

TECH NOTE :: PMX with Allen-Bradley PLC and Ethernet/IP

Version: 2018-06-08 Author: Michael Guckes, Silvan Ettle Status: HBM: Public

Brief description

This is a guide to creating a project using RSLogix5000 that connects the PMX to an Allen-Bradley controller over Ethernet / IP. Furthermore, there is a short explanation how measured values can be monitored by the PMX in the software. Basic knowledge of Ethernet / IP networking and PMX is recommended.

Generate GSE File

Since firmware version 2.00 it is possible to automatically generate an individual EDS (Electronic Data Sheet) file from each PMX. It includes the device configuration and names of all channels. Therefor go to settings -> fieldbus. Now click "Create EDS File" on the bottom. This approach saves time and is more resistent to mistakes compared to a manual configuration in the RSLogix.

| HBM DEVICE NA | MME: pmx (3.02) ER SET: Default (000) | ADMINISTI | administrator 🔞 🌐 🏵 ? PMX° | | | | | |
|----------------------------|--|--------------------------|------------------------------|--|--|--|--|--|
| FIELDBUS | | | | | | | | |
| SETTINGS | | TCP/IP OBJECT (F5) | Refresh | | | | | |
| Data Polling Rate from Bus | 100 Hz | Config Control (Attr 3) | STATIC | | | | | |
| STATUS | | IP Address (Attr 5) | 192.168.0.3 | | | | | |
| Fieldbus Type | EtherNet/IP | Network Mask (Attr 5) | 255.255.255.0 | | | | | |
| Status | Stand by | Gateway Address (Attr 5) | 0.0.0.0 | | | | | |
| Fieldbus Processor Load | 23 % | Domain Name (Attr 5) | | | | | | |
| | | Host Name (Attr 6) | | | | | | |
| HARDWARE INFO | | Арр | ly settings and restart | | | | | |
| MAC Address Upper Port | 00:02:a2:21:99:8c | | | | | | | |
| MAC Address Lower Port | 00:02:a2:21:99:80 | ASSEMBLY INSTANCE 199 | | | | | | |
| | 9199201 | Number of Channels | 0 | | | | | |
| Serial Number | 20181 | LINK STATUS | | | | | | |
| | 2 | Port 2 | no link | | | | | |
| | Week 15-2015 | Port 1 | no link | | | | | |
| - Filliwate version | 2.6 build 12 levision 3 date 2013-8-15 | Reset to t | factory settings and restart | | | | | |
| | | | | | | | | |
| | | ADAPTED EDS FILE | | | | | | |
| | | Calc. Channels in File | 0 V | | | | | |
| | | EDS | Create EDS File | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Contract of the | | | | | | | | |

<u>Important</u>: It is essential to not change the file name. It is normed and includes important information for the software. Also define the number of transmitted calculated channels before generating the file. In the device there has to be mounted at least one measurement card (PX878 is not a measurement card).



Create a Project

Start a new project in RSLogix.

| New Controller | | X | |
|---------------------|---|----------|---|
| Vendor: | Allen-Bradley | | |
| Туре: | 1769-L24ER-QBFC1B CompactLogix5324ER-QBFC1B Controller | |] |
| Revision: | 20 🗸 | Cancel | |
| | Redundancy Enabled | Help | |
| Name: | ethernet_test1 | | |
| Description: | | * | |
| | | | |
| Chassis Tuper | | * | |
| Cridoolo Type. | <none></none> | * | |
| Slot: | 0 🚔 Safety Partner Slot: <none></none> | | |
| Create In: | C:\RSLogix 5000\Projects | Browse | |
| Security Authority: | No Protection | • | |
| | Use only the selected Security Authority for Authentication and Authorization | | |
| | | | |
| | | | |
| | | | |

The following Overview will show up.

| RSLogix 5000 - ethernet_test1 [1769-L24ER-QBFC1B 20.11] | | | |
|--|---|-----|--|
| File Edit View Search Logic Communications Tools Window Help | | | |
| 🖹 🍻 🖬 🍏 🐰 🛍 🛍 🕫 🖙 assign at | p address 🔹 🦺 🐴 强 🎼 📝 💇 🔍 🔍 Select a Language | - 😣 | |
| Offline D. E RUN | - | | |
| | -(L) b | | |
| No Edits Add-On & Safety & | Alarms & Bit & Timer/Counter & Input/Output & Compare | | |
| Controller Organizer | | | |
| Consider Organization (Construction) Consider Tage (Construction) Construction Construction | | | |
| | | | |
| | | | |
| ۲ | | | |
| Create Output Energize instruction | | | |



