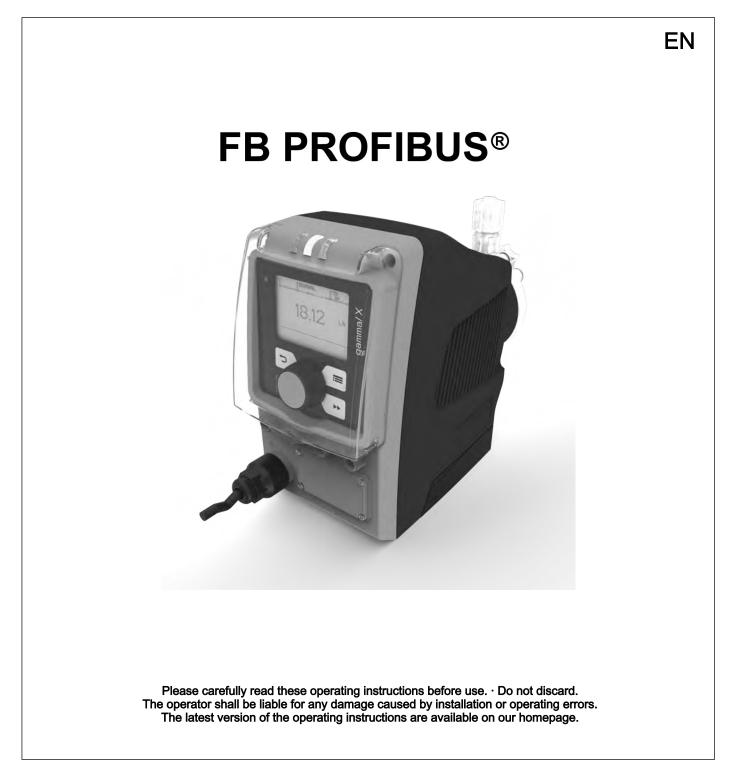
# Installation and configuration manual gamma/ X with PROFIBUS<sup>®</sup> Function blocks



# Table of contents

1	Insta	allation of the GSD file in Step 7 Manager	. 3
	1.1	Creating a project	. 3
	1.2	Install GSD file	. 6
2		grating the device and the function block into your own ect.	10
	2.1	Add PROFIBUS® Master System	10
	2.2	Connecting the device to the PROFIBUS® Master System	13
	2.3	Copying and linking GammaXBasic function block	16
3	Insta	allation of the GSD file in the TIA-Portal	28
	3.1	Installing the GSD file	28
	3.2	Creating a project	30
	3.3	Configure PROFIBUS	33
	3.4	Incorporating a function block into your own project	36
	3.5	Enter metering pump function addresses	41
4	Fun	ction blocks gamma/ X	42
	4.1	Introductory information	42
	4.2	Function block FB100 for basic functionality	43
	4.3	Function block FB101 for complete functionality	48
	4.3.	1 Explanations of the operating modes	48
	4.3.2	2 Tables for the addresses	51

# 1 Installation of the GSD file in Step 7 Manager



This installation manual is only for persons who are familiar with the Siemens Simatic S7 PLC.

Prerequisites:

The installation package (such as "Delta\_S7\_function\_block" or Gamma-Sigma\_S7\_function\_block"), with the GSD file (such as prom0B02.gsd") must have been downloaded from the <u>www.prominent.com</u> website. (The installation package for the respective product is there.)

The installation package must be open on the PC and the GSD must be copied from the installation package into a folder.

#### 1.1 Creating a project

New	Ctrl+N	
'New Project' Wizard		
Open	Ctrl+O	
Close		
Multiproject	C.	1
57 Memory Card		1
Memory Card File		1
Save As	Ctrl+S	
Delete		
Reorganize		
Manage		
Archive		
Retrieve		
Print		1
Page Setup		
1 UF (Projekt) E:\S7Proj\UF S7		
2 DMTDP (Project) \\DMT Package 20101228\Dmtdp		
3 DMTDP (Projekt) E:\S7Proj\Dmtdp		
4 DeltaDP (Project) E:\S7Proj\DeltaDP		
Exit	Alt+F4	

- **1.** ► Follow the path '*File* → 'New Project' Wizard...' and click with the mouse.
  - ⇒ The *'Introduction'* window will be displayed:

TEP 7 Wizard: "New			×
Introduction			1(4)
	STEP 7 Wizard: "New You can create STEP the STEP 7 Wizard. You immediately. Click one of the follow "Next" to create your "Finish' to create your	7 projects quickly a ou can then start pr ving options: project step-by-ste	rogramming p
Display Wizard on	starting the SIMATIC Manager		Previe <u>w</u> >>
< Back	Vext > Finish	Cancel	Help

- 2. Click the [Next>] button.
  - ⇒ The window *'Which CPU are you using in your project?'* will be displayed:

CP <u>U</u> ;	CPU Type	Order No	-
	CPU313 C-2 PtP	6ES7 313-6BF03-0AB0	-
	CPU314	6ES7 314-1AG14-0AB0	_
	CPU314 IFM	6ES7 314-5AE03-0AB0	
	CPU314 C-2 DP	6ES7 314-6CG03-0AB0	
	CPU314 C-2 PtP		
	CDI 1315	6ES7 315 1 AE03 0 AB0	-
2PU name:	CPU314 C-2 DP(1	)	
vIPI <u>a</u> ddress:	and a second s	memory 96KB; 0.1ms/1000 ctions; DI24/DO16; Al5/AO2	1

#### 3. Select the correct CPU.

$\sum_{i=1}^{n}$	Whe that help
	non

When selecting the correct CPU the software version that is imprinted on the CPU and the order number help.

Click the [Next>] button.

⇒ The window *'Which blocks do you want to add?'* will be displayed:

Bloc <u>k</u> s:	Block Name	Symbolic Name	
	OB1	Cycle Execution	-
	□ OB10	Time of Day Interrupt I	)
	□ OB11	Time of Day Interrupt	1
	□ OB12	Time of Day Interrupt	2
	0B13	Time of Day Interrupt 3	3
	C Select All		Help on OB
	Language for S	elected Blocks	
	(€ S <u>I</u> L	C LAD	C EBD
Create with source			Preview>>

**4.** Always place a check mark for option block OB1.

**5.** If the function will be called in selectable time intervals, in addition select OB35 with a check mark (the operation blocks can vary depending on CPU).



A more precise description of the performance scope of the CPU is in your operating manual.

- 6. Click the [Next>] button.
  - ⇒ The window *'What do you want to call your project?'* will be displayed:

STEP 7 Wizard: "New P	TEP 7 Wizard: "New Project"						
<table-of-contents> What do you wan</table-of-contents>	4(4)						
Project name:	Your project name						
Existing projects:	Check your new project in the preview Click "Finish" to create the project with structure.						
		Previe <u>w</u> >>					
< Back	ext > Finish Cancel	Help					

- **7.** After a project name has been entered (in this case "Profibus\_Delta"), click the *[Finish]* button.
  - ⇒ The Simatic Manager window will open see the following chapter.

# 1.2 Install GSD file

A Your project name OB1	<u></u> 7) 많@ 먹 = II (?
A Your project name a 081	
SIMATIC 300 Station  CPU314 C2 DP(1)  STProgram(1)  Succes  Blocks	
ss F1 to get Help.	TCP/IP(Auto) -> Intel(R) PRO/1000 MT

Fig. 1: Simatic Manager with main window with navigation bar

- **1.** In Simatic Manager, in the navigation bar (left) select *'Simatic 300 Station'*.
  - ⇒ In the main window a symbol *'Hardware'* is displayed.
- **2.** Double click the *'Hardware'* symbol.
  - ⇒ The Hardware Configurator will open:

Station Edit Insert PLC Yew Options Window Help         Customize       Curt+Ak+E         Specify Module       Configure Network         Symbol Table       Curt+Ak+T         Provide C-2 DP       Edit Caslog Profile         22       D22-0076         Udder C-2 DP       Edit Caslog Profile         23       AdSAD2         24       Count         25       Popolor         Breact Caslog       Feed Caslog         24       Count         25       Popolor         Breact Caslog       Feed Caslog         24       Count         1       Count         1       Count         1       Count         1       Count         1       Count         1       Count         25       Count         26       Count         27       Count         28       Count         3       Count         4       Find in Service & Support         5       Count         5       Count         6       Simal Tic Pro Second Countol 300/400         8       Simantic Pro Second Countol 300/400 </th <th>-10</th> <th></th> <th></th> <th></th> <th></th> <th>r project nam</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	-10					r project nam							
OUUR         Configure Network           1         Symbol Table         Chrit+Ak+T           2         DPU314 C-2 DPI         Softwarm Error           23         JASADO T6         Update Catalog Profile         Update Catalog           24         Courd         Install HW Updates         PROFIBUS PA           25         Position         Install HW Updates         PROFIBUS PA           24         Courd         Install HW Updates         PROFIBUS PA           25         Position         Install HW Updates         PROFIBUS PA           25         Position         Install HW Updates         PROFIBUS PA           25         Position         Install GSD Fle         PROFIBUS PA           3         Find in Service & Support         SiMATIC 400           3         Create Cattrict on Table rec         SiMATIC PC Based Control 300/400           4         Find in Service & Support         SiMATIC PC Station           5         Create Cattrict on Table rec         SiMATIC PC Station           7         Install A C-2 DP(1)         SESTV2.6.2         Install rec           6         Install rec.         Table rec         SiMATIC PC Station           72         DOL UP         Install r	-191				+E	Ctrl+Ak	Troop			-			
OUUR         Configure Network. Symbol Table         Curl+Alt+T           2         DPU314 C-2 DPI DP         Edit Catalog         Edit Catalog           23         JASADO Tell         Update Catalog         Edit Catalog           24         Courd         Install HW Updates         Edit Catalog           25         Pacific         Standard           26         Courd         Install HW Updates         Edit Catalog           24         Courd         Install HW Updates         Edit Catalog           25         Pacific         Standard         Edit Catalog           24         Courd         Install HW Updates         Edit Catalog           25         Pacific         Standard SSD File         Edit Catalog           3         End         SiMATIC 400         Edit Catolog           3         End         SiMATIC PC Based Control 300/400         Edit Catolog           3         End         Catolog         SiMATIC PC Station										14E		is an april	
1       Symbol Table       Chi+Ak+T         2       CPU314 C-2 DPL       Report System Error         23       LAtSAD2       Update Catalog Profile         24       Court       Instal HW Updates       POPIE         25       Poabion       Instal HW Updates       Profile         24       Court       Instal HW Updates       Profile         25       Poabion       Instal HW Updates       Profile         24       Court       Instal File To To Error       SiMATIC 300         3       Instal File To To Error       SiMATIC 400       Profile         3       Instal File To To Error       SiMATIC 400       Profile         5       Instal File To To Error       SiMATIC 400       Profile         6       Instal File To To Error       SiMATIC 400       Profile         7       Instal File To To Error       SiMATIC 400       Profile         8       SiMATIC PC Station       Profile       SiMATIC PC Station         9       Instal File To To Error       Profile       SiMATIC PC Station         9       Module       D       Error       Profile         10       UR       Instal File To To Error       Profile       Profile	믜			-			ork			- 1			IO UB
22       DPU314 C-2 DP       Réport System Error         22       D/2/D076       Edit Catalog Profile         23       A/S/A02       Update Catalog         24       Count       Install HW Updates         Periodic       Tinstall GSD Ffo         Priodic       Simantic 300         Bind Tic 200       Simantic 300         Bind Tic 200       Simantic 400         Count       Find in Service & Support         Count       Count         Count       Find in Service & Support         Creation       Creation	mt a		ind		+T	Ctrl+Ak				-		1	
C       DP       Edit Catalog Profile         Update Catalog       Update Catalog         23       AUS/AD2         Deation       Install HW Updates         Papelion       Install HW Updates         Papelion       Install FW Updates         Papelion       Install FW Updates         Papelion       Install FW Updates         Profile       Install FW Updates         Install FW Updates       Install FW Updates         Install FW Updates       Install FW Updates         Install FW Updates       Install FW Updates         Install FW Update       Install FW Update		Chandraid	Dinfile:	-			no-	it System	Rep	DP			
22       D/24/2007b       Update Catalog         24       Count       Install HW Updates         25       Position       Install GSD Fle         26       Profile US DP         27       Down in Service & Support         28       Maximum         29       Directer CELT/15 for Topic/Count         20       Directer CELT/15 for Topic/Count         20       Directer CELT/15 for Topic/Count         20       Directer CELT/15 for Topic/Count         21       Directer CELT/15 for Topic/Count         21       Directer CELT/15 for Topic/Count         22       Directer CELT/15 for Topic/Count         23       Directer CELT/15 for Topic/Count         24       Directer CELT/15 for Topic/Count         25       Directer CELT/15 for Topic/Count         26       Module         27       Directer CELT/15 for Topic/Count         28       Autor Count         29       Directer CELT/15 for Topic/Count         20       Directer CELT/15 for Topic/Count         29       Directer CELT/15 for Topic/Count         29       Directer CELT/15 for Topic/Count         29       Directer CELT/15 for Topic/Count         20       Directer CELT/15 for T	_		1000				file	atalog Pro	Edit	_			
4       Count       Install HW Updates         Pastion       Install GSD Fle         Pind in Service & Support       SIMATIC 400         Create GD Pasto Count of Count       SIMATIC HMI Station         Image: GD Pasto Count of Count       SIMATIC PC Based Control 300/400         Image: GD Pasto Count of Count       SIMATIC PC Based Control 300/400         Image: GD Pasto Count       Image: GD Pasto Count         Image: GD Pasto Count										-			
15       Position       Install GSD File         Find in Service & Support       SIMATIC 400         Create F31/REIm 100 / Ce.       SIMATIC PC Baed Control 300/400         Image: Simatic PC Station       SIMATIC PC Station         Image: Simatic PC Station							tar	I HW Llock	Tock				
Find in Service & Support         Open Control 100 / 1													5
Create FEI //26 for T.D.e.v.c         Image: Control 300/400         Image: Con		IMATIC 400	🗉 🔳 S							_			
Image: Similar in the sector						to,	Suppor	n Service 8	Find	_			
Image:							for LDe	e GED file	Orea	-	_	-	
IO) UR         ot       Module        FL.,       M       1<		IMATIC PC Station				- 1			_	-			
CPU314 C-2 DP(1)         6ES7V2.6            22         DP         1/023           23         D/24/D016         1/24.1/24				<u>ب</u>					1		_		
Image: CPU314 C-2 DP(1)         6ES7V2.62           2         DP         1023           2         D24/D016         124.         124.           3         A/5A02         762.         124.           24         Cont         768.         168.				<u>1</u>				-				(0) UR	
2 DP 1023 2 DIA/D016 124.124. 3 A/5/402 752.752 4 Court 768.768.				<u>, 1</u>		Comment	Q	M 1	FL.	0	-12		ot 1
22 D124/D016 124. 124. 23 A15/A02 752. 752. 24 Count 768. 768.				<u>1</u>		Comment	Q	-				Module	ot 🚺
24 Count 788. 788.				<u> </u>		Comment		2				Module CPU314 C	ot 🚺
				,×		Comment	3	2 102			C-2 DP(1)	Module CPU314 C	ot 🚺
						Comment	3 . 124. . 752.	2 102 124 752			C-2 DP(1)	Module CPU314 C DP DI24/DO16 A/5/AD2	
				<u>1</u>		Comment	3 124 752 768	2 102 124 752 788			C-2 DP(1)	Module CPU314 C DP DI24/DD16 A/5/AD2 Count	at 1
				<u>با</u>		Comment	3 124 752 768	2 102 124 752 788			C-2 DP(1)	Module CPU314 C DP DI24/DO16 A/5/AD2	
				<u>با</u>		Comment	3 124 752 768	2 102 124 752 788			C-2 DP(1)	Module CPU314 C DP DI24/DD16 A/5/AD2 Count	at 1
				×		Comment	3 124 752 768	2 102 124 752 788			C-2 DP(1)	Module CPU314 C DP DI24/DD16 A/5/AD2 Count	at 1
FIGURED STORE AND STORE AN			2005101			Comment	3 124 752 768	2 102 124 752 788			C-2 DP(1)	Module CPU314 C DP DI24/DD16 A/5/AD2 Count	at 1
	bured 1	IS-DP slaves for SIMATIC S7, M7, and C7 (distribute				Constnerst	3 124 752 768	2 102 124 752 788			C-2 DP(1)	Module CPU314 C DP DI24/DD16 A/5/AD2 Count	ot 1 22 12 13 13 14 15

