# Supplementary documentation **Proline Promag 53**

Data transmission via EtherNet/IP



# Connection to an EtherNet/IP network and integration into a control system

#### Using the supplementary documentation

This supplementary document should only be used in conjunction with a Proline Promag 53 EtherNet/IP transmitter.

#### Associated device documentation

This document is an integral part of Operating Instructions BA117D (Proline Promag 53 Modbus RS485). It acts as a supplement to BA117D by providing information on using the transmitter in an EtherNet/IP network.



People for Process Automation

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## System design

Measuring device

The measuring device has a dual Ethernet module to connect it to an EtherNet/IP network and for connecting to a Webserver integrated in the measuring device. It uses the EtherNet/IP communication protocol (Ethernet Industrial Protocol) in accordance with the ODVA specification.

Transmitters with a dual Ethernet module are marked "EtherNet/IP" on the nameplate.

#### **Dual Ethernet module**



#### Structure of the dual Ethernet module

- a Ethernet port 1 for EtherNet/IP network or Webserver
- b Ethernet port 2 for EtherNet/IP network or Webserver
- c Status light emitting diodes (LED)
- d DIP switches for hardware addressing
- e DIP switches to reset software addressing
- f Power supply connection
- g Port for service interface FXA193 (FieldCare)

#### **Connection versions**

There are primarily three ways to connect the measuring device.



Transmitter cable entries

	Connection version 1	Connection version 2	Connection version 3
a	Ethernet via	Ethernet via	Ethernet via
	cable entry/cable gland	fieldbus connector	fieldbus connector
b	Dummy plug	Dummy plug	Ethernet via fieldbus connector
с	Power supply via	Power supply via	Power supply via
	cable entry/cable gland	cable entry/cable gland	cable entry/cable gland

#### **Connection version 1**

If the network cable is routed directly into the measuring device through the cable entry, an RJ45 plug must be connected to the network cable.

#### Note!

An RJ45 plug does **not** form part of the delivery.

#### Caution!

If this connection version is used, attention must be paid to the grounding and shielding of the measuring device  $\rightarrow \mathbb{B} 8$ .

#### Connection version 2 and 3

If the measuring device is connected using one or two fieldbus connectors, the device is supplied with one or two 4-pin M12 ports (in accordance with IEC 61076-2-10). You require M12 connectors to connect the device (e.g. Binder Ethernet Connector, Series 825, Article No: 99-3729-810-04).



#### Note!

M12 connectors do **not** form part of the delivery.

#### Connecting to the EtherNet/IP network and accessing the Webserver

The measuring device has a dual Ethernet module with two Ethernet ports. A connection to the EtherNet/IP network, as well as a connection to the Webserver, can be established through the two Ethernet ports. The ports are assigned using the individual IP address.

The dual Ethernet module has an integrated switch that processes the Ethernet data packets on a "store and forward" basis. It can manage up to 256 MAC addresses in its source address table (SAT).

With regard to connection version 3, you can access the Webserver of the measuring device without having to open the device if a connection to the EtherNet/IP network has already been established.

In the case of connection versions 1 and 2, if a connection to the EtherNet/IP network has already been established you can connect to the Webserver by connecting a PC/laptop directly to the dual Ethernet module. The connection compartment of the measuring device must be opened for this purpose, however.



Warning! Heed the safety instructions in the Operating Instructions when opening the connection compartment!

**Connection label** 

A connection label in the cover of the connection compartment provides information on the default IP addresses and the device-specific MAC addresses. If a new IP address is assigned, this can be documented on the connection label.



Connection label (example)

## **Dual Ethernet module**



#### Disabling hardware addressing and activating software addressing

Switch all the DIP switches for hardware addressing to OFF.

# DIP switches to reset software addressing

The set IP addresses can be reset with the DIP switch to reset software addressing (see configuration of the dual Ethernet module  $\rightarrow \stackrel{\frown}{=} 5$ ). This resets the measuring device to the following default IP addresses: EtherNet/IP Network (192.168.212.212), WebServer (192.168.212.213).

Resetting the IP addresses set via software addressing



## **Connection values**

Dual Ethernet module connection		Dual Ethernet module connect a Ethernet port 1 for EtherNe b Ethernet port 2 for EtherNe c Power supply connection	<b>tion</b> tt/IP network or Webserver tt/IP network or Webserver
	Note! Due to the internal switch, both po topology is used.	orts may only be connected to the s	ame network when a Ring or Line
Power supply	85 to 260 V AC, 20 to 55 V AC, 16	o to 62 V DC	
	<ul> <li>Terminal No. 1: L1 for AC, L+ for</li> <li>Terminal No. 2: N for AC, L- for</li> </ul>	or DC DC	
Ethernet port	The measuring device has a dual H connecting to a Webserver integra protocol (Ethernet Industrial Proto	Ethernet module to connect it to a ited in the measuring device. It use ocol) in accordance with the ODV/	n EtherNet/IP network and for es the EtherNet/IP communication A specification.
	A connection to the EtherNet/IP n through the two Ethernet ports. T	etwork, as well as a connection to the ports are assigned using the in	the Webserver, can be established dividual IP address.
	The measuring device has the foll	owing default addresses when del	livered:
		EtherNet/IP network	Webserver
	IP address	192.168.212.212	192.168.212.213
	Netmask	255.255.255.0	255.255.255.0
	Gateway	192.168.212.212	192.168.212.213



