



***PnioVerify
ProfiNET Master Simulator
Documentation***

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PnioVerify ProfiNET Master Simulator

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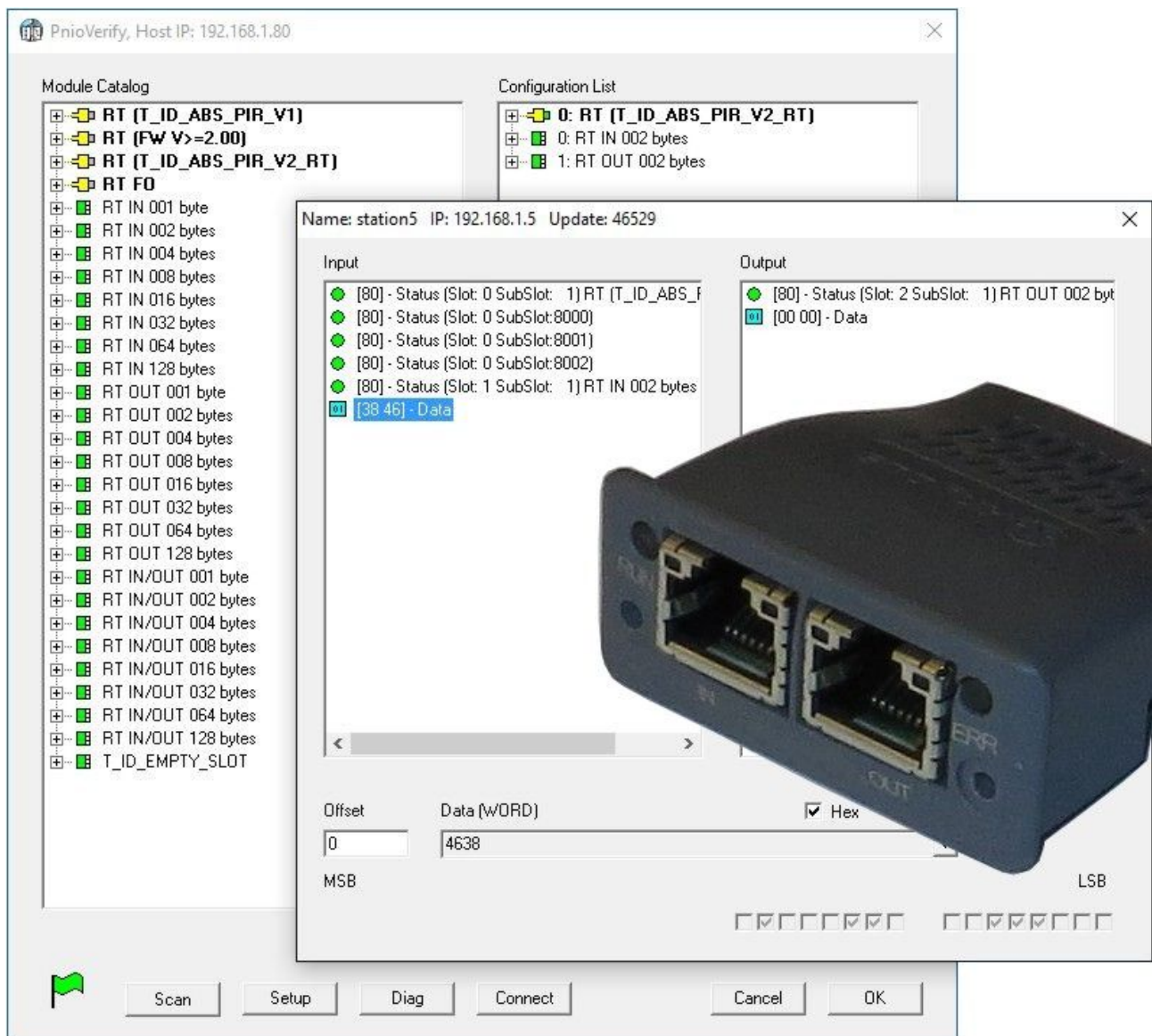
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1 Introduction

The SYBERA ProfiNET Master Simulator allows the control of ProfiNET IO devices at realtime, on a standard PC, without the need of additional controller hardware. The PROFINET control can be realized simply by the PC with a standard Ethernet adapter. The Master Simulator is based on the high precision XRealtime Engine for sending and receiving of ProfinetIO frames at realtime. The Master Simulator allows the handling of ProfiNET-IO data without the need of any complex ProfinetIO management. The Master Simulator scans the bus for Accesspoints, and offers simply configuration of functional modules. Also diagnostics can be handled easily.



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1.1 Product Features

- ProfiNET Station Management
- Station Realtime Sampling-Cycles upto 100 μ sec
- ProfiNET Diagnostics
- ProfiNET acyclic Service Interface (Read / Write)
- ARP, DCP, RPC, LLDP Implementation
- ProfiNET Cyclic Data Exchange
- Sequence Log

1.2 Supported OS

- Windows 7
- Windows 8
- Windows 10
- Windows 11

1.3 Reference Devices

- HMS Anybus-S Module (T_ID_DAP)
- HMS Anybus-S Module (T_ID_ABS_PIR)
- HMS Anybus-S Module (T_ID_ABS_PRT)
- Phoenix ILB 24 DI16 DIO16 – TX2
- Phoenix FL IL 24 BK-PN-PAC
- Deutschmann Unigate CL

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2 Installation

For installation of the PnioVerify software following steps are required:

2.1 Preparation

1. Provide a PC with INTEL or REALTEK Ethernet adapter and Windows operating system
2. Check the installed Ethernet adapter has given a correct IP address

2.2 Installation

3. Install the MFC redistributables DLLs (in Folder MISC \ REDIST)
4. Install Fonts (in Folder MISC \ FONTS)
5. Install MSXML redistributables (in Folder MISC \ MSXML)
6. Next run SYSETUP64 with administrator privileges
(make sure the directory path has no space characters)
7. On Installation the PEC information (PID, SERNUM and KEYCODE) must be entered. The SERNUM for the evaluation version is: 12345678,
the KEYCODE is: 00001111-22223333
8. Select Network card
Optional: Check license with SYLICENCECHECK64.EXE
9. Reboot the System

2.3 Operation

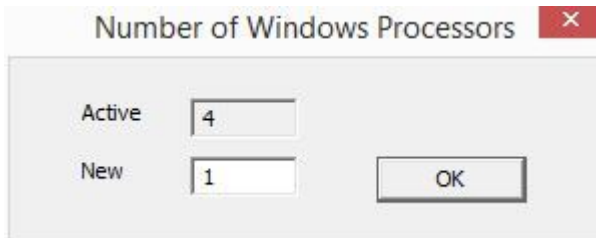
10. Run PnioVerify

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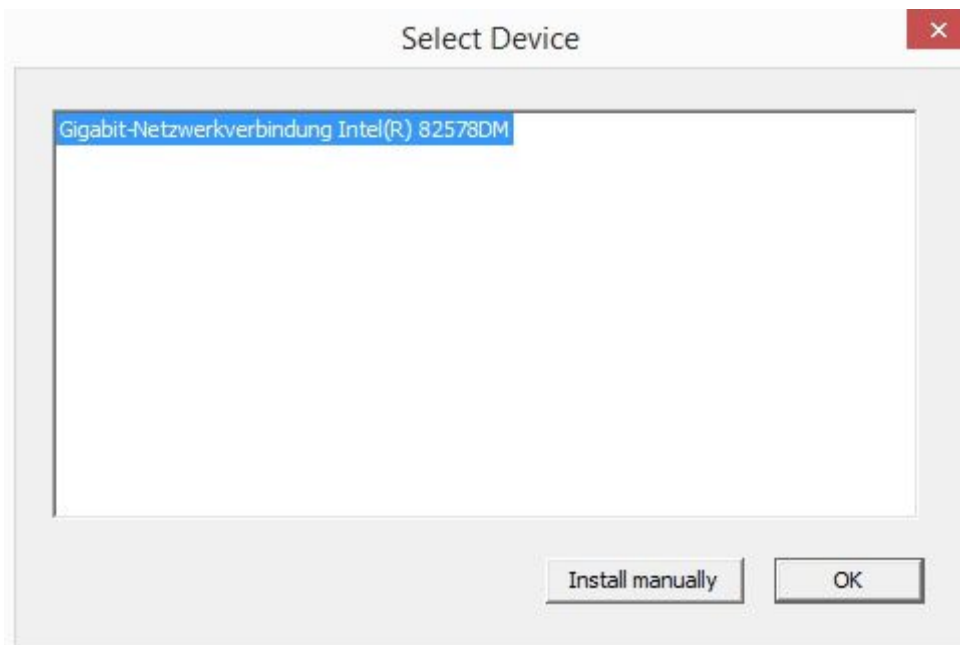
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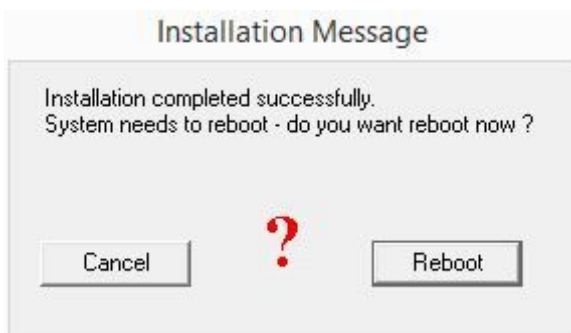
Select **Windows** processor count, typically [Active – 1]



