

























































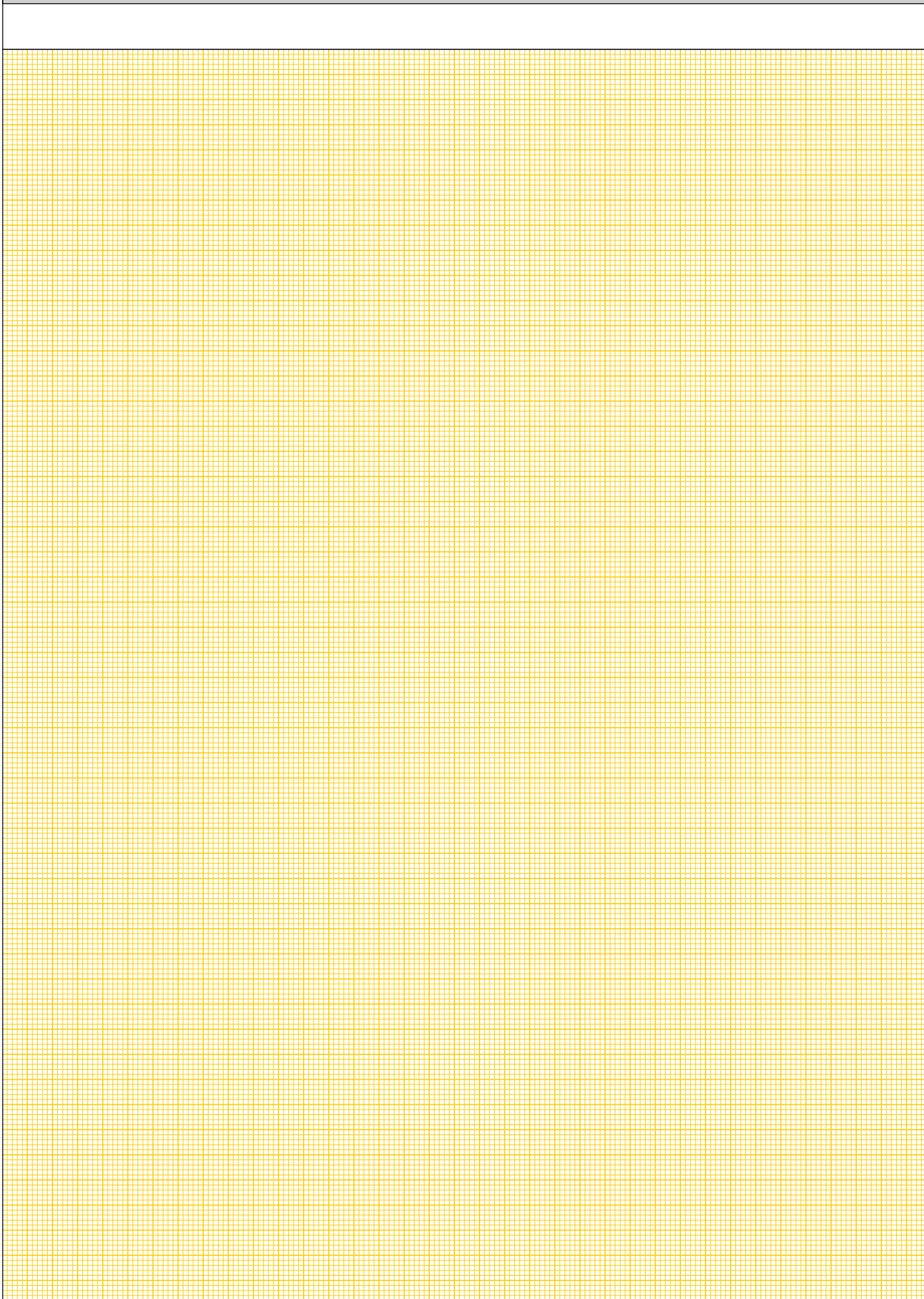
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Function Class	Installation Class			
Ha-VIS eCon unmanaged Plug & Play Store and Forward Switching Mode Non-Blocking Auto-negotiation Auto-polarity Auto-crossing	Inside IP 30 Degree of protection	Ha-VIS eCon 2000 - 3/4/5/16 copper ports (RJ45) - Robust metal housing - Top-Hat rail mount - Optimum installation depth	 eCon 2030-A 3 RJ45	 eCon 2040-A 4 RJ45
	Inside IP 30 Degree of protection	Ha-VIS eCon 3000 - 1/6/8/10 copper ports with optional 1/2 F.O. ports - Robust metal housing - Top-Hat Rail mount - Narrow form factor	without FO  eCon 3080-A/-A2/-A4 8 RJ45 also available with: - with narrowest housing (-A2) - extended temperature range (-A4)	 eCon 3080 -A1 8 RJ45
	Inside IP 30 / IP 40 Degree of protection	Ha-VIS eCon 4000 - 8 copper ports (M12 D-coding) - Robust metal housing - EMC, temperature range and mechanical stability meet the highest requirements	 eCon 4080-B1 8 M12 D-coding	
	Outside IP 65 / IP 67 Degree of protection	Ha-VIS eCon 7000 - 5/10 copper ports (Han® 3 A RJ45 or M12 D-coding) - Robust die-cast zinc housing - EMC, temperature range and mechanical stability meet the highest requirements	5 Port  eCon 7050-A1 5 Han® 3 A RJ45 wide power input range	
Ha-VIS sCon configurable via USB interface configurable through a graphic user interface	Inside IP 30 Degree of protection	Ha-VIS sCon 3000 - 6/8/10 copper ports (RJ45) and optionally 2/3 F.O. ports (SC/ST) - Robust metal housing - Parallel-/ ring-redundancy - Top-Hat rail mounting - Potential-free alarm contact	without F.O.  sCon 3100-A 10 RJ45	
Fast Track Switching Webinterface SNMP (v1, v2c, v3) User Management LLDP	Inside IP 30 Degree of protection	Ha-VIS FTS 3000 - 6/8/10 copper ports (RJ45) and optionally 2 SFP modules - Robust metal housing - Top-Hat rail mounting - Web-management - Fast Track Switching Technology	configurable  FTS 3100s-A 10 RJ45	
Ha-VIS mCon managed Quality of Service VLAN support Rapid Spanning Tree 802.1X RADIUS Client IP authorize manager Link Aggregation IGMP Snooping (v1, v2, v3) with querier DHCP Client DHCP Option 82 SNMP Alarms via Email SNMP Traps Port diagnostic	Inside IP 30 Degree of protection	Ha-VIS mCon 3000 - 6/8/10 copper ports (RJ45) and optionally 1/2/3 F.O. ports (SC/ST) - Robust metal housing - Top-Hat rail mounting - Web management - Potential-free alarm contact	without FO  mCon 3100-AV 10 RJ45	 mCon 3100-AV 10 RJ45 2 RJ45 Gig
	Inside IP 30 / IP 40 Degree of protection	Ha-VIS mCon 4000 - 8 copper ports (M12 D-coding) - Robust metal housing - EMC, temperature range and mechanical stability meet the highest requirements - Web management	 mCon 4080-B1V 8 M12 D-Coding	
	Outside IP 65 / IP 67 Degree of protection	Ha-VIS mCon 7000 - 5/10 copper ports (Han® 3 A RJ45 or M12 D-coding) - Robust die-cast zinc housing - EMC, temperature range and mechanical stability meet the highest requirements - Web management	5 Port  mCon 7050-B1V 5 M12 D-Coding wide power input range	
Ha-VIS pCon Industrial Power Supply 24 V/48 V	Inside IP 20 / IP 65 Degree of protection	Ha-VIS pCon 2000 - Worldwide application through wide input voltage range: 110 ... 240 V AC - Operating temperature: -25 °C ... +70 °C without derating - Fast installation without tools due to cage clamps - Active PFC	 pCon 2035-24 Output: 24 V / 1.4 A (35 W)	 pCon 2035-48 Output: 24 V / 1.4 A (35 W) pCon 2035-48 Output: 48 V / 1.4 A (35 W)

Switches

Application

<p>eCon 2040-A 5</p>	 <p>eCon 2050-A 5 RJ45</p>	 <p>eCon 2050-AA 5 RJ45 Full Gigabit</p>	 <p>eCon 2160-A 16 RJ45</p>	<p>Ethernet IEEE 802.3</p> 
<p>eCon 3061-AD 6 RJ45, 1 SC</p>	 <p>eCon 3061-AE 6 RJ45, 1 ST</p>	<p>eCon 3062-AD/-AD2/-AF 6 RJ45, 2 SC also available with: - extended temperature range (-AD2) - Singlemode (-AF)</p>  <p>eCon 3062-AE 6 RJ45, 2 ST</p>	<p>Converter</p>	<p>eCon 3011-AD 1 RJ45, 1 SC - 10/100 Mbit/s - PoE</p>  <p>eCon 3011-ASFP - 1 RJ45 - 1 SFP module slot - 10/100 Mbit/s - PoE</p> <p>Ethernet IEEE 802.3</p> 
<p>eCon 4080-B3 8 M12 D-coding 110 V DC power input</p>	 <p>eCon 4080-BPoE1 8 M12 D-coding 8 Ports PoE</p>	<p>Ha-VIS eCon 9000 - 7 - 8 copper ports M12 D-coding - Robust metal housing - 19" rack mount - Small form-factor</p>	 <p>eCon 9080-B1 8 M12 D-coding</p>	 <p>eCon 9070-B 7 M12 D-coding Power input on the front</p> <p>Ethernet IEEE 802.3</p> 
<p>eCon 7050- B1 5 M12 D-coding wide power input range</p>	<p>10 Port</p>  <p>eCon 7100-B1 10 M12 D-coding</p>	 <p>eCon 7100-AA 8 Han® 3 A RJ45 2 Han® 3 A RJ45 Gigabit</p>	<p>Ethernet IEEE 802.3</p> 	
<p>sCon 3100-AA 10 RJ45 2 RJ45 Gigabit</p>	<p>F.O.</p>  <p>sCon 3082-AD/-AF 8 RJ45, 2 SC</p>	<p>SC</p>  <p>sCon 3063-AD 6 RJ45, 3 SC</p>	<p>Ethernet IEEE 802.3</p> 	
<p>managed</p>	 <p>FTS 3060-A 6 RJ45</p>	 <p>FTS 3100-A 10 RJ45</p>	 <p>FTS 3082-ASFP 8 RJ45 , 2 SFP module slots</p>	<p>Ethernet IEEE 802.3</p> 
<p>00-AAV gabit</p>	<p>FO</p>  <p>mCon 3082-ADV/AFV 8 RJ45, 2 SC Multi Mode (ADV) Single Mode (AFV)</p>	<p>SC</p>  <p>mCon 3063-ADV 6 RJ45, 3 SC</p>	<p>ST</p>  <p>mCon 3082-AEV 8 RJ45, 2 ST</p>	 <p>mCon 3063-AEV 6 RJ45, 3 ST</p> <p>Ethernet IEEE 802.3</p> 
<p>mCon 4080-B3V 8 M12 D-coding 110 V DC power input</p>	 <p>mCon 4080-BPoE1V 8 M12 D-coding 8 Ports PoE</p>	<p>Ha-VIS mCon 9000 - 7 - 8 copper ports D-coding - Robust metal housing - 19" rack mount - Small form-factor</p>	 <p>mCon 9080-BV 8 M12 D-coding</p>	 <p>mCon 9070-BV 7 M12 D-coding Power input on the front</p> <p>Ethernet IEEE 802.3</p> 
<p>10 Port</p>	 <p>mCon 7100-B1V 10 M12 D-coding</p>	 <p>mCon 7100-AAV 8 Han® 3 A RJ45 2 Han® 3 A RJ45 Gigabit</p>	<p>Ethernet IEEE 802.3</p> 	
<p>pCon 2060-24 2.5 A (60 W)</p>	 <p>pCon 2120-24 Output: 24 V / 5 A (120 W)</p>	 <p>pCon 2020-48 Output: 48 V / 2.5 A (120 W)</p>	<p>pCon 20DRM-10A Redundancy module: 12 ... 48 V / 16 A</p>	<p>Ha-VIS pCon 7000 - DC/DC Converter - Operating temperature: -40 °C ... +70 °C</p>  <p>pCon 7060-110/24 110 V DC / 24 V DC IP 20 Degree of protection</p>  <p>pCon 7150-110/48 110 V DC / 48 V DC IP 65 Degree of protection</p> <p>pCon 7150 DC-24/48 24 V DC / 48 V DC IP 65 Degree of protection</p>

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Ethernet Switch Ha-VIS eCon 2000

Ethernet Switches, unmanaged, for flat mounting onto top-hat mounting rail in control cabinets

General description

The Ethernet Switches of the product family Ha-VIS eCon 2000 are suitable for industrial applications and support Ethernet (10 Mbit/s), Fast Ethernet (100 Mbit/s) and Gigabit Ethernet (1000 Mbit/s). The product family enables the connection of up to 16 network devices (according to type) via Twisted Pair cables.

Through its flat mounting and the clearly laid out integrated LEDs on each port, the Ha-VIS eCon 2000 Ethernet Switch family supports fast and easy network diagnosis. The Ha-VIS eCon Ethernet Switch operates as an unmanaged switch in Store and Forward Switching Mode and supports Auto-crossing, Auto-negotiation and Auto-polarity.

Due to their mechanical attachment, the Ha-VIS eCon 2000 Ethernet Switches can be mounted on or dismounted from standard 35 mm top-hat rails without tools.

Features

- Auto-crossing
- Auto-negotiation
- Auto-polarity
- Store and Forward Switching Mode

For Ethernet Switch Ha-VIS eCon 2050-AA only:

- complete designed for Gigabit Ethernet
- Jumbo Frames up to 9728 Bytes
- 4 K MAC addresses

Advantages

- Flat housing design
- Robust metal housing
- Adapted for mounting onto top-hat mounting rail 35 mm according to EN 60 715
- RoHS compliant

Application fields

- Industrial automation
- Automotive industry
- Wind power
- Power distribution systems

Technical characteristics Ha-VIS eCon 2030-A, 2040-A, 2050-A / Ha-VIS eCon 2160-A
Ethernet interface – RJ45

Number of ports	3x / 4x / 5x / 16x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (RJ45)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

	Ha-VIS eCon 2030-A, eCon 2040-A, eCon 2050-A	Ha-VIS eCon 2160-A
Power supply		
Input voltage	24 V DC (9,6 ... 36 V DC)	24 V DC (9,6 ... 60 V DC) - redundant
Termination	3-pole, pluggable screw contact (24 V, 0, FE)	5-pole, pluggable screw contact, redundant (PWR1 + / PWR1 - / PWR2 + / PWR2 - / FE)
Diagnostics (LED)	Power supply - LED Green	
Design features		
Housing material	aluminium	
Dimensions (W x H x D)	46.5 x 105 x 25.5 mm (without connectors)	120 x 105 x 25.5 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 30	
Assembly	35 mm top-hat rail acc. to EN 60 715	
Weight	approx. 0,2 kg	approx. 0,4 kg

Environmental conditions

Working temperature	-10 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)

Technical characteristics Ha-VIS eCon 2050-AA
Ethernet interface – RJ45

Number of ports	5x 10/100/1000-Base-T(X)
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 cable Category 5 acc. to DIN EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - <ul style="list-style-type: none"> 1000 Mbit/s: Green 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

Power supply

Input voltage	24 V DC (9,6 ... 60 V DC) - redundant
Termination	5-pole, pluggable screw contact, redundant (PWR1 + / PWR1 - / PWR2 + / PWR2 - / FE)
Diagnostics (LED)	Power supply (PWR1; PWR2) - LED Green

Design features

Housing material	aluminium
Dimensions (W x H x D)	70 x 105 x 25.5 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 30
Assembly	35 mm top-hat rail acc. to EN 60 715
Weight	0,4 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)



Ethernet Switch Ha-VIS eCon 2030-A

3-port Ethernet Switch for flat mounting onto top-hat mounting rail in control cabinets

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	3x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 36 V DC		
Input current	approx. 100 mA (at 24 V DC)		
Housing material	aluminium, anodised		
Dimensions (W x H x D)	46,5 x 105 x 25,5 mm (without connectors)		
Weight	approx. 0,2 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV		
MTBF	1.020.000 h		

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS eCon 2030-A Ethernet Switch with 3 RJ45 ports</p>	<p>20 76 103 3000</p>		
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Ethernet Switch Ha-VIS eCon 2040-A

4-port Ethernet Switch for flat mounting onto top-hat mounting rail in control cabinets

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	4x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 36 V DC		
Input current	approx. 100 mA (at 24 V DC)		
Housing material	aluminium, anodised		
Dimensions (W x H x D)	46,5 x 105 x 25,5 mm (without connectors)		
Weight	approx. 0,2 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV		
MTBF	1.020.000 h		

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS eCon 2040-A Ethernet Switch with 4 RJ45 ports	20 76 104 3000		
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Ethernet Switch Ha-VIS eCon 2050-A

5-port Ethernet Switch for flat mounting onto top-hat mounting rail in control cabinets

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	5x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 36 V DC		
Input current	approx. 100 mA (at 24 V DC)		
Housing material	aluminium, anodised		
Dimensions (W x H x D)	46,5 x 105 x 25,5 mm (without connectors)		
Weight	approx. 0,2 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV		
MTBF	1.020.000 h		

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS eCon 2050-A Ethernet Switch with 5 RJ45 ports</p>	<p>20 76 105 3000</p>		
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Ethernet Switch Ha-VIS eCon 2160-A

16-port Ethernet Switch for flat mounting onto top-hat mounting rail in control cabinets

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	16x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, redundant (PWR1 + / PWR1 - / PWR2 + / PWR2 - / FE)		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 220 mA (at 24 V DC)		
Housing material	aluminium, anodised		
Dimensions (W x H x D)	120 x 105 x 25,5 mm (without connectors)		
Weight	approx. 0,4 kg		
Working temperature	-10 °C ... +70 °C		
MTBF	1.150.000 h		

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS eCon 2160-A Ethernet Switch with 16 RJ45 ports</p>	<p>20 76 116 3000</p>		
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Ethernet Switch Ha-VIS eCon 2050-AA

5-port Gigabit Ethernet Switch for flat mounting onto top-hat mounting rail in control cabinets

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	5x 10/100/1000-Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, redundant (PWR1 + / PWR1 - / PWR2 + / PWR2 - / FE)		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 250 mA (at 24 V DC)		
Housing material	aluminium, anodised		
Dimensions (W x H x D)	70 x 105 x 25,5 mm (without connectors)		
Weight	approx. 0,4 kg		
Working temperature	-40 °C ... +70 °C		
MTBF	1.220.000 h		

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS eCon 2050-AA Ethernet Switch with 5 RJ45 ports</p>	<p>20 76 105 3001</p>		
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**Ethernet Switch
Ha-VIS eCon 3000**

Ethernet Switches, unmanaged, for installation in control cabinets

eCon 3000

General description

Features

The Fast Ethernet Switches of the product family Ha-VIS eCon 3000 are suitable for industrial applications and support Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). The product family enables the connection of up to 10 network devices (according to type) over Twisted Pair cables and fibre-optic cables (Multi- and Singlemode).

The Ha-VIS eCon 3000 Ethernet Switch product family, with its integrated LEDs on each port, supports fast and easy network diagnosis.

The Ha-VIS eCon 3000 Ethernet Switch operates as an unmanaged Switch in Store and Forward Switching Mode and supports Auto-crossing, Auto-negotiation and Auto-polarity.

- Auto-crossing
- Auto-negotiation
- Auto-polarity
- Store and Forward Switching Mode

Advantages

Application fields

- Small housing
- Robust metal housing
- Adapted for mounting onto top-hat mounting rail 35 mm according to EN 60 715
- RoHS compliant

- Industrial automation
- Automotive industry
- Wind power
- Power distribution systems

Technical characteristics

Ethernet interface – RJ45

Number of ports	6x / 8x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (RJ45)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

Power supply

Input voltage	24 V DC (9,6 ... 60 V DC) - redundant
Termination	3-pole, pluggable screw contact (24 V, 0, FE)
Diagnostics (LED)	Power supply (PWR1; PWR2) - LED Green

Design features

Housing material	aluminium
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 30
Assembly	35 mm top-hat rail acc. to EN 60 715
Weight	approx. 0,6 kg

Environmental conditions

Working temperature	-10 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)

Technical characteristics F.O. termination

Ethernet interface – F.O.

