

TECH NOTE :: ClipX Reference measurement

Version: 2020-06-09

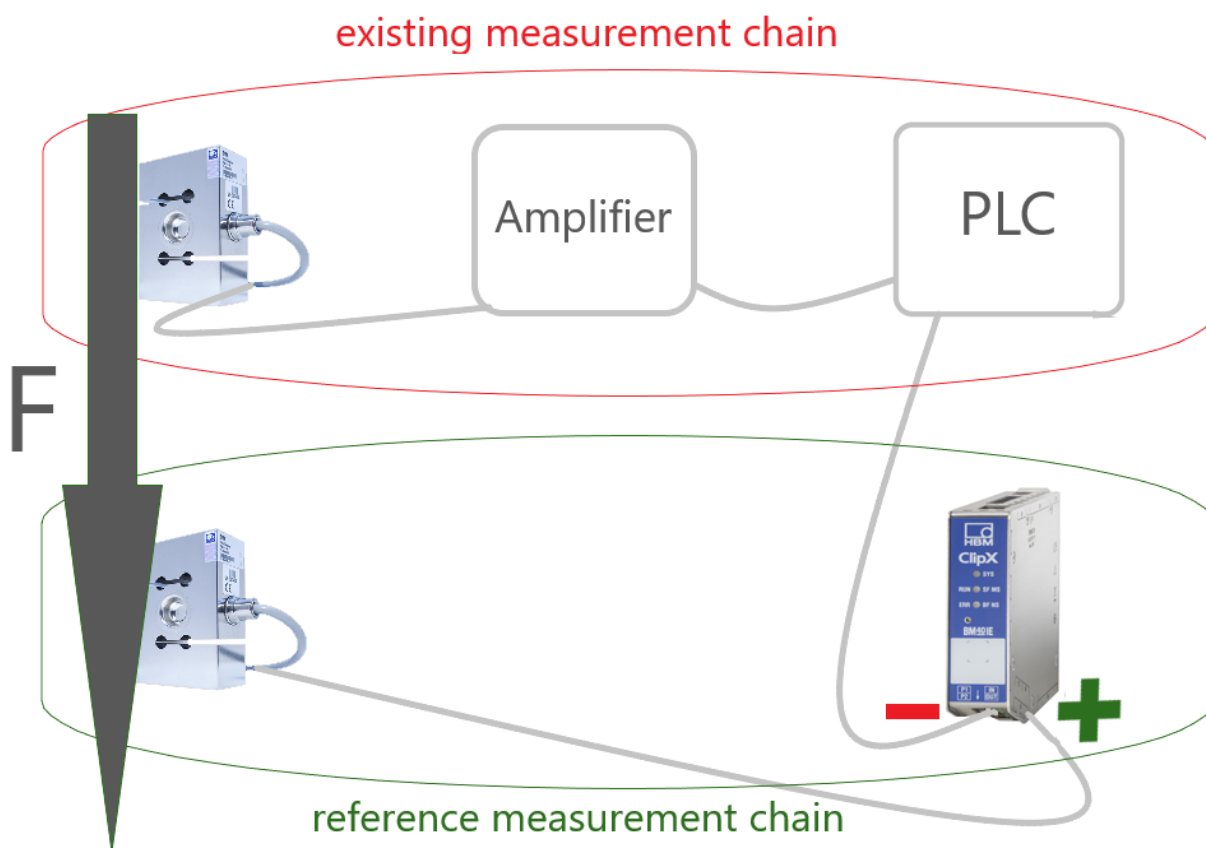
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Status: HBM: Public

Short description

This is an instruction to carry out a reference measurement to verify an existing measurement chain. Therefore, a reference measurement chain is added to the systems, which measures the same, for example, force value as the existing chain. The measurement value of the existing chain is transmitted to the ClipX by the PLC via fieldbus. In ClipX, both values can be compared and evaluated with the internal calculated channels of ClipX.

In this example the measurement value of a PLC is transmitted via EtherCAT to ClipX and then the difference is calculated.



Preparation

To carry out this example, the following materials are required:

- PLC with existing measurement system (provides the current measurement value)
- ClipX with transducer (provides the reference value)

To get started, the transducer must be mounted in the system and the PLC and the transducer must be connected to ClipX.

Carry out

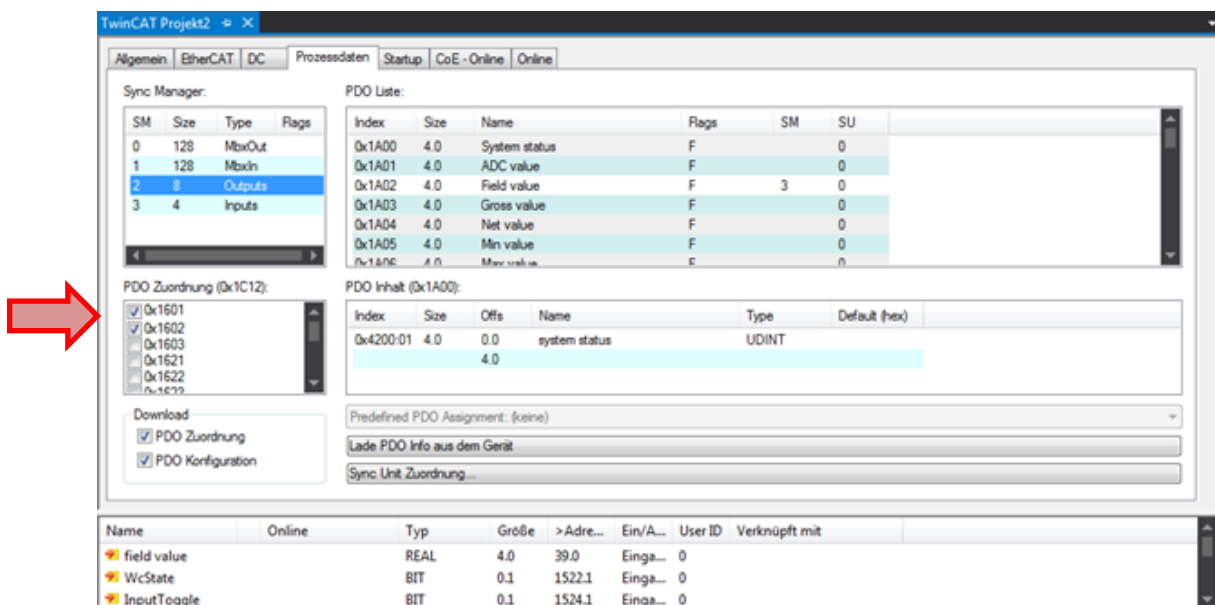
Transmitting the existing measurement value to ClipX