Install devices

Right-click onto Ethernet and add a "New Module".

| Discover Modules |
|----------------------|
| Discover Modules |
| |
| Paste Ctrl+V |
| Properties Alt+Enter |
| Bus Size Print • |

Choose the module type you want to setup (here: PMX) and select "Create".

| Select Module Type | | | | | | | |
|--------------------|-----------------------|---|-------------------|--------------------------|------------------|--|--|
| Catalana | | | | | | | |
| Catalog Module | e Discovery Favorit | es | | | | | |
| | | | | | | | |
| Enter Seard | h Text for Module Ty | Clear Filters | | | Hide Filters 🕱 | | |
| | Madda Ta | | | d de Trese Mandes Ditere | | | |
| | Module Typ | e Category Filters | | dule Type vendor Filters | | | |
| Comm | unication | | Allen-Bradley | | = | | |
| Comm | unications Adapter | | Cognex Corporati | on | | | |
| Contro | oller | | Endress+Hauser | | | | |
| Digital | DI NUMP | | Hottinger Baldwin | Messtechnik GmbH | | | |
| UPIto | EtherNet/IP | × 1 | Mettier-Toledo | | T | | |
| Catalog Nu | mber | Description | Vendor | Category | * | | |
| 1783-EN | USU8T | 1783-EMS08T Ethemet Managed Switch | Allen-Bradley | Communication | | | |
| 1783-E1 | ΤΔΡ | 3 Port Ethemet Tan, Twieted Pair Media | Allen-Bradley | Communication | | | |
| 1783-E1 | TAP1E | 3 Port Ethemet Tap, 1 Fiber/2 Twisted Pair Media | Allen-Bradley | Communication | | | |
| 1783-E1 | TAP2F | 3 Port Ethemet Tap, 2 Fiber/1 Twisted Pair Media | Allen-Bradley | Communication | | | |
| 1788-EN | V2DN | 1788 Ethemet to DeviceNet Linking Device | Allen-Bradley | Communication | | | |
| 1788-EN | NBT | 1788 10/100 Mbps Ethemet Bridge Twisted-Pair Media | Allen-Bradley | Communication | | | |
| 1794-AF | -NT | 1794 10/100 Mbps Ethemet Adapter, Twisted-Pair Me | Allen-Bradley | Communication | | | |
| 1794-AF | INTR | 1794 10/100 Mbps Ethemet Adapter, Photo Visted- | Allen-Bradley | Communication | | | |
| 1/99ER | | 10 Point Input/10 Point Output, 24V DC Base, Source | Allen-Bradley | Digital | | | |
| 1-WGX | 00x | PMX | Hottinger Baldwi | Communications Adapter | | | |
| 2097-V3 | 31PR0 | Kinetix 300, 2A, 120/240V, No Filter | Allen-Bradley | Drive | | | |
| 2097-V3 | 31PR2 | Kinetix 300, 4A, 120/240V, No Filter | Allen-Bradley | Drive | | | |
| 2097-V3 | 32PR0 | Kinetix 300, 2A, 240V, Integrated Filter | Allen-Bradley | Drive | | | |
| 2097-V3 | 32PR2 | Kinetix 300, 4A, 240V, Integrated Filter | Allen-Bradley | Drive | | | |
| 2097-V3 | 32PR4 | Kinetix 300, 8A, 240V, Integrated Filter | Allen-Bradley | Drive | - | | |
| 210 of 210 M | Nodule Types Found | i | | | Add to Favorites | | |
| Close on | Create | | | C | reate Close Help | | |



Assign the IP-Address according to the default settings with the PMX, further name the device.

| New Module | |
|---------------------------|---|
| General [*] Conn | ection Module Info Internet Protocol Port Configuration Network |
| Туре: | 1-WGX00x PMX |
| Vendor: | Hottinger Baldwin Messtechnik GmbH |
| Parent: | Local |
| Name: | E themet Address |
| n i i | Private Network: 1921681 |
| Description: | (IP Address: 192 . 168 . 0 . 3 |
| | O Host Name: |
| | |
| | T |
| Module Defin | nition |
| Revision: | 1.1 |
| Electronic Ke | eying: Compatible Module |
| Connections | Exclusive Owner |
| | |
| | |
| | Change |
| itatus: Creating | OK Cancel Help |

The PMX is added to the overview.



