

# STAHL Intrinsically Safe Isolators



## Overview

STAHL's easy-to-connect and user-friendly isolating barriers provide intrinsic safety and galvanic separation between the control system and the field device, insulating the field device from other parts of the system. Their isolating barrier range is easy to use and boasts an impressive range of functions and a long service life.

## Features

- Compact: Dual Channel modules for most functions
- Analog cards are HART capable
- Analog and digital cards are rated for SIL applications
- pac-Bus provides time-saving system for wiring

## STAHL Intrinsically Safe Isolators Selection Guide

| Part Number                               | Price    | Isolator Type           | Field Device             | Channels     | Controller Side (PLC/DCS)                               | Drawing             |
|-------------------------------------------|----------|-------------------------|--------------------------|--------------|---------------------------------------------------------|---------------------|
| <b>Analog Input (From Hazardous Area)</b> |          |                         |                          |              |                                                         |                     |
| <a href="#">9260-13-11-10S</a>            | \$489.00 | Transmitter (1 channel) | 0 to 20 mA or 4 to 20 mA | 1 in / 1 out | Output range will match input range (active or passive) | <a href="#">PDF</a> |
| <a href="#">9260-19-11-10S</a>            | \$690.00 | Transmitter (splitter)  | 0 to 20 mA or 4 to 20 mA | 1 in / 2 out | Output range will match input range (active)            | <a href="#">PDF</a> |
| <a href="#">9260-23-11-10S</a>            | \$774.00 | Transmitter (2 channel) | 0 to 20 mA or 4 to 20 mA | 2 in / 2 out | Output range will match input range (active)            | <a href="#">PDF</a> |

|                                          |          |                    |                                              |              |                             |                     |
|------------------------------------------|----------|--------------------|----------------------------------------------|--------------|-----------------------------|---------------------|
| <b>Analog Output (To Hazardous Area)</b> |          |                    |                                              |              |                             |                     |
| <a href="#">9165-16-11-11S</a>           | \$546.00 | Isolating repeater | Output range will match input range (active) | 1 in / 1 out | 0 to 20 mA<br>or 4 to 20 mA | <a href="#">PDF</a> |
| <a href="#">9265-26-11-10S</a>           | \$779.00 | Isolating repeater | Output range will match input range (active) | 2 in / 2 out | 0 to 20 mA<br>or 4 to 20 mA | <a href="#">PDF</a> |

|                                            |          |                                           |                                         |              |                                       |                     |
|--------------------------------------------|----------|-------------------------------------------|-----------------------------------------|--------------|---------------------------------------|---------------------|
| <b>Digital Input (From Hazardous Area)</b> |          |                                           |                                         |              |                                       |                     |
| <a href="#">9270-11-16-14S</a>             | \$302.00 | Switching repeater, 1 channel<br>DC power | NAMUR sensor*<br>or dry contacts        | 1 in / 1 out | 1 changeover contact (SPDT relay)     | <a href="#">PDF</a> |
| <a href="#">9170-11-13-21S</a>             | \$220.00 | Switching repeater, 1 channel<br>AC power | NAMUR sensor*<br>or dry contacts        | 1 in / 2 out | 2 changeover contacts (2 SPDT relays) | <a href="#">PDF</a> |
| <a href="#">9270-21-17-14S</a>             | \$350.00 | Switching repeater, 2 channel<br>DC power | NAMUR sensor*<br>or dry contacts        | 2 in / 2 out | 1 NO relay (max 250V / 2A)            | <a href="#">PDF</a> |
| <a href="#">9170-21-12-21S</a>             | \$271.00 | Switching repeater, 2 channel<br>AC power | NAMUR sensor*<br>or dry contacts        | 2 in / 2 out | 1 changeover contact (SPDT relay)     | <a href="#">PDF</a> |
| <a href="#">9172-20-11-00S</a>             | \$296.00 | Ex i relay module<br>(2 channel)          | Intrinsically safe coil<br>(14 to 30 V) | 2 in / 2 out | 1 changeover contact (SPDT relay)     | <a href="#">PDF</a> |

|                                           |          |                |                                       |              |                                         |                     |
|-------------------------------------------|----------|----------------|---------------------------------------|--------------|-----------------------------------------|---------------------|
| <b>Digital Output (To Hazardous Area)</b> |          |                |                                       |              |                                         |                     |
| <a href="#">9275-10-24-48-11S</a>         | \$364.00 | Digital output | Open circuit: 24.3 V<br>48mA at 9.7 V | 1 in / 1 out | 15 to 30 V for ON<br>0 to 5 V for OFF   | <a href="#">PDF</a> |
| <a href="#">9175-20-14-11S</a>            | \$509.00 | Digital output | Open circuit: 17.5 V<br>43mA at 12V   | 2 in / 2 out | 15 to 31.2 V for ON<br>0 to 5 V for OFF | <a href="#">PDF</a> |

