CSM Current Clamps/Hioki Current Clamps

Technical Information

Innovative Measurement and Data Technology

Copyright

Trademarks

Product disposal/recycling

If this symbol (crossed-out wheeled bin) appears on the device, this means that the European Directive 2012/19/EU applies to this device.

The correct disposal of old equipment will protect the environment and people from possible negative consequences.

Become familiar with local regulations for separate collection of electrical and electronic equipment.

Follow local regulations and do not dispose of old equipment with household waste.

Contact information

CSM offers support for its products over the entire product life cycle. Updates for the individual components (e.g. documentation, configuration software and firmware) are made available on the CSM website. To keep up to date, it is therefore recommended that you check the download area of the CSM website for updates at least once a month.

Contents

1 Technical Information 4
1.1 To which current clamps does this document apply? 4
1.2 Measurement setups with current clamps 4
1.2.1 CSM Current Clamp 4
1.2.2 Hioki Current Clamp (with ME15W connector) and CSM Supply Unit HIOKI . . . 4
1.3 Connecting the current clamp. 5
1.4 Measurement channel settings in CSMconfig. 6
1.4.1 Configuring the measurement channel by reading in the TEDS data 6
1.4.2 Configuring the measurement channel manually. 8
1.4.3 Transferring configuration data to the measurement module 9
2 Appendix. 10
2.1 List of figures 10
2.2 List of tables 10

1 Technical Information

1.1 To which current clamps does this document apply?

- **CSM Current Clamps:** CSM Current Clamps consist of a Hioki current clamp[1] and a supply unit as shown in Fig. 1-1. The two components are firmly connected to each other via the output cable of the current clamp.
- **Hioki Current Clamps** (with connector ME15W): The CSM Supply Unit HIOKI (ART1360490) allows customers to use separately purchased Hioki Current Clamps equipped with a ME15W connector in CSM measurement setups (Fig. 1-2).

i	The CSM Supply Unit HIOKI was tested by CSM with the Hioki current clamps CT6841A, CT6843A, CT6844A, CT6845A and CT6846A.

1.2 Measurement setups with current clamps

1.2.1 CSM Current Clamp

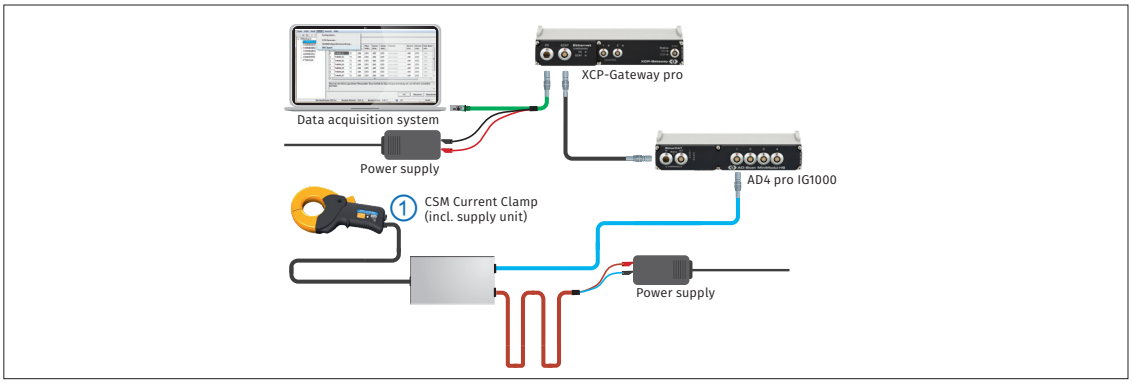

Fig. 1-1: Setup for current measurements with CSM Current Clamp (current clamp and supply unit)

