

Conversion of Analogue Output

of our Ozone Analysers
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In some cases, the analog output signal 4..20 mA shall not correspond to the full range of a device. This happens for example if an analyser shall replace another one with a different range, connected to a PLC.

The following example shows how a Universal Signal Converter can be used to convert the analog output signal of a BMT 964 with a range of 0-200 g/Nm³, so that it can be used to replace an analyser with a range of 0-50 g/Nm³, without the need to change your PLC settings responsible for interpretation of the signal.

In order to achieve this we will be using the analog voltage output of the analyser from 0-2.5 VDC, and convert this to 4..20 mA for the PLC in such a way that the output delivers 20 mA at a concentration of 50 g/Nm³ (2.5 VDC). Other combinations of analog input and output signal ranges are possible, including 4..20 mA as an input signal.

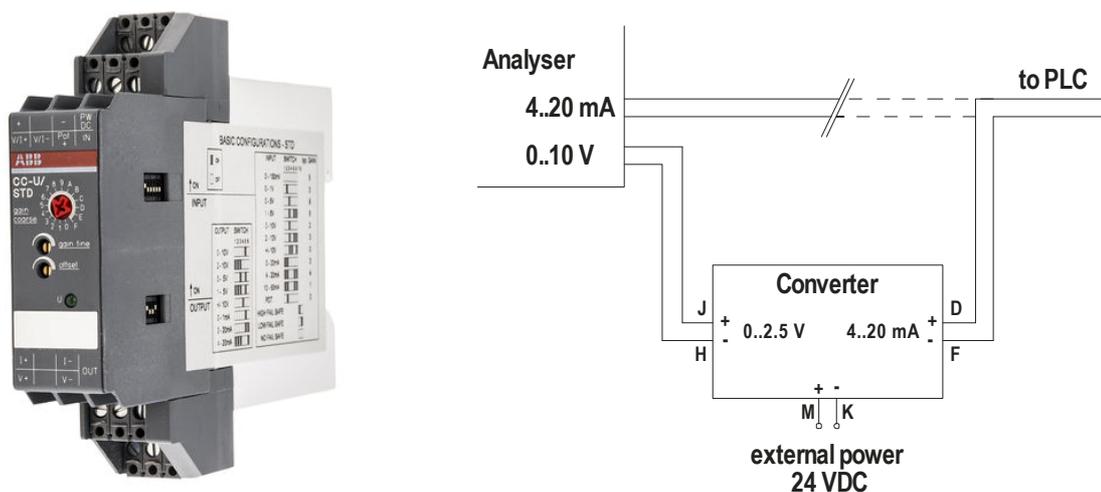


Fig. 1: Universal Signal Converter CC-U/STD
by ABB (1SVR040000R1700)

The converter used in this example (Fig. 1) is powered by 24 VDC (24-48VDC) from an external source. The necessary configuration is set by DIP switches, a rotary switch and trimmers.

Caution: The installation mentioned herein should be done by trained personnel, only! Improper installation or settings may result in process errors and can cause serious personal or material damage.

Setup (example):

In order to receive 20 mA at the output for 2.5 VDC at the input (= 50 g/Nm³ in our example), you will need to perform the following steps:

- on DIP Switch 1 (Input) only set switch 3 to ON, all others to OFF
- on DIP Switch 2 (Output) set switches 1, 2, 3 and 6 to ON, switches 4 and 5 to OFF
- set the rotary switch to "E"
- connect 24VDC to terminals M (+24V) and K (GND)
- connect the 0..10V from the analyser to terminals J (+) and H (-)
- disconnect the output leads for 4..20mA from the analyser;
connect these leads to terminals D (+) and F (-) instead

Conversion of Analogue Output

Power-up the system and set the analog output of the analyser to Simulation Mode (preferably with Diagnostic software BMT 964 Link). Use your PLC (or a multimeter) to check the 4..20 mA as follows:

- set the simulated output value to 0% and use the trimmer "offset" for adjustment to 4.00mA
- set the simulated output value to 25% and use trimmer "gain fine" for adjustment to 20.00mA
- switch off Simulation Mode again, using BMT 964 Link

Now the converter will output 20mA if the analyser reaches 25% of it's measurement range (50g/Nm³ in our example), and your PLC should display 50 g/Nm³.

Please note that the amplification in the above example also amplifies drift and analog steps used by the photometer. If accuracy is an issue, you should always use the correct measurement range instead of a signal conversion.

If any problems occur, do not hesitate to contact us:

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