

## ABB MEASUREMENT & ANALYTICS | INSTRUCTION | INS/FLOW/005-EN REV. A

# **ProcessMaster FEP630, HygienicMaster FEH630** Electromagnetic Flowmeter



EtherNet/IP Rockwell System Integration

Measurement made easy

— ProcessMaster FEP630 HygienicMaster FEH630

## Introduction

ProcessMaster FEP630 and HygienicMaster FEH630 have the EtherNet/IP ProductCode "5002".

- EDS file: FEW530\_FEPFEH630\_01\_01.eds
- Profile 0x43, Generic Device (keyable)

Supported standards and protocols:

- Common Industrial Protocol (CIP<sup>™</sup>) Vol1, Ed 3.25
- EtherNet/IP Adaptation of CIP<sup>™</sup>, Vol2, Ed 1.23

# For more information

Additional documentation on ProcessMaster FEP630, HygienicMaster FEH630 is available for download free of charge at <u>www.abb.com/flow</u>. Alternatively, scan this code:



# 1 EDS file handling

Follow these Instructions to integrate ProcessMaster FEP630 and HygienicMaster FEH630 into the Allen-Bradley<sup>®</sup> Studio 5000<sup>®</sup> System.

# Create a project

- 1 Start Studio 5000 from the Windows<sup>®</sup> Start menu.
- 2 Create a new project, select your controller type and enter the project name.

For more information regarding creating a project, refer to the Studio 5000 documentation.

## Import EDS File with Hardware Installation Tool

The EtherNet/IP device is described by an Electronic Data Sheet (EDS) file. The EDS file for ProcessMaster FEP630 and HygienicMaster FEH630 is available for download from

#### www.abb.com/flow.

To import the EDS file into Studio 5000, do the steps that follow:

- 1 Select Tools > EDS Hardware Installation Tool.
- 2 Click Add.



3 Browse for the EDS file and click Next.

Electronic Data Sheet file(s) will be ad	ded to your system for use in Hockwell Automation applications.	2
<ul> <li>Register a single file</li> </ul>	Download EDS file	
C Register a directory of EDS files	Look in subfolders	
Named: C:\EDS\MAG\FEW530_FEPFEH630_01,	01 eds Browse	
Named: C:\EDS\MAG\FEW530_FEPFEH630_01 	01 eds Browse	

- 4 Click Next.
- 5 Follow the instructions until the import is complete.



# Alternative method: Upload EDS File with RXLinx Classic from the device

1 Navigate to the Ethernet port of the controller that the Flowmeter is connected to.



- 2 Expand the node and navigate to the IP Address of the flowmeter.
- **3** Right-click on the flowmeter and select **Upload EDS file from device**.



- 4 Click Next.
- 5 Follow the instructions until the import is complete.

# 2 Module configuration

Insert the flowmeter in RSLogix as a **module** under the Ethernet connection of the controller.

## Add module

- 1 Filter for Module Type Vendor.
- 2 select ABB.
- 3 Click FEW530/FEP630\_FEH630.

Ente	er Search Text for Module	Type Clear Filte	rs			Hide Filters	
7	Module Type Category	Filters	<u>^</u>	Module Type Ven	dor Filters		-
7	Analog			ABB, Inc.			
1	CIP Motion Converter			Advanced Energy	Industries, Inc.		
V	Communication			Baumer IVO GmbH	H & Co. KG		
V	Communications		E	Dialight			
V	Communications Adapte	н н	- E	Endress+Hauser			
-	Catalog Number	Description		Vendor	Category		
	FCB430/FCH430	CoriolisMaster FCB4/FCH4		ABB, Inc.	Generic Device(keyable)		
	FEW530/FEP630 FEH6	30 EMF FEW5/FEP FEH6		ABB, Inc.	Generic Device(keyable)		

## **Configuring connections**

- 1 Click Create.
- 2 Enter the name and IP address of the device.