Fig. 2: The Hardware Configurator

- 3. ► Follow the path 'Options → Install GSD File' and click with the mouse.
  - ⇒ The 'Install GSD File' window will open:

tall GSD Files		_		-	_	_	_	-		
stall GSD Files:			fron	n the d	rectory		2	-		
:\Profibus DMT									- C	Browse
File PROM062E.gsd	Release	Version	Lan Def	guages ault						
MT										
мт										
MT	SP	now Log		Set	ect All		Deselect	All		

**4.** Use the *[Browse]* button to select the folder into which you have copied the GSD file. (In this screenshot the folder "Profibus Delta" is on drive "E:").

- 5. If the path was correct, the GSD file will be displayed in the window. In this screenshot, this is the file "PROM0B02.gsd" for the delta (for gamma/ L or Sigma it would be the file "PROM0596.gsd").
- 6. Select the file and press the *[Install]* button.
  - A warning will be displayed stating that the action cannot be undone:

Install GSD Dies	No. of Concession, Name			×
Install GSD Files:		from the directory	•	
E:\Profibus DMT				Browse
File	Release Version	Languages		
PHUMU62E.gsd	Confirm installation	of GSD files		X
DMT	CAUTION: Installatic continue the action? Yes		e undone. Do you still want	
Install	Show Log	Select All	Deselect All	_
	Show Log		Dieselleur All	
Close				Help

#### 7. Click [Yes].

⇒ If this GSD file is already present, the following message will be displayed:

Install GSD Film				-		×
Install GSD Files:			from the direct	ory	-	
E:\Profibus DMT						Browse
File	Release	Version	Languages			
PROMO62E.g	nstall GSD	File (13:43	367)			×
	_	1) is already Do you war A backup is	v installed in the s nt to replace this s being created u	iystem. (via Revision 1)? inder C:\PROGR	ROM062E.gsd (R AM ACKUP_2011062	
DMT	Yes		No		Ca	ncel
Install	Sł	iow Log	Select		eselect All	
Close						Help

- 8. Click [Yes] to install the GSD file.
  - $\Rightarrow$  The following message will be displayed:

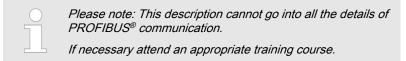
nstall GSD (riles		2
Install GSD Files:	from the directory	-
E:\Profibus DMT		Browse
File Release PROM062E.gsd	Version Languages Default	
Install	55D File (13:4986) Installation was completed successfully.	×
DMT		
Install Sh	ow Log Select All Deselect	All
Close		Help

**9.** Click *[OK]* to conclude the installation.

10. Click [Close] to close the window.

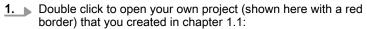
The next chapter shows how you can integrate the ProMinent device (pump, measuring transducer, etc.) into your own project.

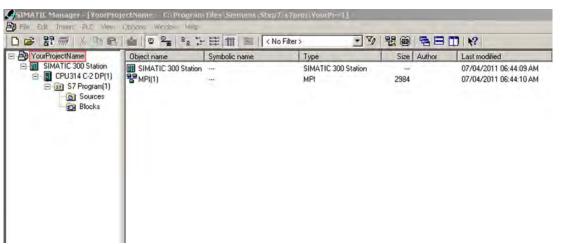
# 2 Integrating the device and the function block into your own project.



# 2.1 Add PROFIBUS® Master System

This section describes how to add a PROFIBUS<sup>®</sup> Master System into your own project and how to generate a PROFIBUS<sup>®</sup> subnet:





#### Fig. 3

**2.** Double click the *'Hardware'* symbol to open the Hardware Configurator:

D 🧀 🎛 🛲 👗 🖻 🖻		- 🏥 🏥 💽 🛛 < No Filte	1> - V		) <b>k</b> ?
E DY YourProjectName	Object name	Symbolic name	Туре	Size Author	Last modified
E SIMATIC 300 Station	Hardware	-	Station configuration	++C	07/04/2011 06:44:09 AM
S7 Program(1)	CPU314 C-2 DP(1)		CPU		07/04/2011 06:44:09 AM

Fig. 4

- **3.** Add a Master System for the CPU: For example, for CPU 314C-2DP, right click slot X2 "DP".
  - $\Rightarrow$  The context menu will open:

Station Edit Insert I	3110 Station (Cooliguration) — You R.C. Vew Options Window Help R. R. R. A. M. D. C. Y		اروند براوند
	4 C-2 DP(1) Copy	2014-C	<u> </u>
<u>10</u>			
Image: Physical system         Image: Physisystem         Image: Physisystem	Sis Te Object Properties. Object Properties. Design sett ED. Product Support Unternation PACI Product Support	2 4 60 m 4 60 m 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Interts a master system in the	e selected DP exerface (or DH 157).		

Fig. 5

#### **4.** Here select 'Add Master System'.

⇒ The window *'PROFIBUS Interface DP'* will be displayed:

eneral Pa	arameters	
Address:		If a subnet is selected, the next available address is suggested.
Subnet:		
not netv	worked	New
		Properties
		Delete

#### Fig. 6

5. In the *'Parameters'* tab under *'Address'* enter the PROFIBUS® address of the CPU used.

- 6. Click [New].
  - ⇒ The 'New Subnet PROFIBUS' will be displayed:

Properties - New su	bnet PROFIBUS	×
General Network	Settings	
Name: S7 subnet ID: Project path:	Your Profibus Name 010F - 0004 YourProjectName	
Storage location of the project: Author:	C:\Program Files\Siemens\Step7\s7proj\YourPr~1	
Date created: Last modified: Comment:	07/04/2011 06:47:57 AM 07/04/2011 06:47:57 AM	
Commeric	-	
		1
OK.	CancelHelp	

#### Fig. 7

- **7.** Under *'Name'* enter a name for the subnet of the PROFIBUS and click *[OK]*.
  - ⇒ The window *'PROFIBUS Interface DP'* will be displayed again:

Address: Highest address:	2 •	If a subnet is selected, the next available address is suggested.
Fransmission rate Subnet:	: 1.5 Mbps	
not network Your Profibus Na		1.5 Mbps
		Properties
		Delete

#### Fig. 8

8. (If necessary via *'Properties'* special PROFIBUS<sup>®</sup> parameters can be adjusted.)

- 9. Mark the PROFIBUS® subnet and click [OK].
  - ⇒ The Hardware Configurator connects the CPU (the Master System) with the Subnet of the PROFIBUS<sup>®</sup>, which the Hardware Configurator now displays in this manner:

		-
2	CPU314 C-2 DP(1)	
2	DP	Your Profibus Name: DP master system (1)
22	DI24/DO16	Four Foldus Manie. Dr. master system (1)
23	AI5/A02	
X2 22 23 24 25	Count	
2.5	Position	
3		
4		
5		
6		
7		
8		-

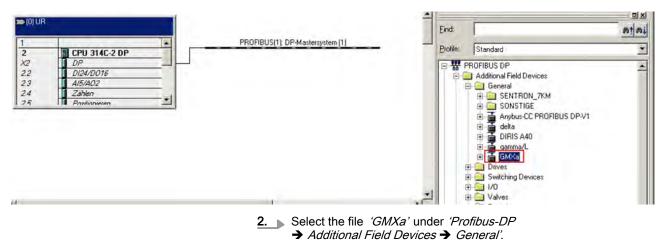
Fig. 9: Graphic presentation: Connection CPU (Master System) with the subnet of the PROFIBUS® in the Hardware Configurator (excerpt)

# 2.2 Connecting the device to the PROFIBUS® Master System

As soon as the PROFIBUS<sup>®</sup> master system has been added to the project and the PROFIBUS<sup>®</sup> subnet is created, the gamma/ X metering pump can be connected to the PROFIBUS<sup>®</sup>:

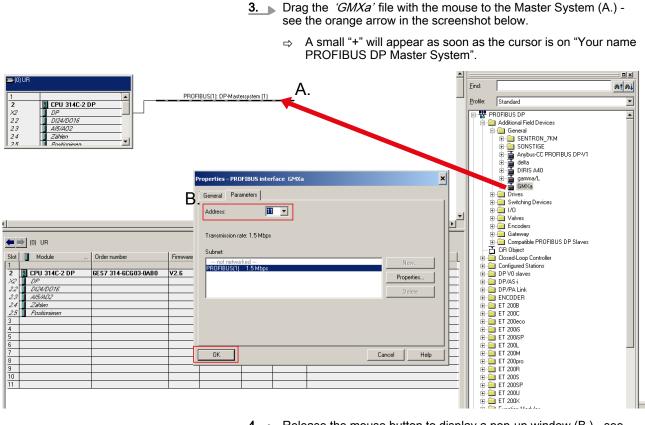
If the entry is not present, the GSD file is not correctly

- 1. ▶ Call up the catalogue via 'Tools → Display Catalogue'.
  - $\Rightarrow$  To the right in the window you will see:



installed.

#### Integrating the device and the function block into your own project.



**4.** Release the mouse button to display a pop-up window (B.) - see illustration above.

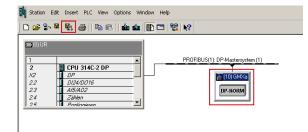
5. Under 'Address' set the PROFIBUS® address that is set on your gamma/ X - see supplemental instructions for gamma/ X with PRO-FIBUS® - and click [OK].



4

If this address is not displayed (already assigned), enter a new address. Then enter this address on your actual gamma/ X as well.

⇒ The Hardware Configurator will then connect the gamma/ X to the PROFIBUS<sup>®</sup> Master System (red box, right) via the subnet, which the Hardware Configurator displays in this manner:



(	🔶 (10) GMXa				
Slot	DP ID	Order Number / Designation	I Address	Q Address	Comment
1	64	Status	256259		
2	128	Control		256257	
3	192	Operating Mode	260	258	
4	192	Discharge	261264	259262	
5	64	Maximum Discharge	265268		
6	192	Batch	269272	263270	
7	128	Contact		271275	
8	192	Concentration	273276	276279	
9	128	Metering Monitor		280	
10	64	Error Warning	277282		
11	192	Stroke Quantity	283294	281282	

Fig. 10: Connection Master System to the gamma/ X via the subnet (graphic presentation in the Hardware Configurator)

In the lower window area (red box) the individual slots and their I-addresses and O-addresses (input addresses and output addresses) are displayed.

- **6.** If necessary, adjust the I-address ranges and O-address ranges. To do this double-click on the appropriate row.
  - $\Rightarrow$  A window will open.
- 7. Here, enter the desired, changed address range and click [OK].

The Hardware Configurator will supplement the address range automatically.

The Hardware Configurator prevents the address from being assigned twice. It handles I-addresses and Oaddresses separately.

- **8.** Save the addresses via the special diskette symbol with "0110" in the toolbar.
- 9. Close the Hardware Configurator.

#### 2.3 Copying and linking GammaXBasic function block



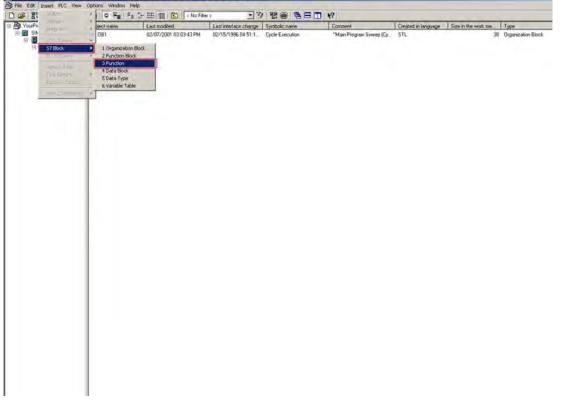
The supplied function blocks are embedded in the ProMinent sample project "GammaXdp.zip"; this is the only way that they can be transported.

