RELEASEnotes

Compatibility Sheet for AD105D, compared to AD104C and AD105C

Thank you for choosing HBM's transducer electronic products.

This document contains all relevant information regarding compatibility of the transducer electronic AD105D with respect to the former versions AD104C and AD105C. A block diagram of the AD105D is presented in the first section of this document. Differences in the hardware interface are addressed in the second section. Serial command changes and new features are covered in the last section. Further technical data about the AD105D can be found in the technical data sheet: https://www.hbm.com/fileadmin/mediapool/hbmdoc/technical/B04297.pdf

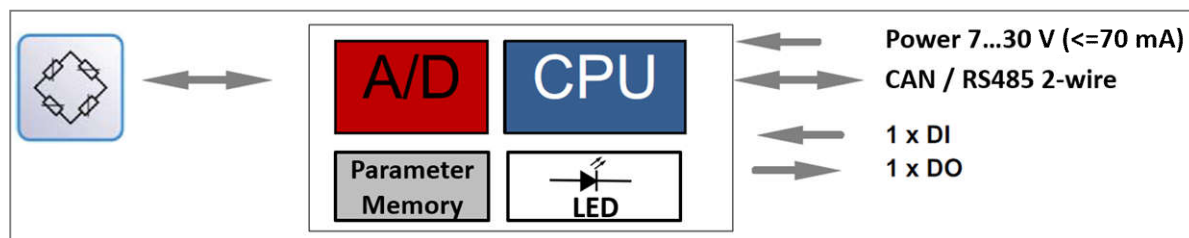## 1. Block Diagram of AD105D

Figure 1: Block diagram of AD105D

A block diagram comprising the most important units and interfaces of the AD105D is shown in Figure 1. AD105D requires a power supply 7…30 V with a typical power consumption of 30 mA@12 V. An analog-to-digital converter (A/D) at the input digitizes the transducer measurement signal, which is then processed by the CPU with and 2-wire RS485 or CANopen interface. One freely configurable Digital Input (DI) and Digital Output (DO) are available. They are configurable via IN1 and OUT1 respectively in the PanelX software. An LED, which is internally connected (OUT2), is additionally configurable in PanelX.

2. Hardware Interfaces

The differences between AD105D, AD104C and AD105C with regards to the interface are summarized in Table 1. The AD104C features a 4-wire RS232 / RS485 interface, the AD105C version is equipped with a RS485 2-wire interface. AD105D provides a RS485 2-wire or a CANopen. Important to note is that only the 4-wire interface of the AD104C allows a write access response. Furthermore, the AD105D requires a supply voltage of 7-30 V instead of 6-15 V in case of an AD104C or AD105C.

	Transducer Electronic Version		
	AD104C	**AD105C**	**AD105D**
Digital IO	1 x IN	1 x OUT	1 x IN / 1 x OUT
Interface	RS232 / RS485 4-wire	RS485 2-wire	RS485 2-wire / CAN
Write Access Response	„0" = OK / „?" = Error	-	-
Supply Voltage	6-15 V	6-15 V	7-30 V

Table 1: Interface characteristics of AD104C, AD105C and AD105D

RELEASEnotes

3. Serial Commands

A description of all serial commands is accessible within PanelX as online Web help or can be downloaded under the following Link: https://www.hbm.com/fileadmin/mediapool/support/download/weighing/panelx/PanelX_1-2-2_WebHelp.zip

3.1 Changes

Most of the available serial commands can be used for all three transducer electronic versions: AD104C, AD105C and AD105D. However, as shown in Table 2, some changes exist regarding the commands. A short explanation of each command is provided in the text bellow, whereas the commands are denoted in brackets.

Command	Description	Transducer Electronic Version (Firmware Version)	
		AD104C/AD105C (P52.6)	**AD105D (P80 1.13)**
IDN	Identification	HBM, AD104C ,1234567,P52	HBM,AD105D ,1234567,P80
TYP	Hardware Type	AD104C: 5* / AD105C: 6*	CAN: 114 / RS-485: 115
IMD	Application	-	0: default
			1: checkweigher
			2: filler
LIV	Limits	Always available	Only available if IMD = 0 / 1
TRC	Trigger Command	Always available	Only available if IMD = 1
TRC	Trigger-Setup Time	<= 99	<=255
TRC	Trigger-Meas. Time	<= 99	<=255
CDL	Zeroing Command	Only write access	Read and Write access
COF	Output Format	0…143**	64…79
ZTR	Zero Tracking	0: deactivated	0: deactivated
		1: 0.5 d/s	1: 0.5 d/s
		-	2: 1 d/s
		-	3: 2 d/s
		-	4: 3 d/s

Table 2: Changes of AD105D serial commands, compared to AD104C / AD105C
* * *Low-Nibble (Example: TYP? -> 53 (53/16 = xx mod 5 -> AD104C)*
*** AD105C also uses 64…79 internally*

The firmware version inside identification command (**IDN**) changed from P52 to P80. Regarding the hardware type command (**TYP**) one needs to note that the hardware type has to be calculated as low nibble (*) for an A104C or an AD105C respectively. An **IMD** command to choose between the different application modes standard, checkweigher and filler, was added in AD105D. Hence, this command is not applicable for AD104C and AD105C. In order to use the trigger command (**TRC**) or the limit switch command (**LIV**) in AD105D, the appropriate application has to be set with the application command (**IMD**).

Trigger-Setup time and Trigger –Measurement time can the set with a maximum step number of 99 with a AD104C or AD105C and to 255 with a AD105D. Moreover, AD104C and AD105C only allow read access with the Zeros command (**CDL**), whereas the AD105D supports write and read access. The zero-tracking command (**ZTR**) allows two options (0 and 0.5 d/s) when an AD104C or AD105C is used. Three additional options (1 d/s, 2 d/s, 3 d/s) are available with an AD105D.

3.2 New Features

Besides the changes above, several new functions are featured by the AD105D version

3.2.1 Filter

- Dynamic buffering of measurement values (**DGA**, **DGL**, **DGN**, **DGR** and **DGS**)
- Notchfilter (**NTF**) applicable in **all filter modes**
- Adaptive notchfilters (**ADF**, **TMA** and **FST**)

3.2.2 Checkweigher

- A software trigger can be set (**TSW**)
- Grading scale (**AT1**, **AT2**, **AT3**, **AT4**, **DT1**, **DT2**, **DT3** and **DT4**)
- Retrigger („MHCW") (**MVC**, **RTB**, **TSL**, **TST** and **TVT**)
- Optional automatic trigger settling time - depending on filter settling time (**AST**)

3.2.3 Service Functions

- Identification commands for serial number (**SNR**), software version (**SWV**) and hardware version (**HWV**)
- Measurement of the supply voltage with **UDC**
- Read out of the limit switch status can be retrieved with **LVS**
- Extended error message with **ERR**

3.2.4 Others

- Individually configurable digital IOs (**IOM**, **IM1**, **IS1**, **OM1**, **OS1** and **SPL**)
- Two additional limit switches which can be addressed with **LIV3** and **LIV4**
- Flow measurement which can be used with **FLO** and **FRT**

Please do not hesitate to contact our team of support engineers directly at http://www.hbm.com/support, if you have any further questions.