

OPC UA

Wago + Exor

Wago

e!COCKPIT

WAGO logo

elC_WagoEior_OPCUA_Test_1.ecp - elCOCKPIT

FILE START VIEW PROGRAM DEBUG

Connect Simulate application Stop Program download Multiple download Boot application download Source code download Edit offline Changes download Online change Rebuild Generate code Clean Clean All Cross reference list CODESYS 3 PLCOpen XML Mark declaration Import Import Export Export Import/Export

Program structure

Project library (POUs)

Applications

Application (ControlBlock)

Library Manager

Task Configuration

PLC_Test

Folder

Alarm configuration

DUT

External File

Global Variable List

Image Pool

Interface

Network Variable List (Receiver)

Network Variable List (Sender)

Persistent Variables

POU

POU for implicit checks

Recipe Manager

Symbol Configuration

Text List

Trace

Trend recording manager

Unit conversion

Visualization

Visualization Manager

PLC_PRG X

```
1 PROGRAM PLC_PRG
2 VAR
3   rSineAngleTest: REAL;
4   wLocalVar1: INT;
5 END_VAR
```

GVL X

```
1 {attribute 'qualified_only'}
2 VAR_GLOBAL
3   wGlobalVar1: WORD;
4   rGlobalVar2: REAL;
5 END_VAR
```

Symbol Configuration

Name:

Symbol Configuration

☐ Include Comments in XML

☒ Support OPC UA Features

Client side data layout

☒ Compatibility Layout

☐ Optimized Layout

Add Cancel

elC_WagoExor_OPCUA_Test_1.ecp - elCOCKPIT

FILE START VIEW PROGRAM DEBUG

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Program structure

Project library (POUs)
Applications
Application (Controller)
GVL
Library Manager
PLC_PRG
Symbol Configuration
Task Configuration
PLC_Task (1)

PLC_PRG X

```
1 PROGRAM PLC_PRG
2 VAR
3   rSineAngleTest: REAL;
4   wLocalVar1: INT;
5 END_VAR
```

GVL X

```
1 {attribute 'qualified_only'}
2 VAR_GLOBAL
3   wGlobalVar1: WORD;
4   rGlobalVar2: REAL;
5 END_VAR
```

Symbol Configuration X

View Build Settings Tools

Changed symbol configuration will be transferred with the next download or online change

| Symbols | Access Rights | Maximal | Attribute | Type | Members | Comment |
|------------------|---------------|---------|-----------|------|---------|---------|
| Constants | | | | | | |
| GVL | | | | | | |
| ✓ rGlobalVar2 | | | | REAL | | |
| ✓ wGlobalVar1 | | | | WORD | | |
| IoConfig_Globals | | | | | | |
| PLC_PRG | | | | | | |
| ✓ rSineAngleTest | | | | REAL | | |
| ✓ wLocalVar1 | | | | INT | | |

100 %

1
2 PLC_PRG.wLocalVar1 := PLC_PRG.wLocalVar1 + 1;
3
4 GVL.wGlobalVar1 := GVL.wGlobalVar1 + 1;
5
6 IF (rSineAngleTest < 2*3.14) THEN
7 rSineAngleTest := rSineAngleTest + 0.001;
8 ELSE
9 rSineAngleTest := 0;
10 END_IF
11 GVL.rGlobalVar2 := 100 + (100*SIN(rSineAngleTest));
12
13

100 %

Name

- elC_WagoExor_OPCUA_Test_1.ecp.~u
- elC_WagoExor_OPCUA_Test_1-AllUsers.opt
- elC_WagoExor_OPCUA_Test_1-WagoTorgeir-WagoTorgeir-PC.opt
- elC_WagoExor_OPCUA_Test_1.ecp
- elC_WagoExor_OPCUA_Test_1.Controller.Application.xml

100 %

elC_WagoEior_OPCUA_Test_1.ecp - elCOCKPIT

FILE START VIEW PROGRAM DEBU

Disconnect Simulate application Stop Program download Multi download Boot application download Source code download Online change Rebuild Generate code Clean Cross reference list CODESYS 3 PLCOpen XML Mark declaration Import Export Import/Export Search

Connection Online Reset

Source code Search Import/Export

Program structure

Project library (POUs)

Applications

Application (Controller)

- GVL
- Library Manager
- PLC_PRG
- Symbol Configuration
- Task Configuration
- PLC_Task (1)