1. CSM Current Clamp (Hioki current clamp firmly connected to a supply unit)

1.2.2 Hioki Current Clamp (with ME15W connector) and CSM Supply Unit HIOKI

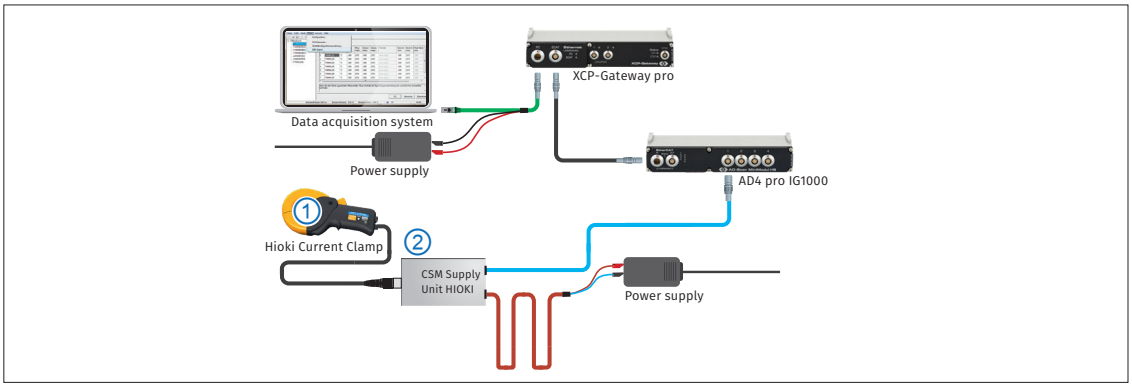

Fig. 1-2: Setup for current measurements with a Hioki Current Clamp and a separate CSM Supply Unit Hioki.

1. Hioki Current Clamp with ME15W connector
2. CSM Supply Unit Hioki

1 The current clamps offered as **CSM Current Clamp** and **Hioki Current Clamp** only differ in the output cables. The output cable of a **CSM Current Clamp** is firmly connected to the supply unit. The output cable of a **Hioki Current Clamp** is fitted with a ME15W connector.

1.3 Connecting the current clamp

NOTE!	
	The arrow (Fig. 1-3, ①) printed on the top of the current clamp indicates the direction of the flow of the primary current I_p (Fig. 1-3, ②) from the source to the consumer. If the current in the HV cable flows in the opposite direction to the arrow on the top of the current clamp, the current output is inverted.

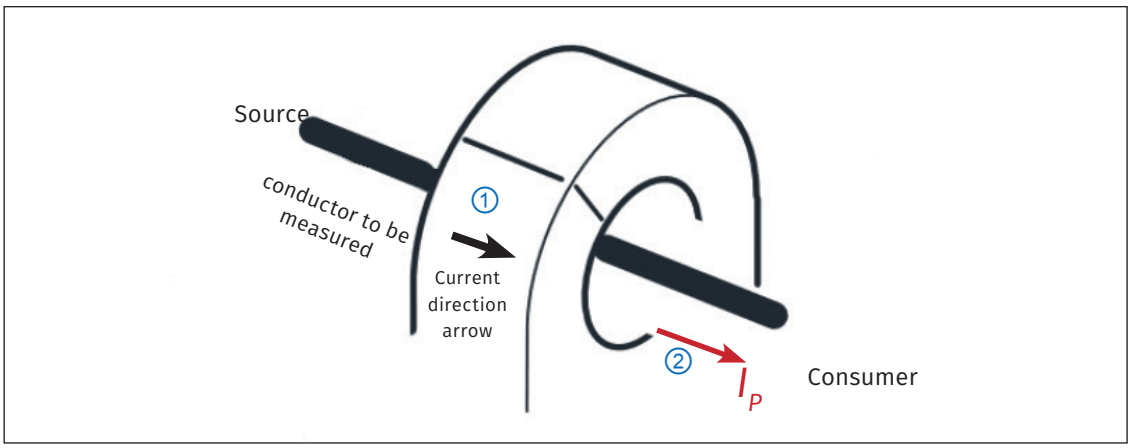

Fig. 1-3: Jaws of the current clamp and the conductor to be measured

NOTE!	
	Information on how to use a Hioki current clamp can be found in the corresponding Hioki instruction manual. The relevant Hioki instruction manuals are included in the scope of delivery.

