Micro Motion[™] 5700 Transmitters

PROFINET Siemens PLC Integration Guide





Safety messages

Safety messages are provided throughout this manual to protect personnel and equipment. Read each safety message carefully before proceeding to the next step.

Safety and approval information

This Micro Motion product complies with all applicable European directives when properly installed in accordance with the instructions in this manual. Refer to the EU declaration of conformity for directives that apply to this product. The following are available: the EU Declaration of Conformity, with all applicable European directives, and the complete ATEX installation drawings and instructions. In addition, the IECEx installation instructions for installations outside of the European Union and the CSA installation instructions for installations in North America are available at Emerson.com or through your local Micro Motion support center.

Information affixed to equipment that complies with the Pressure Equipment Directive, can be found at Emerson.com. For hazardous installations in Europe, refer to standard EN 60079-14 if national standards do not apply.

Other information

Troubleshooting information can be found in the Configuration Manual. Product data sheets and manuals are available from the Micro Motion web site at Emerson.com.

Return policy

Follow Micro Motion procedures when returning equipment. These procedures ensure legal compliance with government transportation agencies and help provide a safe working environment for Micro Motion employees. Micro Motion will not accept your returned equipment if you fail to follow Micro Motion procedures.

Return procedures and forms are available on our web support site at Emerson.com, or by calling the Micro Motion Customer Service department.

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1 Before you begin

1.1 About this document

This document provides information about how to integrate a Model 5700 Ethernet transmitter communicating with a Siemens Simatic S7-400 PLC using a Simatic Manager project.

Important

This manual assumes that:

- The transmitter has been installed correctly and completely according to the instructions in the transmitter installation manual.
- Users understand basic transmitter and sensor installation, configuration, and maintenance concepts and procedures.

1.2 Related documentation

You can find all product documentation via the product documentation DVD shipped with the product or at Emerson.com.

• Hazardous area installation — see the approval documentation shipped with the transmitter, or download the appropriate documentation

2 5700 transmitters in Ethernet networks

- Make sure that each cable is no longer than 328 ft (100 m).
- Connect the 5700 Ethernet transmitter to the host system via a LAN (Local Area Network) and not a WAN (Wide Area Network).
- Follow all network security best practices.

2.1 Star topology

5700 Ethernet transmitters can be installed in a star network.

Figure 2-1: 5700 star network



- A. Programmable Logic Controller (PLC)
- B. 5700 with Ethernet output
- C. External Ethernet switch

2.2 Ring topology

5700 Ethernet transmitters can be installed in a ring network.

Figure 2-2: 5700 ring network



- A. Programmable Logic Controller (PLC)
- B. 5700 with Ethernet output

2.3 Daisy-chain topology

5700 Ethernet transmitters can be installed in a daisy-chain network.

Figure 2-3: 5700 daisy-chain network



- A. Programmable Logic Controller (PLC)
- B. 5700 with Ethernet output

3 Establish cyclic data

3.1 Install the GSDXML file

Procedure

1. Download the GSDXML file using one of the following methods:

Option	Description
Use a USB memory drive	a. Insert a USB memory drive into the 5700 Ethernet service port. The service port connection is located under the transmitter cap.
	b. From the transmitter display, choose Menu \rightarrow USB Options \rightarrow Transmitter \rightarrow USB Drive \rightarrow Download Support Files \rightarrow GSD file.
	c. Follow the menu to copy the GSDXML file to the USB memory drive.
	d. Copy the zip file from the USB memory drive to the PC where SIMATIC Manager is installed.
	e. Unzip the file to a chosen location.
Download the file	a. Download the GSDXML file from the Micro Motion 5700 Ethernet product website.
	b. Unzip the file to a chosen location.

- 2. To install the 5700 PROFINET GSDXML file into your GSD file catalog using the HW config in SIMATIC Manager:
 - a) Choose **Options** → **Install GSD File**.

1 2 -	8 8 4 10 m	Customize	Ctrl+Alt+E	
1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	PS 407 10A CPU 412-2 DP DP MP/DP SI CP 443-5 Basic CP 443-5 Ext	Specify Module Configure Network Symbol Table Report System Error Edit Catalog Profile Update Catalog Install HW Updates	Ctrl+Alt+T	
6	CP 443-1	Instal GSD File		
x1 X1 P1 R X1 P2 R	Siemens Port 1 Port 2	Find in Service & Suppo Create GSD Hie for I-De	rt	
7	DI32xDC 24V			
9			_	

- b) Select Install.
- c) Choose Update Catalog.

stall GSD Files				
stall GSD Files:	from the directory			
:\Documents and Setting	gs\Administrator\Desktop\Profinet (GSD		Browse
File SSDML-V2.31-Micro Mot	ion-Coriolis-20151007-125700.xml	Release 10/07/2015 12:57:00 PM	Version V2.31	Languages English
Instal	Show Log Select All	Deselect All		
Install	Show Log Select All	Deselect All		

3.2 Create a PROFINET network

Procedure

- 1. Configure the primary protocol as PROFINET in the 5700 device:
 - a) From the transmitter display, choose **Device Tools** \rightarrow **Configuration** \rightarrow **Network Settings**.

- b) Select Profinet.
- 2. From SIMATIC Manager, choose File \rightarrow 'New Project' Wizard.
- 3. Follow the wizard to select the CPU for your PLC.

CPU 400

- 4. In the **Component View**, click on the CPU.
- 5. Double-click **Connections**. A graphical representation of the network is displayed.
- 6. Double-click the CPU icon. The *HW Config* screen is displayed.
- 7. Double-click the interface, then click **Properties**.

Example

(0) UR2	Properties - Siemens (R0/56.1)
1 PS 407 10A	General Addresses PROFINET Synchronization Media Redundancy
1 PS 407 10A 3 CPU 412-2 DP X2 DP X1 MP/DP 4 CP 4435 Basic 5 CP 4435 Ext 6 CP 443-1 X1 Simmers X1 P3 P Part 1 X1 P2 R Part 2 7 D132xDC 24V 8 D032xDC24V/0.5A 3	General Addresses PROFINET Synchronization Media Redundancy Shott description: PN-I0 Device name: Siemens Interface Properties - Ether net interface PN-I0 (R0/S 6.1) Type: Ethernet Device number: 0 Address: 192 168.0.168 Networked: Yes Properties 192 168.0.188 Comment: Gateway
	Subnet:

The network settings of the S7 400 PLC Ethernet interface are configured.

