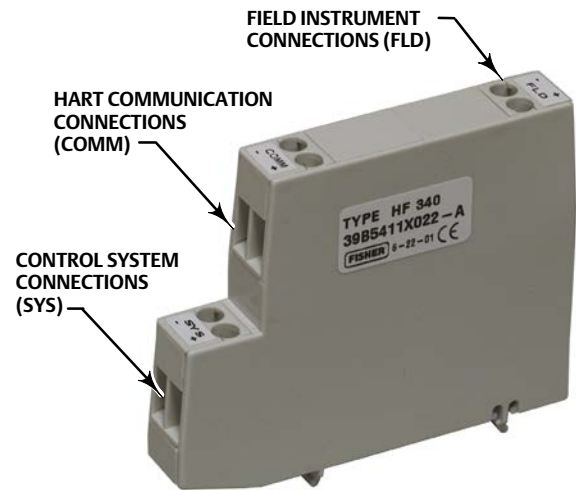


# Fisher™ HF340 Filter

The Fisher HF340 HART® filter is used with HART communicating FIELDVUE™ instruments, such as FIELDVUE DVC2000, DVC6200, or DVC6000 digital valve controllers. HART filters are used when the instrument is connected to a 4 to 20 mA DC control system output not designed for the HART (Highway Addressable Remote Transducer) communication protocol.

The filter receives a 4 to 20 mA DC current signal from the control system and passes the signal, uninterrupted, to the field device. A third connection to the filter provides HART communication to a device that accepts HART signals, such as a multiplexer or a 475 Field Communicator.



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## Features

- **Versatile Mounting**—Mounts on standard type 35 DIN rails.
- **Small Size**—Fits easily in existing installations.
- **Allows HART Communications on 4 to 20 mA Control Systems**— The HF340 HART filter prevents the HART signal from interfering with the control system analog output and prevent the analog output signal from interfering with HART communication. Table 2 lists some of the control systems that require a filter.

## Product Description

The HF340 HART filter is a passive device that is inserted in-line with both wires of a HART 4 to 20 mA DC output loop. The purpose of the filter is to effectively isolate the control system analog output

from modulated HART communication signals. Whether or not HART communication can take place depends upon the control system impedance. Impedance, simply, is the property of an electrical circuit to resist the flow of alternating current.

As shown in figure 1, the HART signal from a transmitter is not normally affected because the control system *analog input* has high impedance (typically 250 ohms). However, the control system *analog output* may have low enough impedance to reduce the amplitude of the HART signal to an unreadable level.

The HF340 filter increases the impedance. Therefore, placing a filter between the control system output and the field instrument restores the HART signal amplitude to a readable level.

Table 2 lists those control systems that have been tested with FIELDVUE Instruments. If your control system is not listed in table 2 you can either always use a filter, or contact your [Emerson sales office](#) or Local Business Partner for a recommendation.

**Specifications**

<p><b>Mounting</b></p> <p>Standard 35 mm DIN rail mounting with filtering components.</p> <p><b>Connections</b></p> <p>Three 2-pin cage-clamp style connectors accept up to 12 AWG wire</p> <p><b>Power Requirements</b></p> <p>Input Current: 4-20 mA DC (nominal) Input Voltage: At 20 milliamps DC, 2 volts above input voltage required by the field instrument (2 volt drop across filter at 20 milliamps DC)</p> <p><b>Ambient Operating Temperature</b></p> <p>-40 to 85°C (-40 to 185°F)</p> <p><b>Ambient Relative Humidity</b></p> <p>5 to 95%</p>	<p><b>Electromagnetic Compatibility</b></p> <p>Meets EN 61326-1:2013 Immunity—Industrial locations per Table 2 of the EN 61326-1 standard. Performance is shown in table below 1. Emissions—Class A ISM equipment rating: Group 1, Class A</p> <p><b>Dimensions</b></p> <p>75 mm (3 inches) long by 12.5 mm (0.5 inches) wide by 60 mm (2.4 inches) deep</p> <p><b>Approximate Weight</b></p> <p>0.1 kg (4 oz)</p> <p><b>Option</b></p> <p>HF341 communications tap: Standard 35 mm DIN rail mounting <i>without</i> filtering components (straight through with capacitor blocking on COMM terminals). In case of an accidental short circuit across the COMM terminal, a capacitor blocking circuit prevents disruption of the 4 to 20 mA DC control signal.</p>
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Table 1. EMC Summary Results; Immunity

