TECH NOTE :: AD105D Quickstart

Version: 2020-09-07
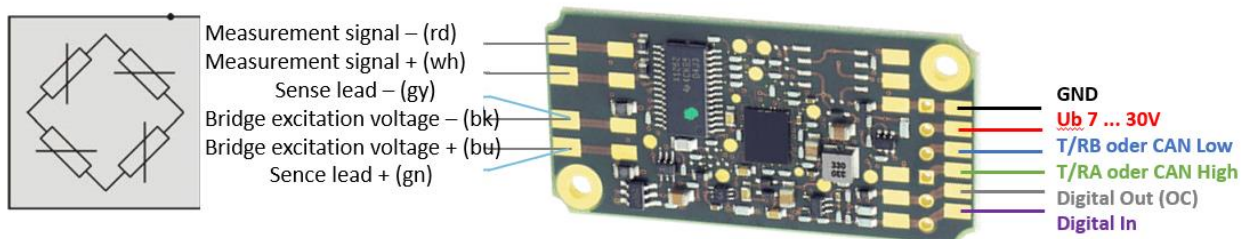Author: Michael Guckes, Roland Siepmann
Status: HBM: Public

Brief description

This is a quick guide for connecting and parameterizing the AD105D strain gauge amplifier. It shows which components are required for connection via CAN and RS485, how they are interconnected and then how the device settings can be made conveniently via the HBM PC software "PanelX" and low-level via a terminal program.

Electrical Connection

The electrical connection is described by the following picture:

The AD105D must always be connected to a power supply via the **GND** and **Ub** pins and is therefore not supplied via the adapter.

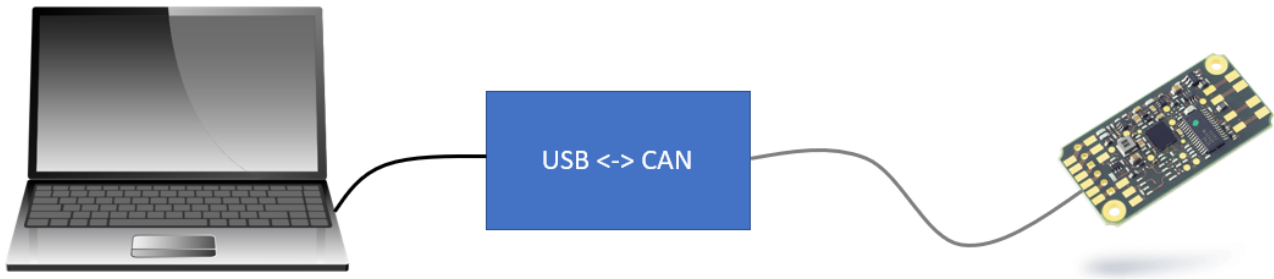For the connection to a PC via RS485 for example the following adapter can be used:
Amazon-Link

Connection

AD105D-CAN

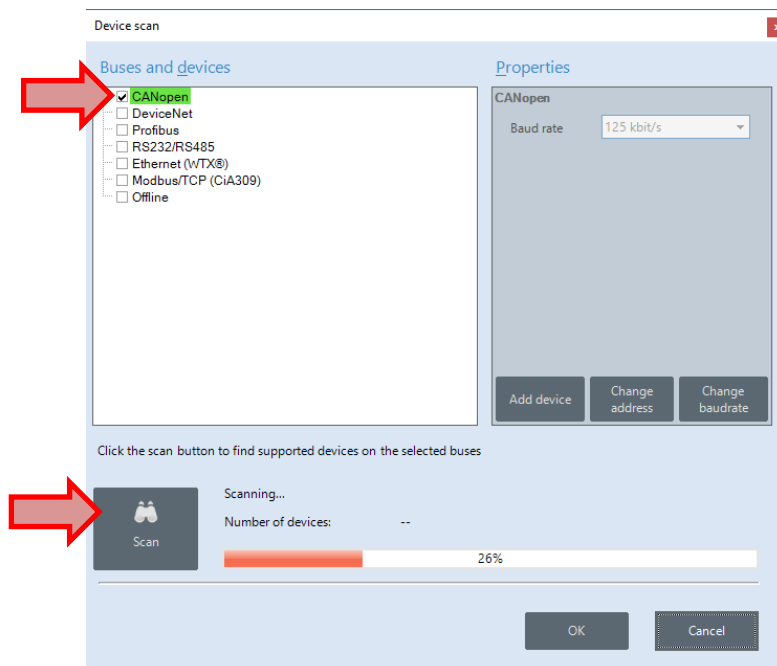The CANopen version is connected to the computer via a CAN to USB adapter.

