HIRSCHMANN
A Belden Company

User Manual

Industrial Protocols
Industrial ETHERNET (Gigabit-)SwitchRS20/RS30/RS40, MS20/MS30, OCTOPUS, RSR20/RSR30, Power MICE, MACH 1000, MACH 4000
With Software L2E, L2P, L3E or L3P

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Content

About this Manual

The “Industry Protocols” user manual describes how the Switch is connected by means of a communication protocol commonly used in the industry, such as EtherNet/IP and PROFINET.

The following thematic sequence has proven itself in practice:

- Device configuration in line with the “Basic Configuration” user manual
- Check on the connection Switch <–> PLC
- Program the PLC

The “Installation” user manual contains a device description, safety instructions, a description of the display, and all the other information that you need to install the device before you begin with the configuration of the device.

The “Redundancy Configuration” user manual contains all the information you need to select a suitable redundancy procedure and configure it.

You will find detailed descriptions of how to operate the individual functions in the “Web-based Interface” and “Command Line Interface” reference manuals.

If you use Network Management Software HiVision you have further opportunities to comfortably configure and monitor:

- Event logbook.
- Configuration the „System Location“ and „System Name“.
- Configuration the network address range and SNMP parameters.
- Saving the configuration to the Switch.
- Simultaneous configuration of several Switch.
- Configuration the relevant ports to be displayed red if there is no link state.

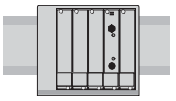
Key

The designations used in this manual have the following meanings:

▶	List
☐	Work step
■	Subheading
Link	Indicates a cross-reference with a stored link
Note:	A note emphasizes an important fact or draws your attention to a dependency.
`Courier`	ASCII representation in user interface

Symbols used:

	Router
	Switch
	Bridge
	Hub
	A random computer
	Configuration Computer
	Server



PLC -
Programmable logic controller

I/O -
Robot

1 Industry Protocols

For a long time, automation communication and office communication were on different paths. The requirements and the communication properties were too different.

Office communication moves large quantities of data with low demands with respect to the transfer time. Automation communication moves small quantities of data with high demands with respect to the transfer time and availability.

While the transmission devices in the office are usually kept in temperature-controlled, relatively clean rooms, the transmission devices used in automation are exposed to wider temperature ranges. Dirty, dusty and damp ambient conditions make additional demands on the quality of the transmission devices.

With the continued development of communication technology, the demands and the communication properties have moved closer together. The high bandwidths now available in Ethernet technology and the protocols they support enable large quantities to be transferred and exact transfer times to be defined.

With the creation of the first optical LAN to be active worldwide, at the University of Stuttgart in 1984, Hirschmann laid the foundation for industry-compatible office communication devices. Thanks to Hirschmann's initiative with the world's first rail hub in the 1990s, Ethernet transmission devices such as switches, routers and firewalls are now available for the toughest automation conditions.

The desire for uniform, continuous communication structures encouraged many manufacturers of automation devices to come together and use standards to aid the progress of communication technology in the automation sector. This is why we now have protocols that enable us to communicate via Ethernet from the office right down to the field level.

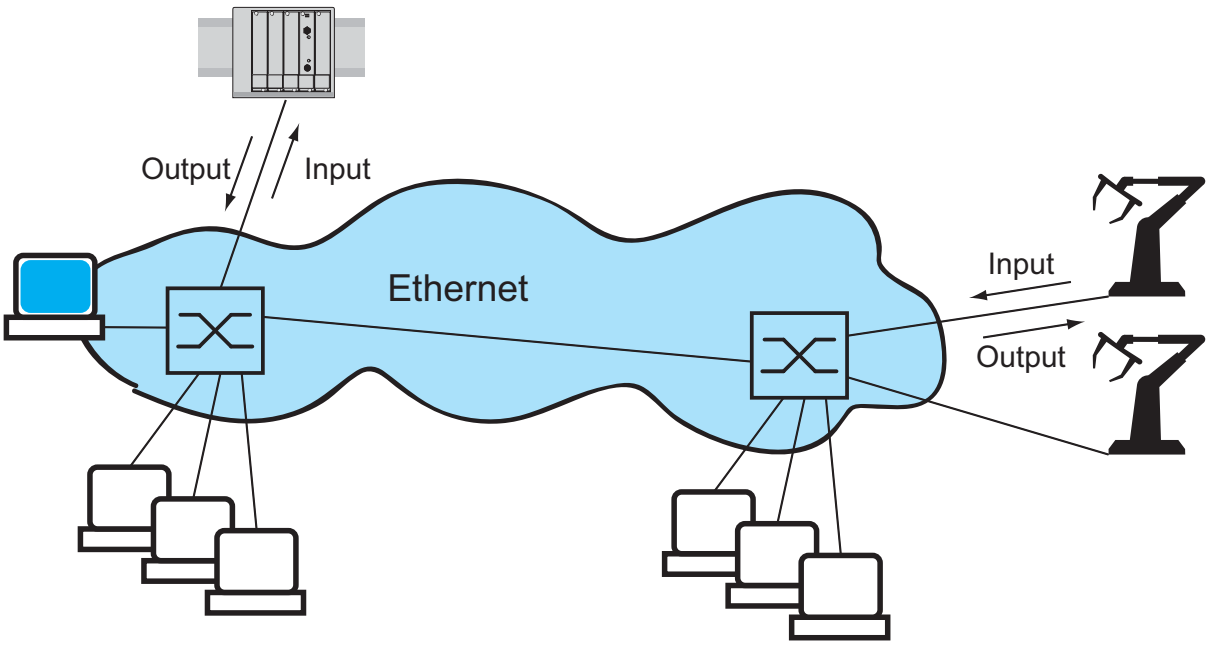


Figure 1: Example of communication.