Select ethernet device and quit with button [OK]



Reboot the system



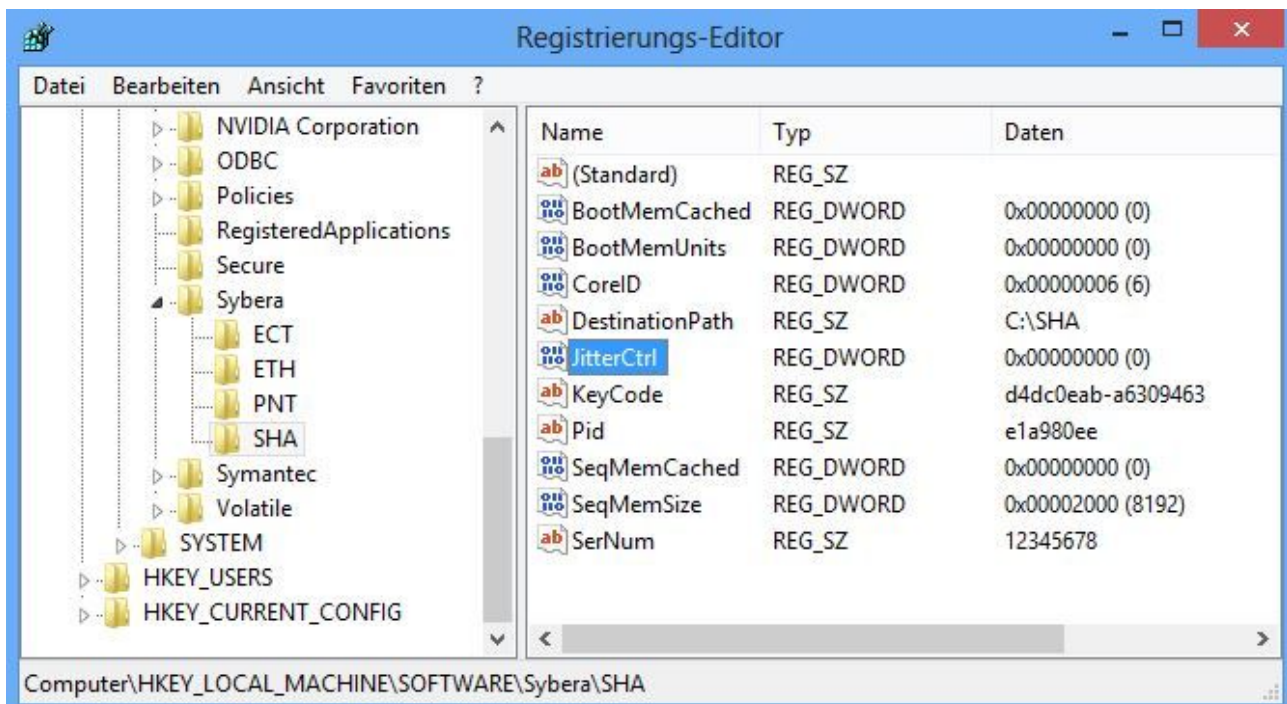
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2.4 Jitter Control (optional)

Since a notebook has a quite different jitter behaviour than desktop systems, an enhanced jitter control mechanism is required. Therefore SYBERA provides a registry entry called "JitterCtrl". This entry allows an adaptive iteration to the best jitter behaviour of the notebook.



Following values are valid:

- 0: No enhanced jitter control
- 1: Enhanced Jitter Control, Step 1 (first choice together with BIOS settings)
- 2: Enhanced Jitter Control, Step 2 (for INTEL platforms only)
- 3: Enhanced Jitter Control, Step 3 (for INTEL platforms only, together with BIOS settings)

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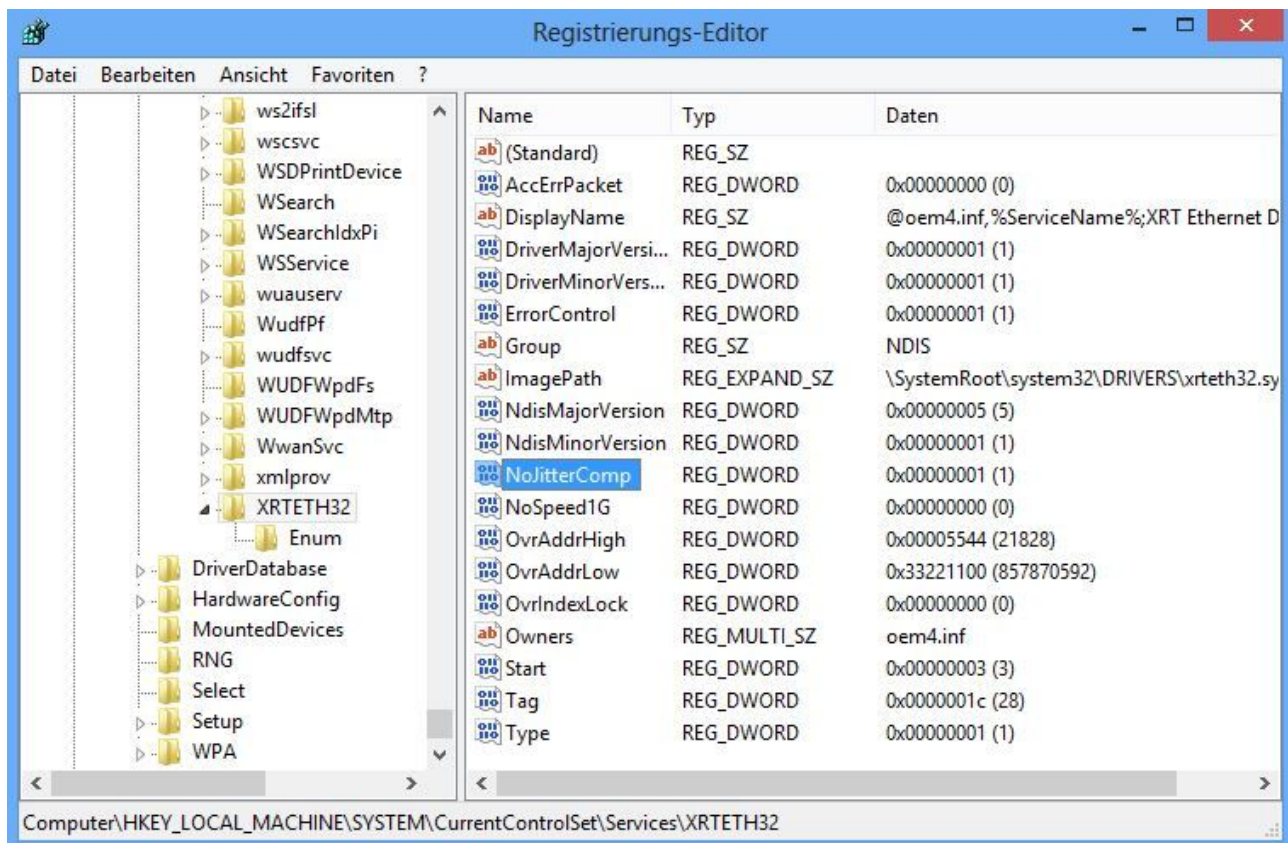
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2.5 Dynamic Jitter Compensation (optional)

SYBERA uses the procedure "Dynamic Jitter Compensation" with active and passive feedback compensation within the realtime engine. Although the X-Real time engine of SYBERA allows a native maximum Jitter of approx. 15 μ sec (according to hardware platform), this behaviour may be reduced below 3 μ sec by the dynamic jitter compensation.

