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1. New Project Wizard

The new Project Wizard simplifies the project setup for the various Win-GRAF controller types.

The "Project" item In the Project Wizard start page is replaced by "Project (WG)".

Project wizard	New Version (V12)	Project wizard	Previous Version (V11)
Project (WG) XML Import Library		Contemplate From template XML Import Library Automation script	
Create a new Win-GR/	AF project	Create a new project	
New project Destination folder: Name: Comment:		New project Destination folder: Name: Comment:	
	Ne	x	Next

Figure 1: Project wizard start page

Kettings New Version (V12)	Settings Previous Version (V11)
Target Platform: Controller: Not Selected Runtime Version: Info	Tempiate: EmpiyFrujeti Options Language: FBD: Function Block Diagram
Programming Language: Language: FBD: Function Block Diagram -	Debug Release Configuration: (Default)
Compiling Mode: O Debug O Release	Communication options
Communication Parameters:	Protocol: TS protocol
P address: 192 . 168 . 2 . 51 · 1100 Finish Cancel	Cher Create exception programs Edit initial values with the recipe editor Use the General Purpose Library

New interface for the project setting:

Figure 2: Project wizard setting dialog

New functions of the Project Wizard setting UI (see Figure 3):

1. The "Controller" list all the Win-GRAF controller types.

- 2. The new "**Auto-Detect**" function automatically detects types and executes the required project configuration for the connected controller.
- 3. Additional information ("**Info...**") about the connected controller such as supported Fieldbus, Function Blocks and libraries can be retrieved.

Controller: 1	Not Selected	•	Auto-Detect
	Not Selected		
Runtime Version:	WP-8000-CE7		Info
	WP-9000-CE7		3
	XP-8000-CE6		
	XP-8000-WES7		
	XP-9000-IoT		
	WP-5000-CE7		
Programming Language:	ViewPAC-CE7		
	RPAC-2658M		
Language:	EMP-2848M		
5 5	EMP-9000-IoT		
	Windows PC-Runtime		
Compiling Mode:	Debug	Release	

Figure 3: Target Platform selection

2. Information about supported Functions

The workbench shows the supported Function Blocks, Fieldbus and libraries for the selected controller. This prevent the programmer from using unsupported functions in the logic program.

1. Not supported Fieldbus and plug-ins are shown in red



Figure 4: I/O Driver and Fieldbus options



2. Unsupported Function are shown in red in the programming editor

3. Unsupported Function Blocks and libraries are shown in red



3. Modbus Master

Modifications:

 Modbus Fieldbus allows you to disable part of a fieldbus configuration setting. A disabled configuration will not be build by the compiler. Its behavior is similar to a comment in Structure Text "(* *)" or "*/", which means entries can be quickly disabled/ enabled" for debugging purpose or system adjustments. In the previous version it was only possible to disable all and not part of the fieldbus configuration.



2. In the Modbus configuration Tree View the variable indexes can either be displayed as **addresses** or as **offset addresses**.



Figure 5: Modbus configuration tree. Modbus variable numbering: Offset (left) or Address (right)

The default the index numbering in the Tree View is set to offset address.

		Edit Configuration as Text		N	ODBUS M	aster add	resses	X
I/O Drivers *	₽	Sort Symbols						
🖀 🔺 Ma MODBUS Master		Add/Remove Separator after Item			First valid	MODBUS a	ddresses	OK
品 ▲ 品 Open MODBUS: 127.0.0.1:502								
** ** ** Read Input Registers (1) [13] - ET-70)	Declare Variable(s) in Database			Input bit	S:	1	Cancol
4 "			a. 1. a.					Cancer
💶 +0: mb_DI_R_00	ŦŦ	Grd	Ctrl+G		Coil		1	
➡ +1: mb_DI_R_01		Generate Shared Memory						
→ +2: mb_DI_R_02		Conferate Strated Methory			To put ro	aictora	1	
🛸 🗳 +3: mb_DI_R_03		MODBUS Master Addresses			Input re	gisters:	1	
Image: Provide the second		Popumbor addresses					_	
+5: mb_DI_R_05		Renumber addresses			Holding		1	
• " • <4> Read Input Registers (1) [3344] - ET-		Add modules						
Image:		Library of Devices						
Image: Second	0-7	/rite all channels (ET-7002)			Display for	variables		
								 1 I
					Show	offsets in t	he tree	
								J

Figure 6: Modbus variable numbering setting

3. Integration of ICPDAS Modbus slaves:

A special Modbus library has been created for the following ICPDAS Modbus series:

- ET-7000
- M-7000
- Power Meter series: PM-2133D, PM-3033, PM-3133, PM-3133-RCT, PM-4324, PM-4324A