After that the software PanelX by HBM can be used to configure the transducer electronic.
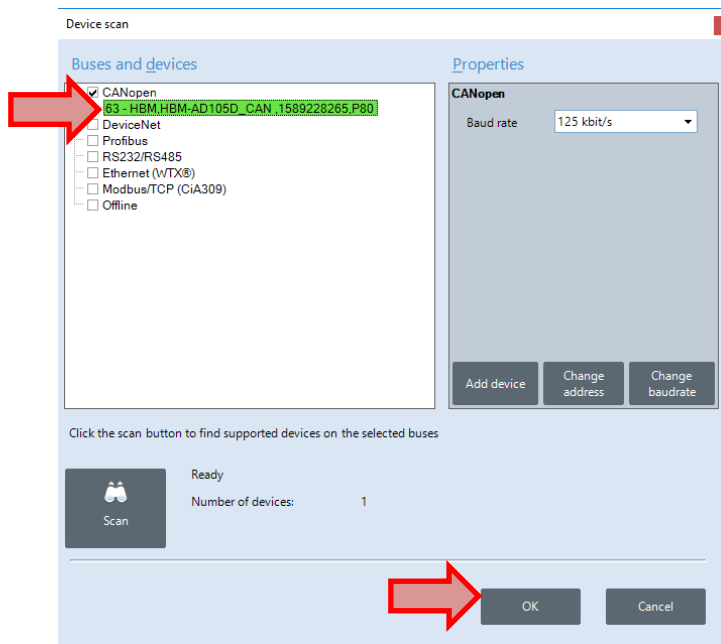
- Start the PanelX software
- Select the scan icon at 'devices'

- In the following dialog choose CANopen and start the scan

- After that select the desired device and confirm with 'OK'

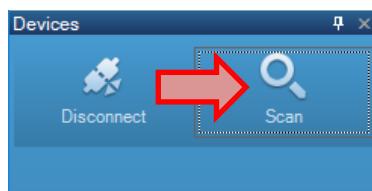The software automatically connects to the AD105D.

AD105D-RS4

The RS485 variant of AD105D can be either connected using a RS485 to RS232 adapter first and then a RS232 to USB adapter or by using a RS485 to USB adapter.
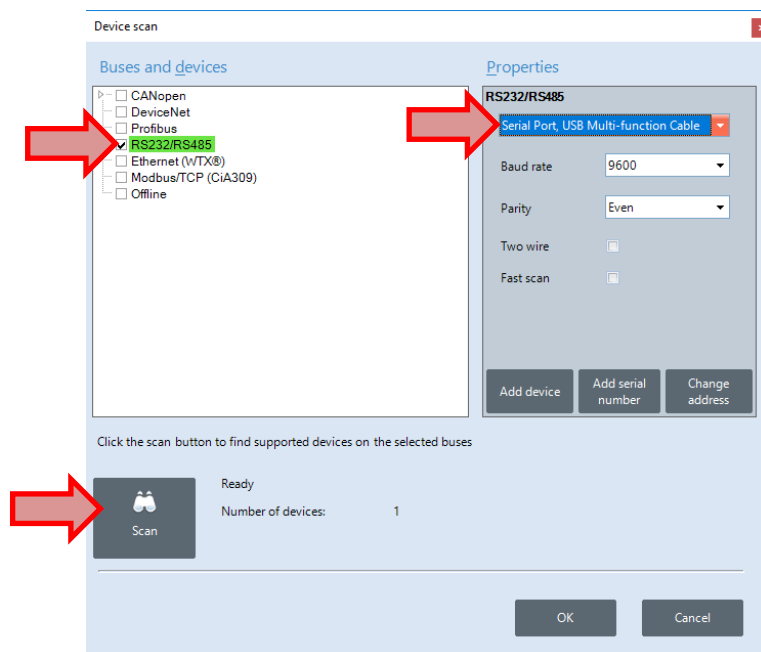