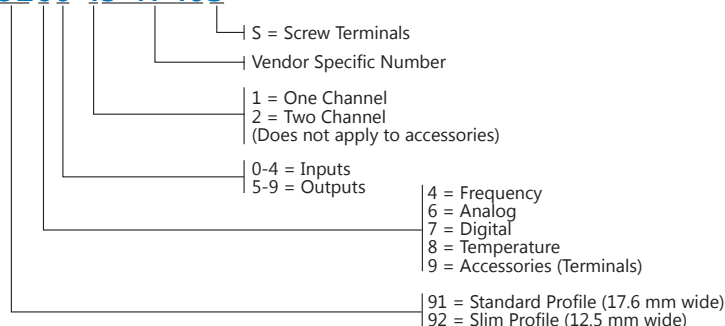
|                                                    |          |                         |                      |              |                                   |                     |
|----------------------------------------------------|----------|-------------------------|----------------------|--------------|-----------------------------------|---------------------|
| <b>Temperature Converter (From Hazardous Area)</b> |          |                         |                      |              |                                   |                     |
| <a href="#">9182-10-51-11S</a>                     | \$625.00 | Temperature transmitter | Thermocouple and RTD | 1 in / 1 out | 0 to 20 mA or 4 to 20 mA (active) | <a href="#">PDF</a> |
| <a href="#">9180-10-77-11S</a>                     | \$525.00 | RTD repeater            | RTD (PT 100)         | 1 in / 1 out | Equal to input signal (resistor)  | <a href="#">PDF</a> |
| <a href="#">9180-20-77-11S</a>                     | \$768.00 | RTD repeater            | RTD (PT 100)         | 2 in / 2 out | Equal to input signal (resistor)  | <a href="#">PDF</a> |

|                                                    |            |                       |                                 |              |                                                                         |                     |
|----------------------------------------------------|------------|-----------------------|---------------------------------|--------------|-------------------------------------------------------------------------|---------------------|
| <b>Frequency Transmitter (From Hazardous Area)</b> |            |                       |                                 |              |                                                                         |                     |
| <a href="#">9146-10-11-12S</a>                     | \$771.00   | Frequency transmitter | NAMUR sensor* or voltage pulses | 1 in / 1 out | 0 to 20 mA or 4 to 20 mA (active)<br>with two configurable dry contacts | <a href="#">PDF</a> |
| <a href="#">9146-20-11-11S</a>                     | \$1,001.00 | Frequency transmitter | NAMUR sensor* or voltage pulses | 2 in / 2 out | 0 to 20 mA or 4 to 20 mA (active)                                       | <a href="#">PDF</a> |

\* A NAMUR sensor is an intrinsically safe 2-wire sensor which supplies one of two signal levels depending on sensor state.