#### Note!

A connection label in the cover of the connection compartment provides information on the default IP addresses and the device-specific MAC addresses. If a new IP address is assigned, this can be documented on the connection label  $\rightarrow \triangleq 4$ .

#### M12 fieldbus connector

4-pole M12 port (in accordance with IEC 61076-2-10)



Assignment:

• Pin No. 1 and 3: signal channel 1

• Pin No. 2 and 4: signal channel 2



Note! You require M12 connectors to connect the device (e.g. Binder Ethernet Connector, Series 825, Article No: 09-3732-700-04). M12 connectors do **not** form part of the delivery.

#### Technical data for M12 fieldbus connector

General characteristic values	General characteristic values				
Number of contacts	4				
Locking system	Screws M12 x 1				
Wire gage in mm <sup>2</sup>	Max. 0.75 (screw); max. 0.25 (solder)				
Wire gage in AWG	Max. 20 (screw); max. 24 (solder)				
Shell protection	IP 67				
Upper temperature	+85 °C (+185 °F)				
Lower temperature	-40 °C (-40 °F)				
Mechanical operation	> 50 mating cycles				
Electrical characteristics					
Rated voltage	250 V				
Rated impulse voltage	2500 V				
Pollution degree	3 (flange plug-in connections in connection area 2)				
Overvoltage category	П				
Material group	Ш				
Test voltage	2950 V				
Rated current (40 °C)	4 A				
Contact resistance	$\leq$ 3 m $\Omega$ (gold)				
Insulation resistance	$\geq 10^{10}  \Omega$				
Material					
Pin contact	CuZn (brass)				
Socket contact	CuZn (brass)				
Cable contact plating	Au (shielded)				
Flange contact plating	Au (gold)				
Male insert	PA 66 (UL 94 HB)				
Female insert	PA 66 (UL 94 HB)				
Metal housing cable connector	CuZn nickel-plated, zinc die-casting, nickel-plated				
Socket	Zinc die-casting, nickel-plated				
Thread ring	Zinc die-casting, nickel-plated				

#### **RJ45** connector

If the network cable is routed directly into the measuring device through the cable entry, an RJ45 plug must be connected to the network cable.



Note!

An RJ45 plug does **not** form part of the delivery.

**Cable entries** 

- Cable entry M20 × 1.5 (8 to 12 mm)
- Threads for cable entries, <sup>1</sup>/<sub>2</sub>" NPT, G <sup>1</sup>/<sub>2</sub>"

## Grounding and shielding

If the EtherNet/IP cable is routed directly into the measuring device through the cable entry (a fieldbus connector is not used), correct grounding and shielding must be ensured. This is required to guarantee electromagnetic compatibility (EMC). The following grounding and shielding options are available:

EMC PG cable gland Users can ensure correct grounding of the shield at the cable entry by using a standard armored thread (PG) cable gland that meets EMC requirements.

> If conduit cabling is used, both the conduit and the Ethernet cable (large area shield contact) have to be grounded at both ends.

- The shield of the Ethernet cable must be grounded at the entrance to the cabinet.
- The conduit must be electrically connected to the transmitter housing and the cabinet.



Ground connections necessary if using a conduit

- Ground connections on the conduit a
- Ground connection at the entrance to the cabinet b С
- Ground connection at the measuring device

### **PC/laptop settings**

Conduit cabling

## Webserver

The IP address of the Webserver (default IP address: 192.168.212.213) must be configured on the PC/ laptop to establish a connection to the Webserver of the measuring device.

The Webserver can be launched using any standard Web browser.



#### Note!

To establish a connection, the option for using the proxy server for LAN must be disabled in the settings for the Web browser.

