex or redundant applications to smart or traditional analog final control elements. Twisted-pair field-wiring connects the field devices to the termination panels.

Applying Input Termination Panels
For simplex applications, select the Type CL6895 Single-Ended Analog/SMART Device Input Termination Panel. For redundant applications, select the Type CL6896 Redundant Single-Ended SMART Device Input Termination Panel.

Each input card and the associated input termination panel accommodate sixteen input channels. You may use all or some of the channels as required by your application.

For either input panel, use one Type CL6859 SMART Device Input Module per pair of input channels. Modules may be added later as new channels are connected. But, you cannot mix analog and smart versions of the modules on the same termination panel. Modules include a current-limiting transmitter power source which eliminates the need for 24 Vdc power fuses on the termination panels.

Applying Output Termination Panels
For simplex applications, select the Type CL6885 Analog/SMART Device Output Termination Panel. For redundant applications, select the Type CL6886 Redundant Analog/SMART Device Output Termination Panel. No modules are used.

Each output card and the associated termination panel provide eight output channels. You may use all or some of the channels as required by your application.

Input and Output Signals
To communicate with your HART-compatible smart devices, you may use hybrid communications in which digital signals are superimposed on a standard current-loop analog signal, or you may use all digital communications.

For hybrid communication, the analog signal is the primary variable, and the digital signals are used for the non-primary variables and status information of a smart device. For all digital communications, the primary variable, non-primary variables, and status information are digital signals. Fast process loops usually use hybrid communication for the analog primary variable. Slower loops can use a digital primary variable and preserve the accuracy of digital communications.

Frequency-shift keying with an average amplitude of zero is used to transmit digital signals on the twisted pair field wiring so that the digital signals and the analog signal in no way interfere with or interrupt each other.

Configuring the I/O Interface
You configure the smart device I/O interface through SW3150-Series ENVOX® Configuration Software. Configuration includes defining the primary variable, non-primary variables, and status information. When traditional analog transmitters are used with a Type CL6827 smart device input card, the non-primary variables and status information are configured to a null value.
For configuring the smart devices, you use HART hand-held configurator or a PC-based application. These devices may be connected across the field terminals on termination panels without filters.

For easy connections, a hookup cable with pin plugs on one end and dual banana plugs on the other end is recommended. The pin plugs fit in the test jacks on the field wiring connector, eliminating make-shift, unreliable connections. A recommended cable is manufactured by ITT Pomona Electronics and available from several electronic equipment suppliers. See the Ordering Information section.

**Calibration**

Every I/O card is calibrated at the factory before it is shipped. When a card is operated at or near its environmental limits for long periods, it may require periodic calibration. The I/O card is to be returned to FRS for periodic calibration.

**Redundancy**

You can choose one-for-one (1:1) or one-for-N (1:N) backup to meet your process requirements. One-for-one backup requires two smart device I/O cards, two I/O buses, two multi-pair cables, and one redundant termination panel.

To help minimize your system costs, you may be able to use one-for-N backup. In this type of backup, one backup card can support up to eight primary cards.

The backup card need not be located in the same file as the primary card.

If a primary card failure is detected and input or output data is not corrupted when inputs are reported or outputs are driven, both input and output values are held at their last values. Input switchover is delayed to allow input filters to stabilize for smooth transitions. In output switchover, a momentary power interruption of up to one millisecond can occur. Normal input reporting and output driving continue after the switchover is complete.

If the failure is detected and the data is corrupted when inputs are reported or outputs are driven, input or output bumps may occur at switchover.

Several figures illustrate simplex and redundancy configurations. Simplex Configuration shows a simplex termination panel to I/O card configuration with redundant I/O bus setup (not necessary, but recommended).

Redundant 1 for 1 Configuration shows a redundant One–for–One I/O setup. Redundant 1 for N (N = 2) Configuration shows one backup card for two primary cards. Both input and output I/O can be simplex or redundant.

In redundant systems, we recommend like cards be used for both primary and redundant card. However, a primary Type CL6827 input card can be backed up by a Type CL6825 or CL6827 input card. A CL6828 SDO card should be used to back up a CL6828 SDO card, and a CL6826 SDO card should be used to back up a CL6926 SDO card. This is due to added functionality.
and changes in the Smart Error State and Alert Byte on the CL 6828 SDO card.

If a CL6826 SDO card is used to backup a CL6828 SDO card, or vice versa, the user must be aware of the differences in the smart error state mapping in the two cards. This mapping will affect error reporting of Set Point Limited and Drive Current indicators.

