ArgusOMDS | DynaMaster | SmartProtect | DynaGo

COMPONENT MANUAL

ChargeAmplifier

In-Line Charge Amplifier

007-B | 2026-07-27

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Specific Safety Instructions

Before using this product, the user must be familiar with the general safety instructions. Use the separate ***Safety Information*** manual for this purpose.

This chapter only describes specific safety instructions for this product.

Field of Application

The **IFTA** *ChargeAmplifier* (*CA*) has been designed to be mounted as described in the chapter ***Installation***. Other uses are not permitted due to safety aspects.

Use in potentially explosive Atmospheres

The *CA* can be installed in potentially explosive atmospheres. The product can be ordered with or without an external industrial housing as shown in the chapter ***Ordering Information***.

Also mind the special ambient temperature range as shown in the chapter ***Environmental*** below.

For further information regarding the certifications please see chapter ***Specifications - Potentially explosive Atmospheres***. The certifications applicable to the product depend on the ordered variant specified by the ***Housing / Installation*** and ***Option*** key shown in the ***Ordering Information*** chapter.

The *CA* was certified within a complete **IFTA** measurement setup as shown in the chapter ***Measurement Chain Example.*** In order to get the best experience and measurement results we highly recommend using the *CA* with this setup.

The certification is only valid within the technical specifications as described in the chapter ***Specifications***.

Without industrial Housing

In case the version without the industrial housing is used (e.g. models with suffix ***B00*** or ***B02***), the equipment shall be installed in an enclosure that provides a degree of protection not less than *IP 54* in accordance with *EN IEC 60079-0*.

With industrial Housing

For models with industrial housing (suffix ***B01*** or ***B03***) only: Equipment for fixed installations where the installation is intended to minimize the risk of electrostatic discharge.

For Version with intrinsically safe Input (Ex ec [ic])

Mind special requirements as described in the ***Specifications*** chapter under ***Potentially explosive Atmospheres - For version with type of protection Ex ec [ic]***!

Always verify that the components are marked with the special Ex symbol as it is described in the separate ***Safety Information*** manual.

Note

Scope of Applicability

This manual was created for the hardware with product key ***0330*** (see ***Ordering Information***). The hardware variant can be determined with the help of the product label attached to the housing.

Product Description

The product is a charge amplifier to convert dynamic charge signals into a voltage signal for further analysis. It is usable for a wide range of sensor types and an essential part of the **IFTA** measurement setup.

Specifications

Features

- Support of piezo pressure and acceleration sensors
- A wide range of different sensitivities are available as shown in the chapter ***Ordering Information*** (others on request)
- Available for wall mounting, with DIN rail or with Ex-certified housing
- Certifications for potentially explosive atmospheres as described in the chapter ***Potentially explosive Atmospheres*** below.
- Optional Ex-certified housing for up to 8 amplifiers available (**IFTA** *Enclosure CA8*)

Environmental

Operating temperature:	-20 ... 75 °C
Storage temperature:	-40 ... 85 °C
Humidity:	0 ... 95 % non-condensing
Altitude:	Max. 2 000 m

Pollution degree: The device may only be used in areas with pollution degree 2 or better, as defined in *EN IEC 60664-1*.

General

ChargeAmplifier

Case material:	Sheet steel, galvanized
Weight:	175 g
Dimensions:	See ***Figure 1***
Protection class:	For Ex environment the *CA* must be installed in an enclosure that provides a degree of protection not less than *IP 54* in accordance with *EN IEC 60079-0*.
Calibration cycle:	One year

Industrial Housing (with one mounted CA)

Material:	Fibreglass reinforced polyester
Seal:	Silicone sealing cord up to 130 °C
Weight:	690 g (including a mounted *CA*)
Dimensions:	See ***Figure 3***
Protection class:	> *IP 65*

Technical Data

Frequency range:	3 Hz ... 40 000 Hz (-3 db) [1]
Linearity:	±1 % FSO
Thermal drift:	100 ppm/ °C typical

Signal Input

Valid input ranges:	±20 ... ±1000 pC [1]
Input coupling:	AC
Input protection:	100 Ω series resistor
Input termination:	1 MΩ

Due to its construction, the *CA* does not emit any current or voltage through its input terminals.

Signal Output and Power Supply

Output signal:	12 V operating point; ±5 V signal
IEPE current supply:	4 ... 12 mA [2]
Supply voltage:	20 ... 28 VDC

[1] Option with enhanced input range and different frequency range available, see ***Ordering Information***

[2] For the best performance the use of 12 mA is recommended.

Potentially explosive Atmospheres

Certificates can be requested by contacting support@ifta.com or found on https://www.ifta.com.

For version with type of protection Ex ec

Increased safety

Ex marking: II 3G Ex ec IIC T5 Gc
EPS 15 ATEX 1 821 X
IECEx EPS 26.0019X

For version with type of protection Ex ec [ic]

Associated equipment with intrinsically safe input

Ex marking: II 3 (3) G Ex ec [ic] IIC T5 Gc
EPS 26 ATEX 1 131 X
IECEx EPS 26.0038X

U_o: 2.2 V I_o: 22 mA P_o: 25 mW C_o: 19 µF L_o: 9 mH

Only connect passive sensors to the input of the *ChargeAmplifier*!