PLC_PRG X

Controller.Application.PLC_PRG

| Expression | Type | Value | Prepare |
|----------------|------|-------------|---------|
| rSineAngleTest | REAL | 0.841992736 | |
| wLocalVar1 | INT | 7124 | |

```
1
2 PLC_PRG.wLocalVar1[7124] := PLC_PRG.wLocalVar1[7124]
3
4 GVL.wGlobalVar1[7124] := GVL.wGlobalVar1[7124] + 1;
5
6 IF (rSineAngleTest[0.842] < 2*3.14) THEN
7   rSineAngleTest[0.842] := rSineAngleTest[0.842]
8 ELSE
9   rSineAngleTest[0.842] := 0;
10 END_IF
11 GVL.rGlobalVar2[175] := 100 + (100*SIN(rSineAngl
12
13 RETURN
```

GVL X

Controller.Application.GVL

| Expression | Type | Value | Prepare |
|-------------|------|------------|---------|
| wGlobalVar1 | WORD | 7124 | |
| rGlobalVar2 | REAL | 174.597168 | |

Symbol Configuration X

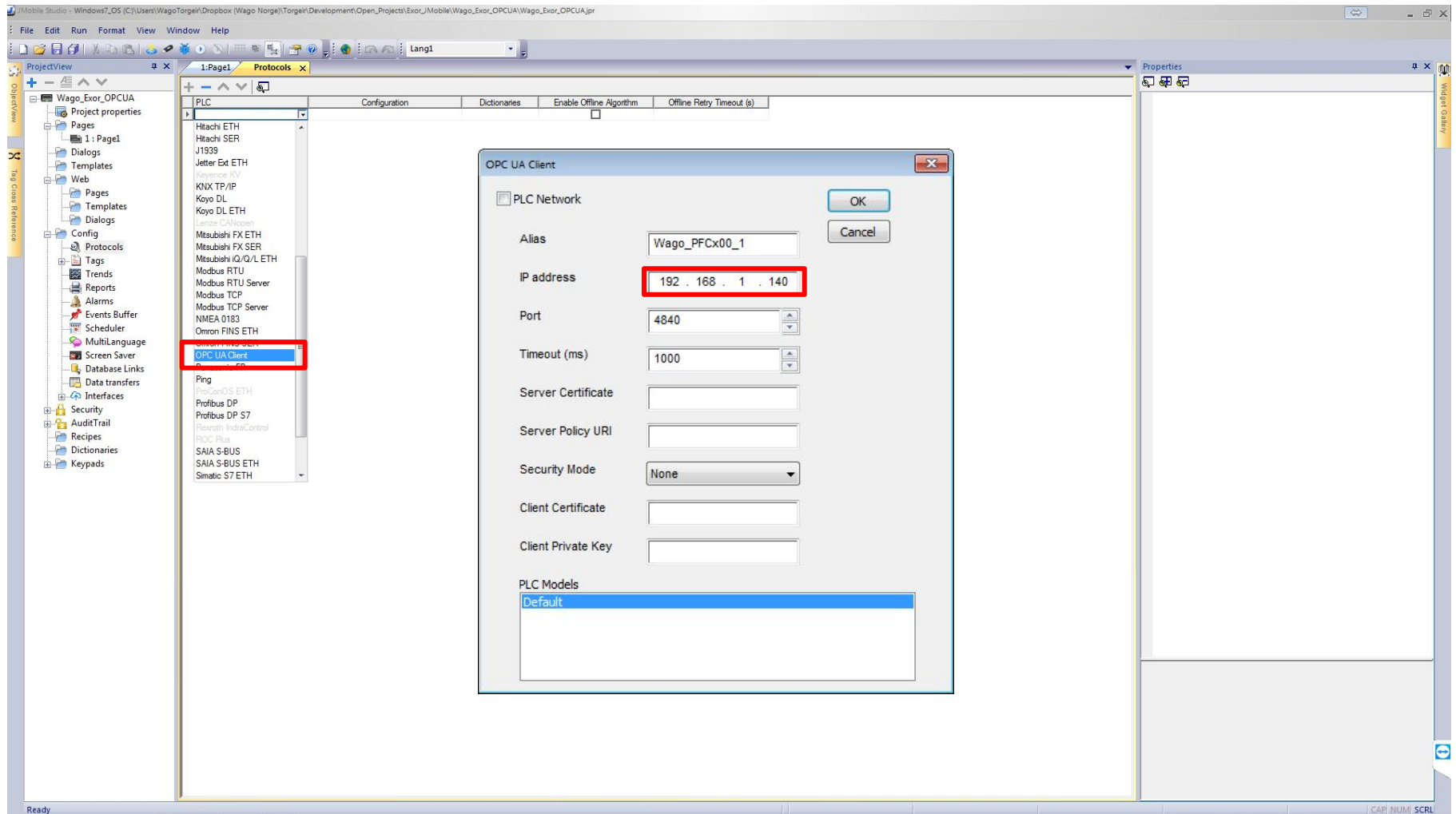
View Build Settings Tools

Changed symbol configuration will be transferred with the next download or online change

| Symbols | Access Rights | Maximal | Attribute | Type | Members | Comment |
|------------------|---------------|---------|-----------|------|---------|---------|
| Constants | | | | | | |
| GVL | | | | | | |
| rGlobalVar2 | | | | REAL | | |
| wGlobalVar1 | | | | WORD | | |
