![Hirschmann — A BELDEN BRAND]

Startup instructions

AutoConfiguration Adapter
ACA21-USB (EEC)
ACA22-USB (EEC)
ACA21-M12 (EEC)
ACA22-M12 (EEC)
ACA22A
ACA22-USB-C (EEC)
ACA22-M12-C (EEC)
ACA31
ACA41

Contents

Important information

Note: Read these instructions carefully, and familiarize yourself with the device before trying to install, operate, or maintain it. The following notes may appear throughout this documentation or on the device. These notes warn of potential hazards or call attention to information that clarifies or simplifies a procedure.

■ Symbol explanation

This is a general warning symbol. This symbol alerts you to potential personal injury hazards. Observe all safety notes that follow this symbol to avoid possible injury or death.

If this symbol is displayed in addition to a safety instruction of the type "Danger" or "Warning", it means that there is a danger of electric shock and failure to observe the instructions will inevitably result in injury.

This symbol indicates the danger of hot surfaces on the device. In connection with safety instructions, non-observance of the instructions will inevitably result in injuries.

⚠ DANGER

DANGER draws attention to an immediately dangerous situation, which will **inevitably** result in a serious or fatal accident if not observed.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

⚠ CAUTION

CAUTION indicates a possible danger which, if not avoided, **may** result in minor injuries.

NOTICE
NOTICE provides information about procedures that do not involve the risk of injury.

Safety instructions

■ Certified usage

- ☐ Exclusively operate the ACA21... / ACA22... / ACA31 / ACA41 storage medium with Hirschmann Industrial Ethernet host devices.
  Maximum ambient air temperature for ACA21... / ACA22...: +70 °C (+158 °F)
  Maximum ambient air temperature for ACA31 and ACA41: +85 °C (+185 °F)
  Peripheral equipment must be suitable for the location in which it is used.
- ☐ Use the product only for the application cases described in the Hirschmann product information, including this manual.
- ☐ Operate the product only according to the technical specifications. See "Technical data" on page 20.
- ☐ Connect to the product only components suitable for the requirements of the specific application case.

■ Supply voltage

- ☐ Exclusively operate the ACA21... / ACA22... storage medium with Hirschmann Industrial Ethernet host devices via their USB interface. The output power at the USB interface is limited to Class 2.
- ☐ Exclusively operate the ACA31 / ACA41 storage medium with Hirschmann Industrial Ethernet host devices via their SD card interface / microSD card interface.

■ National and international safety regulations

Verify that the electrical installation meets local or nationally applicable safety regulations.

■ Use in Hazardous Locations (North America)

The ACA storage medium may be operated in hazardous locations only if it is marked accordingly "FOR USE IN HAZARDOUS LOCATIONS, Class I, Division 2, Groups A, B, C, D". Additionally, for use with Industrial-Line Hirschmann Ethernet products (host devices) only which are individually labeled "FOR USE IN HAZARDOUS LOCATIONS".

⚠ For "ACA21-USB (EEC)", "ACA22-USB (EEC)", and "ACA22A" types only: Non-Incendive only in hazardous locations when installed per Control Drawing 000163850DNR. In addition, the host device shall meet the Entity Parameter requirements as prescribed in the Control Drawing 000163850DNR in this present document.
See "Control Drawing 000163850DNR" on page 9.

WARNING - EXPLOSION HAZARD!
DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN
SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

WARNING - EXPLOSION HAZARD!
SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABILITY
FOR DIVISION 2.

Avertissement - Risque d'explosion - Ne pas débrancher tant que le
circuit est sous tension à moins que l'emplacement soit connu pour ne
contenir aucune concentration de gaz inflammable.

Avertissement - Risque d'explosion - La substitution de tout composant
peut rendre ce matériel incompatible pour une utilisation en classe I,
division 2.