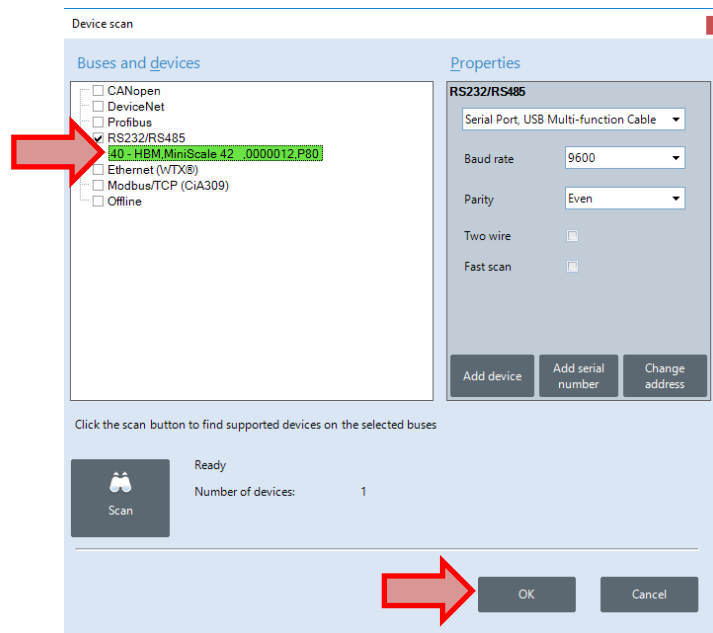After that the software PanelX by HBM can be used to configure the transducer electronic.

- Start the PanelX software
- Select the scan icon at 'devices'

- In the following dialog choose RS232/RS485 and the port
- Start the scan

- After that select the desired device and confirm with 'OK'

The software automatically connects to the AD105D.

Configuration & control with PanelX

After the transducer electronic is connected it can be configured by using the PanelX software.

In the upper region are several menus that lead to configuration content of AD105D. For example, the adjustment can be performed.

- Select 'Adjustment'
- Some scale settings and the scale adjustment can be performed here