- ☞ Connect the current clamp to the supply unit.[2]
- ☞ Connect the supply unit to the power supply (Fig. 1-2).
- ☞ If required, de-magnetize the current clamp as described in the Hioki instruction manual. Information on further procedures (e.g. zero adjustment) can also be found in the Hioki instruction manual.
- ☞ Unlock and open the jaws of the current clamp.
- ☞ Enclose the conductor to be measured with the jaws open. Make sure that only the conductor to be measured is enclosed in the jaws.
- ☞ Close and lock the jaws of the current clamp and make sure that
  - ▸ ... the conductor to be measured is not pinched between the jaws.
  - ▸ ... the current clamp is completely closed.
- ☞ Connect the blue signal cable of the supply unit to the measurement input of the AD4 ECAT MiniModule (Fig. 1-2).[3]

2 Only applicable for Hioki Current Clamps equipped with an ME15W connector in combination with a CSM Supply Unit Hioki. CSM Current Clamps are firmly connected to the supply unit.
3 The blue signal cable can also be connected to an AD CAN measurement module by using a K663 cable adapter.

1.4 Measurement channel settings in CSMconfig

NOTE!
The current clamp is connected to an external power supply (see Fig. 1-1 and Fig. 1-2). The sensor excitation provided by the measurement module is therefore not needed and can be disabled in the channel configuration dialog (Fig. 1-7, ①).

1.4.1 Configuring the measurement channel by reading in the TEDS data

A CSM Current Clamp (Fig. 1-1) is equipped with a TEDS chip (IEEE 1451.4). The TEDS chip comprises the data for the two-point scaling of the CSM Current Clamp and the setup data for the AD4 ECAT measurement module.

NOTE!
Depending on whether the data from the TEDS chip is to be read in automatically or entered manually, either the option "Automatic" or "Manual" has to be selected in the **TEDS Mode** selection menu of the **TEDS related settings** section. ☞ If in doubt, check the TEDS-specific settings in the **Program Settings** dialog.

☞ Start **CSMconfig** and open the channel configuration dialog for the measurement channel connected to the current clamp.

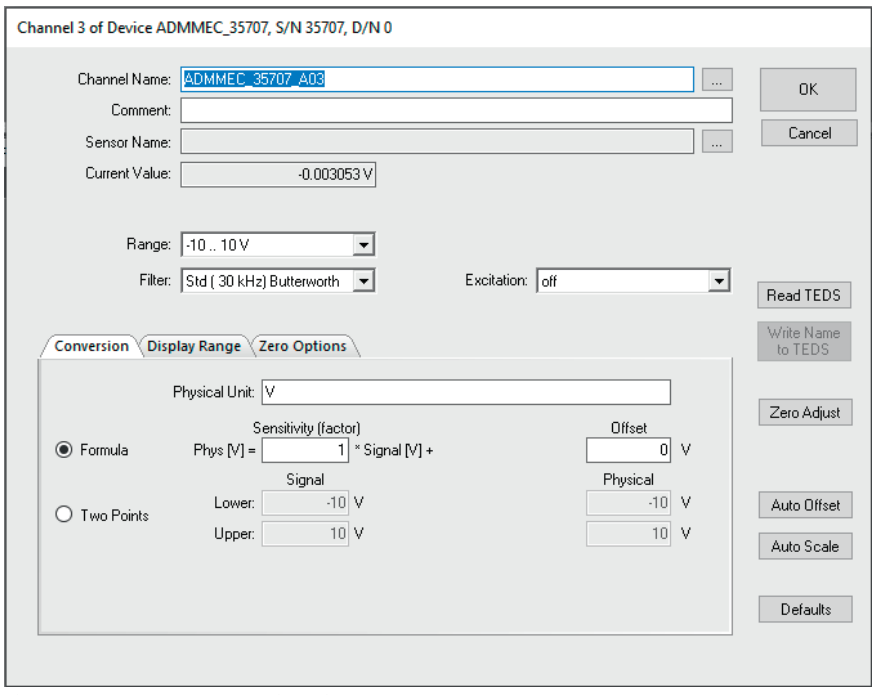

Fig. 1-4: Channel configuration dialog

☞ Click on **Read TEDS**.