For compatibility reason on some platforms it may be required to disable the dynamic jitter compensation. Therefore the registry value "NoJitterComp" has to be set to 1



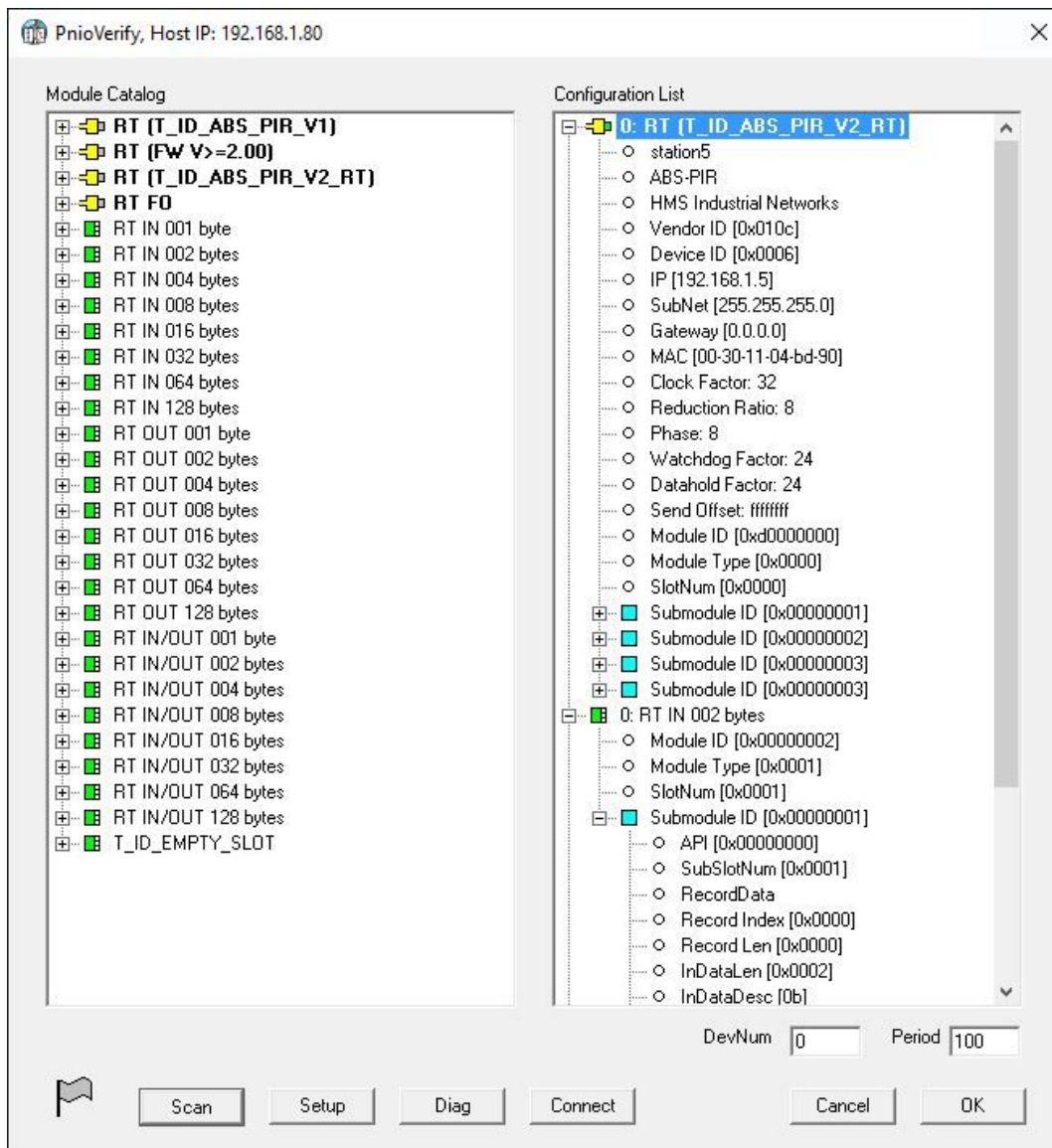
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3 Creating a Stationlist

A ProfinetIO fieldbus system consists of several station devices (typically buscoupler devices). A station consists at least of one module (SLOT) and a module consists at least of one submodule (SUBSLOT). For proper operation the ProfinetIO devices needs first to be configured (by Station Name and IP) and a native STATIONLIST for operating the ProfiNET realtime library has to be created. Therefore SYBERA provides a program called PNIOVERIFY64.EXE.



Note: Make shure a valid IP address is provided for the network connection.



Note: If the application fails to run, check if the lastest Microsoft XML Parser has been installed. If not, install in the directory \APP\MSXML\MSXML4

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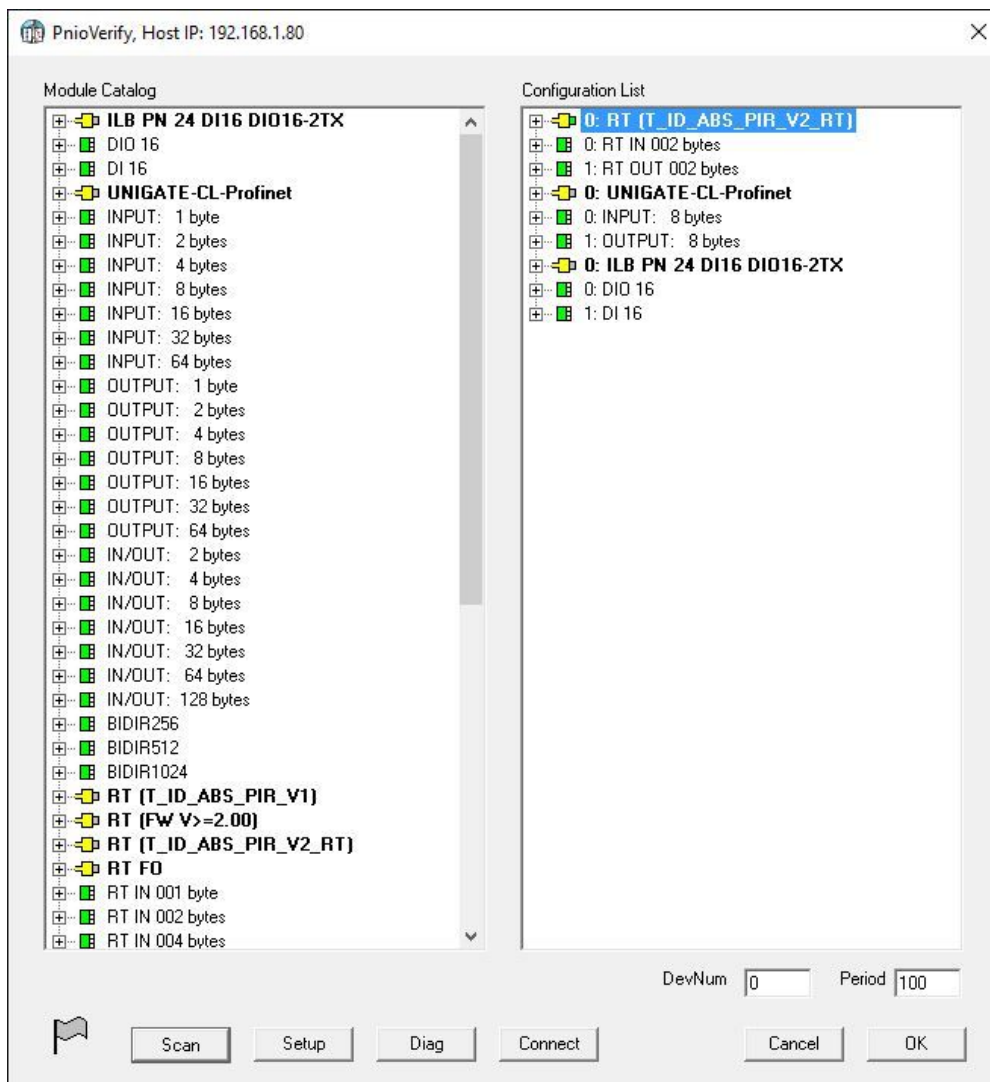
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PNIOVERIFY allows creating a native stationlist by selecting modules from a module catalog (leftside view). The catalog get its entries by the provides GSDML files which must be present in the same directory as PNIOVERIFY. A module is inserted to the station list configuration (rightside view) by a DRAG and DROP operation (just drag a module from the catalog to the station list configuration). There are two types of modules:

-  Accesspoint Module (SLOT 0)
-  Functional Module (SLOT 1 .. n)

3.1 Accesspoint Module

The accesspoint module keeps all information required for connecting to the fieldbus, as station name, IP parameters, MAC address, timing parameters. Therefore first task is to collect information about the ProfinetIO configuration by scanning the bus.



