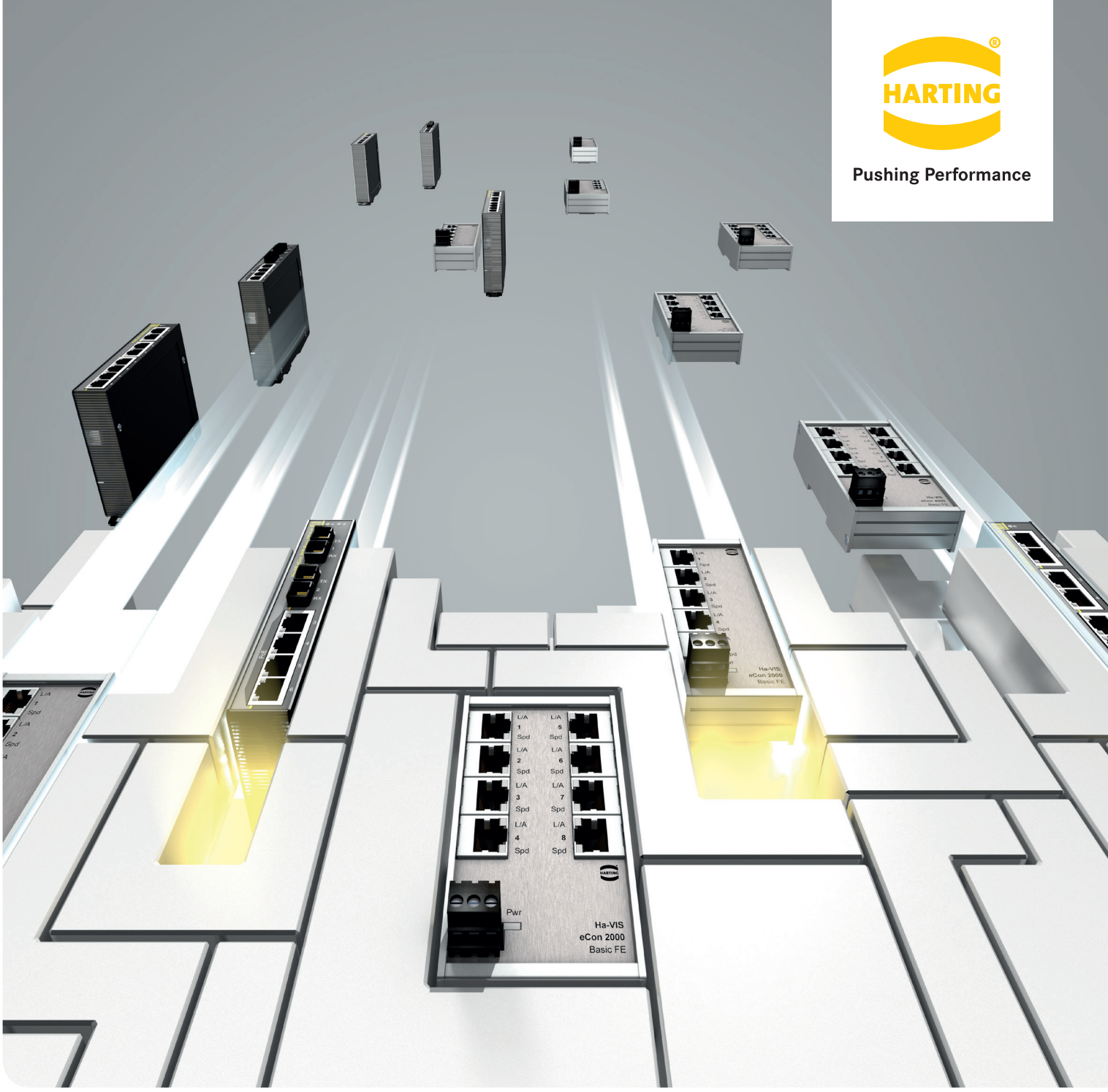


Pushing Performance

HARTING Ha-VIS eCon Ethernet Switches

Versatile. Compact. Efficient.

People | Power | Partnership

Our switches fit in everywhere.
Especially when it comes to your challenges.

Networks in modern production facilities are becoming increasingly complex. The unmanaged switches from the Ha-VIS eCon series now offer you more than 200 new models with RJ45 and fiber optic cable ports to enable the efficient setup and expansion of your Ethernet networks. The Ha-VIS eCon 2000 and 3000 families allow you to react optimally to every spatial and application situation.

Slim design, broad range of possible applications: the Ha-VIS eCon 3000 family
Unmanaged Ethernet switches from the Ha-VIS eCon 3000 family feature up to 16 Fast Ethernet ports and offer economical and fast options to expand or set up network infrastructures. Full Gigabit Switches are available with up to 7 ports for applications with high data throughput. The slim design of the switches also allows them to be positioned on the carrier rail with a very high packing density. Thanks to the DIN rail that is integrated in the housing, the switches' can be swiftly and simply installed in the field, which consequently helps save money and time.

Flat design, highest satisfaction: the Ha-VIS eCon 2000 family
The unmanaged Ethernet switches from the Ha-VIS eCon 2000 family offer up to 16 Fast Ethernet ports and are also available in a 7-port Full Gigabit version. This allows customers to expand or setup network infrastructures in a time-saving, economical way. Owing to the extremely flat design, the switches can also be accommodated in installations where space is restricted towards the cable connection at the front. RJ45 and FOC ports are located on the front of the switches, allowing cables to be connected quickly and simply In combination with the flat design, this is genuinely unique.

Unique variety.
Convincing advantages.

The unmanaged switches from the Ha-VIS eCon series offer a broad range of models and a multitude of advantages. The seven most important key features are:

Slim design

The Ha-VIS eCon 3000 family switches are just 25 mm wide. Thanks to this compact design, they can be installed with a very high packing density in the control cabinet.

Flat design

With a depth of 27 mm, the switches from the Ha-VIS eCon 2000 family are ideal for control cabinets with a low installation depth – while offering uncompromising performance.

Industrial temperature range –40 to +70 °C

All models in the Ha-VIS eCon families are available with an extended temperature range from -40 to +70 °C for industrial applications. As a more economical alternative, C-temp versions are available for the range from 0 °C to +55 °C.

Full Gigabit Ethernet

Data volumes in industry are constantly on the rise. A data transfer rate of 1000 Mbit/s simultaneously on all ports and full support from jumbo frames ensure future-proof positioning for applications with high data throughput.

PoE+

Power over Ethernet allows power to be supplied to end devices directly via the Ethernet data cable. The PoE+ standard of our switches (IEEE 802.3at) provides up to 4 x 34.2 watts for end devices.

PoE+ with internal 24V DC/DC voltage converter

Our switches with integrated DC/DC converter allow the use of PoE+ with a switch supply voltage of 24 V DC. This saves time and cost expenditures for cabling and also eliminates an additional power supply.

Energy-Efficient Ethernet

With intelligent regulation of the current consumption when there is standby mode or low data activity and reduced heat development, Ha-VIS eCon switches reduce energy consumption by up to 50 %.

Flexible energy transmission.
Matched by low consumption.

Power over Ethernet (PoE) is a standard for the parallel transfer of energy and data using twisted pair cables. With the PoE+ standard, our switches offer more power for optional end devices. The portfolio includes switches with a 54 V supply voltage and models with integrated voltage converter. These allow the use of standard 24 V power supplies. The Ha-VIS PoE switches consequently reduce the cabling effort, while saving time and money.

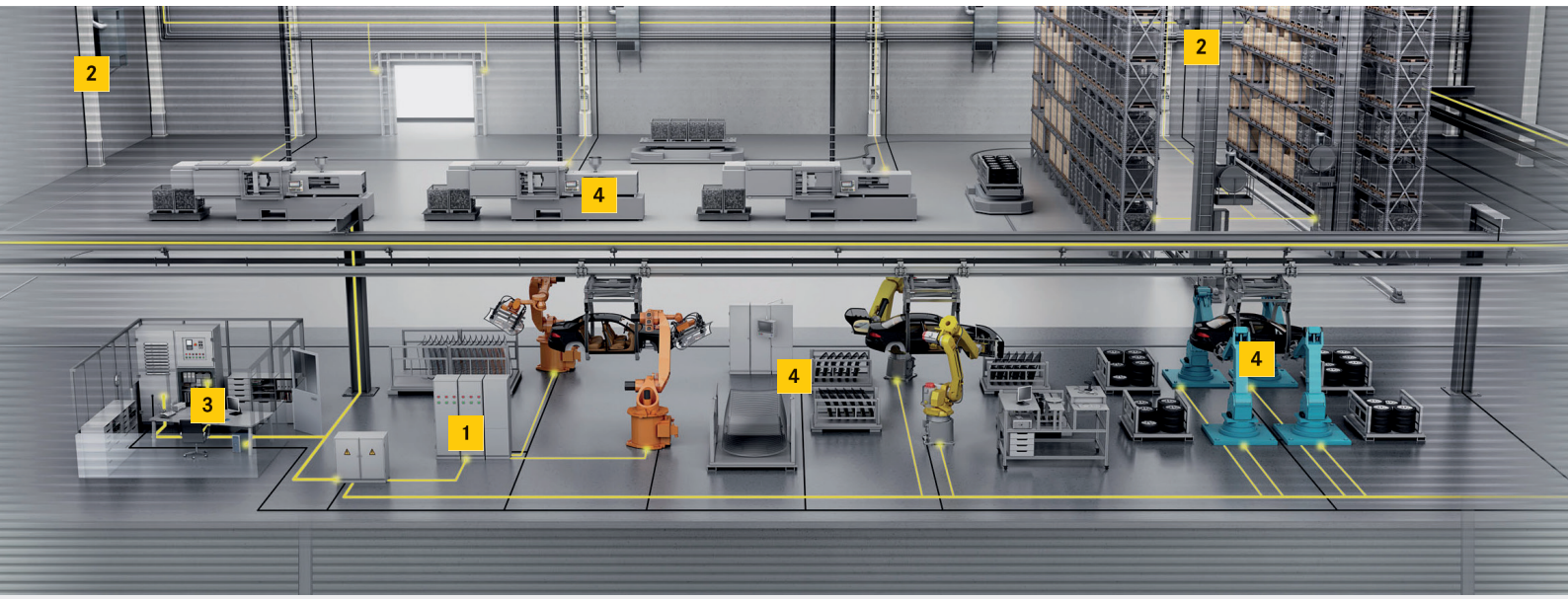
Greater performance with PoE+
Switches according to PoE Standard IEEE 802.3af provide power of up to 15.4 W for a end device. With the available PoE+ standard (IEEE 802.3at), we were able to increase this to 34.2 W and considerably increase the variety of possible applications as a result. The Ha-VIS eCon models allow up to 4 Ethernet switch ports to be used simultaneously for the energy supply. Important: All devices are developed according to current PoE+ standard and are 100% backwards compatible.

Greater flexibility with DC/DC converter
Switches with an integrated DC/DC converter allow the use of 24 V DC standard energy sources. Consequently, it is possible to eliminate a separate energy source for the end devices, as well as reducing complex cabling - saving time and expenditures.

The performance data
- Data and energy transmission over the same twisted pair cables
- Up to 34.2 W output according to IEEE 802.3at Standard (PoE+) per port. A total of approx. 136 watts.
- Suitable for a variety of end devices, such as cameras, IP telephones, RFID readers or WLAN access points.
- Up to 4 switch ports can be used simultaneously for the power and data supply.
- Thanks to the internal DC/DC converter, external voltage sources with 24 V direct voltage can be connected for the supply.