Number of ports	1x / 2x 100Base-FX
Cable types according to IEEE 802.3	<ul style="list-style-type: none"> • Multimodefibre, 1300 nm; 50 µm / 125 µm or 62.5 µm / 125 µm • Singlemodefibre, 1300 nm; 9 µm (for AF versions only)
Data rate	100 Mbit/s
Maximum cable length	<ul style="list-style-type: none"> • 2000 m (Multimode) • 15 km (Singlemode)
Termination	ST female / ST female
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing
Wavelength	1300 nm
Transceive power T(X) max. (dynamic)	<ul style="list-style-type: none"> • -14 dBm (50 µm / 125 µm) • -14 dBm (62.5 µm / 125 µm)
Transceive power T(X) min.	<ul style="list-style-type: none"> • -23,5 dBm (50 µm / 125 µm) • -20 dBm (62.5 µm / 125 µm)
Receive power RX typical (dynamic)	<ul style="list-style-type: none"> • -33,9 dBm (window) • -35,2 dBm (centre)
Receive power RX max. (dynamic)	-14 dBm
Signal detection (dynamic)	-33 dBm
Topology	<ul style="list-style-type: none"> • Line • Star • mixed



**Ethernet Media converter
Ha-VIS eCon 3000**

Ethernet Media converter for vertical installation in control cabinets, including 1 F.O. port

General description	Features
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The Fast Ethernet Media converter Ha-VIS eCon 3011 of the product family Ha-VIS eCon 3000 is suitable for industrial applications and support both Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). The Media-converter enables the conversion from Twisted Pair cables to fiber-optic cables (Multimode and Singlemode).

The Ha-VIS eCon 3011 Media converter is configurable via Dip switch and offers a variety of control functions.

The Media converter has two operating modes:

In the switch mode, it operates as an unmanaged Ethernet Switch with Store and Forward Switching which supports asynchronous data communication, Auto-crossing and Auto-negotiation.

In the converter mode, it works with a data rate of 100 Mbit/s (Full duplex). The latency is very low in this operation mode.

- Auto-crossing
- Auto-negotiation
- Auto-polarity
- Store and Forward Switching Mode

Advantages	Application fields
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- Power over Ethernet (IEEE 802.3af)
- Configuration via Dip switch
- Small housing
- Robust metal housing
- Adapted for mounting onto top-hat mounting rail 35 mm according to EN 60 715

- Industrial automation
- Automotive industry
- Wind power
- Power distribution systems

Technical characteristics Media converter
Ethernet interface – RJ45

Number of ports	1x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (RJ45)
Repeater class	Class II (latency: 860 ns in converter mode)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: OFF • Duplex - Full duplex: Yellow Half duplex: OFF • PoE (Power Source Equipment) (PSE) - Green
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

Power supply

Input voltage	24 V DC (12 ... 30 V DC) - redundant
Input voltage, mode PoE	48 V DC (46 ... 57 V DC) - redundant
Termination	5-pole, pluggable screw contact, redundant (PWR1 + / PWR1 - / PWR2 + / PWR2 - / FE)
Diagnostics (LED)	Power supply - LED Green

Configuration

Configuration via Dip switch:
Mode, Auto-negotiation, Data rate, Duplex TP, Duplex FX,
Link monitoring, PoE (PSE)

Design features

Housing material	aluminium
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 30
Assembly	35 mm top-hat rail acc. to EN 60 715
Weight	approx. 0,6 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)

Technical characteristics Media converter F.O. termination

Ethernet interface – F.O.

Number of ports	1x 100Base-FX
Cable types according to IEEE 802.3	Multimodefibre, 1300 nm; 50 µm / 125 µm or 62.5 µm / 125 µm
Data rate	100 Mbit/s
Maximum cable length	2000 m (Multimode)
Termination	SC-D female
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Duplex - Full duplex: Yellow Half duplex: OFF
Wavelength	1300 nm
Transceive power T(X) max. (dynamic)	<ul style="list-style-type: none"> • -14 dBm (50 µm / 125 µm) • -14 dBm (62.5 µm / 125 µm)
Transceive power T(X) min.	<ul style="list-style-type: none"> • -23,5 dBm (50 µm / 125 µm) • -20 dBm (62.5 µm / 125 µm)
Receive power RX typical (dynamic)	<ul style="list-style-type: none"> • -33,9 dBm (window) • -35,2 dBm (centre)
Receive power RX max. (dynamic)	-14 dBm
Signal detection (dynamic)	-33 dBm
Topology	<ul style="list-style-type: none"> • Line • Star • mixed



Ethernet Switch Ha-VIS eCon 3080-A

8-port Ethernet Switch for vertical installation in control cabinets

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 36 V DC		
Input current	approx. 150 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV; e1		
MTBF	548.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3080-A Ethernet Switch with 8 RJ45 ports	20 76 108 3000		



Ethernet Switch Ha-VIS eCon 3080-A1

8-port Ethernet Switch for flat installation in control cabinets

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 36 V DC		
Input current	approx. 150 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	130 x 23 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV; e1		
MTBF	548.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3080-A1 Ethernet Switch with 8 RJ45 ports	20 76 108 3001		



Ethernet Switch Ha-VIS eCon 3080-A2

8-port Ethernet Switch for vertical installation in control cabinets,
low installation depth

Unmanaged	IP 30	PROFINET comatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 36 V DC		
Input current	approx. 150 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 80 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508		
MTBF	548.000 h		

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS eCon 3080-A2 Ethernet Switch with 8 RJ45 ports	20 76 108 3002		Dimensions in mm
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Ethernet Switch Ha-VIS eCon 3080-A4

8-port Ethernet Switch for vertical installation in control cabinets,
with extended temperature range

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	12 V ... 36 V DC		
Input current	approx. 150 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; DNV		
MTBF	540.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3080-A4 Ethernet Switch with 8 RJ45 ports	20 76 108 3004		



Ethernet Switch Ha-VIS eCon 3061-AD

7-port Ethernet Switch for vertical installation in control cabinets,
including 1 F.O. port (SC, MM)

Unmanaged	IP 30	PROFINET comatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	1x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 200 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508		
MTBF	825.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3061-AD Ethernet Switch with 6 RJ45 ports 1 F.O. port	20 76 107 3100		



Ethernet Switch Ha-VIS eCon 3062-AD

8-port Ethernet Switch for vertical installation in control cabinets,
including 2 F.O. ports (SC, MM)

Unmanaged	IP 30	PROFINET comatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 240 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1		
MTBF	825.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3062-AD Ethernet Switch with 6 RJ45 ports 2 F.O. ports	20 76 108 3100		



eCon 3000

Ethernet Switch

Ha-VIS eCon 3062-AD2

8-port Ethernet Switch for vertical installation in control cabinets, including 2 F.O. ports (SC, MM), extended temperature range

Unmanaged	IP 30	PROFINET comatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 240 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3062-AD2 Ethernet Switch with 6 RJ45 ports 2 F.O. ports	20 76 108 3102		



Ethernet Switch Ha-VIS eCon 3062-AF

8-port Ethernet Switch for vertical installation in control cabinets,
including 2 F.O. ports (SC, SM)

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 240 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3062-AF Ethernet Switch with 6 RJ45 ports 2 F.O. ports	20 76 108 3103		



eCon 3000

Ethernet Switch Ha-VIS eCon 3061-AE

7-port Ethernet Switch for vertical installation in control cabinets,
including 1 F.O. port (ST, MM)

Unmanaged	IP 30	PROFINET comatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	1x 100Base-FX / ST female		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 200 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508		
MTBF	825.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3061-AE Ethernet Switch with 6 RJ45 ports 1 F.O. port	20 76 107 3200		



Ethernet Switch Ha-VIS eCon 3062-AE

8-port Ethernet Switch for vertical installation in control cabinets,
including 2 F.O. ports (ST, MM)

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / ST female		
Input voltage / Termination	24 V DC / 3-pole, pluggable screw contact (24 V, 0, FE)		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 240 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-10 °C ... +70 °C		
Approvals	UL 508		
MTBF	825.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3062-AE Ethernet Switch with 6 RJ45 ports 2 F.O. ports	20 76 108 3200		



Ethernet Media converter

Ha-VIS eCon 3011-AD

2-port Ethernet Media converter for vertical installation in control cabinets, including 1 F.O. port (SC, MM)

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	1x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	1x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, redundant (PWR1 + / PWR1 - / PWR2 + / PWR2 - / FE)		
Permissible range (min./max.)	12 V ... 30 V DC		
Input current	approx. 100 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	cUL (in preparation)		
MTBF	2.055.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3011-AD Ethernet Switch with 1 RJ45 port 1 F.O. port	20 76 102 3100		



Ethernet Media converter Ha-VIS eCon 3011-ASFP

2-port Ethernet Media converter for vertical installation in control cabinets,
including 1 F.O. port (SFP)

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	1x 10/100Base-T(X) / RJ45 (Twisted Pair) PoE supports 8 ports		
Number of ports, F.O. / Termination	1x 100Base-FX / SFP module slot		
mode PoE			
Input voltage / Termination	48 V DC /		
Permissible range (min./max.)	46 V ... 57 V DC		
Input current	approx. 100 mA ... 400 mA at 48 V DC with PoE		
mode Non-PoE			
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, redundant (PWR1 + / PWR1 - / PWR2 + / PWR2 - / FE)		
Permissible range (min./max.)	12 V ... 30 V DC		
Input current	approx. 100 mA (at 24 V DC)		
Housing material	aluminium, powder-coated		
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)		
Weight	approx. 0,6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	cUL (in preparation)		
MTBF	2.090.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 3011-ASFP Ethernet Switch with 1 RJ45 port 1 F.O. port	20 76 102 3101		



Ethernet Switch Ha-VIS eCon 4000

Ethernet Switches, unmanaged, for flat wall mounting

General description

The Fast Ethernet Switches of the product family Ha-VIS eCon 4000 are recommended for use in the widest range of industrial applications and support both Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). The product family enables the connection of up to 8 network devices over Twisted Pair cables.

The robust M12 interface shows its advantages especially in applications at risk of vibrations.

The Ha-VIS eCon 4000 Ethernet Switch product family, with its integrated LEDs, supports fast and easy network diagnosis. The Ha-VIS eCon Ethernet Switch operates as an unmanaged Switch in Store and Forward Switching Mode and supports Auto-crossing, Auto-negotiation and Auto-polarity.

Features

- Ethernet Switch according to IEEE 802.3
- Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s)
- Auto-crossing, Auto-negotiation, Auto-polarity
- Diagnostic LEDs (Link Status, Data, Power)
- Store and Forward Switching Mode
- Mounting onto wall, optionally onto top-hat mounting rail

For Ethernet Switch Ha-VIS eCon 4080-BPoE1 only:

- PoE support

Advantages

- Robust metal housing and flat housing style
- EMC, temperature range and mechanical stability meet the toughest demands
- Wide range for power supply input
- Additional type test according to EN 50 155 and EN 50 121-3-2

Application fields

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

Technical characteristics

Ethernet interface – M12

Number of ports	8x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (M12 D-coding)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	M12 D-coding
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: Green
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

Power supply

Input voltage	24 / 48 V DC (12 ... 60 V DC) - redundant
Termination	M12 A-coding, male, for redundant power supply
Diagnostics (LED)	Power supply - LED Green

Design features

Housing material	metal
Dimensions (W x H x D)	130 x 166 x 50 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 40
Assembly	Wall mounting, flat assembly
Weight	approx. 0,85 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)

Technical characteristics Ha-VIS eCon 4080-BPoE1

Ethernet interface – M12

Number of ports	8x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (M12 D-coding)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	M12 D-coding
Diagnostics (LED) Link	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: Green
PoE	<ul style="list-style-type: none"> • no PoE device - OFF • PoE device with failure - Red • PoE device connected - Green
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

Power supply

Input voltage mode PoE	48 V DC (46 ... 55 V DC)						
mode Non-PoE	24 / 48 V DC (12 ... 55 V DC)						
Termination	M12 A-coding, male, for redundant power supply						
Diagnostics (LED)	<table> <tr> <td>Pwr X9 (switch)</td> <td>voltage – LED Green</td> </tr> <tr> <td>Pwr PoE (mode PoE)</td> <td>> 46 V DC – LED Green</td> </tr> <tr> <td>State</td> <td>< 46 V DC – LED Red</td> </tr> </table>	Pwr X9 (switch)	voltage – LED Green	Pwr PoE (mode PoE)	> 46 V DC – LED Green	State	< 46 V DC – LED Red
Pwr X9 (switch)	voltage – LED Green						
Pwr PoE (mode PoE)	> 46 V DC – LED Green						
State	< 46 V DC – LED Red						

Design features

Housing material	metal
Dimensions (W x H x D)	130 x 166 x 50 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 40
Assembly	Wall mounting, flat assembly
Weight	approx. 0,85 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)



Ethernet Switch
Ha-VIS eCon 4080-B1
 8-port Ethernet Switch for flat wall mounting

Unmanaged	IP 40	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / M12 D-coding		
Input voltage / Termination	24 / 48 V DC / M12 A-coding, male, for redundant power supply		
Permissible range (min./max.)	12 V ... 60 V DC		
Input current	approx. 150 mA (at 24 V DC)		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	130 x 166 x 50 mm (without connectors)		
Weight	approx. 0,85 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	e1		
MTBF	1.544.000 h		

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS eCon 4080-B1 Ethernet Switch with 8 ports M12 D-coding</p> <p>for wall mounting</p>	<p>20 77 208 3001</p>		
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Ethernet Switch Ha-VIS eCon 4080-B3

8-port Ethernet Switch (110 V DC) for flat wall mounting

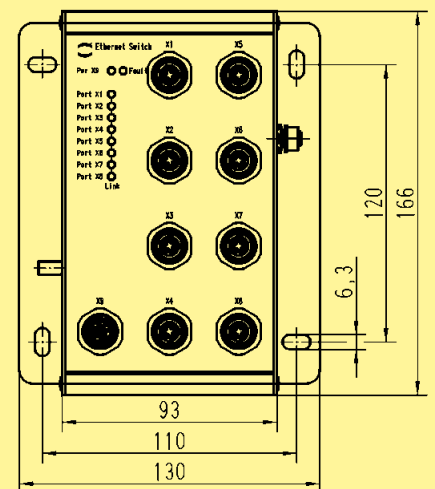
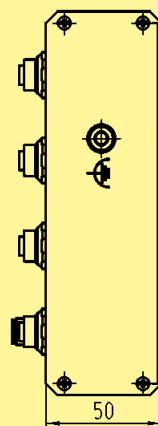
Unmanaged	IP 40	PROFINET comatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / M12 D-coding		
Input voltage / Termination	72 / 110 V DC / M12 A-coding, male, for redundant power supply		
Permissible range (min./max.)	50,4 V ... 137,5 V DC		
Input current	approx. 40 mA (at 110 V DC)		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	130 x 166 x 50 mm (without connectors)		
Weight	approx. 0,85 kg		
Working temperature	-40 °C ... +70 °C		
MTBF	1.183.000 h		

eCon 4000

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS eCon 4080-B3
Ethernet Switch with
8 ports M12 D-coding

20 77 208 3003



for wall mounting



Ethernet Switch

Ha-VIS eCon 4080-BPoE1

8-port Ethernet Switch for flat wall mounting, with Power over Ethernet

eCon 4000

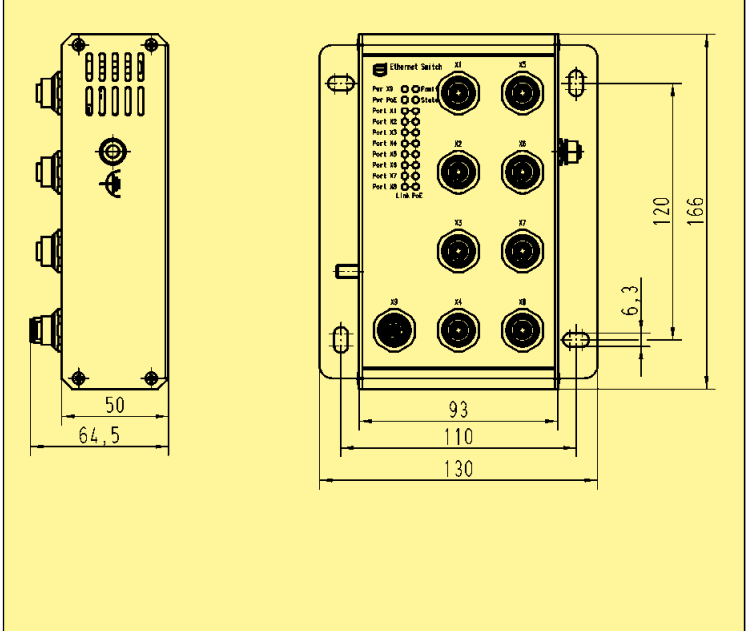
Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / M12 D-coding PoE supports 8 ports		
mode PoE			
Input voltage / Termination	48 V DC / M12 A-coding, male		
Permissible range (min./max.)	46 V ... 55 V DC		
Input current	max. 3 A at 46 V DC, load 350 mA per port		
mode Non-PoE			
Input voltage / Termination	24 / 48 V DC / M12 A-coding, male, for redundant power supply		
Permissible range (min./max.)	12 V ... 55 V DC		
Input current	approx. 150 mA (at 24 V DC)		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	130 x 166 x 50 mm (without connectors)		
Weight	approx. 0,85 kg		
Working temperature	-40 °C ... +70 °C		

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS eCon 4080-BPoE1
Ethernet Switch with
8 ports M12 D-coding

for wall mounting

20 77 208 3009





Ethernet Switch Ha-VIS eCon 9000

19" Ethernet Switches, unmanaged, for installation in a 19" rack

General description

The Ethernet Switches of the product family Ha-VIS eCon 9000 are recommended for use in the widest range of industrial applications and support Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). The product family enables the connection of up to 8 network devices over Twisted Pair cables.

The Ha-VIS eCon 9000 Ethernet Switch family, with its integrated LEDs on each port, supports fast and easy network diagnosis. The Ha-VIS eCon Ethernet Switch operates as an unmanaged Switch in Store and Forward Switching mode and supports Auto-crossing, Auto-negotiation and Auto-polarity.

Features

- Ethernet Switch acc. to IEEE 802.3
- Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s)
- Auto-crossing, Auto-negotiation, Auto-polarity
- Diagnostic LEDs (Link status, Data, Power)
- Store and Forward Switching Mode, non blocking
- Pluggable in 19" racks

For Ethernet Switch Ha-VIS eCon eCon 9070-B only:

- Power input on the front - no backplane necessary

Advantages

- Robust metal housing
- EMC, temperature range and mechanical stability meet the toughest demands

Application fields

- Railway applications
- Industrial automation
- Automotive industry
- Wind power
- Power distribution systems

Technical characteristics

Ethernet interface – M12

Number of ports	7x / 8x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (M12 D-coding)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	M12 D-coding
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

Power supply

Input voltage	24 / 48 V DC (8 ... 60 V DC) - redundant
Termination	M12 A-coding, male
Diagnostics (LED)	Power supply - LED Green

Design features

Housing material	aluminium
Degree of protection acc. to DIN EN 60 529	IP 20
Assembly	19" rack, 3 U
Weight	approx. 0,6 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)



Ethernet Switch Ha-VIS eCon 9070-B

7-port Ethernet Switch for installation in a 19" rack

Unmanaged	IP 20	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
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Number of ports, Copper / Termination 7x 10/100Base-T(X) / M12 D-coding

Input voltage / Termination 24 / 48 V DC / M12 A-coding, male

Permissible range (min./max.) 8 V ... 60 V DC

Input current approx. 150 mA (at 24 V DC)

Housing material aluminium, anodised

Dimensions (W x H x D) 60,6 mm (3 U) x 128,4 mm (12 HP) x 167,5 mm

Weight approx. 0,6 kg

Working temperature -40 °C ... +70 °C

Approvals cUL (in preparation)

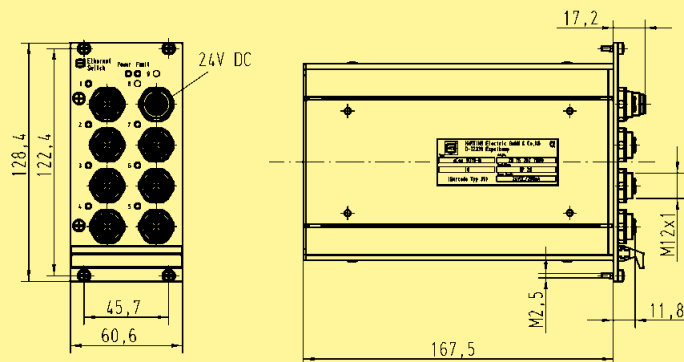
MTBF 1.411.000 h

eCon 9000

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS eCon 9070-B
Ethernet Switch with
7 ports M12 D-coding

20 76 207 7000





Ethernet Switch Ha-VIS eCon 9080-B1

8-port Ethernet Switch for installation in a 19" rack

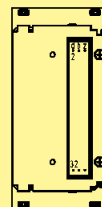
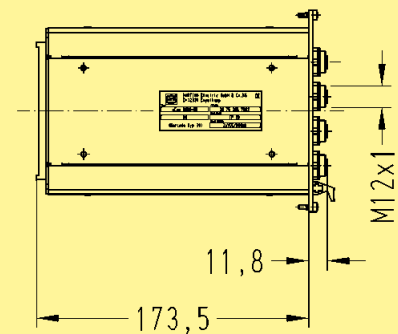
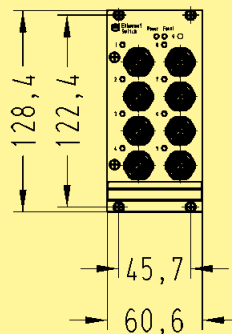
Unmanaged	IP 20	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
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Number of ports, Copper / Termination	8x 10/100Base-T(X) / M12 D-coding
Input voltage / Termination	24 / 48 V DC / DIN frame connector, Type F
Permissible range (min./max.)	8 V ... 60 V DC
Input current	approx. 110 mA (at 24 V DC)
Housing material	aluminium, anodised
Dimensions (W x H x D)	60,6 mm (3 U) x 128,4 mm (12 HP) x 173,5 mm
Weight	approx. 0,6 kg
Working temperature	-40 °C ... +70 °C
Approvals	E1
MTBF	1.260.000 h

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS eCon 9080-B1
Ethernet Switch with
8 ports M12 D-coding

20 76 208 7003





Ethernet Switch Ha-VIS eCon 7000

Ethernet Switches, unmanaged, for use in harsh industrial environments

General description

The Ethernet Switches of the product family Ha-VIS eCon 7000 allow, according to type, the connection of up to 10 end units in industrial networks.