Hirschmann switches support the following industry protocols and systems

- EtherNet/IP
- PROFINET

Depending on the ordered Industrial Protocol variant the Switch offers the suitable default settings:

Settings / Variant	Standard	EtherNet/IP	PROFINET IO
Order code	H	E	P
EtherNet/IP	0	1	0
IGMP Snooping	0	1	0
IGMP Querier	0	1	0
Unknown Multicast	Send To All Ports	Discard	Discard
Known Multicasts	Send to Query and registered Ports	Send to registered Ports	Send to Query and registered Ports
Address Conflict Detection	0	1	0
RSTP	1	0	1
DIP switch	0 SW-Konfig	0 SW-Konfig	0 SW-Konfig
100 Mbit/s TP ringports	Autoneg	Autoneg	Autoneg
Static Query Port	Disable	Automatic	Automatic
PROFINET IO	0	0	1
Boot-Modus	DHCP	DHCP	Lokal
VLAN 0 Transparent Modus	0	0	1
HiDiscovery	Read/Write	Read/Write	ReadOnly
sysName	Product name + 3 Byte MAC	Product name + 3 Byte MAC	empty

2 EtherNet/IP

EtherNet/IP, which is accepted worldwide, is an industrial communication protocol standardized by ODVA (Open DeviceNet Vendor Association) on the basis of Ethernet. It is based on the widely used transport protocols TCP/IP and UDP/IP (standard). EtherNet/IP thus provides a wide basis, supported by leading manufacturers, for effective data communication in the industry sector.

EtherNet/IP adds the industry protocol CIP (Common Industrial Protocol) to the Ethernet as an application level for automation applications. Ethernet is thus ideally suited to the industrial control technology sector.

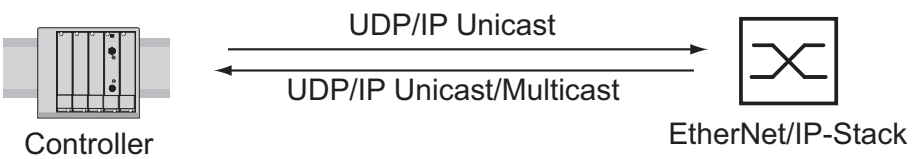


Figure 2: Communication between the Controller (PLC) and the Switch

In particular, you will find EtherNet/IP in the USA and in conjunction with Rockwell controllers.

For detailed information on EtherNet/IP, see the Internet site of ODVA at www.ethernetip.de.

2.1 Integration in Control System

After installing and connecting the Switch, you configure it according to the “Basic Configuration” user manual. Then:

☐ Use the Web-based interface in the `Switching:Multicasts` dialog to check whether the IGMP Snooping is activated.

☐ Use the Web-based interface in the `Advanced:Industry Protocols` dialog to check whether EtherNet/IP is activated.

☐ Use the Web-based interface in the `Advanced:Industry Protocols` dialog to load the EDS (= EtherNet/IP configuration file) and the Icon onto your local computer.

Note: If EtherNet/IP and the Router function are enabled concurrently malfunctions of EtherNet/IP may occur, e.g. in conjunction with „RS Who”.

- Disable Router function via Web-based Interface:
  Dialog `Routing:Global`.
- Disable Router function via Command Line Interface:
  in configuration mode with the command `no ip routing`.

Configuration of the PLC using the example of the Rockwell software

- ☐ Open the “EDS Hardware Installation Tool” of RSLinx.
- ☐ Use the “EDS Hardware Installation Tool” to add the EDS file.
- ☐ Restart the “RSLinx” service so that RSLinx takes over the EDS file of the Switch.
- ☐ Use RSLinx to check whether RSLinx has detected the Switch.
- ☐ Open your Logix 5000 project.
- ☐ Integrate the Switch into the Ethernet port of the controller as a new module (Generic Ethernet Module).

Setting	I/O connection	Input only	Listen only
Comm Format:	Data - DINT	Data - DINT	Input Data - DINT - Run/Program
IP-Address	IP address of the Switch	IP address of the Switch	IP address of the Switch
Input Assembly Instance	2	2	2
Input Size	7 (MACH 4000: 11)	7 (MACH 4000: 11)	7 (MACH 4000: 11)
Output Assembly Instance	1	254	255
Output Size	1 (MACH 4000: 2)	0	0
Configuration Assembly Instance	3	3	3
Configuration Size	0	0	0