Benefit for the user:

- No manual configuration of the Modbus master register is required. After selecting the slave from the list and the I/O channel to be read, the workbench automatically configures the Modbus master register and performs the required variable mapping.
- The new Modbus slave library saves configuration time and prevents register mapping errors.
- 4. The Modbus master library supports TCP/Serial slaves and is filtered by Modbus protocol type:
 - Only Modbus TCP slaves are displayed for Modbus TCP masters(e.g. ET-7000 series)
 - Only Modbus RTU slaves are available for the Modbus RTU master (e.g. M-7000 series)

Mod	bus TCP	10 Drivers *	N	lodbus RTU	
IVD Drivers * IVD MODBUS Master IVD MODBUS: 127.0.0.1:502 IVD MODBUS: 127.0.0.1:502 IVD	Add Modules Device: (none) (none) ET-7002 ET-7005 ET-7015 ET-7016 ET-7017 ET-7018Z ET-7018Z ET-7024 ET-7024 ET-7050 ET-7051 ET-7053 ET-7066 ET-7066 ET-7066 ET-7066 ET-7217 ET-7217 ET-7217	■ ▲ MoDBU ▲ ▲ RTU: ■ ▲ ■ ■ ● ▲ ■ ● ● ● ● ● </td <td>S Master COM1:9600,N.8,1</td> <td>Add Modules</td> <td></td>	S Master COM1:9600,N.8,1	Add Modules	

Figure 7: Modbus slave filtering according TCP/Serial protocol

5. MODBUS RTU configurator accept COM port addresses longer than 32 characters:

MODBUS Master Port	
MODBUS on Ethernet Address: Port: 502 Protocol: TCP - Open MODBUS UDP - MODBUS RTU UDP - Open MODBUS	OK Cancel
Serial MODBUS-RTU Com. port: COM1:9600,N,8,1	New: COM port addresses longer than 32 characters are supported
Delay between requests Delay (ms): 0	
 Try to reconnect after communication error Manage diagnostic info for slaves Disabled (do not open and manage this port) 	

6. Create your own Library for third party MODBUS devices

The Workbench 12.0 comes with a Modbus library tool, which allows you to create and manage slave libraries for third party Modbus devices.

Device - Untitled	X
File Module Variable	
Description:	
MyDemo	
Modules:	
DEMO - Analog Input DEMO - Digital Input	DEMO Read holding registers
	Address = 1 Nb item = 4
Variables:	

Figure 8: Modbus Library Utility for creating third party Modbus slaves libraries

3.1. Example: Creating a Simple Modbus Network with ICPDAS

Modbus slaves

This example shows, how to add a new ICPDAS Modbus slave to the Win-GRAF controlled Modbus network.

Step 1: Add a Modbus Master to the Fieldbus configurator

○ 益 単 載 1	§9 🛱 🕍 🎢	
	Add Configuration Select a configuration (All) MODBUS MODBUS Master MODBUS Slave OPC UA Shared Memory	OK Cancel
■		

Step 2: Set the master type (Modbus TCP or RTU) and its communication parameters

I/O Drivers *		
📙 🔺 Ma MODBUS Master	MODBUS Master Port	×
윫 윫 Open MODBUS: 127.0.0.1:502		
	MODBUS on Ethernet	ОК
II	Address: 127.0.0.1	Cancel
₫.	Port: 502	
	Protocol: TCP - Open MODBUS	
₽ +	UDP - MODBUS RTU	
•	UDP - Open MODBUS	
*		
٩	Serial MODBUS-RTU	
	Com. port:	
	Delay between requests	
	Delay (ms): 0	
Request Slave/Unit Addre		
Total and the second second	Try to reconnect after communication error	
	Manage diagnostic info for slaves	
	Disabled (do not open and manage this port)	

Step 3: Select a slave devices from the drop-down list

I/O Drivers *		
📔 🔺 Ma MOD	BUS Master	Name
윫 & O	pen MODBUS: 127.0.0.1:502	Mode
"目	Add Modules	X
-	Add Modules	
	Device:	Search:
	(none)	
~	(none)	
	ET-7002	
8*	ET-7005	
•	ET-7016	
1	ET-7017	
	ET-7017-10	
~	FT-70182	
	ET-7024	=
	ET-7026	
	ET-7028	
	ET-7042	
	ET-7044	
	ET-7050	
	ET-7052	
Request	ET-7053	
	ET-7060	
	ET-7065	
	ET-7066	
	ET-7067	
	ET-7083	Add variables Prefix:
	ET-7202	
	FT-7215	
	ET-7217	Cancel
	ET-7217-10	
	ET-7217-A5	
	ET-7217RMS	T

Step 4: Select the I/O channel to read, the slave ID and enable the automatically PLC variable declaration and mapping.