| IoConfig_Globals | | | | | | |
| PLC_PRG | | | | | | |
| rSineAngleTest | | | | REAL | | |
| wLocalVar1 | | | | INT | | |

Exor

JMobile



Mobile Studio - Windows7_OS (C:\Users\Wago\Torgein\Dropbox (Wago Norge)\Torgein\Development\Open_Projects\Exor_Mobile\Wago_Exor_OPCUA\Wago_Exor_OPCUA.jpr

File Edit Run Format View Window Help

Lang1

ProjectView

- Wago_Exor_OPCUA
 - Project properties
 - Pages
 - 1: Page1
 - Dialogs
 - Templates
 - Web
 - Pages
 - Templates
 - Dialogs
 - Config
 - Protocols
 - Tags
 - Indexed Tag Set
 - Trends
 - Reports
 - Alarms
 - Events Buffer
 - Scheduler
 - Multilingual
 - Screen Saver
 - Database Links
 - Data transfers
 - Interfaces
 - Security
 - Audit Trail
 - Recipes
 - Dictionaries
 - Keypads

1: Page1 Protocols Tags

Show All Tags
OPC UA Client prot1
Show All Tags

Name Address Encoding Comment Simulator

HMISudio

Multiple tag importers are available for this protocol. Please select the importer type and continue.

| Version | Type |
|-----------------------|--------------|
| OPC UA Discovery v1.0 | Hierarchical |

Tag Editor exported xml General

OK Cancel

OPCUA Client importer

Symbol discovery, click 'Browse' to pull symbols. Do you want to continue?