Protection class, temperature range and mechanical stability meet the highest demands. These Ethernet Switches can therefore be used directly in industrial environments.

Through their use, a reduction of cabling costs in the construction of industrial networks will be achieved. The Ethernet Switches facilitate any kind of network configuration. All connections are plugged, which ensures that assembly and disassembly is fast and reliable.

Features

- Ethernet Switch acc. to IEEE 802.3
- Ethernet (10 Mbit/s), Fast Ethernet (100 Mbit/s) and Gigabit Ethernet (1000 Mbit/s)
- 5 / 10 ports unmanaged
- Auto-crossing, Auto-negotiation, Auto-polarity
- Diagnostic LEDs (Link status, Data, Power, Error)
- Store and Forward Switching Mode, non-blocking

Advantages

- High degree of protection IP 65 / IP 67
- Robust metal housing
- Can be used directly in industrial environments
- EMC, temperature range and mechanical stability meet the toughest demands
- PROFINET compatible

Application fields

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

Technical characteristics Ha-VIS eCon 7050-A1, eCon 7100-AA
Ethernet interface – RJ45

Number of ports	5x / 8x 10/100Base-T(X) 2x 10/100/1000-Base-T(X)
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 (for Ha-VIS eCon 7100-AA only) (Han® 3 A RJ45)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination, device-side	Han® 3 A RJ45 (female)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link (Link/Act) - terminal device is connected: Green data transmission in process: Green flashing • Data transfer rate (Speed) - 1000 Mbit/s: Green 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

Power supply

Input voltage	24 / 48 V DC (12 ... 60 V DC) - redundant
Termination, device-side	Han® 4 A, male, for redundant power supply including fixing screw 09 20 000 9918 to maintain IP 67
Diagnostics (LED)	Power supply - LED Green

Alarm signalling contact (for Ha-VIS eCon 7100-AA only)

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
Termination, device-side	Han® 3 A, male
Diagnostics (LED)	Error - Red

Design features

	Ha-VIS eCon 7050	Ha-VIS eCon 7100
Housing material	zinc die-cast	zinc die-cast
Dimensions (W x H x D)	45 x 120 x 87 mm (without connectors)	90 x 120 x 87 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 65 / IP 67	IP 65 / IP 67
Assembly	<ul style="list-style-type: none"> • Wall mounting, vertical assembly • Wall mounting, flat assembly • 35 mm top-hat rail acc. to EN 60 715 	<ul style="list-style-type: none"> • Wall mounting, vertical assembly
Weight	approx. 0,8 kg	approx. 1,4 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)

Technical characteristics Ha-VIS eCon 7050-B1, eCon 7100-B1
Ethernet interface – M12

Number of ports	5x / 10x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (M12 D-coding)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination, device-side	M12 D-coding (female)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link (Link/Act) - terminal device is connected: Green data transmission in process: Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Star • mixed

Power supply

Input voltage	24 / 48 V DC (12 ... 60 V DC) - redundant
Termination, device-side	M12 A-coding, male, for redundant power supply
Diagnostics (LED)	Power supply - LED Green

Alarm signalling contact (for Ha-VIS eCon 7100 only)

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
Termination, device-side	M12 D-coding, male
Diagnostics (LED)	Error - Red

Design features

	Ha-VIS eCon 7050	Ha-VIS eCon 7100
Housing material	zinc die-cast	zinc die-cast
Dimensions (W x H x D)	45 x 120 x 87 mm (without connectors)	90 x 120 x 87 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 65 / IP 67	IP 65 / IP 67
Assembly	<ul style="list-style-type: none"> • Wall mounting, vertical assembly • Wall mounting, flat assembly • 35 mm top-hat rail acc. to EN 60 715 	<ul style="list-style-type: none"> • Wall mounting, vertical assembly
Weight	approx. 0,8 kg	approx. 1,4 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)



Ethernet Switch Ha-VIS eCon 7050-A1

5-port Ethernet Switch with extended input voltage range
for use in harsh industrial environments

Unmanaged	IP 65 / IP 67	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination		5x 10/100Base-T(X) / Han® 3 A RJ45 (female)	
Input voltage / Termination		24 / 48 V DC / Han® 4 A, male, for redundant power supply	
Permissible range (min./max.)		12 V ... 60 V DC	
Input current		approx. 110 mA (at 24 V DC)	
Housing material		zinc die-cast	
Dimensions (W x H x D)		45 x 120 x 87 mm	
Weight		approx. 0,8 kg	
Working temperature		-40 °C ... +70 °C	
MTBF		1.150.000 h	

eCon 7000

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS eCon 7050-A1 Ethernet Switch with 5 RJ45 ports	20 70 305 3923		Dimensions in mm
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Ethernet Switch Ha-VIS eCon 7050-B1

5-port Ethernet Switch for industrial Ethernet networks
with extended input voltage range, with M12 system cabling

Unmanaged	IP 65 / IP 67	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	5x 10/100Base-T(X) / M12 D-coding (female)		
Input voltage / Termination	24 / 48 V DC / M12 A-coding, male, for redundant power supply		
Permissible range (min./max.)	12 V ... 60 V DC		
Input current	approx. 110 mA (at 24 V DC)		
Housing material	zinc die-cast		
Dimensions (W x H x D)	45 x 120 x 87 mm		
Weight	approx. 0,8 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	<input checked="" type="checkbox"/> e1		
MTBF	1.140.000 h		

eCon 7000

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 7050-B1 Ethernet Switch with 5 ports M12 D-coding	20 70 305 3943		



Ethernet Switch Ha-VIS eCon 7100-B1

10-port Ethernet Switch for industrial Ethernet networks,
with M12 system cabling

Unmanaged	IP 65 / IP 67	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
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Number of ports, Copper / Termination	10x 10/100Base-T(X) / M12 D-coding (female)
Input voltage / Termination	24 / 48 V DC / M12 A-coding, male, for redundant power supply
Permissible range (min./max.)	12 V ... 60 V DC
Input current	approx. 150 mA (at 24 V DC)
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A M12 D-coding, male
Housing material	zinc die-cast
Dimensions (W x H x D)	90 x 120 x 87 mm
Weight	approx. 1,4 kg
Working temperature	-40 °C ... +70 °C
MTBF	740.000 h

eCon 7000

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS eCon 7100-B1 Ethernet Switch with 10 ports M12 D-coding	20 70 310 3942		
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Ethernet Switch Ha-VIS eCon 7100-AA

10-port Ethernet Switch for use in harsh industrial environments,
with 2 Gigabit ports



Unmanaged	IP 65 / IP 67	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / Han® 3 A RJ45 (female) 2x 10/100/1000-Base-T(X) / Han® 3 A RJ45 (female)		
Input voltage / Termination	24 / 48 V DC / Han® 4 A, male, for redundant power supply		
Permissible range (min./max.)	12 V ... 60 V DC		
Input current	approx. 230 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A Han® 3 A, male		
Housing material	zinc die-cast		
Dimensions (W x H x D)	90 x 120 x 87 mm		
Weight	approx. 1,4 kg		
Working temperature	-40 °C ... +70 °C		

eCon 7000

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS eCon 7100-AA Ethernet Switch with 10 ports M12 D-coding	20 70 310 3924		

eCon 7000

Identification	Part number	Drawing	Dimensions in mm
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Power supply			
Hood Metal, straight, metric	19 20 003 1440 ¹⁾		
Protection covers Han® 3 A	09 20 003 5426		
Female insert Han® 4 A	09 20 004 2711		
Cable gland Metal, IP 65, metric, M20, cable Ø: 5 ... 9 mm	19 00 000 5080		
HARAX® M12-L Circular Connectors A-coding	21 03 212 2305		

Alarm signalling contact – for Ha-VIS eCon 7100-AA only

Hood Metal, straight, metric	19 20 003 1440		
Protection covers Han® 3 A	09 20 003 5426		
Female insert Han® 3 A	09 20 003 2711		

A-1
46

1) ... Order insert fixing screw 09 20 000 9918 separately

Identification

Part number

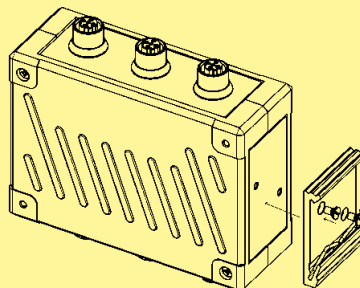
Drawing

Dimensions in mm

Assembly

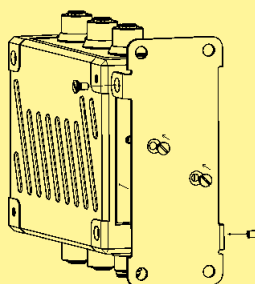
Set for assembly on standard rail
according to DIN EN 60 715

20 80 000 0003



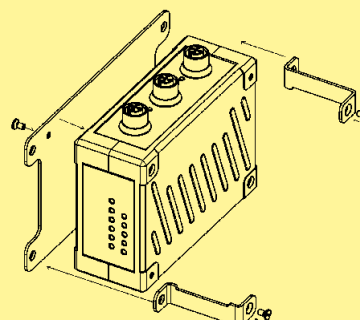
Set for panel mounting
vertical assembly

20 80 010 0001



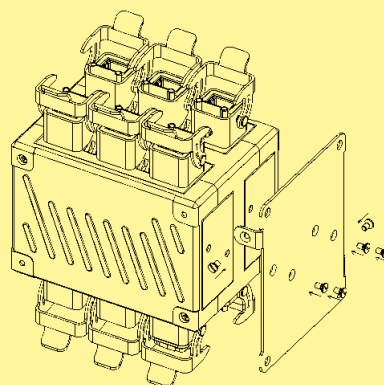
Set for panel mounting
flat assembly

20 80 024 0002



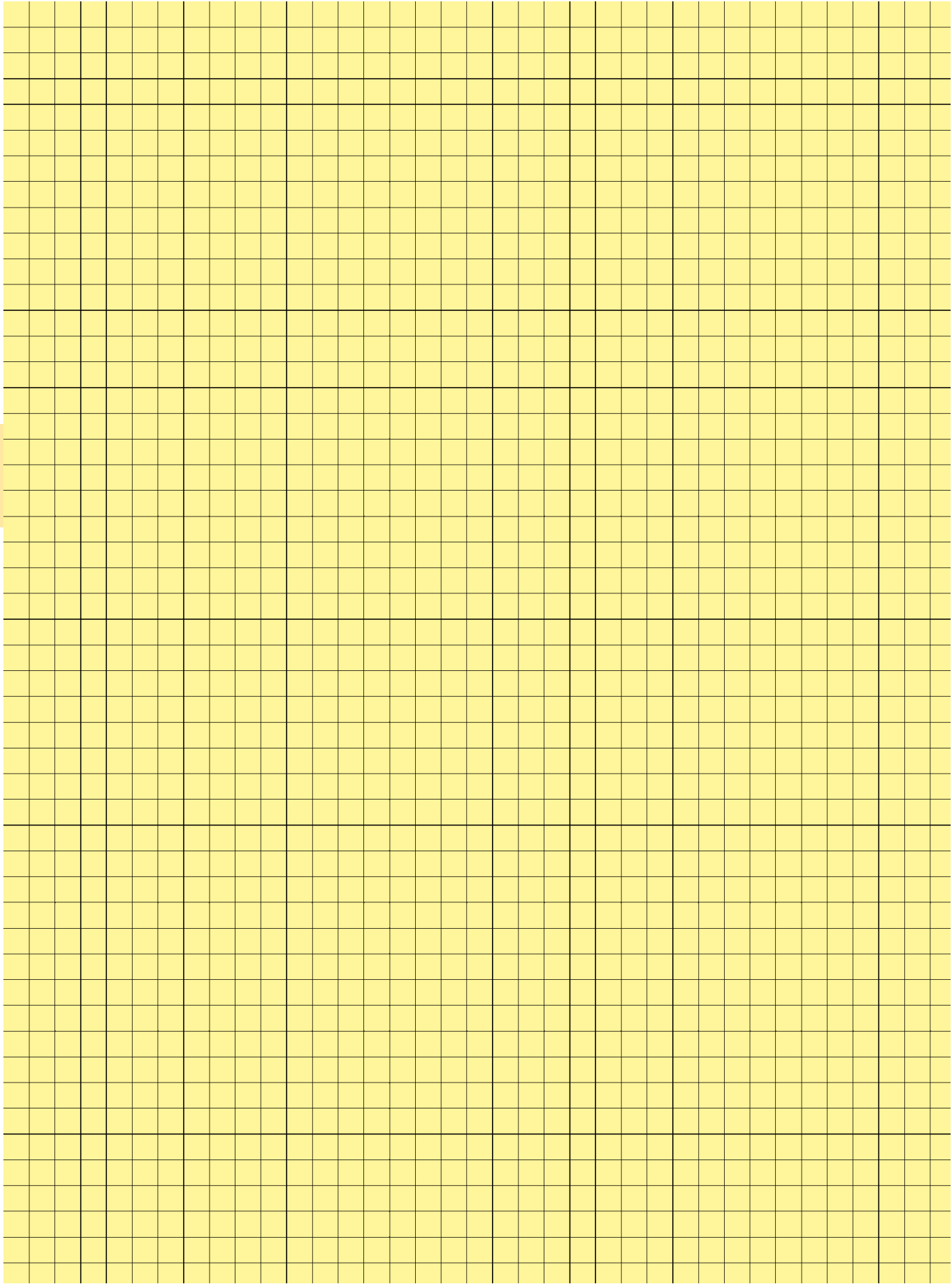
Set for panel mounting
Ha-VIS eCon 7100
vertical assembly

20 80 010 0002



eCon 7000

eCon 7000



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Introduction

For the user, HARTING's novel and innovative solutions open up new, more convenient and extensive options for configuring Unmanaged Ethernet Switches. The solutions available to date offered only very limited or basic options for making alterations to different settings on an Ethernet Switch.

The user made changes to the settings or the configuration via the DIP switches on the Ethernet Switch. The extensive possibilities for applications were physically restricted by the enormous space requirements of the mechanical solution.

Now for the first time, HARTING's Ha-VIS sCon solution makes it possible for the user to realise more configurations than have been possible to date.

Ease of handling and simple operation have been designed in to meet real-life application requirements. Simple and fast configuration is what this solution aims to achieve.

All Ha-VIS sCon Ethernet Switches can be configured via a USB connection cable.

At first sight, Ha-VIS sCon Ethernet Switches do not differ from the Ethernet Switches available to date. However, the possibilities that Ha-VIS sCon has to offer become more than apparent to the user when he connects the Ethernet Switch via the front-side USB socket to a PC, laptop or hand-held PC.

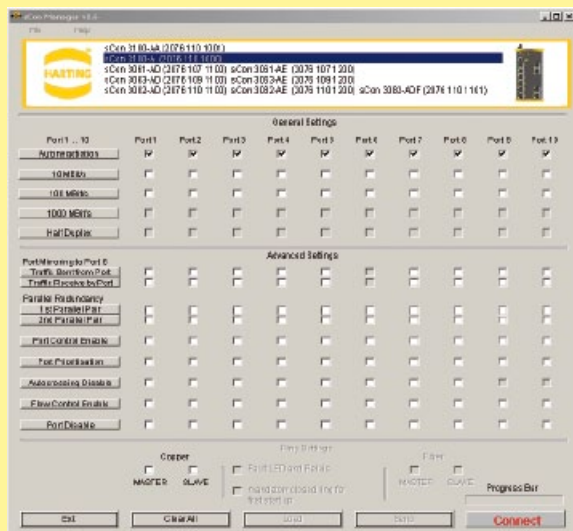


Figure 1 The Start-up menu

Once the Ha-VIS sCon Ethernet Switch has been connected to a PC, it can be accessed on-screen in much the same manner as a commercially available USB stick (Figure 1: The Start-up menu).

The user only has to copy the Ha-VIS sCon software in advance onto the PC. No administrator rights are required. The Ethernet Switch does not have to be connected to a power supply for configuration purposes. That means that the configuration procedure can take place at the user's location of choice: in the office, workshop or production facility. The Ha-VIS sCon Ethernet Switch automatically detects which power supply is connected: mains supply or power supply via the USB port. Please note that it is not possible to operate the Ethernet Switch purely via the USB port. For normal industrial operations, the power must be supplied via one of the redundant inputs.

sCon 3000

Introduction

Making configuration settings by means of DIP switches may appear to be uncomplicated. However, accidentally making an alteration to the configuration can happen more quickly than one would think possible, and in so doing make considerable changes to the previously set procedures. The Ha-VIS sCon family prevents these inadvertent alterations to the configuration. No alteration can be made to the configuration without an USB connection and the software.

Each configuration can be archived and the back-ups retrieved for future projects. By making back-ups of the configuration, all settings can be conveniently stored in case servicing is necessary.

Archived configurations can be imported and printed out when convenient. These extensive options in Ha-VIS sCon ensure that data security enjoys the significance it deserves.

The switch configuration is transmitted only when a new configuration is uploaded via the corresponding 'Send' button. This means that until the data has actually been uploaded, it is still possible to read-in the 'old' data from the Ha-VIS sCon Ethernet Switch via the Refresh option. This means it is easily possible to reverse any inadvertent activation in the corresponding menu.

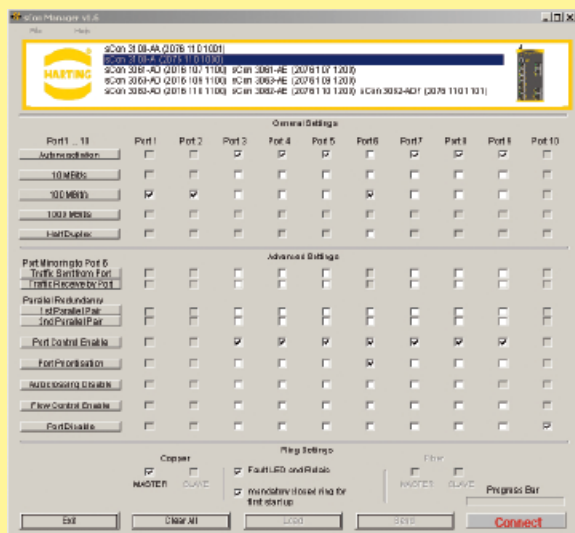


Figure 2 Example of a configuration

Once configured, the Ethernet Switch can be utilised immediately. The configuration remains stored in the Ethernet Switch after the USB cable is removed.