- In the extended view the characteristics can also be entered manually

Configuration and control via terminal software
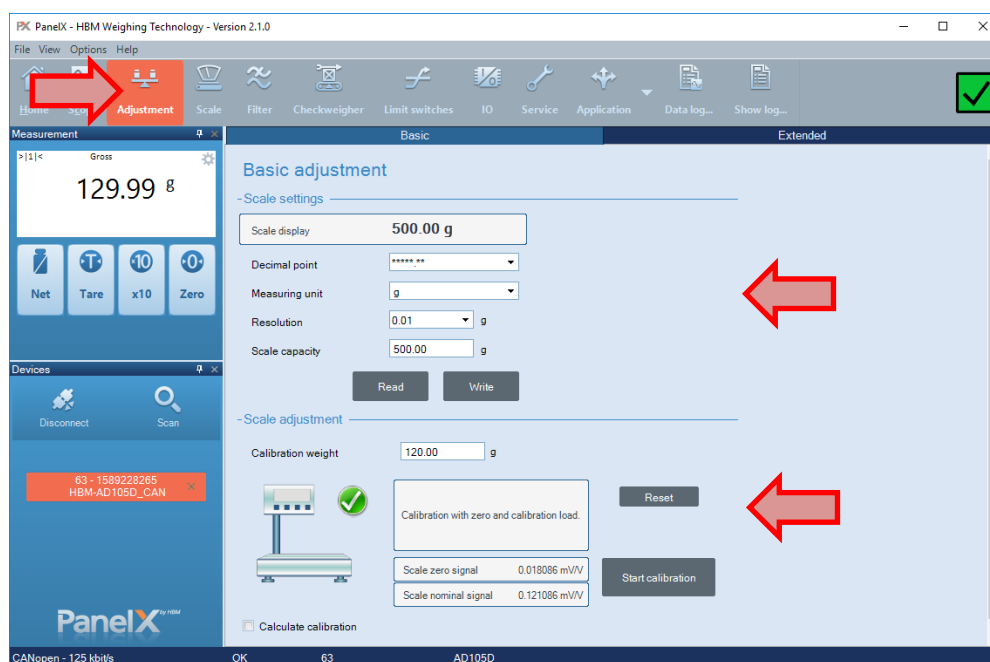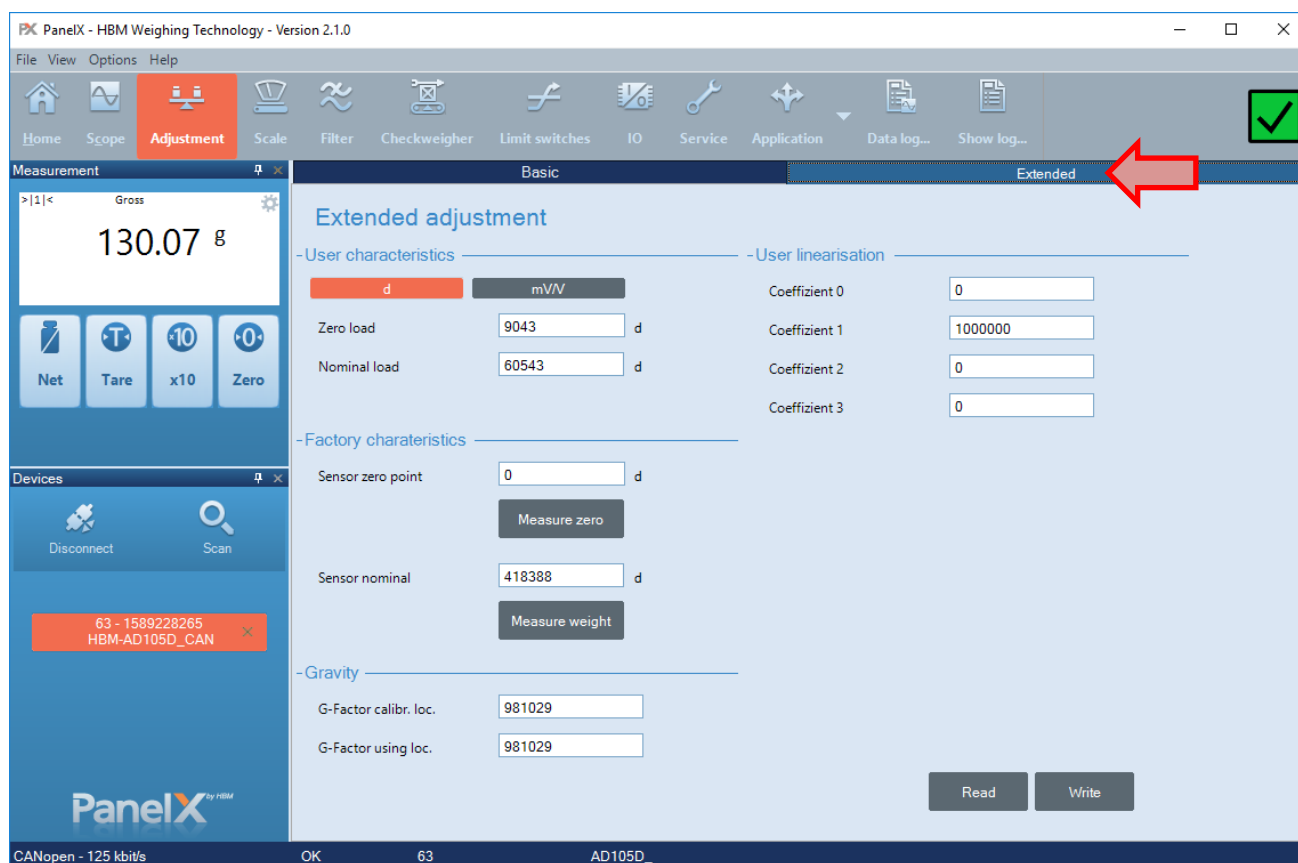
The configuration of the AD105D can also be done using a terminal software for RS485 or CAN. The communication is carried out using 3-byte-commands.

Important: Unlike the older AD104C model, AD105D uses a two-wire half-duplex transmission. Therefore, simultaneous transmission and reception is not possible. In addition, no response is sent to write commands to avoid obstructing the communication flow. To validate a write operation, the corresponding object can be read back (a short time later).

In this example the software Docklight Scripting V2.3 is used to communicate with the AD105D via RS485.

1. Read the device identification string:
   Command: IDN?;

```
07.09.2020 10:18:10.548 [TX] - IDN?;
07.09.2020 10:18:10.559 [RX] - HBM,HBM-AD105D RS4 ,1736570628,P80<CR><LF>
```

   Response: The device sends back the identification string. Unlike the AD104 (7 digits) the serial number of AD105 has 10 digits.