## Configuring the IP address

	5 5					
Hardware addressing	The IP address of the measuring device c switches for hardware addressing (see co the range from 0 to 254 are permitted (t	an be configured f onfiguration of du he address 255 is	for the H al Ether reserve	EtherNe met mo ed for th	et/IP network via the DIP odule $\rightarrow \stackrel{\frown}{=} 5$ ). Addresses in he broadcast address).	
	The IP address for software addressing is 192.168.212.212), i.e. all the DIP switch	active when the d les for hardware a	evice lea ddressii	aves th ng are :	e factory (default IP address: set to OFF.	
	Addressing and enabling hardware add	dressing				
	<ol> <li>Set the desired IP address using the corresponding DIP switches. This configures the last three digits (last octet) of the IP address = 192.168.212.XXX (see example).</li> </ol>					
	Solution Note! The first nine decimal digits (first three octets) can only be configured via software addressing $\rightarrow \stackrel{\circ}{=} 10.$					
	2. After 10 seconds the hardware add	ressing with the d	efined I	P addr	ess is activated.	
		Hardware add	ressing (	(exampl	e for address 97)	
	8 7 7 9	DIP switch	Statu	s = Val	ue configured (IP address):	
	-66666664666	8 = 128	OFF	0	<u> </u>	
		7 = 64	ON	64		
		6 = 32	ON	32		
	OFF 8 7 6 5 4 3 2 1	5 = 16	OFF	0		
		4 = 8	OFF	0		
		3 = 4	OFF	0		
		2 = 2	OFF	0		
		1 = 1	ON	1		
				97	= 192.168.212. <b>97</b>	
	Note! The IP address set via the hardware addr A warning appears in the "Network Confi	essing function ca guration" menu in	n be vis dicating	sualized I that h	d using the Webserver. ardware addressing is active	
	and which IP address has been set. Exam	ple of hardware a	ddressii	ng with	n IP address 5:	
	IP Settings EtherNet/IP	_				
	DHCP					
	IP-Address 192.168.212.5					
	Netmask 255.255.255.0	]				
	Gateway 192.168.212.212	1				
	Submit	-				
	Warning: DIP SW1 active, last byte of the EtherNet/IP A	ddress ist fixed to 5!				

#### Disabling hardware addressing and activating software addressing

Switch all the DIP switches for hardware addressing to OFF.

#### Software addressing

Software addressing is performed in the "Network Configuration" menu of the Webserver. Both the IP address for the Webserver and the IP address for the EtherNet/IP network can be configured.

The measuring device has the following default addresses when delivered:

	EtherNet/IP network	Webserver
IP address	192.168.212.212	192.168.212.213
Netmask	255.255.255.0	255.255.255.0
Gateway	192.168.212.212	192.168.212.213

Addresses in the range from 0 to 254 are permitted (the address 255 is reserved for the broadcast address).

DHCP:	
IP Address:	192.168.212.213
Netmask:	255.255.255.0
Gateway:	0.0.0.0
ettings EtherNet/IP	
ettings EtherNet/IP	
ettings EtherNet/IP DHCP: IP Address:	□ [] [] [] [] [] [] [] [] [] []
ettings EtherNet/IP DHCP: IP Address: Netmask:	□ 192.168.212.212 255.255.255.0

Software addressing via the "Network Configuration" menu



#### Note!

Note!

- Software addressing is disabled if hardware addressing is activated  $\rightarrow \textcircled{1}9$ .
- When changing from software addressing to hardware addressing, the first nine digits (first three octets) that were configured using software addressing, remain unchanged.
- A reset of the software addressing to the default setting is possible  $\rightarrow \triangleq 6$ .

#### DHCP client

If a DHCP server is used within the EtherNet/IP network, the IP address, gateway and subnet mask are set automatically when the DHCP client function is enabled. The MAC address of the measuring device is used for identification purposes (see also the connection label on  $\rightarrow \triangleq 4$ ).

The DHCP client function is enabled in the "Network Configuration" menu.

The measuring device has the following DHCP default settings when delivered:

	EtherNet/IP network	Webserver
DHCP	Yes (enabled)	No (disabled)



The DHCP client function is disabled if hardware addressing is enabled  $\rightarrow \mathbb{P}$  9.

#### Local operation

The address configuration for the measuring device is displayed via the local display.



Displaying the address configuration via the local display

The individual addressing parameters are assigned as follows:

Parameter	Assignment
IP ADDRESS 1	EtherNet/IP network
SUBNETMASK 1	
GATEWAY 1	
MAC ADD. 1	
IP ADDRESS 2	Webserver
SUBNETMASK 2	
GATEWAY 2	
MAC ADD. 2	

## Webserver menus

# Overview of the Webserver menus

Promag 53 - Ethernet - Info

Info	User Management		Parameter Up-/Download	Ethernet Diagnostic	Endress+Hau- ser
Overview	Network Configuration	Data Map	Device Config	Firmware Update	Login

The Webserver has the following menus:

Info	Displaying the serial number of the device, EtherNet HW and communication status	→ 🖹 13
User Management	For assigning access authorization to the Webserver	→ 🖹 12
Parameter Up-/Download	Loading resp. saving of the device parameter	→ 🖹 17
Ethernet Diagnostics	Displaying the Ethernet Diagnostics values	→ 🖹 16
Endress+Hauser	Link to the Endress+Hauser homepage	
Overview	Information on the measuring device, the status and displaying measured values	→ 🖹 13
Network Configuration	Configuration of the network	→ 🖹 14
Data Map	Displaying the input and output values for EtherNet/IP data transmission	→ 🖹 15
Device Config	Configuration of the parameters of the measuring device	→ 🖹 17
Firmware Update	Update to the firmware of the dual Ethernet module	→ 🖹 17
Login	For enabling access to the Webserver	→ 🖹 12

Login

Enabling access to the Webserver.