Meeting international standards, the USB port described is recognised as state-of-the-art technology. The standardised possibility for world-wide utilisation with all notebooks, PCs and Palmtops (revisions 1.0, 1.1 and 2.0) mean that this technology is suitable for universal usage.

The intuitive, but extensive options setting via the relevant buttons and the various options offered by Ha-VIS sCon extend the range of applications for unmanaged Ethernet Switches. With Ha-VIS sCon, the gap between unmanaged and manageable switches is getting smaller.

It is true that sCon is a solution for Unmanaged Ethernet Switches; however, it comes very close to Managed Ethernet Switch functionality.



Ethernet Switch Ha-VIS sCon 3000

Ethernet Switches, unmanaged, for mounting onto top-hat mounting rail in control cabinets, including sCon functions

General description	Features
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The Fast Ethernet Switches of the product family Ha-VIS sCon 3000 can be configured via a USB port for special or more performance-oriented industrial usages. There are almost no limits to the different possibilities.

Activation of parallel and / or ring redundancy or port prioritisation will clearly increase the availability and reliability of data communications through the Ha-VIS sCon 3000.

- Ethernet Switch acc. to IEEE 802.3
- Store and Forward Switching Mode, non blocking, unmanaged
- Auto-crossing, Auto-negotiation, Auto-polarity
- Diagnostic LEDs (Link status, Act, Power, Data transmission rate, Error)
- Following settings are available via USB port:
 - Parameterisation via USB port:
 - Alarm signalling contact
 - Auto-negotiation
 - 10/100/1000 Mbit/s
 - Full/Half Duplex
 - Ring and/or parallel redundancy
 - ports enable / disable
 - Port priority
 - Port Mirroring
 - Pause Frame

Advantages	Application fields
------------	--------------------

- Individually configurable via USB port
- Robust metal housing
- EMC, temperature range and mechanical stability meet the toughest demands
- Ring redundancy and/or parallel redundancy

- Industrial automation
- Railway applications
- Power distribution systems
- Automotive industry
- Mechanical engineering

sCon 3000

Technical characteristics

Ethernet interface – RJ45

Number of ports	6x / 8x / 10x 10/100Base-T(X) 2x 10/100/1000-Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (RJ45)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: Green
Topology	<ul style="list-style-type: none"> • Line • Star • Star • mixed

Power supply

Input voltage	24 / V DC (9,6 ... 60 V DC)
Termination	5-pole, pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply - LED Green

Alarm signalling contact

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
Termination	3-pole pluggable screw contact
Diagnostics (LED)	Error - Red

Design features

Housing material	metal
Dimensions (W x H x D)	60 x 132 x 104 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 30
Assembly	<ul style="list-style-type: none"> • 35 mm top-hat rail acc. to EN 60 715 • Wall mounting, vertical assembly
weight	approx. 0,6 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)

Technical characteristics F.O. termination

Ethernet interface – F.O.

Number of ports	3x / 2x 100Base-FX
Cable types according to IEEE 802.3	<ul style="list-style-type: none"> • Multimodefibre, 1300 nm; 50 µm / 125 µm or 62.5 µm / 125 µm • Singlemodefibre, 1300 nm; 9 µm (for AF versions only)
Data rate	100 Mbit/s
Maximum cable length	<ul style="list-style-type: none"> • 2000 m (Multimode) • 15 km (Singlemode)
Termination	SC-D female
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing
Wavelength	1300 nm
Transceive power T(X) max. (dynamic)	<ul style="list-style-type: none"> • -14 dBm (50 µm / 125 µm) • -14 dBm (62.5 µm / 125 µm)
Transceive power T(X) min.	<ul style="list-style-type: none"> • -23,5 dBm (50 µm / 125 µm) • -20 dBm (62.5 µm / 125 µm)
Receive power RX typical (dynamic)	<ul style="list-style-type: none"> • -33,9 dBm (window) • -35,2 dBm (centre)
Receive power RX max. (dynamic)	-14 dBm
Signal detection (dynamic)	-33 dBm
Topology	<ul style="list-style-type: none"> • Line • Star • Star • mixed



Ethernet Switch Ha-VIS sCon 3100-A

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including sCon functions

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input type="checkbox"/>
Number of ports, Copper / Termination	10x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 170 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
weight	approx. 0,6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1		
MTBF	745.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS sCon 3100-A Ethernet Switch with 10 RJ45 ports	20 76 110 1000		



Ethernet Switch Ha-VIS sCon 3100-AA

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 2 Gigabit ports and sCon functions, extended temperature range

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input type="checkbox"/>
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Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair) 2x 10/100/1000-Base-T(X) / RJ45 (Twisted Pair)
Input voltage / Termination	24 / 48 V DC / 5-pole, pluggable screw contact, for redundant power supply
Permissible range (min./max.)	9,6 V ... 60 V DC
Input current	approx. 240 mA (at 24 V DC)
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact

Housing material	metal, powder-coated
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)
weight	approx. 0,6 kg
Working temperature	-40 °C ... +70 °C
Approvals	UL 508; UL 60 950-1; DNV
MTBF	670.000 h

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS sCon 3100-AA Ethernet Switch with 10 RJ45 ports</p>	<p>20 76 110 1001</p>		
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sCon 3000



Ethernet Switch Ha-VIS sCon 3063-AD

9-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 3 F.O. ports (SC, MM) and sCon functions

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	3x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 290 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
weight	approx. 0,6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1		
MTBF	660.000 h		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS sCon 3063-AD Ethernet Switch with 6 RJ45 ports 3 F.O. ports	20 76 109 1100		



Ethernet Switch Ha-VIS sCon 3082-AD

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 2 F.O. ports (SC, MM) and sCon functions

Unmanaged	IP 30	PROFINET comatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 260 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
weight	approx. 0,6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1		
MTBF	585.000 h		

sCon 3000

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS sCon 3082-AD Ethernet Switch with 8 RJ45 ports 2 F.O. ports</p>	<p>20 76 110 1100</p>		
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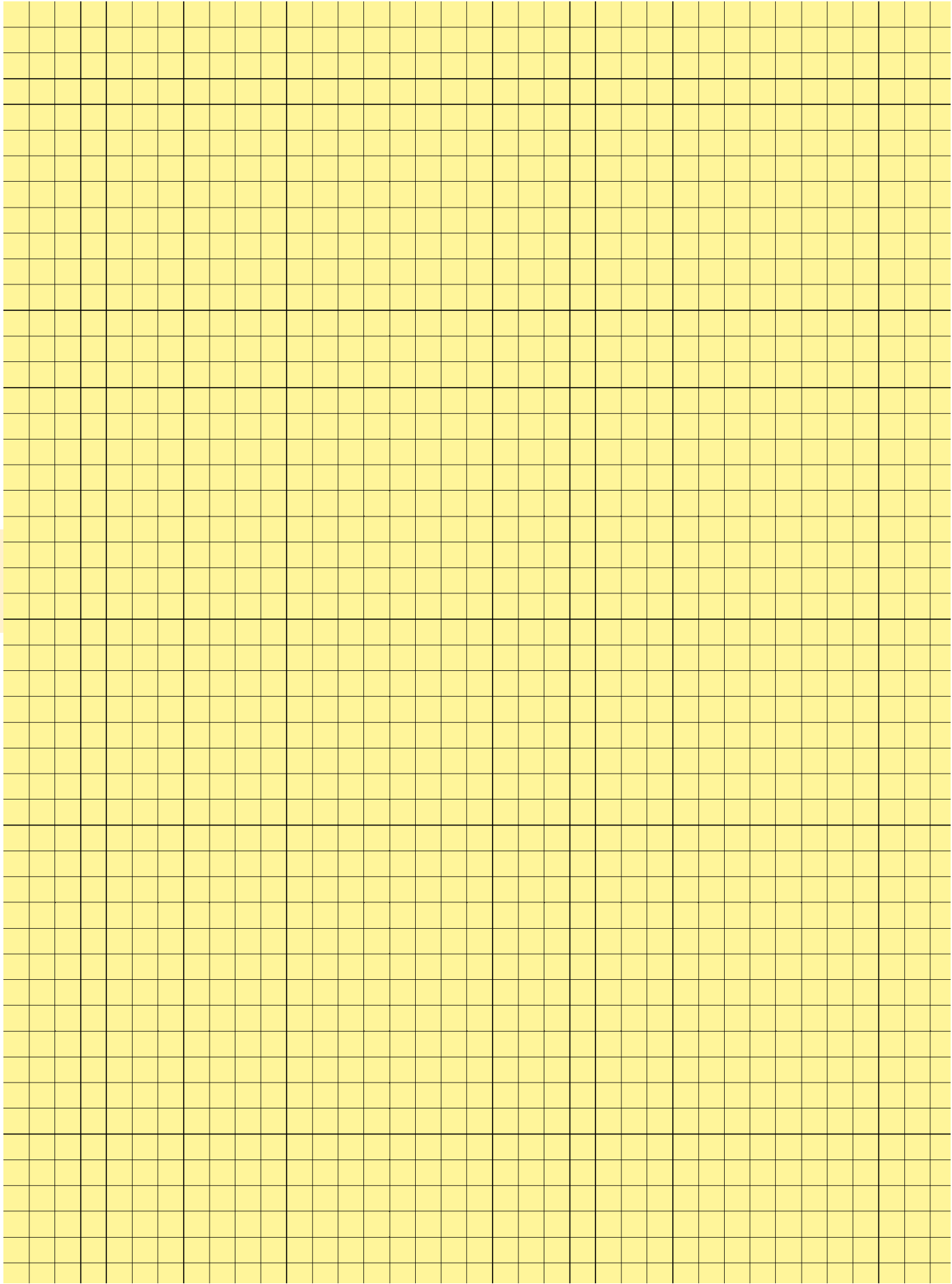
Ethernet Switch Ha-VIS sCon 3082-AF

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 2 F.O. ports (SC, SM) and sCon functions

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9,6 V ... 60 V DC		
Input current	approx. 260 A (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
weight	approx. 0,6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	cUL (in preparation)		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS sCon 3082-AF Ethernet Switch with 8 RJ45 ports 2 F.O. ports	20 76 110 1102		

sCon 3000



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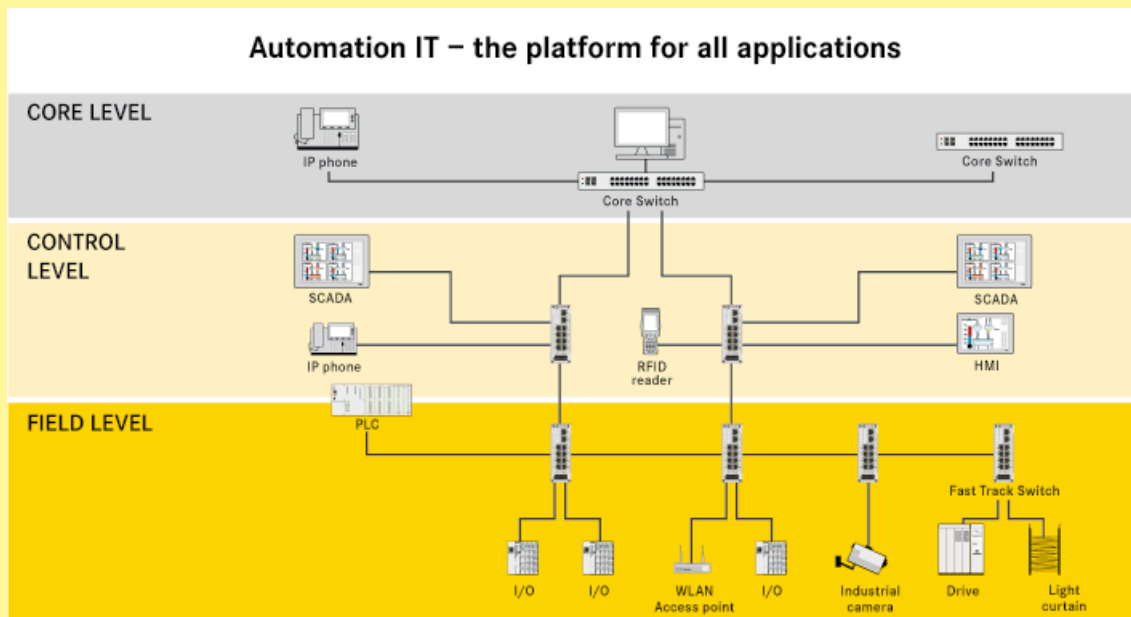
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Fast Track Switching Introduction

Fast Track Switching

Automation IT is a communication platform that serves all applications within an industrial manufacturing firm. By connecting all applications, the uniform platform network increases the efficiency of company workflows.

Automation IT supports Standard Ethernet at all levels – including the office, management and control levels, and also in the field.



The currently available switching technology used in IEEE 802.3 Ethernet, however, does not offer the level of determinism required for automation applications. That is why automation solutions that only implement standard (unchanged) Ethernet require a restricted network design in order to match automation performance levels. Thus there are limited options for the network topology or segmentation – to the extent that IT communications are not allowed within the automation environment.

Automation requires for Industrial Ethernet:

- top performance
- safety
- flexible topology
- and above all determinism

Standard Ethernet switching is based on store-and-forward switching and this introduces long latency times for the frames. But even more serious is the tight dependency on the degree of network traffic: if only automation frames are present in the network, then these frames can be transmitted with no problems. But additional data traffic on the network will compete with the automation frames for forwarding and can thus delay these frames.

Standard switching uses the QoS (Quality of Service) option to influence this. If multiple frames are located in the switch queue, then the frames with the highest priority are forwarded first. But it is still possible for other data frames with priorities equal to or greater than the automation frames to be present. And even when the automation frame has the highest priority, if a data frame is in the process of being sent, the next automation frame must wait until 1522 bytes have been completely sent. Only then is the path open for the automation frame. The same delay could then happen on the next network switch once more. So these wait delays can quickly add up to times which are critical for automation applications. This behaviour can be seen as stochastically random. Most of the time the transfer times will be sufficient. But it only takes one delayed frame to trigger a problem.

FTS 3000
FTS 3000s

Fast Track Switching Introduction

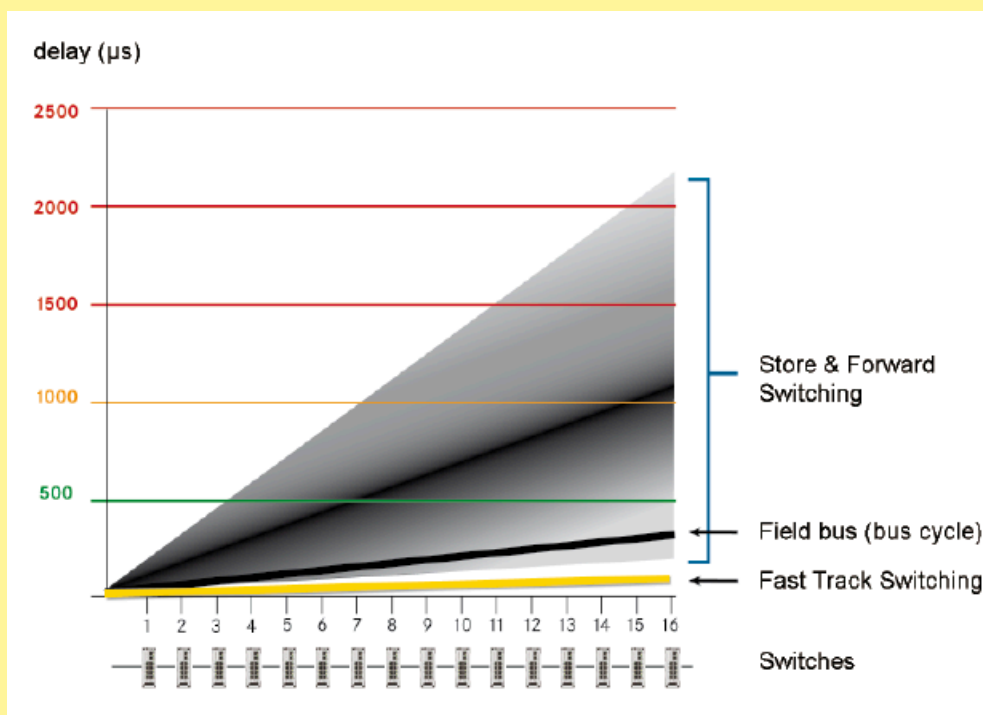
Several Ethernet-based methods have identified this problem and eliminated it. However such methods require each network node to implement specialized hardware for communication.

With the development of Fast Track Switching (FTS), HARTING has found a new path. FTS switches solve the performance and deterministic problems while all other nodes require only the standard Ethernet interfaces.

Fast Track Switching uses three key features to achieve this:

1. Preferred frames (such as automation frames) are detected first. The switch can focus on any specific part of the Ethernet header for special properties. For example, PROFINET frames are Ethertype 8892. This type is then monitored and evaluated if the application needs to accelerate their transmission.
2. These key frames get fast-track forwarding – a cut-through process instead of store-and-forwarding. As a result, the switch latency time is minimized.
3. If the switch port needed for the forwarding is busy at that moment sending a data frame, then the data frame is buffered and the forwarding is aborted so that the automation frame can be forwarded immediately. Only after the automation frame is sent is a second attempt made to send the data frame.

A simple example serves to illustrate the superior performance of this Fast Track Switching:



An automation frame must travel on a path through 16 switches. The transmission time for the Ethernet frames under standard switching rules is tightly dependent on the network load. Thus the transmission time for the frames can vary widely according to the network load: a few arrive quite quickly, the majority have an average time, and a few frames travel quite slowly.

As a reference point, a comparable cycle for one of the Field bus protocols used widely in automation applications is shown in black. This protocol has state-of-the-art levels of determinism and transfer speeds. Sometimes the data arrives just as fast at its destination when standard switching is used – but only sometimes.

Fast Track Switching, on the contrary, exhibits excellent results and is deterministic.

Fast Track Switching Introduction

Now it has finally become possible to setup a universal Automation IT communications platform that reaches into the field level. And finally automation protocols which rely on standard unchanged Ethernet (such as PROFINET RT or EtherNet/IP) can deliver the high performance needed for automation applications.

HARTING has also integrated this groundbreaking technology into production models available for the user:

The configurable Ha-VIS FTS 3100 model offers an easy-to-configure FTS solution for users. Many switch options can be customized to fit your application – even by those who are not trained network administrators.

And with the fully managed switches from the Ha-VIS FTS 3000 line, HARTING combines FTS technology with all of the well-known functions of modern managed industrial Ethernet Switches.



Ethernet Switch Ha-VIS FTS 3000s

Ethernet Switches, unmanaged, with Fast Track Switching Technology, configurable via USB

General description

The Fast Ethernet Switches of the product family Ha-VIS FTS 3000 can identify automation profiles (e.g. PROFINET, EtherNet/IP, Modbus TCP and customized profiles), accelerate their data transmission and prefer them. They are suitable for industrial applications.

The product family enables the connection of up to 10 network devices over shielded Twisted Pair. It supports Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s).

The Ethernet Switch works as an unmanaged switch and can work in Fast Track Switching mode and in Store and Forward mode. It supports Auto-crossing, Auto-negotiation and Auto-polarity.

Features

- Ethernet Switch according to IEEE 802.3
- Auto-crossing, Auto-negotiation, Auto-polarity
- Diagnostic LEDs (Link Status, Act, Data transmission rate, Power, Error)
- Store and Forward Switching Mode, non blocking, unmanaged
- Identification, acceleration and preference for automation frames
- Deterministic data transfer for selected profiles

Advantages

- Individually configurable via USB port
- Robust metal housing
- EMC, temperature range and mechanical stability meet the toughest demands

Application fields

- Industrial automation
- Mechanical engineering
- Automotive industry

Technical characteristics

Ethernet interface – RJ45

Number of ports	10x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (RJ45)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: Green
Topology	<ul style="list-style-type: none"> • Line • Star • mixed
Parameterisation via USB	<ul style="list-style-type: none"> • Parameterisation via USB • Auto-negotiation • 10/100 Mbit/s • Full/Half Duplex • Port enable/disable • Port mirroring • Flow Control • FTS Port enable/disable • Industrial Profile (PROFINET, EtherNet/IP, Modbus TCP, customized) • NRT Bandwidth Control

Power supply

Input voltage	24 V $\overline{=}$ (9.6 ... 60 V $\overline{=}$)
Termination	5-pole, pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply - LED Green

Design features

Housing material	aluminium
Dimensions (W x H x D)	44 x 130 x 100 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 30
Assembly	<ul style="list-style-type: none"> • 35 mm top-hat rail acc. to EN 60 715 • Wall mounting, vertical assembly
weight	approx. 0.5 kg

Environmental conditions

Working temperature	0 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	30 % ... +95 % (non-condensing)



Ethernet Switch Ha-VIS FTS 3100s-A

10-port Ethernet Switch with Fast Track Switching Technology,
configurable via USB

Unmanaged	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	10x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V $\overline{=}$ / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V $\overline{=}$		
Input current	approx. 270 mA (at 24 V DC)		
Housing material	aluminium, anodised		
Dimensions (W x H x D)	44 x 130 x 100 mm (without connectors)		
weight	approx. 0.5 kg		
Working temperature	0 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV		

FTS 3000s

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS FTS 3100s-A Ethernet Switch with 10 RJ45 ports	20 78 110 1000		



**Ethernet Switch
Ha-VIS FTS 3000**

Ethernet Switches, with Fast Track Switching Technology, managed

General description

Features

The Fast Ethernet Switches of the product family Ha-VIS FTS 3000 can identify automation profiles (e.g. PROFINET, EtherNet/IP, Modbus TCP and customized profiles), accelerate their data transmission and prefer them. They are suitable for industrial applications.