opc.tcp://192.168.1.117:4840 Browse

0%

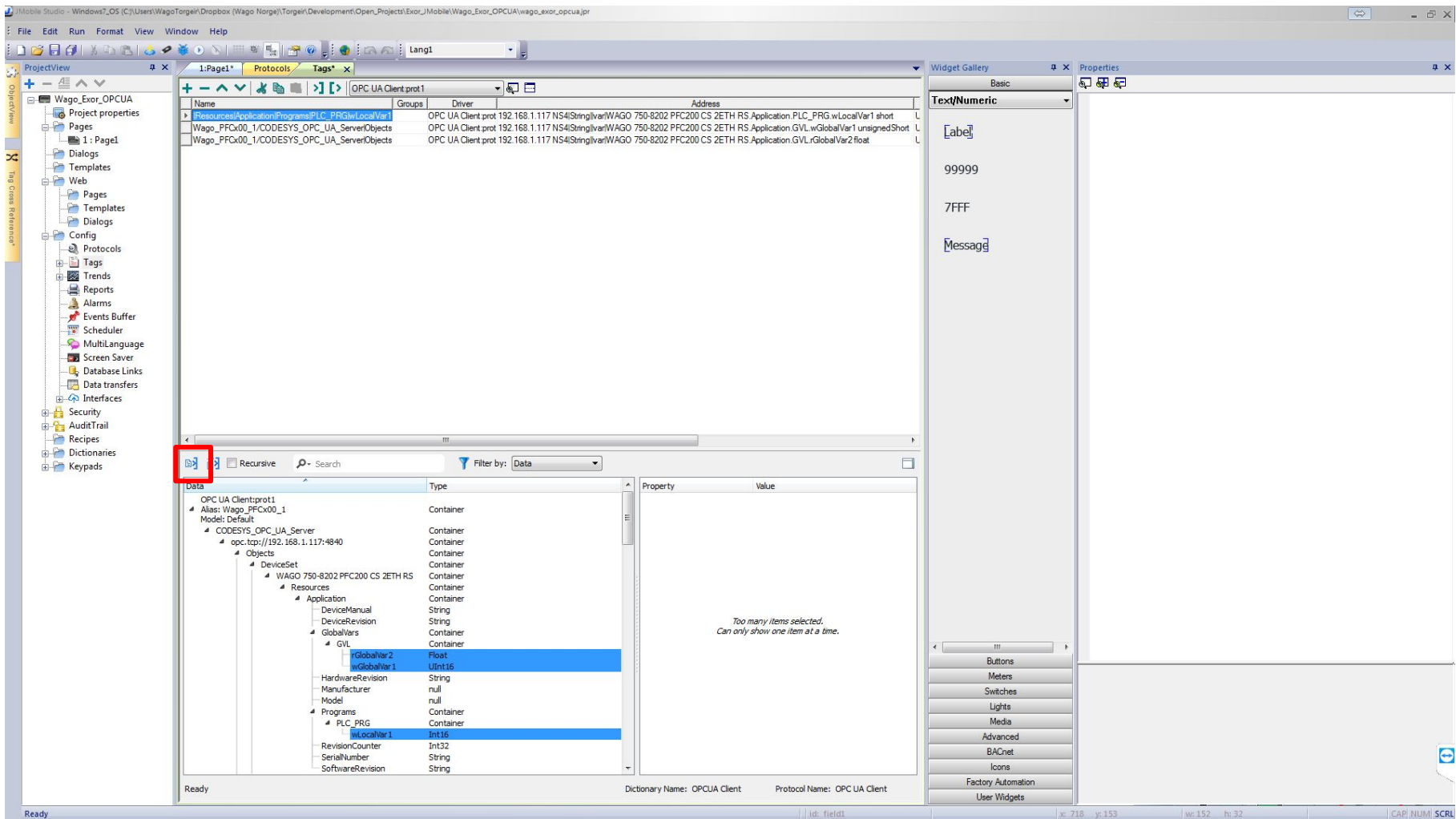
Symbols found: 199

- CODESYS_OPC_UA_Server
 - opc.tcp://192.168.1.117:4840
 - Types
 - Objects
 - DeviceSet
 - WAGO 750-8202 PFC200 CS 2ETH RS
 - Resources
 - Application
 - SerialNumber
 - RevisionCounter
 - Manufacturer
 - Model
 - DeviceManual
 - DeviceRevision
 - SoftwareRevision
 - HardwareRevision
 - Programs
 - PLC_PRG
 - wLocalVar1
 - GlobalVars
 - GVL
 - rGlobalVar2
 - wGlobalVar1
 - Server
 - ServerRedundancy
 - ServerDiagnostics
 - ServerCapabilities
 - Auditing
 - ServiceLevel
 - ServerStatus
 - NamespaceArray
 - ServerArray

OK Cancel

Ready

CAP1 NUM1 SCRL



Mobile Studio - Windows7_OS (C:\Users\WagoTorgein\Dropbox (Wago Norge)\Torgein\Development\Open_Projects\Exor_Mobile\Wago_Exor OPCUA\wago_exor_opcua.jpr

File Edit Run Format View Window Help

Lang1

ProjectView

- Wago_Exor OPCUA
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 - Dialogs
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 - Tags
 - Trends
 - Reports
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 - Screen Saver
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 - AuditTrail
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Protocols Tags 1: Page1