Ordering Information

Product Key □□□□	Module □□	Sensor Type □	Amplification □□□□ □	Environment □□	Housing / Installation □□□	Design □		Options □□
0330	CA	S	0005.0	St	B00	D	Default	A
		D	0010.0	Ex	B01	C	Custom	I
			0025.0		B02	P	Prototype	*x - ZZ*
			0050.0		B03			
			0100.0					
			0250.0					
			0000.5					
			0002.9					
			0052.6					
			0080.7					

Sensor Type	
S	Single ended
D	Differential

Amplification	
0005.0	5 mV/pC
0010.0	10 mV/pC
0025.0	25 mV/pC
0050.0	50 mV/pC
0100.0	100 mV/pC
0250.0	250 mV/pC
0000.5	0.5 mV/pC
0002.9	2.941 mV/pC
0052.6	52.63 mV/pC
0080.7	80.65 mV/pC

Environment	
St	Standard
Ex	Explosive Ex

Housing / Installation	
B00	Wall mounting
B01	With industrial Housing
B02	DIN rail (TS35)
B03	With industrial Housing for Ex ec [ic] protection

Options	
A	High-pass filter and increased input range: *Frequency range:* *100 Hz ... 40 000 Hz (-3 db)* *Valid input ranges:* *±200 ... ±10 000 pC*
I	Ex ec [ic] version *(without this option, the protection type is Ex ec)*
x - ZZ	*Spare*

Default

Component Layout

As mentioned above, the *CA* is available in different variants:

- For wall mounting
- With DIN rail (*TS35*) (e.g. for mounting in an **IFTA** *Enclosure CA8*)
- With Ex certified industrial housing

This chapter describes all those types, marked with the corresponding housing / installation type as defined in the chapter ***Ordering Information***.

ChargeAmplifier for Wall Mounting (B00)

