
2.2.1 VitalSensors VS-3000 4-20mA Application Guide

Connecting a VitalSensors Instrument to 4-20mA Current Loop Network

Objective:

- Become familiar with the instrument wiring requirements and 4-20mA
- Become familiar VS-3000 Sensor System and 4-20mA

Equipment:

- PC running Windows XP®, Windows 7® or Windows 8®
- VS-3000 Sensor System

While every effort was made to verify the following information, no warranty of accuracy or usability is expressed or implied.

Overview:

The *VS-3000 Sensor System* and *VS-300 Sensor Management Station* support 4 channels of 4-20mA current loop communications.

VS-3000 Sensor Systems shipped with 4-20mA communications are configured at the factory with default communication scaling, see Output Assignments chart on pp. 4 below.

The output assignments and scaling can be adjusted via the *VS-3000 Dashboard* software application. Instructions on how to adjust 4-20mA configuration can be found on pp. 4-5 below.

Please Note: The *VS-300 Sensor Management Station* provides a native voltage source for 4-20mA communication. DO NOT apply voltage current to the 4-20mA loop from the PLC side.

Input resistance to the PLC must be less than 100 Ω

Failure to adhere to the conditions above may result in non-warranty damage or incorrect outputs.

Wiring the Cable Connector for 4-20mA Outputs:

Please Note: Electrical wiring and installation must only be performed by a qualified electrician. Proper Lock Out / Tag Out procedures must be observed

An approved cable connector is supplied with the *VS-3000 Sensor System* (Turck BS 8181-0). Below is a wiring diagram for the connector.
4-20mA cable must be 8-conductor, 18-gauge, shielded twisted pair.

Inside view of wiring pin connections.

Wires should be soldered to the color-coded pins shown in *Fig. 1*

Accepts 4mm to 8mm cable

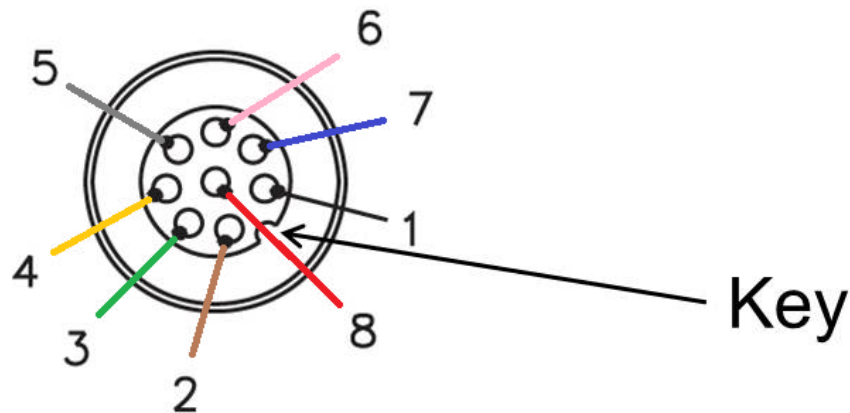


Fig. 1

Default Configuration – VS-3000 Beer and Wine Monitor:

Default Concentration	4-20mA Port	4-20mA Channel	Associated Connector Pins
Alcohol (% w/w) or (% v/v)	1	1	6 (+), 7 (-)
Real Extract / Er (°Plato)	1	2	1 (+), 8 (-)
CO ₂	2	1	2 (+), 3 (-)
Temperature or OG (°Plato)	2	2	4 (+), 5 (-)

Default Configuration – VS-3000 Soft Drink Monitor:

Default Concentration	4-20mA Port	4-20mA Channel	Associated Connector Pins
°Brix	1	1	6 (+), 7 (-)
Acid	1	2	1 (+), 8 (-)
CO ₂	2	1	2 (+), 3 (-)
Temperature or Assay	2	2	4 (+), 5 (-)

After the wiring is completed. Connect the TURCK connector to the VS-300SMS FIELDBUS port. The connector is keyed for proper alignment

Configuring 4-20mA Outputs and Scaling Adjustment:

4-20mA communication starts automatically when the *VS-3000 Sensor System* is powered on. The *VS-300 Sensor Management Station* sends values to the PLC every 100ms.

To make changes to 4-20mA output selections or scaling, access the *VS-3000 Dashboard* software via Remote Desktop.