Device:	Search:		
ET-7002	•		
ET-7002 - AI - Read all channels (I	ngineering)		
ET-7002 - DI - Read all channels			
ET-7002 - DI - Write clear counter			
ET-7002 - DO - Write all channels			
Search:	Add variables	Prefix: MB_	
Search:	Add variables	Prefix: MB_	

After confirming the setting new PLC variables are created for each channel and

D Drivers* A Mo MODBUS Master A Mo MODBUS Master A Ma Open MODBUS: 127.0.0.1502 A *8 ead Input Registers (+0: MB_ALR_Engr_00 +1: MB_ALR_Engr_01 +2: MB_ALR_Engr_01 +2: MB_ALR_Engr_01 +1: MB_ALR_Engr_01 +1: MB_ALR_Engr_01 +1: MB_ALR_Engr_01 +1: MB_ALR_Engr_01 +2:	1) [13] - ET-7002 - AI - Read all channels (Engineering) (ET-7002)	Name Tyr ▲ Global variables MB_AI_R_Engr_00 INT MB_AI_R_Engr_01 INT MB_AI_R_Engr_02 INT MB_DI_R_00 B0 MB_DI_R_01 B0 MB_DI_R_02 B0 MB_DI_R_02 B0 MB_DI_R_03 B0 MB_DI_R_03 B0 MB_DI_R_04 B0 MB_DI_R_04 B0	OL OL OL OL OL OL
• •3:MB_DL_R_03 • •4:MB_DL_R_04 • •5:MB_DL_R_05 Newly declared ch;	variables linked to the I/O annel register	Newly declar PLC variable	ed es

automatically linked to its corresponding Modbus input register/coil.

Step 5: Add the next Modbus slave and repeat the step 4.



4. Remote I/O (DCON Protocol)

Modifications:

The "Remote I/O Fieldbus" editor allows you to quickly disconnect/disable one or more DCON slaves from communication without removing them from the fieldbus editor or from the DCON network. A deactivated slave is ignored by the compiler and the DCON master does not query this module. The new feature simplifies setting up the DCON network and testing single-slave communication.

In the previous version it was only possible to deactivate all slaves and not a selected few from the fieldbus configuration.

New Version (V12)	Previous Version (V
)rivers *	IO Drivers *
🖷 Remote I/O (ICP DAS)	📔 🔺 🖷 Remote I/O (ICP DAS)
▲ 品 COM0 : 9600,N,8,1	
▶ * ■ 0:I-7017C	*∎ ▷ *■ 0:⊢7017
▶ *8 0:1-7018P	► ► • • • • • • • • • • • • • • • • • •
▷ *월 0:I-7013D	▶ *■ 0:1-7052D
▷ *8 0:1-7018 ₽	
▷ "目 0:I-7063D	
▷ "틥 0:I-97015	
	2

5. PAC IO Wizard Extension

- **1.** Added "Disable Node" support:
 - This function allows the user to disable a I/O plug-in module or set it as virtual module. A
 disabled I/O plug-in module is disconnected from physical operation and enables you to test
 your application even if the actual hardware is not available.
 - Deactivated modules are shown in darker color.



2. Remote IO plug-in module scanning:

The latest Win-GRAF controllers support the online I/O slot scanning function, which allows the user to remotely scan the I/O modules installed in the controller from the workbench on the PC. Detected modules are displayed next to the main controller in the "PAC IO" user interface.



3. Auto-Selection of the Remote IO-plug-in module scanning:

The project wizard automatically selects the correct controller type and displays the supported plug-in modules. After selecting the target platform type via the project wizard, the controller type can no longer be changed via the PACIO user interface.

In the previous Workbench release, the controller type could be changed after a project was created. This can result in the main controller being populated with I/O modules that are not supported by the controller.



Previous Version (V11) PAC IO (ICP DAS) * 0 X XP-8000-CE6 5 111 ∎ Ħ 0 ₽+ 0 88 R. [0] XP-8000-CE6 (The XP-8000-CE6 series is x86-based Ŷ н Name Value Symbol Slot XP-8000-CE6 Name Note < 1

6. Simplified OPC UA Server UI



Modifications:

- Added new Security Policies such as "Basic256Sha256" and "Aes128_Sha256_RsaOaep".
- Support of "Open62541" OPC UA server

 Simplified the main configuration procedure. The main changes are shown in the following three figures.