75%

Font Tahoma 24

Application.PLC_PRG.wLocalVar1: 0

Application.GVL.wGlobalVar1: 0

Application.GVL.rGlobalVar2

300.0

240.0

180.0

120.0

60.0

0.0

01:00:00 01:00:00 01:00:00

Widget Gallery

Basic

Text/Numeric

Label

99999

7FFF

Message

Properties

Field: field1

Value 0

DataLink Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects

Access Type R

Number Format #

Keypad Numeric

Events

OnDataUpdate Action

field1.value

Source: Tag Alias System Widget Recipe

Filter by: Data Protocol: Show all Show all tags

Data

| | Type | Tag name |
|------------------|-----------|-----------------------------------------------------------------------------------|
| Application | Container | |
| DeviceManual | String | Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS ... |
| DeviceRevision | String | Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS ... |
| GlobalVars | Container | |
| GlobalVar 2 | Float | Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS ... |
| wGlobalVar1 | UInt16 | Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS ... |
| HardwareRevision | String | Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS ... |
| Manufacturer | null | CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS 2ETH RS/Resour... |
| Model | null | CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS 2ETH RS/Resour... |
| Programs | Container | |
| LocalVar1 | Int16 | Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS ... |
| Revisions | Container | |
| SerialNumber | String | Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS ... |
| SoftwareRevision | String | Wago_PFCx00_1/CODESYS_OPC_UA_Server\Objects\DeviceSet\WAGO 750-8202 PFC200 CS ... |
| Server | Container | |
| Types | Container | |

Read Only Read/Write Write Only Items used: 3/10000 Array index 0

Scaling

By Formula By Range

1,00 x Value + 0,00

Input Output

Min: 0 Max: 100

Min: 0 Max: 100

Bit/Byte Indexing

Color Palette

OK Cancel

Script / Keyboard

Ready

id: field1 x: 877 y: 73 w: 119 h: 52 CAP NUM SCRL

Mobile Studio - Windows7_OS (C:\Users\Wago\Target\Dropbox (Wago Norge)\Torgeir\Development\Open_Projects\Exor_Mobile\Wago_Exor_OPCUA\wago_exor_opcua.jpr

File Edit Run Format View Window Help

Download To Target... Ctrl+D

Manage Target... Download To Target... Ctrl+D

Update Package... Download the current project to the target

Start JS Remote Debugger...

Web Project Settings... Ctrl+E

Start Simulator F12

Stop Simulator Shift+F12

ProjectView

Web

Pages

Templates

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Protocols

Tags

Trends

Reports

Alarms

Events Buffer

Scheduler

MultiLanguage

Screen Saver

Database Links

Data transfers

Interfaces

Security

Audit Trail

Recipes

Dictionaries

Keypads

Lang1

#1 RealtimeTrend

Font Tahoma

24

A B I U

Application.PLC_PRG.wLocalVar1: 0

Application.GVL.wGlobalVar1: 0

Application.GVL.rGlobalVar2

300.0

240.0

180.0

120.0

60.0

0.0

01:00:00 01:00:00 01:00:00 01:00:00

Script / Keyboard

Widget Gallery

Basic

Text/Numeric

Label

99999

7FFF

Message

Properties

Page : Page1

Width 1366

Height 768

Background [255, 255, 255]