**Redundant 1 for 1 Configuration**

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**Redundant 1 for N (N = 2) Configuration**

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**Installation**

The Type CL6827 and CL6828 cards install in the Type CP6701 Control Input/Output Cardfile. The cards can be mixed with other CL6700-Series, CL6800-Series, and CL6900-Series I/O cards in the same file. The cardfile installs on standard EIA rails located in a Type CP7010 System Cabinet or factory-supplied custom cabinet.

Termination panels install on standard EIA rails in a Type CP7005 Half-Depth System Cabinet, a Type CP7010 System Cabinet, or a factory-supplied custom cabinet which contains EIA rails. These cabinets
provide environmentally protected, temperature controlled installation.

Termination panels can be installed in the front and back of a Type CP7010 cabinet for efficient space usage. Front and back doors are used in front and back installations for easy access. Termination panels can be intermixed with other Control I/O panels wherever there is adequate rack space on the EIA rails. Termination panels accept traditional twisted-pair field wiring.

All of the redundancy and physical-distribution characteristics of the Control I/O family apply to the smart interface I/O products. An I/O bus connects the Type CL6827 and CL6828 cards and other I/O cards installed in the I/O card file to the I/O driver in the controller, and a multi-pair cable connects either card to a smart termination panel. The I/O bus and multi-pair cables allow for local or remote I/O locations up to the limits of allowable cable lengths.

### Intrinsic Safety Applications

The SMART Device products may be used in intrinsic safety applications. CL6340-Series termination panels and CL6350-series intrinsic safety barriers interface smart devices in hazardous locations to a PROVOX system. These panels and barriers replace the standard SMART Device termination panels and modules; they are not in addition to them, so you save on the number of cabinets required for your I/O system. See product bulletin, **CL6349-Series Termination Panels and CL6350-Series Intrinsic Safety Barriers**, BU4.2:CL6340, for a detailed description.

You may also use the intrinsic safety products of other manufacturers. These products may add impedance to the 4 to 20 mA current loop which must be taken into account. A typical additional impedance is 180 ohms. Please consult your Fisher-Rosemount representative or sales office for help in specifying non-FRSI intrinsic safety devices.

### Power Failure and Recovery

A power failure involving the entire I/O subsystem causes all outputs to be cleared to a de-activated state. When power is restored, a power up sequence returns outputs to the configured power-up states. System response to power failures of individual analog I/O components depends upon the component experiencing the power failure and whether there is a redundant or backup for that component. Power failures within a cardfile only cause redundancy switchover if the failure is a blown fuse on an active card. Further information is available in Control I/O product installation manuals.

### Upgrading Your I/O System

You can upgrade your present Control I/O system in several ways to take advantage of smart interface capability. To upgrade, you can:

- Use the analog signals from your smart transmitters now and implement full smart functionality later.
- Operate your smart final control elements from traditional analog outputs now and implement full smart functionality later.
- Continue to use your present analog field devices, but install the latest Control I/O smart device products, upgrading to smart functionality when you switch your analog field devices to smart devices.
- Replace earlier design Control I/O smart device input products with the latest Control I/O smart device input products to upgrade your smart device interface.

The tables, **Input Upgrade Paths** and **Output Upgrade Paths**, show several ways to upgrade. The key to upgrading is selecting the appropriate combination of termination panel, input module (no module required for outputs), and I/O card.

The Types CL6895 and CL6896 Analog/SMART Device Input Termination Panels accept inputs from either traditional analog or smart device transmitters. And, the Types CL6885 and CL6886 Analog/SMART Device Output Termination Panels can be used with either traditional analog or smart device final control elements. After selecting the termination panel for either simplex or redundant operation, select the I/O card and, for inputs, the input module.

For traditional analog transmitters, select an analog I/O card and the analog version of the Type CL6859 Analog/SMART Device input Module. For smart transmitters, select the Type CL6827 SMART Device Input Card and the smart device version of the Type CL6859 Analog/SMART Device input Module.
For traditional analog final control elements, select an analog I/O card. For smart final control elements, select the Type CL6828 SMART Device Output Card. When you change from analog to smart functionality, you need only change the I/O card and the input module. The termination panels need not be changed, so expensive field wiring re-connection is not required.