Go to EDIT >> 4-20mA Fieldbus Parameters in the *VS-3000 Dashboard Software*. See *Fig. 2*

VS-3000 Dashboard EDIT menu view

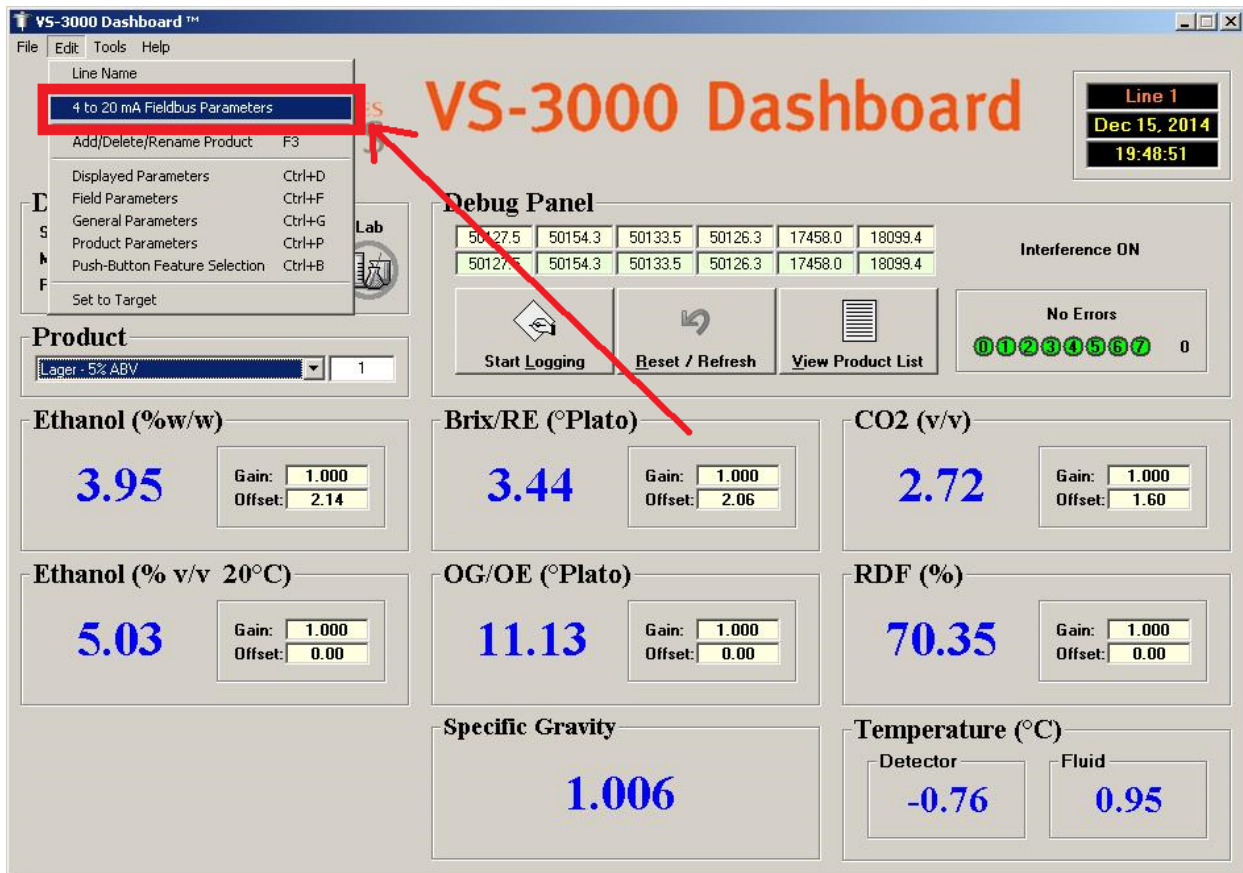


Fig. 2

Output channel selection and scaling are shown in the 4-20mA Parameters menu. See *Fig. 3* on the next page.