Your advantages in brief
- The cabling requires less time, costs and space.
- You gain greater flexibility for connecting end devices and expanding your network.
- You can eliminate additional components such as power supplies.
- Energy efficient design without fans.

As diverse as our portfolio:
Your application areas.



Ha-VIS eCon switches can ensure an efficient exchange of energy and data in countless applications: From wind and solar energy systems to buses and ships and all the way through to industrial automation. The automation area in particular offers a multitude of possible uses that take advantage of the full potential that these devices offer.

1 Smart control and regulation networks
Efficient production demands effective communication between people and machines, and also within the production area. Ha-VIS eCon switches are ideal for networking controllers, remote I/O and human-machine interfaces up to the industrial PCs.

2 Video surveillance of buildings and machines
Visual surveillance of complex production facilities is very important. By connecting cameras via the PoE function in the Ha-VIS eCon switches, you can combine data acquisition and energy supply and consequently save time during the installation. In addition, the elimination of static cabling offers greater flexibility if the production area is reconfigured or expanded.

3 Flexible communication infrastructure
Setting up a supplementary communication infrastructure within the production facilities is swift, cost efficient and flexible with the help of the Ha-VIS eCon switches. From IP telephones to small servers and all the way to WLAN or Bluetooth access points, countless end devices can be used and networked.

4 Vision applications
Visual systems are increasingly stronger integrated into industrial manufacturing processes as monitoring and controlling with camera systems enables flexible processes and higher product quality. Machine vision is an inherent part of Germany's Industry 4.0 high-tech strategy.

Impressing with a persuasive depth and width: Our product portfolio.

Slim

Ha-VIS eCon 3000
Basic Family

Ha-VIS eCon 3000 Fast Ethernet and Full Gigabit Ethernet Basic

Flat

Ha-VIS eCon 2000
Basic Family

Ha-VIS eCon 2000 Fast Ethernet and Full Gigabit Ethernet Basic

3000

Ha-VIS eCon 3000 Fast Ethernet Basic

C-Temp. (0 to +55 °C)	Standard
	PoE+
	PoE+ 24 V DC/DC Converter
I-Temp. (-40 to +70 °C)	Standard
	PoE+
	PoE+ 24 V DC/DC Converter

Ha-VIS eCon 3000 Full Gigabit Ethernet Basic

C-Temp. (0 to +55 °C)	Standard
	PoE+
	PoE+ 24 V DC/DC Converter
I-Temp. (-40 to +70 °C)	Standard
	PoE+
	PoE+ 24 V DC/DC Converter

2000

Ha-VIS eCon 2000 Fast Ethernet Basic

C-Temp. (0 to +55 °C)	Standard
	PoE+
I-Temp. (-40 to +70 °C)	Standard
	PoE+

Ha-VIS eCon 2000 Full Gigabit Ethernet Basic

C-Temp. (0 to +55 °C)	Standard
	PoE+
I-Temp. (-40 to +70 °C)	Standard
	PoE+

Ha-VIS eCon 2000
Fast Ethernet Basic

3 to 16 Ethernet ports RJ45 and SC
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C

Flat | +70 -40 | Energy Efficient Ethernet

- Fast Ethernet Non-Blocking Switch architecture according to IEEE 802.3
- Variants with industrial temperature range of -40°C ... +70 °C
- Wide range voltage supply 24/48 VDC
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet

Target markets

Machinery & Robotics	Automation technology	Industrial Network Infrastructure
Windenergy, Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 2000 Fast Ethernet family of unmanaged Ethernet switches is equipped with up to 16 Fast Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures. Due to the extremely flat design, these switches can be accommodated in installations where space is restricted towards the cable connection at the front.

The selection includes various combinations of variants with RJ45 and fibre optic ports. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (autopolarity and auto-MDI(X)) allow for simple plug & play. All variants are available with the temperature ranges „Industrial“ and „Commercial“.

Technical characteristics

Switch Features

Enclosure width	**46.5 mm**	**60 mm**	**120 mm**	**120 mm**
Number of ports	3, 4, 5	8	7, 8	16
Switching technology	Store and Forward			
Supported standards	IEEE 802.3			
Frame Size	1552 bytes			2 kbytes
MAC table size	1k entries			8 k entries
Packet buffer size	448 kbit			2 Mbit
Non-blocking	Yes			
Quality of service	Yes			
Energy-Efficient Ethernet	Yes			
PROFINET compatible	Yes			
EthernetIP compatible	Yes			

Current supply

Nominal voltage	24 VDC ⎓	48 VDC ⎓
Permissible voltage range	9 VDC ... 60 VDC ⎓	
Surge protection	Yes	
Reverse polarity proof	Yes	
Starting current	2.80 A	5.60 A
Overcurrent protection at input	Yes (2/4 A)	
Max. power consumption @ 24 VDC	0.77 W ... 3.1 W	
Cross-section / Wire gauge	0.08 mm^2 ... 2.5 mm^2 (28 AWG ... 12 AWG)	
Connection type	3-pole, pluggable screwed contact	
Pinout	+ / - / ⏚	
Supply circuit (according to 60950)	SELV (circuit breaker 10 A)	

Ethernet Ports 10BASE-Te / 100BASE-TX EEE

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 100BASE-FX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	1310 nm	
Transfer speed	100 Mbit/s	
Transfer length	2 km	15 km
Output power	-19 dBm ... -14 dBm	-15 dBm ... -8 dBm
Input sensitivity	≤ -32 dBm	≤ -34 dBm

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure	2000 m (795 hPa)

Enclosures

Enclosures width	46.5 mm	60 mm	120 mm
Dimensions H x W x D (without pluggable screw contact)	113.5 mm x 46.5 mm x 27.3 mm	113.5 mm x 60 mm x 27.3 mm	113.5 mm x 120 mm x 27.3 mm
Weight	162 g ... 170 g	217 g	372 g ... 390 g
Type of installation	35 mm DIN rail acc. to EN 60 715		
Material enclosures	Anodised aluminium		
Protection degree (with plugged screw contact)	IP30		
Protection class	III		

Status and diagnostic displays

Power („Pwr“) ⏻ lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, DNV GL, LR, NK, ABB IIT
ECE - Approval mark (E1): see table technical characteristics

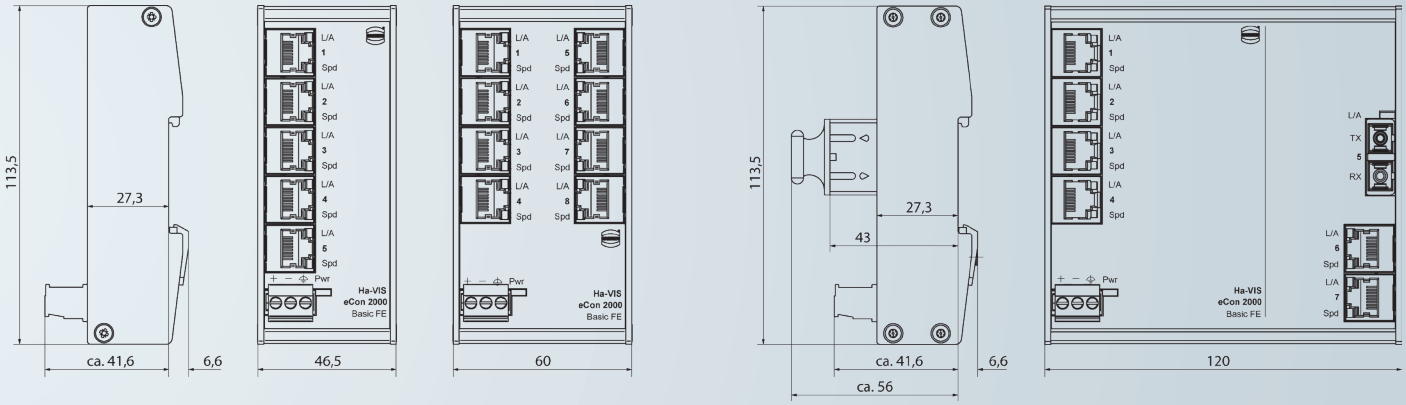
EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery
- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

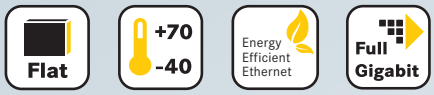
Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption @ 24 VDC	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
3	-	-	46.5 mm	32 mA	3.13	Ha-VIS eCon 2030B-A	24 02 003 0010[1]	Ha-VIS eCon 2030BT-A	24 02 003 0000[1]
4	-	-	46.5 mm	37 mA	2.99	Ha-VIS eCon 2040B-A	24 02 004 0010[1]	Ha-VIS eCon 2040BT-A	24 02 004 0000[1]
5	-	-	46.5 mm	42 mA	2.86	Ha-VIS eCon 2050B-A	24 02 005 0010[1]	Ha-VIS eCon 2050BT-A	24 02 005 0000[1]
6	-	1x MM (2 km)	120 mm	94 mA	1.24	Ha-VIS eCon 2061B-AD	24 02 006 1110	Ha-VIS eCon 2061BT-AD	24 02 006 1100
6	-	1x SM (15 km)	120 mm	81 mA	1.26	Ha-VIS eCon 2061B-AF	24 02 006 1210	Ha-VIS eCon 2061BT-AF	24 02 006 1200
6	-	2x MM (2 km)	120 mm	129 mA	1.20	Ha-VIS eCon 2062B-AD	24 02 006 2110	Ha-VIS eCon 2062BT-AD	24 02 006 2100
6	-	2x SM (15 km)	120 mm	113 mA	1.23	Ha-VIS eCon 2062B-AF	24 02 006 2210	Ha-VIS eCon 2062BT-AF	24 02 006 2200
8	-	-	60 mm	58 mA	2.53	Ha-VIS eCon 2080B-A	24 02 008 0010[1]	Ha-VIS eCon 2080BT-A	24 02 008 0000[1]
16	-	-	120 mm	93 mA	1.75	Ha-VIS eCon 2160B-A	24 02 016 0010	Ha-VIS eCon 2160BT-A	24 02 016 0000

[1] E1 Approval

Ha-VIS eCon 2000
Full Gigabit Ethernet Basic

5 to 16 Ethernet ports RJ45 and SC
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C



- Full gigabit Ethernet, non-blocking switch architecture according to IEEE 802.3
- Support of jumbo frames
- Variants with industrial temperature range of -40°C ... +70 °C
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 2000 Full Gigabit family of unmanaged Ethernet switches is equipped with up to 16 gigabit Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures with high bandwidth requirements. In this, all switches support extra-long Ethernet frames (jumbo frames). Owing to the extremely flat design, these switches can be accommodated in installations where space is restricted towards the cable connection at the front. The selection includes various combinations of variants with RJ45 and fibre optic ports. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (auto-polarity and auto-MDI(X)) allow for simple plug and play. All variants are available with the temperature ranges "Industrial" and "Commercial".