User:	admin
Password:	••••
<u></u>	

Webserver login

Configuration when delivered:

- User: admin
- Password: admin

## Note!

We recommend that you change the password for the administrator after configuring the user rights (see "User Management" Webserver menu  $\rightarrow \square$  12).

User Management

Configuration of the access authorization for individual users or user groups (user name) and the related password. Select the individual categories (Firmware Update, Network Config etc.) to enable these menus for the users or user groups.

Info

Displays the serial number of the measuring device, information on the Ethernet hardware and of the current communication status:

38098491000
V1.00.00
71098081
V1.01.00
71117459
0000500350
00:07:05:10:03:33
00:07:05:10:03:32
connected

Overview

Displays information on the measuring device, the measured values and the current system condition of the measuring device:

Device Information	
Tag:	
IP Address Webserver.	192 168 1 243
IP Address EtherNet/IP:	192.168.1.40
Measured Values	
Mass Flow:	0.0000 kg/h
Volume Flow:	0.0021 m³/h
Totalizer Sum 1:	2951.4517 dm³
Totalizer Sum 2:	2.1441 m <sup>3</sup>
Totalizer Sum 3:	0.0000 m³
Status	
Actual System Condition	SYSTEM OK
Previous System Condition:	UP-/DOWNL.ACT
Stop Refresh	

Overview menu

#### **Network Configuration**

- Assigning a tag name to the measuring device.
- Activating the DHCP client function for the EtherNet/IP network and the Webserver
- Address configuration: IP settings for the EtherNet/IP network and the Webserver
- Uploading the device-specific EDS (Electronic Data Sheet) file for integrating the measuring device into a network

ttings Webserver		
DHCP:		
IP Address:	192.168.212.213	
Netmask:	255.255.255.0	
Gateway:	0.0.00	
DUCP		
Drici.		
IP Address:	192.168.212.212	
IP Address: Netmask:	192.168.212.212           255.255.255.0	

Network Configuration menu

#### Tag

A tag name can be entered for the measuring device or the measuring point. The tag also appears in the "Overview" menu. Possible entries: max. 32-digit text (A-Z, 0-9, +,-, punctuation marks).

#### **DHCP** client

The IP address, gateway and netmask are set automatically if the DHCP client function is enabled for the Web server or the EtherNet/IP network. The MAC address of the measuring device is used for identification purposes (see also the connection label on  $\rightarrow \stackrel{\text{le}}{=} 4$ ). When the device leaves the factory, the DHCP client function is enabled for the EtherNet/IP network and disabled for the Webserver.

#### IP settings

The IP address, the netmask and the gateway can be entered for the Webserver and the EtherNet/IP network via the IP settings. The measuring device has the following default addresses when delivered:

	EtherNet/IP network	Webserver
IP address	192.168.212.212	192.168.212.213
Netmask	255.255.255.0	255.255.255.0
Gateway	192.168.212.212	192.168.212.213

#### Submit

Clicking the "Submit" button sends all the settings and entries of the "Network Configuration" menu to the measuring device.

#### Load EDS File

The EDS file that is needed to integrate the measuring device into an EtherNet/IP network can be downloaded from the measuring device to the PC/laptop using the "Load EDS File" button.

#### Data Map

Displays the input and output values for EtherNet/IP data transmission and related information:

- Position number
- Description (1)
- Register number
- Current input and output values
- Description (2)
- Data type
- Description (3)

Subdivision of the Data Map:

- Pos. 1 to 10 = input values (sent by the measuring device to the controller)
- Pos. 11 to 16 = output values (sent by the controller to the measuring device)

Pos.	Description	Register	Value	Description	Data Type	Description	
1		2007	-0.0007		Input Float		Edit
2		2009	0.0000		Input Float		Edit
3		0	-nan		Input Float		Edit
4		0	-nan		Input Float		Edit
5		0	-nan		Input Float		Edit
6	101223	0	-nan		Input Float		Edit
7		2610	267.9037		Input Float		Edit
8		2810	739.5825		Input Float		Edit
9		3010	-471.6787		Input Float		Edit
10		6859	1.55		Input Integer		Edit
11		2608	0.0000		Output Float		Edit
12		2808	0.0000		Output Float		Edit
13		3008	0.0000		Output Float		Edit
14		0	0.0000		Output Float		Edit
15		0	0.0000		Output Float		Edit
16	Sec.22	0	0.0000		Output Float		Edit