8. Right-click on the Ethernet interface, and select Insert PROFINET IO System.

(0) UR2			
1	PS 407 10A		
3	S CPU 412-2 DP		
X2	DP		
XI	MPI/DP		
4	CP 443-5 Basic		
5	CP 443-5 Ext		
6	CP 443-1		
X1	Siemens		
XTPTR	Port 1	Сору	Ctrl+C
XT P2 R	Port 2	Paste	Ctrl+V
7	DI32xDC 24V	Insert Multi-Controller Devic	e
8	D032xDC24V/0.5A	Deplace Object	
9		Replace Object	
	•	Add Mascer System	
		Disconnect Master System	
		Master System Isochronous	Mode
		Insert PROFINET IO System	N
		Disconnect PROFINET IO Sy	stem
		PROFINET IO Domain Mana	gement
		PROFINET IO Topology	
		PROFINET IO Multi-Controll	er Devices
		PROFINET IO Isochronous r	node
		Specify Module	
		Delete	Del
		Go To Filter Assigned Modules	•
		Monitor/Modify	

The Ethernet network is created.

- 9. Double-click on the PROFINET network you just created. The **Properties** menu is displayed.
- 10. Enter the name of the network.

Example

operties - PROFIN	ET IO-System	
General Update Time	1	
Short designation:	PROFINET IO System	
Name:	pn Use name in 10 device / controller	
IO system no.:	100 💌	
Subnet:	Profinet Properties	
Comment:		

- 11. (Optional) To use the network name in the IO device and in the controller, check **Use the name in IO device/controller**.
- 12. Drag and drop the device called Standard from the GSD file catalog to the 5700 Ethernet network. The 5700 Ethernet network is located at PROFINET IO → Additional Field Devices → Sensors → Coriolis → 5700 Coriolis Meter.

xampl	le						
HW Config	g - [SIMATIC 400(1) (Conf	iguration) Proiect_final]					
Station Ed	dit Insert PLC View Option	ns Window Help					
D ~ 0.							
	• • • • • • • • • • • • • • • • • • • •					_	
(0) UR2						~	
1	PS 407 10A						Eind:
	-						
3	CPU 412-2 DP						Profile: Standard
X2	DP						PROFIBUS DP
XI	MPI/DP						PROFIBUS-PA
4 E	HE CD 443-5 Basic						PROFINET IO
0	HE CP 443-3 EX						Additional Field Devices
XT	Siemens			Profinet:	PROFINET-IO-System (10	0)	E Sensors
XTPTR	Port 1						🖻 🧰 Coriolis
XT P2 R	Port 2						E- 5700 Coriolis Meter
7	D132xDC 24V						E Standard
8	D032xDC24V/0.5A			(and the second s			Input Modules - Slot 1
9				产(1)	mmi5700		API Heterial
							APM - Liquid Volume
							Batcher
				_			Concentration Measurement
							Gas Standard Volume
							Large Configurable Data
							Liquid Volume
							Mass Flow - Common Data
							- Medium Configurable Data
							Small Configurable Data
							E Dutput Modules - Slot 2
							APM External Process Data
							Batcher
							Batcher and External Process Da
							Configurable Data
							Discrete Actions - Common Data
						~	External Process Data
						>	
(1)	mmi5700						+ in Ident Systems
	-	1					Network Components
Slot	Module	Order number	I Address	Q address	Diagnostic Address	C	E Sensors
0	mmi5700	5700"1"C"ZZ"HHCZZ"			4086*		Switching devices
87	Interface			-	4085*	_	E SIMATIC 300
F1	RJ45 10/100 MBit/s		-	-	4084*	_	SIMATIC 400
0.32770	H145 10/100 MBit/s		1 74		4083*	-	SIMATIC PC Based Control 300/400
1	Small Configurable Data		471			_	E SIMATIC PC Station
2							

- 13. Double-click on the device to enter the configuration menu.
- 14. Enter the **Device name**.

Note

The Device name must:

- Follow all DNS conventions
- Cannot start with a number
- Cannot contain uppercase alpha characters
- 15. Make the appropriate IP address configuration of the device, and press **Ok**.

You can use the **Ethernet** button if required.

If the **Use name in IO device/controller** checkbox is checked in the network properties, then **Device name** will have the following format: *device_name.network_name*.

Option	Description	
	Properties - mmi5700	
	General Identification	
	Short description: 5700CoriolisMeter 5700 Coriolis Meter, for PNID controller with PDev	<u>_</u>
	Order no./ firmware: 00210 / Z1.0 Family: Coriolis	
	Device name: mmi5700	
	GSD file: GSDML-V2.31-Micro Motion-Coriolis-20151007-125700.x	ml
	Change Release Number	
	Node in PROFINET IO system	
	Device number: 1 v pn (100)	
	IP address: 192.168.0.1 Ethernet	
	Assign IP address via IO controller	
	Comment:	
		8
Device name when the Use	ОК	Cancel Help
name in IO device/ controller checkbox is unchecked		

Option	Description	
	Properties - mmi5700.pn	
	General Identification	
	Short description: 5700CoriolisMeter	
	5700 Coriolis Meter, for PNIO controller with PDev	4
	Dide to Airmuse 00210 / 71 0	<u> </u>
	Family. Coriolis	
	Device name: mmi5700 , pn	
	GSD file: GSDML-V2 31-Micro Motion-Cariolis-20151007-125700 vml	
	Change Release Number	
	Node in PROFINET ID system	
	Device number: 1 v pn (100)	
	Assign IP address via ID controller	
	Comment	
		<u>×</u>
		2
	OK Cancel	Help
Device name when the Use name in IO device/		
controller checkbox is		
checked		

16. Click on the 5700 Ethernet icon to display the HW configuration in the lower screen.

17. From the HW Catalog, drag the input and output slots to one of the following locations:

- PROFINET IO \rightarrow Additional Field Devices \rightarrow Sensors \rightarrow Coriolis \rightarrow 5700 Coriolis Meter \rightarrow Standard \rightarrow Input Modules Slot 1
- PROFINET IO \rightarrow Additional Field Devices \rightarrow Sensors \rightarrow Coriolis \rightarrow 5700 Coriolis Meter \rightarrow Standard \rightarrow Output Modules Slot 2

Example

If **Empty** is selected, delete the slot by right-clicking on the slot, and selecting **Delete**. For a description of the Input and Output slots, see Input and output slots.

Example

In this example, Small Configurable Data has been added to Slot 1.



- 18. Press Save and Compile.
- 19. Press Download to Module to download the configuration into the CPU module.

Note

The modules configured and downloaded in the HW Config are set in the transmitter. You do not need to set the Input or Output modules on the transmitter first. You can configure the variables in the input data sets using the web server or ProLink III.