Technical characteristics

Switch Features

Enclosures width	**60 mm**	**120 mm**	**120 mm**
Number of ports	5	7	16
Switching technology	Store and Forward		
Supported standards	IEEE 802.3		
Frame Size	10 kbytes	10 kbytes	8 kBytes
MAC table size	8 k entries		
Packet buffer size	1 Mbit	1 Mbit	512 kbytes
Non-blocking	Yes		
Quality of service	Yes		
Energy-Efficient Ethernet	Yes		
PROFINET compatible	Yes		
EthernetIP compatible	Yes		

Voltage supply

Nominal voltage	24 VDC ⎓	48 VDC ⎓
Permissible voltage range	9 VDC ... 60 VDC ⎓	
Surge protection	Yes	
Reverse polarity proof	Yes	
Starting current	1.60 A	3.20 A
Overcurrent protection at input	Yes (2/4 A)	
Max. power consumption @ 24 VDC	3.22 W ... 9.17 W	
Cross-section / Wire gauge	0.08 mm² ... 2.5 mm² (28 AWG ... 12 AWG)	
Connection type	3-pole, pluggable screwed contact	
Pinout	+ / - / ⏚	
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)	

Ethernet Ports 10BASE-Te / 100BASE-TX EEE / 1000BASE-TX EEE

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 / 1000 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 1000BASE-SX / 1000BASE-LX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	850 nm	1310 nm
Transfer speed	1000 Mbit/s	
Transfer length	0.55 km	10 km
Output power	-9.5 dBm ... -4 dBm	-9.5 dBm ... -3 dBm
Input sensitivity	≤ -17 dBm	≤ -21 dBm

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure	2000 m (795 hPa)

Enclosures

Enclosures width	60 mm	120 mm
Dimensions W x H x D (without pluggable screw contact)	113.5 mm x 60 mm x 27.3 mm	113.5 mm x 120 mm x 27.3 mm
Weight	205 g	378 g ... 455 g
Type of installation	35 mm DIN rail acc. to EN 60 715	
Material enclosures	Anodised aluminium	
Protection degree (with plugged screw contact)	IP30	
Protection class	III	

Status and diagnostic displays

Power („Pwr“) ⏻ lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s
Link speed („Spd“) lights up green	1000 Mbit/s

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, DNV GL, LR, NK, ABB IIT

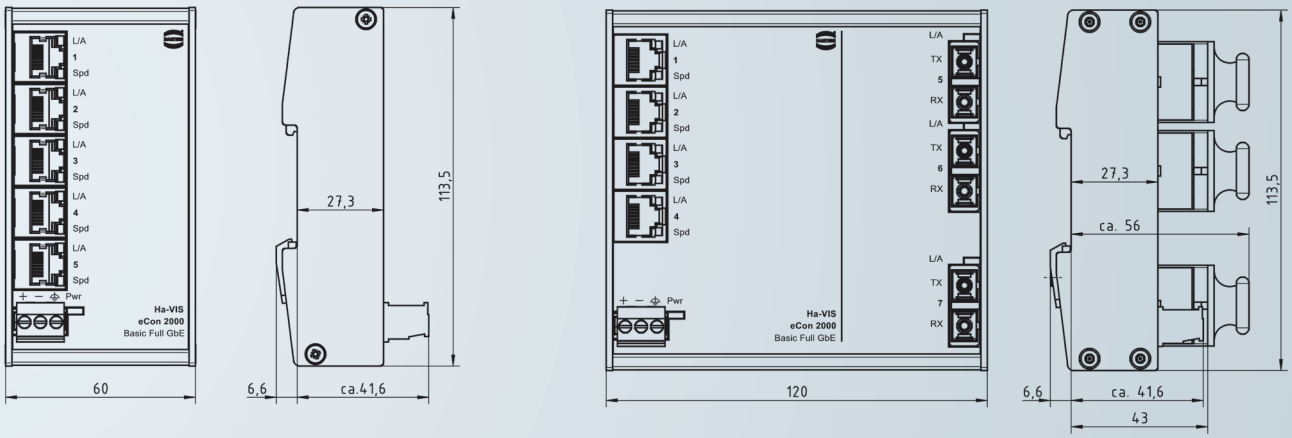
EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery
- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

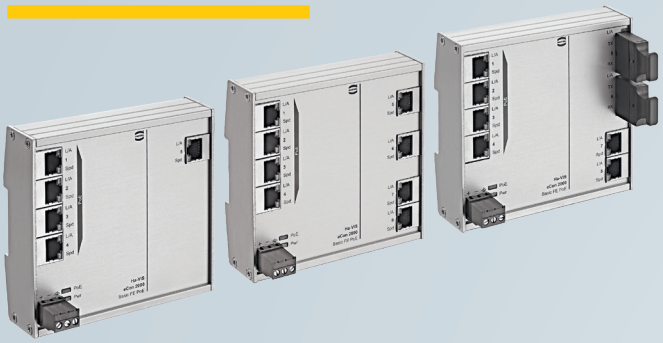
Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption @ 24 VDC	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
4	-	3x MM (0.55 km)	120 mm	185 mA	1.69	Ha-VIS eCon 2043GB-AD	24 02 404 3110	Ha-VIS eCon 2043GBT-AD	24 02 404 3100
4	-	3x SM (10 km)	120 mm	199 mA	1.69	Ha-VIS eCon 2043GB-AF	24 02 404 3210	Ha-VIS eCon 2043GBT-AF	24 02 404 3200
5	-	-	60 mm	134 mA	3.06	Ha-VIS eCon 2050GB-A	24 02 405 0010	Ha-VIS eCon 2050GBT-A	24 02 405 0000
5	-	2x MM (2 km)	120 mm	184 mA	1.69	Ha-VIS eCon 2052GB-AD	24 02 405 2110	Ha-VIS eCon 2052GBT-AD	24 02 405 2100
5	-	2x SM (15 km)	120 mm	194 mA	1.69	Ha-VIS eCon 2052GB-AF	24 02 405 2210	Ha-VIS eCon 2052GBT-AF	24 02 405 2200
6	-	1x MM (2 km)	120 mm	183 mA	1.69	Ha-VIS eCon 2061GB-AD	24 02 406 1110	Ha-VIS eCon 2061GBT-AD	24 02 406 1100
6	-	1x SM (15 km)	120 mm	190 mA	1.69	Ha-VIS eCon 2061GB-AF	24 02 406 1210	Ha-VIS eCon 2161GBT-AF	24 02 406 1200
7	-	-	120 mm	182 mA	1.70	Ha-VIS eCon 2070GB-A	24 02 407 0010	Ha-VIS eCon 2070GBT-A	24 02 407 0000
16*	-	-	120 mm	382 mA	1.36	Ha-VIS eCon 2160GB-A	24 02 416 0010	Ha-VIS eCon 2160GBT-A	24 02 416 0000

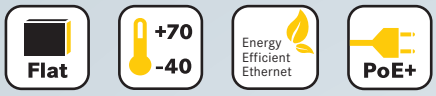
* Maritime Approvals on request

Note: Regarding technical changes to the products and to the content - see page 9.

Ha-VIS eCon 2000
Fast Ethernet Basic
PoE / PoE+



5 to 8 Ethernet ports RJ45, SC and PoE / PoE+
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C



- Energy supply of up to 4 terminal devices via PoE+ (137 watts) according to IEEE 802.3at
- Fast Ethernet Non-Blocking Switch architecture according to IEEE 802.3
- Variants with industrial temperature range of -40°C ... +70 °C
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 2000 Fast Ethernet PoE family of unmanaged Ethernet switches is equipped with up to 8 Fast Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures. The switches work as power sourcing equipment (PSE) and are capable of simultaneously providing the full PoE output of 34.2 watts on up to four ports. Owing to the extremely flat design, these switches can be accommodated in installations where space is restricted towards the cable connection at the front. The selection includes various combinations of variants with RJ45 and fibre optic ports. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (autopolarity and auto-MDI(X)) allow for simple plug & play. All variants are available with the temperature ranges "Industrial" and "Commercial".

Technical characteristics

Switch Features

Enclosures width	**120 mm**
Number of ports	5, 7, 8
Switching technology	Store and Forward
Supported standards	IEEE 802.3
Frame Size	1552 bytes
MAC table size	1k entries
Packet buffer size	448 kbit
Non-blocking	Yes
Quality of service	Yes
Energy-Efficient Ethernet	Yes
PROFINET compatible	Yes
EthernetIP compatible	Yes

Voltage supply

Nominal voltage	48 VDC ⎓	54 VDC ⎓
Permissible voltage range	44 VDC ... 57 VDC ⎓	50 VDC ... 57 VDC ⎓
Surge protection	Yes	
Reverse polarity proof	Yes	
Starting current	6.40 A	7.20 A
Overcurrent protection at input	Yes (4 A)	
Max. power consumption without PoE	1.2 W ... 3.36 W	
Cross-section / Wire gauge	0.08 mm² ... 2.5 mm² (28 AWG ... 12 AWG)	
Connection type	3-pole, pluggable screwed contact	
Pinout	+ / - / ⏚	
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)	

Ethernet Ports 10BASE-Te / 100BASE-TX EEE

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 100BASE-FX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	1310 nm	
Transfer speed	100 Mbit/s	
Transfer length	2 km	15 km
Output power	-19 dBm ... -14 dBm	-15 dBm ... -8 dBm
Input sensitivity	≤ -32 dBm	≤ -34 dBm

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure (operation)	2000 m (795 hPa)

PoE	PoE	PoE+
Number of PoE ports	4	
Standard	IEEE 802.3af / IEEE 802.3at	
PoE type	PSE	
Supported mode	Alternative A	
Supply voltage PSE	48 VDC ⎓	54 VDC ⎓
Max. current consumption PSE	1380 mA	2380 mA
Max. current	375 mA	638 mA
Maximum output power PSE	15.4 W per port 61.6 W total	34.2 W per port 136.8 W total
Supported cabling	See 802.3at, section 33.1.4	
PoE pinout	Alternative A, MDI-X (1/2 = V-, 3/6 = V+)	

Status and diagnostic displays

Power („Pwr“) ⏻ lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s
PoE status off	PoE is inactive / low voltage
PoE status lights up green	Voltage in PoE range
PoE status lights up blue	Voltage in PoE+ range
PoE-Status lights up red	Error

Enclosures

Enclosures width	**120 mm**
Dimensions H x W x D (without pluggable screw contact and holding bracket)	113.5 mm x 120 mm x 27.3 mm
Weight	364 g ... 420 g
Type of installation	35 mm DIN rail acc. to EN 60 715
Material enclosures	Anodised aluminium
Protection degree (with plugged screw contact)	IP30
Protection class	III

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, DNV GL, LR, NK, ABB IIT
ECE - Approval mark (E1): see table technical characteristics