Template none

Events

OnActivate Action

OnDeactivate Action

OnWheel Action

Buttons

Meters

Switches

Lights

Media

Advanced

BACnet

Icons

Factory Automation

User Widgets

Download the current project to the target

jd: Page1

x: 0 y: 0

w: 1366 h: 768

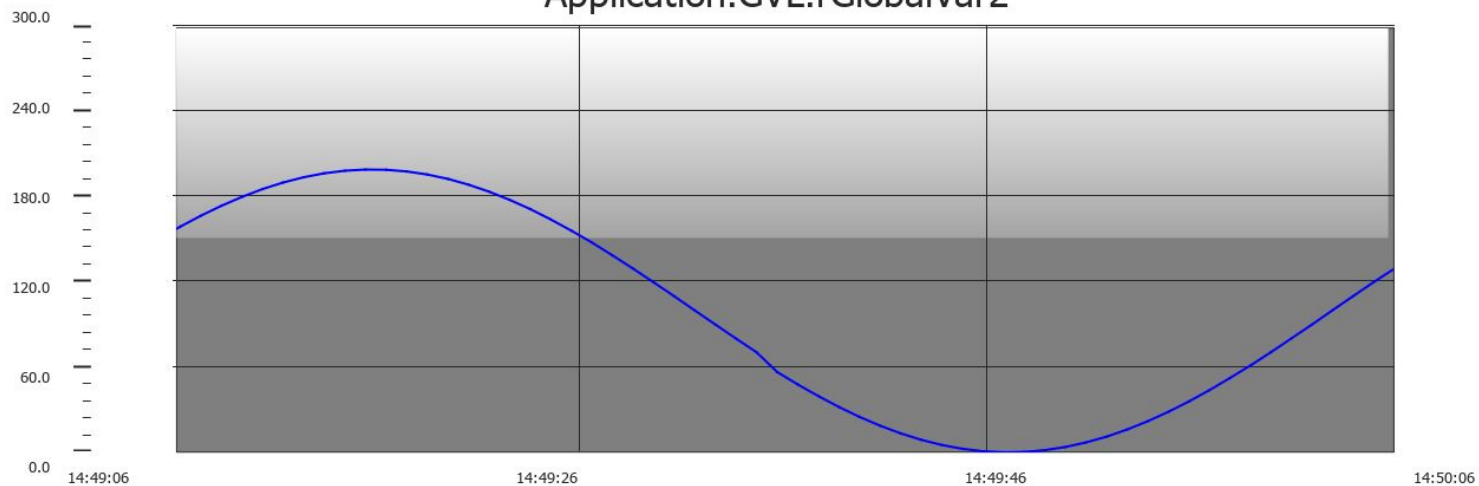
CAP NUM SCRL



Application.PLC_PRG.wLocalVar1: 5974

Application.GVL.wGlobalVar1: 5974

Application.GVL.rGlobalVar2



Wireshark Packet Sniffer Tool

Local Area Connection

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

opcu

| No. | Time | Source | Destination | Protocol | Length | Info |
|------|----------|---------------|---------------|----------|--------|-------------------------------------------------|
| 4347 | 0.109475 | 192.168.1.140 | 192.168.1.117 | Opcua | 399 | UA Secure Conversation Message: ReadRequest |
| 4349 | 0.003876 | 192.168.1.117 | 192.168.1.140 | Opcua | 188 | UA Secure Conversation Message: ReadResponse |
| 4358 | 0.397239 | 192.168.1.117 | 192.168.1.140 | Opcua | 151 | UA Secure Conversation Message: PublishResponse |
| 4360 | 0.011430 | 192.168.1.140 | 192.168.1.117 | Opcua | 129 | UA Secure Conversation Message: PublishRequest |
| 4363 | 0.087303 | 192.168.1.140 | 192.168.1.117 | Opcua | 399 | UA Secure Conversation Message: ReadRequest |
| 4365 | 0.004708 | 192.168.1.117 | 192.168.1.140 | Opcua | 188 | UA Secure Conversation Message: ReadResponse |
| 4378 | 0.417028 | 192.168.1.117 | 192.168.1.140 | Opcua | 151 | UA Secure Conversation Message: PublishResponse |
| 4381 | 0.012616 | 192.168.1.140 | 192.168.1.117 | Opcua | 129 | UA Secure Conversation Message: PublishRequest |
| 4387 | 0.066568 | 192.168.1.140 | 192.168.1.117 | Opcua | 399 | UA Secure Conversation Message: ReadRequest |

Frame 4381: 129 bytes on wire (1032 bits), 129 bytes captured (1032 bits) on interface 0
Ethernet II, Src: Sitek_04:6f:de (00:30:d8:04:6f:de), Dst: Wagonk_40:68:1c (00:30:de:40:68:1c)
Internet Protocol Version 4, Src: 192.168.1.140, Dst: 192.168.1.117
Transmission Control Protocol, Src Port: 55096, Dst Port: 4840, Seq: 49891, Ack: 25922, Len: 63
OpCUA Binary Protocol
Message Type: MSG
Chunk Type: F
Message Size: 63
SecureChannelId: 29093
Security Token Id: 1
Security Sequence Number: 1444
Security RequestId: 1394
OpCUA Service : Encodable Object
TypeId : ExpandedNodeId
PublishRequest
RequestHeader: RequestHeader
AuthenticationToken: NodeId
Timestamp: Sep 4, 2017 14:57:19.334697700 W. Europe Daylight Time
RequestHandle: 1001393
Return Diagnostics: 0x00000000
AuditEntryId: [OpCUA Null String]
TimeoutHint: 60000
AdditionalHeader: ExtensionObject
SubscriptionAcknowledgements: Array of SubscriptionAcknowledgement
ArraySize: 0