■ **Use in Explosive Atmospheres Zone 2 According to
European Directive 2014/34/EC**
This product may be operated in EX zone 2 only if the product label is
marked as follows:

For "ACA21-M12 (EEC)", "ACA22-M12 (EEC)" and "ACA22-USB-
C (EEC)" types:

II 3G Ex ec IIC T4 Gc DEKRA 12ATEX0258X

Temperature Code: T4; Ta: -40 °C to +70 °C (-40 °F to +158 °F)

For "ACA21-USB (EEC)" and "ACA22-USB (EEC)" types:
II 3G Ex ec ic IIC T4 Gc DEKRA 12ATEX0258X

Temperature Code: T4; Ta: -40 °C to +70 °C (-40 °F to +158 °F)

Non-incendive only in Ex Zone 2 when installed per Control
Drawing 000163850DNR. In addition, the host device shall meet
the Entity Parameter requirements as prescribed in the Control
Drawing 000163850DNR in this present document.
See "Control Drawing 000163850DNR" on page 9.

Special conditions for safe use

☐ The equipment shall only be used in an area with maximum pollution degree 2, as defined in EN 60664-1.

☐ The product shall be installed in a suitable enclosure providing a degree of protection of at least IP54 in accordance with EN 60079-0, taking into account the environmental conditions under which the product will be used.

■ Control Drawing 000163850DNR

Ordinary Location, Non-Hazardous Area, Non-Explosive Atmosphere ⟷ **Class 1, Division 2 Groups A, B, C, D Hazardous Location**

or

⟨Ex⟩ **Zone 2 Explosive Atmosphere**

USB Power supply contacts:

ACA21-USB (EEC), ACA22-USB (EEC), and ACA22A with nonincendive field wiring parameters. The USB contacts pin 1 and pin 4 are dependent on the following ENTITY PARAMETERS: *)

V_{max} or U_i	I_{max} or I_i	C_i	L_i
5.5 V	1.25 A_{dc}	6.0 μF	400 nH

USB Data contacts

Entity Parameters only to apply for ACA21-USB (EEC), ACA22-USB (EEC), and ACA22A which are inividually labelled "See Control Drawing No. 000163850DNR".

Temperature Code: T4
Ambient Temperature rating:
Ta: −40 °C to +70 °C

Connect the ACA direct to the host device and
- DO NOT USE ANY ADDITIONAL
  EXTENSION CABLE -

Ground: Pin 4
U_{in} : Pin 1
− Data: Pin 2
+ Data: Pin 3

Ground: Pin 4
U_{in} : Pin 1
− Data: Pin 2
+ Data: Pin 3

CONTROL DRAWING for ACA21-USB (EEC), ACA22-USB (EEC), and ACA22A
according to Class I, Division 2, Hazardous Location ANSI/UL 121201, CSA 213-17 or according to the European directive 2014/34/EU

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Make sure that the Entity Parameters of the host device meet the following requirements: *)

V_{oc} or $U_o \leq 5.5$ V l_{sc} or $l_o \leq 1.25$ A
C_a or $C_o > 6.0$ µF $L_a > 400$ nH

Applied standards:

ANSI/UL 121201-2017 (Hazardous Locations)
CSA 213-17 (Hazardous Locations)
EN IEC 60079-0: 2018 (Zone 2, directive 2014/34/EU)
EN 60079-11: 2012 (ic) (Zone 2, directive 2014/34/EU)
EN 60079-7: 2015 + A1: 2018 (ec) (Zone 2, directive 2014/34/EU)

Special conditions for safe use according to the directive 2014/34/EU

The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.
The product shall be installed in a suitable enclosure providing a degree of protection of at least IP54 in accordance with EN 60079-0, taking into account the environmental conditions under which the product will be used.

*) Note: Applied parameter designations under the conditions of ...

... Hazardous Locations Class I Division 2:	V_{max}	l_{max}	C_i	L_i	V_{oc}	I_{sc}	L_a	C_a
... the European directive 2014/34/EU / EN 60079-11	U_i	I_i	C_i	L_i	U_o	l_o	L_o	C_o

CONTROL DRAWING for ACA21-USB (EEC), ACA22-USB (EEC), and ACA22A according to Class I, Division 2, Hazardous Location ANSI/UL 121201, CSA 213-17 or according to the European directive 2014/34/EU	**HIRSCHMANN** A BELDEN BRAND

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■ CE marking

The labeled devices comply with the regulations contained in the following European directive(s):

2014/30/EU (EMC)
Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

2011/65/EU and 2015/863/EU (RoHS)
Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

2014/34/EU (ATEX)
Directive of the European Parliament and the council on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres.