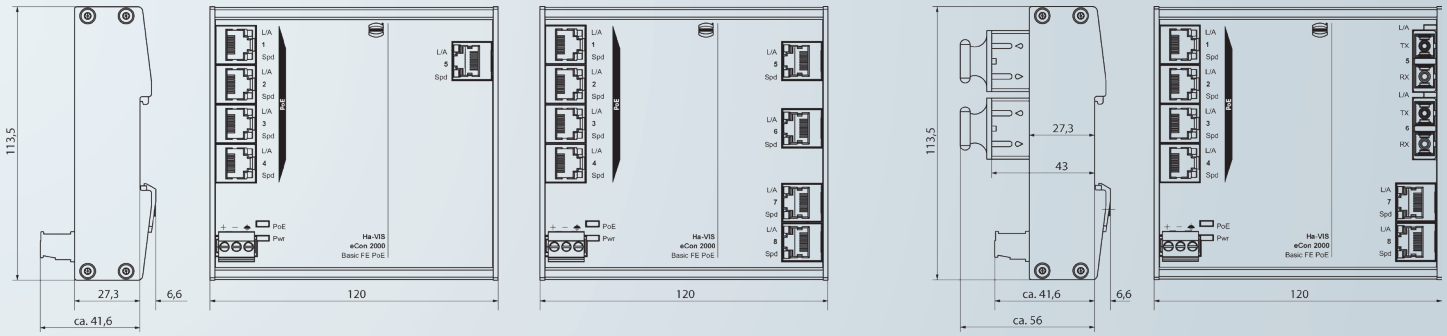
EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery
- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption@ 54 VDC with PoE	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
5	-	-	120 mm	2.39 A	0.84	Ha-VIS eCon 2050B-A-P	24 02 005 0030[1]	Ha-VIS eCon 2050BT-A-P	24 02 005 0020[1]
6	-	1x MM (2 km)	120 mm	2.42 A	0.78	Ha-VIS eCon 2061B-AD-P	24 02 006 1130	Ha-VIS eCon 2061BT-AD-P	24 02 006 1120
6	-	1x SM (15 km)	120 mm	2.41 A	0.79	Ha-VIS eCon 2061B-AF-P	24 02 006 1230	Ha-VIS eCon 2061BT-AF-P	24 02 006 1220
6	-	2x MM (2 km)	120 mm	2.43 A	0.76	Ha-VIS eCon 2062B-AD-P	24 02 006 2130	Ha-VIS eCon 2062BT-AD-P	24 02 006 2120
6	-	2x SM (15 km)	120 mm	2.42 A	0.78	Ha-VIS eCon 2062B-AF-P	24 02 006 2230	Ha-VIS eCon 2062BT-AF-P	24 02 006 2220
8	-	-	120 mm	2.39 A	0.73	Ha-VIS eCon 2080B-A-P	24 02 008 0030[1]	Ha-VIS eCon 2080BT-A-P	24 02 008 0020[1]

[1] E1 Approval

Note: Regarding technical changes to the products and to the content - see page 9.

Ha-VIS eCon 2000
Full Gigabit Ethernet Basic PoE / PoE+

5 to 7 Ethernet ports RJ45, SC and PoE / PoE+
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C

- Energy supply of up to 4 terminal devices via PoE+ (137 watts) acc. to IEEE 802.3at
- Full gigabit Ethernet, non-blocking switch architecture acc. to IEEE 802.3
- Support of jumbo frames
- Variants with industrial temperature range of -40°C ... 70 °C
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 2000 Full Gigabit family of unmanaged Ethernet switches is equipped with up to 7 gigabit Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures with high bandwidth requirements. In this, all switches support extra-long Ethernet frames (jumbo frames). The switches work as power sourcing equipment (PSE) and are capable of simultaneously providing the full PoE output of 34.2 watts on up to four ports. Owing to the extremely flat design, these switches can be accommodated in installations where space is restricted towards the cable connection at the front. The selection includes various combinations of variants with RJ45 and fibre optic ports. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (auto-polarity and auto-MDI(X)) allow for simple plug and play. All variants are available with the temperature ranges „Industrial“ and „Commercial“.

Technical characteristics

Switch Features

Enclosures width	**120 mm**
Number of interfaces	5, 7
Switching technology	Store and Forward
Supported standards	IEEE 802.3
Frame Size	10 kbytes
MAC table size	8k entries
Packet buffer size	1 Mbit
Non-blocking	Yes
Quality of service	Yes
Energy-Efficient Ethernet	Yes
PROFINET compatible	Yes
EthernetIP compatible	Yes

Voltage supply

Nominal voltage	48 VDC ⎓	54 VDC ⎓
Permissible voltage range	44 VDC ... 57 VDC ⎓	50 VDC ... 57 VDC ⎓
Surge protection	Yes	
Reverse polarity proof	Yes	
Starting current	6.40 A	7.20 A
Overcurrent protection at input	Yes (4 A)	
Max. power consumption without PoE	3.60 W ... 4.80 W	
Cross-section / Wire gauge	0.08 mm^2 ... 2.5 mm^2 (28 AWG ... 12 AWG)	
Connection type	3-pole, pluggable screwed contact	
Pinout	+ / - / ⏚	
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)	

Ethernet Ports 10BASE-T / 100BASE-TX EEE / 1000BASE-TX EEE

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 / 1000 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 1000BASE-SX / 1000BASE-LX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	850 nm	1310 nm
Transfer speed	1000 Mbit/s	
Transfer length	0.55 km	10 km
Output power	-9.5 dBm ... -4 dBm	-9.5 dBm ... -3 dBm
Input sensitivity	≤ -17 dBm	≤ -21 dBm

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure (operation)	2000 m (795 hPa)

PoE

	PoE	PoE+
Number of PoE ports	4	
Standard	IEEE 802.3af / IEEE 802.3at	
PoE type	PSE	
Supported mode	Alternative A	
Supply voltage PSE	48 VDC ⎓	54 VDC ⎓
Max. current consumption PSE	1380 mA	2380 mA
Max. current	375 mA	638 mA
Maximum output power PSE	15.4 W per port 61.6 W total	34.2 W per port 136.8 W total
Supported cabling	See 802.3at, section 33.1.4	
PoE pinout	Alternative A, MDI-X (1/2 = V-, 3/6 = V+)	

Status and diagnostic displays

Power („Pwr“) lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s
Link speed („Spd“) lights up green	1000 Mbit/s
PoE status off	PoE is inactive / low voltage
PoE status lights up green	Voltage in PoE range
PoE status lights up blue	Voltage in PoE+ range
PoE status lights up red	Error

Enclosures

Enclosures width	**120 mm**
Dimensions H x W x D (without pluggable screw contact and holding bracket)	113.5 mm x 120 mm x 27.3 mm
Weight	410 g ... 442 g
Type of installation	35 mm DIN rail acc. to EN 60 715
Material enclosures	Anodised aluminium
Protection degree (with plugged screw contact)	IP30
Protection class	III

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, DNV GL, LR, NK, ABB IIT

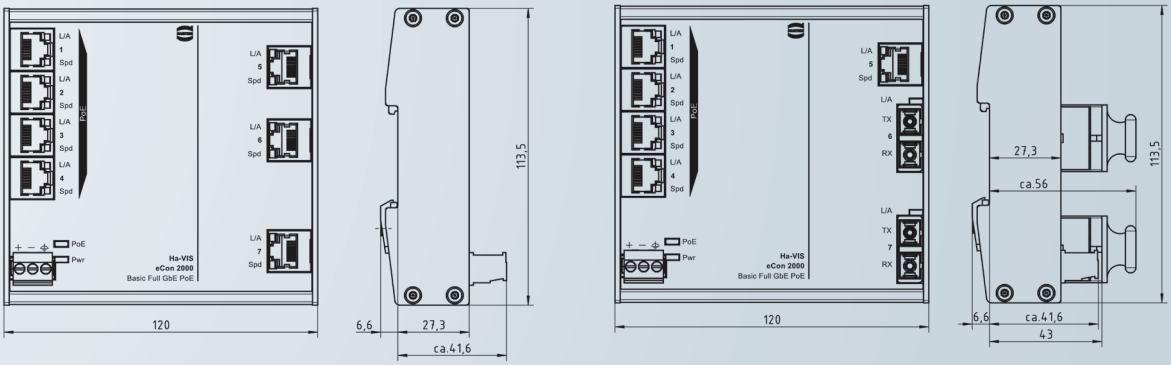
EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery
- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption @ 54 VDC with PoE	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
4	-	3x MM (0.55 km)	120 mm	2.45 A	0.98	Ha-VIS eCon 2043GB-AD-P	24 02 404 3130	Ha-VIS eCon 2043GBT-AD-P	24 02 404 3120
4	-	3x SM (10 km)	120 mm	2.45 A	0.98	Ha-VIS eCon 2043GB-AF-P	24 02 404 3230	Ha-VIS eCon 2043GBT-AF-P	24 02 404 3220
5	-	-	120 mm	2.43 A	1.01	Ha-VIS eCon 2050GB-A-P	24 02 405 0030	Ha-VIS eCon 2050GBT-A-P	24 02 405 0020
5	-	2x MM (0.55 km)	120 mm	2.45 A	0.98	Ha-VIS eCon 2052GB-AD-P	24 02 405 2130	Ha-VIS eCon 2052GBT-AD-P	24 02 405 2120
5	-	2x SM (10 km)	120 mm	2.45 A	0.98	Ha-VIS eCon 2052GB-AF-P	24 02 405 2230	Ha-VIS eCon 2052GBT-AF-P	24 02 405 2220
6	-	1x MM (0.55 km)	120 mm	2.45 A	0.98	Ha-VIS eCon 2061GB-AD-P	24 02 406 1130	Ha-VIS eCon 2061GBT-AD-P	24 02 406 1120
6	-	1x SM (10 km)	120 mm	2.45 A	0.98	Ha-VIS eCon 2061GB-AF-P	24 02 406 1230	Ha-VIS eCon 2061GBT-AF-P	24 02 406 1220
7	-	-	120 mm	2.45 A	0.98	Ha-VIS eCon 2070GB-A-P	24 02 407 0030	Ha-VIS eCon 2070GBT-A-P	24 02 407 0020

Note: Regarding technical changes to the products and to the content - see page 9.

Ha-VIS eCon 3000
Fast Ethernet Basic

3 to 16 Ethernet ports RJ45 and SC
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C

Slim | +70 -40 | Energy Efficient Ethernet

- Fast Ethernet Non-Blocking Switch architecture according to IEEE 802.3
- Variants with industrial temperature range of -40°C ... +70 °C
- Wide range voltage supply 24/48 VDC
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet
- Optimised DIN rail bracket

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 3000 Fast Ethernet family of unmanaged Ethernet switches is equipped with up to 16 Fast Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures. The slender design of the switches enables an extremely high packing density on the DIN rail. The selection includes various combinations of variants with RJ45 and fibre optic ports. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (autopolarity and auto-MDI(X)) allow for simple plug & play. All variants are available with the temperature ranges "Industrial" and "Commercial".