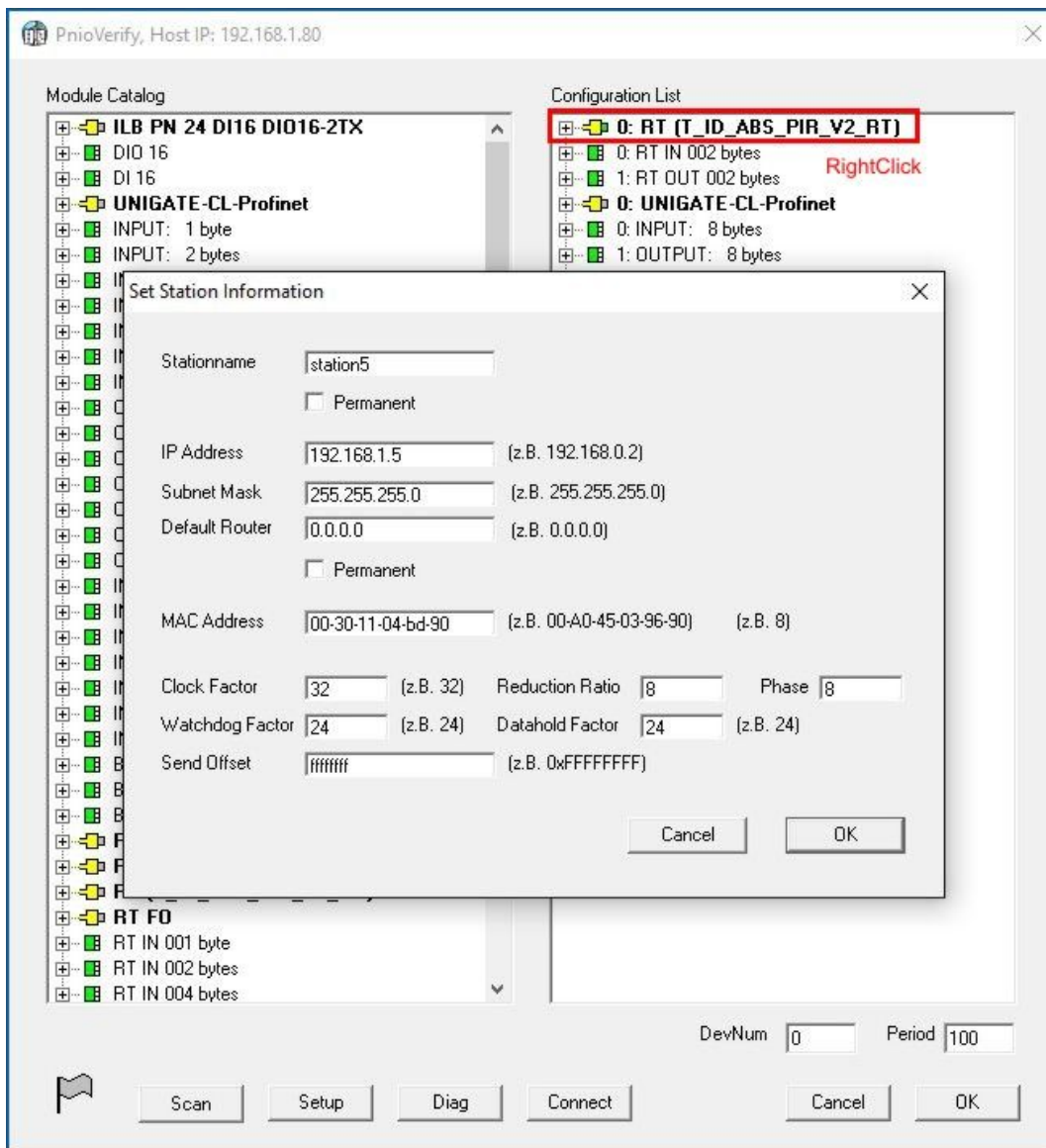
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3.2 Station Settings

The scan gets information about manufacturer name and MAC address. Now individual assignment must set (e.g. IP address, station name, timings). On a right button click at the accesspoint module the Set Station Information dialog appears.



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3.2.1 ProfiNET Timing

The timing settings of each station are based on a clock unit of 31,25 µsec. The synchronisation period is calculated as follow:

$\text{SyncTime} = 31,25 \mu\text{sec} * \text{ClockFactor} * \text{ReductionRatio}$

(e.g. $31,25 \mu\text{sec} * 32 * 8 = 8000 \mu\text{sec} = 8 \text{msec}$)

$\text{WatchdogTime} = \text{SyncTime} * \text{WatchdogFactor}$

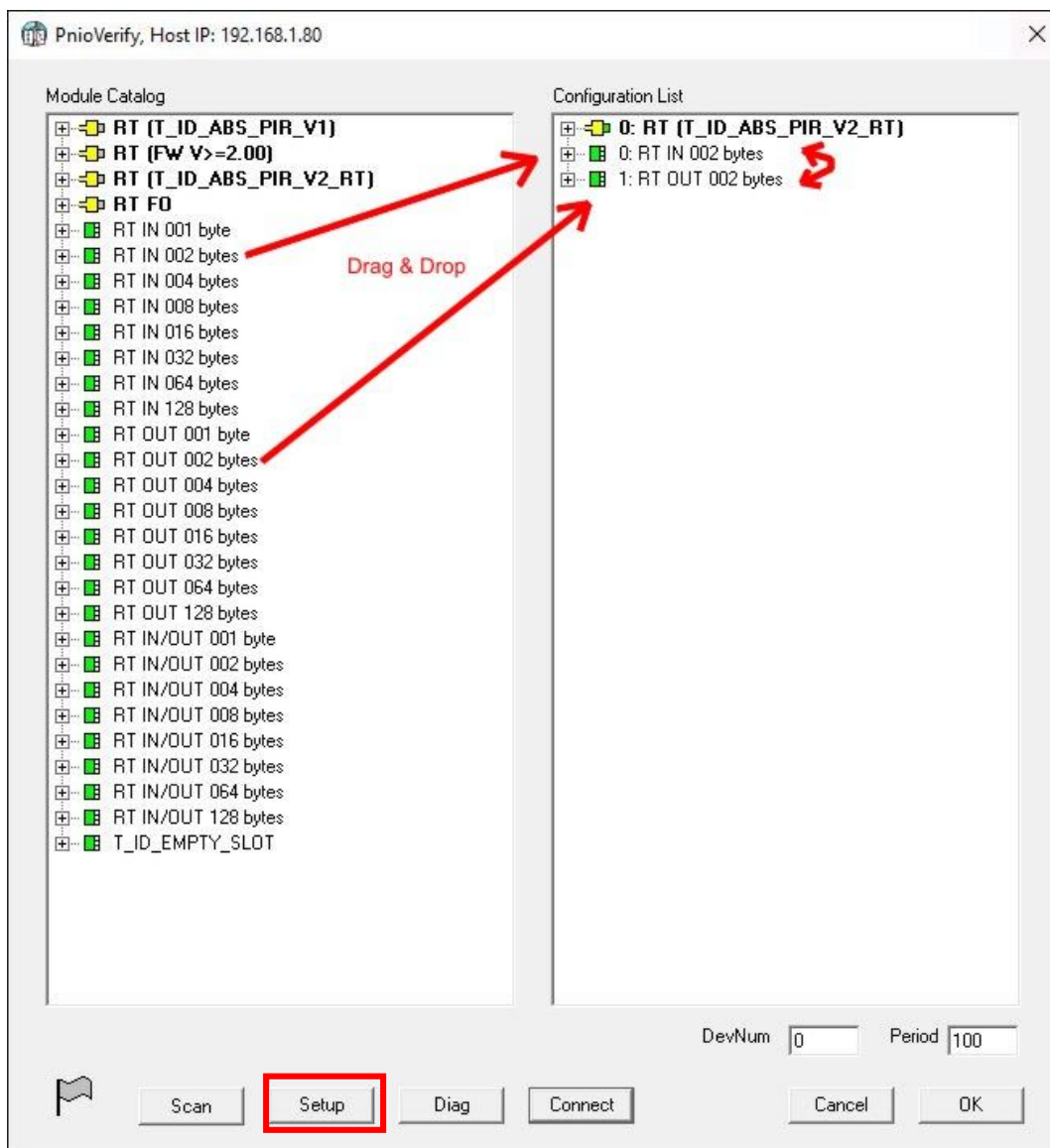
(e.g. $8 \text{msec} * 24 = 192 \text{msec}$)