### Input Upgrade Paths

<table>
<thead>
<tr>
<th>Upgrade Path</th>
<th>Current I/O Card, Termination Panel, and Module Combination</th>
<th>Upgraded I/O Card, Termination Panel, and Module Combination</th>
</tr>
</thead>
</table>
| **Upgrade simplex analog input to simplex smart input** | - **Card** — Type CL6821 Analog Input/Output Card or Type CL6824 Analog Input Card  
- **Panel** — Type CL6861 Single-Ended Analog Input Termination Panel  
- **Module** — None | - **Card** — Type CL6827 SMART Device Input Card  
- **Panel** — Type CL6895 Single-Ended Analog/SMART Device Input Termination Panel  
- **Module** — Type CL6859 SMART Device Input Modules |
|                                  | - **Card** — Type CL6821 Analog Input/Output Card or Type CL6824 Analog Input Card  
- **Panel** — Type CL6895 Single-Ended Analog/SMART Device Input Termination Panel  
- **Module** — Type CL6859 Single-Ended Analog Input Modules |                                                                   |
| **Upgrade redundant analog input to redundant smart input** | - **Card** — Type CL6821 Analog Input/Output Card or Type CL6824 Analog Input Card  
- **Panel** — Type CL6862 Redundant Single-Ended Analog Input Termination Panel  
- **Module** — None | - **Card** — Type CL6827 SMART Device Input Card  
- **Panel** — Type CL6896 Redundant Single-Ended Analog/SMART Device Input Termination Panel  
- **Module** — Type CL6859 SMART Device Input Modules |
|                                  | - **Card** — Type CL6821 Analog Input/Output Card or Type CL6824 Analog Input Card  
- **Panel** — Type CL6896 Redundant Single-Ended Analog/SMART Device Input Termination Panel  
- **Module** — Type CL6859 Single-Ended Analog Input Modules |                                                                   |
| **Upgrade simplex smart input**  | - **Card** — Type CL6822 SMART Transmitter Input Card  
- **Panel** — Type CL6881 Single-Ended SMART Transmitter Termination Panel (2)  
- **Module** — None | - **Card** — Type CL6827 SMART Device Input Card  
- **Panel** — Type CL6895 Single-Ended Analog/SMART Device Input Termination Panel  
- **Module** — Type CL6859 SMART Device Input Modules |
|                                  | - **Card** — Type CL6822 SMART Transmitter Input Card (1)  
- **Panel** — Type CL6882 Redundant Single-Ended SMART Transmitter Termination Panel (2)  
- **Module** — None |                                                                   |
| **Upgrade redundant smart input** | - **Card** — Type CL6822 SMART Transmitter Input Card (1)  
- **Panel** — Type CL6882 Redundant Single-Ended SMART Transmitter Termination Panel (2)  
- **Module** — None | - **Card** — Type CL6827 SMART Device Input Card  
- **Panel** — Type CL6896 Redundant Single-Ended Analog/SMART Device Input Termination Panel  
- **Module** — Type CL6859 SMART Device Input Modules |

1. The Type CL6822 SMART Transmitter Interface Card can be flash downloaded with firmware which upgrades the card to the capability of the Type CL6827 SMART Device Input Card. Contact your Fisher-Rosemount representative or sales office for information and availability.

2. The Type CL6822 SMART Transmitter Input Card is not compatible with the Types CL6895 and CL6896 termination panels. The Types CL6881 and CL6882 termination panels are not compatible with the Type CL6827 SMART Device Input Card.
When you upgrade your system, you re-configure the SMART Device cards and other PROVOX devices with ENVOX software to integrate the smart functionality features of your smart field devices.

Your Fisher-Rosemount representative or sales office can help you choose the appropriate products for your upgrade requirements.

### Output Upgrade Paths

<table>
<thead>
<tr>
<th>Upgrade Path</th>
<th>Current Output Card, Termination Panel, and Module Combination</th>
<th>Upgraded Output Card, Termination Panel, and Module Combination</th>
</tr>
</thead>
</table>
| Upgrade simplex analog output to simplex smart output | ■ Card — Type CL6821 Analog Input/Output Card  
■ Panel — Type CL6871 Analog Output Termination Panel | ■ Card — Type CL6828 SMART Device Output Card  
■ Panel — Type CL6885 Analog/SMART Device Output Termination Panel  
Note: CL6871 must have a common connection from one I/O channel to the Bus Bar PSC |
| Upgrade redundant analog output to redundant smart output | ■ Card — Type CL6821 Analog Input/Output Card  
■ Panel — Type CL6872 Redundant Analog Output Termination Panel  
■ Card — Type CL6828 SMART Device Output Card  
■ Panel — Type CL6886 Redundant Analog/SMART Device Output Termination Panel | ■ Card — Type CL6828 SMART Device Output Card  
■ Panel — Type CL6886 Redundant Analog/SMART Device Output Termination Panel  
OR Type CL6872 Redundant Analog Output Termination Panel |

When you upgrade, some termination panel changes save space in your system cabinets. For instance, the Type CL6882 Redundant Analog Input Termination Panel is 4 rack units, while the replacement Type CL6896 Redundant Analog/SMART Device Input Termination Panel is 3 rack units. Additionally, the Type CL6872 Redundant Analog Output Termination Panel is 3 rack units, while the replacement Type CL6886 Redundant Analog/SMART Device Output Termination Panel is 2 rack units.