Technical characteristics

Switch Features

Enclosures width	**25 mm**	**38 mm**	**38 mm**
Number of ports	3, 5, 6, 7, 8	9, 10	16
Switching technology	Store and Forward		
Supported standards	IEEE 802.3		
Frame Size	1522 bytes	1632 bytes	2000 bytes
MAC table size	1k entries	2k entries	8k entries
Packet buffer size	448 kbit	1 Mbit	2 Mbit
Non-blocking	Yes		
Quality of service	Yes		
Energy-Efficient Ethernet	Yes		
PROFINET compatible	Yes		
EthernetIP compatible	Yes		

Voltage supply

Nominal voltage	24 VDC ⎓	48 VDC ⎓
Permissible voltage range	9 VDC ... 60 VDC ⎓	
Surge protection	Yes	
Reverse polarity proof	Yes	
Starting current	1.6 A	3.2 A
Overcurrent protection at input	Yes (12 A for <=8 ports)/ (2 A for >8 ports)	
Max. power consumption @ 24 VDC	1.80 W ... 6.72 W	
Cross-section / Wire gauge	0.08 mm² ... 2.5 mm² (28 AWG ... 12 AWG)	
Connection type	3-pole, pluggable screwed contact	
Pinout	+ / - / ⏚	
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)	

Ethernet Ports 10BASE-Te / 100BASE-TX EEE

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 100BASE-FX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	1310 nm	
Transfer speed	100 Mbit/s	
Transfer length	2 km	15 km
Output power	-20 dBm ... -14 dBm	-15 dBm ... -8 dBm
Input sensitivity	≤ -30 dBm	≤ -32 dBm

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure (operation)	2000 m (795 hPa)

Enclosures

Enclosures width	25 mm	38 mm
Dimensions H x W x D (without pluggable screw contact and holding bracket)	142 mm x 25 mm x 107.5 mm	142 mm x 38 mm x 107.5 mm
Weight	425 g ... 531 g	
Type of installation	35 mm DIN rail acc. to EN 60 715	
Material enclosures	Anodised aluminium / Powder-coated steel sheet	
Protection degree (with plugged screw contact)	IP30	
Protection class	III	

Status and diagnostic displays

Power („Pwr“) ⏻ lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s

Approvals

CE, FCC CFR 47 Part 15, cUL US 508 listed, DNV GL, LR, NK, ABB IIT
ECE - Approval mark (E1): see table technical characteristics

EMC and environmental conditions

EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

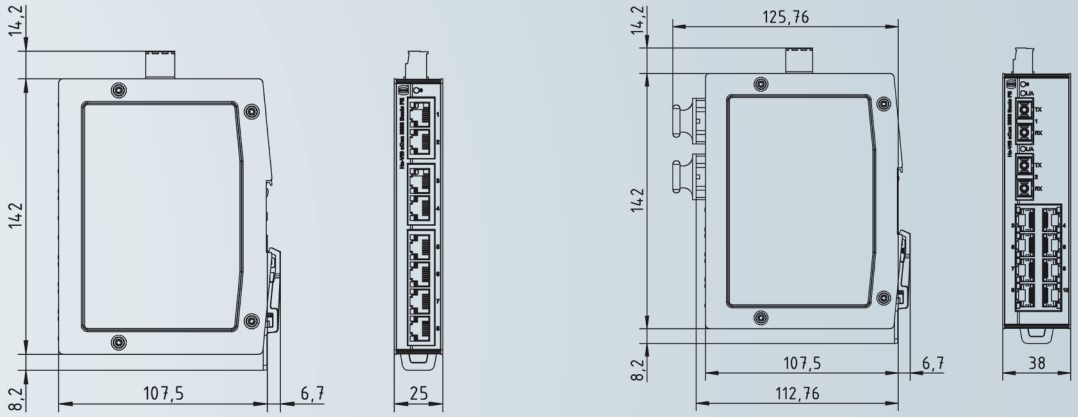
EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery

- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption @ 24 VDC	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
2	-	1x MM (2 km)	25 mm	97 mA	2.51	Ha-VIS eCon 3021B-AD	24 03 002 1110	Ha-VIS eCon 3021BT-AD	24 03 002 1100
2	-	1x SM (15 km)	25 mm	97 mA	2.51	Ha-VIS eCon 3021B-AF	24 03 002 1210	Ha-VIS eCon 3021BT-AF	24 03 002 1200
4	-	1x MM (2 km)	25 mm	111 mA	2.35	Ha-VIS eCon 3041B-AD	24 03 004 1110	Ha-VIS eCon 3041BT-AD	24 03 004 1100
4	-	1x SM (15 km)	25 mm	111 mA	2.35	Ha-VIS eCon 3041B-AF	24 03 004 1210	Ha-VIS eCon 3041BT-AF	24 03 004 1200
4	-	2x MM (2 km)	25 mm	142 mA	2.27	Ha-VIS eCon 3042B-AD	24 03 004 2110	Ha-VIS eCon 3042BT-AD	24 03 004 2100
4	-	2x SM (15 km)	25 mm	142 mA	2.27	Ha-VIS eCon 3042B-AF	24 03 004 2210	Ha-VIS eCon 3042BT-AF	24 03 004 2200
6	-	-	25 mm	75 mA	2.29	Ha-VIS eCon 3060B-A	24 03 006 0010[1]	Ha-VIS eCon 3060BT-A	24 03 006 0000[1]
6	-	1x MM (2 km)	25 mm	121 mA	2.21	Ha-VIS eCon 3061B-AD	24 03 006 1110	Ha-VIS eCon 3061BT-AD	24 03 006 1100
6	-	1x SM (15 km)	25 mm	121 mA	2.21	Ha-VIS eCon 3061B-AF	24 03 006 1210	Ha-VIS eCon 3061BT-AF	24 03 006 1200
8	-	-	25 mm	85 mA	2.16	Ha-VIS eCon 3080B-A	24 03 008 0010[1]	Ha-VIS eCon 3080BT-A	24 03 008 0000[1]
8	-	1x MM (2 km)	38 mm	227 mA	0.94	Ha-VIS eCon 3081B-AD	24 03 008 1110	Ha-VIS eCon 3081BT-AD	24 03 008 1100
8	-	1x SM (15 km)	38 mm	227 mA	0.94	Ha-VIS eCon 3081B-AF	24 03 008 1210	Ha-VIS eCon 3081BT-AF	24 03 008 1200
8	-	2x MM (2 km)	38 mm	273 mA	0.93	Ha-VIS eCon 3082B-AD	24 03 008 2110	Ha-VIS eCon 3082BT-AD	24 03 008 2100
8	-	2x SM (15 km)	38 mm	273 mA	0.93	Ha-VIS eCon 3082B-AF	24 03 008 2210	Ha-VIS eCon 3082BT-AF	24 03 008 2200
10	-	-	38 mm	220 mA	0.91	Ha-VIS eCon 3100B-A	24 03 010 0010	Ha-VIS eCon 3100BT-A	24 03 010 0000
16	-	-	38 mm	93 mA	1.75	Ha-VIS eCon 3160B-A	24 03 016 0010	Ha-VIS eCon 3160BT-A	24 03 016 0000

[1] E1 Approval

Note: Regarding technical changes to the products and to the content - see page 9.

Ha-VIS eCon 3000
Full Gigabit Ethernet Basic

2 to 16 Ethernet ports RJ45 and SC/LC (SFP)
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C

Slim | +70 -40 | Energy Efficient Ethernet | Full Gigabit

- Full gigabit Ethernet, non-blocking switch architecture acc.to IEEE 802.3
- Support of jumbo frames
- Variants with industrial temperature range of -40°C ... +70 °C
- Wide range voltage supply 24/48 VDC
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet
- Optimised DIN rail bracket

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 3000 Full Gigabit family of unmanaged Ethernet switches is equipped with up to 16 gigabit Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures with high bandwidth requirements. In this, all switches support extra-long Ethernet frames (jumbo frames). The slender design of the switches enables an extremely high packing density on the DIN rail. Various combinations of variants with RJ45, fibre optic cables and SFP ports are available. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (autopolarity and auto-MDI(X)) allow for simple plug & play. All variants are available with the temperature ranges „Industrial“ and „Commercial“.

Technical characteristics

Switch Features

Enclosures width	**25 mm**	**38 mm**
Number of ports	2, 5, 6, 7	16
Switching technology	Store and Forward	
Supported standards	IEEE 802.3	
Frame Size	10 kbytes	8 kBytes
MAC table size	8k entries	
Packet buffer size	1 Mbit	512 kBytes
Non-blocking	Yes	
Quality of service	Yes	
Energy-Efficient Ethernet	Yes	
PROFINET compatible	Yes	
EthernetIP compatible	Yes	

Voltage supply

Nominal voltage	24 VDC ⎓	48 VDC ⎓
Permissible voltage range (see table techn. characteristics)	9 VDC ... 60 VDC ⎓ * 18 VDC ... 60 VDC ⎓ **	
Surge protection	Yes	
Reverse polarity proof	Yes	
Starting current	1.60 A	3.20 A
Overcurrent protection at input	Yes (12 A for <=8 ports)/ (2 A for >8 ports)	
Max. power consumption @ 24 VDC	2.21 W ... 9.17 W	
Cross-section / Wire gauge	0.08 mm² ... 2.5 mm² (28 AWG ... 12 AWG)	
Connection type	3-pole, pluggable screwed contact	
Pinout	+ / - / ⏚	
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)	

Ethernet Ports 10BASE-Te / 100BASE-TX EEE / 1000BASE-T EEE

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 / 1000 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 1000BASE-SX / 1000BASE-LX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	850 nm	1310 nm
Transfer speed	1000 Mbit/s	
Transfer length	0.55 km	10 km
Output power	-9.5 dBm ... -4 dBm	-9.5 dBm ... -3 dBm
Input sensitivity	≤ -17 dBm	≤ -21 dBm

SFP ports

Transfer standard	Depending on used SFP
Connection type	Depending on used SFP, RJ45 or LC
Transfer conditions	Depending on used SFP, TP or FO
Transfer speed	Depending on used SFP, 100 or 1000 Mbit/s
Transfer length	Depending on used SFP

Enclosures

Enclosures width	25 mm	38 mm
Dimensions H x W x D (without pluggable screw contact and holding bracket)	142 mm x 25 mm x 107.5 mm	142 mm x 38 mm x 107.5 mm
Weight	428 g ... 490 g	700 g
Type of installation	35 mm DIN rail acc. to EN 60 715	
Material enclosures	Anodised aluminium / Powder-coated steel sheet	
Protection degree (with plugged screw contact)	IP30	
Protection class	III	

Status and diagnostic displays

Power („Pwr“) lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity ("L/A") flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s
Link speed („Spd“) lights up green	1000 Mbit/s

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure (operation)	2000 m (795 hPa)