Example

🖳 HW Confi	ig - [SIMATIC 400(1) (Configuration) Proiect	final]
00 Station E	Edit Insert PLC View Options Window Help	
🗅 🗃 🔓	• 强 🖉 🖻 🛍 🛍 🚯 🗖 💥 🕨	2
(0) UR2	PS 407 10A	
3 ×2 ×7	CPU 412-2 DP	Download
4 5 6	H CP 443-5 Basic CP 443-5 Ext CP 443-5 Ext	- SIMATIC 400(1) - Module:
X1 X1 P1 R X1 P2 R	Siemens Poil 1 Poil 2	[0/3/0] CPU 412-2 DP
7 8 9	DI32xDC 24V D032xDC24V/0.5A	Cancel

The configuration is downloaded into the CPU module. The PLC should show a red LED bus fault.

3.3 Configure Ethernet IP address and device name

Use this procedure to configure the Ethernet IP address and device name for the Model 5700 Ethernet device.

Procedure

1. Choose $PLC \rightarrow Ethernet \rightarrow Edit Ethernet Node$.

Example

@ B-1	≌ ¶: é	Download Upload	Ch/H	
IOIUR2	PS 407	Download Module Identification Upload Module Identification to	PG	
3	CPU 4	Faulty Modules		1
x2 x7 5 6 x7	DP MPUDA COP 443 COP 443 COP 443 COP 444 Siemer	Module Information Operating Mode Clear/Reset Set Time of Day Montor/ModPy	Otri+D Chil+1	Piolinet P
x1 P1 R	Pot 7	Lipdate Fata-aire		
1	D132xD	Selle Device Name to Metnory (Cedia:	
3	00324	Ethernet		Edit Ethernet Node
		PROFIBUS	,	Verify Device Name
		Save Service Data		Assign Device Name

2. To configure the programming machine (PG) to PC interface, choose **Options** → **Set PG/PC Interface...**

Example

) 🧀 🔐 🛲 其 🗞 🛍 🖆	Customize	Ctrl+Alt+E	· 7 2 8 8 5 8	II 12				
Acyclic_test_results 0	Access Protection	,	in language Size in the work me.	Туре	Version (Header)	Name (Header)	Unlinked	Author
E SIMATIC 400(1)	Change Log		-	508	-	-	-	-
B (m) S7 Program(1)	Text Libraries		52	Organization Block	0.1		-	
Sources	Language for Display Devices		150	Function block	0.1		-	
Blocks CP 4121	Manana Multilingual Texts	1	38	Data Block	0.1		-	
C C C C C	manage multilingual retts		40	Data Block	0.1		-	
C	Rewire		64	Instance data block	0.1		-	SIMATIO
C	Run-Time Properties		62	Instance data block	0.1			SIMATIO
12	man rank roperocas		-	Variable Table	0.1		-	
5	Compare Blocks		-	System function block	1.0	ROREC	-	SIMATIC
8	Reference Data	,	-	System function block	1.0	WRREC	-	SIMATIC
	Define Global Data							
	Configure Network							
	Simulate Modules							
	Configure Process Diagnostics							
	CAx Data							
1	Set PG/PC Interface							

3. Press Browse to find the Model 5700 Ethernet device on the network.

Tip

If you cannot find the Model 5700 device, turn off your firewall. Firewalls sometimes prevent SIMATIC Manager from browsing network devices.

Example

Themet node		N. 4
MAC address:	· · · · · ·	Biovise
Set IP configuration		
Use IP parameters		
IP address:		Galeway
		Address
Client ID:	C MAC address	C Device name
	on	
Loign device name		
Device name:		Assignitione
Reset to factory settings		
		Beast

4. Select the device from the list and press **Ok**.

Example



- 5. Fill in the appropriate network settings and press Assign IP Configuration.
- 6. Fill in the device name and press Assign Name.

Make sure the IP configuration and device name are the same as what you configured in Create a PROFINET network.

Example

anonino ano ano		
		Nodes accessible online
1AC address:	00-1E-F2-00-00-14	Browse
et IP configuration		
Use IP paramete	rs	
-		Gateway
IP address:	192.168.0.1	Do not use router
Subnet mask:	255.255.255.0	C Use router
		Address: 192.168.0.1
Client ID:		
Assign IP Config	uration	
\ssign device name		
Assign device name Device name:	mmi5700	Assign Name
Assign device name Device name:	mmi5700	Assign Name

7. Press Browse again to make sure the changes were applied to the device.

Start	I IP address	MAC address	Device type	Name	Subnet mask
	192.168.0.1	00-1E-F2-00-00-14	Coriolis	mmi5700	
лр	192.168.0.168	00-1B-1B-0F-DA-0F	S7-400 CP	siemens	
search					
sh	MAC address: 00	0-1E-F2-00-00-14			

8. Choose $PLC \rightarrow Ethernet \rightarrow Verify Device Name$ to verify the device name was properly assigned.

2 2 1	\$\$10 €	Download Upload	Ctrl+L	
(0) UR2	PS 407	Download Module Identification Upload Module Identification to	n o PG	
	CPU 4	Faulty Modules		
2 7 7 7	DP MPI/Di CP 443 CP 443 CP 443 CP 44 Siemer	Module Information Operating Mode Clear/Reset Set Time of Day Monitor/Modify	Ctrl+D Ctrl+I	Profinet: PROFINET-IO-System (1
1 P1 R 1 P2 R	Port 1 Port 2	Update Firmware		- [1] mmi570
	DI32xD	Save Device Name to Memory	Card	
	DU32x	Ethernet	Þ	Edit Ethernet Node
		PROFIBUS	•	Verify Device Name
	5	Save Service Data		Assign Device Name

Example

Verify Device	Name				2	×
Available Device	es:					
Device name	Status	IP address	MAC address	Device type		
mmi5700	-	192.168.0.1	00-1E-F2-00-00-14	Coriolis	Assign Name	
Show only m	issing and	d incorrectly co	nfigured devices			
Close					Help	

3.4 Verify communications

Procedure

- Verify that the PLC shows no faults (red lights). The most likely error will be a Bus Fault (BF LED is red), which means either the **Device Name**, the **IP address**, the **Input Slot**, or the **Output Slot** between the PLC and the Model 5700 Ethernet transmitter does not match.
- 2. To verify you are receiving data:
 - a) In the HW Config, click the Model 5700 Ethernet icon.
 - b) Right-click on the Input Slot and press Monitor/Modify.
 - c) Click the I/O Display box and the Monitor box to see the process variables updating.