Dimensions

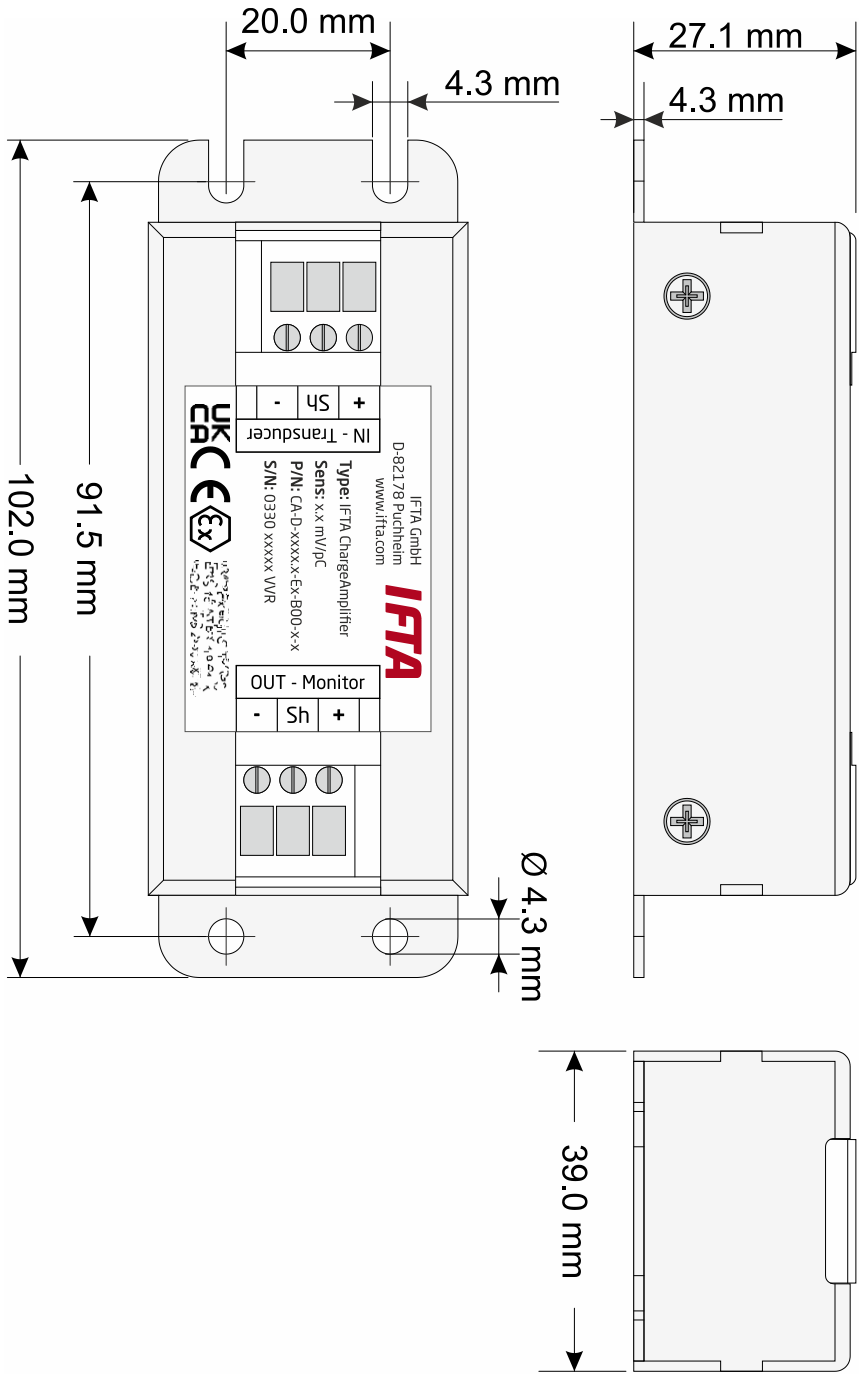

Figure 1: *Dimensions of the CA for wall mounting (figure similar, subject to modification)*

Layout

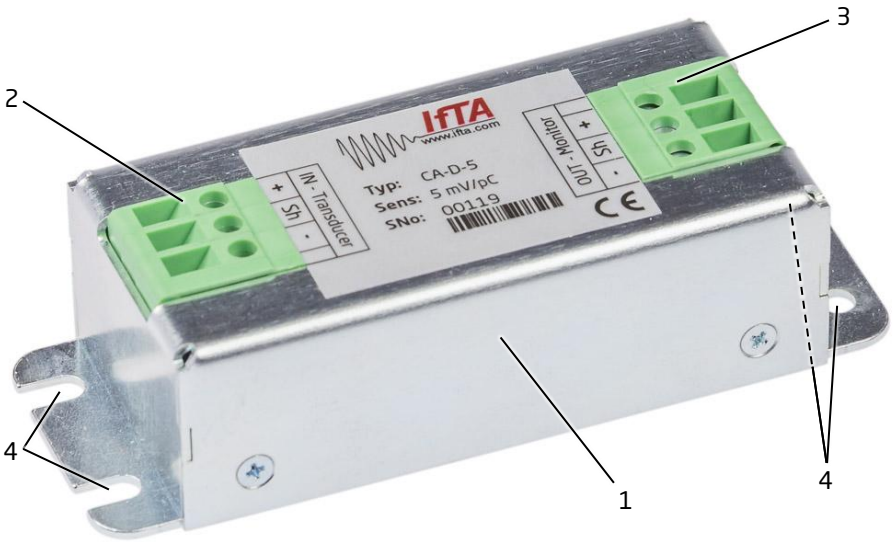

Figure 2: *Layout of the CA for wall mounting (figure similar, subject to modification)*

(1) Case
Housing of the *CA*

(2) Transducer - Input
3-pin screw terminal (the exact pin assignment is shown in ***Figure 7*** and ***Figure 8***)

(3) Monitor - Output
3-pin screw terminal (the exact pin assignment is shown in ***Figure 7*** and ***Figure 8***)

(4) Fixing Points
Four fixing points for the mounting of the *CA* (for details regarding the mounting see ***Installing the CA without Housing***)

ChargeAmplifier with industrial Housing (B01, B03)