## Part Number Nomenclature

### 9260-13-11-10S



# STAHL Intrinsically Safe Isolators

## Digital Output



### STAHL Digital Output Intrinsically Safe Isolators Specifications

|                             |                                                               | <u>9275-10-24-48-11S</u>                              | <u>9175-20-14-11S</u>                                                                                        |
|-----------------------------|---------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Isolator Type</b>        |                                                               | Digital output                                        | Digital output                                                                                               |
| <b>Explosion Protection</b> | Installation Location (per NEC 500)                           | Class I, Division 2                                   | Class I, Division 2                                                                                          |
|                             | Ex Interface (for intrinsically safe interface) (per NEC 500) | Class I, II, III<br>Division 1 or 2                   | Class I, II, III<br>Division 1 or 2                                                                          |
|                             | Agency Approvals                                              | ATEX (IBE), Canada / USA (UL), IECEx (IBE), SIL (BVS) | ATEX (IBE) Canada (FM) USA (FM/UL), EAC (ENDCE), IECEx(BVS), SIL(exida), along with Brazil, India, and Korea |
| <b>Safety Data</b>          | Max Voltage ( $U_0$ )                                         | 27.06 V                                               | 19.6 V                                                                                                       |
|                             | Max Current ( $I_0$ )                                         | 91.11 mA                                              | 150mA per individual channel<br>300mA if both channels are in parallel                                       |
|                             | Max Power ( $P_0$ )                                           | 616mW                                                 | 732mW per individual channel<br>1464mW if both channels are in parallel                                      |
| <b>Functional Safety</b>    | Safety Integrity Level (SIL)                                  | 3                                                     | 3                                                                                                            |
| <b>Electrical Data</b>      | Number of Channels                                            | 1 in / 1 out                                          | 2                                                                                                            |
|                             | Line Fault Detection Relay                                    | Yes                                                   | Yes                                                                                                          |
|                             | Auxiliary Power Range                                         | 19.2 to 30VDC                                         | 18 to 31.2 VDC                                                                                               |
|                             | Nominal Current                                               | 90mA                                                  | 140mA                                                                                                        |
|                             | Power Consumption                                             | 2.16 W                                                | 3.4 W                                                                                                        |
|                             | Max Power Dissipation                                         | 1.62 W                                                | 2.4 W                                                                                                        |
|                             | Operation Indication                                          | Green LED "PWR"<br>Red LED "LF"<br>Yellow LED "STAT"  | Green LED "PWR"<br>Red LED "LF"                                                                              |
|                             | Input Function                                                | Galvanic isolated discrete output                     | Galvanic isolated discrete output                                                                            |
|                             | Input Type                                                    | 15 to 30 V for ON<br>0 to 5 V for OFF                 | 15 to 31.2 V for ON<br>0 to 5 V for OFF                                                                      |
|                             | Output (Channel A)                                            | Open circuit: 24.3 V<br>48mA at 9.7 V                 | Open circuit: 17.5 V<br>42mA at 12V                                                                          |
|                             | HART Compatible                                               | No                                                    | No                                                                                                           |
|                             | Output Min Load                                               | –                                                     | –                                                                                                            |
|                             | Output Max Load                                               | 24.3 V (open circuit)<br>Max current = 48 mA          | 17.5 V (open circuit)<br>Max current = 45 mA                                                                 |
|                             | Output (Channel B)                                            | –                                                     | Open circuit: 17.5 V<br>42mA at 12V                                                                          |
|                             | Parallel Output (Channel A+B)                                 | –                                                     | Open circuit: 17.5 V<br>84mA at 12V                                                                          |
| <b>Ambient Conditions</b>   | Operating Temperature (Group Assembly)                        | -20°C to 60°C [-4°F to 140°F]                         | -20°C to 60°C [-4°F to 140°F]                                                                                |
|                             | Operating Temperature (Single Device Installation)            |                                                       | -20°C to 70°C [-4°F to 158°F]                                                                                |
|                             | Storage Temperature                                           | -40°C to 80°C [-40°F to 176°F]                        | -40°C to 80°C [-40°F to 176°F]                                                                               |
| <b>Mechanical Data</b>      | Degree of Protection                                          | IP20                                                  | IP20                                                                                                         |
|                             | Width                                                         | 12.5 mm [0.49 in] (slim profile)                      | 17.6 mm [0.69 in] (standard)                                                                                 |
|                             | Mounting Type                                                 | DIN rail                                              | DIN rail                                                                                                     |
|                             | Wire Gauge Range                                              | 16 - 12 AWG                                           | 24 to 14 AWG                                                                                                 |
|                             | Mounting Position                                             | Vertical or horizontal                                | Vertical or horizontal                                                                                       |
|                             | Weight                                                        | 0.21 lb [93 g]                                        | 0.42 lb [190g]                                                                                               |