Note: The ATEX Directive applies exclusively to the device variants labeled with an ATEX certificate number:

In accordance with the above-named EU directive(s), the EU conformity declaration will be at the disposal of the relevant authorities at the following address:

Hirschmann Automation and Control GmbH
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Germany

You find the EU conformity declaration as PDF file for downloading on the Internet at: https://www.doc.hirschmann.com/certificates.html

The product can be used in the industrial sector.
▶ Interference immunity: EN 61000-6-2
▶ Emitted interference: EN 55032
You find more information on technical standards here:

Warning! This is a class A device. This device can cause interference in living areas, and in this case the operator may be required to take appropriate measures.

Note: The assembly guidelines provided in these instructions must be strictly adhered to in order to observe the EMC threshold values.

◼ FCC note

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information

ACA21... / ACA22... / ACA31 / ACA41

U.S. Contact Information
Belden – St. Louis
1 N. Brentwood Blvd. 15th Floor
St. Louis, Missouri 63105, United States
Phone: 314.854.8000

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

◼ Recycling note

The symbol of a crossed-out wheeled bin shown on the device indicates that the device MUST NOT be disposed of with household waste at the end of its service life.
After its service life, the used device must be disposed of properly as electronic waste in accordance with the locally applicable disposal regulations.
End users are responsible for deleting personal data from the used device prior to disposal.
End users are obliged to separate used batteries and accumulators that are not enclosed by the used device from the used device in a non-destructive manner before disposing of the used device. The used batteries and accumulators must be handed in for separate collection. This does not apply if the used device is handed in for reuse.

1 Description

The ACA21... / ACA22... / ACA31 / ACA41 storage medium is for saving and updating configuration data and software of the Hirschmann Industrial Ethernet host devices.

USB compatibility of the storage medium: ACA21... / ACA22...

Storage medium	Software	
ACA21-...	Classic	compatible
	HiOS HiSecOS	Enabling the compatibility mode on the device is required.
ACA22-...	Classic HiOS HiSecOS	compatible

Further information:
"Technical data" on page 20

2 Installation

Storage medium ACA21... / ACA22...:
☐ Plug the ACA21... / ACA22... storage medium into the USB interface or
M12 socket of the device.

Storage medium ACA31 and ACA41:

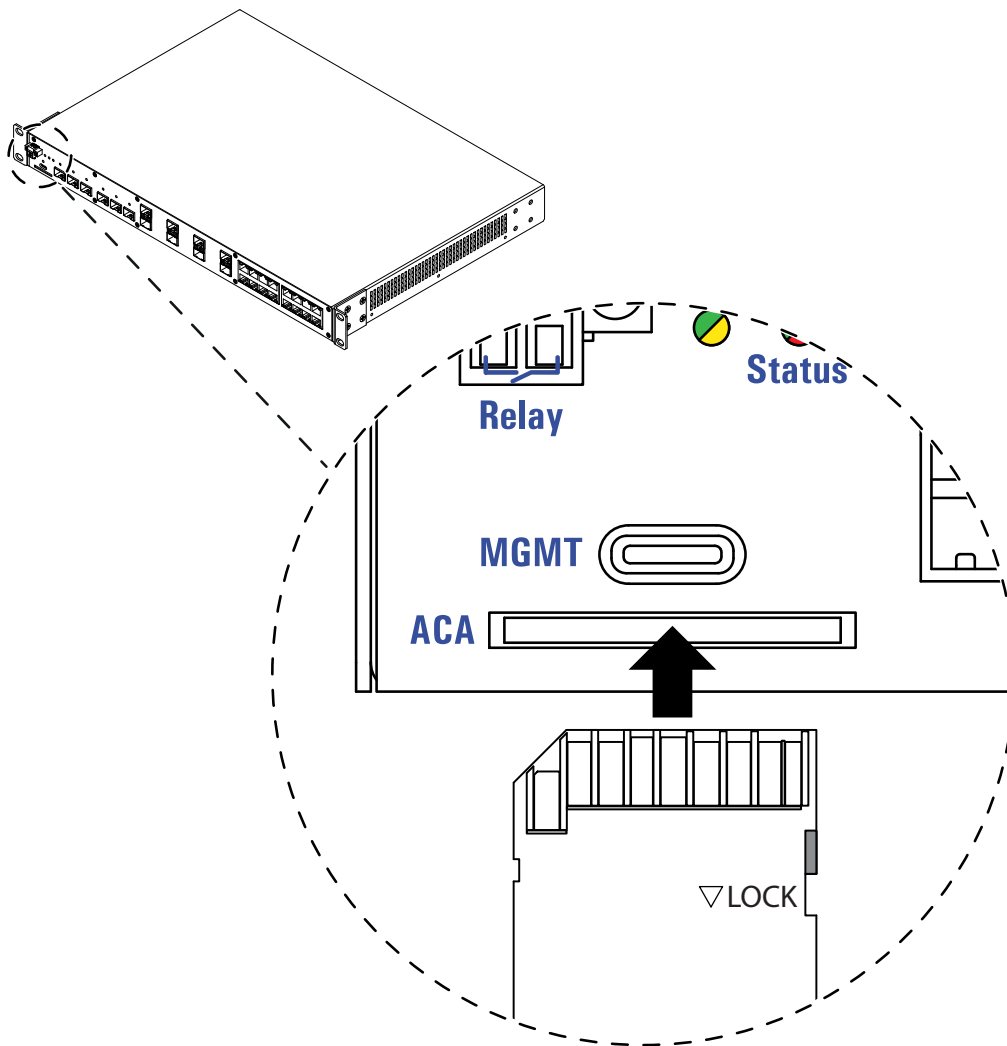*Figure 1: Installation of the storage medium ACA31 using the example GRS105/106*