⇨ The **Read TEDS** dialog opens.

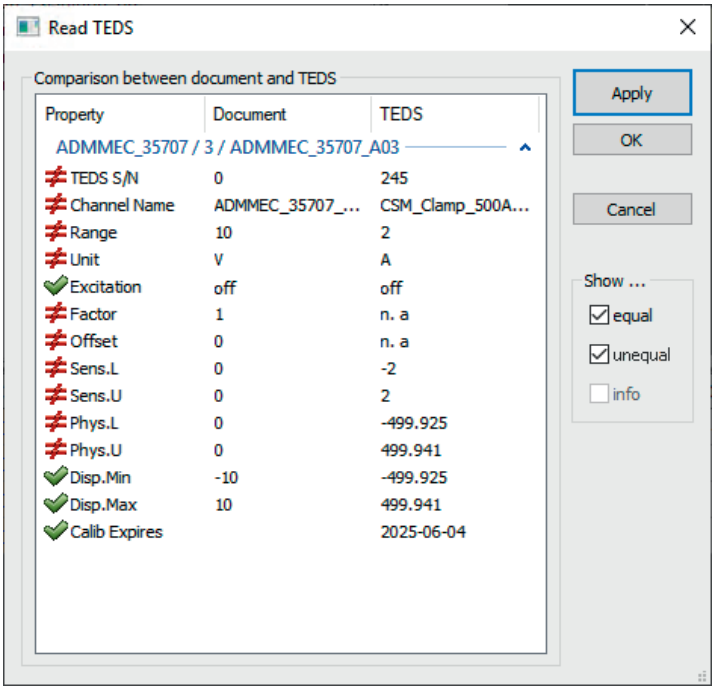

Fig. 1-5: **Read TEDS** dialog, differences between document settings and TEDS data

In the table, matches between the data stored in the TEDS and the settings in the configuration document are indicated by green check marks. Differences between the TEDS data and the settings in the configuration document are highlighted by a red "unequal" symbol.

☞ Click on **Apply** to read the data from the TEDS chip to the configuration document.

⇨ The **Read TEDS** dialog closes. The changed settings are displayed in the channel configuration dialog (compare with settings in Fig. 1-4).