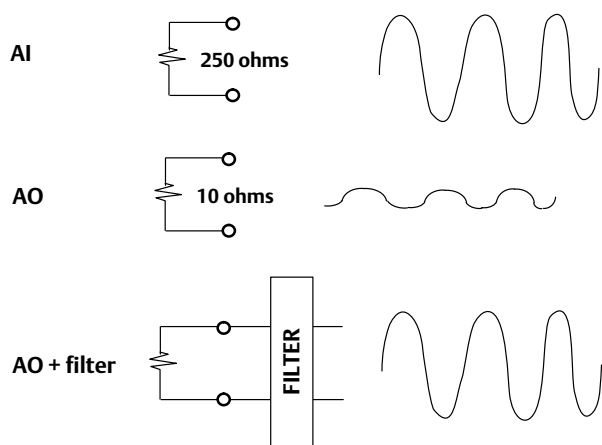
Port	Phenomenon	Basic Standard	Test Level	Performance Criteria
Enclosure	Electrostatic discharge (ESD)	IEC 61000-4-2	4 kV contact 8 kV air	A
	EM field	IEC 61000-4-3	80 to 100 MHz @ 10V/m with 1 kHz at 80% 1400 to 2000 MHz @ 3V/m with 1 kHz at 80% 2000 to 2700 MHz @ 1V/m with 1 kHz at 80%	A
	Rated power frequency magnetic field	IEC 61000-4-8	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>
I/O signal/control	Burst	IEC 61000-4-4	1 kV	A
	Surge	IEC 61000-4-5	1 kV (line to ground only, each)	A
	Conducted RF	IEC 61000-4-6	150 kHz to 80 MHz at 3 Vrms	A

A = During testing, normal performance within the specification limits.  
1. Not applicable; only applicable to magnetically sensitive equipment.

**Table 2. Control System Installation Requirements for HART Communicating FIELDVUE Digital Valve Controllers**

Control System <sup>(1)</sup>		Installation Requirement
Bailey™ Infi 90™		Filter required
Fischer-Porter DCI 40PC2000C		Filter required
Honeywell™ TDC2000		Filter required
Honeywell TDC3000	Multi-function controller	Filter required
	High-Density Process Manager (HPM) controller	No filter required
FOXBORO™ I/A (1988)		No filter required
Moore™ 352		No filter required
Valmet™ (output configured for straight through, not for 250 ohms)		No filter required
Rosemount™ RS-3 Multiport with HART I/O		No filter required
Fisher-Rosemount DeltaV™ (AO and HART I/O)		No filter required
Fisher-Rosemount PROVOX™ Configurable, Computing, and Interactive (IAC) Controllers		Filter required
Fisher-Rosemount PROVOX MUX (parallel) I/O		No filter required
Fisher-Rosemount PROVOX Control (serial) I/O	for AO	Filter required
	for HART I/O	No filter required
Fisher-Rosemount TL108 with 24 or 45 volt DC power		No filter required
Fisher-Rosemount DPR900		Filter required
Fisher-Rosemount ROC 364		No filter required
Transmation™ 1028 mA Calibrator		No filter required
<small>NOTE: The information presented in this table reflects the feedback of users of the HF340 filter. Your experiences and usage may vary depending on your control system, conditions, and other factors.</small>		
<small>1. For control systems not listed, a filter is recommended, if the voltage available at the instrument is adequate. See appropriate instrument instruction manual for procedures for determining voltage available. Filtering ensures proper communication and simplifies connecting a HART communicator or HART interchange multiplexer.</small>		