#### The principle steps:

- 1 Download the zipped installation package (such as "GammaX\_S7\_Funktionsblock.zip") from the website (prerequisite).
- 2 Drag the ProMinent sample project "GammaXdp.zip" out of the installation package (prerequisite).
- 3 Create a function in your own project (here FC1).
- Save the zipped ProMinent sample project "GammaXdp.zip" in the Simatic Manager and open it - in doing so, it will be simultaneously unzipped / retrieved.
- 5 Copy the function block or the function blocks from this location into your own project.
- Link the required function block(s) into your own function (in this case FC1).
- 7 Generate a data block.
- 8 Enter the addresses in the function block.
- 9 Enter the function parameters in the function block.

Copy the zipped ProMinent sample project "GammaXdp.zip" into a project and integrate it into a function:

**1.** In the Simatic Manager in the Navigation window, on the left, select *'Blocks'* and highlight it.



- 2. ► Follow the path 'Insert → S7 Block → 3 Function' and click with the mouse.
  - ⇒ The window 'Properties Function' will open

SEMATE Marager   Dress ponjest more		(for(not(p)))	
C S <sup>2</sup> To a reset name S <sup>2</sup> Year and the terms S <sup>2</sup> Year and the terms S <sup>2</sup> S <sup>2</sup> To a reset S <sup>2</sup> S <sup>2</sup> S <sup>2</sup> Frogram () S <sup>2</sup> S <sup>2</sup>	Page 1 a 2 to File III (C) Properties - Function Properties - Function General - Part   General Pro- Synbol Name Synbol Comment File Sinage Scalars Sinage Scalars Co Outer cented - DC	et 2 [ Cali:   Antouen   7 21 Cali:   Antouen   22 Confunction are 23 Control of the second and the second area of the seco	
Press FE to get Help.		109(P(auto) -> Java(P) (P0)	000 MT

- **3.** To create the function, here enter a *'Name'* (e.g. FC1) and a *'Symbolic name'* and under *'Symbol Comment'* enter its meaning. Then click *[OK]*.
  - ⇒ In the main window the new function (e.g. FC1) will additionally be displayed.

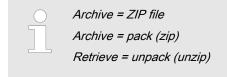
#### Integrating the device and the function block into your own project.

New	Ctrl+N	< No Filter	> • V)	20 5 5 1	<b>k</b> ?	
'New Project' Wizard Open	Ctrl+O		Last interface change	Symbolic name	Comment	Created in languag
Close	conte	3:43 PM		Cycle Execution	"Main Program Sweep (Cy	
Multiproject	,	4:23 AM	06/25/2011 10:54:2	FCYou/FunctionName		LAD
57 Memory Card Memory Card File	3					
Save As	Ctrl+S					
Delete Reorganize Manage						
Archive						
Retrieve						
Print Page Setup	,					
1 Your project name (Project) – C:\\Step7\s7proj\You 2 DeltaDP (Project) – E:\S7Proj\DeltaDP 3 DMTDP (Projekt) – E:\S7Proj\Dmtdp 4 DMTDP (Project) – \\DMT Package 20101226\Dmtdg						
Exit.	Alt+F4					
		-				

**1.** Follow the path '*File*  $\rightarrow$  *Retrieve* ...' and click with the mouse.

⇒ The window *'Retrieving - Select an archive'* will be displayed:

) - Select an archive		x
Downloads		•
	- Date modified	Туре
)	28.06.2011 13:07	WinRAR ZIP
Gammadp PKZip 12.4-Archive (*.zip)		Dpen Cancel
	) - Select an archive Downloads	Downloads 🔹 🗧 😁



- **2.** Here select your folder with the packed ProMinent sample project "GammaXdp", and click *[Open]*.
  - ⇒ The window 'Select destination directory' will be displayed.

Select destination directory		×
	S7HSYS s7ifc S7IKX S7INF S7LIBS S7MANUAL S7MET S7MGD S7NVB S7PCT S7PCT S7Pcoj S7SCI S7SET S7SKA	
OK Canc	el	Help

- **3.** Here select the directory into which the ProMinent sample project will be unzipped, and click *[OK]*.
  - ⇒ First a DOS Window (with black background) will be displayed, in which the ProMinent sample project will be unzipped. Then the '*Retrieve*' window will be displayed:

Retrieve	(3280:754)
Â	The following objects were retrieved: Projects: GammaDP Libraries: None Do you want to open these now?
Yes	No

4. To unpack Click [Yes].

⇒ The SIMATIC Manager now displays the unpacked project:

Object name L	ast modiled	Last interface change	Symbolic name	Comment	Created in language	Size in the work me	Tupe
Systemdaten 8	6/07/2010 11:23:11 AM	02/15/1996 04:51:1		"Main Program Sweep (Cy	A	-	SDB Organization Bloc
1 0835 0	6/06/2010 12:14:17 PM	02/15/1996 04:51:1		"Cyclic Interrupt"	LAD	54	Organization Block
	8/19/2010 02 26 13 PM	08/19/2010 02:26:1.		Profibus Delta Basic	SCL		Function Block
	8/13/2010 02:26:28 PM 18/13/2010 02:27:11 PM	08/13/2010 02 26 2		Protibus Delta Complete Funktion Delta Basic	SCL.		Function Block Function
	8/19/2010 02:27:27 PM	06/06/2010 12:08:2		Funktion Delta Complete	LAD		Function
C D8100	8/19/2010 02:27:08 PM	08/19/2010 02:26:1	DBDeltaBasic		DB	82	Instance data blo
	18/19/2010 02:27:24 PM 16/02/2010 01:03:01 PM	08/19/2010 02 26 2. 06/02/2010 01 03:0.			DB		Instance data bio Variable Table



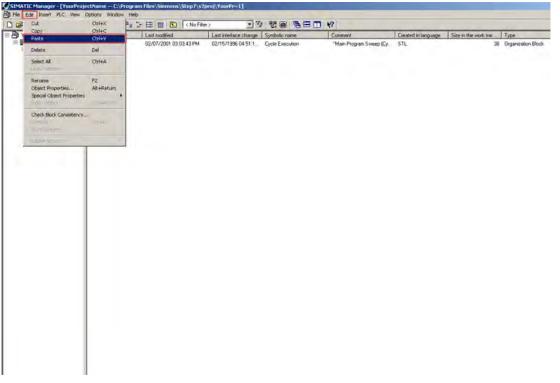
In this project you will find the 2 standard function blocks FB100 and FB101 (FB100 for the basic version or FB101 for the complete version).

1000	Cut	Chilton	a 法 註 前 💽 《NoFe		/ 캡슐 램 문 [				
L	Copy	CHIEC	Last modified	Last interface change	Sunbolic name	Comment	Created in language	Size in the work me	Type
1	(Feed)	-CONTA	05/07/2010 11:23 11 AM	-	-	-	_		SDB
	Delete	Del	06/02/2010 02 49:56 PM	02/15/1996 04:51:1		"Main Program Sweetp ICy-	STL		Organization Bloc
1	Select All	Ctri+A	06/06/2010 12:14:17 PM	02/15/1996 04 51:1	CYC_INT5	"Cyclic Interrupt"	LAD	54	<b>Drganization Bloc</b>
	Undo Selection	Curra	08/19/2010 02 26 13 PM	08/19/2010 02:251		Profibur Delta Basic	SCL		Function Block
c.		-	08/19/2010 02 26 28 PM	08/19/2010 02:26:2		Protibus Delta Complete	SCL		Function Block
i.	Rename Object Properties	F2 Ak+Return	08/19/2010 02:27:11 PM	04/19/2010 08 03 4		Funktion Delta Basic	LAD		Function
	Special Object Properties	HETHOLIN	08/19/2010 02:27:27 PM 08/19/2010 02:27:08 PM	06/06/2010 12:08:2		Funktion Delta Complete	DB		Instance data blo
	Open Object	OH+Ak+0	08/19/2010 02:27:24 PM	08/19/2010 02:26:2			DE		Instance data bio Instance data bio
-			06/02/2010 01:03:01 PM	05/02/2010 01:03:0			0.0		Variable Table
		colve.							
		anne							
8									
	1.1557 01111								

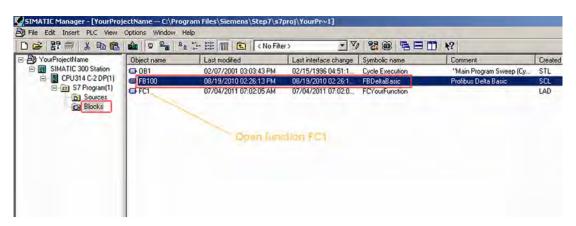
Fig. 11

**5.** Select the desired function block and copy it via '*Edit*  $\rightarrow$  *Copy*', for example.

Integrating the device and the function block into your own project.



**7.** Copy the desired function block into your own project via the *'Edit*  $\rightarrow$  *Paste'*.



- **8.** To link the function block into your own function, open the function by clicking it (here, FC1).
  - $\Rightarrow$  The following window will be displayed:

	Image: State	
New network  New network  New network  New Stop  New S	Choose "FB100" and dam with .drag and drop" on your metwork	

- **9.** Now drag the function block (here FB100) out of the function block catalogue, left, with the mouse into the network shown above see the orange arrow in the screen shot above.
  - ⇒ In the window with the networks, a depiction of the function block is displayed:

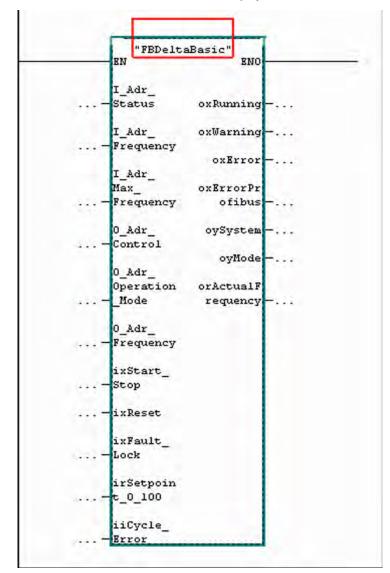
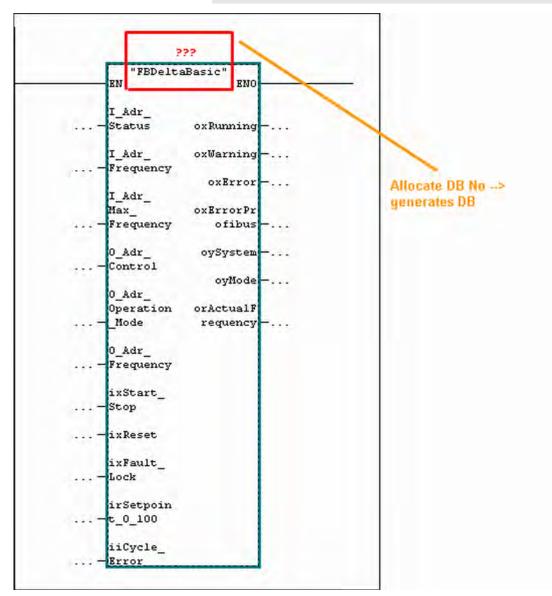


Fig. 12: Depiction of the function block FB100 for GammaXBasic-functionality



Each function block needs a data block to save its data (DB ...).

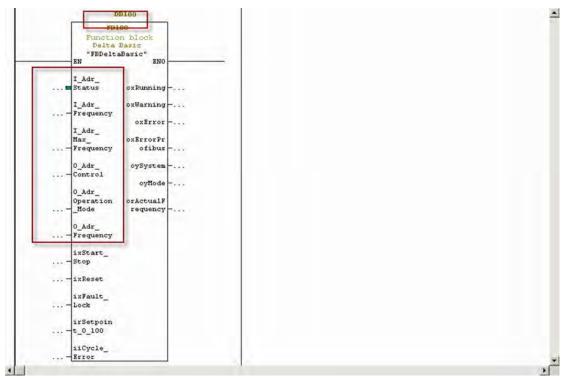
For better understandability use the same number that is used for the function block when naming the data block.



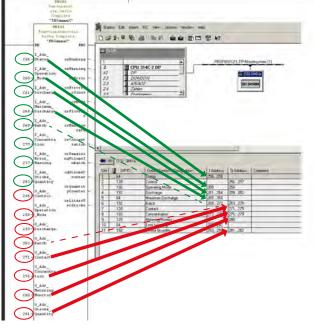
**10.** Double-click the red *'???'* and assign a name for the data block of this function block (e.g. "DB100").



*In this process the data block will be generated automatically in the background.* 



- ⇒ Now function block FB100 has the data block DB100 see 1st red box.
- **11.** Now the complete addresses must still be entered on the input of the function block see 2nd red box. Then go back to the Hardware Configurator (e.g. via the task bar on the lower edge):



- ⇒ The green arrows in the screenshot show the relationship between the input addresses ( '*I\_Adr\_...'* --> '*I-address'*). The red arrows show the relationship between the output addresses ( '*O\_Adr\_...'* --> '*I-address'*).
- **12.** Click in the function block preceding the selected address name (marked by the oval above) and enter the start address of the corresponding address range that the Hardware Configurator displays (at the tip of the arrow). Press the *[ENTER]* key.
- **13.** Do this for all *'I\_Adr\_...'* and *'O\_Adr\_...'*.

**14.** To specify the remaining parameters, use your own operating concept for this pump and refer to the tables in chapter "Function block gamma/ X".

# 3 Installation of the GSD file in the TIA-Portal



This installation manual is only for persons who are familiar with the Siemens Simatic S7 PLC.