The product family enables the connection of up to 10 network devices over shielded Twisted Pair or F.O. interfaces, according to type. It supports Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s).

The Ethernet Switch works as an unmanaged switch and can work in Fast Track Switching mode and in Store and Forward mode. It supports Auto-crossing, Auto-negotiation and Auto-polarity.

- Managed Ethernet Switch according to IEEE 802.3
- Fast Track Switching Mode, Store and Forward Switching Mode
- Auto-crossing, Auto-negotiation, Auto-polarity
- Diagnostic LEDs (Link Status, Data, Power)
- Identification, acceleration and preference for automation frames
- Deterministic data transfer for selected profiles
- Robust metal housing, RoHS compliant

Advantages

Application fields

- Individually configurable via USB port
- Robust metal housing
- EMC, temperature range and mechanical stability meet the toughest demands

- Industrial automation
- Automotive industry
- Mechanical engineering

FTS 3000

Technical characteristics

Ethernet interface – RJ45

Number of ports	6x / 8x / 10x 10/100Base-TX
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (RJ45)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: Green
Topology	<ul style="list-style-type: none"> • Line • Star • Ring • mixed

Power supply

Input voltage	24 V $\overline{=}$ (9.6 ... 60 V $\overline{=}$)
Termination	5-pole, pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply - LED Green

Diagnosis device

Diagnostics (LED)	<ul style="list-style-type: none"> • Device acts error free - Green • Diagnosis error - Red
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Design features

Housing material	aluminium
Degree of protection acc. to DIN EN 60 529	IP 30
Assembly	<ul style="list-style-type: none"> • 35 mm top-hat rail acc. to EN 60 715 • Wall mounting, vertical assembly
weight	approx. 0.35 kg

Environmental conditions

Working temperature	0 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	30 % ... +95 % (non-condensing)

Technical characteristics F.O. termination

Ethernet interface – F.O.

Number of ports	2x 100Base-FX
Cable types according to IEEE 802.3	Multimodefibre, 1300 nm; 50 µm / 125 µm or 62.5 µm / 125 µm
Data rate	100 Mbit/s
Maximum cable length	2000 m (Multimode)
Termination	SFP module slot
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Duplex - <ul style="list-style-type: none"> Full duplex: Yellow Half duplex: OFF
Wavelength	1300 nm
Transceive power T(X) max. (dynamic)	<ul style="list-style-type: none"> • -14 dBm (50 µm / 125 µm) • -14 dBm (62.5 µm / 125 µm)
Transceive power T(X) min.	<ul style="list-style-type: none"> • -23.5 dBm (50 µm / 125 µm) • -20 dBm (62.5 µm / 125 µm)
Receive power RX typical (dynamic)	<ul style="list-style-type: none"> • -33.9 dBm (window) • -35.2 dBm (centre)
Receive power RX max. (dynamic)	-14 dBm
Signal detection (dynamic)	-33 dBm
Topology	<ul style="list-style-type: none"> • Line • Ring • Star • mixed

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	
	Port mirroring disable / enable	
	Flow Control disable / enable	
	Industrial profiles (PROFINET, EtherNet/IP, Modbus TCP, customer specific)	
	NRT Bandwidth Control	
	Network Discovery	Link Layer Discovery Protocol (LLDP)
Protocols	IPv4	RFC 791, 903, 951, 1293, 1519
	TCP	RFC 793, 896
	UDP	RFC 768
	Ethernet ARP	RFC 826
	ICMP	RFC 2521, 1191, 1788, 792
File Transfer	Firmware import and export via TFTP	
	Configuration import and export via TFTP	
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 10 or 6	
QoS		
	Quality of Service (QoS)	IEEE 802.1p
VLAN		
	Port protocol based VLANs	IEEE 802.1Q Rev D5.0, 2005
Redundancy		
	Spanning Tree (STP)	IEEE 802.1D (2004)
	Rapid Spanning Tree (RSTP)	IEEE 802.1D (2004)
Security		
	Port-Based Network Access Control Port Based Authentication with EAP	802.1x (2004)
	RADIUS Client	RFC 2138
	IP authorized manager	
Multicast		
	IGMP Snooping (v1, v2, v3) with support for querier	RFC 1112, 2236, 3376
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	

Management functions

Diagnostic

PROFINET diagnostic
Port Mirroring
Switch History
MAC Address Table

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
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Pluggable memory card

MIB Support

Enterprise (HARTING MIB)

MIB II

MIB II for SNMPv1, SNMPv2, SNMPv3

Interface group MIB

Bridge MIB

MIB for Ethernet-like interfaces (requires support in hardware)

VLAN MIB

Spanning Tree Protocol MIB

Rapid STP MIB

Port-based Network Authentication Control MIB

Definitions of managed objects for LLDP

802.1/LLDP extension MIB

802.3/LLDP extension MIB

Radius Client MIB

IPv4 MIB

IGMP MIB

DHCP



Ethernet Switch Ha-VIS FTS 3060-A

6-port Ethernet Switch with Fast Track Switching Technology, managed

Managed	IP 30	PROFINET comatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
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Number of ports, Copper / Termination	6x 10/100Base-TX / RJ45 (Twisted Pair)
Input voltage / Termination	24 V $\overline{=}$ / 5-pole, pluggable screw contact, for redundant power supply
Permissible range (min./max.)	9.6 V ... 60 V $\overline{=}$
Input current	approx. 220 mA (at 24 V DC)
Housing material	aluminium, anodised
Dimensions (W x H x D)	33 x 130 x 100 mm (without connectors)
weight	approx. 0.35 kg
Working temperature	0 °C ... +70 °C
Approvals	UL 508; UL 60 950-1; DNV

FTS 3000

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS FTS 3060-A Ethernet Switch with 6 RJ45 ports</p>	<p>20 78 106 4000</p>		
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Ethernet Switch Ha-VIS FTS 3100-A

10-port Ethernet Switch with Fast Track Switching Technology, managed

Managed	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
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Number of ports, Copper / Termination	10x 10/100Base-TX / RJ45 (Twisted Pair)
Input voltage / Termination	24 V $\overline{=}$ / 5-pole, pluggable screw contact, for redundant power supply
Permissible range (min./max.)	9.6 V ... 60 V $\overline{=}$
Input current	approx. 300 mA (at 24 V DC)
Housing material	aluminium, anodised
Dimensions (W x H x D)	44 x 130 x 100 mm (without connectors)
weight	approx. 0.5 kg
Working temperature	0 °C ... +70 °C
Approvals	UL 508; UL 60 950-1; DNV

FTS 3000

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS FTS 3100-A Ethernet Switch with 10 RJ45 ports</p>	<p>20 78 110 4000</p>		
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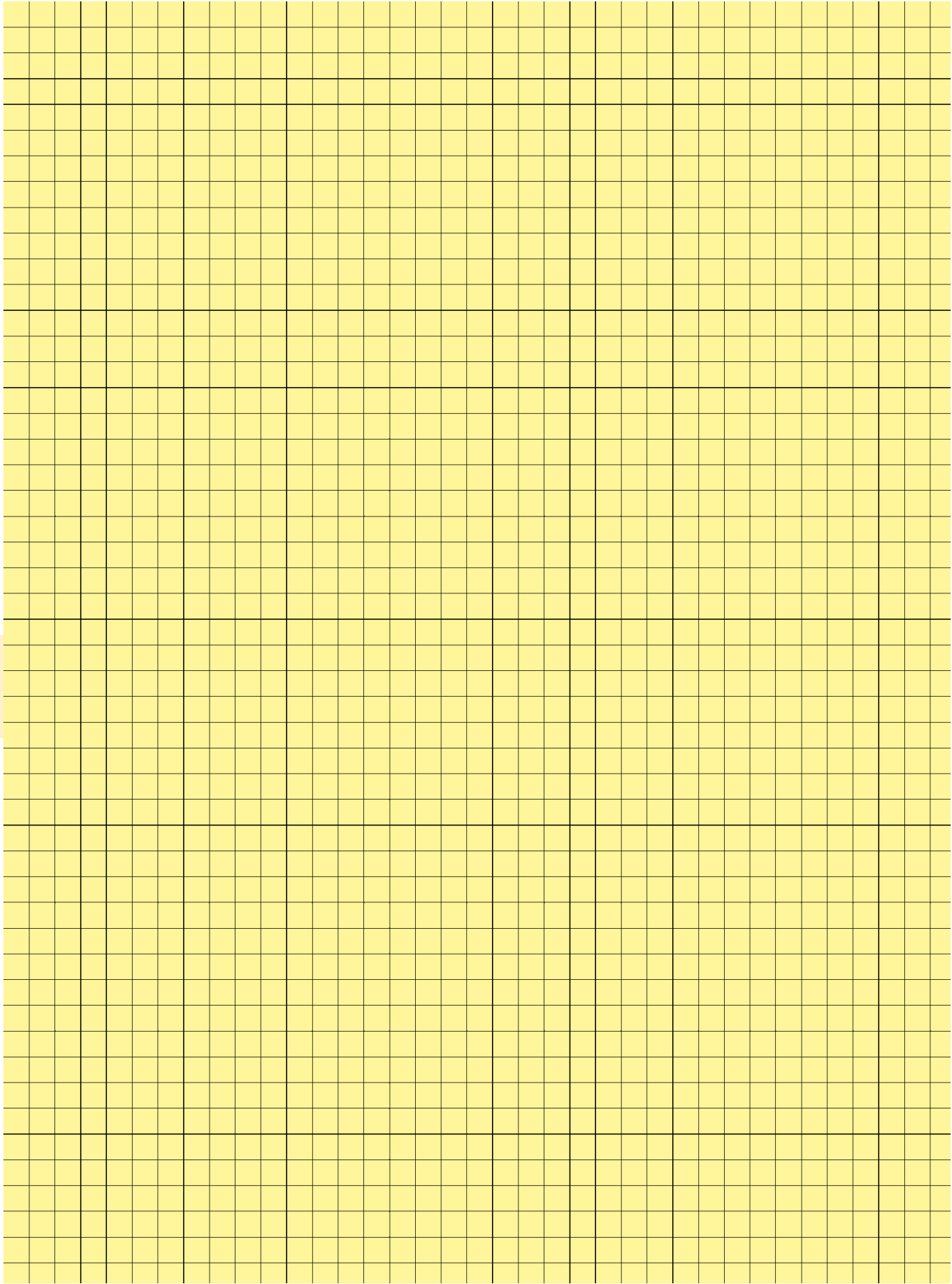
Ethernet Switch Ha-VIS FTS 3082-ASFP

10-port Ethernet Switch with Fast Track Switching Technology,
with 2 slots for SFP modules, managed

Managed	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-TX / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / SFP module slot		
Input voltage / Termination	24 V $\overline{=}$ / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V $\overline{=}$		
Input current	approx. 340 mA (at 24 V DC)		
Housing material	aluminium, anodised		
Dimensions (W x H x D)	44 x 130 x 100 mm (without connectors)		
weight	approx. 0.5 kg		
Working temperature	0 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV		

FTS 3000

Identification	Part number	Drawing		Dimensions in mm
Ha-VIS FTS 3082-ASFP Ethernet Switch with 8 RJ45 ports 2 F.O. ports	20 78 110 4300			



FTS 3000

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mCon 9000
mCon 7000

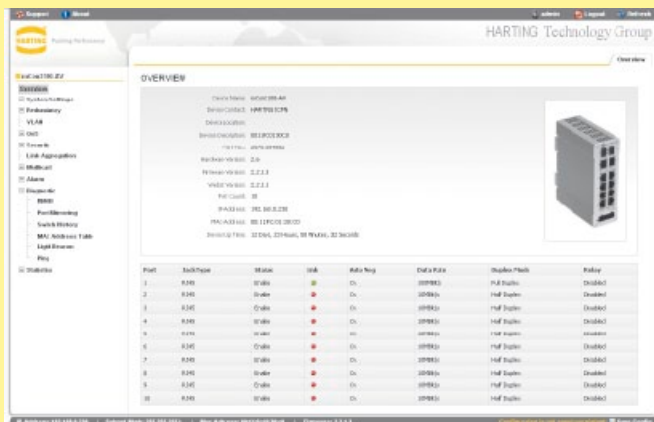
Management Software Overview

Network Management

With the Ha-VIS mCon families, HARTING has expanded its range of Ethernet switches. The series offers a broad spectrum of possibilities: in addition to the standard functions already present in the sCon and eCon Series, the Ha-VIS mCon switches offers management functions which set up a convergent and manageable network.

With the introduction of the new management software V2.0 for the HARTING Ha-VIS mCon switch families, the strong competitive capability will achieve a new level. A lot of improvements and additional features have been added to the software and the future development is assured. This new management software has been designed for industrial use and provides professional network solutions.

The configuration and management of the Ha-VIS mCon switches is made simply: either via SNMP tools, network management software or very easily via a web interface.



Overview - Intuitive web management interface

The Ha-VIS mCon switches can be accessed and configured via a normal internet browser, without the need of any additional tools or browser plugins (Java etc.) The web management is password protected and provides a range of access levels. An easy and intuitive tree menu allows the Ha-VIS mCon switches to be customized and adapted to a specific network.

A huge variety of management functionalities and features are integrated in the HARTING Ha-VIS mCon switches, to provide the best possibilities for the customer.

Support of VLANs allow the Ha-VIS mCon switches to segment a network, which results in better control of the communication flow and the avoidance of unnecessary network loads. The IGMP functionality ensures, that multicast traffic like video/audio streams and automation packets are only forwarded through ports, which are involved in this application. With RSTP it is possible to build up redundant networks, to assure the availability of the network even in the case of failure or incorrect configuration. To improve and assure the security and integrity of the network, HARTING has integrated a lot of security functionalities, like the port based access control via 802.1x and Radius and the IP Authorized manager. All Ha-VIS mCon switches support a fast and easy network diagnosis and a wide scale of alerting mechanisms.

Ha-VIS mCon switches can be used in all applications, offer professional solutions for the operation of Ethernet networks and are simple to install and use. The Ha-VIS mCon families will always be used in high level applications to provide a fully managed and adaptable Ethernet network for automation solutions. The customer has the possibility to configure and develop all applications on the basis of his requirements.

Web-Interface via HTTP

- HTML based web interface
- No additional software needed
- Rapid access to the switch
- Intuitive configuration

SNMP (v1, v2, v3)

- Accessible via standard MIBs
- Professional configuration
- Using of professional management tools

Management Software Overview

Diagnostic and alert functions

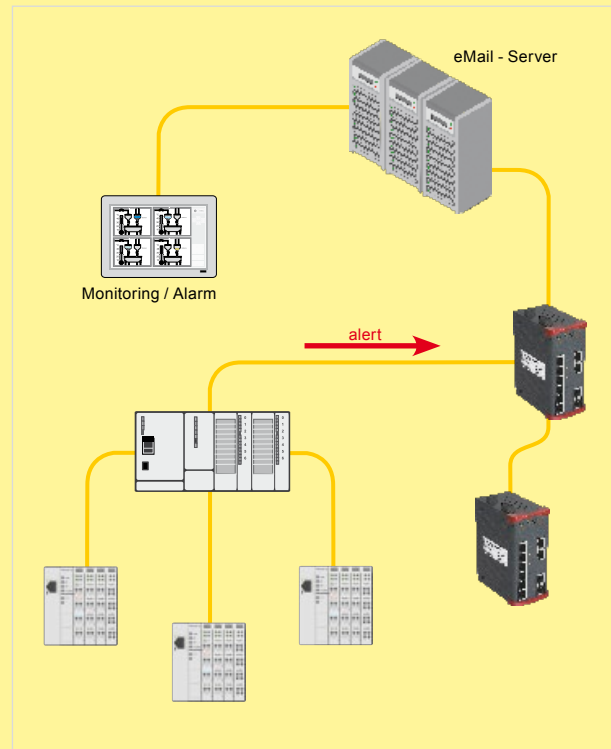
The reliability and operational availability of industrial Ethernet networks are highly associated with the possibility of management and diagnosis functionalities. For most applications it is mandatory to have an overview of what is happening in the network any-time. To assure a trouble free data flow, it is necessary that all failures in the network are propagate to a maintenance station.

The Port Mirroring feature allows the capturing of the incoming and outgoing data traffic of the switch. By connecting a network analyzer to a configured mirror-to port, the network traffic going through the entire switch can be easily monitored, without changing the network topology.

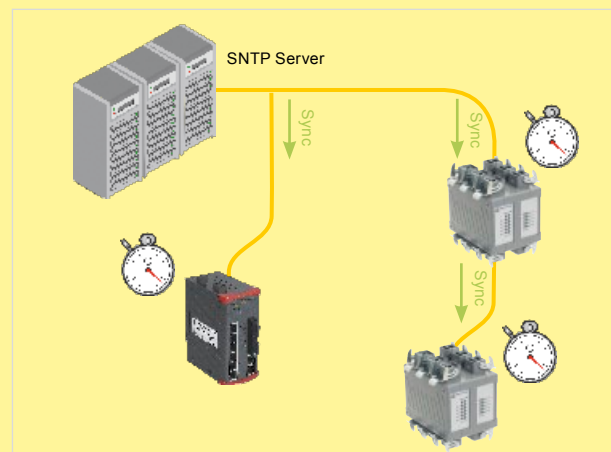
Certain network or Ethernet switch events may require the attention of service personnel. It is possible to select several events according to the requirements, which will cause a notification to a remote monitoring station if they occur. This notification can be done by sending an eMail or a SNMP trap.

In addition to notification per e-mail and SNMP trap, the alarm signal can be relayed via a connected relay to an external signaling device (depending on the type).

Examples for an event within the system are alterations to the configuration, a port event, interruption or creation of a link between a port and a connected device. Additional features like a locally saved switch history and a MAC address table are also helpful utilities to keep track of the network. All events are time synchronized with support of the SNTP protocol.



eMail and SNMP alert mechanism



Time synchronization with SNTP

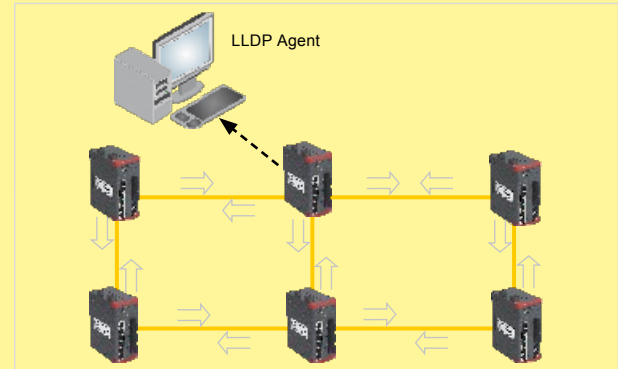
Management Software Overview

Network Discovery via Link Layer Discovery Protocol (LLDP)

The Link Layer Discovery Protocol allow systems on an Ethernet LAN to advertise their key capabilities to neighbor nodes and also to learn about the key capabilities of other systems on the same Ethernet LAN.

This, in turn, promotes a unified network management view of the LAN topology and connectivity to aid network administration and trouble-shooting.

In general a network administration station can be connected to one single switch and from there it is able to access the connectivity information in the complete network within the application.