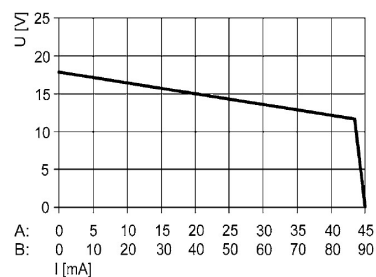
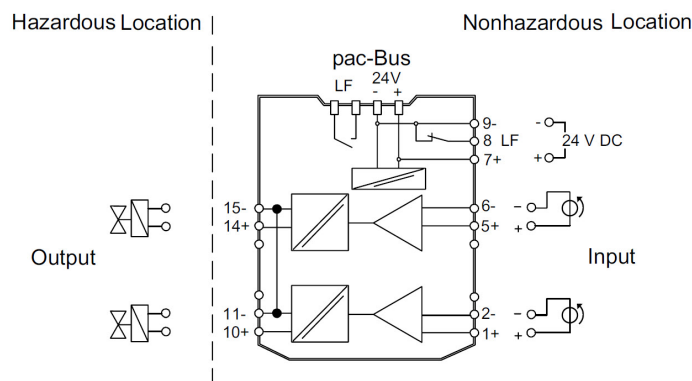
# STAHL Intrinsically Safe Isolators

## Digital Output



### Connection Diagrams

#### 9175-20-14-11S



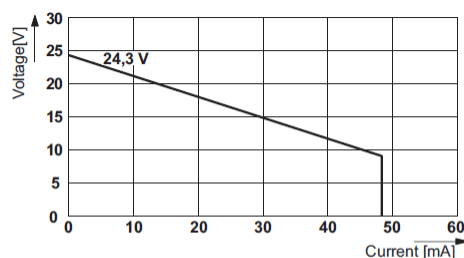
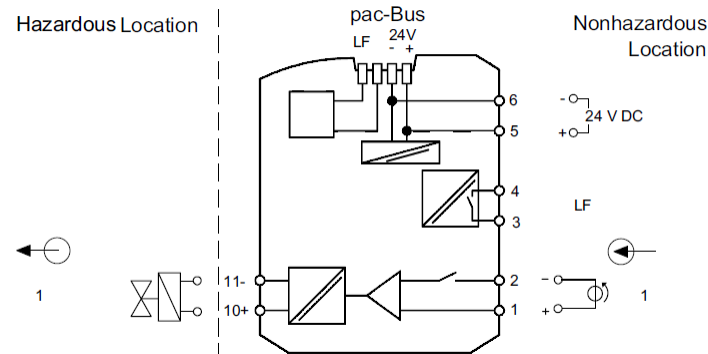
Output characteristic 9175/.0-14-11, 9176/.0-14-00

X-axis (I [mA])

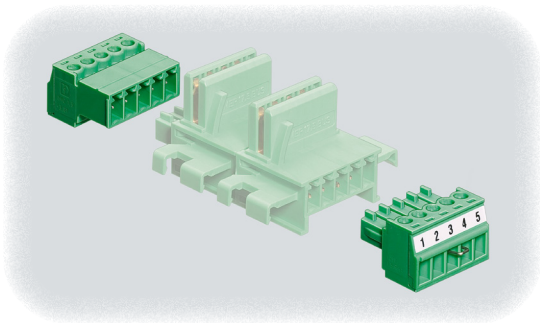
A: Characteristic curve for each channel

B: Characteristic curve channel 1 parallel with channel 2

#### 9275-10-24-48-11S



# STAHL Intrinsically Safe Isolators Accessories – pac-Bus System

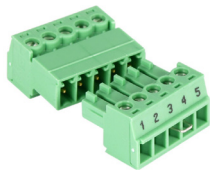


## Benefits of Using the pac-Bus System

- Quick, easy wiring
- Can be installed on standard DIN rail without tools by simply snapping into place
- Can be expanded at any time with additional pac-Bus units
- Suitable for industrial environments subject to vibration
- Optional power supply module 9193 enables refused redundant 24VDC supply and fault signalization

## STAHL Intrinsically Safe Isolators Accessories (pac-Bus System) Selection Guide

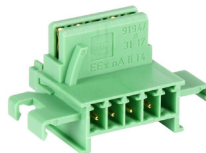
| Part Number           | Price    | Description                                                   | Weight        | Drawing             |
|-----------------------|----------|---------------------------------------------------------------|---------------|---------------------|
| <b>9194-50-01</b>     | \$23.50  | End terminal set for pac-Bus system                           | 0.29 oz [8 g] | <a href="#">PDF</a> |
| <b>9294-31-12</b>     | \$30.50  | pac-Bus terminal for 92xx (12.5 mm [0.49 in] width) isolators | 0.16 oz [5 g] | <a href="#">PDF</a> |
| <b>9194-31-17</b>     | \$23.50  | pac-Bus terminal for 91xx (17.6 mm [0.69 in] width) isolators | 0.16 oz [5 g] | <a href="#">PDF</a> |
| <b>9193/21-11-11S</b> | \$269.00 | pac-Bus supply module                                         | 0.4 lb [180g] | <a href="#">PDF</a> |
| <b>111412</b>         | \$40.00  | Qty 10 spare fuses for use with pac-Bus supply module         | 0.07 lb [2g]  | <a href="#">PDF</a> |