Select Controller Tags and define the number of Calculated Channels under "PMX C".

PMX C = Configuration PMX I = Inputs (from PMX)

PMX O = Outputs (to PMX)





Double-click onto PMX in the structure for the settings.

| Controller Organizer 👻 🕂 🗙 | | |
|---|---|---|
| | Certeral Connection Module Info Internet Protocol Port Configuration Network | _ |
| - 🖉 Controller Tags | Type: 1-WGX00x PMX | |
| Controller Fault Handler | Vander Hattinger Baldwije Maastachvijk Grahl | |
| Power-Up Handler | | |
| 🚊 🚔 Tasks | Parent: Local | |
| 🖨 🚭 MainTask | Name: PMX Ethernet Address | |
| 🛓 🖳 MainProgram | Decision Decisio | |
| Unscheduled Programs | Description: | |
| 🚊 📹 Motion Groups | © IP Address: 132 . 168 . 0 . 3 | |
| Ungrouped Axes | | |
| Add-On Instructions | Host Name: | |
| 🖕 🔄 Data Types | | |
| User-Defined | | |
| 🕀 🙀 Strings | | |
| Add-On-Defined | Module Definition | |
| 🗄 📲 Predefined | Bevision 11 | |
| 🗄 📲 Module-Defined | ITGVINUL I.I | |
| Trends | Electronic Keying: Compatible Module | |
| i 🔄 I/O Configuration | Connections: Exclusive Owner | |
| 🖻 🎹 1769 Bus | | |
| [0] 1769-L24ER-QBFC1B ethernet_test1 | | |
| Embedded I/O | | |
| [1] Embedded Discrete_IO | Change | |
| [2] Embedded Analog_IO | | |
| [3] Embedded Counters | | |
| Expansion I/O | | |
| ⊟ thernet | UK Lancel Apply Hel | 2 |
| II IIII 1769-I 24ER-OREC1R ethernet test1 | | |

A click on "Change..." (see above) opens the window "Module Definition", in which the Calculated Channels must be setup according to the defined number within the Controller Tags.

| ¢ | Controller Organizer 👻 🕂 🗙 | Consul | | | | | | |
|--------------|--|--|---|--|---|-----------------|---|--|
| T Start Page | Controller Joganizer Controller Joganizer Controller Jogan Co | General Conno Type: Vendor: Parent: Name: Description: Bevision: Electronic K Connections Status: Offline | ection Module Into Internet Proto 1-WGX00x PMX Hotinger Baldwin Messtechnik Gr Local PMX I.1 esing Compatible Module Exclusive Owner | ecel Port Configuration nbH Revision: Electronic Keying Connections: Name Exclusive Ov | Network Ethernet Address Private Network: IP Address: Host Name: nition* Compatible Module vner | 1921681 192. | ISIZE 8 channels 5 Stre 8 channels 5 ShrT 18 channels 5 ShrT 19 ShrT | |
| | S Module Defined Tags | | | | | OK | Cancel Help | |

Choose a communication path (Path: Communications\Select Recent Path). Confirm your selection with "Go Online".

| 1 | Select Recent | Communications Path | | × |
|---|---|---|-----------------|--|
| | Controller test1 | Path USB\16 | | Go Online Upload Download Close Help |
| | Show Only Pat Serial Number in F Path in Project: | hs Matching Serial Number in Project roject: <none> <none></none></none> | Reset Path List | Set Project Path Clear Project Path |



Display a measurement

After Downloading to the device...

| | | | | _ | |
|--------------|---|-----|---|------------------|-------------------------------|
| Off | line | • | | | Path: <none:< th=""></none:<> |
| No | Forces | | <u>G</u> o Online | \mathbb{P}_{-} | |
| No | Edits | | Upload | | |
| | | | <u>D</u> ownload | | Favorit |
| 🏠 Start Page | Controller Orga Contro Con Cor Pov Tasks | Gro | Program Mode <u>R</u> un Mode <u>T</u> est Mode Clear <u>F</u> aults <u>Go</u> To Faults Controller Properties | | |
| | i Uns | Gro | oups | | |