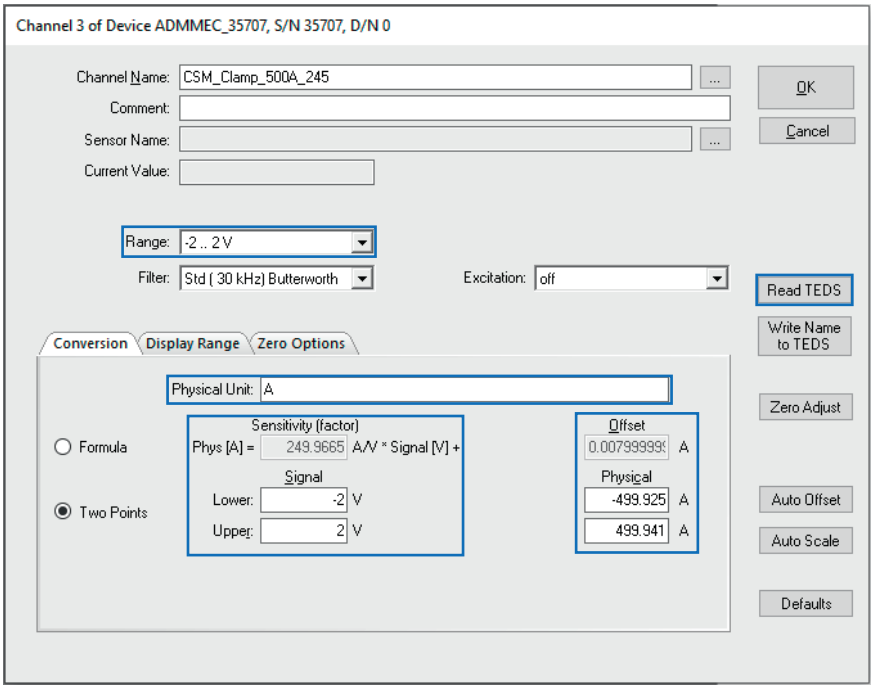

Fig. 1-6: Channel configuration dialog – adopted TEDS settings

→ *For further information, see the "Read TEDS" section in the CSMconfig online help.*

1.4.2 Configuring the measurement channel manually

i	Hioki current clamps with an MW15E connector (Fig. 1-2) generally have to be configured manually.

The following section describes how to manually adjust the channel settings depending on the type of current clamp being used.

☞ Start **CSMconfig** and open the channel configuration dialog of the measurement channel to which the current clamp is connected.

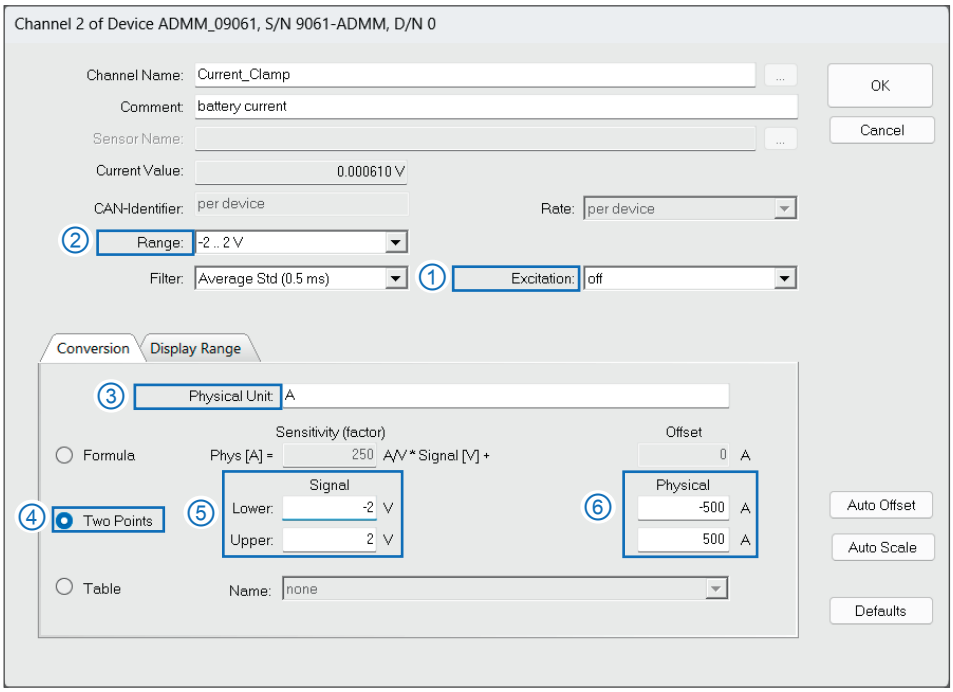

Fig. 1-7: Channel configuration dialog – settings for Hioki Current Clamp (-500 A .. 500 A)

Setting the measurement range and scaling manually (two-point scaling)

The current clamp converts the measured current I_p into an output voltage U_{Sensor}. To make sure that the voltage supplied by the current clamp is correctly interpreted by the measurement module, some settings have to be adjusted. The following section shows which values have to be adjusted for the corresponding CSM Current Clamp / Hioki current clamp in the channel configuration dialog (Fig. 1-7).

