

Management functions

Basic Functions

	Store and Forward Switching Mode	IEEE 802.3
	Manual and Dynamic IP Address Assignment	
Port-Settings	Auto-negotiation on / off	
	Port Speed 10 Mbit/s / 100 Mbit/s	
	Half / Full duplex	
	Port disable / enable	
	Link Up/Down Trap disable / enable	
	Flow Control disable / enable	
Network Discovery	Link Layer Discovery Protocol (LLDP)	802.1AB, 2005
Rate Control	Rate Control per port (Broadcast, Multicast, Unicast)	
File Transfer	Firmware import and export via TFTP and HTTP	
	Configuration import and export via TFTP and HTTP	
Time Settings	Manual time setting	
	Simple Network Time Protocol (SNTP)	RFC 1305, RFC 4330
User Management	Admin, Guest and Service Level	
Service	Service Mode via port 1	

PROFINET

	PROFINET IO Device Stack ¹⁾	
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Time Synchronization

	Precision Time Protocol ¹⁾	IEEE 1588, 2008
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QoS

	Quality of Service (QoS)	IEEE 802.1p
	Differentiated services (DiffServ)	RFC 2474, 2475

VLAN

	Port protocol based VLANs VLAN ID Range: 1 – 4094 Max. Anzahl aktiver VLANs: 256	IEEE 802.1Q Rev D5.0, 2005
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Redundancy

	Spanning Tree (STP)	IEEE 802.1D (2004)
	Rapid Spanning Tree (RSTP)	IEEE 802.1D (2004)
	Media redundancy protocol ^{1) 2)}	DIN EN 62 439-2

Security

	Port-Based Network Access Control Port Based Authentication with EAP	802.1X (2004)
	RADIUS Client	RFC 2138
	IP authorized manager	

Link Aggregation

	Link Aggregation (LACP)	IEEE 802.3ad (2005)
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Multicast

	IGMP Snooping (v1, v2, v3) with support for querier	RFC 1112, 2236, 3376
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Management functions

DHCP

	DHCP Client	RFC 2131
	DHCP relay agent	RFC 2131
	DHCP Option 82	RFC 3046

Alarm

	Alarms via E-mail (SMTP) and SNMP Traps	
	Signalling contact for low voltage detection or Link break	

Diagnostic

	Port diagnostic	
	Port Mirroring	
	Switch History	
	MAC Address Table	
	RMON (1,2,3 & 9 groups)	RFC 2819

Management

	Password protected Web-Management interface	
	SNMP (v1, v2c, v3) agent & MIB support	RFC 1155, 1157, 1212, 1213, 1215, 2089, 2578, 3411, 3412, 3413, 3414, 3415, 3416, 3417, 3584
	Command Line Interface (CLI)	
	Pluggable SD card for saving of configuration ¹⁾	
	Multifunction button ¹⁾	

¹⁾ ... Available for Ha-VIS mCon 3000 Next Generation

²⁾ ... Licensing via separately available SD card

Ethernet Switch
Ha-VIS mCon 3000 Next Generation
 Ethernet Switches, managed,
 for mounting onto top-hat mounting rail
 in control cabinets



General Description

The fully Managed Ethernet Switches of the product family Ha-VIS mCon 3000 enable the connection of up to 10 network devices (according to type) over RJ45 ports or SFP modules on lowest area.

Degree of protection, mechanical stability and the comprehensive management software provide for high operation safety and meet highest demands.

The Ha-VIS mCon 3000 Ethernet Switches are designed for an effective, industrial and individual use.

The configuration via SD card or via the Multifunction button enables an easy and fast commissioning in the field.

Comprehensive possibilities of configuration and diagnostic are provided easy via web interface or standardized via SNMP.

The Ethernet Switches of the Ha-VIS mCon 3000 Next Generation family can be used as PROFINET IO devices.

Features

- Full managed Ethernet Switch acc. to IEEE 802.3
- Up to 10 ports, managed, non-blocking
- Store and Forward Switching Mode
- Gigabit Uplink ports, RJ45 and SFP modules
- Auto-crossing, Auto-negotiation, Auto-polarity
- Temperature range -40 °C ... +70 °C
- PROFINET IO device
- Time synchronization via IEEE 1588v2
- Multifunction button for fast commissioning
- SD card slot for storage of the configuration
- Management functions see pages 1 and 2

Advantages

- Small, robust metal housing
- External SD card for storage of the configuration
- Individual pre-configuration via Multifunction button
- Fast removable Ethernet data links via SFP „Hot-Swap“
- Optimised DIN rail fitting
- EMC, temperature range and mechanical stability meet the highest demands
- Universally applicable: PROFINET, Ethernet/IP or profile neutral