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, DNV GL, LR, NK, ABB IIT

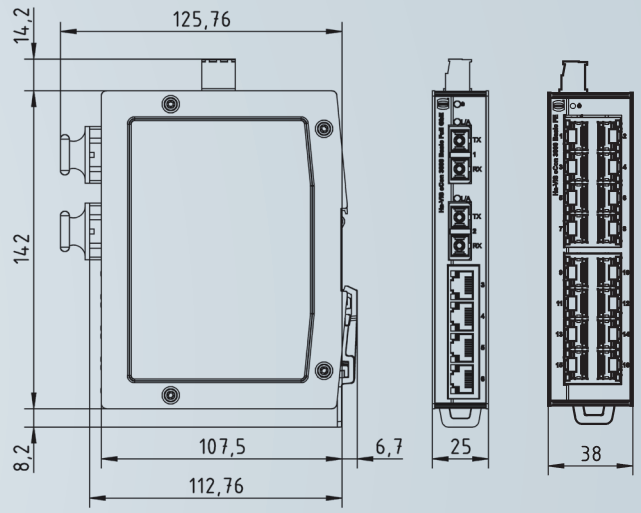
EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery
- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption @ 24 VDC	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
1	-	1x MM (0.55 km)	25 mm	92 mA*	2.13	Ha-VIS eCon 3011GB-AD	24 03 401 1110	Ha-VIS eCon 3011GBT-AD	24 03 401 1100
1	-	1x SM (10 km)	25 mm	92 mA*	2.13	Ha-VIS eCon 3011GB-AF	24 03 401 1210	Ha-VIS eCon 3011GBT-AF	24 03 401 1200
1	1	-	25 mm	90 mA**	0.95	Ha-VIS eCon 3011GB-AC	24 03 401 1310	Ha-VIS eCon 3011GBT-AC	24 03 401 1300
4	-	1x MM (0.55 km)	25 mm	155 mA*	2.15	Ha-VIS eCon 3041GB-AD	24 03 404 1110	Ha-VIS eCon 3041GBT-AD	24 03 404 1100
4	-	1x SM (10 km)	25 mm	155 mA*	2.15	Ha-VIS eCon 3041GB-AF	24 03 404 1210	Ha-VIS eCon 3041GBT-AF	24 03 404 1200
4	-	2x MM (0.55 km)	25 mm	182 mA*	2.08	Ha-VIS eCon 3042GB-AD	24 03 404 2110	Ha-VIS eCon 3042GBT-AD	24 03 404 2100
4	-	2x SM (10 km)	25 mm	182 mA*	2.08	Ha-VIS eCon 3042GB-AF	24 03 404 2210	Ha-VIS eCon 3042GBT-AF	24 03 404 2200
4	3	-	25 mm	172 mA**	0.99	Ha-VIS eCon 3043GB-AC	24 03 404 3310	Ha-VIS eCon 3043GBT-AC	24 03 404 3300
5	-	-	25 mm	149 mA*	1.97	Ha-VIS eCon 3050GB-A	24 03 405 0010	Ha-VIS eCon 3050GBT-A	24 03 405 0000
5	-	1x MM (0.55 km)	25 mm	177 mA*	1.91	Ha-VIS eCon 3051GB-AD	24 03 405 1110	Ha-VIS eCon 3051GBT-AD	24 03 405 1100
5	-	1x SM (10 km)	25 mm	177 mA*	1.91	Ha-VIS eCon 3051GB-AF	24 03 405 1210	Ha-VIS eCon 3051GBT-AF	24 03 405 1200
5	2	-	25 mm	175 mA**	0.94	Ha-VIS eCon 3052GB-AC	24 03 405 2310	Ha-VIS eCon 3052GBT-AC	24 03 405 2300
6	-	-	25 mm	172 mA*	1.76	Ha-VIS eCon 3060GB-A	24 03 406 0010	Ha-VIS eCon 3060GBT-A	24 03 406 0000
6	1	-	25 mm	178 mA**	0.89	Ha-VIS eCon 3061GB-AC	24 03 406 1310	Ha-VIS eCon 3061GBT-AC	24 03 406 1300
7	-	-	25 mm	182 mA**	0.85	Ha-VIS eCon 3070GB-A	24 03 407 0010	Ha-VIS eCon 3070GBT-A	24 03 407 0000
16***	-	-	38 mm	382 mA*	1.36	Ha-VIS eCon 3160GB-A	24 03 416 0010	Ha-VIS eCon 3160GBT-A	24 03 416 0000

* Permissible voltage range 9 VDC ... 60 VDC ⎓
** Permissible voltage range 18 VDC ... 60 VDC ⎓
*** Maritime Approvals on request

Note: Regarding technical changes to the products and to the content - see page 9.

Ha-VIS eCon 3000
Fast Ethernet Basic
PoE / PoE+

5 to 8 Ethernet ports RJ45, SC and PoE / PoE+
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C

- Energy supply of up to 4 terminal devices via PoE+ (137 watts) according to IEEE 802.3at
- Fast Ethernet Non-Blocking Switch architecture according to IEEE 802.3
- Variants with industrial temperature range of -40°C ... +70 °C
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet
- Optimised DIN rail bracket

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 3000 Fast Ethernet PoE family of unmanaged Ethernet switches is equipped with up to 8 Fast Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures. The switches work as power sourcing equipment (PSE) and are capable of simultaneously providing the full PoE output of 34.2 watts on up to four ports. The slender design of the switches enables an extremely high packing density on the DIN rail. The selection includes various combinations of variants with RJ45 and fibre optic ports. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (autopolarity and auto-MDI(X)) allow for simple plug & play. All variants are available with the temperature ranges „Industrial“ and „Commercial“.

Technical characteristics

Switch Features

Enclosures width	**25 mm**
Number of ports	5, 6, 7, 8
Switching technology	Store and Forward
Supported standards	IEEE 802.3
Frame Size	1522 bytes
MAC table size	1k entries
Packet buffer size	448 kbit
Non-blocking	Yes
Quality of service	Yes
Energy-Efficient Ethernet	Yes
PROFINET compatible	Yes
EthernetIP compatible	Yes

Voltage supply

Nominal voltage	48 VDC ⎓	54 VDC ⎓
Permissible voltage range	44 VDC ... 57 VDC ⎓	50 VDC ... 57 VDC ⎓
Surge protection	Yes	
Reverse polarity proof	Yes	
Starting current	6.40 A	7.20 A
Overcurrent protection at input	Yes (12 A)	
Max. power consumption without PoE	1.92 W ... 3.60 W	
Cross-section / Wire gauge	0.08 mm² ... 2.5 mm² (28 AWG ... 12 AWG)	
Connection type	3-pole, pluggable screwed contact	
Pinout	+ / - / ⏚	
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)	

Ethernet Ports 10BASE-Te / 100BASE-TX

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 100BASE-FX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	1310 nm	
Transfer speed	100 Mbit/s	
Transfer length	2 km	15 km
Output power	-20 dBm ... -14 dBm	-15 dBm ... -8 dBm
Input sensitivity	≤ -30 dBm	≤ -32 dBm

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure (operation)	2000 m (795 hPa)

PoE

	PoE	PoE+
Number of PoE ports	4	
Standard	IEEE 802.3af / IEEE 802.3at	
PoE type	PSE	
Supported mode	Alternative A	
Supply voltage PSE	48 VDC ⎓	54 VDC ⎓
Max. current consumption PSE	1380 mA	2380 mA
Max. current	375 mA	638 mA
Maximum output power PSE	15.4 W per port 61.6 W total	34.2 W per port 136.8 W total
Supported cabling	See 802.3at, section 33.1.4	
PoE pinout	Alternative A, MDI-X (1/2 = V-, 3/6 = V+)	

Status and diagnostic displays

Power („Pwr“) ⏻ lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) lights up green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s
PoE status 🔌 off	PoE is inactive / low voltage
PoE status 🔌 lights up green	Voltage in PoE range
PoE status 🔌 lights up blue	Voltage in PoE+ range
PoE status 🔌 lights up red	Error

Enclosures

Enclosures width	**25 mm**
Dimensions H x W x D (without pluggable screw contact and holding bracket)	142 mm x 25 mm x 107.5 mm
Weight	480 g ... 508 g
Type of installation	35 mm DIN rail acc. to EN 60 715
Material enclosures	Anodised aluminium / Powder-coated steel sheet
Protection degree (with plugged screw contact)	IP30
Degree of protection	III

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, DNV GL, LR, NK, ABB IIT
ECE - Approval mark (E1): see table technical characteristics

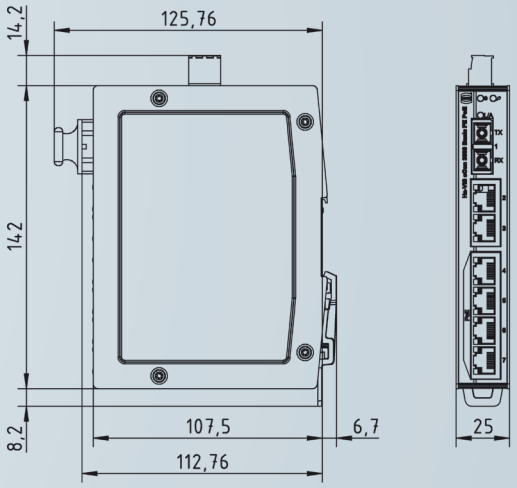
EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery
- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption@ 54 VDC with PoE	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
4	-	1x MM (2 km)	25 mm	2.41 A	1.19	Ha-VIS eCon 3041B-AD-P	24 03 004 1130	Ha-VIS eCon 3041BT-AD-P	24 03 004 1120
4	-	1x SM (15 km)	25 mm	2.41 A	1.19	Ha-VIS eCon 3041B-AF-P	24 03 004 1230	Ha-VIS eCon 3041BT-AF-P	24 03 004 1220
4	-	2x MM (2 km)	25 mm	2.43 A	1.17	Ha-VIS eCon 3042B-AD-P	24 03 004 2130	Ha-VIS eCon 3042BT-AD-P	24 03 004 2120
4	-	2x SM (15 km)	25 mm	2.43 A	1.17	Ha-VIS eCon 3042B-AF-P	24 03 004 2230	Ha-VIS eCon 3042BT-AF-P	24 03 004 2220
6	-	-	25 mm	2.40 A	1.18	Ha-VIS eCon 3060B-A-P	24 03 006 0030[1]	Ha-VIS eCon 3060BT-A-P	24 03 006 0020[1]
6	-	1x MM (2 km)	25 mm	2.42 A	1.15	Ha-VIS eCon 3061B-AD-P	24 03 006 1130	Ha-VIS eCon 3061BT-AD-P	24 03 006 1120
6	-	1x SM (15 km)	25 mm	2.42 A	1.15	Ha-VIS eCon 3061B-AF-P	24 03 006 1230	Ha-VIS eCon 3061BT-AF-P	24 03 006 1220
8	-	-	25 mm	2.40 A	1.14	Ha-VIS eCon 3080B-A-P	24 03 008 0030[1]	Ha-VIS eCon 3080BT-A-P	24 03 008 0020[1]

[1] E1 Approval

Note: Regarding technical changes to the products and to the content - see page 9.

Ha-VIS eCon 3000
Full Gigabit Ethernet
Basic PoE / PoE+

5 to 7 Ethernet ports RJ45, SC/LC (SFP) and PoE / PoE+
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C

- Energy supply of up to 4 terminal devices via PoE+ (137 watts) acc. to IEEE 802.3at
- Full gigabit Ethernet, non-blocking switch architecture acc. to IEEE 802.3
- Support of jumbo frames
- Variants with industrial temperature range of -40°C ... +70 °C
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet
- Optimised DIN rail bracket

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 3000 Full Gigabit family of unmanaged Ethernet switches is equipped with up to 7 gigabit Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures with high bandwidth requirements. In this, all switches support extra-long Ethernet frames (jumbo frames). The switches work as power sourcing equipment (PSE) and are capable of simultaneously providing the full PoE output of 34.2 watts on up to four ports. The slender design of the switches enables an extremely high packing density on the DIN rail. Various combinations of variants with RJ45, fibre optic cables and SFP ports are available. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (autopolarity and auto-MDI(X)) allow for simple plug & play. All variants are available with the temperature ranges „Industrial“ and „Commercial“.