LLDP- Neighbor information exchange

Port-Based Access Control with 802.1x

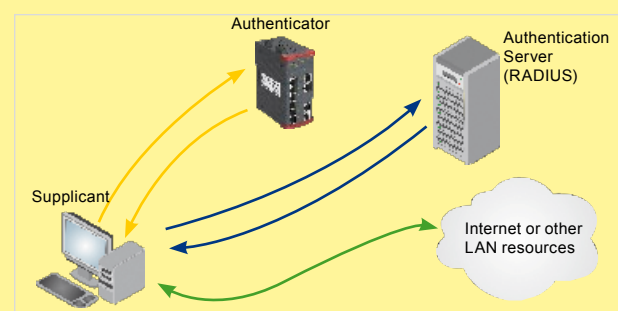
With the affiliation of the common office communication with the industrial networks, security and flexibility become more and more important for industrial Ethernet networks and applications. The demand of security and reliability is increasing rapidly. Therefore, industrial Ethernet networks need an end device authentication method that is highly secure but not tied to a ports physical location. For this reason, the HARTING Ha-VIS mCon Switches supports the 802.1x authentication functionality conform to the IEEE standard 802.1X REV 2004. This authentication method prevents access to a switch port in cases, if the authentication and authorization fails. The HARTING management software supports dynamic enabling or disabling of the Network Access Control feature in the switch through management configuration. The authorization of an attached supplicant can be proceed on two different ways: either remote or local.

With the local authorization, the data which is needed is stored directly on the switch, so no external instance is needed. The other way is the remote authorization via a RADIUS server and the EAPoL protocol. The database, containing all information of the network devices which are allowed to get access to the network are stored at the server side and can be managed from a single point. 802.1x user authentication is rapidly becoming an expected component of any Ethernet infrastructure.

- Prevention of unauthorized network access based on access data, not the physical address
- User authentication in the complete network without bindings to a special port
- Attaching an move devices

IP authorized manager

The IP authorized manager feature enables the switch to enhance security on the network by using IP addresses to authorize which stations (PCs or workstations) can access the switch. Thus, having the correct passwords (when logging through TELNET/WEB) is not sufficient for accessing the switch through the network, unless the station attempting access is also included in the switch's Authorized IP Managers configuration.

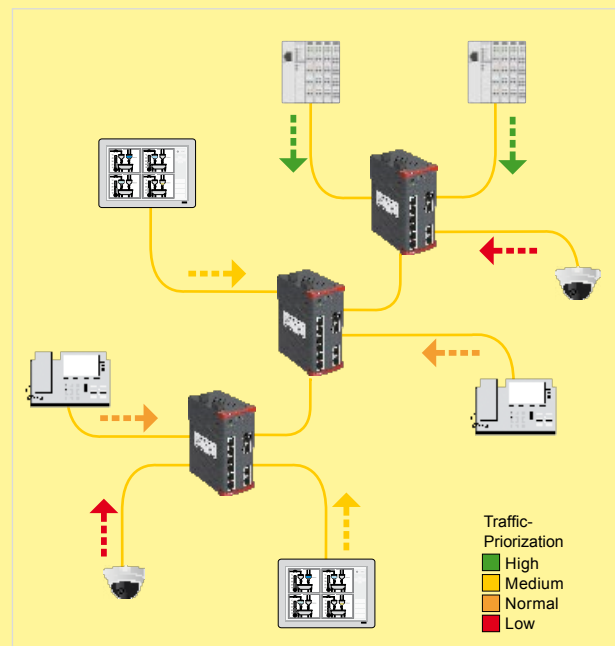


802.1X based user authentication procedure

Management Software Overview

Quality of Service (802.1p, DiffServ)

Quality of Service (QoS) is a technology for managing network traffic in a cost effective manner to enhance network performance and reliability of the application. QoS allows the prioritization of the network traffic to assure quality and performance at any time. For example, QoS technologies can be applied to prioritize traffic for latency-sensitive applications (such as automation protocols and voice or video) and to control the impact of latency-insensitive traffic. The IEEE 802.1p standard provides up to eight traffic classes which can be configured via the management software. The queuing scheme and the way the traffic will be handled inside the switch can be adapted to the requirements of the application.

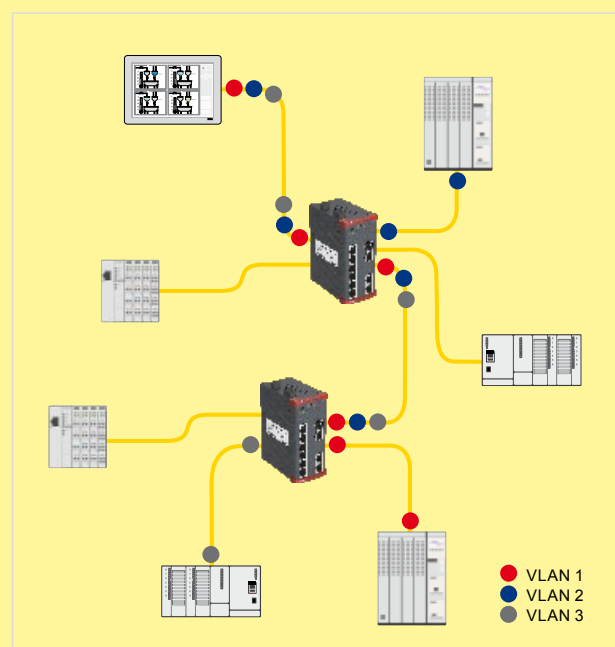


Traffic prioritization for time critical applications

Virtual LAN (VLAN)

As networks have grown in size and complexity, the claim to segment these networks increased rapidly. To avoid the rise of costs and complexity of the devices, the segmentation and separation of different network groups should be established by virtual local area networks (VLANs). This functionality provides a way of structuring and organize the network. Basically, a VLAN is a collection of nodes that are grouped together in a single broadcast domain that is not based on physical location of the devices. VLANs logically segment the shared media LAN and forming virtual workgroups. The different VLANs will send and receive data only to devices which are members of this special LAN. HARTING Ha-VIS mCon switches support up to 4094 VLAN tags and conforms with IEEE standard 802.1Q. The use of VLANs will have the following benefits:

- Security - Separating systems that have sensitive data from the rest of the network
- Performance/Bandbreite - Limitation and administrativ control of the network
- Broadcasts/Traffic-flows - VLANs does not pass broadcast traffic to nodes that are not part of the VLAN, it automatically reduces broadcasts



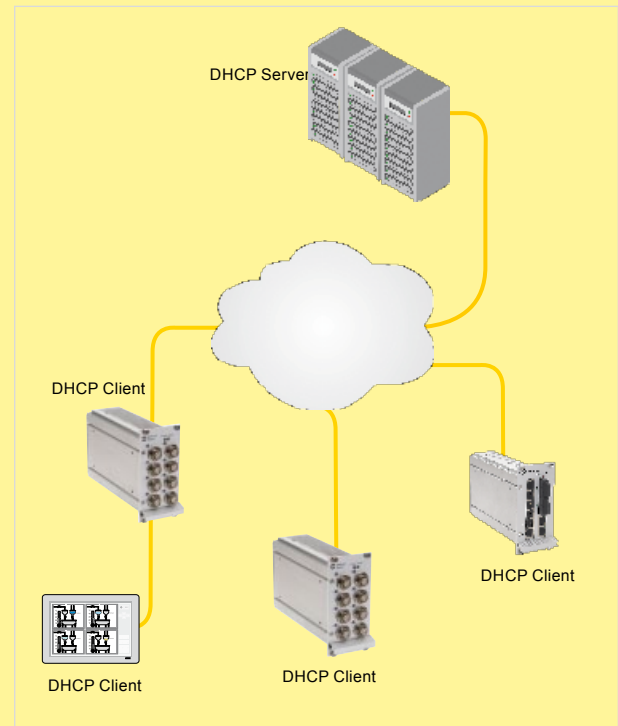
Traffic management with VLANs

Management Software Overview

DHCP Option 82

Upgrading and changing the structure of Ethernet networks causes usually a lot of administrative effort. Configuration of security and addressing procedures has to be redone every time a device will be changed. Replacing or moving of network devices causes a lot of trouble, because some network mechanisms such as dynamic IP address assignment are MAC based. The Industrial market searches for a method to simplify the addition and replacement of Ethernet devices to reduce the maintenance effort. DHCP Option 82 provides a mechanism for generating IP addresses based on the location where the client device is attached in the network. By using DHCP option 82, the Ha-VIS mCon switches are able to include additional information about itself, when forwarding DHCP packets. Information about its location can be sent along with the request to the server.

The DHCP server makes a decision on what IP should be assigned to the end device based on this location information.

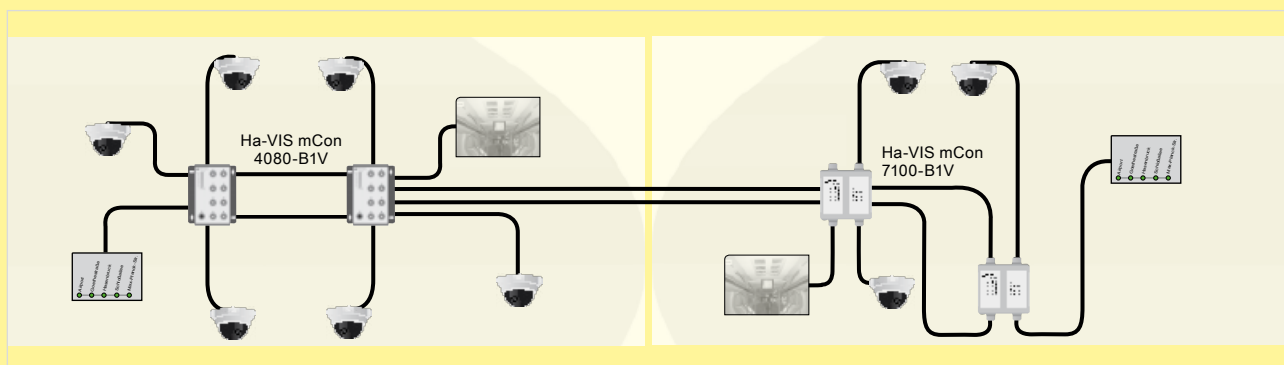


Location-dependent IP address assignment

IGMP Snooping

A Layer 2 switch by default, floods multicast traffic within the broadcast domain. This can consume a lot of bandwidth if many multicast servers are sending streams of data. IGMP Snooping are meant to dynamically discover the presence of multicast receivers and use the learnt information to control the multicast traffic flow, restricting it only to the desired ports on which receivers are present. HARTING provides support for dynamic multicast registration support through IGMP snooping (for IPv4 multicast traffic). IGMP snooping can be used for Layer 2/3 traffic and provides a much greater degree of granularity in selecting multicast traffic.

IGMP learns the multicast forwarding information through the IGMP report messages from hosts and updates the forwarding database. It is possible to edit and add information to the forwarding database manually, so there is no limitation and restriction for the network topology and the application. The IGMP forwarding database based on multicast group MAC address (MAC based). All Ha-VIS mCon switches support IGMP version 1,2 and 3 and also the Querier functionality.



Multicast application with multiple sources and receivers

Management Software Overview

Rapid Spanning Tree

A continuous and failure tolerant network is an essential claim for industrial applications and their network components. The high availability is a mandatory demand to guarantee the failure free operation of these networks. Network redundancy is the ability to handle and endure a link failure without a permanent communication break down. Network redundancy is important in applications, where a single failure can result in significant consequences which can not be tolerated. The Ha-VIS Management Software supports the Rapid Spanning Tree protocol to form loop free topology in a network. RSTP detects topology changes and reconfigures the topology and intimates the topology change to all the switches in the LAN. RSTP avoids this delay by calculating an alternate root port, and immediately switching over to this port if the root port becomes unavailable. Thus, using RSTP, the switch immediately brings the alternate port to forwarding state, without any delay.

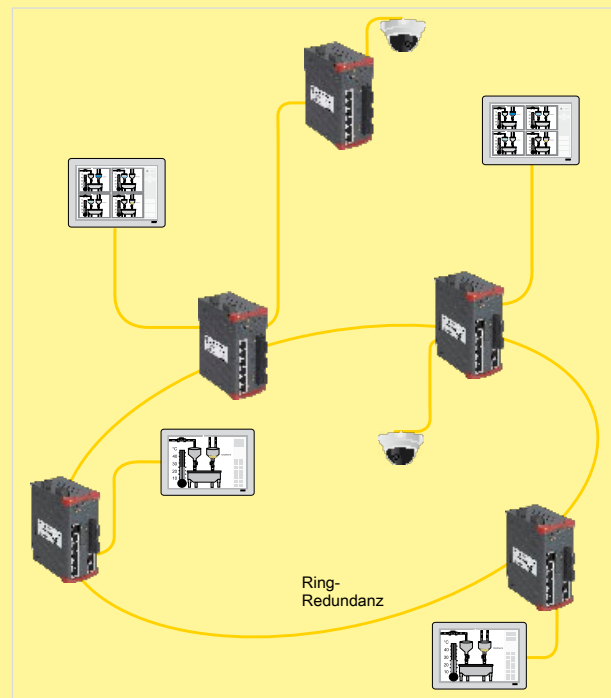
- High availability via redundancy
- Loop free and failure tolerant network
- Fast convergent and recovery time

Link Aggregation (LA)

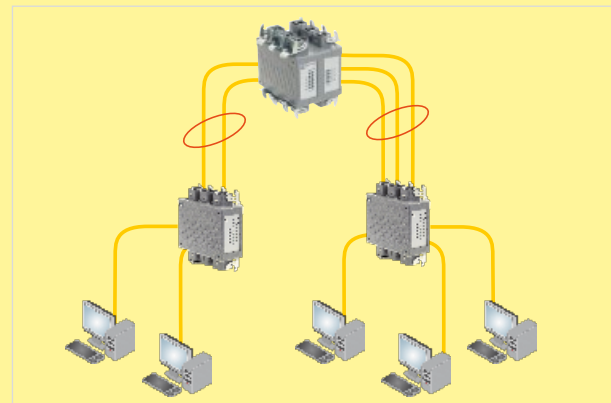
Link Aggregation or trunking is a feature, which allows the combining of several physical network links into a single logical link. This combination brings a lot of advantages to the existing network topology. With Link Aggregation it is clearly possible to increase the bandwidth between to switches to handle heavy network loads at specific points. Furthermore LA offers the possibility to use load balancing on these links. One of the most important benefits is the increased availability between to network devices. Because of the physical redundant link with more than one cable, the connection is still available in case of a link failure. Aggregation groups are formed dynamically using LACP or statically using manual aggregation.

Link Aggregation bietet die folgenden Vorteile:

- Increased bandwidth
- Link redundancy
- High availability
- Load sharing on the individual links
- Aggregating replaces Upgrading



High availability with RSTP



Link Aggregation - Load Balancing, Redundancy, increased bandwidth

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)	IEEE 802.1AB, 2005
PoE	Power Over Ethernet Support	IEEE 802.1af
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	

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)

Security

	Port-Based Network Access Control Port Based Authentication with EAP	IEEE 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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DHCP

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

Management Functions

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

mCon 3000
mCon 4000
mCon 9000
mCon 7000



Ethernet Switch
Ha-VIS mCon 3000

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 Twisted Pair cables and fibre-optic cables (Multi- and Single-mode). The Ha-VIS mCon 3000 Ethernet Switch family, with its integrated LEDs on each port, supports fast and easy network diagnosis.

The Ha-VIS mCon 3000 Ethernet Switches are designed for an effective, industrial and individual use. They support both SNMP and an easy Web interface for management functions.

Features

- Ethernet Switch acc. to IEEE 802.3
- Store and Forward Switching Mode
- Up to 10 ports, managed, non-blocking
- Auto-crossing, Auto-negotiation, Auto-polarity
- Temperature range -40 °C ... +70 °C

Advantages

- Robust metal housing
- EMC, temperature range and mechanical stability meet the toughest demands
- Integrated management functions

Application fields

- Industrial automation
- Automotive industry
- Wind power
- Power distribution systems

Technical characteristics

Ethernet interface – RJ45

Number of ports	6x / 8x / 10x 10/100Base-T(X) 2x 10/100/1000-Base-T(X)
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 cable Category 5 acc. to DIN EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - <ul style="list-style-type: none"> 1000 Mbit/s: Green 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Ring • Star • mixed

Power supply

Input voltage	24 V DC (9.6 ... 60 V DC)
Termination	5-pole, pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply - LED Green

Alarm signalling contact

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
Termination	3-pole pluggable screw contact
Diagnostics (LED)	Error - Red

Design features

Housing material	metal
Dimensions (W x H x D)	60 x 132 x 104 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 30
for Ha-VIS mCon xxxx-AEx only	IP 20
Assembly	<ul style="list-style-type: none"> • 35 mm top-hat rail acc. to EN 60 715 • Wall mounting, vertical assembly
Weight	approx. 0.6 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)

Technical characteristics F.O. termination

Ethernet interface – F.O.

Number of ports	2x / 3x 100Base-FX
Cable types according to IEEE 802.3	<ul style="list-style-type: none"> • Multimode fibre, 1300 nm; 50 µm / 125 µm or 62.5 µm / 125 µm • Singlemode fibre, 1300 nm; 9 µm (for AF versions only)
Data rate	100 Mbit/s
Maximum cable length	<ul style="list-style-type: none"> • 2000 m (Multimode) • 15 km (Singlemode)
Termination	SC-D female / ST female
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing
Wavelength	1300 nm
Transceive power T(X) max. (dynamic)	<ul style="list-style-type: none"> • -14 dBm (50 µm / 125 µm) • -14 dBm (62.5 µm / 125 µm)
Transceive power T(X) min.	<ul style="list-style-type: none"> • -23.5 dBm (50 µm / 125 µm) • -20 dBm (62.5 µm / 125 µm)
Receive power RX typical (dynamic)	<ul style="list-style-type: none"> • -33.9 dBm (window) • -35.2 dBm (centre)
Receive power RX max. (dynamic)	-14 dBm
Signal detection (dynamic)	-33 dBm
Topology	<ul style="list-style-type: none"> • Line • Ring • Star • mixed



Ethernet Switch Ha-VIS mCon 3100-AV

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets

Managed	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	10x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V DC		
Input current	approx. 190 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
Weight	approx. 0.6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV		
MTBF	625.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

mCon 3000

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS mCon 3100-AV Ethernet Switch with 10 RJ45 ports</p> <p>including set for assembly on standard rail</p>	<p>20 76 110 4002</p>		
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Ethernet Switch

Ha-VIS mCon 3100-AAV

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 2 Gigabit ports, with extended temperature range

Managed	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair) 2x 10/100/1000-Base-T(X) / RJ45 (Twisted Pair)		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V DC		
Input current	approx. 260 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
Weight	approx. 0.6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 60 950-1; DNV		
MTBF	720.000 h		
Management	fully managed via Web interface and SNMP Functions see page A:9		

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS mCon 3100-AAV Ethernet Switch with 10 RJ45 ports including set for assembly on standard rail	20 76 110 4003		60 130 100
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Ethernet Switch

Ha-VIS mCon 3063-ADV

9-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 3 F.O. ports (SC, MM)

Managed	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	3x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V DC		
Input current	approx. 320 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
Weight	approx. 0.6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1		
MTBF	710.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

mCon 3000

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS mCon 3063-ADV Ethernet Switch with 6 RJ45 ports 3 F.O. ports</p> <p>including set for assembly on standard rail</p>	<p>20 76 109 4101</p>		
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Ethernet Switch

Ha-VIS mCon 3082-ADV

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 2 F.O. ports (SC, MM)

Managed	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V DC		
Input current	approx. 290 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
Weight	approx. 0.6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV		
MTBF	560.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

Identification	Part number	Drawing	Dimensions in mm
<p>Ha-VIS mCon 3082-ADV</p> <p>Ethernet Switch with 8 RJ45 ports 2 F.O. ports</p> <p>including set for assembly on standard rail</p>	20 76 110 4101		



Ethernet Switch

Ha-VIS mCon 3082-AFV

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 2 F.O. ports (SC, SM)

Managed	IP 30	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / SC-D female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V DC		
Input current	approx. 270 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
Weight	approx. 0.6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	cUL (in preparation)		
MTBF	560.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

mCon 3000

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS mCon 3082-AFV Ethernet Switch with 8 RJ45 ports 2 F.O. ports</p> <p>including set for assembly on standard rail</p>	<p>20 76 110 4102</p>		
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Ethernet Switch

Ha-VIS mCon 3063-AEV

9-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 3 F.O. ports (ST, MM)

Managed	IP 20	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	6x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	3x 100Base-FX / ST female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V DC		
Input current	approx. 320 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
Weight	approx. 0.6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1		
MTBF	710.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS mCon 3063-AEV Ethernet Switch with 6 RJ45 ports 3 F.O. ports</p> <p>including set for assembly on standard rail</p>	<p>20 76 109 4201</p>		
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Ethernet Switch

Ha-VIS mCon 3082-AEV

10-port Ethernet Switch for mounting onto top-hat mounting rail in control cabinets, including 2 F.O. ports (ST, MM)

Managed	IP 20	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / RJ45 (Twisted Pair)		
Number of ports, F.O. / Termination	2x 100Base-FX / ST female		
Input voltage / Termination	24 V DC / 5-pole, pluggable screw contact, for redundant power supply		
Permissible range (min./max.)	9.6 V ... 60 V DC		
Input current	approx. 290 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	60 x 132 x 104 mm (including cap, without connectors)		
Weight	approx. 0.6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	UL 508; UL 60 950-1; DNV		
MTBF	560.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

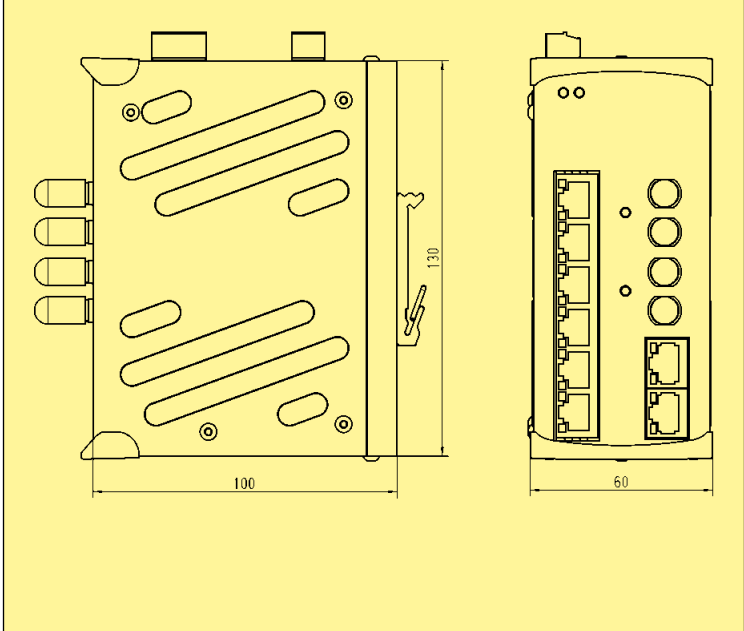
mCon 3000

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS mCon 3082-AEV
Ethernet Switch with
8 RJ45 ports
2 F.O. ports

including
set for assembly on standard rail

20 76 110 4201





Ethernet Switch
Ha-VIS mCon 4000

Ethernet Switches, managed, for flat wall mounting

General description

The Fast Ethernet Switches of the product family Ha-VIS mCon 4000 are recommended for use in the widest range of industrial applications and support Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). The product family enables the connection of up to 8 network devices over Twisted Pair cables.