At first, the measurement value must be transmitted from the PLC to ClipX. Therefore, the value is transmitted via EtherCAT and the TwinCAT software to ClipX.

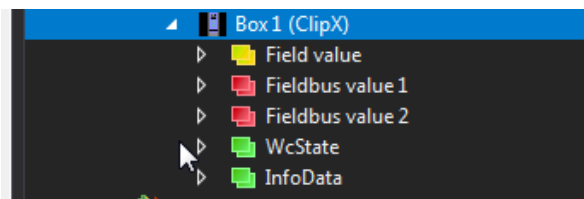
In the fieldbus menu of ClipX the fieldbus protocol type must be set to EtherCAT:



Now the outputs are added in TwinCAT:

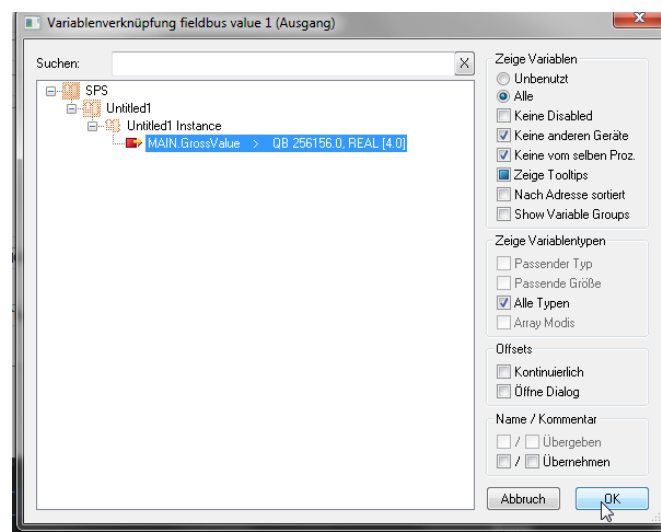
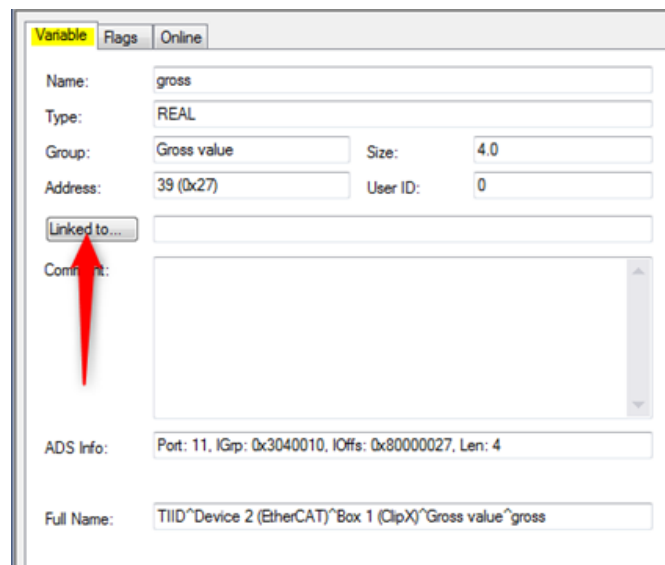


ClipX should now have to following configuration:



To assign the measurement value to the fieldbus value 1, the measurement value needs to be assigned to a variable at first. Then this variable is linked to the fieldbus value 1. (For detailed information see Tech Note 5 – ClipX EtherCAT with TwinCAT).

The fieldbus value is a float and is referenced by index 0x44F0 and subindex 30.



After that assignment is done, the value is accessible via the fieldbus on ClipX.

ClipX

Now the measurement value is transmitted to ClipX and can be evaluated here. There are various opportunities for that. The easiest and most obvious is to make the difference between the measurement signal and the reference signal:

- Add a new calculated channel of type 'Adder/Multiplier'
- Set the inputs so that $y = \text{measurement value (ClipX)} - \text{fieldbus value 1}$
- Assign the result to a calculated channel

#1
Addierer / Multiplizierer

1 2.843 ^

$$y = x_1 x_2 x_3 x_4 + x_5 x_6 + x_7 x_8 + x_9 x_{10}$$

x ₁	Net (Netto)	x ₂	1	x ₃	1
x ₄	1	x ₅	-1	x ₆	External FB Value 1
x ₇	0	x ₈	0	x ₉	0
x ₁₀	0				

y
Berechnungskanal 1

↓ NACH UNTEN

🗑 LÖSCHEN

Now, on basis of the deviation it can be decided, whether a new adjustment of the existing measurement chain is necessary or not.

There is also the opportunity to monitor the difference signal with limit switches or monitor its peak values.

Disclaimer

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