**9194-50-01**



**9294-31-12**



**9194-31-17**

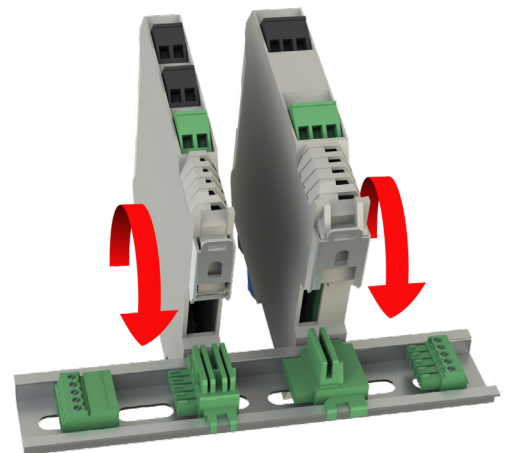
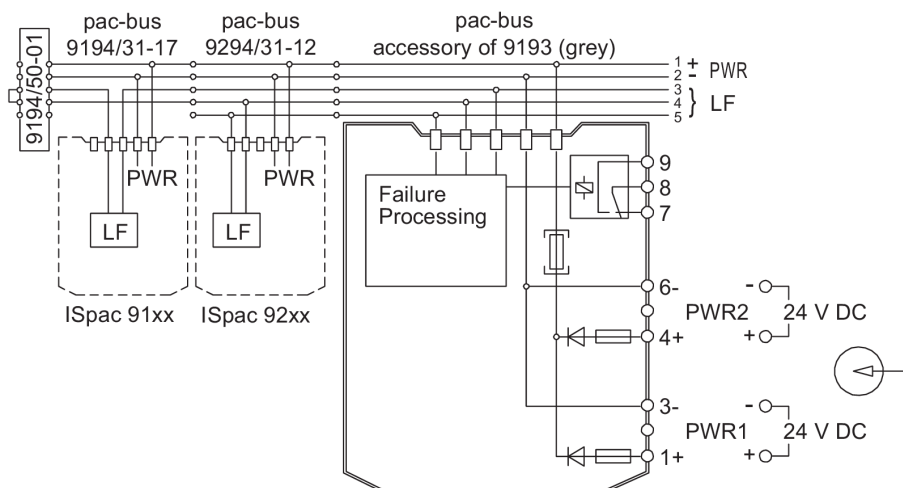


**9193/21-11-11S**



**111412**

## Connection Diagram



Refer to installation instructions for details

# STAHL Intrinsically Safe Isolators Accessories – pac-Bus System



| STAHL pac-Bus Supply Module Specifications |                                                               |                                                                             |
|--------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------|
|                                            |                                                               | <b><u>9193/21-11-11S</u></b>                                                |
| <b>Explosion Protection</b>                | Installation Location (per NEC 500)                           | Class I, Division 2                                                         |
|                                            | Ex Interface (for intrinsically safe interface) (per NEC 500) | Class I, II, III<br>Division 1 or 2                                         |
|                                            | Agency Approvals                                              | ATEX (BVS), Canada (FM), China (NEPSI), IECEx (BVS), India (PESO), USA (FM) |
| <b>Electrical Data</b>                     | Power Supply                                                  | 24VDC 4A, primary and redundant                                             |
|                                            | Auxiliary Power Voltage Range                                 | 18.0 to 31.2 VDC                                                            |
|                                            | Max Power Dissipation                                         | 2.5 W                                                                       |
| <b>Ambient Conditions</b>                  | Operating Temperature                                         | -40°C to 55°C<br>[-40°F to 131°F]                                           |
|                                            | Storage Temperature                                           | -40°C to 80°C<br>[-40°F to 176°F]                                           |
| <b>Mechanical Data</b>                     | Degree of Protection                                          | IP20                                                                        |
|                                            | Mounting Type                                                 | DIN rail                                                                    |
|                                            | Wire Gauge Range                                              | 16AWG for terminals<br>12AWG for ground connections                         |

# Safety Products



*Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application.*

*AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.*