Mechanical stability and temperature range meet the highest demands. The robust M12 interface shows its advantages especially in applications at risk of vibrations.

The Ethernet Switches support both SNMP and an easy Web interface for management functions.

Features

- Ethernet Switch according to IEEE 802.3
- Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s)
- Auto-crossing, Auto-negotiation, Auto-polarity
- Diagnostic LEDs (Link status, Data, Power)
- Store and Forward Switching Mode, non blocking
- Mounting onto wall, optionally onto top-hat mounting rail

Advantages

- Robust metal housing and flat housing style
- EMC, temperature range and mechanical stability meet the toughest demands
- Wide range for power supply input
- Additional type test according to EN 50 155 and EN 50 121-3-2

Application fields

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

Technical characteristics

Ethernet interface – M12

Number of ports	8x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (M12 D-coding)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	M12 D-coding (female)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: Green • Error - Red
Topology	<ul style="list-style-type: none"> • Line • Ring • Star • mixed

Power supply

Input voltage	24 / 48 V DC (12 ... 60 V DC) - redundant
for Ha-VIS mCon 4080-B3V only	72 / 110 V DC (50.4 ... 137.5 V DC) - redundant
Termination	M12 A-coding, male, for redundant power supply
Diagnostics (LED)	Power supply - LED Green

Design features

Housing material	metal
Dimensions (W x H x D)	130 x 166 x 50 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 40
Assembly	Wall mounting, flat assembly
Weight	approx. 0.85 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)



Ethernet Switch
Ha-VIS mCon 4080-B1V
 8-port Ethernet Switch for flat installation

Managed	IP 40	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / M12 D-coding (female)		
Input voltage / Termination	24 / 48 V DC / M12 A-coding, male, for redundant power supply		
Permissible range (min./max.)	12 V ... 60 V DC		
Input current	approx. 165 mA (at 24 V DC)		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	130 x 166 x 50 mm (without connectors)		
Weight	approx. 0.85 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	<input type="checkbox"/> e1		
MTBF	489.000 h		
Management	fully managed via Web interface and SNMP Functions see page A:9		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS mCon 4080-B1V Ethernet Switch with 8 ports M12 D-coding for wall mounting	20 77 208 4001		



Ethernet Switch
Ha-VIS mCon 4080-B3V
 8-port Ethernet Switch (110 V DC) for flat installation

Managed	IP 40	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / M12 D-coding (female)		
Input voltage / Termination	72 / 110 V DC / M12 A-coding, male, for redundant power supply		
Permissible range (min./max.)	50.4 V ... 137.5 V DC		
Input current	approx. 48 mA (at 110 V DC)		
Housing material	metal, powder-coated		
Dimensions (W x H x D)	130 x 166 x 50 mm (without connectors)		
Weight	approx. 0.85 kg		
Working temperature	-40 °C ... +70 °C		
MTBF	446.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS mCon 4080-B3V Ethernet Switch with 8 ports M12 D-coding for wall mounting	20 77 208 4003		

mCon 4000



**Ethernet Switch
Ha-VIS mCon 9000**

Ethernet Switches, managed, for installation in a 19" rack

General description

The Ethernet Switches of the product family Ha-VIS mCon 9000 are recommended for use in the widest range of industrial applications and support Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s) . The product family enables the connection of up to 8 network devices over Twisted Pair cables.

The Ha-VIS mCon 9000 Ethernet Switch family, with its integrated LEDs on each port, supports fast and easy network diagnosis. The Ha-VIS mCon Ethernet Switch operates in Store and Forward Switching mode and supports Auto-crossing, Auto-negotiation and Auto-polarity.

Features

- Ethernet Switch acc. to IEEE 802.3
- Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s)
- Auto-crossing, Auto-negotiation, Auto-polarity
- Diagnostic LEDs (Link status, Data, Power)
- Store and Forward Switching Mode, non-blocking
- Pluggable in 19" racks
- Power input on the front, no backplane necessary

Advantages

- Robust metal housing
- Integrated management functions
- EMC, temperature range and mechanical stability meet the toughest demands

Application fields

- Railway applications
- Industrial automation
- Automotive industry
- Wind power
- Power distribution systems

Technical characteristics

Ethernet interface – M12

Number of ports	7x / 8x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (M12 D-coding)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	M12 D-coding (female)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link - Green • Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Ring • Star • mixed

Power supply

Input voltage	24 / 48 V DC (8 ... 60 V DC) - redundant
Termination	M12 A-coding, male
Diagnostics (LED)	Power supply - LED Green

Alarm signalling contact (for Ha-VIS mCon 9080-B1V only)

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
Termination, device-side	DIN frame connector, Type F
Diagnostics (LED)	Error - Red

Design features

Housing material	aluminium
Degree of protection acc. to DIN EN 60 529	IP 20 (front side IP 40, when mounted)
Assembly	19" rack, 3 U
Weight	approx. 0.6 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)



Ethernet Switch Ha-VIS mCon 9070-BV

7-port Ethernet Switch for installation in a 19" rack

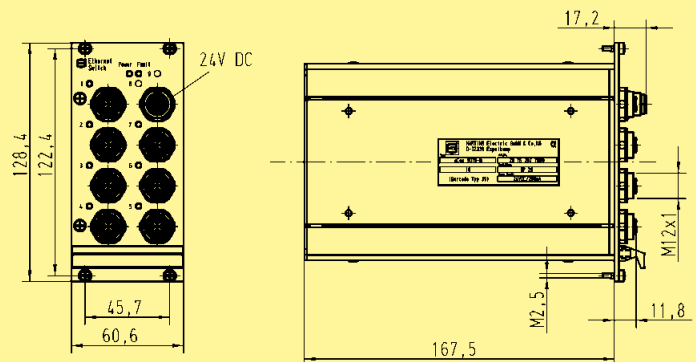
Managed	IP 20	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
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Number of ports, Copper / Termination	7x 10/100Base-T(X) / M12 D-coding (female)
Input voltage / Termination	24 / 48 V DC / M12 A-coding, male
Permissible range (min./max.)	8 V ... 60 V DC
Input current	approx. 130 mA (at 24 V DC)
Housing material	aluminium, anodised
Dimensions (W x H x D)	60.6 mm (3 U) x 128.4 mm (12 HP) x 167.5 mm
Weight	approx. 0.6 kg
Working temperature	-40 °C ... +70 °C
MTBF	667.000 h
Management	fully managed via Web interface and SNMP Functions see page A-9

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS mCon 9070-BV
Ethernet Switch with
7 ports M12 D-coding

20 76 207 7002





Ethernet Switch Ha-VIS mCon 9080-B1V

8-port Ethernet Switch for installation in a 19" rack

Managed	IP 20	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / M12 D-coding (female)		
Input voltage / Termination	24 / 48 V DC / DIN frame connector, Type F		
Permissible range (min./max.)	8 V ... 60 V DC		
Input current	approx. 130 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A DIN frame connector, Type F		
Housing material	aluminium, anodised		
Dimensions (W x H x D)	60.6 mm (3 U) x 128.4 mm (12 HP) x 173.5 mm		
Weight	approx. 0.6 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	cUL (in preparation)		
MTBF	631.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS mCon 9080-B1V Ethernet Switch with 8 ports M12 D-coding	20 76 208 7002		

mCon 9000



Ethernet Switch Ha-VIS mCon 7000

Ethernet Switches, managed, for harsh industrial environments

General description

If additional services for networks in harsh industrial environments (filtering, prioritisation, topology), or individual network configurations are required, then the Ethernet Switches of the product family Ha-VIS mCon 7000 come into play.

These managed switches allow the connection of up to 10 end-units, according to switch type, over IEC 802.3 Twisted-Pair cabling. Protection class, temperature range and mechanical stability satisfy the highest requirements. These Ethernet Switches can therefore be directly used in industrial environments.

They support both SNMP and an easy Web interface for management functions.

Features

- Ethernet Switch acc. to IEEE 802.3
- Store and Forward Switching Mode
- 5 or 10 ports, managed, non-blocking
- Auto-crossing, Auto-negotiation, Auto-polarity
- Ethernet (10 Mbit/s), Fast Ethernet (100 Mbit/s) and Gigabit Ethernet (1000 Mbit/s)
- Diagnostic LEDs (Link status, Data, Power, Error)

Advantages

- High degree of protection IP 65 / IP 67
- Robust metal housing, zinc die-cast
- Can be used directly in industrial environments
- EMC, temperature range and mechanical stability meet the toughest demands
- Integrated management functions

Application fields

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

Technical characteristics

Ethernet interface – RJ45

Number of ports	8x 10/100Base-T(X) 2x 10/100/1000-Base-T(X)
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 (for Ha-VIS mCon 7100-AAV only) (Han® 3 A RJ45)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination	Han® 3 A RJ45 (female)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link (Link/Act) - terminal device is connected: Green data transmission in process: Green flashing • Data transfer rate (Speed) - 1000 Mbit/s: Green 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Ring • Star • mixed

Power supply

Input voltage	24 / 48 V DC (12 ... 60 V DC) - redundant
Termination	Han® 4 A, male, for redundant power supply (including fixing screw 09 20 000 9918 to maintain IP 67)
Diagnostics (LED)	Power supply - LED Green

Alarm signalling contact

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
Termination, device-side	Han® 3 A, male
Diagnostics (LED)	Error - Red

Design features

Housing material	zinc die-cast
Dimensions (W x H x D)	90 x 120 x 87 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 65 / IP 67
Assembly	<ul style="list-style-type: none"> • 35 mm top-hat rail acc. to EN 60 715 • Wall mounting, flat assembly • Wall mounting, vertical assembly
Weight	approx. 1.4 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)

Technical characteristics Ha-VIS mCon 7050-B1V, mCon 7100-B1V
Ethernet interface – M12

Number of ports	5x / 10x 10/100Base-T(X)
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10 Mbit/s or 100 Mbit/s (M12 D-coding)
Maximum cable length	100 m (Twisted Pair, with cable Category 5 acc. to DIN EN 50 173-1)
Termination, device-side	M12 D-coding (female)
Diagnostics (LED)	<ul style="list-style-type: none"> • Status Link (Link/Act) - terminal device is connected: Green data transmission in process: Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	<ul style="list-style-type: none"> • Line • Ring • Star • mixed

Power supply

Input voltage	24 / 48 V DC (12 ... 60 V DC) - redundant
Termination, device-side	M12 A-coding, male, for redundant power supply
Diagnostics (LED)	Power supply - LED Green

Alarm signalling contact

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
Termination, device-side	M12 D-coding, male
Diagnostics (LED)	Error - Red

Design features

	Ha-VIS mCon 7050	Ha-VIS mCon 7100
Housing material	zinc die-cast	zinc die-cast
Dimensions (W x H x D)	45 x 120 x 87 mm (without connectors)	90 x 120 x 87 mm (without connectors)
Degree of protection acc. to DIN EN 60 529	IP 65 / IP 67	IP 65 / IP 67
Assembly	<ul style="list-style-type: none"> • 35 mm top-hat rail acc. to EN 60 715 • Wall mounting, flat assembly • Wall mounting, vertical assembly 	<ul style="list-style-type: none"> • 35 mm top-hat rail acc. to EN 60 715 • Wall mounting, flat assembly • Wall mounting, vertical assembly
Weight	approx. 0.8 kg	approx. 1.4 kg

Environmental conditions

Working temperature	-40 °C ... +70 °C
Stock temperature	-40 °C ... +85 °C
Relative humidity	10 % ... +95 % (non-condensing)



Ethernet Switch Ha-VIS mCon 7050-B1V

5-port Ethernet Switch with extended input voltage range for industrial Ethernet networks, with M12 system cabling

Managed	IP 65 / IP 67	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	5x 10/100Base-T(X) / M12 D-coding (female)		
Input voltage / Termination	24 / 48 V DC / M12 A-coding, male, for redundant power supply		
Permissible range (min./max.)	12 V ... 60 V DC		
Input current	approx. 160 mA (at 24 V DC)		
Housing material	zinc die-cast		
Dimensions (W x H x D)	45 x 120 x 87 mm		
Weight	approx. 0.8 kg		
Working temperature	-40 °C ... +70 °C		
Approvals	<input type="checkbox"/> e1		
MTBF	462.000 h		
Management	fully managed via Web interface and SNMP Functions see page A-9		

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS mCon 7050-B1V Ethernet Switch with 5 ports M12 D-coding	20 70 305 4943		
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Ethernet Switch Ha-VIS mCon 7100-B1V

10-port Ethernet Switch for industrial Ethernet networks,
with M12 system cabling

Managed	IP 65 / IP 67	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	10x 10/100Base-T(X) / M12 D-coding (female)		
Input voltage / Termination	24 / 48 V DC / M12 A-coding, male, for redundant power supply		
Permissible range (min./max.)	12 V ... 60 V DC		
Input current	approx. 180 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A M12 D-coding, male		
Housing material	zinc die-cast		
Dimensions (W x H x D)	90 x 120 x 87 mm		
Weight	approx. 1.4 kg		
Working temperature	-40 °C ... +70 °C		
MTBF	378.000 h		
Management	fully managed via Web interface and SNMP Functions see page A:9		

Identification	Part number	Drawing	
Ha-VIS mCon 7100-B1V Ethernet Switch with 10 ports M12 D-coding	20 70 310 4945		

mCon 7000



Ethernet Switch Ha-VIS mCon 7100-AAV

10-port Ethernet Switch for use in harsh industrial environments,
with 2 Gigabit ports

Managed	IP 65 / IP 67	PROFINET compatible <input checked="" type="checkbox"/>	EtherNet/IP compatible <input checked="" type="checkbox"/>
Number of ports, Copper / Termination	8x 10/100Base-T(X) / Han® 3 A RJ45 (female) 2x 10/100/1000-Base-T(X) / Han® 3 A RJ45 (female)		
Input voltage / Termination	24 / 48 V DC / Han® 4 A, male, for redundant power supply		
Permissible range (min./max.)	12 V ... 60 V DC		
Input current	approx. 260 mA (at 24 V DC)		
Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A Han® 3 A, male		
Housing material	zinc die-cast		
Dimensions (W x H x D)	90 x 120 x 87 mm		
Weight	approx. 1.4 kg		
Working temperature	-40 °C ... +70 °C		
Management	fully managed via Web interface and SNMP Functions see page A-9		

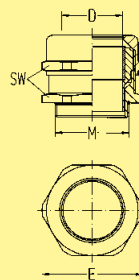
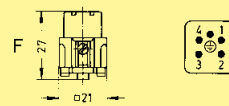
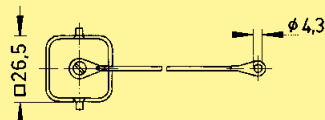
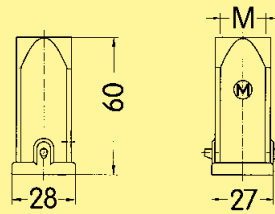
Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS mCon 7100-AAV Ethernet Switch with 10 RJ45 ports</p>	<p>20 70 310 4924</p>		
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Identification	Part number	Drawing	Dimensions in mm
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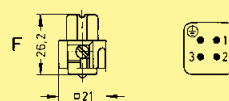
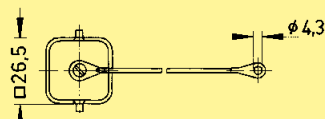
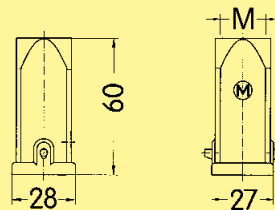
Power supply

Hood Metal, straight, metric	19 20 003 1440 ¹⁾		
Protection covers Han® 3 A	09 20 003 5426		
Female insert Han® 4 A	09 20 004 2711		
Cable gland Metal, IP 65, metric, M20, cable Ø: 5 ... 9 mm	19 00 000 5080		
HARAX® M12-L Circular Connectors A-coding	21 03 212 2305		

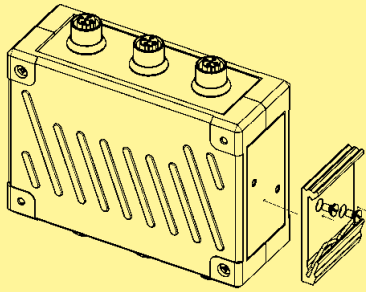
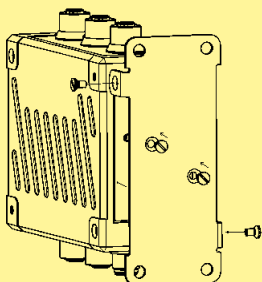
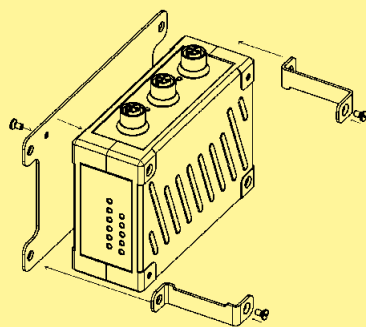
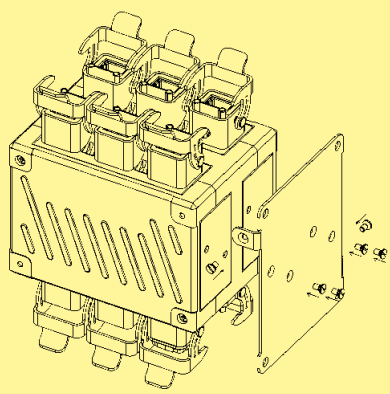


Alarm signalling contact – for Ha-VIS eCon 7100-AAV only

Hood Metal, straight, metric	19 20 003 1440		
Protection covers Han® 3 A	09 20 003 5426		
Female insert Han® 3 A	09 20 003 2711		



1) ... Order insert fixing screw 09 20 000 9918 separately

Identification	Part number	Drawing	Dimensions in mm
Assembly			
Set for assembly on standard rail according to DIN EN 60 715	20 80 000 0003		
Set for panel mounting vertical assembly	20 80 010 0001		
Set for panel mounting flat assembly	20 80 024 0002		
Set for panel mounting Ha-VIS mCon 7100 vertical assembly	20 80 010 0002		



Industrial Power supplies Serial Ha-VIS pCon 2000

for centralised power supply
in control cabinets with degree of protection IP 20

General Description

The power supplies of the product family Ha-VIS pCon 2000 are designed for power supply solutions for control units, Ethernet and other automation components. With their wide range of input voltage, the units are suitable for world-wide use.

