



Instruction Manual



HART® Interface for Digital Bronkhorst® Instruments

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ATTENTION

**Please read this document carefully before installing and operating the product.
Not following the guidelines could result in personal injury and/or damage to the equipment.**



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Symbols in this document



Important information. Disregarding this information could increase the risk of damage to equipment, or the risk of personal injuries.



Helpful information.



Additional information available on the internet or from your Bronkhorst representative.

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1 Introduction

1.1 Scope of this manual

This manual covers the HART® slave interface that can be installed on selected Bronkhorst® instruments. It contains installation and operation information, as well as a comprehensive description of the HART® menus and methods that can be accessed through the master device.

1.2 General description

HART® (acronym for Highway Addressable Remote Transducer) is a bi-directional communication protocol, owned by the FieldComm Group, for sending and receiving digital information across the 4...20 mA analog current output of an instrument. The HART® signal is superimposed on the analog current output through high-frequency Frequency-shift Keying (FSK), which enables the user to operate the instrument digitally by using (existing) analog wiring.

A Bronkhorst® HART® slave device can communicate with any HART® master by loading the specific Device Description (DD) file into the master device. This DD file is provided by Bronkhorst and contains the parameters and methods that enable communication with the instrument. Bronkhorst® instruments with a HART® interface support Revision 7 of the HART® communication protocol.

A Bronkhorst® instrument with a HART® interface does not support Burst Mode, nor can it act as a master device.



Detailed information about the HART protocol can be found on the FieldComm website: www.fieldcommgroup.org

1.3 Functionality

The HART® interface on Bronkhorst® instruments adds a lot of extra features to an instrument compared to analog operation, such as:

- Viewing process variables (mass) flow, density, temperature and flow setpoint
- Reading alarm info
- Resetting alarms
- Adjusting zero point
- Reading device information

1.4 Multibus operation

Bronkhorst® digital instruments offer great flexibility by allowing operation of the instruments from multiple sources simultaneously. Beside operation via HART® or the analog input/output, simultaneous operation via RS232, display (if present), any optional fieldbus interface (such as FLOW-BUS, PROFIBUS DP, PROFINET, Modbus or EtherCAT®) or any customized I/O (if applicable) is possible.

It is possible, for example, to change instrument settings via HART®, without disturbing active analog or fieldbus operations. However, there are a few rules regarding priorities:

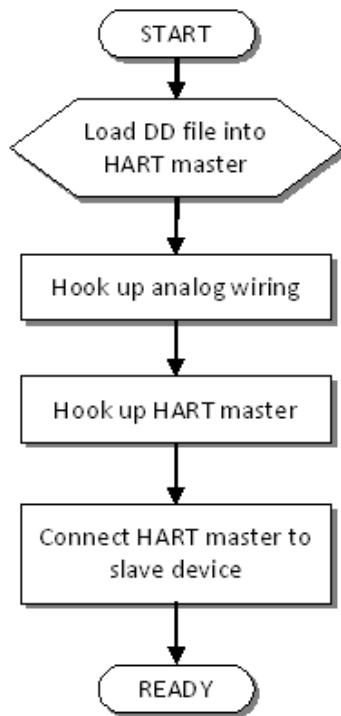
- By default, the instrument only accepts setpoints from the analog input source. No digital setpoint (including HART®) is accepted unless the default control mode is set from 'analog' to 'digital' (see the instrument manual).
- For any other parameter the last received value from any source prevails. Keep in mind that some sources send and/or receive parameter values continuously, while HART® communication does not. Make sure that a HART® command is not overwritten immediately by another I/O source.

1.5 Documentation



For functional description of the HART® interface see the field device specification document 9.17.135
This document can be downloaded from www.bronkhorst.com/downloads

1.6 Short form start-up



2 Installation

Connect the HART® master with terminals (4...20 mA output & HART and 0 V power).



Make sure that the 4... 20 mA circuit has a load of minimum of 250 and maximum of 600 Ω

3 Instrument configuration

Load the instrument DD file into the master device or use a generic DD file. Note that a generic DD file might not provide access to all supported HART features of the instrument.

4 Operation

The instrument DD file provided by Bronkhorst supports the following device variables (see also the screenshot below from the HART Smart Device Configurator):

- Flow sensor
- Temperature sensor
- Density sensor
- Flow setpoint
- Alarminfo

See the **Field device specification, document 9.17.135** for a full description of the available commands/parameters.

In the picture below an example of the menu structure for the HART device can be seen.

The screenshot shows the SDC625 - [Table View] window. The left pane displays a tree view of the device configuration under 'Online'. The right pane shows a table of device variables with their current values and units.

Item	Value	Units
Device setup		
PV	1.312	g/h
PV Unit		g/h
PV LRV	0.000	g/h
PV URV	921.211	g/h
PV % range	0.148	%
PV Loop current	4.024	mA
Zero trim		
Device reset		

At the bottom of the window, the status bar shows 'SDC-625 (0xd6) (0x48) Dev Rev 01.01', 'HART Beat', and 'NUM'.



See the [HART Field Device Specification for Bronkhorst® Instruments](#) for a full description of all available commands and parameters.

5 Service

For current information about Bronkhorst® and service addresses, please visit our website:

 www.bronkhorst.com

Do you have any questions about our products? Our Sales Department will gladly assist you selecting the right product for your application. Contact sales by e-mail:

 sales@bronkhorst.com

For after-sales questions, our Customer Service Department is available with help and guidance. To contact CSD by e-mail:

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No matter the time zone, our experts within the Support Group are available to answer your request immediately or ensure appropriate further action. Our experts can be reached at:

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