☐ Deactivate the write protection on the SD card / microSD card by pushing
the write-protect lock towards the contacts.
☐ Applies to ACA31:
Push the SD card into the slot with the beveled corner on the front left
side.
☐ Applies to ACA41:
Push the microSD card into the slot with the beveled corner on the front
right side.

Note: In some devices, the slot is protected by a locking mechanism. Disengage the locking mechanism before you insert or remove the SD card / microSD card.

Note: Note that upon restart, the host device—depending on its configuration—adopts the configuration saved on the ACA21... / ACA22... / ACA31 / ACA41 storage medium. The status of the storage medium in the graphical user interface or in the Command Line Interface tells you if the configuration on the ACA21... / ACA22... / ACA31 / ACA41 storage medium corresponds with the configuration on the host device.

3 Pin assignments

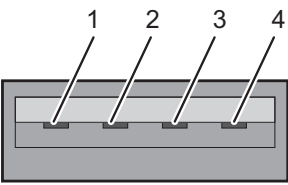## 3.1 ACA21-USB (EEC), ACA22-USB (EEC), ACA22A-USB Mini

Figure	Pin	Function
	1	U_{in}
	2	− Data
	3	+ Data
	4	Ground (GND)

Table 1:   Pin assignment of the USB-A interface

3.2 ACA22-USB-C (EEC)

Name	Pin	Pin	Name
GND	B12	A1	GND
-	B11	A2	-
-	B10	A3	-
V BUS	B9	A4	V BUS
-	B8	A5	CC1
D-	B7	A6	D+
D+	B6	A7	D-
CC2	B5	A8	-
V BUS	B4	A9	V BUS
-	B3	A10	-
-	B2	A11	-
GND	B1	A12	GND
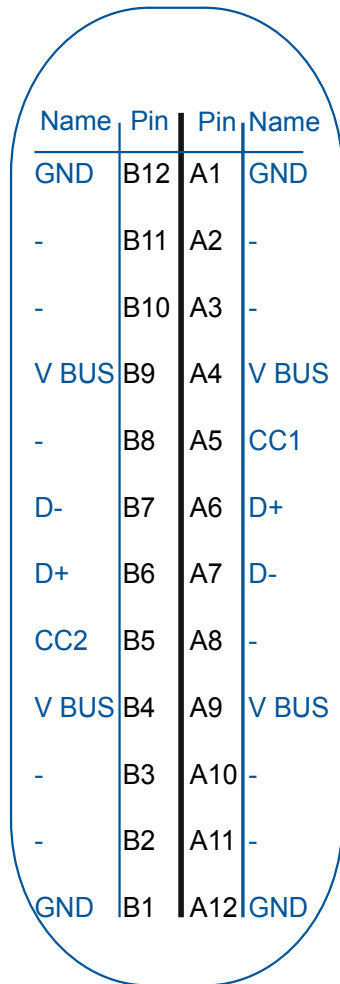
Figure 2: Pin assignment of the USB-C interface