Application fields

- Mechanical engineering
- Robotics
- Industrial automation
- Industrial Network Infrastructure
- Wind power, Solar Power
- Maritime

Technical characteristics

Ethernet interface RJ45

Number of ports

Ha-VIS mCon 3080-A	8x 10/100Base-T(X)
Ha-VIS mCon 3102-AASFP	8x 10/100Base-T(X) 2x 10/100/1000Base-T(X) (Combo ports with SFP slot)

Cable types according to IEEE 802.3

Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5

Data rate

10 Mbit/s, 100 Mbit/s or 1000 Mbit/s (RJ45)

Maximum cable length

100 m (Twisted Pair; with Category 5 cable acc. to DIN EN 50 173-1)

Termination

RJ45 (Twisted Pair)

Diagnostics (via LED)

- Status Link – Green
- Data transfer (Act) – Green flashing
- Data transfer rate (Speed) – 1000 Mbit/s: Green
100 Mbit/s: Yellow
10 Mbit/s: OFF

Topology

Ring, Line, Star or mixed

Ethernet Interface SFP (mini-GBIC) Fibre Optic and copper

Number of ports

Ha-VIS mCon 3102-AASFP	2x 100/1000Base (Combo ports with SFP slot)
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Data rate

100 Mbit/s, 1000 Mbit/s

Termination

SFP modules according to MSA (Multi Source Agreement)
(see catalogue „HARTING Ethernet Network Solutions Automation IT“)

Diagnostics (via LED)

- Status Link – Green
- Data transfer (Act) – Green flashing

Power supply

Nominal input voltage

24/48 V DC ---

Termination

5-pole screw terminal, pluggable
for redundant power supply

Switch

Diagnostics (via LED)

- Device operates without failures – Green
- Power supply in the admissible range – Green
- Low voltage – Red
- Diagnostics failure – Red
- PROFINET failure / diagnosis – Red/Green flashing

Configuration

Slot for SD cards (back side)

- Saving and loading of configuration files
- Licence management for MRP

Multifunction button

Individual pre-configuration of software functions

Technical characteristics

Design features

Housing material	Aluminium, anodized
Dimensions (W x H x D)	44 x 130 x 100 mm (without connectors)
Degree of protection acc. to DIN 60529	IP 30
Mounting	• 35 mm top-hat rail acc. to EN 60715 • Panel mounting, vertical assembly

Environmental conditions

Operating temperature	−40 °C ... +70 °C
Storage temperature	−40 °C ... +85 °C
Relative humidity	10 % ... 95 % (non-condensing)

Mechanical solidness

Shock	IEC 60 068-2-27 • 15 g • 11 ms duration • Shock form: Half sine-wave
Vibration	EN 60 068-2-6
Rail-standard	EN 50 155, Class 1

EMC Interference immunity (EN 61 000-6-2, EN 50 121-3-2)

		<i>Industrial</i>	<i>Railway</i>	<i>Maritime</i>
Electrostatic discharge (ESD)	EN 61 000-4-2	Criterion B	Criterion B	Criterion B
Electromagnetic field	EN 61 000-4-3	Criterion A	Criterion A	Criterion A
Fast transients (Burst)	EN 61 000-4-4	Criterion B	Criterion A	Criterion B
Impulse voltages (Surge)	EN 61 000-4-5	Criterion B	Criterion B	Criterion B
Conducted emissions	EN 61 000-4-6	Criterion A	Criterion A	Criterion A
Rail applications	EN 50 121-3-2			

EMC interference (EN 61 000-6-4, EN 55 022, EN 50 121-3-2)

Management software

Full managed via web interface, SNMP and CLI
 Range of functions and detailed description see pages 1 and 2



Ethernet Switch
Ha-VIS mCon 3080-A
8-port Ethernet Switch, full managed
for mounting onto top-hat mounting rail in control cabinets

Managed	IP 30	PROFINET compatible ☒	EtherNet/IP compatible ☒
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Number of ports, Copper / Termination 8x 10/100Base-T(X) / RJ45 (Twisted Pair)