Data Map menu

#### Input and output values

The sequence and number of input and output values for EtherNet/IP data transmission are displayed via the Data Map (configuration of the Data Map via Webserver  $\rightarrow 18$ ). The Data Map is configured as follows when the measuring device leaves the factory:

Pos.	Parameter	Register	Input/output values
1	Mass flow	2007	Input values
2	Volume flow	2009	The imput values are continue to
3	-	0	measuring device to the controller.
4	-	0	
5	-	0	
6	-	0	
7	Totalizer 1	2610	
8	Totalizer 2	2810	
9	Totalizer 3	3010	
10	Actual system condition	6859	
11	Reset totalizer 1	2608	Output values
12	Reset totalizer 2	2808	The cutruit velues are cent by the
13	Reset totalizer 3	3008	controller to the measuring device.
14	-	0	
15	-	0	
16	-	0	

#### **Ethernet Diagnostics**

Displaying the Ethernet Diagnostics values.

Ethernet Port 1			
Link Status:	Inactive		
Media Speed:	Unknown		
Duplex:	Unknown		
Autonegotiate S	tatus: Autonegotiation	in progress	
Ethernet Port 2			
Link Status:	Active		
Media Speed:	100 Mbps		
Duplex:	Full Duplex		
Autonegotiate S	tatus: Successfully ne	gotiated speed and duplex	
CIP Connection Stati	stics		
Active Explicit M	an Connections:	0	
Explicit Msg Cor	nections Supported:	20	
Total Explicit Ms	g Connections Observed:	0	
Active I/O Conne	ections:	1	
I/O Connections	Supported:	10	
Total I/O Conner	ctions Observed:	1	
Conn Open Rec	juests:	1	
Open Request B	Errors:	0	
Conn Close Re	quests:	0	
Close Request	Errors:	0	
Conn Timeouts:		0	
TCP Connection Stat	listics		
Active TCP Conr	nections:		
TCP Connection	ns Supported:	10	
Total TCP Conn	ections Observed:	1	
CIP Explicit Messagi	ng Statistics		
Connected Mes	sages Sent:	0	
Connected Mes	sages Received:	0	
Unconnected M	essages Sent:	1	
Unconnected M	essages Received:		
CIP I/O Messaging St	tatistics		
		Packets/Second	Total
Messages Sent		50	3159426
Messages Rece	eived:	50	3153091
Messages Inhib	ited:	0	0
Messages Reje	cted:	0	0
Messages Miss	ed:	0	0
Sum (Sent + Re	cv + Innib + Rejc):	100	6312517
I/O Packet Capa	city:	500	
Theoretical rese	rve I/O Capacity:	400	
Actual reserve I/	O Capacity:	400	

EtherNet Diagnostics menu

Device Configuration	<ul> <li>Configuration of the parameters of the measuring device</li> <li>Show any system or process errors on the display</li> <li>Direct access to individual parameters of the measuring device</li> </ul>					
	Device Configuration Measured Variables Measuring Values Main Variables System Units User Interfaces Configuration Supervision Configuration Service	MASS FLOW 0 VOLUME FLOW 0.00208963 DENSITY 0	Help kg/h 1 m³/h g/cm³			
	"Device Configuration" menu					
Firmware Update	The Ethernet module's firmware can be from www.endress.com. Note! The device software (amplifier, I/O mod Device FXA193/291 DTM and the Field	updated via this menu. The latest firmware ule) is updated via the FXA193 service inter ICare plant asset management tool.	file can be obtained face using the Flow			
Parameter Up-/Download	Use this function to save the configurat parameter to the device.	ion parameter from the device or upload th	ne configuration			
	Upload Configuration Parameters from Device					
	Upload					
	Download Configuration Parameters to Device					
	Download File:		Browse			
	Download					
	"Up-/Download" menu					

# Technical data

The device supported the full duplex mode. Cyclic time: 3 ms (RPI Range)

## Configuring the Data Map via the Webserver

The input and output values for EtherNet/IP data transmission and related information are displayed in the Data Map (Data Map  $\rightarrow \triangleq 15$ ). The order and number of the input and output values can be adapted for EtherNet/IP data transmission. Write access to the related parameters has to be enabled to configure the Data Map (Login  $\rightarrow \triangleq 12$ ).

1. Open the **"Device Config"** menu in the Webserver.

Promag 53 - Ethernet - Info						
Info	User Management		Parameter Up-/Download	Ethernet Diagnostic	Endress+Hau- ser	
Overview	Network Configuration	Data Map	Device Config	Firmware Update	Login	

 Open "Basic functions" → "Additional Config." → "Configuration" in the "Device Config" menu.