VS-3000 Dashboard 4-20 mA Parameters Menu

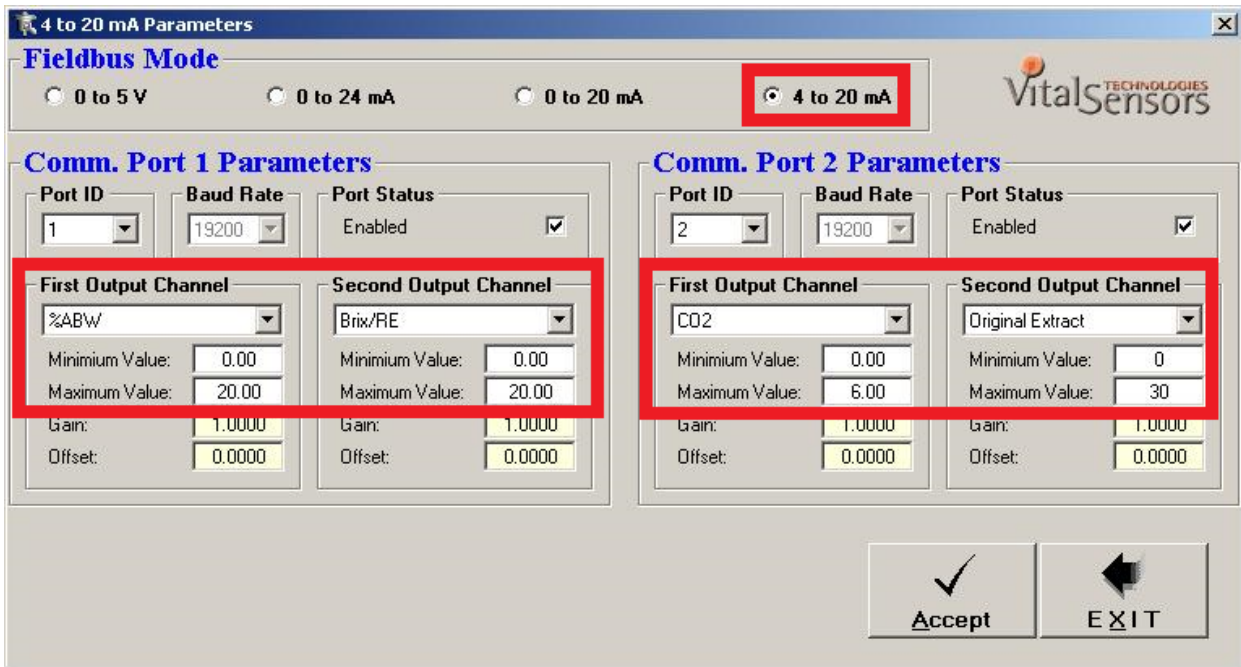


Fig. 3

- Output channel assignments can be changed via the dropdown menus
- Minimum and Maximum output scales can be changed
 - Default values will be provided by the factory and documented accordingly
- Click ACCEPT to save your changes
- The 4-20mA outputs on VS-3000 Sensor Systems use 16-bit output scaling (64,000 voltage steps)
 - Resolution is NOT greatly affected by increasing or decreasing the scaling range

Sensor Management Station Internal 4-20mA Wiring Diagram:

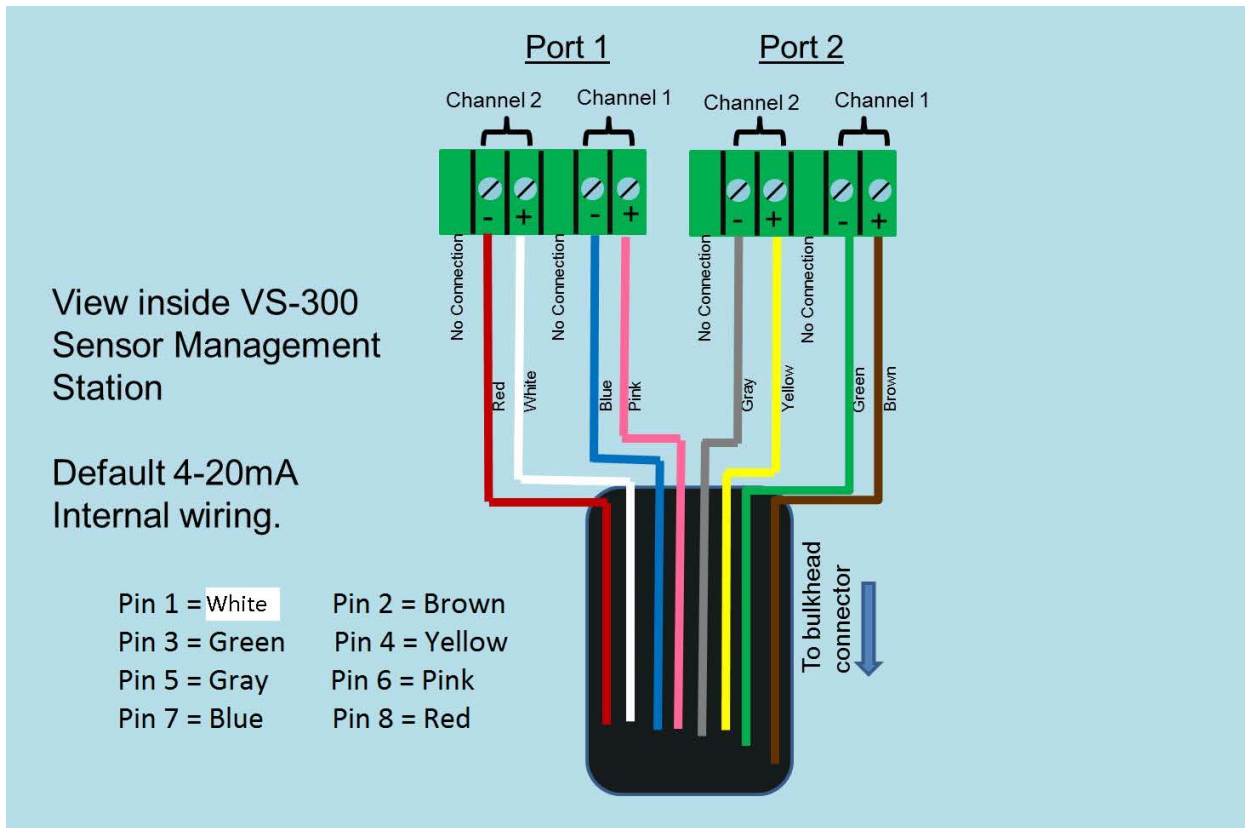


Fig. 4