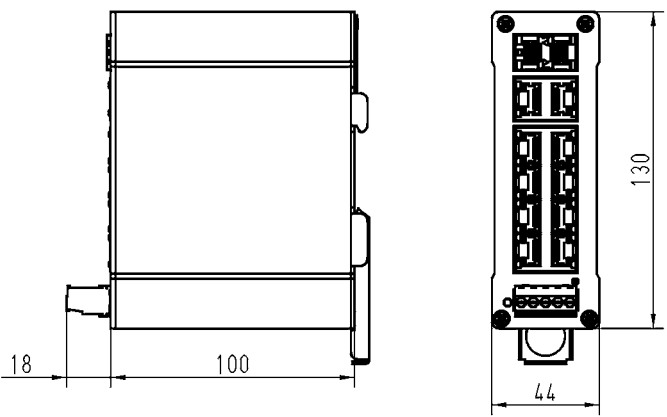
Nominal input voltage range	24/48 V DC ---
Permissible range (min/max)	12 V ... 60 V DC ---
Termination	5-pole screw terminal, pluggable redundant power supply
Input current	approx. 170 mA (at 24 V ---) approx. 90 mA (at 48 V ---)
Housing material	Aluminium, anodized
Dimensions (W x H x D)	44 x 130 x 100 mm (without connectors)
Weight	approx. 0.450 kg
Operating temperature	-40 °C ... +70 °C
MTBF	678.372 h
Approvals (in preparation)	UL 508; UL 60 950-1; DNV
Management	fully Managed via Web interface, SNMP and CLI Functions see pages 1 and 2

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS mCon 3080-A Ethernet Switch, full managed 8 RJ45 ports including Set for assembly on standard rail	20 76 108 4000		

**Ethernet Switch****Ha-VIS mCon 3102-AASFP**

10-port Ethernet Switch with 2 ports Gigabit Ethernet, full managed
for mounting onto top-hat mounting rail in control cabinets

Managed	IP 30	PROFINET compatible ☒	EtherNet/IP compatible ☒
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair) 2x 10/100/1000Base-T(X) / RJ45 (Twisted Pair)		
Number of slots SFP / Termination	2x 100/1000Base / Combo ports		
Nominal input voltage range	24/48 V DC ---		
Permissible range (min/max)	12 V ... 60 V DC ---		
Termination	5-pole screw terminal, pluggable redundant power supply		
Input current	approx. 280 mA (at 24 V ---) approx. 140 mA (at 48 V ---)		
Housing material	Aluminium, eloxiert		
Dimensions (W x H x D)	44 x 130 x 100 mm (incl. cap, without connectors)		
Weight	approx. 0.485 kg		
Operating temperature	-40 °C ... +70 °C		
MTBF	597.974 h		
Approvals (in preparation)	UL 508; UL 60 950-1; DNV		
Management	fully Managed via Web interface, SNMP and CLI Functions see pages 1 and 2		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS mCon 3102-AASFP Ethernet Switch, full managed 8 ports Fast Ethernet RJ45 2 ports Gigabit Ethernet (combo SFP) including Set for assembly on standard rail	20 76 112 4300		



Accessories

Ha-VIS Memory cards

The HARTING SD cards are used for saving the switch configuration. The web interface can be used to save the current configuration to the SD card.

If an SD card is inserted in the back of the switch, the switch will use the configuration saved on the card when it boots.

So it's quite easy when replacing a switch to transfer the entire configuration to the new switch. The old SD card with your current configuration is simply pushed into the new switch which then boots with these settings. No special network expertise is required.

Note: The HARTING Ethernet Switches are not compatible with conventional memory cards.

MRP memory cards allow you to activate the MRP functionality (media redundancy protocol) when using switches from the FTS 3000 and mCon 3000 series (with firmware ver. 3.0.0.1 and later). For example, in order to operate the device as an MRP slave, you need only have the corresponding MRP slave card inserted during operations.

Operating temperature -40 °C ... +70 °C

Memory space 128 MB

SD Memory cards

Configuration memory	20 89 900 1000
MRP Slave	20 89 900 1001
MRP Master	20 89 900 1002



Accessories

Ha-VIS SFP modules

General description

SFPs (Small Form-factor Pluggable) are small standardized modules for network connections.

These modules are a specification for a new generation of modular optical transceivers. The devices are constructed as connecting plugs for extremely quick network connections.

The SFPs are available in a variety of models, depending on the cable type (multi-mode or single-mode), the wave length (850 nm, 1300 nm, 1550 nm or CWDM), data rate or range.

Copper-based SFP are also available.