2. Read measuring value:
   Command: Single Value: MSV?;
                       Continuous Measuring: MSV?0;
                       X Data Sets: MSV?x;

Caution: The continuous measuring mode can lead to problems since the 2-wire connection does not support simultaneous sending and receiving. At higher measuring rates it might not be possible to send the stop (STP) command.

```
07.09.2020 10:29:34.423 [TX] - MSV?;
07.09.2020 10:29:34.469 [RX] - -1638400,31,003<CR><LF>
```

   Response: The device sends the measuring value(s).

3. Set up the format of measuring values:
   Command: COFx;

For the parameterization of the command see the online help of PanelX. The command allows to set up the format of the transmitted measuring values to binary, ASCII and other formats. Additionally, a bit must be set for the transmission mode (2-wire +64).

Example: Set up the format to ASCII 9/10 characters without separator (P1 = 003)

2. ASCII formats ⊙

In ASCII output, a separator is placed between the individual items of information. You can define the separator yourself with the TEX command. Depending on parameter P1 in TEX, the last item of information is followed by either crlf (2 characters) or the selected separator (1 character).

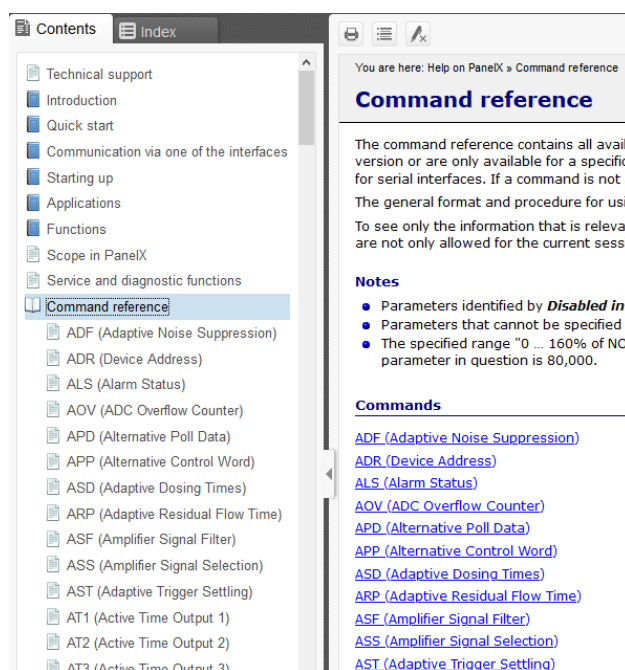| P1	Length of the output	Output order[1]
001	12/13 characters	Measured value (8) separator (1) end label (1/2)
003	9/10 characters	Measured value (8) end label (1/2)
005	12/13 characters	Measured value (8) separator (1) end label (1/2)
007	9/10 characters	Measured value (8) end label (1/2)
009	16/17 characters	Measured value (8) separator (1) address (2) separator (1) status (3) (1/2)
011	13/14 characters	Measured value (8) separator (1) status (3) end label (1/2)

Send: COFx; with x = 3+64 = 67 → COF67;

```
07.09.2020 10:46:54.366 [TX] - COF67;
07.09.2020 10:46:56.448 [TX] - MSV?;
07.09.2020 10:46:56.468 [RX] - -1638400<CR><LF>
```

Further commands:

- ADF → Adaptive Noise Suppression
- ADR → Geräteadresse
- ALS → Alarmstatus
- AOV → ADC Overflow Counter
- ASF → Signalfilter
- BDR → Baudrate
- BSY → Busy State
- CDL → Nullstellen
- CPV → Spitzenwerte löschen
- CSM → Checksumme
- CTR → Triggerergebnisse löschen
- DPW → Password zurücksetzen
- ESR → Error Status
- HRN → Hohe Auflösung
- IOM → IO-Mode
- LDW → Load Dead Cell Weight
- LWT → Load Cell Weight
- NOV → Nominalwert
- NTF → Notch-Filter
- PVA → Spitzenwerte lesen
- RES → Reset
- RSN → Auflösung
- RUN → Füllen starten
- SPW → Passwort setzen
- STB → Kontrollbyte
- STP → Stopp-Befehl
- STW → Kontrollwort
- SWV → Softwareversion
- TAD → Tare Delay
- TAR → Tare
- TAS → Bruttosignal
- TDD → Parameter speichern
- TIM → Datum/Zeit
- ZTR → Zero Tracking

A list of all commands can be looked up in the online help of PanelX:

Disclaimer

These examples are for illustrative purposes only. They cannot be used as the basis for any warranty or liability claims.