...the programm can be started by "Go online".

| Rem Run No Forces No Edits | <mark>].</mark> ▶. ₽ | Run Mode Controller OK Battery OK I/O OK |
|----------------------------------|----------------------------|---|
| Controller O | rganize | er |
| | | |

The measured values are shown under Controller Tags \ PMX I (Input).

| | Controller Organizer | - 4 × | s | cope: 🔃 ethernet_test1 | | w: All Tags | | | |
|------|----------------------------------|-------|---|------------------------|------|-------------|------------|---------|-----------|
| Star | Controller ethernet_test1 | | | Name | - BC | Value 🗲 | Force Mask | Stule | Data Tune |
| t Pa | Controller Tags | | | +-PMX:I.Data[40] | | 0 | | Decimal | SINT |
| e | Controller Fault Handler | | | + PMX:I.Data[41] | | 0 | | Decimal | SINT |
| | Power-Up Handler | | | + PMX:I.Data[42] | | 0 | | Decimal | SINT |
| | - A MainTack | | | + PMX:I.Data[43] | | 0 | | Decimal | SINT |
| | | | | + PMX:I.Data[44] | | 0 | | Decimal | SINT |
| | Unscheduled Programs | | | + PMX:I.Data[45] | | 0 | | Decimal | SINT |
| | | | | + PMX:I.Data[46] | | 17 | | Decimal | SINT |
| | Ungrouped Axes | | | + PMX:I.Data[47] | | 43 | | Decimal | SINT |
| | Add-On Instructions | | | + PMX:I.Data[48] | | 42 | | Decimal | SINT |
| | 🚊 📇 Data Types | | | + PMX:I.Data[49] | | -63 | | Decimal | SINT |
| | 📲 User-Defined | | | + PMX:I.Data[50] | | 6 | | Decimal | SINT |
| | 🖶 🔙 Strings | | | + PMX:I.Data[51] | | 0 | | Decimal | SINT |
| | Add-On-Defined | | | + PMX:I.Data[52] | | -71 | | Decimal | SINT |
| | 🕀 🛄 Predefined | | | + PMX:I.Data[53] | | 75 | | Decimal | SINT |
| | 💮 🛄 Module-Defined | | | + PMX:I.Data[54] | | 122 | | Decimal | SINT |
| | rends | | | + PMX:I.Data[55] | | -65 | | Decimal | SINT |
| | E-G I/O Configuration | | | + PMX:I.Data[56] | | 0 | | Decimal | SINT |
| | | | | + PMX:I.Data[57] | | 0 | | Decimal | SINT |
| | | | | + PMX:I.Data[58] | | 0 | | Decimal | SINT |
| | III Embedded Discrete IO | | | + PMX:I.Data[59] | | 0 | | Decimal | SINT |
| | [2] Embedded Analog IQ | | | + PMX:I.Data[60] | | 0 | | Decimal | SINT |
| | [3] Embedded Counters | | | + PMX:I.Data[61] | | 0 | | Decimal | SINT |
| | Expansion I/O | | | + PMX:I.Data[62] | | 6 | | Decimal | SINT |
| | Ethernet | | | + PMX:I.Data[63] | | 0 | | Decimal | SINT |
| | 1769-L24ER-QBFC1B ethernet_test1 | | | + PMX:I.Data[64] | | 0 | | Decimal | SINT |
| | 1-WGX00x PMX | | | + PMX:I.Data[65] | | 0 | | Decimal | SINT |
| | | | | + PMX:I.Data[66] | | 0 | | Decimal | SINT |
| | | | | ⊕ PMX:I.Data[67] | | 0 | | Decimal | SINT |
| | | | | + PMX:I.Data[68] | | 6 | | Decimal | SINT |
| | | | | + PMX:I.Data[69] | | 0 | | Decimal | SINT |
| | | | | | | 1 | | | |



Disclaimer

These examples are for illustrative purposes only. They cannot be used as the basis for any warranty or liability claims.