3. Scroll down until you come to the **SCAN LIST REG. 1** parameter.

SCAN LIST REG. 1	2007	
SCAN LIST REG. 2	2009	Contraction of the second
SCAN LIST REG. 3	0	
SCAN LIST REG. 4	0	
SCAN LIST REG. 5	0	
SCAN LIST REG. 6	0	
SCAN LIST REG. 7	2610	
SCAN LIST REG. 8	2810	
SCAN LIST REG. 9	3010	
SCAN LIST REG. 10	6859	
SCAN LIST REG. 11	2608	
SCAN LIST REG. 12	2808	16.5
SCAN LIST REG. 13	3008	
SCAN LIST REG. 14	0	1
SCAN LIST REG. 15	0	
SCAN LIST REG. 16	0	

Parameter in Additional Settings, related register = position (row) in the Data Map		Value configuration when delivered (an input or output value is assigned to the position in question)				
Parameter	Register	Pos. in Data Map	Value	=	Register for	Input/output value
SCAN LIST REG. 1	5001	Row 1	2007	=	Mass flow	Input values*
SCAN LIST REG. 2	5002	Row 2	2009	=	Volume flow	
SCAN LIST REG. 3	5003	Row 3	-			
SCAN LIST REG. 4	5004	Row 4	-			
SCAN LIST REG. 5	5005	Row 5	-			
SCAN LIST REG. 6	5006	Row 6	-			
SCAN LIST REG. 7	5007	Row 7	2610	=	Totalizer 1	
SCAN LIST REG. 8	5008	Row 8	2810	=	Totalizer 2	
SCAN LIST REG. 9	5009	Row 9	3010	=	Totalizer 3	
SCAN LIST REG. 10	5010	Row 10	6859	=	Actual system condition	
SCAN LIST REG. 11	5011	Row 11	2608	=	Reset totalizer 1	Output values*
SCAN LIST REG. 12	5012	Row 12	2808	=	Reset totalizer 2	
SCAN LIST REG. 13	5013	Row 13	3008	=	Reset totalizer 3	
SCAN LIST REG. 14	5015	Row 14	0	=	-	
SCAN LIST REG. 15	5016	Row 15	0	=	-	]
SCAN LIST REG. 16	5017	Row 16	0	=	-	]

The parameters SCAN LIST REG. 1 to 16 stand for the particular row (position) 1-16 in the Data Map. The Data Map is configured as follows when the measuring device leaves the factory:

\* Input and output value from the point of view of the higher-order controller

4. The mass flow appears in the first row (Pos. 1) in the Data Map, i.e. this input value is the first value to be sent to the higher-order controller via EtherNet/IP data transmission. The system can continue to describe the individual input or output value in the Data Map  $\rightarrow 15$ 

Pos.	Description	Register	Value	Description	Data Type	Description	
1	Massflow	2007	3547.8340		Input Float	Massflow	Edit



#### Note!

The Data Map can be configured via the "Device Config" menu (by entering the Register and Value  $\rightarrow \ge 17$ ).



## Integrating into a control system

2. Choose the desired device. The window "New Module" will open automatically.

Description	Vendor
RFID Interface Module	Allen-Bradley
MultiSight Vision Sensor, 6mm lens	Allen-Bradley
MultiSight Vision Sensor, 12mm lens	Allen-Bradley
EtherNet/IP Electromagnetic Flow Meter	Endress+Hau.
EtherNet/IP Mass Flow Meter	Endress+Hau.
Fin	d Add Favorite
Vendor Favorites	
	Description  RFID Interface Module  MultiSight Vision Sensor, form lens MultiSight Vision Sensor, 12mm lens EtherNet/IP Electromagnetic Flow Meter EtherNet/IP Mass Flow Meter  Fin /endor Favorites

3. Adapt the details for "Name" and "Ethernet Address" in register "General" in the "New Module" window.

ype: endor:	Endress+H	3 EtherNet/IP Electromagnetic Flow Me auser	- Ethernet Address
arent: ame:	p53		Private Network: 192.168.1. 50
escription:			C IP Address:
Module Defi	inition		
Series:		A Change	
Revision:		1.1	
Electronic K	.eying:	Compatible Module	
Connection:		I/O Data (no device config)	
Scan Regist	ter Format:	Factory Default Set	
Default Con	fig Units:	None	

- 4. Open the "Module Definition" window by using the button "Change":
  - under "Connection" choose the specification "I/O Data (with config)". With this selection the inputs, outputs and also the device configuration will be used.
  - under "Scan register format" choose the specification "Factory Default Set". With this selection the settings as supplied to customer will be used. Alternative the specification "Customer User Set" can be selected, to allow customer specific settings of the measuring value transmissions (Communication  $\rightarrow \exists 23, Pt. 9$ ).
  - under "Default Config Units" choose the desired format for the units.