Dimensions

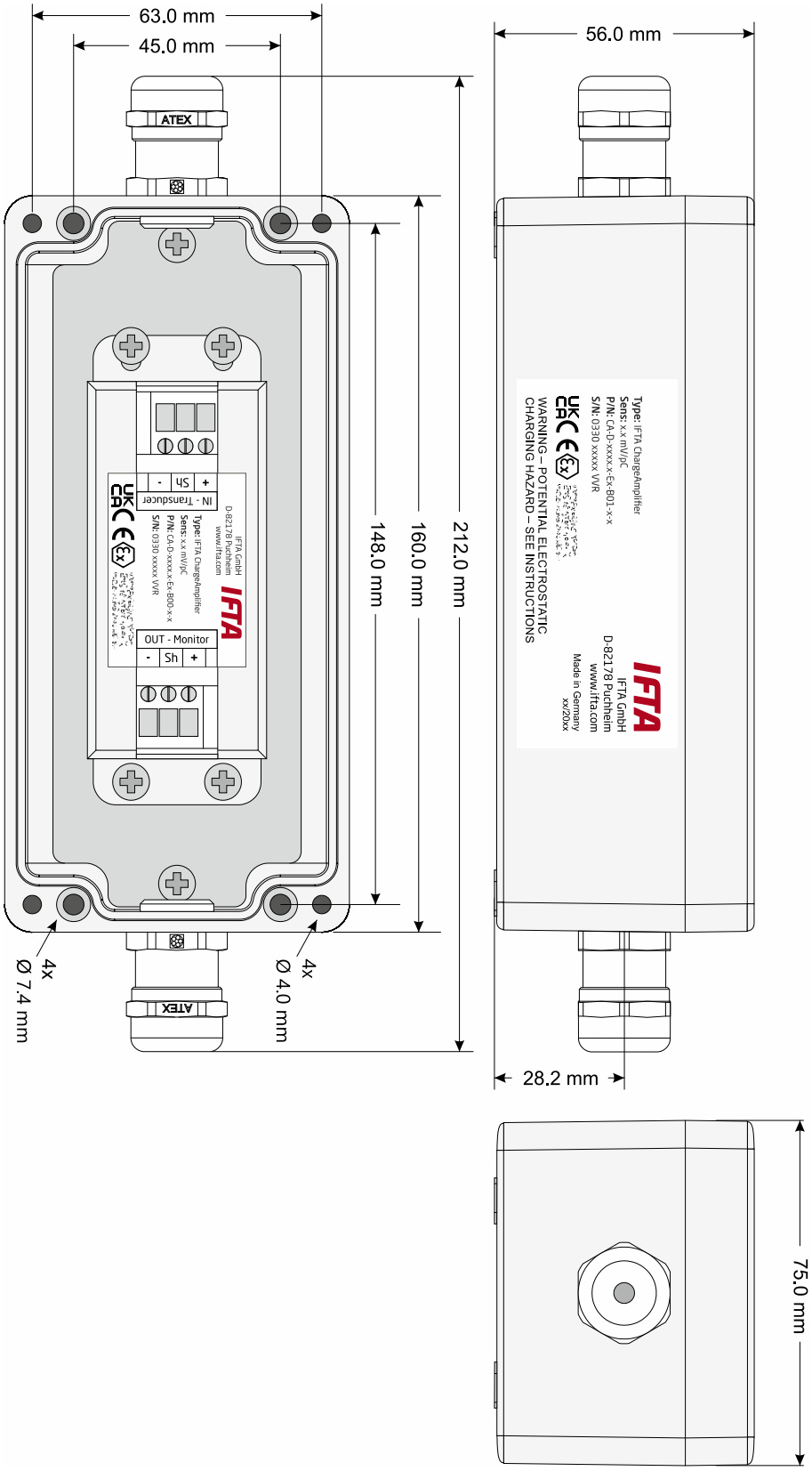

Figure 3: *Dimensions of the industrial housing (figure similar, subject to modification)*

Layout

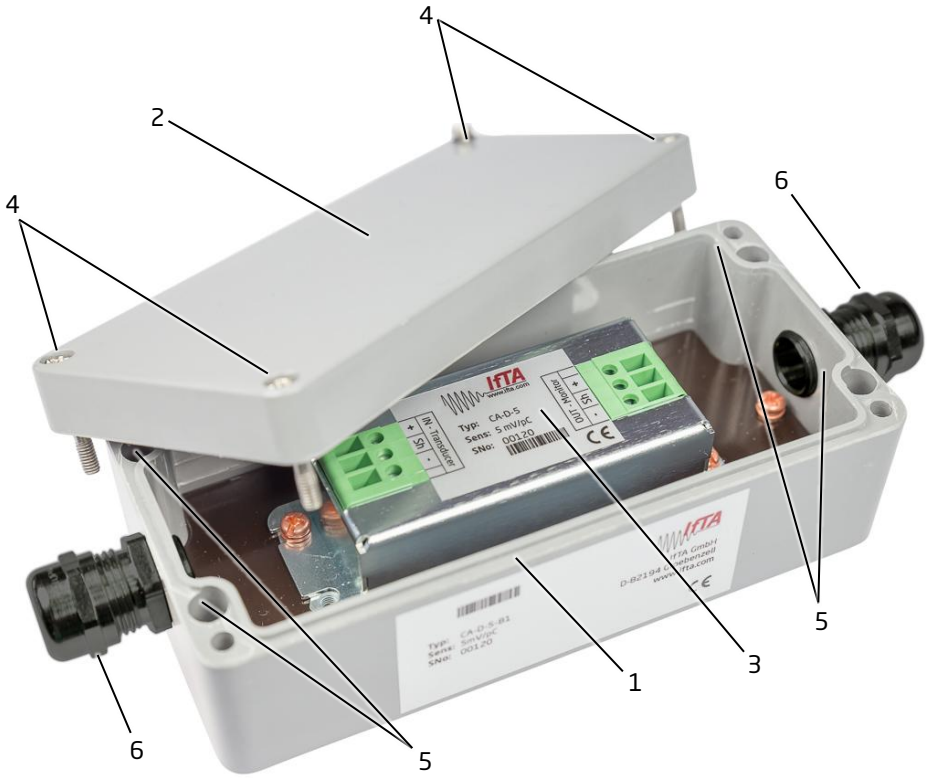

Figure 4: *Layout of the industrial housing (figure similar, subject to modification)*