The SendOffset must be set to 0xFFFFFFFF



3.3 Functional Module

Each station typically consists of multiple functional modules (SLOT 1..n). Function Modules have to be inserted from the catalog by DRAG and DROP operations. As well the nmodules may be sorted below the AccessPoint. A station configuration should contain all functional modules (in the order these modules are physically connected). When inserting a new module from the catalog, after dropping, it appears at the end of the configuration list and may be pushed to the correct slot location.



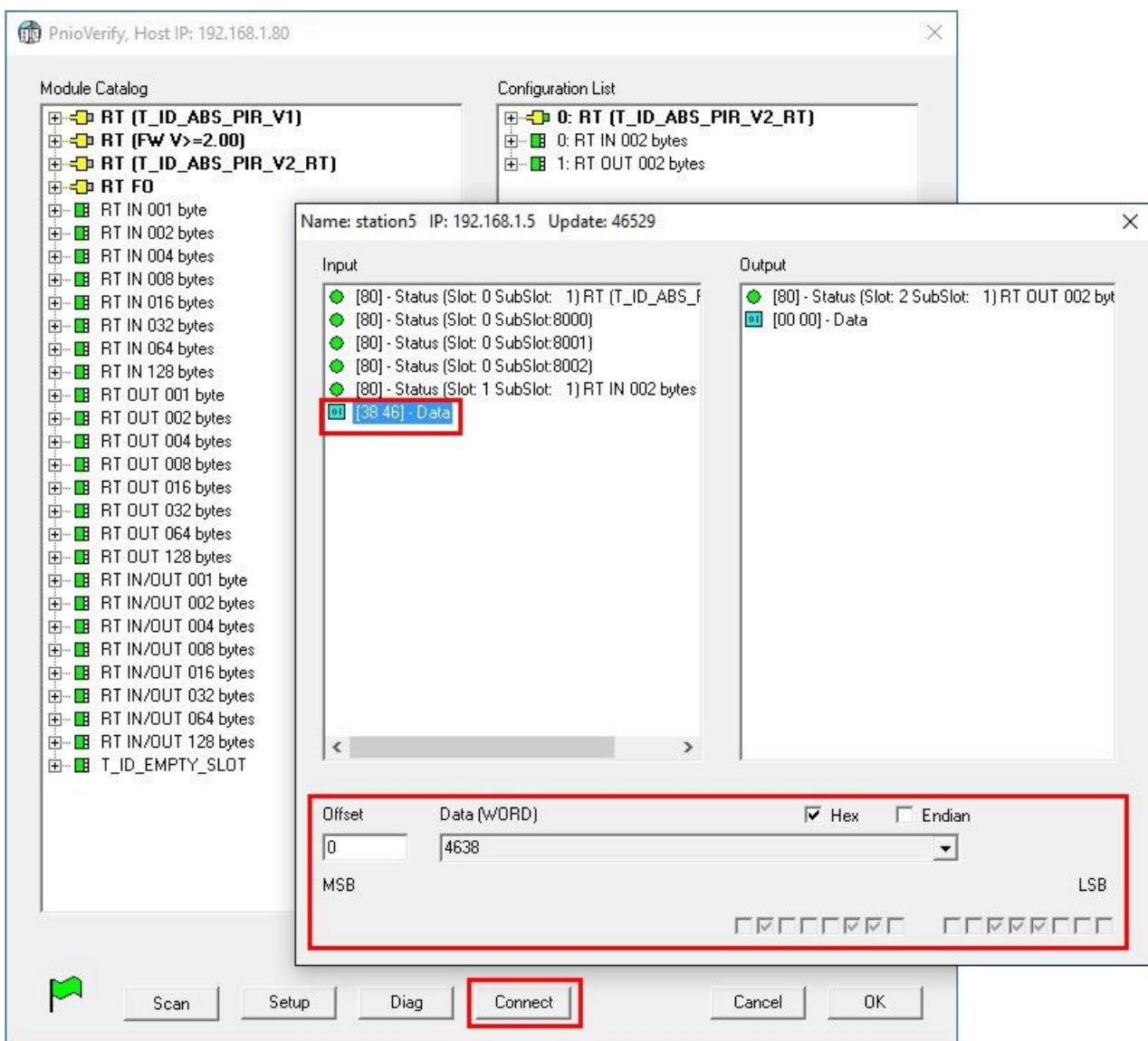
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3.4 Cyclic Operation

For cyclic data exchange, select an access point and press the button [Connect]. On the left side you will see the input submodules, on the right side the output submodules with status and data fields. When selecting a data field, the value is displayed below with several selectable options (hex, endian, bitwise ...). Each value may displayed and evaluated by a maximum size of 4 bytes. At larger data fields, an offset must be used to display and evaluate the next data bytes.

