

TECH NOTE – digiCLIP DF30CAN and DF31CAN

Version: 2015-07-27

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Status: public

Short description

Example of a digiCLIP amplifier in a CAN network for filling level control.

Introduction

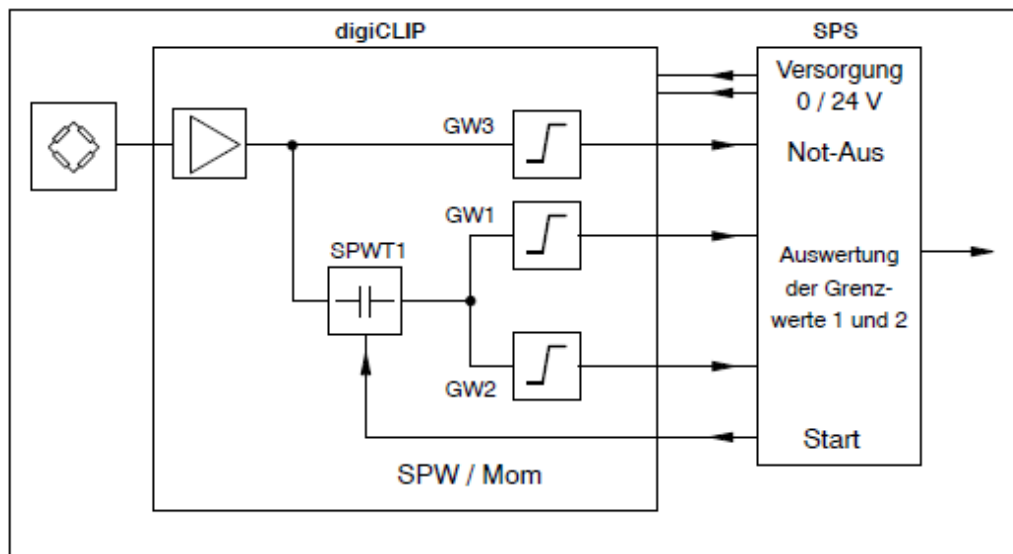
This article is to describe an example of a small-scale digiCLIP amplifier application in a CAN network using a PLC. In this application, load cells implemented as strain gauge full bridges are used for determining the filling level in a tank and taring it to 0...100% using a PLC connected to the digiCLIP.

Taring (hopper empty = 0% / hopper full = 100%) is activated by the system operator via the PLC panel and is only required after maintenance work on the system.

Afterwards, the PLC only needs to read out the value of the current hopper level and the error status and send it to the PLC program.



Procedure



1.) Scaling of the digiCLIP to the connected load cells. For this purpose, use the 'Aufnehmer' (Transducers) and 'Skalierung' (Scaling) menus of digiCLIP Assistant. The values can be found in the data sheet or in the calibration certificate.

Note: TEDS sensors enable sensor data to be loaded directly from the sensor to the amplifier.

<input type="checkbox"/>	Aufnehmer	
	Speisespannung	2,5 V
	Verstärkermessbereich (\pm)	4 mV/V
<input type="checkbox"/>	Skalierung	
	Physikalische Einheit	kG
	Anzahl Nachkommastellen	1
<input type="checkbox"/>	Spannenskalierung	
	Nullpunkt elektr.	0,00000 mV/V
	Nullpunkt phys.	0,00000 kG
	Spanne elektr.	1,00000 mV/V
	Spanne phys.	200,00000 kG

2.) Definition of a limit value (GW1/LV1) for falling below a specified weight value during emptying (e.g. below 1KG). Definition of GW2/LV2 to be displayed on filling (e.g. above 100KG). These settings can be made in the 'Grenzwertschalter' (Limit value switches) menu of digiCLIP Assistant.

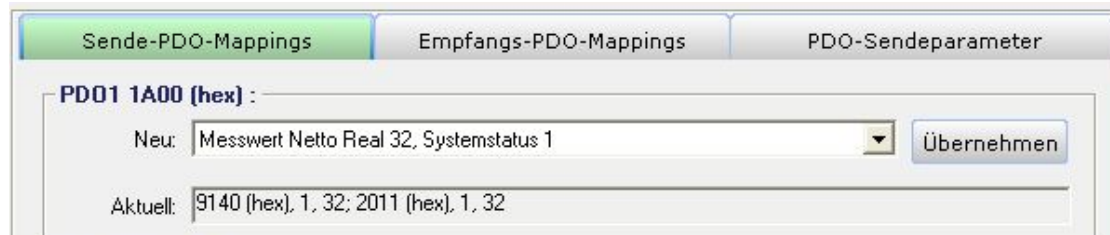
<input type="checkbox"/>	Grenzwertschalter 1	
	Modus	Kleiner als
	Sende 'Emergency Message'	Aktiv
	Schwelle	1,00000 kG
	Hysterese	0,10000 kG
	Signalquelle	Netto
	Falls GW in Hysterese:	<input type="button" value="Zurücksetzen"/>
<input type="checkbox"/>	Grenzwertschalter 2	
	Modus	Größer gleich
	Sende 'Emergency Message'	Aktiv
	Schwelle	100,00000 kG
	Hysterese	0,10000 kG
	Signalquelle	Netto