### Product Compatibility

To use the full smart device capability throughout your PROVOX system, the following product versions are required:

- Type CL6827 SMART Device Input Card.

To obtain full smart input capability, the Type CL6827 SMART Device Input Card is compatible with HART Revision 5.

- Type CL6828 SMART Device Output Card.

To obtain full smart output capability, the Type CL6828 SMART Device Output Card is only compatible with Fisher Controls FIELDVUE® instruments.

- ENVOX Configuration Software, versions P4.0 and later
- SR90 or SRx Controller, versions P5.5 and later
- OWP console, versions P1.2 and later
- PROVUE® console, versions P5.5 and later
- CHIP, versions P4.2 and later
## Specifications

### SMART Input Card

<table>
<thead>
<tr>
<th>Channel Capacity</th>
<th>Up to 16</th>
</tr>
</thead>
</table>
| **Analog Input Signal** | **Signal**: 4 to 20 mA dc  
**Input Resistance**: 250 ohms (230 ohms on input card, 20 ohms on termination panel)  
**Rolloff Frequency**:  
–3db at 2.9 Hz  
–6db at 4.9 Hz  
–9db at 7.4 Hz  
**Accuracy**: 0.1% reference, 0.2% at operative limit. See Operating Conditions below  
**Resolution**: 0.035% of span (16 bit A/D)  
**Repeatability**: 0.05% of span  
**Slew Rate**: 10 Hz maximum input process slew rate for stated analog accuracy |
| **Digital Input Signals** | **Standard**: Bell 202 standard FSK signal superimposed on the analog input signal (hybrid communication) or on 20 mA direct current (all digital communication).  
**Input Resistance**: 250 ohms  
**Input Slew Rate**: 10 Hz maximum input process slew rate for stated analog accuracy |
| **Digital Output Signals** | **Standard**: Bell 202 standard FSK signal superimposed on the analog output signal (hybrid communication) or on a constant output current (all digital communication). The constant output current is at 24 Vdc through 230 ohm source impedance, and limited to 27 mA maximum with a current foldback circuit  
**Signal Level**: 800 mv peak-to-peak into a static 500 Ohm load  
**Hybrid Mode**: 600 mv peak-to-peak into a static 500 Ohm load  
**All Digital Mode**: 800 mv peak-to-peak into a static 500 Ohm load |
| **Power Requirement** | **+24 Vdc nominal from the cabinet power bus bar at 200 mA (typical) 300 mA (maximum)** |
| **User Accessible Switches** | **A momentary pushbutton switch used for manual switchover to a backup card** |
| **Mounting** | **Installs in any one of 14 slots in the Type CP6701 Control I/O Card File** |
| **Size and Weight** | **8.66 inches x 9.18 inches (220 mm x 233 mm), 2.0 lbs. (1.4 kg)** |

### SMART Output Card

<table>
<thead>
<tr>
<th>Channel Capacity</th>
<th>Up to 8</th>
</tr>
</thead>
</table>
| **Analog Output Signal** | **Signal**: 4 to 20 mA dc  
**Rolloff Frequency**:  
–3db at 5.6 Hz  
–6db at 9.6 Hz  
–9db at 14.2 Hz  
**Accuracy**: 0.15% reference, 0.2% at operative limit. See Operating Conditions below  
**Resolution**: 12 bit  
**Repeatability**: 0.05% of span  
**Slew Rate**: Limited to 25 Hz. |
| **Digital Output and Return Signals** | **Standard**: Bell 202 standard FSK signal superimposed on the analog output signal (hybrid communication) or on a constant output current (all digital communication). The constant output current is at 24 Vdc through 230 ohm source impedance, and limited to 27 mA maximum with a current foldback circuit  
**Hybrid Mode**: 600 mv peak-to-peak into a static 500 Ohm load  
**All Digital Mode**: 800 mv peak-to-peak into a static 500 Ohm load |
| **Power Requirements** | **+24 Vdc at 200 mA (typical) 300 mA (maximum) plus 24 ma for each active output channel** |
| **User Accessible Switches** | **A momentary pushbutton switch used for manual switchover to a backup card** |
| **Mounting** | **Installs into any one of 14 slots in the Type CP6701 Control I/O Card File** |
| **Size and Weight** | **8.66 inches x 9.18 inches (220 mm x 233 mm), 2.0 lbs. (1.4 kg)** |
Specifications