General* Conr	ection Module Info	Internet Protocol	Port Configuration	Network	
Type: Vendor:	FEW530/FEP630_I ABB, Inc.	EH630 EMF FEW	5/FEP_FEH6		
Parent:	Local				
Name:	FEx_1		B	hernet Address	
Description:			^ (C	) Private Network: ) IP Address: ) Host Name:	192.168.1. (*) 192 . 168 . 1 . 20
odule Properties:	Local (FEW530/FEP630_F	EH630 1.001) ×	ion Network		
/endor: ABE	l Inc.	in rewarter_reno			
arent: Loci	al				
Vame: FE	1		Ethernet Address		
Description:		*	<ul> <li>Private Network:</li> <li>IP Address:</li> </ul>	192.168.1. 20 🚖	
		-	Host Name:		
Module Definition		÷	⊘ Host Name:		
Module Definition Revision: Electronic Keying:	1.001 Compatible Module	•	Host Name:		·
Module Definition Revision: Electronic Keying: Connections:	1.001 Compatible Module Flow and Output		Host Name:     Module Definition		·
Module Definition Revision: Electronic Keying: Connections:	1.001 Compatible Module Flow and Output Totalizer (Input only) Diag Values (Input only)	,	Host Name: Module Definition Revision:		
Module Definition Revision: Bectronic Keying: Connections:	1.001 Compatible Module Flow and Output Totalizer (input only) Diag Values (input only	-	Host Name: Module Definition Revision: Electronic Keying:	1 • 001 -	
Module Definition Revision: Bectronic Keying: Connections:	1.001 Compatible Module Flow and Output Totalizer (Input only) Diag Values (Input only	Change	Host Name: Host Name: Module Definition Revision: Electronic Keying: Connections:	1 v) 001 <del>a</del>	· · · · · · · · · · · · · · · · · · ·
Module Definition Revision: Bectronic Keying: Connections:	1.001 Compatible Module Flow and Output Totalizer (Input only) Diag Values (Input only	Change	Host Name:     Module Definition     Revision:     Eectronic Keying:     Connections:     Name	1 • 001 ÷	• • Tag Suffix
Module Definition Revision: Bectronic Keying: Connections:	1.001 Compatible Module Flow and Output Totalizer (Input only) Diag Values (Input only	-	Host Name:     Module Definition Revision:     Eectronic Keying:     Connections:     Name     Eow and Output	1 V 001 -	Tag Suffix
Module Definition Revision: Bectronic Keying: Connections: us: Offline	1.001 Compatible Module Flow and Output Totakzer (hput only) Diag Values (hput only	Crange (m)	Host Name:  Module Definition Revision:  Bectronic Keying:  Connections:  Name Flow and Output	Compatible Module	• Tag Suffix T 1 FEx_101
Module Definition Revision: Bectronic Keying: Connections: us: Offline	1.001 Compatible Module Flow and Output Totalizer (input only) Diag Values (input only	- Change (m)	Host Name: Nodule Definition Revision: Connections: Name Flow and Output Select a connection	1 • 001 ⊕ Compatible Module	Tag Suffix
Module Definition Revision: Bectronic Kaying: Connections: us: Offline	1.001 Compatible Module Flow and Output Totalizer (Input only) Dag Values (Input only	Change Int	Hoat Name: Module Definition Revision: Ectonic Keying: Connections: Name Plow and Output Select a connection	1 ● 001 Compatible Module Scce Input: 20 Output: 4 Set	Tag Suffic Tag Suffic Tag Suffic Tag Suffic Tag Suffic
Module Definition Revision: Bectronic Keying; Connections:	1.001 Compatible Module Flow and Output Totalizer (hput only) Dag Values (input only	Change Im	Host Name: Module Definition Revision: Electronic Keying: Name Plow and Output Select a connection	1 → 001 ⊕ Compatible Module Inputtic 20 Output: 4 SNT	• • • • • • • • • • • • • • • • • • •

#### Note:

Connection 1 with Assembly 100 (Flow and Output) is preset. It contains all the default process values of the device.

4 Choose the connection/assembly in the **Name** column, which will define the composition of the process data.

The Tag suffix is the identifier or reference for the related assembly (device data) for RSLogix.

For an overview of assemblies available and details of the connections and data structures, refer to "Interface Description - ProcessMaster FEP630, HygienicMaster FEH630, Modbus Protocol" <u>COM/FEP630/FEH630/MB-EN</u>.

