



Typical point to point connection with analog signaling

Typical multi-drop connection with digital communications

Brandt Instruments HART<sup>®</sup> Manufacturer Code = 96 Hex, 150 Decimal  
See the MST2000 Multivariable SMARTFLOW<sup>®</sup> Transmitter specification sheet, operations manual or contact the factory for further information and details.  
HART<sup>®</sup> is a registered trademark of the HART<sup>®</sup> Communications Foundation.

# HART<sup>®</sup> Communications For the MST2000 Series

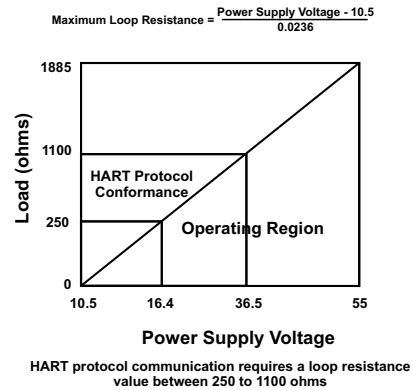
Thermo's **MST2000 Multivariable SMARTFLOW<sup>®</sup> Transmitter** is a HART<sup>®</sup> conforming loop-powered device. HART<sup>®</sup> Communications is available and requires the installation of a HART<sup>®</sup> Communications module. The HART<sup>®</sup> Communications module is available in either the **MST2100** (NEMA 1) or the **MST2400** (NEMA 4X) configuration and can be installed at the factory or retrofitted in the field.



## HART<sup>®</sup> Communications

### POWER AND LOOP CONDITIONS

<b>Voltage:</b>	24 Volt DC (Typical)
<b>Maximum Ripple:</b>	0.2 V (peak to peak). 47 to 125 Hz.
<b>Maximum Noise:</b>	1.2 mV. 500 to 10kHz.
<b>Maximum series impedance:</b>	10 ohms. 500 to 10kHz



### CONNECTIONS

- Connections:** All electrical connections are per standard HART<sup>®</sup> connections per HART<sup>®</sup> Communication Foundation Document HCF\_SPEC-54 (HART<sup>®</sup> FSK Physical Layer Specification, Revision 8).
- Cabling Requirements:** Shielded twisted pair cable should be used. When using cable with multiple twisted pairs, it is important not to use the other pairs for signals that might interfere with the HART<sup>®</sup> communications signal. See Operation Manual for more detailed information.
- Communication Distance:** Up to 1.5 km (1 mile) when using multiple twisted pair cables. Communication distance varies depending on type of cable used. See Operation Manual for more detailed information.

[www.thermo.com](http://www.thermo.com)  
Let us point you in the right direction.



## Thermo Electron Corporation

1410 Gillingham Lane  
Sugar Land, Texas 77478  
Telephone: (877) 290-7422 Facsimile: (713) 272-2273