Туре:	Prom	Module Definition	<u>×</u>	
/endor: Parent: Name:	Endre Ether p53	Series: Revision: Electronic Keying:	A T	.168.1. 50 -
- Module Defi Series: Revision: Electronic K	nition-	Connection: Scan Register Format: Default Config Units:	VO Data (no device config) UO Data (no device config) Input Only (no device config) VO Data (with config) Input Only (with config)	
Connection: Scan Regist Default Con	er Form fig Units	ОК	Cancel Help	

5. Switch to register "Connection" and activate the "Major Fault On If Connection Fails While in Run Mode".

New Mo	odule										1
ieneral*	Conne	ction*	todule Info	* User Interf	ace*   Syste	em Units*	System Pa	arameters*	Communicatio	on*   Totalize	•
Reques	ted Pack	ket Interva	al (RPI):	20.0	ms (10.0 -	1000.0)					
🗌 Inhit	bit Modul	le									
🔽 Majo	or Fault C	)n Control	ler If Conn	ection Fails W	hile in Run M	1ode					
🔽 Use	Unicast	Connectio	on over Et	herNet/IP							
- Modul	le Fault -										

6. Switch to register "User Interface". Examine the settings and change them if necessary.

eneral* Connection*	Module Info*	User Interface*	System Units*	System Parameters*	Communication*	Totalize 4
Configuration			-			
Main Line Assign	Volume Flo	W				
Add. Line Assign	Totalizer 1		•			
Info Line Assign:	Operation/	Sys. Condition	•			

7. Switch to register "System Units". Examine the settings and change them if necessary.

Nass Flow: Volume Flow:	lb/m US Mgal/d	×	Density Density: Density Value:	g/cc	1.0000	
Other Length:	Inch	<u> </u>	Temperature:	F (Fahr	enheit) 💌	

Configuration				inication"   Totalize_
Installed Direction	Normal (Forward)	Alarm Delay:	0.0	s
Pos. Zero Ret.:	Off			
System Damping:	9.0			

8. Switch to register "System Parameters". Examine the settings and change them if necessary.

9. Switch to register "Communication". Examine the settings and change them if necessary.

🗞 Note!

The register "Communication" is only available, if the specification "Customer User Set" is selected in the "Module Definition" under "Scan register format"  $\rightarrow \square 21$ , Pt. 4. If the specification "Factory Default Set" is selected, the register "Communication" isn't displayed. However, the settings are readable via WebSever.

nput Data (Device to PLC)		Output Data (PLC to Device)	
SCAN LIST REGISTER 1	2007	SCAN LIST REGISTER 11	2608
SCAN LIST REGISTER 2	2009	SCAN LIST REGISTER 12	2808
SCAN LIST REGISTER 3	0	SCAN LIST REGISTER 13	3008
SCAN LIST REGISTER 4	0	SCAN LIST REGISTER 14	0
SCAN LIST REGISTER 5	0	SCAN LIST REGISTER 15	0
SCAN LIST REGISTER 6	0	SCAN LIST REGISTER 16	0
SCAN LIST REGISTER 7	2610		
SCAN LIST REGISTER 8	2810		
SCAN LIST REGISTER 9	3010		
SCAN LIST REGISTER 10	6859		
SCAN LIST REGISTER 9	3010 6859		

10. Switch to register "Totalizer (1...3)". Examine the settings and change them if necessary. Use the button 1, 2 or 3 to select the specific totalizer.

l otalizer b	Assian:	Volume Flow	-		
	Unit Volume:	h3	-		
	Unit Mass:	в	-		
	Mode:	Balance	•		
				-	

11. Switch to register "Processparameter". Examine the settings and change them if necessary.

ew Module			11000	
er Interface*   System Units*   System Parar	meters* Communication	*   Totalizer (13)*	Process Paramete	#s* Vendor <u></u> ◀
mpty Pipe Detection	- Lo	w Flow Cut Off	′olume Flow 💌	
Response Time: 1.0	0 s	Press. Shock Su	op.:	s
Threshold: 0.0	0 %	Off Value:	50.0	. %
		Un Value:	0.00000	
			7.85	

12. Additional information about the device will be displayed in the register "Vendor".



13. At that time, information about the device won't be displayed in register "Module Info". This display occurs not until the download of the settings is executed in online mode.

eneral* Connection* Module Info* User Inter	ace*   System Units*   System Parameters*   Communication*   Totalize •
Identification Vendor: Product Type: Product Code: Beviaion	Status Major Fault: Minor Fault: Internal State:
Serial Number: Product Name:	Configured: Owned: Module Identity:
	Refresh Reset Module