Table 1: Settings for integrating a Generic Ethernet Module

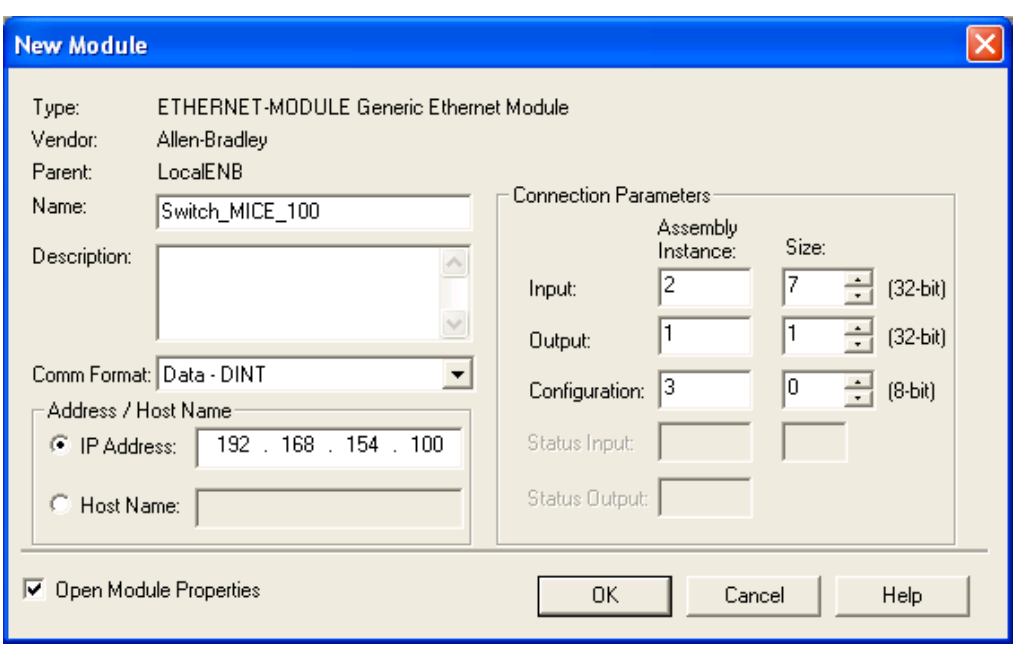


Figure 3: Integrating a new module into Logix 5000

☐ In the module properties, enter a value of at least 100 ms for the Request Packet Interval (RPI).

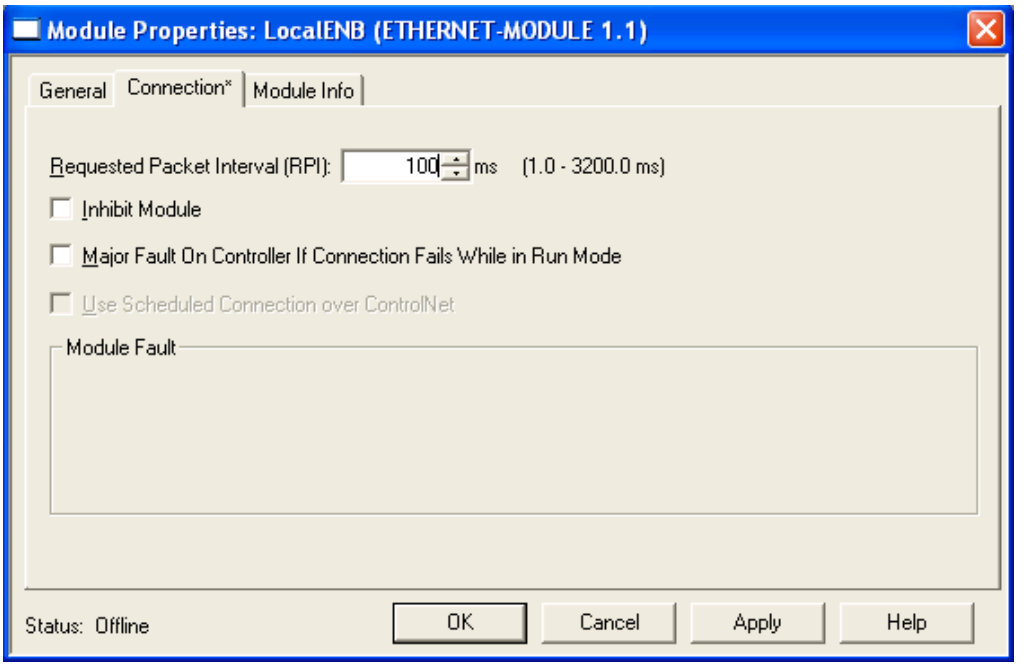


Figure 4: Module properties for the Request Packet Interval (RPI)

Note: If e.g. a management program loads the Switch with SNMP requests the I/O connection between controler (PLC) and Switch may be temporarely disrupted. Cause in this case the Switch can further on forward data packets the installation may also be operative.
The monitoring of the I/O connection to the Switch as failure criterion may lead to a breakdown of the installation and therefore it is less suitable as failure criterion.

Example of integration from the Sample Code Library

The Sample Code Library is a Rockwell web site. The goal of this site is to give users a place to share their best Integrated Architecture applications, including logic, HMI and drive applications.Look inside the http://samplecode.rockwellautomation.com web site for the „Catalog Number“ 9701. This is the catalog number of an example for integrating Hirschmann Switches into RS Logix 5000 Rel. 16, PLC Firmware Release 16.

2.2 EtherNet/IP Parameters

2.2.1 Identity Objekt

The Switch supports the identity object (class code 01) of EtherNet/IP. The Hirschmann manufacturer ID is 634. Hirschmann uses the manufacturer-specific ID 149 (95hex) to designate the “Managed Ethernet Switch” product type.

Id	Attribute	Access Rule	Data type	Description
1	Vendor ID	Get	UINT	Hirschmann 634
2	Device Type	Get	UINT	Vendor-specific Definition 149 (0x95) "Managed Ethernet Switch".
3	Product Code	Get	UINT	Product Code: mapping is defined for every device type, e.g. RS20-0400T1T1SDAPHH is 16650.
4	Revision	Get	STRUCT USINT Major USINT Minor	Revision of the Ethernet/IP implementation, currently 1.1, Major Revision and Minor Revision
5	Status	Get	WORD	Not used
6	Serial Number	Get	UDINT	Serial number of the device (contains last 3 Bytes of MAC address).
7	Product Name	Get	Short String (max. 32 Byte)	Displayed as "Hirschmann" + order code, e.g. Hirschmann RS20-0400XXXXXXXP.

Table 2: Identity Objekt

2.2.2 TCP/IP Interface Object

The Switch supports an instance (instance 1) of the TCP/IP Interface Object (class code f5hex) of EtherNet/IP.
In the case of write access, the Switch stores the complete configuration in its flash memory. Saving can take 10 seconds. If the save process is interrupted, for example, by a power cut, the Switch may crash.