Prerequisites:

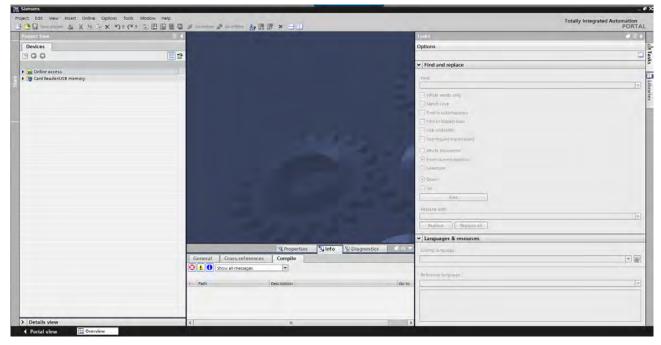
The installation package (such as "GammaX\_S7\_Funktionsblock.zip") with the GSD file (such as "gmxa0f4e.gsd") must have been downloaded from the www.prominent.de website. (The installation package for the respective product is there.)

The installation package must be open on the PC and the GSD must be copied from the installation package into a folder.

#### 3.1 Installing the GSD file

		Totally Integrated Automation PORTAL
Open existing project     Create new project     Migrate project	User interface language Select the language in which the user interface will be displayed.	
C Welcome Tour		
<ul> <li>Installed software</li> <li>Help</li> </ul>		
🍓 User Interface language		

Fig. 13: TIA-Portal in the portal view



**1.** Change to the project view in the TIA-Portal with the *'Project view'* button.

Fig. 14: TIA-Portal in the project view

- 2. ► Follow the path 'Extras → Manage device description file (GSD)' and click with the mouse.
  - ⇒ The 'Manage device description file' window will open:

Source path: W:\Down	load\GSD-file-gamma-X			
Content of imported pa	ath			
File	Version	Language	Status	Info
gmxa0f4e.gsd		Default	Already installed	
4		III	-	>
			Delete Insta	Cancel

- **3.** Use the *[...]* button to select the folder into which you have copied the GSD file.
- **4.** If the path was correct, the GSD file will be displayed in the window. The one for the file gmxa0f4e.gsd for the gamma/ X is in this screenshot.

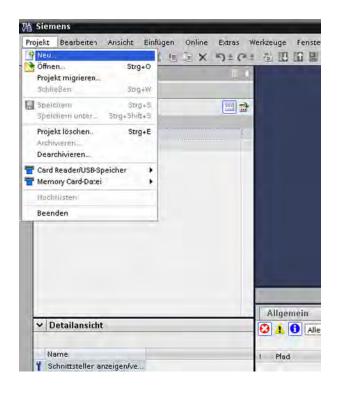
- **5.** Select the file and press the *[Install]* button.
  - $\Rightarrow$  This message appears:

Installation result	t			
1 Message				
<ul> <li>Installation w</li> </ul>	vas completed s	successfully.		

6. Click [Close] to conclude the installation.

The next chapter shows how to create a project in the TIA-Portal.

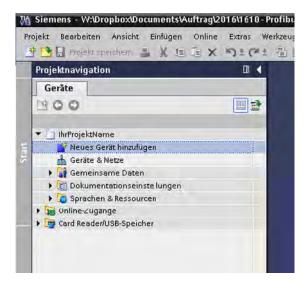
# 3.2 Creating a project



- **1.** ▶ Follow the path *'Project* → *New* ... 'and click with the mouse.
  - ⇒ The *'Create a new project'* window will be displayed:

Create a new project		×
Project name:	YourProjectName	]
Path:	C:1	
Author:	Christian Keller	
Comment:	^	
	~	j
	Create Cancel	

- 2. A project name, path, author and comments can be entered in this window.
- 3. Click [Create].

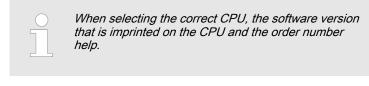




⇒ The 'Add new device' window will be displayed.

ld new device			
evice name:			
LC_1			
Controllers	<ul> <li>Controllers</li> <li>SIMATIC 57-1200</li> <li>SIMATIC 57-1500</li> <li>SIMATIC 57-300</li> <li>SIMATIC 57-300</li> <li>SIMATIC 57-300</li> <li>CPU</li> <li>CPU 312</li> <li>CPU 312</li> <li>CPU 312C</li> <li>CPU 313C-2 DP</li> <li>CPU 313C-2 PP</li> <li>CPU 314C-2 DP</li> <li>CPU 314C-2 DP</li> <li>CPU 314C-2 PV</li> <li>CPU 315-2 PNDP</li> <li>CPU</li></ul>	DI24/DO16; / (2.5kHz); 4-cH 24V (60kHz) positioning fi master or DP to 31 module direct data e	CPU 314C-2 DP CFU 314C-2 DP 6ES7 314-6CH04-0A80 V3.3 memory: 0.1 ms/1000 instructions; MS/AO2 integrated; 4 pulse outputs hannel counting and measuring wild with the recoders; integrated unction: MPI+DP interface (DP Stave); multi-tier configuration up existence and receive capability for xchange; constant bus cycle time; ommunication (loadable FBs/FCs)

5. Select the correct CPU.



Click [OK].

The next chapter shows how to configure the PROFIBUS in the TIA-Portal.

# 3.3 Configure PROFIBUS

The following steps describe the configuration of a 314C-2DP CPU. (The configuration of the communications processor is implemented in a similar manner.)

Project tree	YourProjectName + PLC_1 [CPU :	14C-2 DF
Devices		Topol
1900	Device overview	
	W Module	- 1
YourProjectName		
🗳 Add new device	▼ PLC_1	
Devices & networks	MPI interface_1	
• [] PLC_1 [CPU 314C-2 DP]	DP interface_1	
Device configuration	DI 24/DO 16_1	6
& Online & diagnostics	AI 5/AO 2_1	9
Program blocks	Count_1	
Technology objects	Positioning_1	
External source files	the second se	
<ul> <li>PLC tags</li> <li>PLC data types</li> </ul>	AN T	
Watch and force tables		
Online backups	No. of the second se	
Device proxy data	i≤ =	
Program info		
PLC alarms		
Text lists		
Local modules		
Common data		
Documentation settings		
Languages & resources		
Online access		
Card Reader/USB memory		
	<	

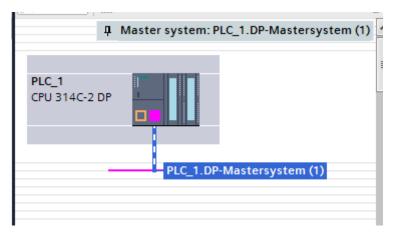


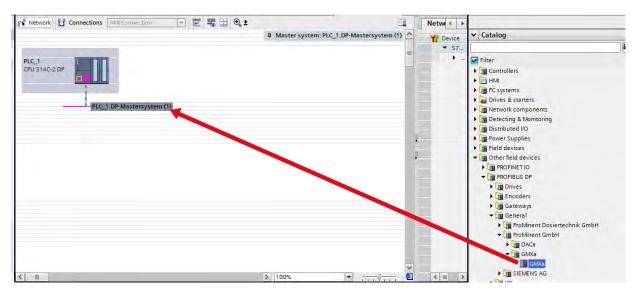
YourProjectName → Devices & networks	
📱 Topology view	<u>۸</u>
Network Connections	
	^
	≡
PLC_1 CPU 314C-2 DP	
	-

- 2. Now create a PROFIBUS master system: To do so, first open the purple square (PROFIBUS interface) with a right-click.
  - ⇒ The context menu appears:

PLC_1 CPU 314C-2 DP			
	Add subnet		
	Assign to new sub	net	
	Disconnect from s	ubnet	
	Add master system	m	
	Assign to new ma	ster	
	Disconnect from r	naster system	
	Highlight masters		
	Add new VPN grou	ıp	
	Assign module to	ign module to a VPN group	
	Remove module f	rom VPN	
	Q Properties	Alt+Ent	

- **3.** Click 'Add master system'.
  - ⇒ A master system is added (here: PLC\_1.DP-Mastersystem (1)):





- 4. ► To add the metering pump, follow the menu path *Other field devices* → *PROFIBUS DP* → *General*  → *Prominent GmbH* → *GMXa'* in the catalogue (right window) and drag the GMXa module to the master system.
  - $\Rightarrow$  Now the metering pump is linked to the PLC.

Network	tions HMI connection	- I	r 🕫 🖬	🔍 ±				
					Д Ma	ster s	ystem: PL	c_
PLC_1	PLC_1.DP-Master	Slave_1 GMXa PLC_1 system (1)		dp-Norm				
			Topology view	k Netw	ork view	De	vice view	
R Network Connections HM	connection 💌 🕅 📆 🗄	Q ±	ropology nen				Netw 4	
		Д	Master system:	PLC_1.DP-Mast	ersystem (1)		Y Device	Þ
PLC_1 CPU 314C-2 DP	Slave_1 GMXa PLC_1	DP-NORM					▼ 57 ▶ ▼ GS	1.1
<	C_1.DP-Mastersystem (1)	>	100%			~	< III >	
Slave_1 [PB1]			Q Properties	🔄 Info 🔒	🛛 🖁 Diagno	ostics		1
General         IO tags         Syst           General         PROFIBUS address         General DP parameters           General DP parameter assignment         Watchdog         SYNOFREZZE           Diagnostics addresses         Diagnostics addresses         Diagnostics addresses	tem constants Texts PROFIBUS address Interface networked with Subnet:	PROFIBUS_1	subnet				•	
	Parameters Address:	3					•	
	Highest address: Transmission speed:						× × ×	
								I

- **5.** Click on the 'Network view' tab to assign the PROFIBUS address.
- **6.** Click on the PROFIBUS interface (2nd purple square) in the graphical representation of the metering pump GMXa.

	😴 Topology view 🛛 🚠 Network vi	ew 🔢	Device view
Network 🔛 Connections HMI cor	nection 🔽 🗒 🔛 🔍 🛨		Netw ∢ →
	# Master system: PLC_1.DP-Mastersystem	tem (1) 🛆	Pevice
		=	▼ \$7
PLC 1	Slave 1		►
CPU 314C-2 DP	GMXa DP-NORM		▼ GS
	PLC_1		
PIC 1	DP-Mastersystem (1)		
100_1			
		~	
<	▶ 100%		< III >
Slave_1 [PB1]	💁 Properties 🐴 Info 🔒 🖫 I	Diagnostic	s 🗆 🗆 🗸
General IO tags System	constants Texts		
General	ROFIBUS address		
PROFIBUS address			
General DP parameters	Interface networked with		
Hex parameter assignment			
Watchdog SYNC/FREEZE	Subnet: PROFIBUS_1		-
Diagnostics addresses	Add new subnet		
Diagnostics addresses			
L	Parameters		
	Address: 3		•
•			
	Highest address: 126		
	Transmission speed: 1.5 Mbps		
			× .

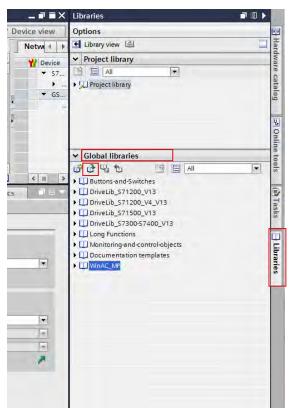
- **7.** Right-click the *'Properties'* tab and select *'PROFIBUS address'* in the *'General'* column.
- **8.** Enter the address of the metering pump in the *'Parameters'* field under *'Address'*.
- 3.4 Incorporating a function block into your own project



The supplied function blocks are embedded in the "Lib-GammaX" library - this is the only way that they can be transported.

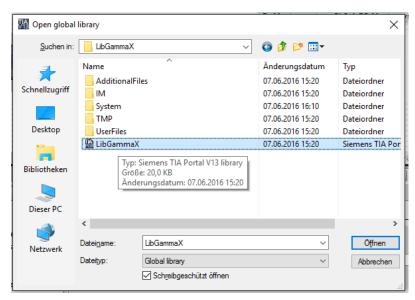
#### Prerequisites:

The project must be open.



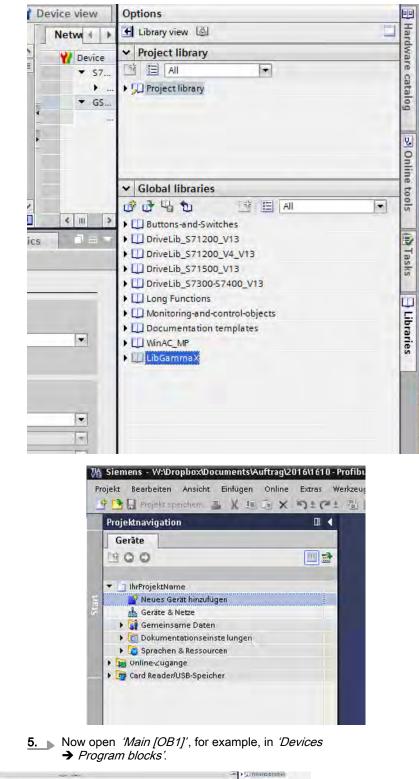
**1.** Click on the 'Libraries' tab on the right edge in the TIA-Portal.

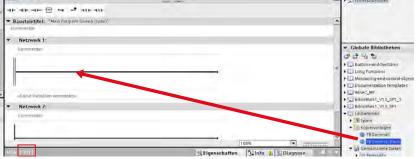
- **2.** Click on key [Load library] on the right in the 'Global libraries' window.
  - $\Rightarrow$  The libraries are loaded.
- 3. Click on [Open].
  - ⇒ The 'Open global library' window opens.



4. Select the "LibGammaX" library and click [Open].

⇒ The "LibGammaX" library appears in the *'Global libraries'* window.





- **6.** In order to call up a function block in *'OB1'- 'Network 1'*, for example the function block GammaXBasic from the "LibGammaX" library, drag and drop to *'Network 1'* with the mouse.
  - ⇒ The *'Call options'* window appears.