(1) Industrial Housing
Ex certified industrial enclosure for the *CA*

(2) Cover
Cover of the industrial housing

(3) ChargeAmplifier
Mounted *CA*

(4) Cover Screws
Four screws to attach the housing cover

(5) Fixing Points
Four holes for the mounting of the industrial housing (for details regarding the mounting see chapter ***Installing the CA with industrial Housing***)

(6) Stuffing Gland
For the installation of the cables

ChargeAmplifier with DIN Rail (B02)

Dimensions

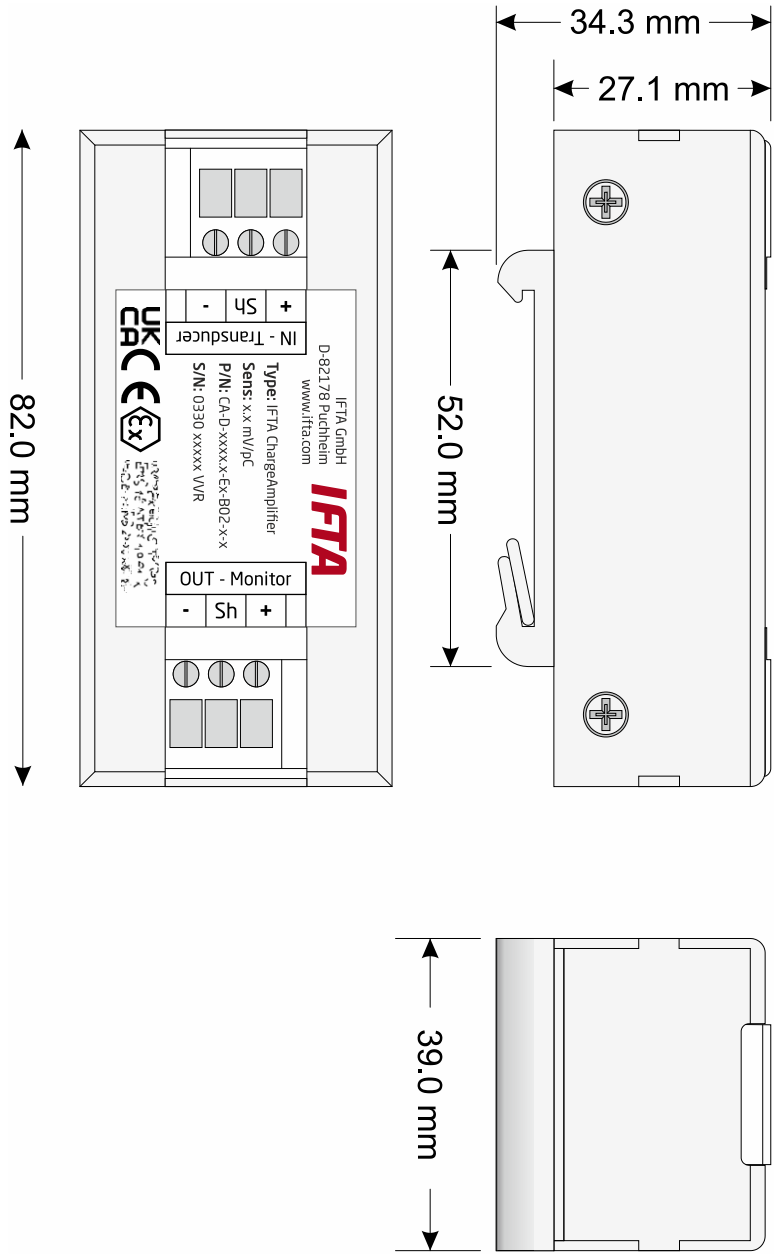

Figure 5: *Dimensions of the CA with DIN rail (figure similar, subject to modification)*

Layout

Beside the four fixing points, the layout is comparable to the version for wall mounting (see ***Figure 2***).

Technical Description

Schematics

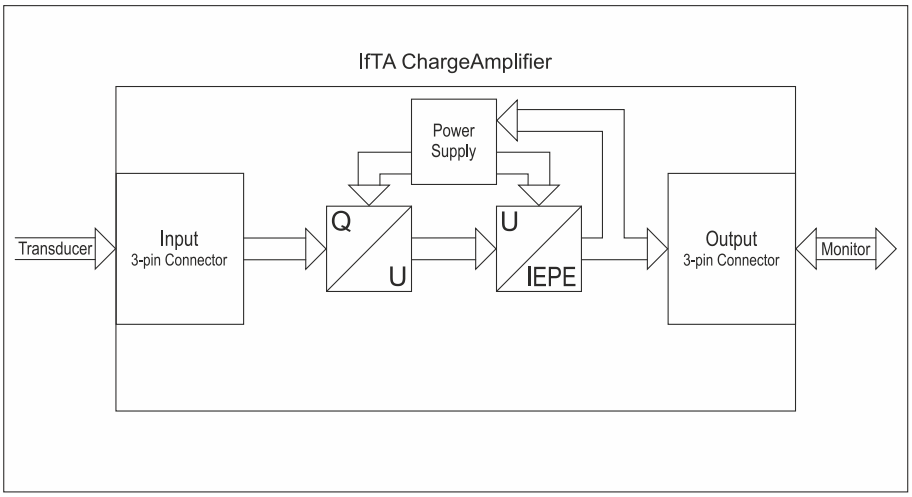

Figure 6: *Schematics of the CA (figure similar, subject to modification)*

Pin Assignment

For detailed information regarding the pin assignment see ***Figure 7*** and ***Figure 8*** below.