	_				
Path	emerse	on\SIMATIC	400(1)\CPU 412-5 H P1	N/DP	
1	Address	Symbol	Display forma	t Status value	Modify value
1	PIB 0		HEX	B#16#41	
2	PIB 1		HEX	B#16#A0	
3	PIB 2		HEX	B#16#00	
4	PIB 3		HEX	B#16#00	
5	PIB 4		HEX	B#16#40	
6	PIB 5		HEX	B#16#00	
7	PIB 6		HEX	B#16#00	
8	PIB 7		HEX	B#16#00	
9	PIB 8		HEX	B#16#3F	
10	PIB 9		HEX	B#16#80	
11	PIB 10		HEX	B#16#00	
Run IV M	Row Not Eff conditionally fonitor fodify Tripper	ective	Update Force Symbo tun immediately Status Value	I with F5	pheral Outputs

3. If the transmitter is still not communicating, from the transmitter display, choose Menu → Configuration → Ethernet settings → Primary Protocol → Profinet to verify that PROFINET is the configured primary protocol on the Model 5700 Ethernet transmitter.

3.5 Troubleshooting the PROFINET integration

3.5.1 Cannot download PROFINET into the PLC controller

Use the following procedure if you cannot download the PROFINET program into the PLC controller.

Procedure

- 1. Choose $PLC \rightarrow Ethernet \rightarrow Edit Ethernet Node$.
- 2. Select **Browse**. A list of network devices with MAC IDs is displayed.
- 3. Select the PROFINET controller and press **OK**.



4 Configuring Siemens PLC read/write operation

Procedure

- 1. To insert the data blocks:
 - You will use the data blocks to configure the request and response parameters on the Siemens PLC. a) From the SIMATIC Manager screen, select Insert → S7 Block → Data Block.

Example

	3580:00	- 7	📲 🔄 🖽 🏢 💽 🔤 No.	liter) 💌	/ 캡송 혐프			Sec. 1
Acyclic_b	Subnet	- >	Symbolic name	Created in language	Size in the work me	Type	Version (Header)	Nome (h
8-10 C	Program			- LAD	-	SDB Occurring Stock	-	-
8.2	ST Software		DB Request	08	45	Data Block	0.1	
	S7 Block		1 Organization Block	DB	43	Data Block	0.1	
(B 📲 C	M7 Software	•	2 Function Block	DB DB	64 62	Instance data block Instance data block	0.1 0.1	-
	Symbol Table		3 Function			Variable Table	01	anare.
	Text Library External Source	1	5 Data Type	STL	-	System function block.	10	WRRE

b) From the *Properties* screen, enter the values as shown in the following example and select OK.

Example

Properties - Data Block		x
General - Part 1 General	Part 2 Calls Attributes	
Name and type:	DB2 Shared DB	_
Symbolic Name:	DB_Request	
Symbol Comment:		
Created in Language:	DB	
Project path:		_ ["
Storage location of project:	D:\MODBUS TCP\Profinet v0.35\emerso_1	- 11
	Code Interface	
Date created:	02/04/2016 04:52:16 PM	
Last modified:	02/04/2016 04:52:16 PM 02/04/2016 04:52:16 PM	
Comment:		^
]	~
ОК	Cancel Hel	P

The first of two data blocks is created.

c) From the *Properties* screen, enter the values as shown in the following example and select OK.

Name and type:	DB3 Sha	red DB 👻		-
Symbolic Name:	DB_Response			
Symbol Comment:				
Created in Language:	DB			
Project path:				_
Storage location of project:	D:\MODBUS TCP\Profin	et v0.35\emerso_1		
	Code	Interface		
Date created:	02/04/2016 04:53:10 PM			
Last modified:	02/04/2016 04:53:10 PM	02/04/2016	5 04:53:10 PM	
Comment:				*

The second of two data blocks is created.

- 2. To copy the SFB52 and SFB53 data blocks to your project:
 - a) From the SIMATIC Manager screen, select File \rightarrow Open and select the Library tab.
 - b) Select Standard Library and press OK.

Example

Name	Storage path	
Redundant IO CGP	V40 C:\Program Files\Siemens\Step7\S7lbs\red_io_1	
Redundant IO CGF	V52 C:\Program Files\Siemens\Step7\S7libs\red_io52	
Redundant IO MG	V32 C:\Program Files\Siemens\Step7\S7lbs\ved_io_0	
SIMATIC NET CF	C:\Program Files\Siemens\Step7\S7libs\simation	
Standard Library Stalibs (V2)	C-VProgram Files\Siemens\Step7\S7libs\stdlb30 C-VProgram Files\Siemens\Step7\S7libs\stdlbs	
Standsed Library stdlibs (V2)	C:\Program Files\Siemens\Step7\S7lbs\stdlbs C:\Program Files\Siemens\Step7\S7lbs\stdlbs	
Standard Lonary stdilos (V2) ser projects:	C:\Program Files\Siemens\Step7\S7lbs\stdlbs C:\Program Files\Siemens\Step7\S7lbs\stdlbs	
Standard Lonary stdilos (V2) ser projects: branies:	C-VProgram Files\Stemens\Step7\S7lbs\stdlbs C-VProgram Files\Stemens\Step7\S7lbs\stdlbs inted	
Standard Lonary Standard Lonary Standard Lonary Set standard Lonary Set set projects: set projects: set projects:	C.\Program Files\Stemens\Step7\S7lbs\stdlbs C.\Program Files\Stemens\Step7\S7lbs\stdlbs Inded	

The pre-defined library opens.

- c) From the *Standard Library* tree view, select **System Function Blocks** \rightarrow **Blocks**.
- d) From the right panel, select SFB52 and SFB53, and select Copy.