Call options		×
Single	Data block Name DBYourInstanceDB Number  Manual Automatic The called function block saves its data in its own instance data block. More	×
	OK Cancel	

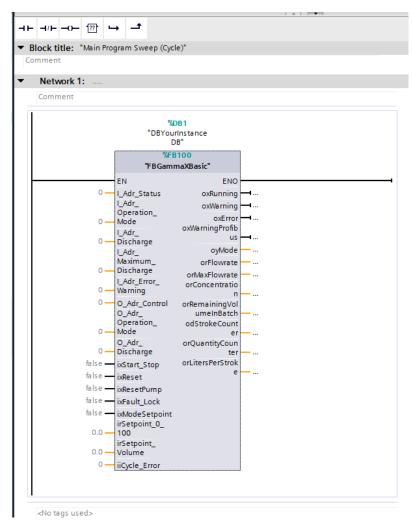
Each function block needs a data block to save its data (DB ...).

For better understandability use the same number that is used for the function block when naming the data block.

- **7.** Enter a name and potentially also a number for the function block in the *'Call options'* window and save with *[OK]*.
  - In the mat

In this process the data block will be generated automatically in the background.

⇒ In the window with the networks, a depiction of the function block is displayed. Now the function block is linked in the project.



*Fig. 15: Depiction of the function block GammaXBasic for GammaXBasic-functionality* 

- **8.** If necessary, adjust the I-address ranges and O-address ranges. To do this double-click on the appropriate row.
  - ⇒ A window will open.
- 9. Here, enter the desired, changed address range and click [OK].



The Hardware Configurator will supplement the address range automatically.

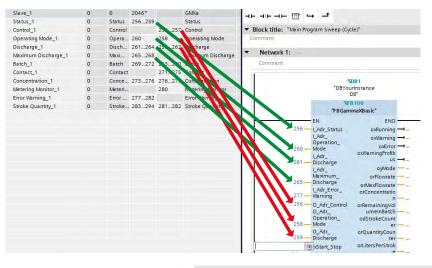
The Hardware Configurator prevents the address from being assigned twice. It handles *I*-addresses and *O*-addresses separately.

Now the definitive addresses must still be entered on the input of the function block:

## 3.5 Enter metering pump function addresses

		2	Topology view	🛔 Network view	🛐 Devi	ce view	0
Network	- 12 4 🖽 🖲	Q ±				letw 🔹 🕨	
		ņ	Master system: PLC	_1.DP-Mastersystem	(1) ^	Y Device	~
					Ξ	▼ S7	
						<u>بر در ا</u>	
PLC_1 CPU 314C-2 DP	Slave_1				_	▼ GS	
CF0 314C-2 DF	PLC_1	NORM			•		1
	ruc_i				-		11
							Ľ
PLC_1.DP-Mast	ersystem (1)						Ľ
							Ľ
							Ľ
					~		L÷.
<		>	100%	· · · · · · · · · ·	. 🔹	< III >	
Slave_1 [PB1]			Q Properties	🗓 Info 😩 🗓 Diag	nostics		-
General IO tags System consta	nts Texts						
General     DOCUDU	S address						
PROFIBUS address	5 address						
	ce networked with						
Hex parameter assignment							
Watchdog	Subnet: PF	ROFIBUS_1				-	
SYNC/FREEZE		Add new	subnet				
Diagnostics addresses							
Param	eters						
	Address: 3					-	
-	Highest address: 12	26					
	Transmission speed: 1.						
	nonannaaion speed.	o mops					
						C	

- 1. ▶ Click on the 'Slave' in 'Devices&Networks → Network view'.
- 2. To enter the address at the function block input, change back to 'Devices&Networks' (hardware configurator) (e.g. via the task bar at the bottom edge):



⇔

In the depiction shown here, there is a screenshot on the left side as both windows are not visible at the same time. Then work on the right side.

The green arrows in the screenshot show the relationship between the input addresses (*'I-address' --> 'I-Adr\_...'*). The red arrows show the relationship between the output addresses (*'O-address' --> 'O\_Adr\_...'*).

- 3. Click in the function block preceding the selected address name (right window) and enter the start address of the corresponding address range that the Hardware Configurator displays (left window). Press the [ENTER] key.
- **4.** Do this for all *'I\_Adr\_...'* and *'O\_Adr\_...'*.
- 5. To specify the remaining parameters, use your own operating concept for this pump and refer to the tables in chapter "Function block gamma/ X".

## 4.1 Introductory information

### Functions of the function blocks

In the sample project there are 2 variants of function blocks:

- 1 GammaXBasic for basic functionality
- 2 GammaX for complete functionality

1 GammaXBasic for basic functionality contains the functions:

- Start/Stop
- Setpoint 0-100%
- Setpoint capacity in I/h
- Warning/fault message (group bit)
- Simple PROFIBUS<sup>®</sup> monitoring

2 GammaX for complete functionality contains the functions:

- Start/Stop
- Selection of setpoint specification / batch
- Batch handling
- Contact control
- Setpoint 0-100%
- Setpoint capacity in I/h
- Stroke counter
- Quantity counter
- Concentration output (option)
- Warning/fault message (group bit)
- Detail specification of the warning
- Detail specification of the fault message
- Simple PROFIBUS<sup>®</sup> monitoring

# Explanation of the names in the standard function blocks

#### In the hardware address "I\_ADR\_Name" and "O\_ADR\_Name":

L	Input
O_	Output
ADR_	Address
Name	Name

#### In the interface names "abName":

#### a (variants)

i	Input
0	Output
stat	Statistical range of the function block

#### b (variants)

Variant	Туре	Value range	
x	Bool	false, true	
у	Byte	0 255	16#00 16#FF
i	Int	0 65535	-32768 32767

Variant	Туре	Value range	
d	DInt	0 4294967295	-2147483648 2147483647
r	Real	-3.402822E +38 -1.175495E-38	1.175495E-38 3.402822E+38

Name

Name

## 4.2 Function block FB100 for basic functionality

Appearance of the function block FB100 for basic functionality

	FB1	00
	and the second second second second	
	Funkcionsb "FBGamma	
_	EN	ENO
	I_Adr_	
	Status	oxRunning
11	6 1 - C	
	I_Adr_	oxWarning
1	Operation	
	Hode	oxError
	I Adr	oxUarning
	Discharge	Profibus
	I_Adr_	oyNode
	Maximum_	
	Discharge	orFlowrat
		e
	I_Adr_ Error	orMaxFlow
11	Warning	rate
	arning	Lave
	0 Adr	orConcent
÷	Control	ration
1		
	0_Adr_	orRemaini
1.1	Operation	ngVolumel
	Mode	nBatch
	0 Adr	odStrokeC
÷. –	Discharge	
1		
	ixStart_	orQuantit
	Stop	yCounter
•• <sup></sup>	ixReset	orLiters] erStroke
	ixResetPu	erscroke
	mp	
1	-	
	ixFault_	
	Lock	
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	ixModeSet	
	point	
	irSetpoin	
	t_0_100	
	irSetpoin	
	t_Volume	
10		
6.4	iiCycle_	
T	Error	

Fig. 16

# Functions of the function block in the Hardware Configurator

Slot	DPID	Order Number / Designation	I Address	Q Address	Comment
1	64	Status	295298		
2	128	Control		283284	
3	192	Operating Mode	299	285	
4	192	Discharge	300303	286289	
5	64	Maximum Discharge	304307		
6	0	Empty [	Discharge		
7	0	Empty			
8	0	Empty			
9	0	Empty			
10	64	Error Warning	316321		
11	0	Empty			

Fig. 17

### Address name of the function block

Address	Туре	Slot	DP identification
I_Adr_Status	Int	1	64
I_Adr_Operation_Mode	Int	3	192
I_Adr_Discharge	Int	4	192
I_Adr_Maximum_Discharge	Int	5	64
I_Adr_Error_Warning	Int	10	64
O_Adr_Control	Int	2	128
O_Adr_Operation_Mode	Int	3	192
O_Adr_Discharge	Int	4	192

The address ranges of the input addresses or output addresses (from the gamma/ X to the CPU) can be read in the Hardware Configurator under "gamma" for the corresponding slots:

### Interfaces of the function block

Interfaces	Туре	Description
ixStart_Stop	Bool	If a 1 is present on this input and if there is no fault, the pump will be activated.
		If the pump does not run or is not at a standstill the following causes are possible:
		PROFIBUS <sup>®</sup> is faulty
		Pump is not in PROFIBUS <sup>®</sup> mode
		PROFIBUS <sup>®</sup> address is not correct
		Configuration is not correct
		Pump is set to stop
		Setpoint is on 0% (irSetpoint_0_100)
		ixFault_Lock = 1 and oxError = 1 or oxProfibus = 1
ixReset	Bool	Resets the bit messages oxWarning, oxError and oxErrorProfibus. Resets the pump (positive flank sent).
ixResetPump	Bool	If the value of "ixResetPump" switches from 1 to 0, the internal pump memory is reset (e.g. for batch metering) and - where possible - any pending errors are reset.