The image below shows all the available connections. The **Tag Suffix** is defined by RS Logix.

Use the Tag **FEx\_1** and the suffix (for example, :**I1**) to identify the related connection throughout RSLogix.

tronic Keying: Comp	atible Mod	dule		•		
nections:						
Name		Size		Tag Su	uffix	
Flow and Output	Input:	20	SINT	1	FEx_1	11
now and Output	Output:	4	SINT	<u>1</u>	FEx_1	01
Totalizer (Input only)	Input:	32	SINT	2	FEx_1	12
rotalizer (input only)	Output:	0	JINT	2	<none< td=""><td>&gt;</td></none<>	>
Diag Values (Input only)	Input:	24	SINT	3	FEx_1	13
Diag Values (input only)	Output:	0	JINT		<none< td=""><td>&gt;</td></none<>	>
All Process Inputs (Input	Input:	76	SINT	4	FEx_1	14
only)	Output:	0	JINT		<none< td=""><td>&gt;</td></none<>	>
Extended Device	Input:	8	CINT	-	FEx_1	15
Status (Input Only)	Output:	0			<none< td=""><td>&gt;</td></none<>	>

To see the cycle-time-configuration as **Requested Packet** Interval (RPI) in milliseconds, navigate to the **Connection** tab.

#### Module Properties: Local (FEW530/FEP630\_FEH630 1.001) ×

General	Connection	Module Info	Internet Protocol	Port Cor	nfigurati	on Network			124	
		Name		Reques	ited Pa	cket Interval (RPI) ms)	Connect over Ether	tion rNet/IP	Input Trig	ger
Flow	and Output			50.0	\$ 50.	0 - 9999.9	Unicast	-	Cyclic	
Totaliz	er (Input only)	)		200.0	\$ 50.	0 - 3200.0	Unicast	-	Cyclic	-
Diag \	/alues (Input o	nly)		200.0	\$ 50.	0 - 3200.0	Unicast	-	Cyclic	
All Pro	ocess Inputs (I	input only)		1000.0	\$ 50.	0 - 3200.0	Unicast	-	Cyclic	-
	1-10-1-0	the dent Oal	(4)	1000.0	- 50	0 - 3200 0	Unicast		Cyclic	_

# 3 AddOn instructions for FEx630

For a more convenient raw data conversion into structured data types, download the **AddOnInstructions** file (AOI file) from <u>www.abb.com/flow</u>. The AOIs that follow are available:

- FEx\_Rung\_For\_Assembly\_All\_Process\_Input\_v0\_2.L5X
- FEx\_Rung\_For\_Assembly\_DiagValues\_v0\_2.L5X
- FEx\_Rung\_For\_Assembly\_Extended\_Device\_Status\_v0\_2. L5X
- FEx\_Rung\_For\_Assembly\_Flow\_v0\_2.L5X
- FEx\_Rung\_For\_Assembly\_Output\_v0\_2.L5X
- FEx\_Rung\_For\_Assembly\_Totalizer\_v0\_2.L5X

If all the connections are configured, you can import an AOI that includes all the individual AOIs:

FEx\_Rung\_For\_ALL\_Assembly\_v0\_2.L5X

For pre-defined routines for all assemblies, download FEx\_Routine\_v0\_2.L5X.

### Import AOI

This example from MainRoutine shows how to import an AOI for the first connection **FEx\_1:**]1.