😹 🔐 🖉 👗 🗞 😭	ê 0 ÷ 1	눈 註 冊 💼 🛛 🖓	et >	• 7	18 6 8	🗊 🐶			
Standard Library	Object name	Symbolic name	Created in 1	kagange Si	e in the work me	Type	_	Version (Header)	Name (Header)
Communication Blocks	SFB43	PULSEGEN	SIL			System function h	lock	1.0	PULSEGEN
IEC Function Blocks	SFB44	ANALOG	STL			System function b	lock	1.0	ANALOG
minellaneous Blocks	SFB46	DOGITAL	STL			System function b	lock	1.0	DIGITAL
Organization Blocks	5 SFB47	COUNT	STL			System function b	dock.	1.0	COUNT
PID Control Ellocks	575B48	FREQUENC	STL			System function b	lock	1.0	FREQUENC
PROFienergy Blocks	SFB49	PULSE	SIL			System function h	lock	1.0	PULSE
23-57 Converting Bucks	ga 57852	RDREC	SIL			Series Inches	lock.	1.0	RDREC #
So Electo	ga 57853	WRREC	ZTL	Open Obj	ect	Ctrl+Alt+O	24		
and The City on a character a Rivela	SP854	RALEM	STL	200		12241122	ek.	1.0	RALRM
I'm tree constant parts	SFB60	SEND_PTP	STL	Cut		Ctrl+X	12	1.0	SEND_PTP
	1 SFB61	RCV_PTP	STL	Сору		Ctrl+C	ek.	1.0	RCV_PTP
	55 SFB62	RES_RCVB	STL	Datte		Childy	ek.	1.0	RES_RCVB
	5 SFB63	SEND_RK	STL	C BANK		Correct of	kk.	1.0	SEND_RK
	1 SFB64	FETCH_RK	STL	Delete		Del	ek.	1.0	FETCH_RK
	SFB65	SERVE_RK	STL				kk.	1.0	SERVE_RK
	SFB73	RCYREC	STL	Insert New	Object	,	\$k	1.0	RCVREC
	55874	PRVREC	STL				ek.	1.0	FRVREC
	2 SFB75	SALRM	STL	Compare	blocks		ek.	1.0	SALRM
	1 SFB81	RD_DPAR	STL	Drint			ek.	1.0	RD_DPAR
	5 SFB104	IP_CONF	STL	FIRE		· · · ·	ek.	1.0	IP_CONF
-	SFC0	SET CLK	STL	Saecial Ol	iest Properties			1.0	SET CLE

SFB52 and SFB53 are copied to your **Projects** folder under **CPU** \rightarrow **S7 Program** \rightarrow **Blocks**.

- 3. To add the SFB52 and SFB53 DB instances:
 - a) To create the data blocks, choose $\textbf{Insert} \rightarrow \textbf{S7} \ \textbf{Block} \rightarrow \textbf{Data} \ \textbf{Block}.$
 - b) Enter the values as shown in the following example and select **OK**.

схапріе

General - Part 1 General	Part 2 Calle Attri	butes]		
Name and type:	DB52	Instance DB	▼ SFB52	-
Symbolic Name:	SFB52_Instance			
Symbol Comment:				
Created in Language:	DB 💌			
Project path:				
Storage location of project:		rofinet v0.35\eme	erso_1	
	Code	Int	terface	
Date created:	02/04/2016 05:07:40	PM		
Last modified:	02/04/2016 05:07:40	PM 02	2/04/2016 05:07:40 PM	
Comment:				*
				-
ок			Cancel	Help

The first of the two data block DB instances is added.

c) Enter the values as shown in the following example and select **OK**.

1			
Name and type:	DB53 Instance	DB 💌 SFB53	•
Symbolic Name:	SFB53_Instance		
Symbol Comment:			
Created in Language:	DB		
Project path:			
Storage location of project:	D:\MODBUS TCP\Profinet v0	.35\emerso_1	
	Code	Interface	
Date created:	02/04/2016 05:08:38 PM		
Last modified:	02/04/2016 05:08:38 PM	02/04/2016 05:08:3	18 PM
Comment:			*
			-

The second of the two data block DB instances is added. The SIMATIC Manager displays the entries.

Object name	Symbolic name	Created in language	Size in the work me	Туре	Version (Header)
🚵 System data				SDB	4
🕀 0B1	CYCL_EXC	LAD	180	Organization Block	0.1 🌈
DB2	DB_Request	DB	46	Data Block	0.1
DB3	DB_response	DB	48	Data Block	0.1 🧹
DB52	SFB52_Instance	DB	64	Instance data block	0.1
🖬 DB53	SFB53_Instance	DB	62	Instance data block	0.1
VAT_1	VAT_1			Variable Table	0.1
🚰 SFB52	RDREC	STL		System function block	1.0
🚰 SFB53	WRREC	STL		System function block	1.0 🦼
Land and the second	and the second s	Contraction of the second		and and a	

4. To configure the DB2 Request data block, double-click **DB2 Request** and enter the values as shown in the following example.

Example

4	DB2 "DB_Request" WorkAcyclic_test_results\SIMATIC	C 4	400(1)\CPU 412-5 H PN/DP\\DB2			
I	Address	N	ame	Туре	Initial value	Comment
I	0.0	Γ		STRUCT		
I	+0.0		Word2	WORD	W#16#0	
I	+2.0		Word3	WORD	V#16#0	
I	+4.0		Word4	WORD	W#16#0	
I	+6.0		Word5	WORD	W#16#0	
I	=8.0	Γ		END STRUCT		

5. To configure the DB3 Response data block, double-click **DB3 Response** and enter the values as shown in the following example.

DB3 "DB_Response" Proiect_fin	AINSIMATIC 400(1)\CP	U 412-2 DP\\DB3		
Address	Name	Туре	Initial value	Comment
0.0		STRUCT		
+0.0	ReadWordl	REAL	0.000000e+000	
+4.0	ReadWord2	REAL	0.000000e+000	
+8.0	ReadWord3	REAL	0.000000e+000	
=12.0		END_STRUCT		

- 6. To program acyclic read:
 - a) Double-click OB1.

Example

Object name	Symbolic name	Created in language	Size in the work me	Туре	Version (Header)	4
🖄 System data		5		SDB		
🖬 0B1	CYCL_EXC	LAD	174	Organization Block	0.1	
🖬 DB2	DB_Request	DB	46	Data Block	0.1	5
🖬 DB53	SFB53_Instance	DB	62	Instance data block	0.1	÷.
VAT_1	VAT_1			Variable Table	0.1	3
SFB52	RDREC	STL		System function block	1.0	1
SFB53	WRREC	STL		System function block	1.0	4

b) Choose Insert \rightarrow Network.

Example

🖬 File Edit Ins	ert PLC Debug View	Options Win	dow Help			5
🗅 🗃 🔓	Object	•	≌_64 !≪ ≫!		*** 📑 🚺	+++++-0 ™ +→ →>
	Block Template	+		Cont	tents Of:	'Environment\Interfa
Turni	Declaration Line	Alt+Ins	terface	1	Name	
Bit logi	Network	Ctrl+R	TEMP		IERP	
Enclogi	Network Comment)		
🕀 🚭 Conver	Symbol	Ctrl+J	"Main Program	a Sweep (C	Cycle)"	
⊕ ⊕ Counte ⊕ ⊕ DB call	Program Elements	Ctrl+G	nt:			5
G Jumps Jumps Integer fun	ction		work 1: Title:			-
● C Move ● T Program co	ontrol			DB53 "SFB53_ Instance"		3
 Image: Britten Shift/Rotate Image: Britten Status Image: Britten Status 	e		Wri	SFB53 te a Proc	ess	
Timers		_ملطل	Description of the second seco	ata Recor "WRPRO	d	and well

c) To configure the input and output parameters, from SFB blocks, drag SFB52 to Network.



