

# *Installation Instructions*

## **Foundation Fieldbus Linking Device**

Catalog Numbers 1757-FFLD2, 1757-FFLD4

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### **About the Fieldbus Linking Device**

The FOUNDATION Fieldbus Linking Device bridges from the Ethernet network to H1 networks. It accepts either High-speed Ethernet (HSE) or EtherNet/IP messages and converts them to the H1 protocol. By supporting H1, HSE, and EtherNet/IP protocols, the linking device is capable of providing bridging capability of Rockwell Automation products and FOUNDATION Fieldbus products on the Ethernet network to products on H1 links.

## Status Indicators

### Linking Device Status Indicators

Indicator	Status	Description
H1	Off	The linking device H1 channel is inactive. Verify that the linking device is connected to the H1 network.
	Flashing green	The linking device H1 channel is active.
STATUS (module)	Off	No power - Module does not have 24V DC power. Verify that power is supplied to the module.
	Flashing green	Standby - Module not configured. <sup>(1)</sup>
	Green	Operational - Module operating correctly.
	Flashing red	Minor fault - A recoverable fault has been detected. Verify that the configuration is correct and consistent.
	Red	Major fault - An unrecoverable fault has been detected. Recycle power to the module. If this does not clear the fault, replace the module.
WDOG (watchdog)	Off	Normal operation.
	Flashing red	Software fault. Contact Rockwell Automation Technical Support.
BATT (battery)	Off	Normal operation.
	Flashing red	Jumper is missing (or not seated on the two rightmost pins), or the battery is low or dead. <sup>(2)</sup>
NS (network status)	Off	Not powered, no IP address. Verify that power is supplied or assign an IP address.
	Flashing green	No connections. <sup>(1)</sup> Verify that the linking device is connected to the fieldbus network.
	Green	CIP connections.
	Flashing red	Connection timeout. Verify that the linking device is connected to the Ethernet network.
	Flashing red and green	Self test.

## Linking Device Status Indicators

Indicator	Status	Description
MODE	Solid green	Linking device operational.
	Flashing green	Linking device out-of-service. Verify that the Resource Block is set to Target Auto mode.

- (1) If you already set the IP address and the Status and Mode indicators are flashing green, you may have a duplicate IP address with another device on your network.
- (2) If the BATT status indicator remains on after the jumper is replaced, and power has been returned to the linking device, contact Rockwell Automation Technical Support.

## Specifications

### 1757-FFLD2, 1757-FFLD4 - Technical Specifications

Attribute	Value
Physical interfaces	2 or 4 H1 FOUNDATION Fieldbus interfaces 1 10/100 Ethernet interface (HSE, IP)
Number of H1 networks <sup>(1)</sup> per linking device	2 for 1757-FFLD2 linking device, 4 for 1757-FFLD4 linking device
Number of fieldbus devices per H1 network, max	16 (8...10 recommended)
Number of fieldbus devices per linking device, max	64
Power requirements	
Current rating/supply power In rush current	300 mA @ 24V DC ( $\pm 20\%$ ) 1.5 A
Isolation voltage	50V (continuous), Basic Insulation Type, Fieldbus to system backplane and Ethernet network to system backplane  Type tested at 500V AC for 60 s
Panel mounting screw torque (using M4 or #8 screws)	1.1...1.8 N•m (10...16 lb•in)