**Figure 1. Effect of Control System Impedance on the HART Signal Amplitude**



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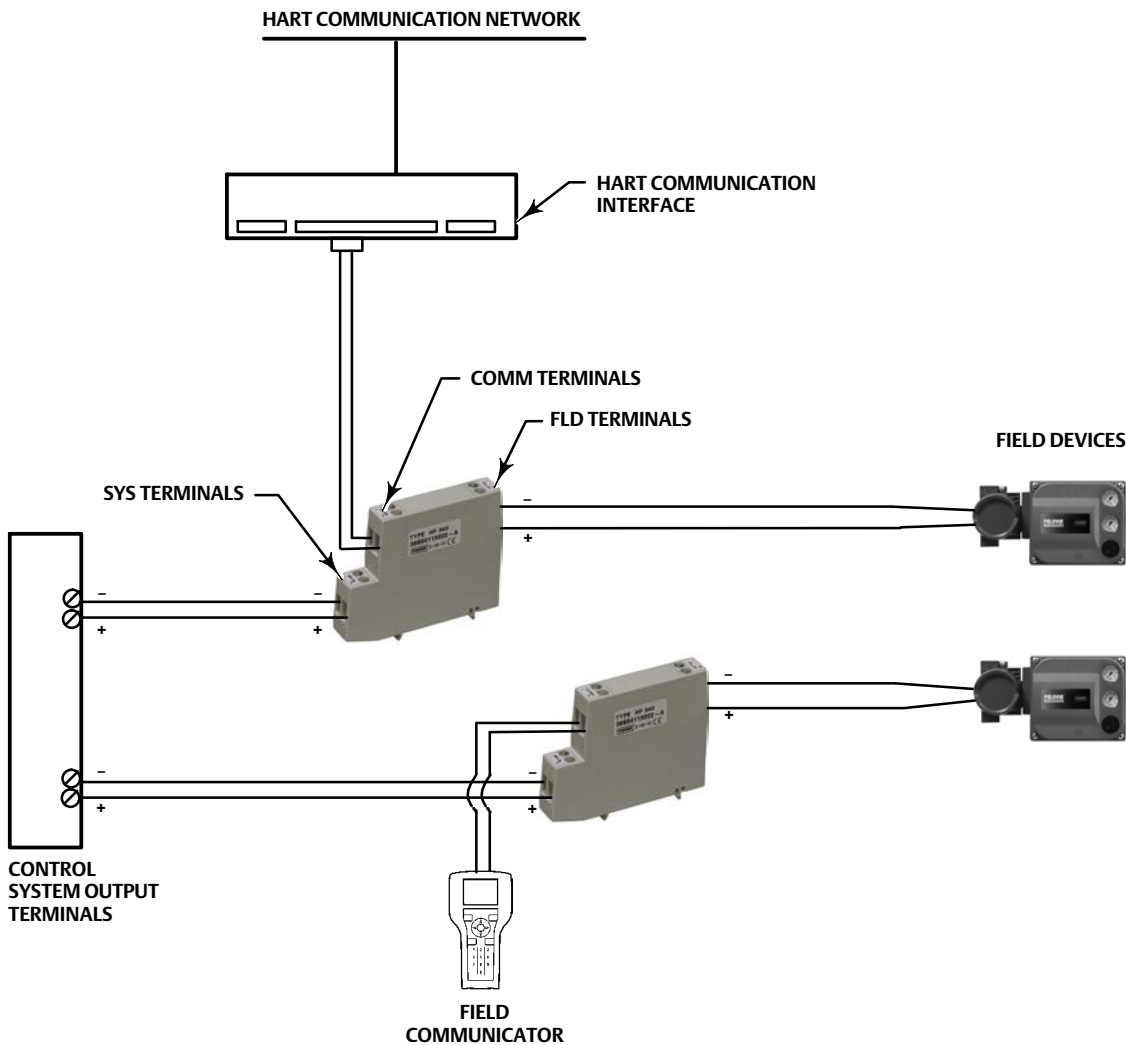
## Installation

Figure 2 shows a typical HART filter installation. The filter is normally installed near the field wiring terminals of the control system I/O. The HF340 filter mounts on DIN rails. HART communication is only possible between the filter and the field instrument and at the COMM terminals, but not on the control system side of the filter. The filter is not approved for use in hazardous areas. However, it can be used with instruments in hazardous areas by following the appropriate wiring and installation guidelines.

## Ordering Information

When ordering, specify the filter type number HF340 or the optional HF341 communications tap.

Figure 2. Typical Fisher HF340 HART Filter Installation



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