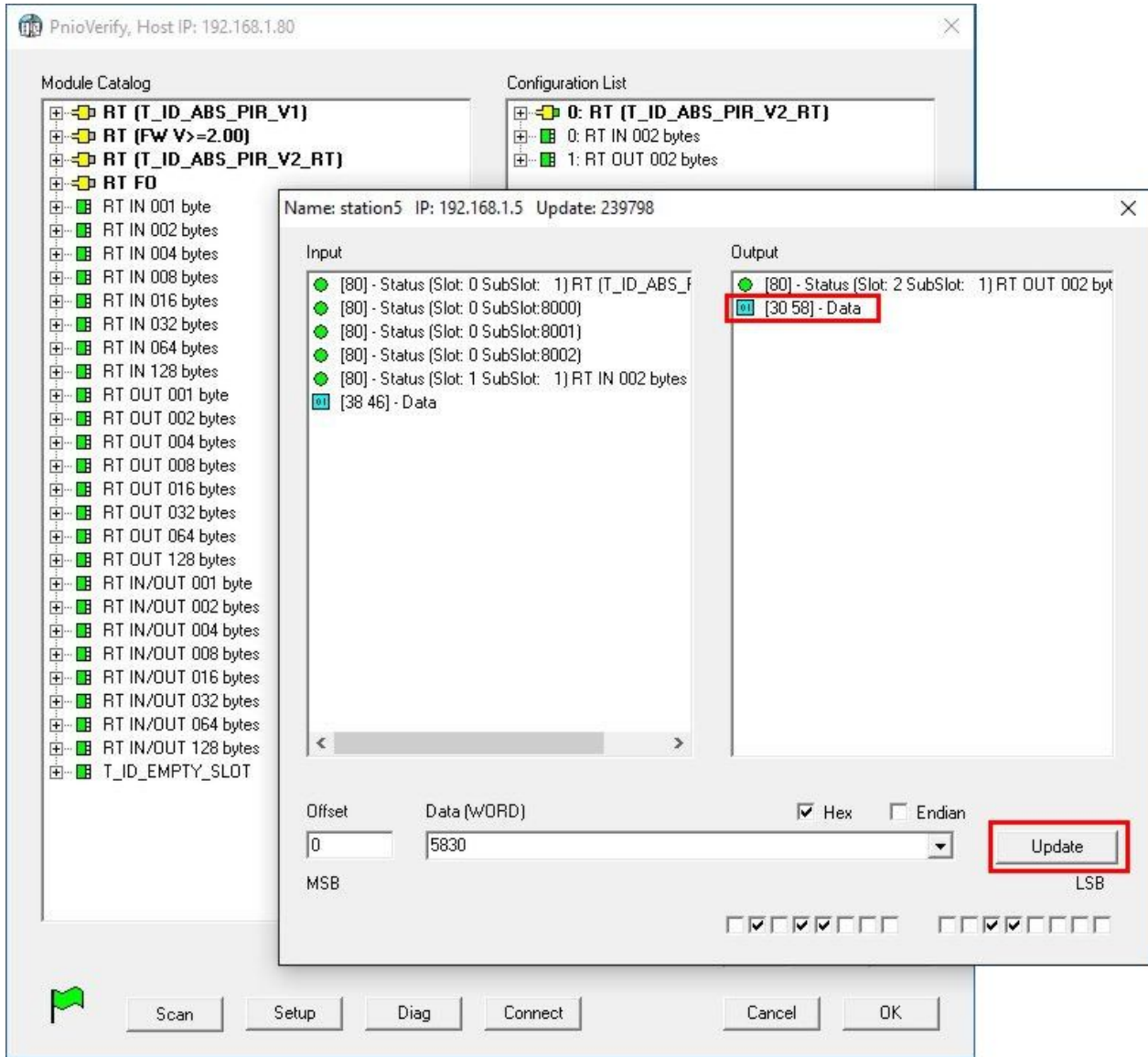


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An output value for a output data field may be written by pressing the button [Update].



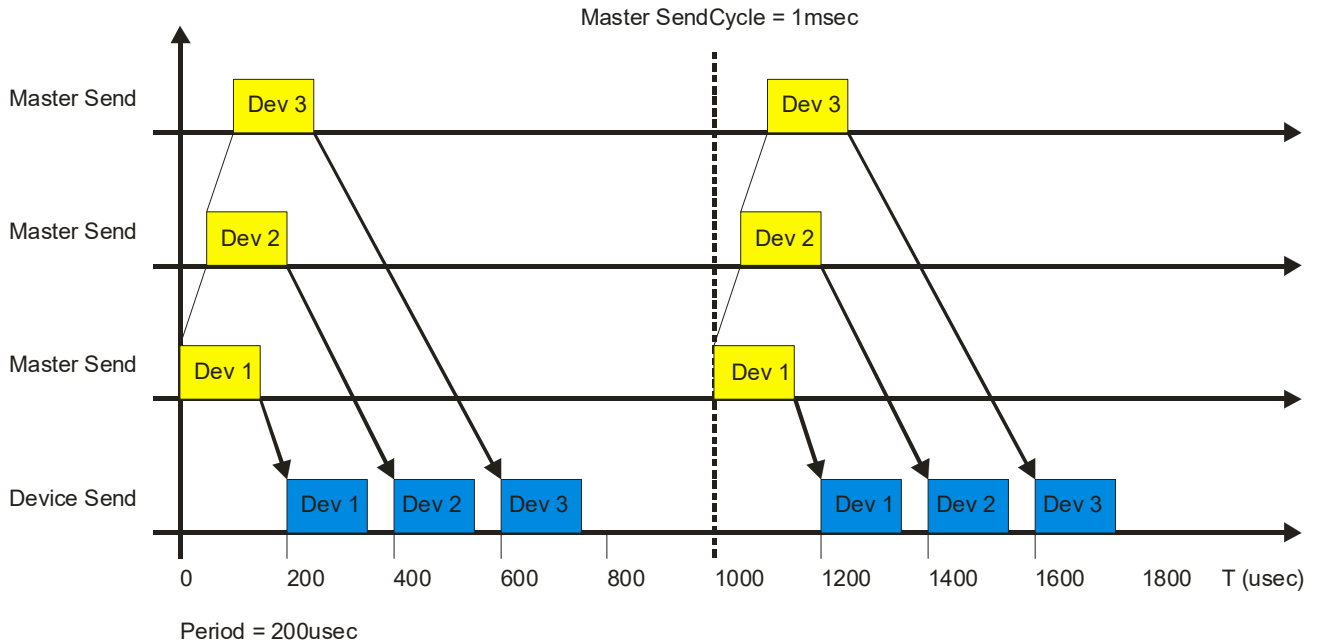
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3.5 PLL Send Mode

With the PLL send mode, a station is bound to the send timing of the master. The device will send its frame, when receiving a master frame.



Registry:

HKEY_LOCAL_MACHINE\SOFTWARE\Sybera\PNS\SendMode 0

Wireshark:

2735	16.795502000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:28370 (Valid,Primary,Ok,Run)
2736	16.795850000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:28370 (Valid,Primary,Ok,Run)
2737	16.799501000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:28498 (Valid,Primary,Ok,Run)
2738	16.799851000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:28498 (Valid,Primary,Ok,Run)
2739	*REF*	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:28627 (Valid,Primary,Ok,Run)
2740	0.000354000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:28627 (Valid,Primary,Ok,Run)
2741	0.004009000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:28755 (Valid,Primary,Ok,Run)
2742	0.004356000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:28755 (Valid,Primary,Ok,Run)
2743	0.008013000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:28883 (Valid,Primary,Ok,Run)
2744	0.008360000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:28883 (Valid,Primary,Ok,Run)
2745	0.012013000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:29011 (Valid,Primary,Ok,Run)
2746	0.012361000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:29011 (Valid,Primary,Ok,Run)
2747	0.016016000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:29139 (Valid,Primary,Ok,Run)
2748	0.016362000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:29139 (Valid,Primary,Ok,Run)
2749	0.020023000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:29267 (Valid,Primary,Ok,Run)
2750	0.020349000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:29267 (Valid,Primary,Ok,Run)
2751	0.024023000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:29395 (Valid,Primary,Ok,Run)
2752	0.024369000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:29395 (Valid,Primary,Ok,Run)
2753	0.028025000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTCl(legacy), ID:0xc002, Len: 40, Cycle:29523 (Valid,Primary,Ok,Run)
2754	0.028367000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTCl(legacy), ID:0xc001, Len: 40, Cycle:29523 (Valid,Primary,Ok,Run)

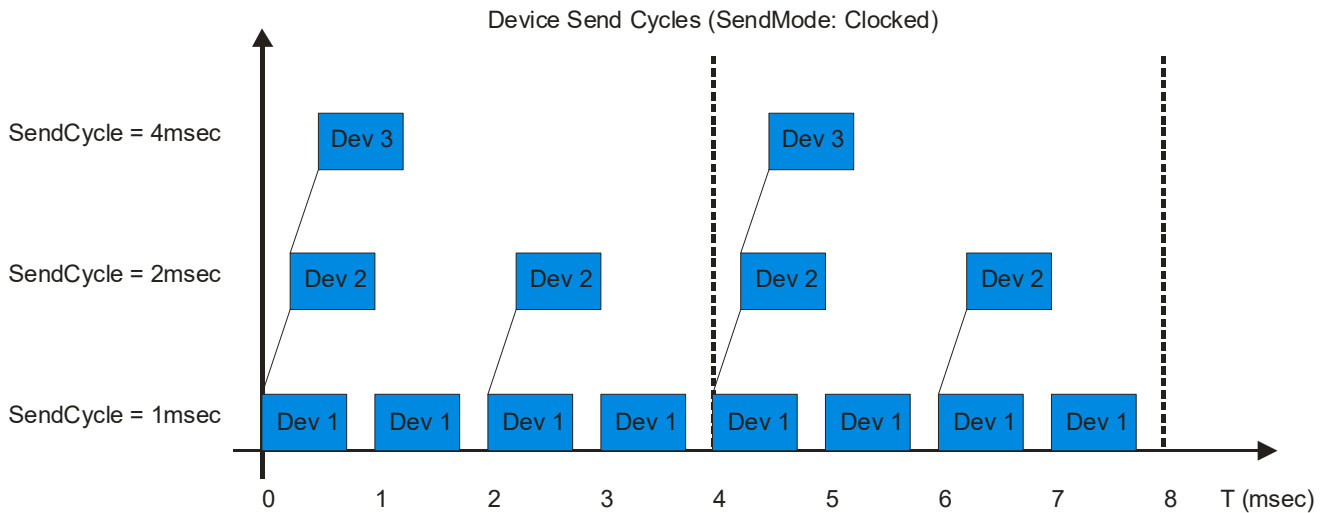
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3.6 Clocked Send Mode

With the clocked send mode, a station is bound to a (master) specified send cycle, independently to the master cycle itself. This allows a different device send cycle to the master send cycle.