**Termination Panels and Input Module**

**Power Requirements**
- +24 Vdc nominal from the cabinet power bus bar at the currents listed:
  - **Input Module**: Modules require no power. Field transmitter power connects through a module; one module for each pair of 2-wire transmitters.
  - **Type CL6895 Termination Panel**: 30 mA
    (Add 22 mA for each 2-wire transmitter)
  - **Type CL6896 Termination Panel**: 100 mA
    (Add 22 mA for each 2-wire transmitter)
  - **Type CL6885 Termination Panel**: 0 mA
  - **Type CL6886 Termination Panel**: 125 mA

**Field Transmitter Power Limiting**
- Current Limiting in the input module.
- Output voltage begins foldback at 30 mA dc. Output power short circuit duration: indefinite

**Field Wiring Connections**
- Printed circuit board connectors with screw lock. Each connector can accept one 12 AWG or two 14 AWG wires.

**Mounting Depth**
- 4 inches (102 mm)

**Size and Weight**
- See Termination Panel Size and Weight table

**Termination Panels to I/O Card Cables**

**Type**
- Gray PVC jacket, multi-twisted-pair conductor, one aluminum-polyester shield with 24 AWG stranded tinned copper drain wire. Meets VW-1 Vertical Wire Flame Test

**Conductors**
- Cable between I/O card and input termination panel — 19-twisted pair, tinned copper, S-R PVC insulated, 24 AWG. Cable between I/O card and output termination panel — 13-twisted pairs, tinned copper, S-R PVC insulated, 24 AWG.

**Nominal Capacitance**
- 30 pf/ft (98 pf/m) between mutual conductors, 50 pf/ft (164 pf/m) between one conductor and other conductors connected to the shield

**Resistance**
- 24 Ohms/1000 ft signal wire.
- 14 Ohms/1000 ft drain wire

**Termination Panels to I/O Card Cables** (continued)

**Lengths**
- Includes molded connectors on both cable ends, in standard lengths of 5, 10, 20, 50, 100, 200 feet (1.52, 3.05, 6.1, 15.2, 30.5, 61 m). The 50, 100, and 200 foot cables are supplied with a field termination kit for custom installation. 200 ft (61 m) is the maximum allowable cable length.

**Environmental**

**Electrical Classification**
- Refer to Non-Hazardous Area Classification Bulletin 4.7:001

**Electromagnetic Compatibility**
- Complies with European Standards EN50081-2.1993 and EN50082-2.1995

**Contaminants**
- Meets ISA S71.04-1985, Severity Level G2

**Operating Conditions**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Reference Limits (1)</th>
<th>Normal Limits (1)</th>
<th>Operative Limits (1)</th>
<th>Transport &amp; Storage Limits (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ambient Temperature</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ambient Temperature Variation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximum Temperature</strong></td>
<td>3.5°F/h (2°C/h)</td>
<td>36°F/hr (20°C/hr)</td>
<td>9°F/min (5°C/min)</td>
<td>18°F/min (10°C/min)</td>
</tr>
<tr>
<td><strong>Ambient Relative Humidity</strong></td>
<td>35 to 45%</td>
<td>10 to 90%</td>
<td>5 to 95%</td>
<td>5 to 95%</td>
</tr>
<tr>
<td><strong>without condensation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. These terms are defined in ISA Standard ISA-S51.1-1979.