ixFault Lock       Bool       If 0, then the pump does not include a locking mechanism for stored faults.         ixEqual Lock       Logical link:       Start pump = ixStart Stop         is_because the faults oxError and oxWarningProfibus require acknowledgement, the pump automatically starts up again if there is a fault on both sides.       Logical link:         is_there the faults oxError and oxWarningProfibus require acknowledgement, the pump automatically start up again if there is a fault on both sides.       Logical link:         isTet pump - ixStart Stop & oxError = 0 & oxWarningProfibus require acknowledgement. The pump does not automatically start up again if there is a fault on both sides.       Logical link:         irSetpoint_0_100       Real       Entry of the setpoint of the metering pump in %. The formula of the calculation is:         irSetpoint_Volume       Real       Entry of the setpoint of the metering pump in %. The formula of the calculation is:         irSetpoint_Volume       Real       Entry of the setpoint of the metering pump in %. The formula of the calculation is:         irSetpoint_Volume       Real       Entry of the setpoint of the metering pump in %. The formula of the calculation is:         irSetpoint_Volume       Real       Entry of the setpoint of the metering pump in %. The formula of the calculation is:         irSetpoint_Volume       Real       Entry of the setpoint of the metering pump capacity).         irCycle_Error       Int       Specification of the calculation is:	Interfaces	Туре	Description
Logical link: Start pump = ixStart_Stop i.e. because the faults oxError and oxWarningProfibus require acknowledgement. the pump automatically starts up again if there is a fault on both sides.If 1. then the pump does not include a locking mechanism via fault messages oxError or oxWarningProfibus. Logical link: Start pump = ixStart_Stop & oxError = 0 & oxWarningProfibus equire acknowledgement. the pump does not automatically start up again if there is a fault on both sides.irSetpoint 0 100RealEntry of the setpoint of the metering pump in %. The formula of the calculation is: Set frequency = MaxFrequency * irSetpoint / 100 Through the real number the spead on the stroke can be precisely selected, because the entry of 49.99%, for example, is possible. Likewise a fibric connection of the integrated S7 controller is pos- sible. For this the output parameter LMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in l/h. The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.0 l/h - Max. metering pump capacity).iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning. OxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. Delay = time wake alam * iiCycle_Error When using the function block in OB3: Delay = time wake alam * iiCycle_Error When using the function block in OB3: Delay = time wake alam * iiCycle_Error When using the function block in OB3: Delay = time wake alam * iiCycle_Error When using the function block in OB3: Delay = time wake alam * iiCycle_Error When using the function block in OB3: Delay = time wake alam * iiCycle_Error When using the function block in OB3: Delay = time wake a	ixFault_Lock	Bool	
Start pump = ixStart_Stopie, because the faults oxError and oxWarningProfibus require acknowledgement, the pump automatically starts up again if there is a fault on both sides.If 1, then the pump does not include a locking mechanism via fault messages oxError or oxWarningProfibus = 0 i.e. because the faults oxError and oxWarningProfibus require acknowledgement, the pump does not automatically start up again if there is a fault on both sides.irSetpoint 0 100RealEntry of the setpoint of the metering pump in %. The formula of the calculation is: Set frequency + inSetpoint / 100 Through the real number the speed on the stroke can be precisely selected, because the entry of 49.9%, for example, is possible. Likewise a diculation is: Setpoint_volumeirSetpoint_VolumeRealEntry of the setpoint of the metering pump in /h. The formula of the calculation is: Setpoint quantity = input quantity (Limitation 0.0 /h - Max. metering pump capacity).irGycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Specification of the cycles as delay of the warning and fault oxWarning for the unit is is calculated as follows: When using the function block in OB3: Delay = time wake alam * iiCycle_Error Wane using the function block in OB3: Delay = time wake alam * iiCycle_Error Wane using the function block in OB3: Delay = time wake alam * iiCycle_Error Wane using the function block in OB3: Delay = time wake alam * i			
i.e. because the faults oxError and oxWarningProfibus require acknowledgement, the pump automatically starts up again if there is a fault on both sides.if 1, then the pump does not include a locking mechanism via fault messages oxError or oxWarningProfibus.Logical link:start on both sides.irSetpoint 0. 100RealEntry of the setpoint of the metering pump in %. The formula of the calculation is: Set frequency = MaxFrequency * irSetpoint / 100 Through the real number the speed on the stroke can be precisely selected, because the entry of 49.9%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- sible. For this the output parameter LMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in %. The formula of the calculation is: Setpoint quantity input of 49.9%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- sible. For through the real number the speed on the stroke can be precisely selected, because the entry varing/profibus. Likewise a direct connection of the integrated S7 controller is pos- sible. For through the real number the speed on the stroke can be precisely selected, because the entry varing/profibus.iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarningProfibus. Short drop-outs in the PROFIBUS* system can be bridged by the day. The delay time is calculated as follows: When using the function block in OB35: Delay = time wake alam * iiCycle ErroroxRunningBool0 = no warning 1 = pump is runningoxWarningProfibusBool0 = no warning 1 = pump is runningoxKrorendBool<			<u> </u>
messages oxError or oxWarningProfibus. Logical link: Start pump = ixStart_Stop & oxError = 0 & oxWarningProfibus = 0 i.e. because the faults oxError and oxWarningProfibus require acknowledgement, the pump does not automatically start up again if there is a fault on both sides.irSetpoint_0_100RealEntry of the setpoint of the metering pump in %. The formula of the calculation is: Set frequency = MaxFrequency 'irSetpoint / 100 Through the real number the speed on the stroke can be precisely selected, because the entry of 49.99%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- sible. For this the output parameter LMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in l/h. The formula of the calculation is: Setpoint quantity input quantity (Limitation 0.0 l/h - Max. metering pump capacity).iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS* system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB31: Delay = measured cycle time 'iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_ErroroxRunningBool0 = no fault 1 = pump is runningoxWarningProfibusBool0 = no fault 1 = faut activeoxWarningProfibusBool0 = Profibus activated and not disrupted - Pump cannot be controlledoxWarningProfibusBool0 = Profibus activated or Profibus disrupted - Pump cannot be controlledoxWarningProfibusBool0 = Profibus activated or Profibus disrupted - Pump cann			i.e. because the faults oxError and oxWarningProfibus require acknowledgement, the pump automatically starts up again if there is
Start pump = ixStart_Stop & oxError = 0 & oxWarningProfibus = 0 i.e. because the faults oxError and oxWarningProfibus require acknowledgement, the pump does not automatically start up again ifirSetpoint_0_0100RealEntry of the setpoint of the metering pump in %. The formula of the calculation is: Set frequency = MaxFrequency ' irSetpoint/ 100 Through the real number the speed on the stroke can be precisely selected, because the entry of 49.99%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- sible. For this the output parameter LMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in l/h. The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.0 l/h - Max. metering pump capacity).iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Shord drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = time wake alarm * iiCycle_Error When using the function block in OB1: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in O			
i.e. because the faults oxError and oxWarningProfibus require acknowledgement, the pump does not automatically start up again if there is a fault on both sides.irSetpoint_0_100RealEntry of the setpoint of the metering pump in %. The formula of the calculation is: Set frequency = MaxFrequency * irSetpoint / 100 Through the real number the speed on the stroke can be precisely selected, because the entry of 41.99%, for example, is possible. Likewise a direct connection of the integrated \$7 controller is pos- siple. For this the output parameter LIMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in l/h. The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.0 l/h - Max. metering pump capacity).iiCycle_ErrorIntSetpoint quantity = Input quantity OxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB35: Delay = time wake alarm * iiCycle_ErroroxRunningBool0 = no warning 1 = pump is runningoxWarningProfibusBool0 = no fault 1 = pump is runningoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Norfolitus activated or Profibus disrupted - Pump cannot be controlledoxWarningProfibusBool0 = Norfolitus activated or Profibus disrupted - Pump cannot be controlledoxWarningProfibusBool0 = Norfolitus activated or Profibus disrupted - Pump cannot be controlledoxWarnin			Logical link:
acknowledgement, the pump does not automatically start up again if there is a fault on both sides.irSetpoint_0_100RealEntry of the setpoint of the metering pump in %. The formula of the calculation is: Set frequency = MaxFrequency * irSetpoint / 100 Through the real number the speed on the stroke can be precisely selected, because the entry of 49.99%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- siput.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in l/h. The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.01 h- Max: metering pump capacity).iiCycle_ErrorIntSetpoint quantity = Input quantity (Limitation 0.01 h- Max: metering pump capacity).iiCycle_ErrorIntSetpoint quantity = Input quantity (Limitation 0.01 h- Max: metering pump capacity).iiCycle_ErrorIntSetpoint quantity = Input quantity (Limitation 0.01 h- Max: metering pump capacity).iiCycle_ErrorIntSetpoint quantity = Input quantity (Limitation 0.01 h- Max: metering pump capacity).iiCycle_ErrorIntSetpoint quantity = Input quantity (Limitation 0.01 h- Max: metering pump capacity).iiCycle_ErrorOn pump is at standstill 1 = pump is runningoxRunningBool0 = no warning 1 = pump is runningoxRunningBool0 = no varning 1 = pump is runningoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated on Profibus disrupted - Pump cannot be control			Start pump = ixStart_Stop & oxError = 0 & oxWarningProfibus = 0
Image: Section of the calculation is:The formula of the calculation is:Set frequency = MaxFrequency * irSetpoint / 100Through the real number the speed on the stroke can be precisely selected, because the entry of 49.99%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- sible. For this the output parameter LMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in <i>l/h</i> . The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.0 <i>l/h</i> – Max. metering pump capacity).iiCycle_ErrorInt Specification of the cycles as delay of the warning and fault oxWarning. Not drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle ime * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error WarningoxRunningBool0 = no warning 1 = pump is runningoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealC1 = Manual			acknowledgement, the pump does not automatically start up again if
Set frequency = MaxFrequency * irSetpoint / 100 Through the real number the speed on the stroke can be precisely selected, because the entry of 49.99%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- sible. For this the output parameter LMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in l/h. The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.0 l/h – Max. metering pump capacity).iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle time * iiCycle_ErroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateKealActual value capacity in l/h	irSetpoint_0_100	Real	Entry of the setpoint of the metering pump in %.
Through the real number the speed on the stroke can be precisely selected, because the entry of 49.99%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- sible. For this the output parameter LMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in l/h. The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.0 l/h - Max. metering pump capacity).iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = time wake alarm * iiCycle_ErroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no marning 1 = warning activeoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateKealActual value capacity in l/h			The formula of the calculation is:
selected, because the entry of 49.99%, for example, is possible. Likewise a direct connection of the integrated S7 controller is pos- sinput.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in I/h. The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.0 I/h – Max. metering pump capacity).iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarning, oxError and oxWarning/Profibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_Error When using the function block in OB35: Delay = time water at andstill 1 = pump is runningoxRunningBool0 = no warning 1 = warning active 0 = no fault 1 = fault activeoxErrorBool0 = Profibus ac			Set frequency = MaxFrequency * irSetpoint / 100
sible. For this the output parameter LMN must be connected on this input.irSetpoint_VolumeRealEntry of the setpoint of the metering pump in I/h. The formula of the calculation is: Setpoint quantity = Input quantity (Limitation 0.0 I/h – Max. metering pump capacity).iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alam * iiCycle_ErroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarning.Bool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h			
Image: An analysis of the calculation is:The formula of the calculation is:Setpoint quantity = Input quantity (Limitation 0.0 l/h - Max. metering pump capacity).iiCycle_ErroriiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_ErroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = Manual 0 = ne active in lock in cycle active in lock in			sible. For this the output parameter LMN must be connected on this
Setpoint quantity = Input quantity (Limitation 0.0 l/h - Max. metering pump capacity).iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_ErroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in l/h	irSetpoint_Volume	Real	Entry of the setpoint of the metering pump in I/h.
IIICycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_ErroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h			The formula of the calculation is:
iiCycle_ErrorIntSpecification of the cycles as delay of the warning and fault oxWarning, oxError and oxWarningProfibus. Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_ErroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h			Setpoint quantity = Input quantity
oxWarning, oxError and oxWarningProfibus.Short drop-outs in the PROFIBUS® system can be bridged by the delay. The delay time is calculated as follows: When using the function block in OB1: Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_ErrroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in l/h			(Limitation 0.0 l/h – Max. metering pump capacity).
delay.The delay time is calculated as follows:When using the function block in OB1:Delay = measured cycle time * iiCycle_ErrorWhen using the function block in OB35:Delay = time wake alarm * iiCycle_ErrroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h	iiCycle_Error	Int	
When using the function block in OB1: Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_ErroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h			
Delay = measured cycle time * iiCycle_Error When using the function block in OB35: Delay = time wake alarm * iiCycle_ErrroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in l/h			The delay time is calculated as follows:
When using the function block in OB35: Delay = time wake alarm * iiCycle_ErrroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h			When using the function block in OB1:
Delay = time wake alarm * iiCycle_ErrroroxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in l/h			Delay = measured cycle time * iiCycle_Error
oxRunningBool0 = pump is at standstill 1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in l/h			When using the function block in OB35:
1 = pump is runningoxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h			Delay = time wake alarm * iiCycle_Errror
oxWarningBool0 = no warning 1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in l/h	oxRunning	Bool	0 = pump is at standstill
1 = warning activeoxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in l/h			1 = pump is running
oxErrorBool0 = no fault 1 = fault activeoxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in l/h	oxWarning	Bool	0 = no warning
A constraint1 = fault active0xWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlled0yModeByte01 = Manual0rFlowrateRealActual value capacity in l/h			1 = warning active
oxWarningProfibusBool0 = Profibus activated and not disrupted 1 = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h	oxError	Bool	0 = no fault
I = No Profibus activated or Profibus disrupted - Pump cannot be controlledoyModeByte01 = ManualorFlowrateRealActual value capacity in I/h			1 = fault active
oyModeByte01 = ManualorFlowrateRealActual value capacity in l/h	oxWarningProfibus	Bool	0 = Profibus activated and not disrupted
orFlowrate Real Actual value capacity in I/h			
	oyMode	Byte	01 = Manual
orMaxFlowrate Real Max. capacity in I/h	orFlowrate	Real	Actual value capacity in I/h
	orMaxFlowrate	Real	Max. capacity in I/h

# Statistical range of the instance block and

flag	
------	--

90.0 stat	Status Service	BOOL	FALSE	FALSE	1=Es sind Serviceanforderungen vorhanden, 0= Es sind keine Serviceanforderungen	
90.1 stat	Status Messages	BOOL	FALSE	FALSE	1=Es sind Meldungen vorhanden, 0=Es sind keine Meldurgen vorhanden	
90,2 stat	Status Error	BOOL	FALSE	FALSE	1=Störung, 0=keine Störung	
90.3 stat	Status Mamings	BOOL	FALSE	FALSE	1=Wamung, 0=keine Wamung	
90.4 stat	Status ManuelStop	BOOL	FALSE	FALSE	1=Pumpe wurde von Hand gestoppt, 0=Pumpe ist nicht von Hand gestoppt	
30.5 stat	Status Stop	BOOL	FALSE	FALSE	1=Pumpe ist gestoppt, 0=Pumpe ist nicht gestoppt	
90.6 stat	Status Incake	BOOL	FALSE	FALSE	1=Ansaugen aktiv, 0=Ansaugen inaktiv	
90.7 stat	Status Auxiliary	BOOL	FALSE	FALSE	1=Pumpe ist in Auxiliarbetneb, 0=Pumpe ist nicht in Auxiliarbetrieb	
91.0 stat	Status Pause	BOOL	FALSE	FALSE	1=Pause aktiv, 0=Pause inaktiv	
91.1 stat	Status Module	BOOL	FALSE	FALSE	0=Automatic Mode???	
1.2 stal	Status Flow	BOOL	FALSE	FALSE	0=Dosierüberwachung inaktiv, 1=Dosierüberwachung aktiv	
1.3 stat	Status BatchMemory	BOOL	FALSE	FALSE	0=Batch Speicher ist nicht aktiviert, 1=Batch Speicher aktiviert	
11.4 stat	Status Calibrated	BOOL	FALSE	FALSE	0=Pumpe ist nicht kalibriert, 1=Pumpe ist kalibriert	
1.5 otat	Statua NotUacd1	BOOL	FALSE	FALSE	nicht bonutzt	
1.6 stat	Status NotUsed2	BOOL	FALSE	FALSE	nicht benutzt	
1.7 stat	Status NotUsed3	BOOL	FALSE	FALSE	nicht benutzt	
2.0 stat	Status Diaphragm	BOOL	FALSE	FALSE	0=Membranbruchsensor nicht vorhanden, 1=Membranbruchsensor vorhanden	
2.1 stat	Status Concentration	BOOL	FALSE	FALSE	0=Konzentrationsberechnung nicht aktiv, 1=Konzentrationsberechnung aktiv	
2.2 stat	Status NotUsed4	BOOL	FALSE	FALSE	nicht benutzt	
2.3 stat	Status Overpressure	BOOL	FALSE	FALSE	0=0K, 1=Antriebssteuerung meldet zu hoher Gegendruck	
2.4 stat	Status Depressunsed	BOOL	FALSE	FALSE	0=OK; 1=Antnebssteuerung meldet kein Gegendruck	
2.5 stat	Status Venting	BOOL	FALSE	FALSE	0=0K, 1=Pumpe entluttet im Moment	
2.6 stat	Status NotUsed5	BOOL	FALSE	FALSE	nicht benutzt	
2.7 stat	Status NotUsed6	BOOL	FALSE	FALSE	nicht benutzt	
3.0 stat	Status NotUsed7	BOOL	FALSE	FALSE	nicht benutzt	
3.1 stat	Status NotUsed8	BOOL	FALSE	FALSE	nicht benutzt	
3.2 stat	Status NotUsed9	BOOL	FALSE	FALSE	nicht benutzt	
4.0 stat	Errors.Minimum	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Dosierflüssigkeitsstand zu gering	
4.1 stat	Errors.Batch	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Zu viele Dosierhübe > 100000	
4.2 stat	Errors Analog_4mA	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Analogstrom ist kleiner 4 mA	
4.3 stat	Errors Ar alog_20mA	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Analogstrom ist größer 23 mA	
4.4 stat	Errors FlowMonitoring	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Dosierüberwachungsfehler	
4.5 stat	Errors.DiaphragmFailure	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Defekte Membran im Doslerkopf	
4.6 stat	Errors AirLock	BOOL	FALSE	FALSE	0 = Kein Fehler, 1 = Luft im Dosierkopf	
4.7 stat	Errors.Overpressure	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Überdruck in der Hydraulik	
5.0 stat	Errors.NotUsed1	BOOL	FALSE	FALSE	nicht benutzt	
5.1 stat	Errors.Cavitation	BOOL	FALSE	FALSE	0 = Kein Fehler, 1 = Kaviatation	
5.2 stat	Errors.LcwPressure	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Zu geringer Druck in der Hydraulik	
5.3 stat	Errors StokeLenghtChanged	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Im gesperiten Zustand wurde die Hublänge geändert	
5.4 stat	Errors Venting	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Automatische Entfüftung nicht möglich	
6.5 otat	Erroro.BucError	BOOL	FALSE	FALSE	0 = Kein Fehler, 1 = Vom Modul gemeldeter Busfehler	
5.6 stat	Errors.SystemError	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Systemkomponenten defekt. Siehe Display	
5.7 stat	Errors.MeduleError	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Fehler im Modulhandling	
6.0 stat	Warnings.Minimum	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Dosierflüssigkeitsstand ist gering	
6.1 stat	Warnings.Calibration	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Hublängeneinstellung außerhalb der Kalibriertoleranz	
6.2 stat	Warnings FlowMonitoring	BOOL	FALSE	FALSE	0 = keine Wamung, 1 = Dosierüberwachungswamung	
16.3 stat	Warnings DiaphragmFailure	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Defekte Membran im Dosierkopf	
16.4 stat	Warnings Alrlock	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Luft im Dosierkopf	
6.5 stat	Warnings NotUsed1	BOOL	FALSE	FALSE	nicht benutzt	
16.6 stat	Warnings NotOsed1 Warnings Cavitation	BOOL	FALSE	FALSE	0 = keine Wamung, 1 = Kaviatation	
		BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Kawatason 0 = keine Warnung, 1 = Überdruck in der Hydraulik	
6,7 stat	Warnings Overpressure	BOOL	FALSE	FALSE		
17.0 stat	Warnings LowPressure	and the second second			0 = keine Warnung, 1 = Zu geringer Druck in der Hydraulik	
8.0 stat	liCycleFault	INT	0	0		