Note: The Switch replies the configuration change „set request” with a „response” before the saving of the configuration is finished.

Id	Attribute	Access rule	Data type	Description
1	Status	Get	DWORD	Interface Status (0 = Interface not configured, 1 = Interface contains valid config).
2	Interface Capability flags	Get	DWORD	Bit 0 = BOOTP Client, Bit 1 = DNS Client, Bit 2 = DHCP Client, Bit 3 = DHCP-DNS Update, Bit 4 = Configuration setable (within CIP). Other bits reserved (0).
3	Config Control	Set/Get	DWORD	Bit 0-3: Value 0 = using stored config, Value 1 = using BOOTP, Value 2 = using DHCP. Bit 4 = 1 device uses DNS for name lookup (always 0 because not supported) Other bits reserved (0).
4	Physical Link Object	Get	Structure: UINT Path size EPATH Path	Path to the Physical Link Objekt, always {20hex, F6hex, 24hex, 01hex} describing instance 1 of the Ethernet Link Object.
5	Interface Configuration	Set/Get	Structure: UDINT IP address UDINT Netmask UDINT Gateway address UDINT Name server 1 UDINT Name server 2 STRING Domain name	IP Stack Configuration (IP-Address, Netmask, Gateway, 2 Nameserver (DNS, not supported) and the domain name).
6	Host name	Set/Get	STRING	Host name (for DHCP DNS Update).

Table 3: TCP/IP Interface Objekt

2.2.3 Ethernet Link Object

The Switch supports at least one instance (instance 1 is the instance of the CPU Ethernet Interface) of the Ethernet Link Object (class code f6hex) of EtherNet/IP.

Id	Attribute	Access rule	Data type	Description
1	Interface Speed	Get	UDINT	Used interface speed in MBits/s (10, 100, 1000, …). 0 is used when the speed has not been determined or is invalid because of errors.
2	Interface Flags	Get	DWORD	Interface Status Flags: Bit 0 = Link State (1=Link), Bit 1 = Halfduplex(0)/Fullduplex(1), Bits 2-4 = Autoneg Status (0 Autoneg in Progress, 1 Autoneg failed, 2 failed but Speed detected, 3 Autoneg success, 4 No Autoneg), Bit 5 = manual configuration require reset (always 0 because not needed), Bit 6 hardware error.
3	Physical Address	Get	ARRAY of 6 USINTs	MAC address of physical interface.
4	Interface Counters	Get	Struct MIB II Counters each UDINT	InOctets, InUcastPackets, InNUcastPackets, InDiscards, InErrors, InUnknownProtos, OutOctets, OutUcastPackets, OutNUcastPackets, OutDiscards, OutErrors.
5	Media Counters	Get	Struct Ethernet MIB Counters each UDINT	Alignment Errors, FCS Errors, Single Collision, Multiple Collision, SQE Test Errors, Deferred Transmissions, Late Collisions, Excessive Collisions, MAC TX Errors, Carrier Sense Errors, Frame Too Long, MAC RX Errors.
6	Interface Control	Get/Set	Struct Control Bits WORD Forced Iface Speed UINT	Control Bits: Autoneg enable/disable Bit 0, enable=1, Duplex mode (Bit 1, full duplex=1), if Autoneg disabled (Bit 0 set to 0). Interface speed in MBits/s: 10,100,…, if Autoneg disabled (Control Bit 0 set to 0).

Table 4: Ethernet Link Objekt

The Switch supports additional manufacturer-specific attributes.

Id	Attribute	Access rule	Data type	Description
100 =64 hex	Ethernet Interface Index	Get	UDINT	Interface/Port Index (ifIndex out of MIBII)
101 =65 hex	Port Control	Get/Set	DWORD	Bit 0 (RO) Link state (0 link down, 1 link up) Bit 1 (R/W) Link admin state (0 disabled, 1 enabled) Bit 8 (RO) Access violation alarm Bit 9 (RO) Utilization alarm
102 =66 hex	Interface Utilization	Get	UDINT	The existing Counter out of the private MIB hmIfaceUtilization is used. Utilization in percentage (Unit 1% = 100, %/100). RX Interface Utilization.
103 =67 hex	Interface Utilization Alarm Upper Threshold	Get/Set	UDINT	Within this parameter the variable hmIfaceUtilizationAlarmUpperThreshold can be accessed. Utilization in percentage (Unit 1% = 100). RX Interface Utilization Upper Limit.
104 =68 hex	Interface Utilization Alarm Lower Threshold	Get/Set	UDINT	Within this parameter the variable hmIfaceUtilizationAlarmLowerThreshold can be accessed. Utilization in percentage (Unit 1% = 100). RX Interface Utilization Lower Limit.
105 =69 hex	Broadcast limit	Get/Set	UDINT	Broadcast limiter Service (Egress BC-Frames limitation, 0 = disabled), Frames/second
106 = 6A hex	Ethernet Interface Description	Get	STRING [max. 64 Bytes] even number of Bytes	Interface/Port Description (from MIB II ifDescr), e.g. "Unit: 1 Slot: 2 Port: 1 - 10/100 Mbit TX", or "unavailable", max. 64 Bytes.

Table 5: Enhancements to Ethernet Link Object by Hirschmann

2.2.4 Ethernet Switch Agent Object

The Switch supports the Hirschmann-specific Ethernet Switch Agent Object (class code f5hex = 149dec) for the Switch configuration and information parameters with one instance (instance 1).
You will find further information on these parameters and how to set them in the “Web-based Interface” reference manual.