Registry:

HKEY_LOCAL_MACHINE\SOFTWARE\Sybera\PNS\SendMode 1

Wireshark:

3296	13.897668000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTC1(legacy), ID:0xc002, Len: 40, Cycle:62012 (Valid,Primary,Ok,Run)
3297	13.898353000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62012 (Valid,Primary,Ok,Run)
3298	13.900355000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62012 (Valid,Primary,Ok,Run)
3299	13.901645000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTC1(legacy), ID:0xc002, Len: 40, Cycle:62140 (Valid,Primary,Ok,Run)
3300	*REF*	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62140 (Valid,Primary,Ok,Run)
3301	0.002011000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62140 (Valid,Primary,Ok,Run)
3302	0.003281000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTC1(legacy), ID:0xc002, Len: 40, Cycle:62268 (Valid,Primary,Ok,Run)
3303	0.004007000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62268 (Valid,Primary,Ok,Run)
3304	0.006002000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62268 (Valid,Primary,Ok,Run)
3305	0.007301000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTC1(legacy), ID:0xc002, Len: 40, Cycle:62396 (Valid,Primary,Ok,Run)
3306	0.008009000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62396 (Valid,Primary,Ok,Run)
3307	0.010007000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62396 (Valid,Primary,Ok,Run)
3308	0.011305000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTC1(legacy), ID:0xc002, Len: 40, Cycle:62525 (Valid,Primary,Ok,Run)
3309	0.011994000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62525 (Valid,Primary,Ok,Run)
3310	0.014011000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62525 (Valid,Primary,Ok,Run)
3311	0.015305000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTC1(legacy), ID:0xc002, Len: 40, Cycle:62653 (Valid,Primary,Ok,Run)
3312	0.016013000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62653 (Valid,Primary,Ok,Run)
3313	0.018024000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62653 (Valid,Primary,Ok,Run)
3314	0.019306000	CIMSYS_33:44:55	FritzKue_03:23:96	PNIO_PS	64	RTC1(legacy), ID:0xc002, Len: 40, Cycle:62781 (Valid,Primary,Ok,Run)
3315	0.019996000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62781 (Valid,Primary,Ok,Run)
3316	0.022010000	FritzKue_03:23:96	CIMSYS_33:44:55	PNIO_PS	64	RTC1(legacy), ID:0xc001, Len: 40, Cycle:62781 (Valid,Primary,Ok,Run)

Registry:

HKEY_LOCAL_MACHINE\SOFTWARE\Sybera\PNS\SendMode 1

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Sample Startup Protocol:

Sybera ILB24_FE350 64 Modues (OK).pcap - Wireshark

File Edit View Go Capture Analyze Statistics Telephony Tools Help

Filter: Expression... Clear Apply

No. -	Time	Source	Destination	Protocol	Info
19	29.927300	HmsField_03:8c:7d	C1msys_33:44:55	PN-DUP	Ident OK, Xid:0x2, NameOfStation: station1, Dev-Options(9), Dev-
20	29.938380	C1msys_33:44:55	Broadcast	Broadcast	who has 192.168.1.22? Tell 192.168.1.3
21	29.938537	HmsField_03:8c:7b	C1msys_33:44:55	ARP	192.168.1.22 is at 00:30:11:03:8c:7b
22	29.999843	HmsField_03:8c:7c	LLDP_Multicast	LLDP	Chassis Id = station1 Port Id = port-001 TTL = 20
23	29.999875	HmsField_03:8c:7c	LLDP_Multicast	LLDP	Chassis Id = station1 Port Id = port-001 TTL = 20
24	30.325179	192.168.1.3	192.168.1.23	PNIO-CM	connect request, ARBlockReq, IOCRBlockReq, IOCRBlockReq, ExpectedSub
25	30.377414	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:55520 (valid,Primary,ok,Run)
26	30.385367	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:55776 (valid,Primary,ok,Run)
27	30.393341	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:56032 (valid,Primary,ok,Run)
28	30.401335	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:56288 (valid,Primary,ok,Run)
29	30.409331	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:56544 (valid,Primary,ok,Run)
30	30.417307	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:56800 (valid,Primary,ok,Run)
31	30.425285	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:57056 (valid,Primary,ok,Run)
32	30.433272	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:57312 (valid,Primary,ok,Run)
33	30.433648	PhoenixC_04:07:f3	Broadcast	ARP	who has 192.168.1.3? Tell 192.168.1.23
34	30.433835	C1msys_33:44:55	PhoenixC_04:07:f3	ARP	192.168.1.3 is at 00:11:22:33:44:55
35	30.438825	192.168.1.23	192.168.1.3	PNIO-CM	connect response, OK, ARBlockRes, IOCRBlockRes, IOCRBlockRes, Alarm
36	30.441256	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:57568 (valid,Primary,ok,Run)
37	30.449242	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:57824 (valid,Primary,ok,Run)
38	30.454303	192.168.1.3	192.168.1.23	PNIO-CM	write request, IOBwriteReqHeader, Api:0x0, Slot:0x0/0x1, Index:(0x1
39	30.457228	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:58080 (valid,Primary,ok,Run)
40	30.465216	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:58336 (valid,Primary,ok,Run)
41	30.473199	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:58592 (valid,Primary,ok,Run)
42	30.481190	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:58848 (valid,Primary,ok,Run)
43	30.488294	192.168.1.23	192.168.1.3	PNIO-CM	write response, OK, IOBwriteReqHeader, Api:0x0, Slot:0x0/0x1, Index
44	30.489175	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:59104 (valid,Primary,ok,Run)
45	30.497187	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:59360 (valid,Primary,ok,Run)
46	30.501970	192.168.1.3	192.168.1.23	PNIO-CM	write request, IOBwriteReqHeader, Api:0x0, Slot:0x1/0x1, Index:(0x1
47	30.505144	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:59616 (valid,Primary,ok,Run)
48	30.513142	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:59872 (valid,Primary,ok,Run)
49	30.521115	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:60128 (valid,Primary,ok,Run)
50	30.528764	192.168.1.23	192.168.1.3	PNIO-CM	write response, OK, IOBwriteReqHeader, Api:0x0, Slot:0x1/0x1, Index
51	30.529101	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:60384 (valid,Primary,ok,Run)
52	30.533084	192.168.1.3	192.168.1.23	PNIO-CM	control request, IOBBlockReq, Command: ParameterEnd
53	30.537093	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:60640 (valid,Primary,ok,Run)
54	30.537201	C1msys_33:44:55	PhoenixC_04:07:f3	PNIO	RTCL/UDP, ID:0xc010, Len: 40, Cycle:60640 (valid,Primary,ok,Stop)
55	30.545072	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:60896 (valid,Primary,ok,Run)
56	30.545256	C1msys_33:44:55	PhoenixC_04:07:f3	PNIO	RTCL/UDP, ID:0xc010, Len: 40, Cycle:60896 (valid,Primary,ok,Stop)
57	30.553057	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:61152 (valid,Primary,ok,Run)
58	30.553086	C1msys_33:44:55	PhoenixC_04:07:f3	PNIO	RTCL/UDP, ID:0xc010, Len: 40, Cycle:61152 (valid,Primary,ok,Stop)
59	30.561043	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:61408 (valid,Primary,ok,Run)
60	30.561144	C1msys_33:44:55	PhoenixC_04:07:f3	PNIO	RTCL/UDP, ID:0xc010, Len: 40, Cycle:61408 (valid,Primary,ok,Stop)
61	30.569042	PhoenixC_04:07:f3	C1msys_33:44:55	PNIO	RTCL/UDP, ID:0xc001, Len: 40, Cycle:61664 (valid,Primary,ok,Run)

Frame 24 (514 bytes on wire, 514 bytes captured)