Fig. 18

# Description of the variables of the function block (statistical range)

Variable	Туре	Description
Status.Service	Bool	1 = There are service requests present - see metering pump oper- ating instructions
Status.Messages	Bool	1 = There are messages present - see metering pump operating instructions
Status.Error	Bool	1 = Fault - see metering pump operating instructions
Status.Warnings	Bool	1 = Warning - see metering pump operating instructions
Status.ManuelStop	Bool	1 = Pump stopped manually
Status.Stop	Bool	1 = Pump stopped
Status.Intake	Bool	1 = Suction active (higher-level function)
Status.Auxiliary	Bool	1 = Pump is in auxiliary mode (higher-level function)
Status.Pause	Bool	1 = Pause active (higher-level function)
Status.Module	Bool	1 = Automatic operation
Status.Flow	Bool	1 = Metering monitor active
Status.BatchMemory	Bool	1 = Batch memory is activated
Status.Calibrated	Bool	1 = Pump is calibrated
Status.NotUsed1	Bool	Not used
Status.NotUsed2	Bool	Not used

Variable	Туре	Description
Status.NotUsed3	Bool	Not used
Status.Diaphragm	Bool	1 = Diaphragm rupture indicator present
Status.Concentration	Bool	1 = Concentration calculation is activated
Status.NotUsed4	Bool	Not used
Status.Overpressure	Bool	1 = Drive controller signals "excessive counter pressure"
Status.Depressurised	Bool	1 = Drive controller signals "no counter pressure"
Status.Venting	Bool	1 = Pump vents in torque
Status.NotUsed5	Bool	Not used
Status.NotUsed	Bool	

### Flags of the function block

Flag name	Туре	Description
iiCycleWarning	Int	Flag - for how many cycles has the warning been present. If this counter is > iiCycle_Error, then oxWarning will be set
iiCycleFault	Int	Flag - for how many cycles has the fault been present. If this counter is > iiCycle_Error, then oxError will be set

### Errors of the function block

Error	Туре	Description
Errors.Minimum	Bool	1 = Metering medium level too low
Errors.Batch	Bool	1 = Too many metering strokes: > 100,000
Errors.Analog_<_4mA	Bool	1 = Analogue current is less than 4 mA
Errors.Analog_>_20mA	Bool	1 = Analogue current is higher than 23 mA
Errors.FlowMonitoring	Bool	1 = Error metering monitor
Errors.FailureDiaphragm	Bool	1 = Defective metering diaphragm
Errors.Airlock	Bool	1 = Air in the metering head
Errors.Overpressure	Bool	1 = Overpressure in the hydraulic system
Errors.NotUsed1	Bool	Not used
Errors.Cavitation	Bool	1 = Cavitation
Errors. LowPressure	Bool	1 = Insufficient pressure in the hydraulic system
Error.StrokeLengthChanged	Bool	1 = In blocked status someone has changed the stroke length
Error.Venting	Bool	1 = Automatic venting not possible
Errors.BusError	Bool	1 = Bus error signalled by the module
Errors.SystemError	Bool	1 = System components defective - see metering pump screen
Errors.ModulError	Bool	1 = Error in the module handling

## Warnings of the function block

Warning	Туре	Metering medium level description
Warnings.Minimum	Bool	1 = Level of metered liquid is low
Warnings.Calibration	Bool	1 = Stroke length setting is out of calibration tolerance

Warning	Туре	Metering medium level description
Warnings.FlowMonitoring	Bool	1 = Warning metering monitor
Warnings.FailureDiaphragm	Bool	1 = Defective metering diaphragm
Warnings.Airlock	Bool	1 = Air in the metering head
Warnings.NotUsed1	Bool	Not used
Warnings.Cavitation	Bool	1 = Cavitation
Warnings.Overpressure	Bool	1 = Overpressure in the hydraulic system
Warnings.LowPressure	Bool	1 = Insufficient pressure in the hydraulic system

## 4.3 Function block FB101 for complete functionality

## 4.3.1 Explanations of the operating modes

At the input *'iyMode'*, these operating modes can be selected:

- 00 Halt
- 01 Manual
- 02 Charge
- 03 Kontakt
- 04 Analog
- 17 Concentration
- 18 Batch (concentration)
- 19 Contact (concentration)
- 20 Analogue (concentration)

#### 4.3.1.1 Manual mode

In 'manual' mode the following signals are relevant:

- ixStart\_Stop
- irSetpoint0\_100
- irSetpoint\_Volume
- ixFault\_Lock
- ixModeSetpoint
- oxError

oxErrorProfibus

The pumps starts, if:

ixStartStop = 1 & (ixFault\_Lock = 0 or (ixFault\_Lock = 1 & oxError = 0 & oxWarningProfibus = 0)

with metering speed (strokes / h) =

A - If ixModeSetpoint = 0:

Metering speed = Maximum frequency \* irSetpoint0\_100 / 100

B - If ixModeSetpoint = 1:

Metering speed = irSetpoint\_Volume

The pump does not start up, if: ixStartStop = 0

#### 4.3.1.2 Batch mode

- In 'Batch' mode the following signals are relevant:
- ixStart\_Stop
- ixStartBatch\_Or\_Contact
- ixBatchContactMemory
- iiBatchTime
- irBatchVolume
- ixFault\_Lock
- oxError
- oxWarningProfibus
- odActualStrokesInBatch
- odRemainStrokesInBatch

#### Without memory function: 'ixBatchContactMemory' = 0

With the input 'ixStart\_Stop' the pump can be switched off at any time.

Recommendation for operation: 'Set ixStart\_Stop' on 1 and only on 0 if needed.

The inputs '*irBatchVolume*' and '*iiBatchTime*' indicate the metering speed.

Locking mechanism = manual mode

*'ixStartStop'* = 1 & (*'ixFault\_Lock'* = 0 or (*'ixFault\_Lock'* = 1 & *'oxError'* = 0 & *'oxWarningProfibus'* = 0)

Metering speed (strokes / h) =

'irBatchVolume' | 'iiBatchTime' (converts the metering pump to I/h.)

The pump does not start up, if:

The value = 0

The pumps starts, at:

Positive flank on input 'ixStartBatch\_Or\_Contact'.

Remaining quantity is set to the value *'irBatchVolume'* (*'orRemainingVolumeInBatch' = 'irBatchVolume'*). The metering pump runs until the remaining quantity = 0.

A renewed flank on *'ixStartBatch\_Or\_Contact'* resets the value of the remaining quantity to *'irBatchVolume'*. If the flank occurs during the batch, the value will be limited to only irBatchVolume (no memory function active).

#### With memory function: ixBatchContactMemory = 1

As "Without memory function: ixBatchContactMemory = 0, but ...

The pumps starts, at:

Positive flank on input 'ixStartBatch\_Or\_Contact'.

Remaining quantity is set to the value *'irBatchVolume'* (*'orRemainingVolumeInBatch'* = *'orRemainingVolumeInBatch'* +

*'irBatchVolume'*). The metering pump runs until the remaining quantity = 0.

A renewed flank on *'ixStartBatch\_Or\_Contact'* increases the remaining stroke remaining quantity by the value *'irBatchVolume'* (memory function active).

#### 4.3.1.3 Contact mode

In 'Contact' mode the following signals are relevant:

- ixStart\_Stop
- ixStartBatch\_Or\_Contact

- ixBatchContactMemory
- irSetpoint0\_100
- irSetpoint\_Volume
- ixModeSetpoint
- ixFault\_Lock
- oxError
- oxWarningProfibus

#### Without memory function: ixBatchContactMemory = 0

With the input 'ixStart\_Stop' the pump can be switched off at any time.

Recommendation for operation: 'Set ixStart\_Stop' on 1 and only on 0 if needed.

The input *'irSetpoint0\_100'* or *'irSetpoint\_Volume'* indicates the metering speed, depending on the input *'ixModeSetpoint'*.

Locking mechanism = manual mode

'ixStartStop' = 1 & ( 'ixFault\_Lock' = 0 or ( 'ixFault\_Lock' = 1 & 'oxError' = 0 & 'oxWarningProfibus' = 0)

If 'ixModeSetpoint' = 0

Capacity =

Maximum capacity \* 'irSetpoint0\_100' / 100

The pump does not start up, if the value is "0".

If 'ixModeSetpoint' = 1

Capacity =

'irSetpoint\_Volume'

The pump does not start up, if the value is "0".

The pumps starts, if:

Positive flank on input *'ixStartBatch\_Or\_Contact'*: Contact quantity = *'irContactVolume'*.

#### With memory function: ixBatchContactMemory = 1

As "Without memory function: ixBatchContactMemory = 0, but ...

A renewed flank on *'ixStartBatch\_Or\_Contact'*: e Contact quantity = remaining quantity + *'irContactVolume'*.

#### 4.3.1.4 Analogue mode

In 'Analogue' mode the following signals are relevant:

- ixStart\_Stop
- ixFault\_Lock
- oxError
- oxWarningProfibus

The pumps starts, if:

ixStartStop = 1 & (ixFault\_Lock = 0 or (ixFault\_Lock = 1 & oxError = 0 & oxErrorProfibus = 0 & oxWarningWarningProfibus = 0)

with metering speed (strokes / h) in accordance with setting mA:

4mA = x strokes,

20mA = y strokes \* (mA on pump /(y - x) strokes)

The pump does not start up, if: The value = "0".

## 4.3.2 Tables for the addresses

Appearance of the function block GammaX for complete functionality

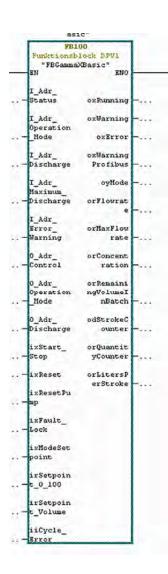


Fig. 19

# Functions of the function block in the Hardware Configurator

Slot	DPID Order Number / Designation		I Address	Q Address	Comment
1	64	Status	256259		
2	128	Control		256257	
3	192	Operating Mode	260	258	
4	192	Discharge	261264	259262	
5	64	Maximum Discharge	265268		
6	192	Batch	269272	263270	
7	128	Contact		271275	
8	192	Concentration	273276	276279	
9	128	Metering Monitor		280	
10	64	Error Warning	277282		
11	192	Stroke Quantity	283294	281282	
	-	-			

Fig. 20

### Address name of the function block

Address	Туре	Slot	DP identification
I_Adr_Status	Int	1	64
I_Adr_Operation_Mode	Int	3	192
I_Adr_Discharge	Int	4	192
I_Adr_Maximum_Discharge	Int	5	64
I_Adr_Batch	Int	6	192
I_Adr_Concentration	Int	8	192
I_Adr_Error_Warning	Int	10	64
I_Adr_Stroke_Quantity	Int	11	192
O_Adr_Control	Int	2	128
O_Adr_Operation_Mode	Int	3	192
O_Adr_Discharge	Int	4	192
O_Adr_Batch	Int	6	192
O_Adr_Contact	Int	7	128
O_Adr_Concentration	Int	8	192
O_Adr_Metering_Monitor	Int	9	128
O_Adr_Stroke_Quantity	Int	11	192

The address ranges of the input addresses or output addresses (from the gamma/ X to the CPU) can be read in the Hardware Configurator under delta for the corresponding slots.