The quick connection technique guarantees easy installation.

Features

- Wide range input for world-wide use
- High efficiency of up to 92 %
- Easy installation and toolless connection
- Range of operating temperature of up to 70 °C without derating

Advantages

- Wide operating temperature range
- Compact design and high power density
- Proof against sustained short-circuits, overloads and no-load operation
- International approvals
- Protection class II (no earth connection necessary)
- Proof against dynamic overload (150 % rated current for up to 2.5 seconds)

Application fields

- Industrial automation
- Automotive industry
- Power generation and distribution



**Industrial Power supply
Ha-VIS pCon 2035-24**
for centralised power supply in control cabinets
with degree of protection IP 20

2x spring-type terminals	IP 20	24 V DC	35 W
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Input		Output	
Rated voltage	100 ... 230 V AC (Wide range input)	Output voltage	24 V DC \pm 1 % (setting range 23 ... 29 V)
Input voltage range	85 ... 264 V AC (100 ... 375 V DC)	Output current	1.4 A
Input rated current	< 0.5 A at 230 V < 1.5 A at 100 V	Max. output power	35 W
Input current	< 40 A (active limiting)	Main buffering time	> 100 ms (at 230 V AC) > 15 ms (at 115 V AC)
Input frequency	47 ... 63 Hz	Remaining ripple	< 40 mVss (at rated values)
Input fuse	internal T 4 A	Sensibility	< 2 %
Recommended backup fuse	B 16 A (EN 60 898)	Protection function	Proof against sustained short-circuits, overloads and no-load operation
Protection class	II (no earth connection necessary)	Overload behavior	Limiting current > 2.5 A (static) / > 2.8 A (dynamic)
		Output voltage indication	LED Green
General data			
Termination Power / Load	Spring-type terminal 0.3 ... 2.5 mm ² / AWG 22 ... 14 (stranded) / 0.3 ... 4 mm ² / AWG 22 ... 12 (solid)		
Product standards	EN 60 950 (SELV)	Efficiency	89 % (230 V) / 87 % (115 V)
Approvals	CE, cCSA _{US} , (UL 60 950, UL 508)	Weight	approx. 170 g

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS pCon 2035-24 Industrial Power supply for mounting onto 35 mm top-hat mounting rail according to DIN EN 60 715</p>	<p>20 80 000 3123</p>		
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Industrial Power supply Ha-VIS pCon 2060-24

for centralised power supply in control cabinets
with degree of protection IP 20

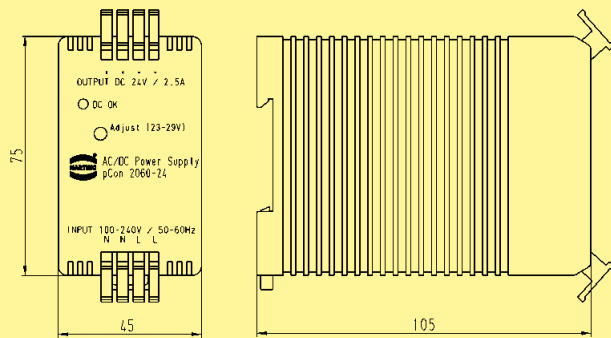
2x spring-type terminals	IP 20	24 V DC	60 W
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Input		Output	
Rated voltage	100 ... 240 V AC (Wide range input)	Output voltage	24 V DC \pm 1 % (setting range 23 ... 29 V)
Input voltage range	85 ... 264 V AC (100 ... 375 V DC)	Output current	2.5 A
Input rated current	< 0.7 A at 230 V < 1.3 A at 100 V	Max. output power	60 W
Input current	< 40 A (active limiting)	Main buffering time	> 100 ms (at 230 V AC) > 15 ms (at 115 V AC)
Input frequency	47 ... 63 Hz	Remaining ripple	< 40 mV _{SS} (at rated values)
Input fuse	internal T 4 A	Sensibility	< 2 %
Recommended backup fuse	B 16 A (EN 60 898)	Protection function	Proof against sustained short-circuits, overloads and no-load operation
Protection class	II (no earth connection necessary)	Overload behavior	Limiting current 2.7 A (static) / 5.0 A (dynamic)
		Output voltage indication	LED Green
General data			
Termination Power / Load	Spring-type terminal 0.3 ... 2.5 mm ² / AWG 22 ... 14 (stranded) / 0.3 ... 4 mm ² / AWG 22 ... 12 (solid)		
Product standards	EN 60 950 (SELV)	Efficiency	91.5 % (230 V) / 90 % (115 V)
Approvals	CE, cCSA _{US} (UL 60 950, UL 508), BG-Primara	Weight	approx. 250 g

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS pCon 2060-24
Industrial Power supply for mounting
onto 35 mm top-hat mounting rail
according to DIN EN 60 715

20 80 000 3121





Industrial Power supply
Ha-VIS pCon 2060-48
 for centralised power supply in control cabinets
 with degree of protection IP 20

2x spring-type terminals	IP 20	48 V DC	60 W
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Input		Output	
Rated voltage	100 ... 240 V AC (Wide range input)	Output voltage	48 V DC \pm 1 % (setting range 47 ... 52 V)
Input voltage range	85 ... 264 V AC (100 ... 375 V DC)	Output current	1.25 A
Input rated current	< 0.7 A at 230 V < 1.3 A at 100 V	Max. output power	60 W
Input current	< 40 A (active limiting)	Main buffering time	> 100 ms (at 230 V AC) > 15 ms (at 115 V AC)
Input frequency	47 ... 63 Hz	Remaining ripple	< 40 mVss (at rated values)
Input fuse	internal T 4 A	Sensibility	< 2 %
Recommended backup fuse	B 16 A (EN 60 898)	Protection function	Proof against sustained short-circuits, overloads and no-load operation
Protection class	II (no earth connection necessary)	Overload behavior	Limiting current 1.5 A (static) / 2.5 A (dynamic)
		Output voltage indication	LED Green
General data			
Termination Power / Load	Spring-type terminal 0.3 ... 2.5 mm ² / AWG 22 ... 14 (stranded) / 0.3 ... 4 mm ² / AWG 22 ... 12 (solid)		
Product standards	EN 60 950 (SELV)	Efficiency	92 % (230 V) / 90 % (115 V)
Approvals	CE, cCSA _{US} (UL 60 950, UL 508), BG-Primara	Weight	approx. 250 g

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS pCon 2060-48</p> <p>Industrial Power supply for mounting onto 35 mm top-hat mounting rail according to DIN EN 60 715</p>	<p>20 80 000 3122</p>		<p>pCon 2000</p> <hr/> <p>A-5</p> <hr/> <p>5</p>
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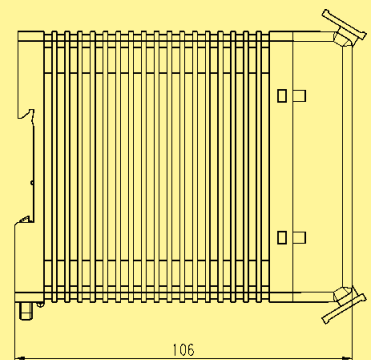
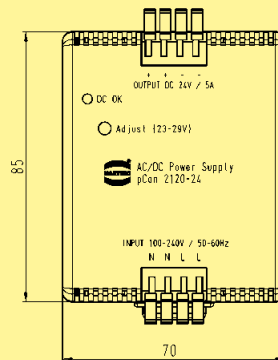
Industrial Power supply
Ha-VIS pCon 2120-24
 for centralised power supply in control cabinets
 with degree of protection IP 20

2x spring-type terminals	IP 20	24 V DC	120 W
Input		Output	
Rated voltage	100 ... 240 V AC (Wide range input)	Output voltage	24 V DC \pm 1 % (setting range 23 ... 29 V)
Input voltage range	85 ... 264 V AC (100 ... 375 V DC)	Output current	5 A
Input rated current	< 1.0 A at 230 V < 2.0 A at 100 V	Max. output power	120 W
Input current	< 40 A (active limiting)	Main buffering time	> 100 ms (at 230 V AC) > 15 ms (at 115 V AC)
Input frequency	47 ... 63 Hz	Remaining ripple	< 40 mV _{SS} (at rated values)
Input fuse	internal T 4 A	Sensibility	< 2 %
Recommended backup fuse	B 16 A (EN 60 898)	Protection function	Proof against sustained short-circuits, overloads and no-load operation
Protection class	II (no earth connection necessary)	Overload behavior	Limiting current 5.3 A (static) / 9.5 A (dynamic)
		Output voltage indication	LED Green
General data			
Termination Power / Load	Spring-type terminal 0.3 ... 2.5 mm ² / AWG 22 ... 14 (stranded) / 0.3 ... 4 mm ² / AWG 22 ... 12 (solid)		
Product standards	EN 60 950 (SELV)	Efficiency	90 % (230 V) / 89 % (115 V)
Approvals	CE, cCSA _{us} (UL 60 950, UL 508)	Weight	approx. 500 g

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS pCon 2120-24
 Industrial Power supply for mounting
 onto 35 mm top-hat mounting rail
 according to DIN EN 60 715

20 80 000 3124



Industrial Power supply
Ha-VIS pCon 2120-48
 for centralised power supply in control cabinets
 with degree of protection IP 20



2x spring-type terminals	IP 20	48 V DC	120 W
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Input		Output	
Rated voltage	100 ... 240 V AC (Wide range input)	Output voltage	48 V DC \pm 1 % (setting range 47 ... 52 V)
Input voltage range	85 ... 264 V AC (100 ... 375 V DC)	Output current	2.5 A
Input rated current	< 1.0 A at 230 V < 2.0 A at 100 V	Max. output power	120 W
Input current	< 40 A (active limiting)	Main buffering time	> 100 ms (at 230 V AC) > 15 ms (at 115 V AC)
Input frequency	47 ... 63 Hz	Remaining ripple	< 40 mVss (at rated values)
Input fuse	internal T 4 A	Sensibility	< 2 %
Recommended backup fuse	B 16 A (EN 60 898)	Protection function	Proof against sustained short-circuits, overloads and no-load operation
Protection class	II (no earth connection necessary)	Overload behavior	Limiting current 2.7 A (static) / 5.0 A (dynamic)
		Output voltage indication	LED Green
General data			
Termination Power / Load	Spring-type terminal 0.3 ... 2.5 mm ² / AWG 22 ... 14 (stranded) / 0.3 ... 4 mm ² / AWG 22 ... 12 (solid)		
Product standards	EN 60 950 (SELV)	Efficiency	90 % (230 V) / 90 % (115 V)
Approvals	CE, cCSA _{US} (UL 60 950, UL 508)	Weight	approx. 500 g

Identification	Part number	Drawing	Dimensions in mm
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<p>Ha-VIS pCon 2120-48 Industrial Power supply for mounting onto 35 mm top-hat mounting rail according to DIN EN 60 715</p>	<p>20 80 000 3125</p>	<p>Technical drawing showing input terminals (N, N, L, L) and output terminals (DC OK, Adjust 147-52V). Dimensions: 85 mm height, 70 mm width.</p>	<p>Technical drawing showing the side profile of the unit mounted on a 35 mm top-hat rail. Dimension: 106 mm length.</p>
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Redundant module Ha-VIS pCon 20DRM-10A

for redundant power supply in control cabinets
with degree of protection IP 20

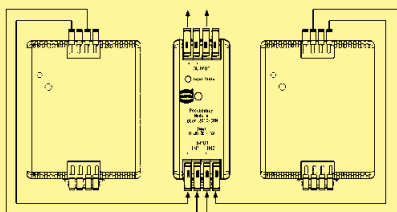
2x spring-type terminals	IP 20	24 V / 48 V	
Input		Output	
Rated voltage	24 V / 48 V DC	Output voltage	same as Input voltage
Input rated current	10 A	Output current	16 A (max.)
Protection class	II (no earth connection necessary)	Voltage drop	300 mV (max.)
		Current limiting	No. The upstream power supply has to fulfill this function.
		Overload protection	No. The upstream power supply has to fulfill this function.
		Overtemperature shut-off	No
		Power loss	6 W (max.)
		Indication	LED Green
			Green flashing: Only one input connected. Output voltage present
			Green continuous ON: Both inputs are connected. Output voltage present
General data			
Termination Power / Load	Spring-type terminal 0.3 ... 2.5 mm ² / AWG 22 ... 14 (stranded) / 0.3 ... 4 mm ² / AWG 22 ... 12 (solid)		
Product standards	EN 60 950 (SELV)	Weight	approx. 100 g
Approvals	CE, cCSA _{US} (UL 60 950, UL 508)		

Identification	Part number	Drawing	Dimensions in mm
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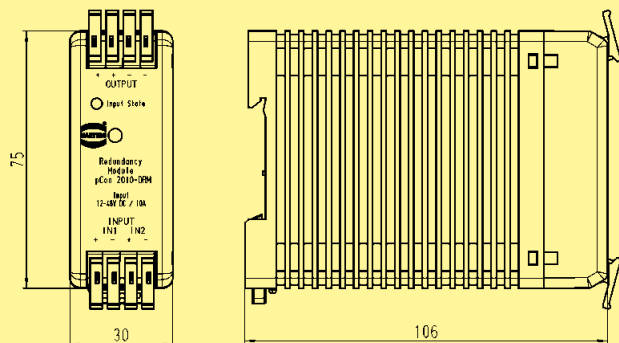
Ha-VIS pCon 20DRM-10A

Redundant module for mounting
onto 35 mm top-hat mounting rail
according to DIN EN 60 715

Example for application:



20 80 000 3130





Industrial DC/DC converter
 Serial Ha-VIS pCon 7000
 for centralised power supply
 with degree of protection IP 20 / IP 65

General Description	Features
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These primary switched DC/DC converters of the product family Ha-VIS pCon 7000 are designed for the decentralised supply of control units, Ethernet components or automation devices in industrial areas and harsh environments.

With their wide range of input voltage, the units are suitable for world-wide use.

The converters need no ground load and are short-circuit protected by primary and secondary power limitation.

The converters are maintenance free, vacuum potted and prepared for the use in devices with Protection Class I or II, depending on the type of the converter.

- Wide input range for world-wide use
- Easy installation
- Galvanically separated
- Short circuit protected
- Ambient Temperature up to 70 °C
- High degree of protection IP 65 / IP 67

Advantages	Application fields
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- Robust housing
- Wide operating temperature range
- Mechanical stability for highest demands
- Can be used directly in industrial and railway environments
- Compact design and high power density
- Proofed against short-circuits, overloads and no-load operation
- International approvals

- Industrial automation
- Automotive industry
- Railway applications
- Power generation and distribution



DC/DC converter
 Ha-VIS pCon 7150-110/48
 for centralised power supply
 with degree of protection IP 65

Han® 3 A / M12 A-coding		IP 65	110 V DC	48 V DC
Input		Output		
Input voltage	50.4 ... 154 V DC (wide range input)	Output voltage	48 V DC	-1 % / +2 %
Inrush current	$< 7 \times I_{in\ nom}$	Ripple	$\leq 1\ %\ p-p$	
Switching frequency	approx. 70 kHz	Noise	$\leq 2\ %\ p-p$	
Efficiency	$\geq 88\ %$	Starting time	$\leq 200\ ms$	
Input filter	two-step filter	No load characteristics	no ground load	
Reverse polarity protection	by means of connector with coding	Current limiting	105 ... 130 % stabilised current	
Termination	Han® 3 A	Termination	M12 A-coding	
Protection class	I			
General data				
Operating temperature	-40 °C ... +70 °C / -40 °C ... +85 °C for $t \leq 10\ min.$ according to EN 50 155			
Cooling	free convection			
Weight	approx. 1800 g			
Relative humidity	30 % ... 95 % (non-condensing)			
Dimensions	192 x 115 x 68 mm			
MTBF	$> 950\ 000\ hours$ (according to SN 29 500, $T_A = +50\ ^\circ C$)			

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS pCon 7150-110/48 DC/DC converter	20 80 300 3026		



DC/DC converter
 Ha-VIS pCon 7150-24/48
 for centralised power supply
 with degree of protection IP 65

Han® 3 A / M12 A-coding	IP 65	24 V DC	48 V DC
Input		Output	
Input voltage	16.8 ... 33.6 V DC (wide range input)	Output voltage	48 V DC -1 % / +2 %
Inrush current	< 7 x I _{in nom}	Ripple	≤ 1 % p-p
Switching frequency	approx. 70 kHz	Noise	≤ 2 % p-p
Efficiency	> 90 %	Starting time	≤ 200 ms
Input filter	two-step filter	No load characteristics	no ground load
Reverse polarity protection	by means of connector with coding	Current limiting	105 ... 130 % stabilised current
Termination	Han® 3 A	Termination	M12 A-coding
Protection class	I		
General data			
Operating temperature	-40 °C ... +70 °C / -40 °C ... +85 °C for t ≤ 10 min. according to EN 50 155		
Cooling	free convection		
Weight	approx. 1800 g		
Relative humidity	30 % ... 95 % (non-condensing)		
Dimensions	192 x 115 x 68 mm		
MTBF	> 950 000 hours (according to SN 29 500, T _A = +50 °C)		

Identification	Part number	Drawing	Dimensions in mm
Ha-VIS pCon 7150-24/48 DC/DC converter	20 80 300 3027		



DC/DC converter
Ha-VIS pCon 7060-110/24
for centralised power supply
with degree of protection IP 20

2x spring-type terminals	IP 20	110 V DC	24 V DC
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Input		Output	
Input voltage	43.2 ... 154 V DC (wide range input)	Output voltage	24 V DC ±2 %
Switching frequency	approx. 70 kHz	Ripple	≤ 1.5 % p-p
Efficiency	≥ 85 %	Noise	≤ 2 % p-p
Input filter	LC filter	Starting time	≤ 200 ms
Transient protection	1.8 kV / 5/50 µs	No load characteristics	no ground load
Reverse polarity protection	cross diode (together with external fuse)	Current limiting	105 ... 130 % stabilised current
Termination	Spring clamps	Termination	Spring clamps
Protection class	II (no earth connection necessary)		
General data			
Operating temperature	-40 °C ... +70 °C / -40 °C ... +85 °C for t ≤ 10 min. according to EN 50 155		
Cooling	mounting on heat sink with R _{th} < 2.5 K/W, thermal coupling with Al base plate		
Weight	approx. 400 g		
Relative humidity	30 % ... 95 % (non-condensing)		
Dimensions	69 x 130 x 30 mm		
MTBF	> 1 400 000 hours (according to SN 29 500, T _A = +50 °C)		

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS pCon 7060-110/24 DC/DC converter	20 80 300 3025	<p>Technical drawing showing top and side views of the Ha-VIS pCon 7060-110/24 DC/DC converter. The top view shows a rectangular component with a width of 69 mm and a height of 130 mm. The mounting holes are spaced 3.4 mm apart. The side view shows a thickness of 30 mm. The drawing also indicates a length of 112 mm and a total length of 122±0.2 mm. The terminal block is labeled with pins 1 through 12.</p>	<p>Side view technical drawing of the Ha-VIS pCon 7060-110/24 DC/DC converter, showing a total length of 122±0.2 mm and a thickness of 30 mm.</p>
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Accessories
Ha-VIS SFP modules

General description	Features
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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.

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

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



Accessories Ha-VIS SFP modules

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

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			



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



Ha-VIS 19" DIN-Rail Mounting kit

The 19" mounting kit has been designed to install DIN-Rail mounted systems in a standard 19" rack.

The mounting kit is modular and very flexible. The DIN-Rail position can be changed in a very easy way. It can be installed in a horizontal or in a vertical position.

Each mounting kit has a cable management at the backside.

Features:

- 19 inch / 3 U
- Flexible installation
- Variable mounting
- Integrated mounting rail
- Robust design

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS 19" DIN-Rail Mounting kit

20 80 000 0007