Switch Status	Id 01	DWORD (32 bit) RO
	Bit 0	Overall state (0=ok, 1=failed) Like the signal contact.
	Bit 1	Power Supply 1 (0 = ok, 1 =failed or not existing)
	Bit 2	Power Supply 2 (0 = ok, 1 =failed or not existing)
	Bit 3	Power Supply 3 (0 = ok or not possible on this platform, 1 =failed or not existing)
	Bit 4	Power Supply 4 (0 = ok or not possible on this platform, 1 =failed or not existing)
	Bit 5	Power Supply 5 (0 = ok or not possible on this platform, 1 =failed or not existing)
	Bit 6	Power Supply 6 (0 = ok or not possible on this platform, 1 =failed or not existing)
	Bit 7	Power Supply 7 (0 = ok or not possible on this platform, 1 =failed or not existing)
	Bit 8	Power Supply 8 (0 = ok or not possible on this platform, 1 =failed or not existing)
	Bit 11	Signal Contact 1 (0=closed, 1=open)
	Bit 12	Signal Contact 2 (0=closed, 1=open)
	Bit 16	Temperature (0=ok, 1=Failure)
	Bit 17	Fan (0=ok or no fan, 1=Failure)
	Bit 24	Module removed (1=removed)
	Bit 25	ACA removed (1=removed)
	Bit 28	Hiper-Ring (1=Failure)
	Bit 29	Ring-/Netcoupling (1=Failure)
	Bit 30	Connection Error (1=Failure)
Switch Temperature	Id 02	Struct{INT RO Temperature °FINT RO Temperature °C}
Reserved	Id 03	Always 0, attribute is reserved for future use.
Switch Max Ports	Id 04	UINT (16 bit) RO Maximum number of Ethernet Switch Ports
Multicast Settings (IGMP Snooping)	Id 05	WORD (16bit) RW
	Bit 0 RW	IGMP Snooping (1=enabled, 0=disabled)

Table 6: Hirschmann Ethernet Switch Agent Objekt

	Bit 1 RW	IGMP Querier (1=enabled, 0=disabled)
	Bit 2 RO	IGMP Querier Mode (1=Querier, 0=Non-Querier)
	Bit 4-6 RW	IGMP Querier Packet Version V1 = 1 V2 = 2 V3 = 3 Off = 0 (IGMP Querier disabled)
	Bit 8-10 RW	Treatment of Unknown Multicasts (Railswitch only): 0 = Send To All Ports 1 = Send To Query Ports 2 = Discard
Switch Existing Ports	Id 06	ARRAY OF DWORD[a] RO Bitmask of existing Switch Ports
	Per Bit starting with Bit 0 (=Port 1)	1=Port existing, 0=Port not available. Array (bit mask) size is adjusted at the size of maximum number of Switch ports (e.g. max. 28 Ports => 1 DWORD is used (32bit)).
Switch Port Control	Id 07	ARRAY OF DWORD[1] RW Bitmask Link Admin Status Switch Ports
	Per Bit starting with Bit 0 (=Port 1)	0=Port enabled, 1=Port disabled. Array (bit mask) size is adjusted at the size of maximum number of Switch ports (e.g. max. 28 Ports => 1 DWORD is used (32bit)).
Switch Ports Mapping	Id 08	ARRAY OF USINT (BYTE, 8 bit) RO Instance number of the Ethernet-Link-Object
	Starting with Index 0 (=Port 1)	All Ethernet Link Object Instances for the existing Ethernet Switch Ports (1..N, maximum number of ports). When the entry is 0, the Ethernet Link Object for this port does not exist.
Switch Action Status	Id 0x9	DWORD (32 bit) RO
	Bit 0	Flash write in progress
	Bit 1	Flash write failed

Table 6: Hirschmann Ethernet Switch Agent Objekt

a. RS20/RS30/RS40, MS20/MS30, OCTOPUS, Power MICE und MACH 1000: 32 bit MACH 4000: 64 Bit

The Hirschmann specific Ethernet Switch agent object offers the addition vendor specific service with the service code 0x35 to save the Switch configuration. The Switch replies the save configuration request as soon as it has saved the configuration to the flash memory.

2.2.5 I/O Data

You will find the precise meaning of the individual bits of the device state in the I/O data in "Ethernet Switch Agent Object" on page 22.

I/O Data	Value (data types and sizes to be defined)	Direction
Device status	Bitmask (see Switch Agent Attribute 1)	Input, DWORD 32 bit
Link status	Bitmask, one Bit per port 0=No link, 1=Link	Input, DWORD[a]
Output Links admin state applied	Bitmask (one Bit per port) to acknowledge output. Link state change can be denied, e.g. for controller access port. 0=Port enabled, 1=Port disabled.	Input DWORD[1]
Utilization alarm	Bitmask, one Bit per port 0=No alarm, 1 = Alarm on port	Input, DWORD[1]
Access violation alarm	Bitmask, one Bit per port 0=No alarm, 1 = Alarm on port	Input, DWORD[1]
Multicast Connections	Integer, number of connections	Input, 1 DINT 32 bit
TCP/IP Connections	Integer, number of connections	Input, 1 DINT 32 bit
Link admin state	Bitmask, one Bit per port 0=Port enabled, 1=Port disabled	Output, DWORD[1]

Table 7: I/O datd

a. RS20/RS30/RS40, MS20/MS30, OCTOPUS, Power MICE und MACH 1000: 32 bit
MACH 4000: 64 Bit

2.2.6 Mapping of the Ethernet Link Object Instances

The table displays the mapping of the Switch port number to the EthernetLink Object Instance.