Measurement Chain Example

The *CA* is best used in a measurement setup with an **IFTA** system like the *ArgusOMDS*. This chapter includes two example configurations for both differential and single ended mode and the use with an *ArgusOMDS* system. The schematics are shown in the ***Figure 7*** and ***Figure 8*** below.

Using Differential CA with Single Ended Sensors

In case the *CA* is connected to a single ended sensor, as shown in the example below, and the differential version of the product is used (see ***Ordering Information***), the amplitude will be halved.

The signal quality may vary from case to case, and the example setup shown for the single ended mode below is not always the ideal configuration. As an alternative, the sensor "-" can be connected to the *CA's* "-" terminal instead of "SH". Additionally, in some setups, bridging the *CA's* "-" and "SH" terminals will lead to the best results. In the two latter cases the amplitude will not be halved.

Differential Mode

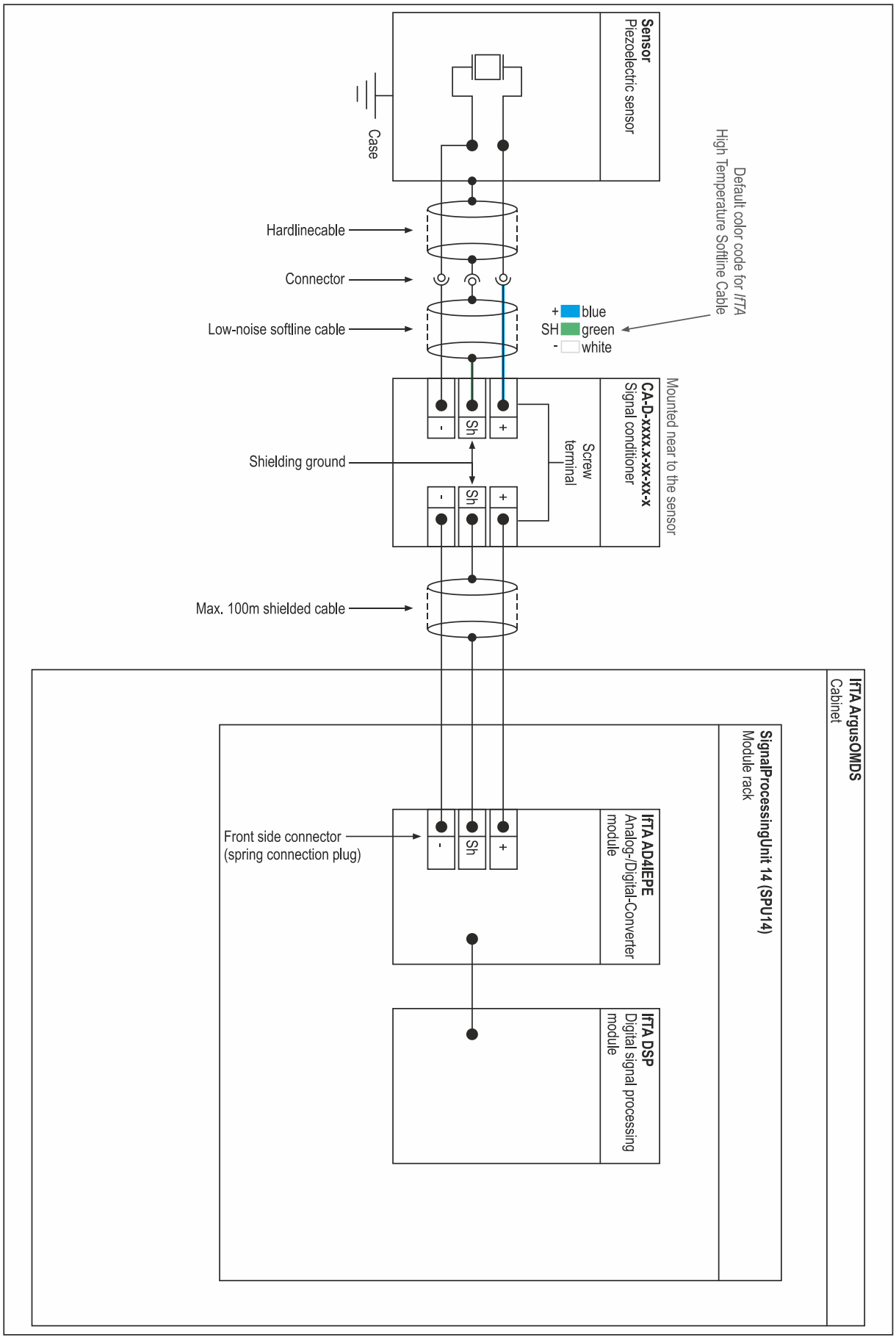

Figure 7: *Schematics of the differential mode measurement chain (figure similar, subject to modification)*