#### Download the settings

1. Download the settings with the command "Download" under the "Communications" menu.



2. Choose the device in the "Controller Organizer" window. Now the information about the device will be shown in the register "Module Info".

ieneral Connection	Module Info User Interface	System Units S	ystem Parameters	Communication	Totalizer (1:
Identification		Status			
Vendor:	Endress+Hauser	Major Fault:	None		
Product Type:	Generic Device	Minor Fault:	None		
Product Code:	Promag_53	Internal State:	Self-test		
Revision:	1.1				
Serial Number:	00000000	Configured:	No		
Product Name:	Promag 53	Owned:	No		
		Module Identity	r. Match		
		Refresh	Reset Mo	odule +	

Displaying the measured, input and output values in online mode Open the "Controller Tags" window with the command "Monitor Tags" under the "Logic" menu.

🕌 RSLogix 5000 - AOP11	17 [1756-L63 18.11]*	
File Edit View Search	Logic Communications Tools	Window Help
à 🖻 🖬 🚳 🕺	Open	vicet:1 🔽 🚜 🍇 📴 🗹 🖭 🔍 Q
	Monitor Tags	Pathy AR CTUID 1/102 100 1 10/Packelana/0X
	Edit Tags	
Pos Pus 🔲	Produced Tags	
	Map PLC/SLC Messages	Favorites & Add-On & Safety & Alarms & Bit & Timer/Counter & Input/Output & Comp
No Forces	Verify •	
No Edits 🔒	<u>T</u> CIII 7	
Redundancy 500	I/O Eorcing 🔹 🕨	
Controller Organizer	SFC Forcing	×
MainTask	Online Edits	P
🖓 📗 🦳 🔚 Unershadule	od Deageame / Dhacae	

Search for you device in the "Controller Tags" window. Under the name extension:

- "Device name: **C**" the configuration parameters are displayed
- "Device name: O" the output values are displayed
- "Device name: I" the intput values are displayed

The "Controller Tags" window with setting "Factory Default Set" in the "Module Definition"  $\rightarrow$  🖹 21

Name IB 🛆	Value 🗲	Force Mask 🗧 🗧	Style
∃ Generic:I	{}	{}	
±-Generic:0	{}	{}	
±-p53:C	{}	{}	
	{}	{}	
-p53:I.Mass_Flow	6.543194		Float
-p53:I.Volume_Flow	1.12748670e-003		Float
p53:I.Scan_List_Reg_3	-1.#QNAN		Float
-p53:I.Scan_List_Reg_4	-1.#QNAN		Float
-p53:I.Scan_List_Reg_5	-1.#QNAN		Float
-p53:I.Scan_List_Reg_6	-1.#QNAN		Float
-p53:1.Totalizer1	4.7709436		Float
-p53:1.Totalizer2	4.7706313		Float
-p53:1.Totalizer3	2.08969970e-004		Float
⊕-p53:I.Actual_System_Condition	1		Decim
∃-p53:0	{}	{}	-
⊞-p53:0.Reset_Totalizer1	0		Decim
⊕ p53:0.Reset_Totalizer2	0		Decim
⊞-p53:0.Reset_Totalizer3	0		Decim

The "Controller Tags" window with setting "Customer User Set" in the "Module Definition"  $\rightarrow$   $\supseteq$  21

ope: DAUP117 Show: All	Y. Enter Name Filter				-	
Name	-== A	Value	ं	Force Mask 🔷 🍨	Style	1
±-Generic:0		{.	}	{}		
<b>.</b> −p53:C		{.	}	{}		1
⊡-p53:I		{.	}	{}		
-p53:I.Scan_List_Reg_1		6.6528	8606		Float	
		1.14416680e-003			Float	Ľ
p53:I.Scan_List_Reg_3		-1.#0	QNAN		Float	L
-p53:I.Scan_List_Reg_4		-1.#0	QNAN		Float	L
-p53:I.Scan_List_Reg_5		-1.#0	QNAN		Float	L
-p53:1.Scan_List_Reg_6		-1.#0	QNAN		Float	L
-p53:1.Scan_List_Reg_7		4.6654	4353		Float	L
-p53:I.Scan_List_Reg_8		4.6652	2293		Float	L
		2.08969970e-	-004		Float	L
⊞-p53:I.Scan_List_Reg_10			1		Decim	L
⊡-p53:0		{.	}	{}		
🗄-p53:0.Scan_List_Reg_11			0		Decim	
p53:0.Scan_List_Reg_12			0		Decim	
⊕p53:0.Scan_List_Reg_13			0		Decim	
⊞-p53:0.Scan_List_Reg_14			0		Decim	
⊕-p53:0.Scan_List_Reg_15			0		Decim	
+-p53:0.Scan List Reg 16			0		Decim	

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