Ethernet Link Object Instance	RS20/RS30/RS40 OCTOPUS, MACH 1000	MS20/MS30 Power MICE	MACH 4000
1	CPU	CPU	CPU
2	1	Module 1 / Port 1	Module 1 / Port 1
3	2	Module 1 / Port 2	Module 1 / Port 2
4	3	Module 1 / Port 3	Module 1 / Port 3
5	4	Module 1 / Port 4	Module 1 / Port 4
6	5	Module 2 / Port 1	Module 1 / Port 5
7	6	Module 2 / Port 2	Module 1 / Port 6
8	7	Module 2 / Port 3	Module 1 / Port 7
9	8	Module 2 / Port 4	Module 1 / Port 8
10	9	Module 3 / Port 1	Module 2 / Port 1
11	10	Module 3 / Port 2	Module 2 / Port 2
12	11	Module 3 / Port 3	Module 2 / Port 3
13	12	Module 3 / Port 4	Module 2 / Port 4
14	13	Module 4 / Port 1	Module 2 / Port 5
..	..	..	..

Table 8: Mapping of the Switch port number to the Ethernet Link Object Instances

2.2.7 Supported services

The following table gives an overview of the supported services by the Ethernet/IP implementation for the objects instance.

Service code	Identity Object	TCP/IP Interface Object	Ethernet Link Object	Switch Agent Object
Get Attribute All (0x01)	All attributes	All attributes	All attributes	All attributes
Set Attribute All (0x02)	-	Settable attributes (3,5,6)	-	-
Get Attribute Single (0x0e)	All attributes	All attributes	All attributes	All attributes
Set Attribute Single (0x10)	-	Settable attributes (3,5,6)	Settable attributes (6,0x65, 0x67,0x68,0x69)	Settable attributes (7)
Reset (0x05)	Parameter(0,1)	-	-	-
Save Configuration (0x35) Vendor specific	Parameter(0,1)	-	-	Save switch configuration

Table 9: Supported services

3 PROFINET IO

PROFINET IO is an industrial communication network based on Ethernet that is accepted worldwide. It is based on the widely used transport protocols TCP/IP and UDP/IP (standard). This is an important aspect for fulfilling the requirements for consistency from the management level down to the field level.

PROFINET IO enhances the existing Profibus technology for such applications that require fast data communication and the use of industrial IT functions.

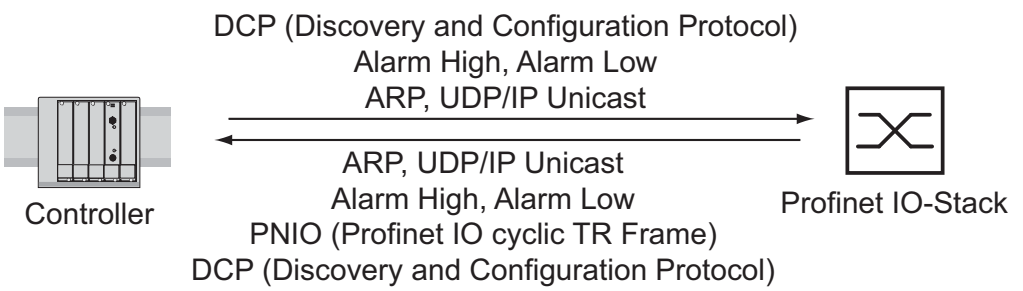


Figure 5: Communication between the Controller and the Switch

In particular, you will find PROFINET IO in Europe and in conjunction with Siemens controllers.

You will find detailed information on PROFINET on the Internet site of the PROFIBUS Organization at http://www.profibus.com/pall/meta/downloads/article/00456/.

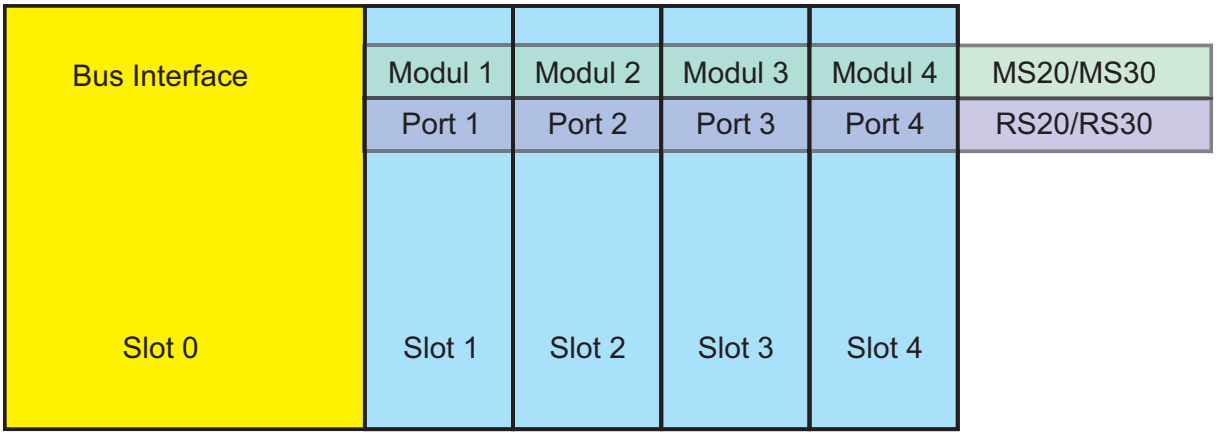


Figure 6: Switch model for PROFINET IO

3.1 Integration in Control System

3.1.1 Configuration of the Switch

After installing and connecting the Switch, you configure it according to the "Basic Configuration" user manual:

- ☐ Use the Web-based interface in the `Basic Settings:Network` dialog to check whether `Local` is selected in the "Mode" frame.
- ☐ Use the Web-based interface in the `Switching:VLAN:Global` dialog to check whether "VLAN 0 Transparent Mode" is selected.
- ☐ Use the Web-based interface in the `Advanced:Industry Protocols` dialog to check whether Profinet IO is activated.
- ☐ Use the Web-based interface in the `Advanced:Industry Protocols` dialog to download the GSDML (= Generic Station Description Markup Language) and the Icon onto your local computer.
- ☐ Configure the Alarm setting and the Threshold value for the alarms you want to monitor.