Current clamp	Nominal current	Signal (Fig. 1-7, ⑤)		Physical (Fig. 1-7, ⑥)	
		Lower	Upper	Lower	Upper
Current Clamp 20 A	-20 A..20 A	-2 V	2 V	- 20 A	20 A
Current Clamp 200 A	-200 A..200 A			- 200 A	200 A
Current Clamp 500 A (20 mm) Current Clamp 500 A (50 mm)	-500 A..500 A			- 500 A	500 A
Current Clamp 1000 A	-1000 A..1000 A			- 1000 A	1000 A

Tab. 1-1: CSM Current Clamps and Hioki Current Clamps - settings for two-points scaling

i	If a calibration certificate is available for the current clamp, the corresponding values from the calibration certificate are to be used for **Physical | Lower** and **Physical | Upper** (Fig. 1-7, ⑥) instead of the values in Tab. 1-1.

Example: To be able to measure a rated current in the range of -500 A .. 500 A using a current clamp, the following settings have to be adjusted:

- ☞ Go to **Range** and select "-2 .. 2 V" (Fig. 1-7, ②).
- ☞ Go to **Physical Unit** (Fig. 1-7, ③) and enter an "A" for Ampere.
- ☞ Enable the **Two Points** option (Fig. 1-7, ④) to enter the scaling values.
- ☞ Enter the following values in section **Two Points**, **Signal** (Fig. 1-7, ⑤) and **Physical** (Fig. 1-7, ⑥):
  - **Signal | Lower:** -2 V
  - **Signal | Upper:** 2 V
  - **Physical | Lower**: -500 A
  - **Physical | Upper**: 500 A

i	In order to be able to measure peak currents, the measurement range (Fig. 1-7, ②) has to be extended. Please refer to the corresponding Hioki instruction manual for the permitted peak currents.

1.4.3 Transferring configuration data to the measurement module

NOTE!	
	After finishing the channel configuration, the configuration data has to be transferred to the measurement module.

- ☞ Open the device configuration dialog.
- ☞ Click on **Write to device**.
  - ⇨ A confirmation prompt is displayed.
- ☞ Click on **OK**, to save the modified configuration to the measurement module.
  - ⇨ A message indicates the successful reconfiguration of the measurement module.

i	Further information on how to configure the module can be found in the user guide of the relevant AD measurement module or in the CSMconfig online help in section **Help | Overview**.

2 Appendix

2.1 List of figures

Fig. 1-1: Setup for current measurements with CSM Current Clamp (current clamp and supply unit) . . . 4

Fig. 1-2: Setup for current measurements with a Hioki Current Clamp and a separate CSM Supply Unit Hioki. . . . 4

Fig. 1-3: Jaws of the current clamp and the conductor to be measured . . . 5

Fig. 1-4: Channel configuration dialog . . . 6

Fig. 1-5: **Read TEDS** dialog, differences between document settings and TEDS data . . . 7

Fig. 1-6: Channel configuration dialog – adopted TEDS settings. . . . 7

Fig. 1-7: Channel configuration dialog – settings for Hioki Current Clamp (-500 A .. 500 A) . . . 8

List of tables

Tab. 1-1: CSM Current Clamps and Hioki Current Clamps - settings for two-points scaling . . . 8

CSM GmbH Headquarters (Germany)

Raiffeisenstr. 36 • 70794 Filderstadt
+49 711 77 96 40 sales@csm.de

CSM Office Southern Europe (France, Italy)

ArchParc • Immeuble ABC 1 • Entrée A
60, rue Douglas Engelbart • 74160 Archamps, France
+33 4 50 95 86 44 info@csm-produits.fr

CSM Products, Inc. USA (USA, Canada, Mexico)

1920 Opdyke Court, Suite 200 • Auburn Hills, MI 48326
+1 248 836 4995 sales@csmproductsinc.com

CSM (RoW)

Vector Informatik (China, Japan, Korea, India, Great Britain, Sweden)
DATRON-TECHNOLOGY (Slovakia, Czech Republic)

Our partners guarantee you worldwide availability.
Feel free to contact us.

CSM GmbH Germany is certified.

ISO 9001, ISO 14001
Certified Integrated Quality and Environmental Management System
www.tuv-sud.com/ms-cert