#### 1 Right-click Import Rungs.



y						-	_
Look in:	AOI_MAG		- G 🤌 🛤	<b>•</b>			
(And	Name		*		Date modified	Туре	Size
and the	📕 OLD				27.11.2020 09:57	File folder	
Recent Places	FEx_Routin	ne_v0_2.L5X			01.12.2020 15:18	Logix Designer X	
	FEx_Rung_	for_ALL_Assembly_v0_2.	L5X		01.12.2020 15:17	Logix Designer X	
	FEx_Rung_	for_Assembly_All_Proces	s_Input_v0_2.L5X		27.11.2020 13:07	Logix Designer X	
Desktop	FEx_Rung_	for_Assembly_DiagValue	s_v0_2.L5X		27.11.2020 13:07	Logix Designer X	
AR40	FEx_Rung_	for_Assembly_Extended_	Device_Status_v0_2.L5X		01.12.2020 15:15	Logix Designer X	
<b>1</b>	FEx_Rung_	for_Assembly_Flow_v0_2	.LSX One		27.11.2020 13:06	Logix Designer X	
Libraries	FEx_Rung_	for_Assembly_Output_v	2.L5X		27.11.2020 13:07	Logix Designer X	
	FEx_Rung_	for_Assembly_Totalizer_v	.0_2.L5X		27.11.2020 13:07	27.11.2020 13:07 Logix Designer X	
	JSR_To_FE	x_from_MainRoutine.L5X			27.11.2020 13:27	Logix Designer X	
Computer							
	•						÷.
Network	File name:	FEx_Rung_for_Assemb	ly_Flow_v0_2.L5X			- Ope	n
NEWYOR	Files of type:	Logix Designer XML File	es (*.L5X)			Canc	xel
						Hel	p

#### 2 Select the AOI.

3 In the imported rung, select the correct tag suffix for the connection for FEx\_Raw\_Input\_Flow.

			FEX_Assembly_Flow FEX_A100 FEX_Raw_Input_Flow FEX_1:11.Data	
	<ul> <li>Show:</li> </ul>	All Tags		•
== Data	Туре			-
SINT	20]			
_0028	E:FEW530FE	P630_FEH630_	E8411017:I:0	-
_0028	E:FEW530FE	P630_FEH630_	986FF8BE:I:0	E
_0028	E:FEW530FE	P630_FEH630_	879F7612:I:0	
_0028	E:FEW530FE	P630_FEH630_	F211ADCF:I:0	-
	<u>=</u> <u></u> Data _002i _002i _002i _002i	Show:     Show:     ShT[20]     Ota Type     ShT[20]     OtaZ FEWS30FE     OtaZ	Show: All Tags      Data Type     SNIT[20]     _002E:FEW530FEP630_FEH630     _002E:FEW530FEP630_FEH630     _002E:FEW530FEP630_FEH630     _002E:FEW530FEP630_FEH630_     _002E:FEW530FEP630_FEH630_FEH630_     _002E:FEW530FEP630_FEH630_FEH630_FEH630_     _002E:FEW530FEP630_FEH63	FEX_131.Data           Show: All Tags           Image: Image

#### Note:

The screenshot shows an example of the Flow connection with the suffix "I1" in "FEx\_1:I1 Data" [DeviceName:Suffix Data].

The Tag page for the controller shows a tag "FEx\_A100\_Flow". The raw data was copied here by the AOI. The process values are present in structured form.

The figure below shows the Connection/Assembly 100 (Flow):

<ul> <li>FEx_A100_Flow</li> </ul>	{}	<b>{}</b>	FEx_Flow
FEx_A100_Flow.Volume_Flow	0.9835609	Float	REAL
FEx_A100_Flow.Mass_Flow	0.9835609	Float	REAL
FEx_A100_Flow.Flow_Velocity	0.03422981	Float	REAL
FEx_A100_Flow.Volume_Flow_Unit	16#1413	Hex	INT
FEx_A100_Flow.Mass_Flow_Unit	16#1445	Hex	INT
FEx_A100_Flow.Flow_Velocity_Unit	16#2600	Hex	INT
FEx_A100_Flow.Device_Status	0	Decimal	SINT
FEx_A100_Flow.Reserved_1	0	Decimal	SINT

## **Device status**

After each connection, a manufacturer-specific device status is available.