Parameter	Description
REQ	 The Read request is sent to the Model 5700 using bit memory M8.2. You have the following options: 1 (true) starts the read request. You must end the request.
	• 0 (false) ends the request. Reset Bit logic is used to reset M8.2.
VALID	Bit memory M8.4 indicates whether a new data record was received and valid.
BUSY	Bit memory M8.3 indicates whether the read process has terminated or not.
ERROR	Bit memory M8.5 indicates whether an error has occurred while processing the function.
STATUS	The double-word bit memory MD18 contains an error code. For error descriptions, see <i>Help on system functions / function blocks</i> .
ID	Displays the PN-IO diagnostic address (for example, "8180" = 1FF4 hex). This address is used for PROFINET acyclic read/write to the Model 5700E station to perform pre-defined diagnoses.
INDEX	Displays the data record number (247 – starting Modbus register for mass flow). For the Model 5700, the starting address is 1.
MLEN	The maximum length in bytes of data record information to be fetched.
RECORD	The destination area for the read data record. For DB3 in this example, the starting address is 0 and the address length is two bytes.

d) Read the acyclic parameters displayed in the Actual value field.

Address	Name	Type	Initial value	Actual value	Comment	
		0000	0.000000.0000	In ACOLE		-

7. To program acyclic write, choose S7 Program \rightarrow Blocks and double-click OB1.

The OB1 block is a Program Cycle Organization Block. The S7 CPU operating system executes OB1 periodically. When OB1 has been executed, the operating system restarts it. Cyclic execution of OB1 is started after the start-up has been completed.

- a) To edit the program, select **OB1**.
- b) Choose Insert \rightarrow Network.
- c) From **SFB blocks**, drag **SFB53** to **Network and** and configure the input and output as shown in the following example.

Example	
□ Network 2:	Title:

	I	"SFB53_ nstance"	257
	= EN	WRREC" ENO	
H1.0-	REQ	DONE	-11.1
W#16#1FF4 -	ID	BUSY	-M1.2
40 -	INDEX	ERROR	-M1.3
2 —	LEN	STATUS	-MD18
P#DB2. DBX0.0 BYTE 8-	RECORD		

8. To create a variable table:

Use the variable table to modify and monitor the connected PLC variables and memory content.

- a) From the SIMATIC Manager screen, choose Insert \rightarrow S7 Block \rightarrow Variable Table.
- b) Enter the values as shown in the following examples and save your changes.

Example

	4	Ad	dress	Symbol	Display format	Status value	Modify value
1	-	М	1.0		BOOL	true	true
2		DB2	DBW 0	"DB_Request".Word1	HEX	VV#16#005B	V\#16#005B
3							
1							
5							

The write request is sent to the Model 5700 using bit memory M1.0.

- c) To start the read request, enter 1 (true) in the Modify value field, right-click, and press Modify.
- d) To end the request, enter **0** (false) in the **Modify value** field, right-click, and press **Modify**.
- 9. To download a project to PLC:
 - a) From the *SIMATIC Manager* screen, select the **Download to Module** icon. The configuration is downloaded to your CPU.
 - b) After the project downloads, open the vat table and make the corresponding M 1.0, 8.2 bits high for read and read/write.

The read request is sent to the Model 5700 using bit memory M8.2. The write request is sent to the Model 5700 using bit memory M1.0.

c) Go online to read and write acyclic data into the Model 5700 device module.

A Input and output slots

A.1 Input slots

Empty

Use the Empty Input slot when no input data is required. Typically for an Ethernet mass flow meter, the Empty Input slot is unused because this meter is a measuring device.

Assembly Dword index	Name		Data type
0	Mass Flow		REAL
1	Temperature		REAL
2	Density		REAL
3	Drive Gain		REAL
4	Totalizer 1 (default = Mass Total)		REAL
5	Inventory 1 (default = Mass Inventory)		REAL
6	6 Status		DWORD
	Severity (bits 0-15)	• Bit #0 = Immediate Failure	
		• Bit #1 = Last Measure Value Failure	
		• Bit #2 = Function Check	
		• Bit #3 = Out of Specification	
		Bit #4 = Maintenance Required	
	Counter/Heartbeat (bits 16-32)	The PLC will display the counter/ heartbeat as a signed INT, therefore the counter can be negative.	

Table A-1: Common input data

Assembly Dword index	Name		Data type
7	Alert detail	Bit #0 = Electronics Failure	DWORD
		• Bit #1 = Sensor Failed	
		• Bit #2 = Configuration Error	
		• Bit #3 = Core Low Power	
		• Bit #4 = Security Breach	
		Bit #5 = Sensor-Transmitter Communication Error	
		• Bit #6 = Tube Not Full	
		• Bit #7 = Extreme Primary Purpose Variable	
		• Bit #8 = Reserved	
		Bit #9 = Flowmeter Initializing	
		 Bit #10 = Function Check in Progress 	
		• Bit #11 = Sensor Being Simulated	
		• Bit #12 = Output Fixed	
		• Bit #13 = Drive Over Range	
		• Bit #14 = Process Aberration	
		• Bit #15 = Discrete Event X Active	
		Bit #16 = Output Saturated	
		Bit #17 = Function Check Failed	
		Bit #18 = Data Loss Possible	
8	Echo Output Data Discrete Actio	bus	DWORD

Table A-1: Common	n input data	(continued)
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Table A-2: Liquid volume flow

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9	Volume Flow	REAL
10	Totalizer 2 (default = Volume Total)	REAL
11	Inventory 2 (default = Volume Inventory)	REAL

Table A-3: Gas volume flow

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9	Gas Volume Flow	REAL
10	Totalizer 4 (default = Gas Volume Total)	REAL
11	Inventory 4 (default = Gas Volume Inventory)	REAL

Table A-4: API referral

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9	Volume Flow	REAL
10	Totalizer 2 (default = Volume Total)	REAL
11	Inventory 2 (default = Volume Inventory)	REAL
12	Corrected Density	REAL
13	Corrected Vol Flow	REAL
14	Totalizer 3 (default = Corrected Vol Total)	REAL
15	Inventory 3 (default = Corrected Vol Inv)	REAL
16	Avg Density	REAL
17	Avg Temperature	REAL
18	СТІ	REAL