Single Ended Mode

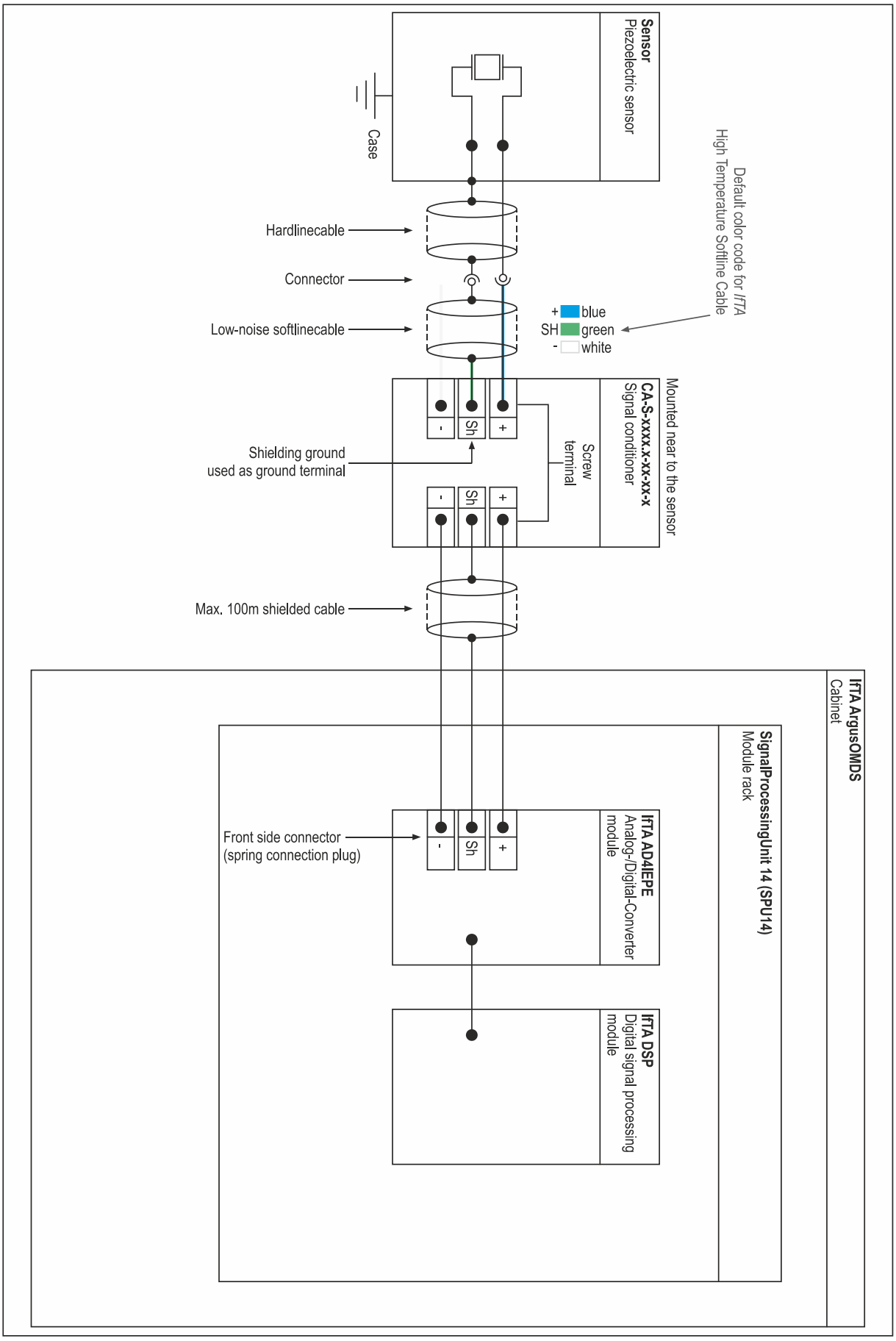

Figure 8: *Schematics of the single ended mode measurement chain (figure similar, subject to modification)*

Installation and Maintenance

Installing the CA with industrial Housing

Mounting of the industrial Housing

(1) Choose a vibration-free place for the mounting.

(2) Remove the cover of the industrial housing by unscrewing the four cover screws (see ***Figure 4***).

(3) Use the four fixing points (see ***Figure 4***) to mount the housing on a suitable surface.

(4) Continue with the steps described in the chapter below.

Connecting Cables

Risk of electrostatic discharge. Equipment for fixed installation where the installation is intended to minimize the risk from electrostatic discharge. Clean with damp cloth only. Not suitable for application with strong electrostatic charging processes.

Industrial Housing

(1) Loosen the stuffing glands (see ***Figure 4***).