3.3 ACA21-M12 (EEC), ACA22-M12 (EEC)

Figure	Pin	Function
	1	U_{in}
	2	—
	3	− Data
	4	Ground (GND)
	5	+ Data

Table 2: Pin assignment of the plug of the following storage media: ACA21-M12 (EEC), ACA22-M12 (EEC)

3.4   ACA22-M12-C (EEC)
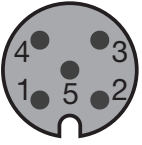
Figure	Pin	Function
	1	U_{in}
	2	CC1
	3	− Data
	4	Ground (GND)
	5	+ Data

Table 3:   Pin assignment of the plug of the following storage medium: ACA22-M12-C (EEC)

4 Operation

■ **Transferring the current configuration data on the storage medium**
You have the option of transferring the current configuration of your connected device via the graphical user interface or the Command Line Interface on the ACA21... / ACA22... / ACA31 / ACA41 storage medium and the flash memory of the host device simultaneously.

■ **Transferring the configuration data from the storage medium**
Upon restart, the host device adopts the configuration data saved on the ACA21... / ACA22... / ACA31 / ACA41 storage medium and saves them permanently in the flash memory.

■ **Updating the software**
For more information, refer to the "User Manual Configuration" document.

5   Technical data

General technical data		
Order numbers	ACA21-USB (EEC)	943 271-003
	ACA22-USB (EEC)	942 124-001
	ACA21-M12 (EEC)	943 913-003
	ACA22-M12 (EEC)	942 125-001
	ACA22-M12-C (EEC)	942 306-001
	ACA22A	942 152-001
	ACA22-USB-C (EEC)	942 239-001
	ACA31	942 074-001
	ACA41	942 342-001
USB standard	ACA21-USB (EEC)	USB 1.1
	ACA21-M12 (EEC)	
	ACA22-USB (EEC)	USB 2.0
	ACA22-M12 (EEC)	
	ACA22-M12-C (EEC)	
	ACA22A	
	ACA22-USB-C (EEC)	
SD specifications	ACA31	Version 2.0
	ACA41	
Storage capacity	ACA21-USB (EEC)	64 MB
	ACA21-M12 (EEC)	
	ACA22-USB (EEC)	512 MB
	ACA22-M12 (EEC)	
	ACA22-M12-C (EEC)	
	ACA22A	
	ACA22-USB-C (EEC)	
	ACA31	
	ACA41	
Connection type	ACA21-USB (EEC)	USB-A plug
	ACA22-USB (EEC)	
	ACA22A	
	ACA22-USB-C (EEC)	USB-C plug
	ACA21-M12 (EEC)	5-pin, "A"-coded M12 plug
	ACA22-M12 (EEC)	
	ACA22-M12-C (EEC)	
	ACA31	SD card
	ACA41	microSD card

General technical data

Dimensions	ACA21-USB (EEC)	93 mm × 29 mm × 15 mm (3.66 in × 1.14 in × 0.59 in)	
	ACA22-USB (EEC)		
	ACA21-M12 (EEC)		
	ACA22-M12 (EEC)		
	ACA22A	46 mm × 16 mm × 8 mm (1.81 in × 0.63 in × 0.31 in)	
	ACA22-USB-C (EEC)	45 mm × 17 mm × 18 mm (1.77 in × 0.67 in × 0.71 in)	
	ACA22-M12-C (EEC)	23 mm × 23 mm × 65 mm (0.91 in × 0.91 in × 2.56 in)	
	ACA31	32 mm × 24 mm × 2,1 mm (1.26 in × 0.94 in × 0.08 in)	
	ACA41	15 mm × 11 mm × 1 mm (0.59 in × 0.43 in × 0.04 in)	
Weight	ACA21-USB (EEC)	50 g (1.76 oz)	
	ACA22-USB (EEC)		
	ACA21-M12 (EEC)	70 g (2.47 oz)	
	ACA22-M12 (EEC)		
	ACA22-M12-C (EEC)	80 g (2.82 oz)	
	ACA22A	6 g (0.21 oz)	
	ACA22-USB-C (EEC)	10 g (0.35 oz)	
	ACA31	5 g (0.18 oz)	
	ACA41	0.4 g (0.01 oz)	
Degree of protection	ACA21-USB (EEC)	IP20	
	ACA22-USB (EEC)		
	ACA22A		
	ACA22-USB-C (EEC)		
	ACA31		
	ACA41		
	ACA21-M12 (EEC)	IP67	
	ACA22-M12 (EEC)		
	ACA22-M12-C (EEC)		
Cable length	ACA21-USB (EEC)	50 cm (19.69 in)	
	ACA22-USB (EEC)		
	ACA21-M12 (EEC)		
	ACA22-M12 (EEC)		
	ACA22A	0 cm (0 in)	
	ACA22-USB-C (EEC)		
	ACA22-M12-C (EEC)		
Power supply	ACA21... / ACA22...	Maximum rated voltage DC	5.5 V
		Maximum current consumption	150 mA
		Class 2	