Table A-5: Concentration measurement

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9	Volume Flow	REAL
10	Totalizer 2 (default = Volume Total)	REAL
11	Inventory 2 (default = Volume Inventory)	REAL
12	Density at Reference	REAL
13	Std Vol Flow Rate	REAL
14	Totalizer 5 (default = Std Vol Total)	REAL
15	Inventory 5 (default = Std Vol Inv)	REAL
16	Net Mass Flow Rate	REAL

Assembly Dword index	Name	Data type
17	Totalizer 6 (default = Net Mass Total)	REAL
18	Inventory 6 (default = Net Mass Inv)	REAL
19	Net Vol Flow Rate	REAL
20	Totalizer 7 (default = Net Vol Flow Total)	REAL
21	Inventory 7 (default = Net Vol Flow Inv)	REAL
22	Concentration	REAL
23	Density - Fixed SG Units	REAL
24	Density - Special Density Units	REAL

Table A-5: Concentration measurement (continued)

Table A-6: Batcher

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-2
9–11	Liquid Volume	
12	Batch Total	REAL
13	Overshoot Compensation Value (Reg 1457)	REAL
14	Batch Fill Time	REAL

Assembly Dword index	Name	Data type
15	Fill status and diagnostics	DWORD
	• Bit #0 - Primary Fill in progress (reg 2495 bit 0)	
	• Bit #1 - Primary AOC training (reg 2495 bit 9)	
	• Bit #2 = Primary Valve (reg 2495 bit 5	
	• Bit #3 = Undefined	
	• Bit #4 = Undefined	
	• Bit #5 = Undefined	
	• Bit #6 - Fill Start Not Okay (reg 2496 bit 0)	
	• Bit #7 - AOC Flow Rate Too High (reg 2496 bit 1)	
	• Bit #8 - Maximum Fill Time Exceeded (reg 2496 bit 2)	
	• Bit #9 - Slug Flow (reg 2496 bit 3)	
	• Bit #10 - Tube Not Full (reg 2496 bit 4)	
	• Bit #11 - Drive Overrange (reg 2496 bit 5)	
	Bit #12 - Critical Sensor Failure (reg 2496 bit 6)	
	Bit #13 - Critical Transmitter Failure (reg 2496 bit 7)	
	• Bit #14 - Density Out of Limits (reg 2496 bit 8)	
	• Bit #15 - Temperature Out of Limits (reg 2496 bit 9)	
	Bit #16 - Bit #31 for future expansion	

Table A-6: Batcher (continued)

Table A-7: Small input configurable data set

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9–16	8 configurable slots	REAL *8

Table A-8: Medium input configurable data set

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9–24	16 configurable slots	REAL *16

Table A-9: Large input configurable data set

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9–40	32 configurable slots	REAL *32

Table A-10: Advanced Phase Measurement (APM) – liquid

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9	Volume Flow	REAL
10	Totalizer 2 (default = Volume Total)	REAL
11	Inventory 2 = (default = Volume Inventory)	REAL
12	Gas Void Fraction	REAL
13	Contract Total 1	REAL
14	Contract Total 2	REAL
15	Contract Total 3	REAL
16	Contract Total 4	REAL
17	Net Oil Flow @ Line	REAL
18	Net Water Flow @ Line	REAL
19	Watercut @ Line	REAL
20	Net Oil Total @ Line	REAL
21	Net Water Total @ Line	REAL
22	Density Oil @ Line	REAL
23	Net Oil Flow @ Ref	REAL
24	Net Water Flow @ Ref	REAL
25	Watercut @ Ref	REAL
26	Net Oil Total @ Ref	REAL
27	Net Water Total @ Ref	REAL

Table A-11: Advanced Phase Measurement (APM) – gas volume

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9	Gas Volume Flow	REAL

Assembly Dword index	Name	Data type
10	Totalizer 4 (default = Gas Volume Total)	REAL
11	Inventory 4 = (default = Gas Volume Inventory)	REAL
12	Contract Total 1	REAL
13	Contract Total 2	REAL
14	Contract Total 3	REAL
15	Contract Total 4	REAL
16	Total time mist detected	DWORD
17	 APM Status Bit #0 – TMR Algorithm Active (reg 433 bit 12)⁽¹⁾ Bit #1 – Bit #15 currently not defined Bit #16 – Bit #31 for future expansion 	DWORD
18	Liquid Mass Flow Estimate	REAL
19	Watercut @ Ref	REAL

Table A-11: Advanced Phase Measurement (APM) – gas volume (continued)

(1) Do not include the parenthesis in the label.

Table A-12: Wet Gas Measurement

Assembly Dword index	Name	Data type
0-8	Common input data	See Table A-1
9	Gas Volume Flow	REAL
10	RPO	REAL
11	Live Zero	REAL
12	Tube Frequency	REAL
13	Core Temperature	REAL
14	Inventory 2 (default = Volume Inventory)	REAL
15	Contract Total 1	REAL
16	Contract Total 2	REAL
17	Contract Total 3	REAL
18	Contract Total 4	REAL

Assembly Dword index	Name	Data type
19	Total time mist detected	DWORD
20	 APM Status Bit #0 - TMR Algorithm Active (reg 433 bit 12) Bit #1 - Bit #15 undefined Bit #16 - Bit #31 for future expansion 	DWORD
21	Liquid Mass Flow Estimate	REAL
22	Watercut @ Ref	REAL
23	Gas Mass Flow (Reg 2008)	REAL
24	Liquid Volume Flow (Reg 2261)	REAL
25	Gas to Liquid Ratio (Reg 2255)	REAL
26	Gas to Oil Ratio (Reg 2263)	REAL
27	Net Oil Flow @ Ref	REAL
28	Net Water Flow @ Ref	REAL
29	Net Oil Total @ Ref	REAL
30	Net Water Total @ Ref	REAL

Table A-12: Wet Gas Measurement (continued)

Table A-13: Device Status

Assembly Dword index	Name	Data type
0	Status & Diagnosis	DWORD
	Bit #0 – Smart Meter Verification Running	
	Bit #1 – Smart Meter Verification Passed	
	Bit #2 – Smart Meter Verification Failed	
	Bit #3 – Smart Meter Verification Aborted	
	Bit #4 – Bit #31 for future expansion	
1	LPO	REAL
2	RPO	REAL
3	Live Zero	REAL
4	Tube Frequency	REAL
5	Core Temperature	REAL
6	Case Temperature	REAL
7	Core In Volts	REAL