(2) Pass the cables through the stuffing glands into the designated position.

(3) Tighten the stuffing glands and verify that the cables are securely fastened by the stuffing glands to ensure a proper sealing.

(4) Continue with the next chapter to connect cables to the charge amplifier.

Mind that there are two different types of stuffing glands used as described below. The specification of them is as follows:

Type A - Sensor Side

Clamping range: 3 ... 6 mm

Tightening torque: 2 Nm

For the softline cables coming from the sensor side

Type B - Monitor Side

Clamping range: 5 ... 10 mm

Tightening torque: 3 Nm

For the outgoing cables to the monitor side

ChargeAmplifier

Before connecting anything to the charge amplifier, ensure to be familiar with the requirements as shown in the chapter ***Specifications*** and the terminal specifications as shown below.

The charge amplifier has two 3-pin screw terminals for the signal in- and output as shown in ***Figure 2.*** The terminal specification is as follows:

Valid cable types:	0.2 ... 2.5 mm² solid wire
	0.2 ... 2.5 mm² flexible
	0.25 .... 1.5 mm² flexible with end sleeve
	AWG24 ... AWG14
Stripping length:	9.0 mm
Tightening torque:	0.4 ... 0.5 Nm

(1) Ensure that the cable type is fitting the described specification above.

(2) Connect the cable to the corresponding pin of the two screw terminals (the exact pin assignment is shown in ***Figure 7*** and ***Figure 8***).

(3) Install the cover of the industrial housing again.

Installing the CA without Housing

Installation

The user must ensure that the *CA* will be installed into a certified housing for the mounting in potentially explosive atmospheres.

It is very important to ensure that the housings of the amplifiers do not touch each other and that there is no contact between them.

For this purpose, always install the wall mounting variant on a surface which is electrically non-conducting.

When using the DIN rail variant, it is recommended to install spacer between the amplifiers as shown in the ***Figure 9*** below.

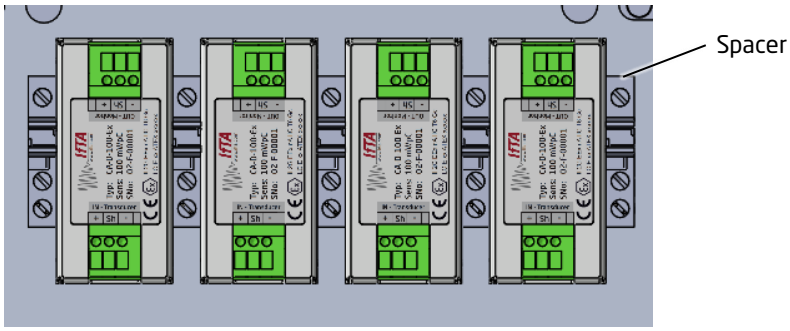

Figure 9: *Recommended installation of the DIN rail ChargeAmplifier (figure similar, subject to modification)*

ChargeAmplifier for Wall Mounting

Use the four fixing points (see ***Figure 2***) to mount the *CA* into a suitable housing and mind the information in the chapter ***Installation*** above.

ChargeAmplifier with DIN Rail

Use the DIN rail at the rear side to mount the *CA* into a suitable housing and mind the information in the chapter ***Installation*** above.

Connecting Cables

Please use the chapter ***Connecting Cables - ChargeAmplifier***.

Maintenance and Cleaning

The *ChargeAmplifier* has no actively turning parts nor other components which would require maintenance.

However, it is necessary to keep the device clean and free from dust using a soft cloth. Especially the connectors need to be clean to avoid any signal distortions.

It is also highly recommended to follow the calibration cycle mentioned in the chapter ***Product Description - General.*** Recalibration at the **IFTA** laboratory can be offered - contact us for details.

Declarations and Certificates

CE

EU Declaration of Conformity

Manufacturer Address:	IFTA Ingenieurbuero fuer Thermoakustik GmbH Junkersstrasse 8 D-82178 Puchheim Germany
Product:	IFTA ChargeAmplifier
Model:	0330-CA-D-xxxx.x-Ex-Bxx-x-x

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration described above is in conformity with the relevant Community harmonisation legislation:

2014/30/EU	Electromagnetic Compatibility (EMC)
2011/65/EU	Restriction of Hazardous Substances (RoHS)
2014/34/EU	Equipment and protective systems intended for use potentially explosive atmospheres

Compliance was proved by the application of the following standards:

EMC	EN 61326-1:2013 EN 55011:2009+A1:2010
ATEX	EN IEC 60079-0:2018, EN 60079-7:2015 EN IEC 60079-7:2015/A1:2018 NB: Bureau Veritas Consumer Service Germany GmbH NB Nr.: 2004 COC: EPS 15 ATEX 1 821 X
RoHS	EN IEC 63000:2018

The object of the declaration described above is in conformity with Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (OJ L 174, 1.7.2011, p. 88)

March 17, 2026 Puchheim

Date / Place

Dr. Jakob Hermann, General Manager

Appendix

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