- Ethernet II, Src: C1msys_33:44:55 (00:11:22:33:44:55), Dst: PhoenixC_04:07:f3 (00:a0:45:04:07:f3)
- Internet Protocol, Src: 192.168.1.3 (192.168.1.3), Dst: 192.168.1.23 (192.168.1.23)
- User Datagram Protocol, Src Port: blackjack (1025), Dst Port: profinet-cm (34964)
- DCE RPC Request, Seq: 0, Serial: 0, Frag: 0, FragLen: 392
- PROFINET IO, Connect
 - Operation: Connect (0)
 - ArgsMaximum: 4096
 - ArgsLength: 372
 - Array: Max: 4096, Offset: 0, Size: 372
 - ARBlockReq: IOCARSingle, Session:1, MAC:00:11:22:33:44:55, Port:0x8892, Station:Sybera-PNIO-Master
 - IOCRBlockReq: Input CR, Ref:0x1, Len:40, FrameID:0xc001, CLock:32, Ratio:8, Phase:8 APIS:1
 - IOCRBlockReq: Output CR, Ref:0x2, Len:40, FrameID:0xffff, CLock:32, Ratio:8, Phase:8 APIS:1
 - ExpectedSubmoduleBlockReq: APIS:1, Submodules:1
 - ExpectedSubmoduleBlockReq: APIS:1, Submodules:1
 - ExpectedSubmoduleBlockReq: APIS:1, Submodules:1
 - AlarmCRBlockReq: Alarm CR, LT:0x8892, TFactor:1, Retries:3, Ref:0x1, Len:200 Tag:0xc000/0xa000
 - [ARUID:017b173e-6c79-d74c-8d74-427c0b1c8f95 ContrMAC:00:11:22:33:44:55 ContrARef:0x1 DevMAC:00:a0:45:04:07:f3 DevARef:0x14 INCR:0xc001 C

```

0000 00 30 45 04 07 f3 00 11 22 33 44 55 08 00 45 00  ..E...."3DU..E.
0010 01 f4 00 01 00 00 80 11 b5 8d c0 a8 01 03 c0 a8  .....$......
0020 00 17 04 01 88 94 01 e0 24 5c 04 00 20 00 00 00  .....1.....d...
0030 00 00 de a0 00 00 6c 97 11 d1 82 71 00 01 00 04  .....l.....d...$B
0040 00 00 b0 de a0 00 01 6c 97 11 d1 82 71 00 a0 24 42  .....l.....d...$B
0050 05 7d 26 56 a0 d5 fd 40 6d 42 b7 88 5a 70 fd 6c  38W...N...

```

Frame (frame), 514 bytes Packets: 5333 Displayed: 5333 Marked: 0 Profile: Default

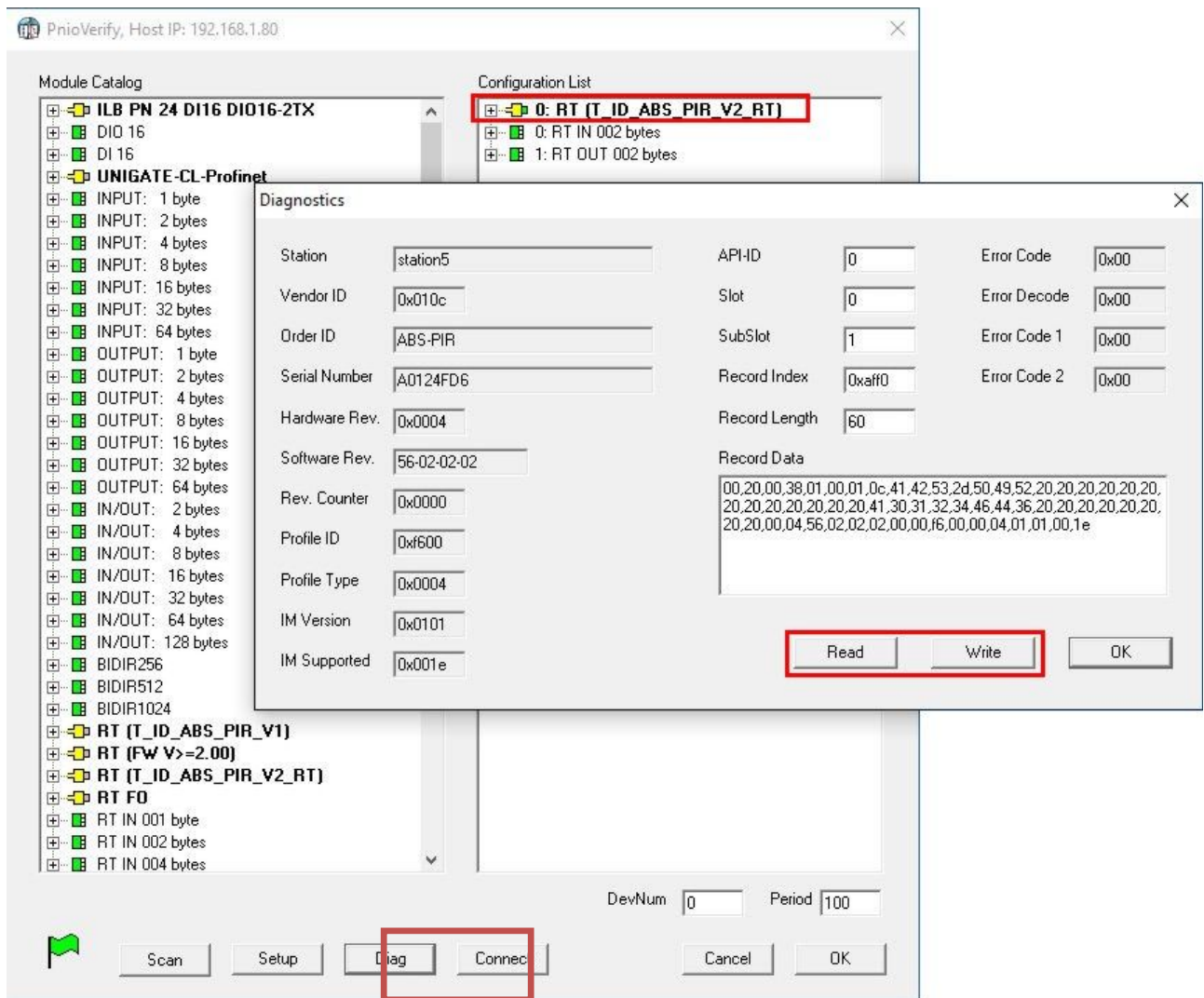
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3.7 Station Diagnostics

The station diagnostics allows gathering of I&M data, as well as reading and writing acyclic information (by API, SlotNum, SubSlotNum and RecordIndex). Therefore select an AccessPoint and press button [Diag].



To read or write acyclic information, put in the API-ID, Slot, SubSlot and Record Index. If the function fails, you'll get the corresponding PNIO error code.

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```
>>> Submodule
```

```
[SUBMOD_ID]
03 00 00 00
[SUBSLOT_NUM]
02 80
[OBJ_INPUT]
01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 01 00 00 00 01 00 00 00
```

```
>> Module
```

```
[NAME]
T_ID_RT_IN2
[MOD_ID]
02 00 00 00
[MOD_TYPE]
01 00
[SLOT_NUM]
01 00
```

```
>>> Submodule
```

```
[SUBMOD_ID]
01 00 00 00
[SUBSLOT_NUM]
01 00
[OBJ_INPUT]
01 0b 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
02 00 00 00 01 00 00 00 01 00 00 00
```

```
>> Module
```

```
[NAME]
T_ID_RT_OUT2
[MOD_ID]
20 00 00 00
[MOD_TYPE]
01 00
[SLOT_NUM]
02 00
```

```
>>> Submodule
```

```
[SUBMOD_ID]
01 00 00 00
[SUBSLOT_NUM]
01 00
[OBJ_OUTPUT]
01 0b 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
02 00 00 00 01 00 00 00 01 00 00 00
```

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5 Error Handling

The master library provides an error handling and tracing mechanism.

5.1 Debug LOG File

On execution the master library creates a sequence file PNTDBG.LOG in Text-Format

Note: This file is not accessible while the application is running

5.2 Event File

On execution the master library logs error event to the Windows Event Manager. The master library logs Application and System events. These events can be exported to a file and provided for support purposes.