OPC UA Server New Version (V12)	OPC UA Server
Server Account Certificate	Server Account Certificate Previous Version (V11)
Endpoint URL	Information
Address [NodeName]	Manufacturer Name Manufacturer Name
Port 4840	Product Name Product Name
	Product Uri urn:Company:Product
Security Policies	Server Name UaServer:[NodeName]
Vone Vone	Server Uri urn:Company:Product:OPCUA_Server
Basic128Rsa15	
Basic256	Maximum Society 2
Basic256Sha256	
Aes128_Sha256_RsaOaep	Maximum Session Timeout 3000 Second
Application Description	Minimum Session Timeout 10 Second
Server Name UaServer:[NodeName]	Minimum Keep Alive Interval 5 Second
Application LIDT	Subscription Settings
urn:Company:Product:UA_Server	Maximum Lifetime 0 🖨 Millisecond
Product URI urn:Company:Product	Minimum Lifetime 10000 🚔 Millisecond
User Identity Token	Publishing Settings
Anonymous Vsername and Password	Maximum Interval 0 Millisecond
Security Check Options	Minimum Interval 50 💭 Millisecond
Automatically trust all client certificates.	User Identity Token
Disable Application URI check.	V Use Username and Password
	Use Certificate
	Use Anonymous Port:
ОК	
L	Security Policies:
	None
	▼ Basic128Rsa15
	Basic256

Figure 9:Server configuration UI (left: Version 12; right: old version)

OP	C UA Server	New Version (V12)		OF	PC UA Server	Previous Vers	sion (V11)
	Add Remo	ve Modify			Add Rer	nove	
	Username	Password	Writable		Username	Password	Writable
	user	userpw	false		user	password	true
					admin	password	true
					User		
					Username		
					Password		
			OK Cancel				
L			Suncer		Write Au	thorization	
							Apply

Figure 10: Account configuration UI (left: Version 12; right: old version)

OPC UA Server			X	OPC UA Server	
Server Account Certificate	New Vers	ion (V12)		Server Account Certificate	Previous Version (V11)
Enable Server Self-Signed				CENTRAL Enable Server Self-Signe	d
Common Name				Certificate Information	
[ServerName]				Common Name	
Organization	Organizati	on Unit		[ServerName]	
Location Name	Country (2	letters)		Organization	Organization Unit
Chata / Dravinga				Organization	Unit
State / Province				Location Name	Country (2 letters)
IP Addresses (separate by s	emicolon)			Location Name	US
DNS Names (separate by se	micolon)			State / Province	machine
[NodeName]					[NodeName]
Years Valid For:				IP Addresses (separate by	semicolon)
20					
				DNC Names (constate by c	
				[NodeName]	emicolony
				[Nodename]	
				Years Valid For:	
		0	Cancel	20	
					OK Cancel

Figure 11: Certificate setting UI (left: Version 12; right: old version)

7. Extended Online Help

Added "F1" support for directly opening the help file of the "IO Driver" plug-in.

Example:

Press F1 to open the OPC UA server documentation:



Press F1 to open the PAC IO Wizard documentation:



7.1. User Manual Updates

- PAC-IO Wizard manual: Described the new function and modification made to the PAC_IO wizard
- Modbus manual:
 - Described the extended Modbus functions and how to add and configure ICPDAS (ET-7000, M7000, PM) Modbus slaves.
 - In addition described how the user can add third party slaves to the Modbus slave library.
 - Extended the FAQ section.
- **OPC UA Server manual**: Started to describe the modified OPC UA wizard functions

8. Detailed list of new features

	Description			
1	Support project names longer than 15 characters			
2	Support of UNIONs			
	Types / Unions			
	🖪 Name 🔺 Type			
	The NewUnion			
	ng 🗖 NewVar BOOL			
	III NewVar1 DINT			
	■ NewVar2 DWORD			
	E ^B E ^S E ^U			
3	Support of WSTRING			
4	Compiler: implement a pragma to display messages in the build report			
5	Compiling option to send STRING constants as UTF8			
6	Add "Redundancy" button to the On Line toolbar for multitask applications			
	♥∂ 蒜 ヰ ト w w w Redundancy			
7	Modbus: Give a way to disable only a part of a fieldbus configuration			
8	Modbus: Added Modbus slave Library			

9	Modbus RTU configurator accept COM port addresses longer than 32
	characters
10	Modbus tree register offset numbering: address or offset address
11	Modbus library tool for integrating third party slaves
12	Remote I/O wizard supports deactivating selected slaves
13	OPC UA server: Added new Security Policies such as "Basic256Sha256" and
	"Aes128_Sha256_RsaOaep" support.
14	OPC UA server: Simplified the main configuration procedure.
15	PAC-IO Wizard: Added "Disable Node" support
16	PAC-IO Wizard: Online I/O plug-in scan function
17	Project Wizard: New Project Wizard simplifies the project setup for the
	various Win-GRAF controller types.
18	Added "F1" support for some plug-in wizard (DDKC)