Assembly Dword index	Name	Data type
8	Flow Verification Zero	REAL
9	Result 1 (LPO Normalized Stiffness Reg 5782)	REAL
10	Result 1 (RPO Normalized Stiffness Reg 5784)	REAL
11	Result 3 – Future Use	REAL
12	Result 4 – Future Use	REAL
13	Result 5 – Future Use	REAL
14	Result 6 – Future Use	REAL
15	Data 1 – (Confidence Interval LPO Reg 6360)	REAL
16	Data 2 – (Confidence Interval RPO Reg 6362)	REAL
17	Data 3 – (LPO Std. Dev. Reg 6356)	REAL
18	Data 4 – (RPO Std. Dev. Reg 6358)	REAL
19	Data 5 – (LPO Meter Factor Reg 6371)	REAL
20	Data 6 – (RPO Meter Factor Reg 6373)	REAL
21	Data 7 – Future Use	REAL
22	Data 8 – Future Use	REAL
23	Data 9 – Future Use	REAL
24	Smart Meter Verification Run Number (Reg 5826)	UINT
25	Smart Meter Verification Progress (Reg 3020)	UINT
26	Code 1 (Abort Code Reg 3002)	UINT
27	Code 2 – Future Use	UINT
28	Code 3 – Future Use	UINT

Table A-13: Device Status (continued)

A.2 Output slots

Empty

Use the Empty Input slot when no output data is required. No output data is a typical application and is the default.

Table A-14: Common output data — Discrete actions only

Note

Common output data is required for every output assembly in order to access 5700 functions. Depending on the application, not all functions may be used.

Assembly Dword index	Name	Data type
0	Discrete Actions:	DWORD
	• Bit #0 – Start Sensor Zero (trigger start with a 1, no abort)	
	Bit #1 – Reset All Process Totals (same as setting bits 2-8)	
	Bit #2 – Reset Totalizer 1 (Mass Total by default)	
	• Bit #3 – Reset Totalizer 2 (Volume Total by default)	
	• Bit #4 – Reset Totalizer 3 (PM Ref Vol Total by default)	
	• Bit #5 – Reset Totalizer 4 (GSV Total by default)	
	• Bit #6 – Reset Totalizer 5 (CM Ref Vol Total by default)	
	• Bit #7 – Reset Totalizer 6 (CM Net Mass Total by default)	
	• Bit #8 – Reset Totalizer 7 (CM Net Vol Total by default)	
	Bit #9 – Start All Totals (trigger start with a 1)	
	 Bit #10 – Stop All Totals (trigger stop with a 1) If both start and stop =1, then totals are stopped 	
	 Bit #11 – Start Smart Meter Verification (Continue Measuring Mode only) Trigger start with a 1, no abort 	
	Bit #12 – Reset all Inventory Totals	
	• Bit #13 – Bit #31 for future expansion	

Table A-15: External process data

Assembly Dword index	Name	Data type
0	Common output data	See Table A-14
1	External Pressure	REAL
2	External Temperature	REAL

Table A-16: Batcher

Assembly Dword index	Name	Data type
0	Common output data	See Table A-14
1	Batch Target	REAL

Assembly Dword index	Name	Data type
2	Batcher Control – Discrete Actions Bit #0 – Reserved 	DWORD
	• Bit #1 – Start Fill	
	• Bit #2 – End Fill	
	• Bit #3 – Pause Fill	
	• Bit #4 – Resume Fill	
	• Bit #5 – Reserved	
	• Bit #6 – Start Training	
	Bit #7 – Save AOC Calibration	
	Bit #8 – Reset Batch Total	
	• Bit #9 – Print Batch Ticket	
	Bit #10 – Reset Preset 1 Inventory	
	Bit #11 – Reset Preset 2 Inventory	
	Bit #12 – Reset Preset 3 Inventory	
	Bit #13 – Reset Preset 4 Inventory	
	Bit #14 – Reset Preset 5 Inventory	
	Bit #15 – Reset Preset 6 Inventory	
	Bit #16 – Inhibit Totalizer	
	• Bit #17 – Inhibit Flow	
	• Bit #18 – Inhibit Batch	
	Bit #19 – Bit #31 for future expansion	
3	Maximum Batch Time (Reg 1305)	REAL
4	Batch Preset	UINT

Table A-16: Batcher (continued)

Table A-17: Batcher and external process data

Assembly Dword index	Name	Data type
0–2	External process data	See Table A-15
3	Batch Target	REAL

Assembly Dword index	Name	Data type
4	Batcher Control – Discrete Actions Bit #0 – Reserved 	DWORD
	• Bit #1 – Start Fill	
	• Bit #2 – End Fill	
	• Bit #2 – Pause Fill	
	• Bit #4 – Resume Fill	
	• Bit #5 – Reserved	
	• Bit #6 – Start Training	
	Bit #7 – Save AOC Calibration	
	Bit #8 – Reset Batch Total	
	• Bit #9 – Print Batch Ticket	
	Bit #10 – Reset Preset 1 Inventory	
	Bit #11 – Reset Preset 2 Inventory	
	Bit #12 – Reset Preset 3 Inventory	
	Bit #13 – Reset Preset 4 Inventory	
	Bit #14 – Reset Preset 5 Inventory	
	Bit #15 – Reset Preset 6 Inventory	
	Bit #16 – Inhibit Totalizer	
	• Bit #17 – Inhibit Flow	
	• Bit #18 – Inhibit Batch	
	Bit #19 – Bit #31 for future expansion	
5	Maximum Batch Time (Reg 1305)	REAL
6	Batch Preset	UINT

Table A-17: Batcher and external process data (continued)

Table A-18: Output configurable data

Assembly Dword index	Name	Data type
0	Common output data	DWORD
1	Configurable Slot 1 (Register)	DWORD
2	Configurable Slot 2 (Register)	DWORD
3	Configurable Slot 3 (Register)	DWORD
4	Configurable Slot 4 (Register)	DWORD
5	Configurable Slot 5 (Register)	DWORD

Assembly Dword index	Name	Data type
6	Configurable Slot 6 (Register)	DWORD
7	Configurable Slot 7 (Register)	DWORD
8	Configurable Slot 8 (Register)	DWORD
9	Configurable Slot 9 (Coil)	DWORD
10	Configurable Slot 10 (Coil)	DWORD
11	Configurable Slot 11 (Coil)	DWORD
12	Configurable Slot 12 (Coil)	DWORD

Table A-18: Output configurable data (continued)

Table A-19: Advanced Phase Measurement (APM)

Assembly Dword index	Name	Data type
0	Common output data	See Table A-14
1	External Pressure	REAL
2	External Temperature	REAL
3	External Water Cut	REAL



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