Technical characteristics

Switch Features

Enclosures width	**25 mm**
Number of ports	5, 6, 7
Switching technology	Store and Forward
Supported standards	IEEE 802.3
Frame Size	10 kbytes
MAC table size	8k entries
Packet buffer size	1 Mbit
Non-blocking	Yes
Quality of service	Yes
Energy-Efficient Ethernet	Yes
PROFINET compatible	Yes
EthernetIP compatible	Yes

Voltage supply

Nominal voltage	48 VDC ⎓	54 VDC ⎓
Permissible voltage range	44 VDC ... 57 VDC ⎓	50 VDC ... 57 VDC ⎓
Surge protection	Yes	
Reverse polarity proof	Yes	
Starting current	6.40 A	7.20 A
Overcurrent protection at input	Yes (12 A)	
Max. power consumption without PoE	3,84 W ... 4.56 W	
Cross-section / Wire gauge	0.08 mm^2 ... 2.5 mm^2 (28 AWG ... 12 AWG)	
Connection type	3-pole, pluggable screwed contact	
Pinout	+ / - / ⏚	
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)	

Ethernet Ports 10BASE-Te / 100BASE-TX EEE / 1000BASE-T EEE

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 / 1000 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 1000BASE-SX / 1000BASE-LX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	850 nm	1310 nm
Transfer speed	1000 Mbit/s	
Transfer length	0.55 km	10 km
Output power	-9.5 dBm ... -3 dBm	-9.5 dBm ... -4 dBm
Input sensitivity	≤ -17 dBm	≤ -21 dBm

SFP ports

Transfer standard	Depending on used SFP
Connection type	Depending on used SFP, RJ45 or LC
Transfer conditions	Depending on used SFP, TP or FO
Transfer speed	Depending on used SFP, 100 or 1000 Mbit/s
Transfer length	Depending on used SFP

PoE

	PoE	PoE+
Number of PoE ports	4	
Standard	IEEE 802.3af / IEEE 802.3at	
PoE type	PSE	
Supported mode	Alternative A	
Supply voltage PSE	48 VDC ⎓	54 VDC ⎓
Max. current consumption PSE	1380 mA	2380 mA
Max. current	375 mA	638 mA
Maximum output power PSE	15.4 W per port 61.6 W total	34.2 W per port 136.8 W total
Supported cabling	See 802.3at, section 33.1.4	
PoE pinout	Alternative A, MDI-X (1/2 = V-, 3/6 = V+)	

Status and diagnostic displays

Power („Pwr“) ⏻ lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s
Link speed („Spd“) lights up green	1000 Mbit/s
PoE status 🔌 off	PoE is inactive / low voltage
PoE status 🔌 lights up green	Voltage in PoE range
PoE status 🔌 lights up blue	Voltage in PoE+ range
PoE status 🔌 lights up red	Error

Enclosures

Enclosures width	**25 mm**
Dimensions H x W x D (without pluggable screw contact and holding bracket)	142 mm x 25 mm x 107.5 mm
Weight	498 g ... 531 g
Type of installation	35 mm DIN rail acc. to EN 60 715
Material enclosures	Anodised aluminium / Powder-coated steel sheet
Protection degree (with plugged screw contact)	IP30
Protection class	III

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure (operation)	2000 m (795 hPa)

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, DNV GL, LR, NK, ABB IIT

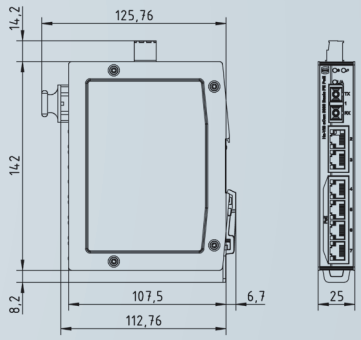
EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery
- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption @ 54 VDC with PoE	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
4	-	1x MM (0.55 km)	25 mm	2.42 A	1.13	Ha-VIS eCon 3041GB-AD-P	24 03 404 1130	Ha-VIS eCon 3041GBT-AD-P	24 03 404 1120
4	-	1x SM (10 km)	25 mm	2.42 A	1.13	Ha-VIS eCon 3041GB-AF-P	24 03 404 1230	Ha-VIS eCon 3041GBT-AF-P	24 03 404 1220
4	-	2x MM (0.55 km)	25 mm	2.44 A	1.11	Ha-VIS eCon 3042GB-AD-P	24 03 404 2130	Ha-VIS eCon 3042GBT-AD-P	24 03 404 2120
4	-	2x SM (10 km)	25 mm	2.44 A	1.11	Ha-VIS eCon 3042GB-AF-P	24 03 404 2230	Ha-VIS eCon 3042GBT-AF-P	24 03 404 2220
4	3	-	25 mm	2.44 A	0.70	Ha-VIS eCon 3043GB-AC-P	24 03 404 3330	Ha-VIS eCon 3043GBT-AC-P	24 03 404 3320
5	-	-	25 mm	2.42 A	1.08	Ha-VIS eCon 3050GB-A-P	24 03 405 0030	Ha-VIS eCon 3050GBT-A-P	24 03 405 0020
5	-	1x MM (0.55 km)	25 mm	2.44 A	1.06	Ha-VIS eCon 3051GB-AD-P	24 03 405 1130	Ha-VIS eCon 3051GBT-AD-P	24 03 405 1120
5	-	1x SM (10 km)	25 mm	2.44 A	1.06	Ha-VIS eCon 3051GB-AF-P	24 03 405 1230	Ha-VIS eCon 3051GBT-AF-P	24 03 405 1220
5	2	-	25 mm	2.45 A	0.68	Ha-VIS eCon 3052GB-AC-P	24 03 405 2330	Ha-VIS eCon 3052GBT-AC-P	24 03 405 2320
6	-	-	25 mm	2.43 A	1.01	Ha-VIS eCon 3060GB-A-P	24 03 406 0030	Ha-VIS eCon 3060GBT-A-P	24 03 406 0020
6	1	-	25 mm	2.45 A	0.66	Ha-VIS eCon 3061GB-AC-P	24 03 406 1330	Ha-VIS eCon 3061GBT-AC-P	24 03 406 1320
7	-	-	25 mm	2.45 A	0.63	Ha-VIS eCon 3070GB-A-P	24 03 407 0030	Ha-VIS eCon 3070GBT-A-P	24 03 407 0020

Note: Regarding technical changes to the products and to the content - see page 9.

Ha-VIS eCon 3000
Fast Ethernet Basic
PoE / PoE+ 24 V DC/DC

5 to 8 Ethernet Ports RJ45, SC and PoE/PoE+ with 24 V DC/DC converter
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C

- Use of PoE+ with 24 V DC supply (isolated)
- Energy supply of up to 4 terminal devices via PoE+ (137 watts) according to IEEE 802.3at
- Fast Ethernet Non-Blocking Switch architecture according to IEEE 802.3
- Variants with industrial temperature range of -40°C ... +70 °C
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet
- Optimised DIN rail bracket

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 3000 Fast Ethernet PoE DC/DC family of unmanaged Ethernet switches is equipped with up to 8 Fast Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures. The switches work as power sourcing equipment (PSE) and are capable of simultaneously providing the full PoE output of 34.2 watts on up to four ports. Exceeding the PoE+ standard, the switches are equipped with an integrated, galvanically isolated DC/DC voltage transformer. The switches can be supplied with 24 VDC instead of the usually required 54 VDC. The selection includes various combinations of variants with RJ45 and fibre optic ports. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (autopolarity and auto-MDI(X)) allow for simple plug & play. All variants are available with the temperature ranges „Industrial“ and „Commercial“.

Technical characteristics

Switch Features

Enclosures width	**60 mm**
Number of ports	5, 6, 7, 8
Switching technology	Store and Forward
Supported standards	IEEE 802.3
Frame Size	1522 bytes
MAC table size	1k entries
Packet buffer size	448 kbit
Non-blocking	Yes
Quality of service	Yes
Energy-Efficient Ethernet	Yes
PROFINET compatible	Yes
EthernetIP compatible	Yes

Voltage supply

Nominal voltage	24 VDC ⎓
Permissible voltage range	18 VDC ... 60 VDC ⎓
Surge protection	Yes
Reverse polarity proof	Yes
Starting current	1.60 A
Overcurrent protection at input	Yes (10 A)
Max. power consumption @ 24 VDC	138.5 W ... 140.2 W
Cross-section / Wire gauge	0.08 mm^2 ... 2.5 mm^2 (28 AWG ... 12 AWG)
Connection type	3-pole, pluggable screwed contact
Pinout	+ / - / ⏚
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)

Ethernet Ports 10BASE-Te / 100BASE-TX

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 100BASE-FX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	1310 nm	
Transfer speed	100 Mbit/s	
Transfer length	2 km	15 km
Output power	-20 dBm ... -14 dBm	-15 dBm ... -8 dBm
Input sensitivity	≤ -30 dBm	≤ -32 dBm

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure (operation)	2000 m (795 hPa)

PoE

	PoE	PoE+
Number of PoE ports	4	
Standard	IEEE 802.3af / IEEE 802.3at	
PoE type	PSE	
Supported mode	Alternative A	
Supply voltage PSE	24 VDC ⎓	
Max. current consumption PSE	2,6 A	5,7 A
Max. current	375 mA	638 mA
Maximum output power PSE	15.4 W per port 61.6 W total	34.2 W per port 136.8 W total
Supported cabling	See 802.3at, section 33.1.4	
PoE pinout	Alternative A, MDI-X (1/2 = V-, 3/6 = V+)	

Status and diagnostic displays

Power („Pwr“) ⏻ lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s
PoE status 🔧 off	PoE is inactive / low voltage
PoE status 🔧 lights up blue	Voltage in PoE+ range
PoE status 🔧 lights up red	Error

Enclosures

Enclosures width	**60 mm**
Dimensions H x W x D (without pluggable screw contact and holding bracket)	142 mm x 60 mm x 107.5 mm
Weight	838 g ... 866 g
Type of installation	35 mm DIN rail acc. to EN 60 715
Material enclosures	Anodised aluminium / Powder-coated steel sheet
Protection degree (with plugged screw contact)	IP30
Protection class	III

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, ABB IIT
ECE - Approval mark (E1): see table technical characteristics

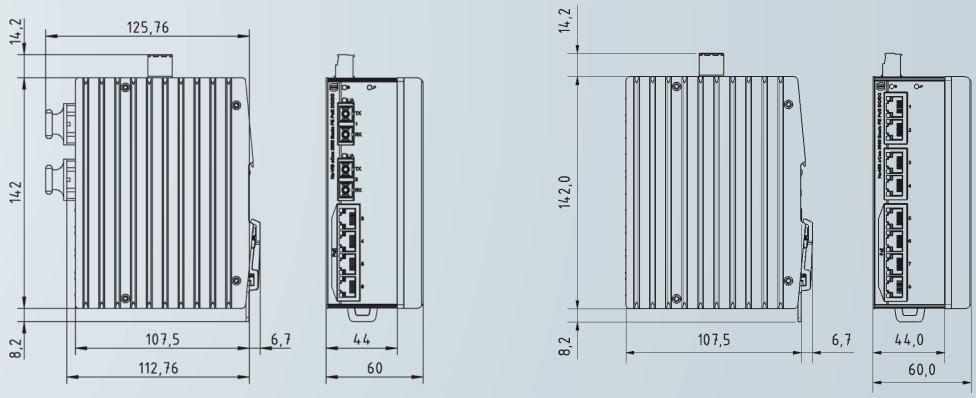
EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
Electromagnetic field EN 61 000-4-3
Rapid transients (burst) EN 61 000-4-4
Surge voltages EN 61 000-4-5
Conducted interference voltages EN 61 000-4-6

EMC Interference emission (EN 61000-6-4, EN 55 032, FCC CFR 47 Part 15)

Mechanical stability (EN 60721-3)
IEC 60068-2-6 Vibration
IEC 60068-2-6 Vibration resonance search
IEC 60068-2-27 Shock test

Included in delivery
- Pluggable screw contact for voltage supply
- Assembly instruction

Drawings



Technical characteristics / order information

Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption@ 24 VDC with PoE	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
4	-	1x MM (2 km)	60 mm	5.81	0.82	Ha-VIS eCon 3041B-AD-PP	24 03 104 1130	Ha-VIS eCon 3041BT-AD-PP	24 03 104 1120
4	-	1x SM (15 km)	60 mm	5.81	0.82	Ha-VIS eCon 3041B-AF-PP	24 03 104 1230	Ha-VIS eCon 3041BT-AF-PP	24 03 104 1220
4	-	2x MM (2 km)	60 mm	5.84	0.81	Ha-VIS eCon 3042B-AD-PP	24 03 104 2130	Ha-VIS eCon 3042BT-AD-PP	24 03 104 2120
4	-	2x SM (15 km)	60 mm	5.84	0.81	Ha-VIS eCon 3042B-AF-PP	24 03 104 2230	Ha-VIS eCon 3042BT-AF-PP	24 03 104 2220
6	-	-	60 mm	5.77	0.85	Ha-VIS eCon 3060B-A-PP	24 03 106 0030[1]	Ha-VIS eCon 3060BT-A-PP	24 03 106 0020[1]
6	-	1x MM (2 km)	60 mm	5.82	0.80	Ha-VIS eCon 3061B-AD-PP	24 03 106 1130	Ha-VIS eCon 3061BT-AD-PP	24 03 106 1120
6	-	1x SM (15 km)	60 mm	5.82	0.80	Ha-VIS eCon 3061B-AF-PP	24 03 106 1230	Ha-VIS eCon 3061BT-AF-PP	24 03 106 1220
8	-	-	60 mm	5.78	0.83	Ha-VIS eCon 3080B-A-PP	24 03 108 0030[1]	Ha-VIS eCon 3080BT-A-PP	24 03 108 0020[1]

[1] E1 Approval

Note: Regarding technical changes to the products and to the content - see page 9.