3.1.2 Configuration of the PLC

The following illustrates the configuration of the PLC using the example of the Simatic S7 software from Siemens, and assumes that you are familiar with operating the software.

Note: If e.g. a management program loads the Switch with SNMP requests the I/O connection between controler (PLC) and Switch may be temporarely disrupted. Cause in this case the Switch can further on forward data packets the installation may also be operative. The monitoring of the I/O connection to the Switch as failure criterion may lead to a breakdown of the installation and therefore it is less suitable as failure criterion.

As default the PLC takes the disruption of the I/O connection to the switch as failure criterion. This leads to a breakdown of the installation. Take Step/ program technical measures to change the default settings.

- Incorporating the Switch in the configuration
  - ☐ Open the "Simatic Manager" from Simatic S7.
  - ☐ Open your project.
  - ☐ Go to the hardware configuration.
  - ☐ Install the GSD(ML) file using `Extras:Install GSD File`. Select the GSDML file previously downloaded. Simatic S7 installs the file together with the Icon. You will find the new Switch under `Profinet IO:Other Field Devices:Switching Devices:Hirschmann ...`
  - ☐ Use Drag & Drop to pull the Switch onto the bus cable.
  - ☐ To give the Switch its name, select the Switch and in the menu bar choose `Target System:Ethernet:Edit Ethernet Participants...`

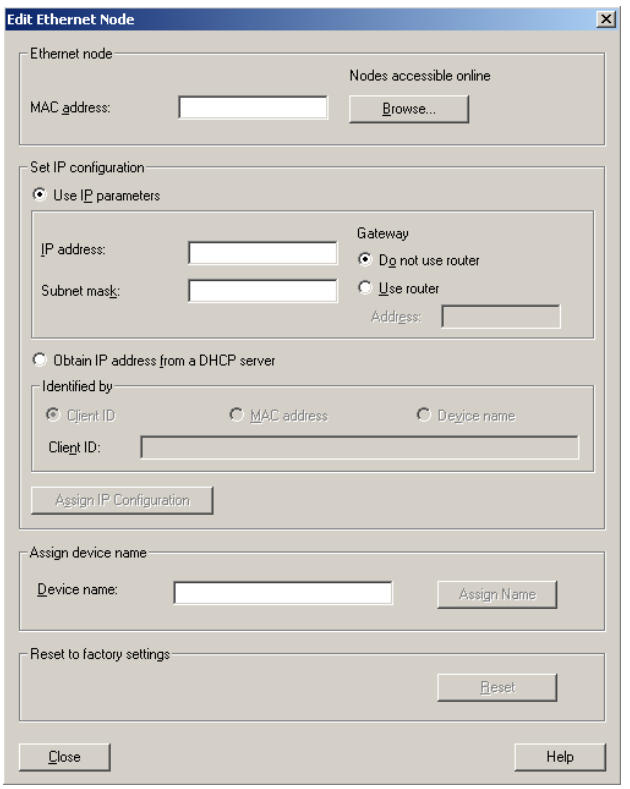


Figure 7: Dialog for entering the Switch name

- ☐ Click on "Search".
  Select your Switch.
  Click on "OK".
- ☐ Give the Switch its name.
  Click on "Assign name".
- ☐ Click on "Close".

- ☐ In the hardware configuration, right-click on the Switch and select `Object properties`.

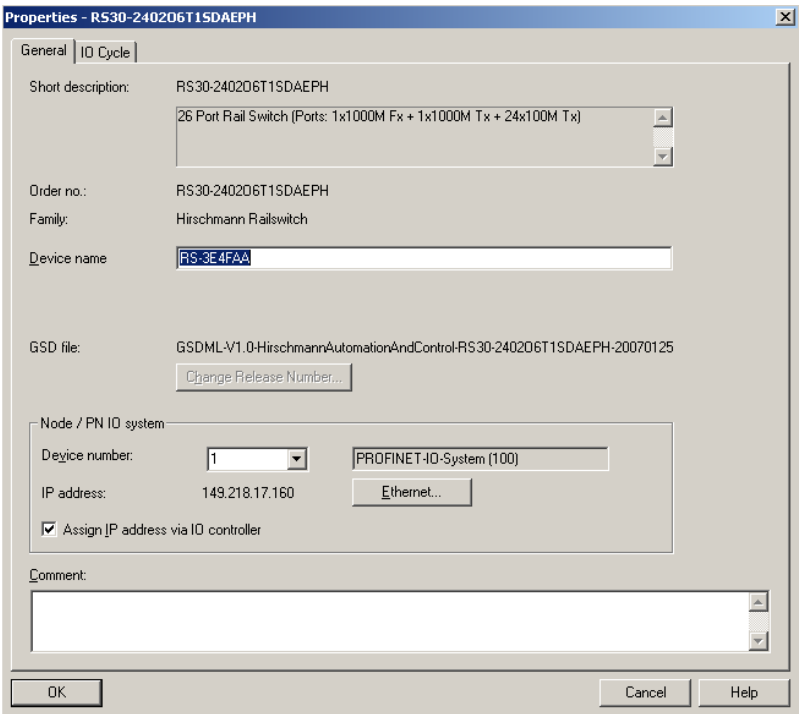


Figure 8: Dialog for entering the object name (= name of the Switch) and the IP parameter

- ☐ Enter the same device name here.
- ☐ Click on "Ethernet".
  Enter the IP parameters.
  Close the Ethernet input window.
- ☐ Click on "OK" to close the properties window.