▲ FEx_A100_Flow	{}	<b>{}</b>	FEx_Flow
FEx_A100_Flow.Volume_Flow	0.9835609	Float	REAL
FEx_A100_Flow.Mass_Flow	0.9835609	Float	REAL
FEx_A100_Flow.Flow_Velocity	0.03422981	Float	REAL
FEx_A100_Flow.Volume_Flow_Unit	16#1413	Hex	INT
FEx_A100_Flow.Mass_Flow_Unit	16#1445	Hex	INT
FEx_A100_Flow.Flow_Velocity_Unit	16#2b00	Hex	INT
FEx_A100_Flow.Device_Status	0	Decimal	SINT
FEx_A100_Flow.Reserved_1	0	Decimal	SINT

This byte includes the information that follows:

- 0x00: NO Alarm
- 0x01: Check Function Alarm
- 0x02: Off Specification Alarm
- 0x03: Maintenance Alarm
- 0x04: Failure Alarm

## **Extended Device Status (alarms)**

In case of an Alarm (Device\_Status != 0), an extended device status is available in Connection 9 (Assembly 104). These assemblies indicate specific active alarms with a **1**.

✓ FEx_A104_Extended_Device_Status	{}	{}		FEx_Extended_Device_Status
FEx_A104_Extended_Device_Status.Device_Status	16#00		Hex	SINT
FEx_A104_Extended_Device_Status.Mass_flowrate_exceeds_limits_0_0	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Volume_flowrate_exceeds_limits_0_1	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Simulation_is_on_0_2	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Flowrate_to_zero_0_3	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Maintenance_interval_is_reached_0_4	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.All_totalizer_stop_0_5	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Totalizer_reset_0_6	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Display_value_is1600h_at_Qmax_0_7	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Device_not_calibrated_1_0	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Sensor_memory_defective_1_1	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.NV_data_defect_Data_storage_1_2	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.No_Frontend_Board_detected_1_3	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.FEB_communication_error_1_4	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.Incompatible_Frontend_Board_1_5	0		Decimal	BOOL
FEx_A104_Extended_Device_Status.NV_chips_defect_on_Motherboard_1_6	0		Decimal	BOOL
FFv A104 Extended Device Status Pulse output is cutted off 1-7	0		Decimal	BOOL

## Units

All units used in a connection are shown with process data.

FEx_A100_Flow.Volume_Flow_Unit	16#1413	Hex	INT	
FEx_A100_Flow.Mass_Flow_Unit	16#1445	Hex	INT	
FEx_A100_Flow.Flow_Velocity_Unit	16#2b00	Hex	INT	

## Cyclic output data

The data that follows can be written cyclically to the flowmeter:

- DO\_Flow\_To\_Zero
- DO\_System\_Zero\_Adjust
- DO\_Counter\_Reset
- DO\_Counter\_Stop
- DO\_Dual\_Range\_Mass
- DO\_Dual\_Range\_Volume
- DO\_Batch\_Start\_Stop

▲ FEx_A110_Output	{}	{}	FEx_Output	
FEx_A110_Output.DO_Function_Activation	0	Decimal	BOOL	
FEx_A110_Output.Empty1	0	Decimal	BOOL	
FEx_A110_Output.Empty2	0	Decimal	BOOL	
FEx_A110_Output.Empty3	0	Decimal	BOOL	
FEx_A110_Output.Empty4	0	Decimal	BOOL	
FEx_A110_Output.Empty5	0	Decimal	BOOL	
FEx_A110_Output.Empty6	0	Decimal	BOOL	
FEx_A110_Output.Empty7	0	Decimal	BOOL	
FEx_A110_Output.Empty8	0	Decimal	SINT	
FEx_A110_Output.DO_Flow_To_Zero	0	Decimal	BOOL	
FEx_A110_Output.DO_System_Zero_Adjust	0	Decimal	BOOL	
FEx_A110_Output.DO_Counter_Reset	0	Decimal	BOOL	
FEx_A110_Output.DO_Counter_Stop	0	Decimal	BOOL	
FEx_A110_Output.DO_Dual_Range_Mass	0	Decimal	BOOL	
FEx_A110_Output.DO_Dual_Range_Volume	0	Decimal	BOOL	
FEx_A110_Output.DO_Batch_Start_Stop	0	Decimal	BOOL	
FEx_A110_Output.Reserved1	0	Decimal	BOOL	
FEx_A110_Output.Empty9	0	Decimal	SINT	

For the "DO\_\*" data to be processed, the control system must set **DO\_Function\_Activation** to **1**.



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