Ha-VIS eCon 3000
Full Gigabit Ethernet Basic PoE+ 24 V DC/DC

5 to 7 Ethernet Ports RJ45, SC/LC (SFP) and PoE/PoE+ with 24 V DC/DC converter
Unmanaged Plug & Play Ethernet switches for DIN rail assembly in control cabinets
Commercial Temp.: 0 °C ... +55 °C / Industrial Temp.: -40 °C ... +70 °C

Slim | +70 -40 | Energy Efficient Ethernet | 24/54V PoE+ | Full Gigabit

- Use of PoE+ with 24 V DC supply (isolated)
- Energy supply of up to 4 terminal devices via PoE+ (137 watts) acc. to IEEE 802.3at
- Full gigabit Ethernet, non-blocking switch architecture acc. to IEEE 802.3
- Support of jumbo frames
- Variants with industrial temperature range of -40°C ... +70 °C
- Surge protection and reverse polarity protection
- Minimum energy consumption due to Energy-Efficient Ethernet
- Optimised DIN rail bracket

Target markets

Machinery & Robotics	Automation technology	Industrial network infrastructures
Wind Energy Solar Energy	Transportation	Shipbuilding

General description

The Ha-VIS eCon 3000 Full Gigabit family of unmanaged Ethernet switches is equipped with up to 7 gigabit Ethernet ports and allow for cost-efficient and quick expansion and/or reconstruction of network infrastructures with high bandwidth requirements. In this, all switches support extra-long Ethernet frames (jumbo frames). The switches work as power sourcing equipment (PSE) and are capable of simultaneously providing the full PoE output of 34.2 watts on up to four ports. Exceeding the PoE+ standard, the switches are equipped with an integrated, galvanically isolated DC/DC voltage transformer. The switches can be supplied with 24 VDC instead of the usually required 54 VDC. Various combinations of variants with RJ45, fibre optic cables and SFP ports are available. Automatic detection of the transmission rate (auto-negotiation) and of the wiring of the twisted pair data cable (autopolarity and auto-MDI(X)) allow for simple plug & play. All variants are available with the temperature ranges „Industrial“ and „Commercial“.

Technical characteristics

Switch Features

Enclosures width	**60 mm**
Number of ports	5, 6, 7
Switching technology	Store and Forward
Supported standards	IEEE 802.3
Frame Size	10 kbytes
MAC table size	8k entries
Packet buffer size	1 Mbit
Non-blocking	Yes
Quality of service	Yes
Energy-Efficient Ethernet	Yes
PROFINET compatible	Yes
EthernetIP compatible	Yes

Voltage supply

Nominal voltage	24 VDC ⎓
Permissible voltage range	18 VDC ... 60 VDC ⎓
Surge protection	Yes
Reverse polarity proof	Yes
Starting current	1.60 A
Overcurrent protection at input	Yes (10 A)
Max. power consumption @ 24 VDC	141,2 W ... 141,6 W
Cross-section / Wire gauge	0.08 mm² ... 2.5 mm² (28 AWG ... 12 AWG)
Connection type	3-pole, pluggable screwed contact
Pinout	+ / - / ⏚
Supply circuit (acc. to 60950)	SELV (circuit breaker 10 A)

Ethernet Ports 10BASE-Te / 100BASE-TX EEE / 1000BASE-T EEE

Connection type	RJ45
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transfer conditions	Twisted Pair
Transfer speed	10 / 100 / 1000 Mbit/s
Transfer length	100 m (twisted pair, Cat 5)

Ethernet Ports 1000BASE-SX / 1000BASE-LX

Type of fibre	**Multimode (MM)**	**Singlemode (SM)**
Connection type	SC Duplex	
Transfer conditions	FO	
Wavelength	850 nm	1310 nm
Transfer speed	1000 Mbit/s	
Transfer length	0.55 km	10 km
Output power	-9.5 dBm ... -4 dBm	-9.5 dBm ... -3 dBm
Input sensitivity	≤ -17 dBm	≤ -21 dBm

SFP ports

Transfer standard	Depending on used SFP
Connection type	Depending on used SFP, RJ45 or LC
Transfer conditions	Depending on used SFP, TP or FO
Transfer speed	Depending on used SFP, 100 or 1000 Mbit/s
Transfer length	Depending on used SFP

PoE

	PoE	PoE+
Number of PoE ports	4	
Standard	IEEE 802.3af / IEEE 802.3at	
PoE type	PSE	
Supported mode	Alternative A	
Supply voltage PSE	24 VDC ⎓	
Max. current consumption PSE	2,6 A	5,7 A
Max. current	375 mA	638 mA
Maximum output power PSE	15.4 W per port 61.6 W total	34.2 W per port 136.8 W total
Supported cabling	See 802.3at, section 33.1.4	
PoE pinout	Alternative A, MDI-X (1/2 = V-, 3/6 = V+)	

Status and diagnostic displays

Power („Pwr“) ⏻ lights up green	Supply voltage is applied
Link/Activity („L/A“) off	No link
Link/Activity („L/A“) lights up green	Link is active
Link/Activity („L/A“) flashes green	Link is active and data is transferred
Link speed („Spd“) off	10 Mbit/s
Link speed („Spd“) lights up yellow	100 Mbit/s
Link speed („Spd“) lights up green	1000 Mbit/s
PoE status 🔌 off	PoE is inactive / low voltage
PoE status 🔌 lights up blue	Voltage in PoE+ range
PoE status 🔌 lights up red	Error

Enclosures

Enclosures width	**60 mm**
Dimensions H x W x D (without pluggable screw contact and holding bracket)	142 mm x 60 mm x 107.5 mm
Weight	865 g ... 898 g
Type of installation	35 mm DIN rail acc. to EN 60 715
Material enclosures	Anodised aluminium / Powder-coated steel sheet
Protection degree (with plugged screw contact)	IP30
Protection class	III

Ambient conditions

Commercial temperature range	0 °C ... +55 °C
Industrial temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
Relative humidity (operation)	0 % ... 95 % (not-condensing)
Relative humidity (storage and transport)	0 % ... 95 % (not-condensing)
Air pressure (operation)	2000 m (795 hPa)

Approvals
CE, FCC CFR 47 Part 15, cUL US 508 listed, ABB IIT

EMC and environmental conditions
EMC Interference immunity (EN 61000-6-1, 61 000-6-2 55024)
Electrostatic discharge (ESD) EN 61 000-4-2
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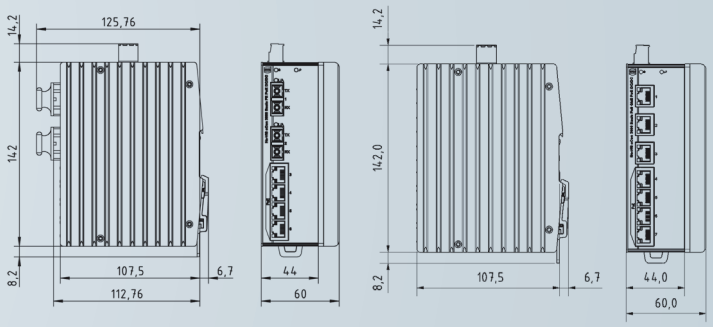

Technical characteristics / order information

Ports / order information

RJ45	SFP	SC	Enclosures width	Current consumption @ 24 VDC with PoE	MTBF in Mio. h	Commercial Temp.: 0 °C ... +55 °C		Industrial Temp.: -40 °C ... +70 °C	
						Switch	Part no.	Switch	Part no.
4	-	1x MM (0.55 km)	60 mm	5.88	0.82	Ha-VIS eCon 3041GB-AD-PP	24 03 504 1130	Ha-VIS eCon 3041GBT-AD-PP	24 03 504 1120
4	-	1x SM (10 km)	60 mm	5.88	0.80	Ha-VIS eCon 3041GB-AF-PP	24 03 504 1230	Ha-VIS eCon 3041GBT-AF-PP	24 03 504 1220
4	-	2x MM (0.55 km)	60 mm	5.90	0.81	Ha-VIS eCon 3042GB-AD-PP	24 03 504 2130	Ha-VIS eCon 3042GBT-AD-PP	24 03 504 2120
4	-	2x SM (10 km)	60 mm	5.90	0.81	Ha-VIS eCon 3042GB-AF-PP	24 03 504 2230	Ha-VIS eCon 3042GBT-AF-PP	24 03 504 2220
4	3	-	60 mm	5.90	0.57	Ha-VIS eCon 3043GB-AC-PP	24 03 504 3330	Ha-VIS eCon 3043GBT-AC-PP	24 03 504 3320
5	-	-	60 mm	5.88	0.80	Ha-VIS eCon 3050GB-A-PP	24 03 505 0030	Ha-VIS eCon 3050GBT-A-PP	24 03 505 0020
5	-	1x MM (0.55 km)	60 mm	5.90	0.79	Ha-VIS eCon 3051GB-AD-PP	24 03 505 1130	Ha-VIS eCon 3051GBT-AD-PP	24 03 505 1120
5	-	1x SM (10 km)	60 mm	5.90	0.79	Ha-VIS eCon 3051GB-AF-PP	24 03 505 1230	Ha-VIS eCon 3051GBT-AF-PP	24 03 505 1220
5	2	-	60 mm	5.90	0.55	Ha-VIS eCon 3052GB-AC-PP	24 03 505 2330	Ha-VIS eCon 3052GBT-AC-PP	24 03 505 2320
6	-	-	60 mm	5.90	0.76	Ha-VIS eCon 3060GB-A-PP	24 03 506 0030	Ha-VIS eCon 3060GBT-A-PP	24 03 506 0020
6	1	-	60 mm	5.90	0.53	Ha-VIS eCon 3061GB-AC-PP	24 03 506 1330	Ha-VIS eCon 3061GBT-AC-PP	24 03 506 1320
7	-	-	60 mm	5.90	0.52	Ha-VIS eCon 3070GB-A-PP	24 03 507 0030	Ha-VIS eCon 3070GBT-A-PP	24 03 507 0020

Note: Regarding technical changes to the products and to the content - see page 9.