Features

- Highly flexible
- Easily swapped out in event of malfunction
- Hot swappable
- Variants:

	SM fibre	MM fibre
100 Mbit/s	X	X
1000 Mbit/s	X	X

Advantages

- SFP used as connecting plug for extremely quick network connections
- Standardized modules for network connections

Application fields

- Railway applications
- Industrial automation
- Automotive industry
- Wind power



Accessories

Ha-VIS SFP modules 100 Mbit/s

SFP:

Type	SFP Fast Ethernet Transceiver 155 Mbit/s MM	SFP Fast Ethernet Transceiver 155 Mbit/s SM	SFP Fast Ethernet Transceiver 155 Mbit/s SM	SFP Fast Ethernet Transceiver 155 Mbit/s SM
Wave length	1310 nm	1310 nm	1310 nm	1550 nm
Mode	Multimode	Singlemode	Singlemode	Singlemode
Fiber	50 / 125 µm or 62.5 / 125 µm	9 / 125 µm	9 / 125 µm	9 / 125 µm
Max. cable length*	2 km	15 km	40 km	80 km
Connector	LC connector duplex	LC connector duplex	LC connector duplex	LC connector duplex
Optical budget	min. 8.2 dB	min. 8.2 dB	min. 10 dB	min. 10 dB
Data rate	155 Mbit/s	155 Mbit/s	155 Mbit/s	155 Mbit/s

* Typical cable length depending on attenuation of each specific application.

Identification	Part number	Drawing	Dimensions in mm
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SFP modules

SFP Fast Ethernet Transceiver 155 Mbit/s MM

20 76 000 0300

SFP Fast Ethernet Transceiver 155 Mbit/s SM

20 76 020 0300

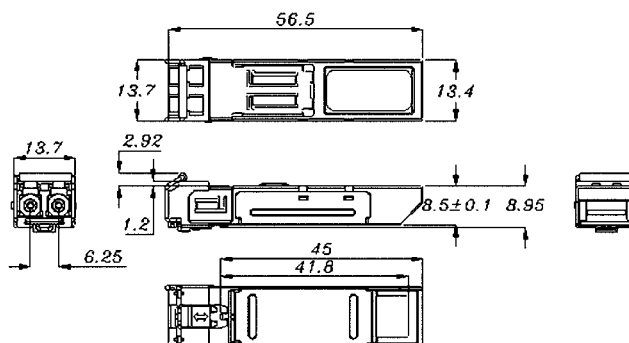
SFP Fast Ethernet Transceiver L40 155 Mbit/s SM

20 76 024 0300

SFP Fast Ethernet Transceiver L80 155 Mbit/s SM

20 76 028 0300

other types on request





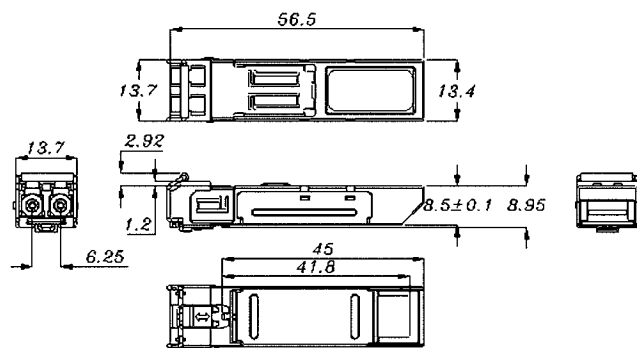
Accessories

Ha-VIS SFP modules 1000 Mbit/s

SFP:

Type	SFP Gigabit Ethernet Transceiver 1.25 Gbit/s MM	SFP Gigabit Ethernet Transceiver 1.25 Gbit/s SM	SFP Gigabit Ethernet Transceiver 1.25 Gbit/s SM	SFP Gigabit Ethernet Transceiver 1.25 Gbit/s SM
Wave length	850 nm	1310 nm	1310 nm	1310 nm
Mode	Multimode	Singlemode	Singlemode	Singlemode
Fiber	50 / 125 µm or 62.5 / 125 µm	9 / 125 µm	9 / 125 µm	9 / 125 µm
Max. cable length*	550 m (50 / 125) 275 m (62.5 / 125)	10 km	40 km	80 km
Connector	LC connector duplex	LC connector duplex	LC connector duplex	LC connector duplex
Optical budget	min. 9 dB	min. 9 dB	min. 9 dB	min. 9 dB
Data rate	1250 Mbit/s	1250 Mbit/s	1250 Mbit/s	1250 Mbit/s

* Typical cable length depending on attenuation of each specific application.

Identification	Part number	Drawing	Dimensions in mm
SFP modules			
SFP Gigabit Ethernet Transceiver 1,25 Gbit/s MM	20 76 010 0300		
SFP Gigabit Ethernet Transceiver 1,25 Gbit/s SM	20 76 030 0300		
SFP Gigabit Ethernet Transceiver L40 1,25 Gbit/s SM	20 76 034 0300		
SFP Gigabit Ethernet Transceiver L80 1,25 Gbit/s SM	20 76 038 0300		
other types on request			



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