0000 00 30 de 40 68 1c 00 30 d8 04 6f de 08 00 45 00 .0.@..0...E.
0010 00 73 29 80 40 00 40 06 8c b3 c0 a8 01 8c c0 a8 .S).@..0.....
0020 01 75 d7 38 12 e8 81 63 bb 4e 6f 73 22 c5 80 18 .U.8...C.Nos"...
0030 01 1f 0c e1 00 01 01 08 0a 00 00 19 e1 00 1f ..YMSGF?.....
0040 09 59 4d 53 47 46 3f 00 00 00 85 71 00 00 01 00 ..YMSGF?.....
0050 00 00 04 05 00 00 72 05 00 01 00 2a 03 71 03P.....
0060 04 00 a1 f3 94 57 74 25 d3 01 b1 47 0f 00 00 00 00P.....
0070 00 00 ff ff ff ff 60 ea 00 00 00 00 00 00 00 00P.....

Text item (text), 35 bytes

Packets: 4443 · Displayed: 506 (11.4%) Profile: Default

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

opcu

| No. | Time | Source | Destination | Protocol | Length | Info |
|------|----------|---------------|---------------|----------|--------|-------------------------------------------------|
| 4387 | 0.066568 | 192.168.1.140 | 192.168.1.117 | Opcua | 399 | UA Secure Conversation Message: ReadRequest |
| 4389 | 0.003994 | 192.168.1.117 | 192.168.1.140 | Opcua | 188 | UA Secure Conversation Message: ReadResponse |
| 4413 | 0.437405 | 192.168.1.117 | 192.168.1.140 | Opcua | 151 | UA Secure Conversation Message: PublishResponse |
| 4415 | 0.013916 | 192.168.1.140 | 192.168.1.117 | Opcua | 129 | UA Secure Conversation Message: PublishRequest |
| 4417 | 0.044746 | 192.168.1.140 | 192.168.1.117 | Opcua | 399 | UA Secure Conversation Message: ReadRequest |

Frame 4413: 151 bytes on wire (1208 bits), 151 bytes captured (1208 bits) on interface 0
Ethernet II, Src: Wagonk_40:68:1c (00:30:de:40:68:1c), Dst: Sitek_04:6f:de (00:30:d8:04:6f:de)
Internet Protocol Version 4, Src: 192.168.1.117, Dst: 192.168.1.140
Transmission Control Protocol, Src Port: 4840, Dst Port: 55096, Seq: 26044, Ack: 50287, Len: 85
OpCUA Binary Protocol
Message Type: MSG
Chunk Type: F
Message Size: 85
SecureChannelId: 29093
Security Token Id: 1
Security Sequence Number: 1444
Security RequestId: 1392
OpCUA Service : Encodable Object
TypeId : ExpandedNodeId
PublishResponse
ResponseHeader: ResponseHeader
Timestamp: Sep 4, 2017 15:05:05.112000000 W. Europe Daylight Time
RequestHandle: 1001391
ServiceResult: 0x00000000 [Good]
ServiceDiagnostics: DiagnosticInfo
StringTable: Array of string
AdditionalHeader: ExtensionObject
SubscriptionId: 2
AvailableSequenceNumbers: Array of UInt32
MoreNotifications: False
NotificationMessage: NotificationMessage
Results: Array of StatusCode
DiagnosticInfo: Array of DiagnosticInfo

0000 00 30 d8 04 6f de 00 30 de 40 68 1c 08 00 45 00 .0..0..0.@...E.
0010 00 89 db 03 40 00 40 06 db 19 c0 a8 01 75 c0 a8 ...@..0.....
0020 01 8c 12 e8 d7 38 6f 73 23 3f 81 63 bc da 08 1880s.#?.C....
0030 13 dd 44 ac 00 00 01 01 08 0a 00 00 1f a9 5d 00 00D.....
0040 19 ec 4d 53 47 46 55 00 00 00 85 71 00 00 01 00 ..MSGF?.....
0050 00 00 a4 05 00 00 70 05 00 01 00 3d 03 03 00 00P.....
0060 24 6d 7e 25 d3 01 af 47 0f 00 00 00 00 00 00 00 00\$m%...G.....
0070 00 00 00 00 00 02 00 00 00 00 00 00 00 00 00 00\$m%.....
0080 00 00 00 ed 24 6d 7e 25 d3 01 00 00 00 00 00 00\$m%.....
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00\$m%.....

Text item (text), 57 bytes

Packets: 4443 · Displayed: 506 (11.4%) Profile: Default