The Switch is now included in the configuration.

Adding modules for modular devices

- ☐ Use Drag & Drop to pull a module from the library into a slot.
  Simatic S7 adds the ports using the Module properties.

Configuring Device Property

On slot 0 you enter the settings for the entire Switch.

- ☐ Select the Switch.
- ☐ Right-click on slot 0.
  To configure the entire device, select `Object properties`.
- ☐ In the Properties window, select the "Parameters" tab.

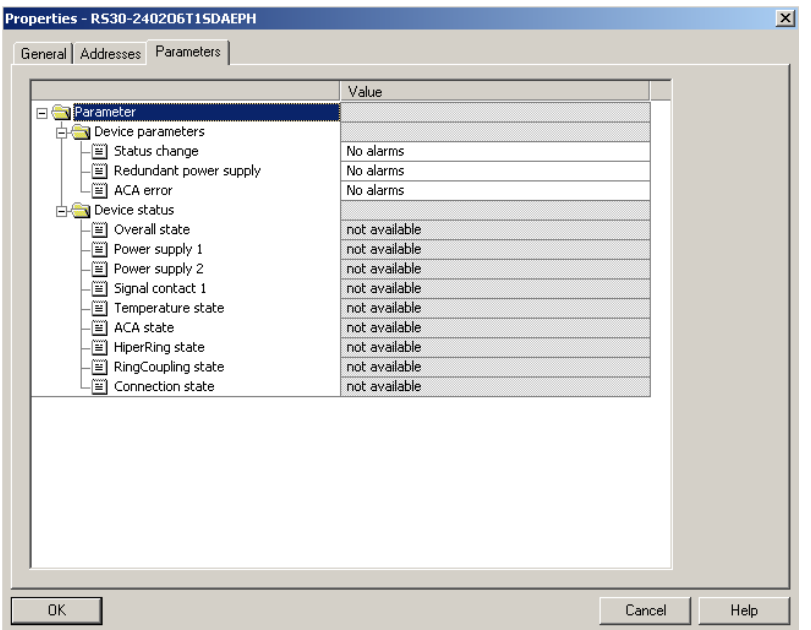


Figure 9: Configuring device alarms for e.g. RS20/RS30/RS40.

Configuring the Port Properties

For the modular devices, slots 1 to n represent the modules. The ports are represented as records within the Slots.
For not-modular devices, slots 1 to n represent the ports.

☐ Right-click on one of slots 1 to n and select `Object Properties`.
☐ In the Properties window, select the „Parameters“ tab.
☐ select the desired alarms and close the window (see fig. 10).

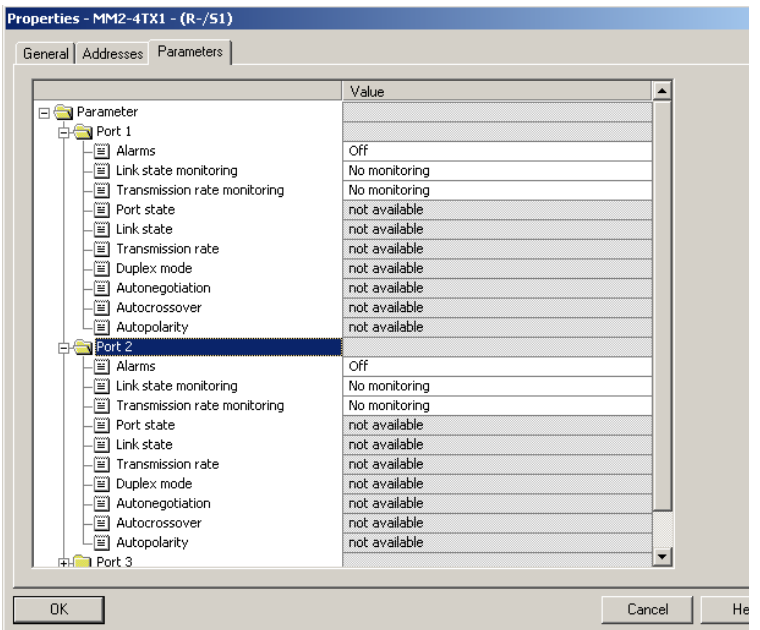


Figure 10: Port properties

3.2 PROFINET IO Parameters

3.2.1 Alarms

The Switch supports alarms on the device and port levels (see „Device State“ in the Basic Configuration User Manual or the Web-based Interface Reference Manual.

Alarms on device level	Change in device status - Failure of redundant power supply - Failure/removal of ACA
Alarms on port level	- Change in link status - Specified transfer rate exceeded.

Table 10: Alarms supported

3.2.2 Record Parameters

The Switch provides device status and port parameters as records.

Device status parameters	- Overall status - Power supply 1 - Power supply 2 - Signal contact 1(/2) - Temperature - ACA status - HIPER-Ring status - Network coupling status
Port parameters	- Port status - Link status - Transfer rate - Duplex mode - Autonegotiation - Autocrossover - Autopolarity.

Table 11: Record parameters supported

A Reader´s comments

What is your opinion of this manual? We are always striving to provide as comprehensive a description of our product as possible, as well as important information that will ensure trouble-free operation. Your comments and suggestions help us to further improve the quality of our documentation.

Your assessment of this manual:

	excellent	**good**	**satisfactory**	**mediocre**	**poor**
Accuracy	O	O	O	O	O
Readability	O	O	O	O	O
Comprehensibility	O	O	O	O	O
Examples	O	O	O	O	O
Structure/Layout	O	O	O	O	O
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Graphics	O	O	O	O	O
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