**1757-FFLD2, 1757-FFLD4 - Technical Specifications**

<b>Attribute</b>	<b>Value</b>
Wiring category <sup>(2)</sup>	2 - on Fieldbus ports 3 - on power ports 2 - on Ethernet ports
Terminal block torque specifications	0.34 N•m (3 lb•in) on power and Fieldbus wire connections
Wire size	
DC power connection	0.2... 1.5 mm <sup>2</sup> (26...16 AWG) solid or stranded copper wire rated at 75 °C (167 °F) or greater 1.2 mm (3/64 in.) insulation max
Fieldbus connections	0.8 mm <sup>2</sup> (18 AWG) solid or stranded shielded twisted pair copper wire rated at 75 °C (167 °F) or greater 1.2 mm (3/64 in.) insulation max
Ethernet connections	RJ45 connector according to IEC 60603-7, 2 or 4 pair Category 5e minimum cable according to TIA 568-B.1 or Category 5 cable according to ISO/IEC 24702
Program retention (unpowered)	21 days
North American temp code	T4
IEC temp code	T4
In-circuit battery life	5000 charge/discharge cycles (about 13 years). Battery is not replaceable
Enclosure type rating	None (open-style)

<sup>(1)</sup> Each network defined as a FOUNDATION Fieldbus 31.25 kbps H1 network.

<sup>(2)</sup> Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**1757-FFLD2, 1757-FFLD4 - Environmental Specifications**

<b>Attribute</b>	<b>Value</b>
Operating temperature IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0...60 °C (32...140 °F)
Nonoperating temperature IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Thermal Shock)	-40...85 °C (-40...185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10...500 Hz
Operating shock IEC 60068-2-27 (Test Ea, Unpackaged Shock)	15 g
Nonoperating shock IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Emissions CISPR 11	Group 1, Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges

**1757-FFLD2, 1757-FFLD4 - Environmental Specifications**

<b>Attribute</b>	<b>Value</b>
Radiated RF immunity IEC 61000-4-3	1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz  10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz  10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz and 1890 MHz
EFT/B immunity IEC 61000-4-4	±2 kV at 5 kHz on power ports  ±2 kV at 5 kHz on shielded Fieldbus ports  ±2 kV at 5 kHz on Ethernet ports
Surge transient immunity IEC 61000-4-5	±2 kV line-earth (CM) on shielded Fieldbus ports  ±2 kV line-earth (CM) on shielded Ethernet ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz on power ports, shielded Fieldbus ports, and Ethernet ports
Magnetic field immunity IEC 61000-4-8	30 A/m long duration at 50 Hz

**1757-FFLD2, 1757-FFLD4 - Certifications<sup>(1)</sup>**

<b>Certification<sup>(2)</sup></b>	<b>Value</b>
c-UL-us	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.

**1757-FFLD2, 1757-FFLD4 - Certifications<sup>(1)</sup>**

<b>Certification <sup>(2)</sup></b>	<b>Value</b>
CE	European Union 2004/108/EC EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul>
C-Tick	Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• AS/NZS CISPR 11; Industrial Emissions</li> </ul>
Ex	European Union 94/9/EC ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements</li> <li>• II 3 G Ex nA nL IIC</li> </ul>
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications
FF	FOUNDATION Fieldbus Test Campaigns H1-CT0060, HTK-000900

<sup>(1)</sup> When product is marked.

<sup>(2)</sup> See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

## Additional Resources

These documents contain additional information concerning related Rockwell Automation products.

Resource	Description
FOUNDATION Fieldbus Wiring and Installation Application Guide publication at <a href="http://www.fieldbus.org">http://www.fieldbus.org</a> . publication <a href="#">AG-140</a>	Provides information on how to wire, power, and configure network components.
FOUNDATION Fieldbus Intrinsic Safe Systems Application Guide at <a href="http://www.fieldbus.org">http://www.fieldbus.org</a> . publication <a href="#">AG-163</a>	Introduces you to the principals of intrinsic safety, and outlines how to apply approved devices in a hazardous area.
FOUNDATION Fieldbus Linking Device User Manual, publication <a href="#">1757-UM010</a>	Provides information needed to use the linking device, including function block and web page details.
Fieldbus Solutions for Rockwell Automation's Integrated Architecture User Manual, publication <a href="#">1757-UM006</a>	Overview of intergrating fieldbus into ProcessLogix, ControlLogix, and PLC-5 controllers.