## Interfaces of the function block

Interfaces	Туре	Description
ixStart_Stop	Bool	If a 1 is present on this input and if there is no fault, the pump will be activated.
		If the pump does not run the following causes are possible:
		PROFIBUS <sup>®</sup> is faulty
		Pump is not in PROFIBUS <sup>®</sup> mode PROFIBUS <sup>®</sup> address is not account.
		<ul> <li>PROFIBUS<sup>®</sup> address is not correct</li> <li>Pump is set to stop</li> </ul>
		<ul> <li>Setpoint is on 0% (irSetpoint_0_100)</li> </ul>
		ixFault_Lock = 1 and oxError = 1 or oxProfibus = 1
ixStartBatch_Or_Contact	Bool	Batch mode - iyMode = 2 or iyMode = 18: Pump starts batch mode with a positive flank
		Contact mode - iyMode = 3 or iyMode = 19: At a positive flank the pump 1 x executes iiTransMultiplier strokes
ixBatchContactMemory	Bool	0 = Memory function is switched off
		1 = Memory function is active
ixReset	Bool	Resets the bit messages oxWarning, oxError and oxWarningPro- fibus. Resets the pump (positive flank sent).
ixResetPump	Bool	If the value of "ixResetPump" switches from 1 to 0, the internal pump memory is reset (e.g. for batch metering) and any pending errors are reset.
ixFault_Lock	Bool	If 0, then the pump does not include a locking mechanism for stored faults.
		Logical link:
		Start pump = ixStart_Stop
		i.e. because the faults oxError and oxWarningProfibus require acknowledgement, the pump automatically starts up again if there is a fault on both sides.
		If 1, then the pump does not include a locking mechanism via fault messages oxError or oxWarningProfibus.
		Logical link:
		Start pump = ixStart_Stop & oxError = 0 & oxWarningProfibus = 0
		i.e. because the faults oxError and oxWarningProfibus require acknowledgement, the pump does not automatically start up again if there is a fault on both sides.
ixResetStrokeCounter	Bool	At a positive flank the stroke counter will be reset.
ixResetQuantity	Bool	At a positive flank the quantity counter will be reset.
ixFlowControl_OnOff	Bool	0 = Metering monitor off
		1 = Metering monitor on
		Prerequisite is an installed metering monitor.
iyMode	Byte	00 = Halt
		01 = Manual
		02 = Batch
		03 = Contact
		04 = Analogue
		17 = Concentration
		18 = Batch (concentration)
		19 = Contact (concentration)
		20 = Analogue (concentration)

Interfaces	Туре	Description
irSetpoint_0_100	Real	Entry of the setpoint of the metering pump in %.
		The formula of the calculation is:
		Set quantity = MaxCapacity * irSetpoint / 100
		Through the real number the speed on the stroke can be pre- cisely selected, because the entry of 49.99%, for example, is pos- sible.
		Likewise a direct connection of the integrated S7 controller is pos- sible. For this the output parameter LMN must be connected on this input.
irSetpoint_Volume	Real	Entry of the setpoint of the metering pump in I/h.
		The formula of the calculation is.
		Setpoint quantity = Input quantity (Limitation 0.0l/h – Max. metering pump capacity).
irBatchVolume	Real	Metering volume of a batch.
		At a positive flank on the input ixStartBatch_Or_Contact, the volume is metered.
iiBatchTime	Int	The time in which the batch is to be metered.
irContactVolume	Real	The metering volume to be metered per contact.
		At a positive flank on the input ixStartBatch_Or_Contact, the volume is metered.
irConcentration	Real	Setpoint of the concentration setting (only with concentration operating mode)
iiCycle_Error	Int	Specification of the cycles as delay of the warning and fault oxWarning, oxError and oxErrorProfibus.
		Short drop-outs in the PROFIBUS® system can be bridged by the delay.
		The delay time is calculated as follows:
		When using the function block in OB1:
		Delay = measured cycle time * iiCycle_Error
		When using the function block in OB35:
		Delay = time wake alarm * iiCycle_Errror
oxRunning	Bool	1 = pump is running
oxWarning	Bool	1 = warning active
oxError	Bool	1 = fault active
oxErrorProfibus	Bool	1 = Profibus faulty
oxWarningProfibus	Bool	1 = No Profibus activated or Profibus disrupted:
		Pump cannot be controlled
oyMode	Byte	00 = Halt
		01 = Manual
		02 = Batch
		03 = Contact
		04 = Analogue
		17 = Concentration
		18 = Batch (concentration)
		19 = Contact (concentration)
		20 = Analogue (concentration)

Interfaces	Туре	Description
orFlowrate	Real	Actual value capacity in I/h
orMaxFlowrate	Real	Max. capacity in I/h
orConcentration	Real	Current concentration of the metering pump (option must be enabled)
orRemainingVolumeInBatch	Real	Remaining volume that is currently still to be metered in batch operation
odStrokeCounter	DInt	Current value of the stroke counter in the metering pump
orLitersPerStroke	Real	Current quantity in the quantity counter of the metering pump

# Statistical range of the instance block and flag

90.0 stat	Status Service	BOOL	FALSE	FALSE	1=Es sind Serviceanforderungen vorhanden, 0= Es sind keine Serviceanforderunge
90.1 stat	Status Messages	BOOL	FALSE	FALSE	1=Es sind Meldungen vorhanden, 0=Es sind keine Meldurgen vorhanden
90,2 stat	Status Error	BOOL	FALSE	FALSE	1=Störung, 0=keine Störung
90.3 stat	Status Warnings	BOOL	FALSE	FALSE	1=Wamung, D=keine Wamung
90.4 stat	Status ManuelStop	BOOL	FALSE	FALSE	1=Pumpe wurde von Hand gestoppt, 0=Pumpe ist nicht von Hand gestoppt
90.5 stat	Status Stop	BOOL	FALSE	FALSE	1=Pumpe ist gestoppt, 0=Pumpe ist nicht gestoppt
90.6 stat	Status In:ake	BOOL	FALSE	FALSE	1=Ansaugen aktiv, 0=Ansaugen inaktiv
90.7 stat	Status Auxiliary	BOOL	FALSE	FALSE	1=Pumpe ist in Auxiliarbetrieb, 0=Pumpe ist nicht in Auxiliarbetrieb
91.0 stat	Status Pause	BOOL	FALSE	FALSE	1=Pause aktiv, 0=Pause inaktiv
91,1 stat	Status Module	BOOL	FALSE	FALSE	0=Automatic Mode???
91.2 stat	Status Flow	BOOL	FALSE	FALSE	0=Doslerüberwachung inaktiv, 1=Doslerüberwachung aktiv
91.3 stat	Status BatchMemory	BOOL	FALSE	FALSE	0=Batch Speicher ist nicht aktiviert, 1=Batch Speicher aktiviert
91.4 stat	Status Calibrated	BOOL	FALSE	FALSE	0=Pumpe ist nicht kallbriert, 1=Pumpe ist kallbriert
91,5 otat	Status NotUced1	BOOL	FALSE	FALSE	nicht bonutzt
91.6 stat	Status NotUsed2	BOOL	FALSE	FALSE	nicht benutzt
91.7 stat	Status NotUsed3	BOOL	FALSE	FALSE	nicht benutzt
92.0 stat	Status Diaphragm	BOOL	FALSE	FALSE	0=Membranbruchsensor nicht vorhanden, 1=Membranbruchsensor vorhanden
92.1 stat	Status Concentration	BOOL	FALSE	FALSE	0=Konzentrationsberechnung nicht aktiv, 1=Konzentrationsberechnung aktiv
92.2 stat	Status NotUsed4	BOOL	FALSE	FALSE	nicht benutzt
92.3 stat	Status Overpressure	BOOL	FALSE	FALSE	0=OK, 1=Antriebssteuerung meldet zu hoher Gegendruck
92.4 stat	Status Depressunsed	BOOL	FALSE	FALSE	0=0K, 1=Antnebssteuerung meldet kein Gegendruck
92.5 stat	Status Venting	BOOL	FALSE	FALSE	0=OK, 1=Pumpe entlüftet im Moment
92.6 stat	Status NotUsed5	BOOL	FALSE	FALSE	nicht benutzt
92.7 stat	Status NotUsed6	BOOL	FALSE	FALSE	nicht benutzt
93.0 stat	Status NotUsed7	BOOL	FALSE	FALSE	nicht benutzt
93.1 stat	Status NotUsed8	BOOL	FALSE	FALSE	nicht benutzt
93.2 stat	Status NotUsed9	BOOL	FALSE	FALSE	nicht benutzt
94.0 stat	Errors.Minimum	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Dosiertlüssigkeitsstand zu gering
94.1 stat	Errors.Batch	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Zu viele Dosierhübe > 100000
94.2 stat	Errors Aralog_4mA	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Analogstrom ist kleiner 4 mA
94.3 stat	Errors Aralog_20mA	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Analogstrom ist größer 23 mA
94.4 stat	Errors FlowMonitoring	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Dosjerüberwachungsfehler
94,5 stat	Errors DiaphragmFailure	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Defekte Membran im Doslerkopf
94.6 stat	Errors AilLock	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Luft im Dosierkopf
94.7 stat	Errors.Overpressure	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Überdruck in der Hydraulik
95.0 stat	Errors.NotUsed1	BOOL	FALSE	FALSE	nicht benutzt
95.1 stat	Errors.Cavitation	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Kavistation
95.2 stat	Errors.LcwPressure	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Zu geringer Druck in der Hydraulik
95,3 stat	Errors StokeLenghtChanged	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Im gesperiten Zustand wurde die Hublänge geändert
95,4 stat	Errors.Venting	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Automatische Entlüftung nicht möglich
06.5 otat	Emoro.BucError	BOOL	FALSE	FALSE	0 = Noin Fahlar, 1 = Vom Modul gemaldator Buatahlar
95.6 stat	Errors.SystemError	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Systemkomponenten defekt. Siehe Display
95.7 stat	Errors.MeduleError	BOOL	FALSE	FALSE	0 = kein Fehler, 1 = Fehler im Modulhandling
96.0 stat	Warnings Minimum	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Dosierflüssigkeitsstand ist gering
96,1 stat	Warnings.Calibration	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Hublängeneinstellung außerhalb der Kallbriertoleranz
96.2 stat	Warnings FlowMonitoring	BOOL	FALSE	FALSE	0 = keine Wamung, 1 = Doslerüberwachungswamung
96.3 stat	Warnings.DiaphragmFailure	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Defekte Membran im Dosierkopf
96.4 stat	Warnings Airlock	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Luft im Dosierkopf
98.5 stat	Warnings.NotUsed1	BOOL	FALSE	FALSE	nicht benutzt
98.6 stat	Warnings.Cavitation	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Kaviatation
96.7 stat	Warnings.Overpressure	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Überdruck in der Hydraulik
97.0 stat	Warnings LowPressure	BOOL	FALSE	FALSE	0 = keine Warnung, 1 = Zu geringer Druck in der Hydraulik
98.0 stat	liCycleFault	INT	0	0	
00.0 stat	liCycleWarning	INT	0	0	

Fig. 21

# Statistical range of the instance block of the function block GammaX

Variable	Туре	Description
Status.Service	Bool	1 = There are service requests present - see metering pump operating instructions
Status.Messages	Bool	1 = There are messages present - see metering pump operating instructions
Status.Error	Bool	1 = Errors are present
Status.Warnings	Bool	1 = Warnings are present
Status.ManuelStop	Bool	1 = Pump has been stopped manually

Variable	Туре	Description
Status.Stop	Bool	1 = Pump stopped
Status.Intake	Bool	1 = Pump is in intake operation (higher-level function - see metering pump operating manual)
Status.Auxiliary	Bool	1 = Pump is in auxiliary mode (higher-level function)
Status.Pause	Bool	1 = Pump is switched to pause (higher-level function)
Status.Module	Bool	1 = Automatic operation
Status.Flow	Bool	1 = Metering monitor active
Status.BatchMemory	Bool	1 = Batch memory is activated
Status.Calibrated	Bool	1 = Pump is calibrated
Status.NotUsed1	Bool	Not used
Status.NotUsed2	Bool	Not used
Status.NotUsed3	Bool	Not used
Status.Diaphragm	Bool	1 = Diaphragm break option is installed
Status.Concentration	Bool	1 = Concentration calculation is activated
Status.NotUsed4	Bool	Not used
Status.Overpressure	Bool	1 = Drive controller signals "excessive counter pressure"
Status.Depressurised	Bool	1 = Drive controller signals "no counter pressure"
Status.Venting	Bool	1 = Pump vents in torque
Status.NotUsed5	Bool	Not used
Status.NotUsed	Bool	

## Flags of the function block

Flag name	Туре	Description
iiCycleWarning	Int	Flag - for how many cycles has the warning been present. If this counter is > iiCycle_Error, then oxWarning will be set
iiCycleFault	Int	Flag - for how many cycles has the fault been present. If this counter is > iiCycle_Error, then oxError will be set

### Name of the error messages of the function block

Name of the error messages	Туре	Description
Errors.Minimum	Bool	1 = Level of metering medium too low
Errors.Batch	Bool	1 = Too many metering strokes (>100,000)
Errors.Analog_<_4mA	Bool	1 = Analogue current is less than 4 mA
Errors.Analog_>_20mA	Bool	1 = Analogue current is higher than 23 mA
Errors.FlowMonitoring	Bool	1 = Error metering monitor
Errors.FailureDiaphragm	Bool	1 = Diaphragm break
Errors.Airlock	Bool	1 = Air in the metering head
Errors.Overpressure	Bool	1 = Overpressure in the hydraulic system
Errors.NotUsed1	Bool	Not used

Name of the error messages	Туре	Description
Errors.Cavitation	Bool	1 = Cavitation
Errors.LowPressure	Bool	1 = Insufficient pressure in the hydraulic system
Errors.StrokeLenghtChanged	Bool	1 = In blocked status the stroke length has been changed
Errors.Venting	Bool	1 = Automatic venting not possible
Errors.BusError	Bool	1 = Bus error signalled by the module
Errors.SystemError	Bool	1 = System component defective See LCD screen
Errors.ModulError	Bool	1 = Error in the module handling
Warnings.Minimum	Bool	1 = Metering medium level is too low
Warnings.Calibration	Bool	1 = Stroke length out of calibration tolerance
Warnings.FlowMonitoring	Bool	1 = Metering monitor warning
Warnings.FailureDiaphragm	Bool	1 = Diaphragm break
Warnings.Airlock	Bool	1 = Air in the metering head
Warnings.Overpressure	Bool	1 = Overpressure in the hydraulic system
Warnings.LowPressure	Bool	1 = Insufficient pressure in the hydraulic system



ProMinent GmbH Im Schuhmachergewann 5-11 69123 Heidelberg Germany Telephone: +49 6221 842-0 Fax: +49 6221 842-419 Email: info@prominent.com Internet: www.prominent.com

Heidelberg, 1, en\_GB