Ambient conditions

Climatic conditions during operation	Ambient air temperature[a]	ACA21... / ACA22...	-40 °C ... +70 °C (-40 °F ... +158 °F)
		ACA31 ACA41	-40 °C ... +85 °C (-40 °F ... +185 °F)
	Humidity		10 % ... 95 % (non-condensing)
	Air pressure		min. 795 hPa (+2000 m ASL; +6562 ft ASL) max. 1060 hPa (-400 m ASL; -1312 ft ASL)
Climatic conditions during storage	Ambient air temperature[a]	ACA21... / ACA22...	-40 °C ... +85 °C (-40 °F ... +185 °F)
		ACA31 ACA41	-45 °C ... +85 °C (-49 °F ... +185 °F) up to 3 months
			-40 °C ... +70 °C (-40 °F ... +158 °F) up to 1 year
			-40 °C ... +50 °C (-40 °F ... +122 °F) up to 2 years
			0 °C ... +30 °C (+32 °F ... +86 °F) up to 10 years
	Humidity		10 % ... 95 % (non-condensing)
	Air pressure		min. 700 hPa (+3000 m ASL; +9842 ft ASL) max. 1060 hPa (-400 m ASL; -1312 ft ASL)

a. Temperature of the ambient air at a distance of 5 cm (2 in) from the device

EMC and immunity

Immunity	Vibration IEC 60068-2-6, test Fc	ACA21... / ACA22...	8.4 Hz ... 200 Hz with 1 g 200 Hz ... 500 Hz with 1.5 g
		ACA31	10 Hz ... 150 Hz with 1 g
		ACA41	10 Hz ... 2000 Hz, 6 G_{rms}, 30 mins per axis
	Shock IEC 60068-2-27, test Ea		15 g at 11 ms
EMC interference emission	EN 55032		
EMC interference immunity	EN 61000-4-2	ACA21... / ACA22... ACA31	6 kV contact discharge 8 kV air discharge
		ACA41	Contact pad: ±4 kV Non-contact pad (Coupling plane discharge): ±8 kV Non-contact pad (Air discharge): ±15 kV
	EN 61000-4-3		max. 10 V/m

Underlying technical standards

The device has an approval based on a specific standard exclusively if the approval indicator appears on the device casing.

If your device has a shipping approval according to DNV, you find the approval mark printed on the device label. You will find out whether your device has other shipping approvals on the Hirschmann website at www.hirschmann.com in the product information.

EN 50121-4	Railway applications – EMC – Emission and immunity of the signaling and telecommunications apparatus (Rail Trackside)
EN 60079-0	Explosive atmospheres – Part 0: Equipment – General requirements
EN 60079-7	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
EN 60079-11	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
FCC 47 CFR Part 15	Code of Federal Regulations
IEC/EN 61850-3	Communication networks and systems for power utility automation - Part 3: General requirements.
IEEE 1613	IEEE Standard Environmental and Testing Requirements for Communication Networking Devices in Electric Power Substations
CAN/CSA C22.2 No. 213	Non-incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations.
ANSI/UL 121201	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
NEMA TS 2	Traffic Controller Assemblies with NTCIP Requirements (environmental requirements)
UL 508	Safety for Industrial Control Equipment

A   Further support

Technical questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You find the addresses of our partners on the Internet at https://www.belden.com.

A list of local telephone numbers and email addresses for technical support directly from Hirschmann is available at https://hirschmann-support.belden.com.

This site also includes a free of charge knowledge base and a software download section.

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