3.) The measured values and the system/device status are to be sent to the PLC via PDO later. This allows a short cycle time of few milliseconds.

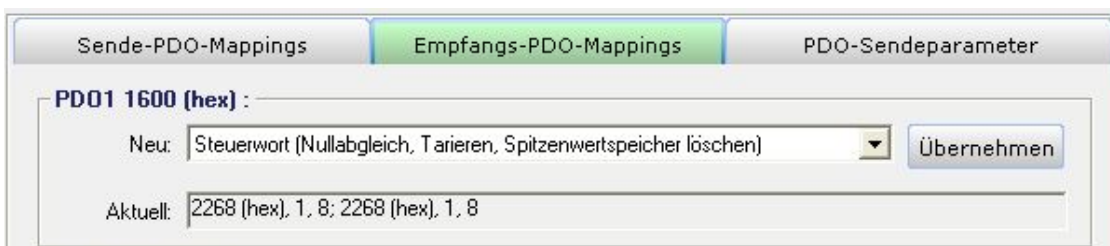
These settings can be activated in the 'PDO-Details' (PDO details) menu of digiCLIP Assistant.

Assistant provides some settings. Additional software from the PLC manufacturer is required, if further mappings are to be made.

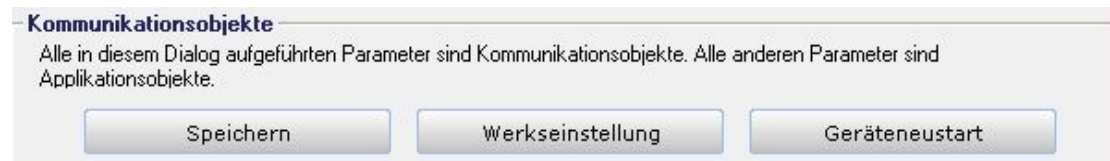
Define the 'Messwert Netto Real 32 + Systemstatus1' (Measured value net integer 32 + system status1) contents in 'Sende-PDO1' (Send PDO1):



Define the 'Steuerwort' (Control word) contents in 'Empfangs-PDO1' (Receive PDO1):



Then save the settings in this dialog and restart the device.



During operation, you get the weight value at cyclic intervals and you can carry out the Zero/Tare function during emptying (below limit value 1) via Receive PDO1.

In- dex (hex)	Index (dez)	Sub-Index	Zugriff	Datentyp	Wert	Beschreibung	Definition	Parametersatz
2268	8808	1	RWP	u8	Steuerbyte 1: ⁶⁾ Bit 0: Nullstellen ausführen (siehe Index 6125) Bit 1: Trieren ausführen (siehe Index 6139) Bit 2: Max-Spitzenwertspeicher dauernd löschen (s. Index 2262) Bit 3: Min-Spitzenwertspeicher dauernd löschen (s. Index 2263) Bit 4: Max-Spitzenwertspeicher einmalig löschen (s. Index 2264) Bit 5: Min-Spitzenwertspeicher einmalig löschen (s. Index 2265) Bit 6: Max-Spitzenwertspeicher halten (s. Index 2266) Bit 7: Min-Spitzenwertspeicher halten (s. Index 2267)	HBM	A ⁷⁾	

Bits 4...7 of system status 1 signal the respective status of the limit value switch (Bit4 = GW1/LV1).

In- dex (hex)	Index (dez)	Sub-Index	Zugriff	Datentyp	Wert	Beschreibung	Definition	Parametersatz
2010	8208	1	ROP	u8	System-Status 1 Bit 0...2: wie Index 6150, Bit 0...2 Bit 3: CAN-Bus-Fehler oder -Warnung Bit 4...7: Grenzwertschalter 1...4 ausgelöst		HBM	-

TIP

All these settings can be made in Assistant and saved to the EPROM ('Parameter speichern/laden' (Save/Load parameters) menu); this will take slightly more than one second. No measurement/production process should be started during this time.

Legal notice

This example is only to illustrate integration of the HBM amplifier into a CAN network. HBM declines all responsibility or liability for this example.