**HART Specifications Implemented**

- HART Physical Layer Specification, Draft 400-600 MU and HART Universal Command Specification, Revision 5.1
Termination Panel Size and Weight

<table>
<thead>
<tr>
<th>Name</th>
<th>Width</th>
<th>Height With 1-inch Cable Tray</th>
<th>Height With 2-inch Cable Tray</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type CL6895 Single-Ended Analog/SMART Device Input Termination Panel</td>
<td>19 inches (483 mm)</td>
<td>3 rack units [5.25 inches (133 mm)]</td>
<td>4 rack units [7 inches (178 mm)]</td>
<td>3.2 lbs</td>
</tr>
<tr>
<td>Type CL6896 Redundant Single-Ended Analog/SMART Device Input Termination Panel</td>
<td>3 rack units [5.25 inches (133 mm)]</td>
<td>4 rack units [7 inches (178 mm)]</td>
<td>3.3 lbs</td>
<td></td>
</tr>
<tr>
<td>Type CL6885 Analog/SMART Device Output Termination Panel</td>
<td>2 rack units [3.5 inches (89 mm)]</td>
<td>3 rack units [5.25 inches (133 mm)]</td>
<td>2.1 lbs</td>
<td></td>
</tr>
<tr>
<td>Type CL6886 Redundant Analog/SMART Device Output Termination Panel</td>
<td>2 rack units [3.5 inches (89 mm)]</td>
<td>3 rack units [5.25 inches (133 mm)]</td>
<td>2.2 lbs</td>
<td></td>
</tr>
<tr>
<td>Type CL6841 Analog Input Cable Interface Panel</td>
<td>4 rack units [7 inches (178 mm)]</td>
<td>5 rack units [8.75 inches (222 mm)]</td>
<td>3.0 lbs</td>
<td></td>
</tr>
<tr>
<td>Type CL6842 Analog Output Cable Interface Panel</td>
<td>4 rack units [7 inches (178 mm)]</td>
<td>5 rack units [8.75 inches (222 mm)]</td>
<td>3.0 lbs</td>
<td></td>
</tr>
</tbody>
</table>

Field Wiring Specifications

Proper communication of the HART-protocol digital signal requires cabling that meets HART Physical Layer specifications. All PROVOX cabling meets the specifications and provides excellent digital communication capability. To maintain the capability, field wiring must also meet the specifications.

For inputs, the specifications are listed in the HART-SMART Communications Protocol, FSK Physical Layer Specification, Revision 7.2 A. For outputs, the specifications are listed in the PRELIMINARY HART-SMART Communications Protocol, FSK Physical Layer Specification, Revision 8.0 H.

Be sure to obtain a copy of this standard and review it prior to planning the field wiring layout. Copies are available from your Fisher-Rosemount representative or sales office and from the HART Communications Foundation (HCF) at the following address:

HCF  
9390 Research Blvd.  
Suite II-250  
Austin, TX 78759  
U.S.A.  
FAX: (512) 794-8893  
WWW: http://www.hartcomm.org

Ordering Information

When ordering, specify:

SMART Device I/O Cards
- Type CL6827 SMART Device Input Card
- Type CL6828 SMART Device Output Card

Input Termination Panels
- Type CL6895 Single-Ended Analog/SMART Device Input Termination Panel
- Type CL6896 Redundant Single-Ended Analog/SMART Device Input Termination Panel

Output Termination Panels
- Type CL6885 Analog/SMART Device Output Termination Panel
- Type CL6886 Redundant Analog/SMART Device Output Termination Panel

Input Module
Select one Type CL6859 SMART Device Input Module, for every two channels which you wish to use; up to eight modules. Not all channels on a termination panel need be used.
Cable Interface Panels
Specify only if using 1 for N redundancy
- Type CL6841 Analog Input Cable Interface Panel
- Type CL6842 Analog Output Cable Interface Panel

I/O Card to Termination Panel Cables
A simplex application requires one cable between the I/O card and the associated termination panel. A 1 : 1 redundant application requires two cables: one between the primary I/O card and the associated termination panel, and the other between the backup I/O card and the associated termination panel. A 1 : N redundant application requires three or more cables: one between the primary I/O card and the associated termination panel, one between the backup I/O card and the associated cable interface panel, and one between the termination panel and the cable interface panel. Plus one additional cable for each additional card that is backed up.
- Factory specified. This selection lets the factory specify the best length up to 20 feet for cabling between adjacent cabinets. If the cabinets are not adjacent, specify the lengths below.
  - 5 feet (1.525 m)
  - 10 feet (3.05 m)
  - 20 feet (6.1 m)
  - 50 foot (15.2 m). Includes an extra connector for field alterations
  - 100 foot (30.5 m). Includes an extra connector for field alterations
  - 200 foot (61 m). Includes an extra connector for field alterations

Cable Trays
All termination panels include a one-inch wide horizontal cable tray for field-wiring. An optional two-inch wide cable tray is available to replace the one-inch tray.
The wider tray mounts horizontally above the panel and requires one additional vertical rack-unit. The tray increases both the cable capacity and the cable-bend area. The tray may be retrofitted in the field if sufficient space is available above the termination panel.