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IHR PARTNER IN DER SENSOR TECHNOLOGIE

APPLICATION NOTE

AN1611-2

Application Note

E2 Interface for EE03, EE07 and EE08

Rev. 1.0 11/2016

Relevant for:

This application note applies to EE03, EE07 and EE08

Introduction:

The E2 interface is used for the digital, bidirectional data transmission between a Master and a Slave device.

The data transmission takes place via synchronous and serial modes, the Master being responsible for generating the clock signal. The Slave cannot send any data independently. For details, please refer to the document "Specification E2 Interface".

CONTENT

1   Measured parameters

Following parameters and values [hex] can be read via E2 interface:

command	return-value	parameter	format	measuring range	Output resolution
Group	**EE03:** 0x03 **EE07:** 0x07 **EE08:** 0x08				
Sub-Group	**EE03:** 0x09 **EE07:** 0x09 **EE07-02:** 0x29 **EE08:** 0x00				
Available measured values	**EE03:** 0x03 **EE07:** 0x02 or 0x03 **EE07-02:** 0x02 or 0x03 **EE08:** 0x03 or 0x21				
Statusbyte:[1]	0x0x				
Measured value 1:		Humidity	unsigned integer	0 - 100%rH	1/100%rH
Measured value 2:		Temperature	unsigned integer	233.15 – 353.15°K	1/100°K
Measured value 3:		Not defined			
Measured value 4:		Not defined			

1) For EE03: Indicates broken (but not short circuit) sensor

2   Maximum E2-Interface clock frequency

The maximum clock frequency depends on the pull-up resistor and the capacity of the connection cable. The pull-up resistor shall be between 10 kOhm and 100 kOhm.

2.1   EE03

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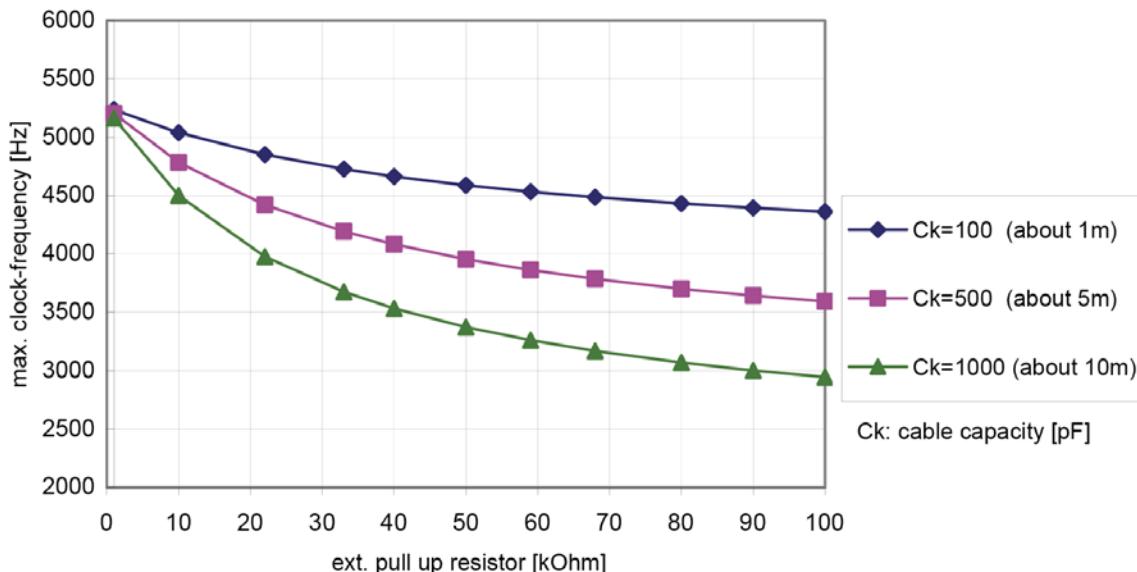
2.2 EE07
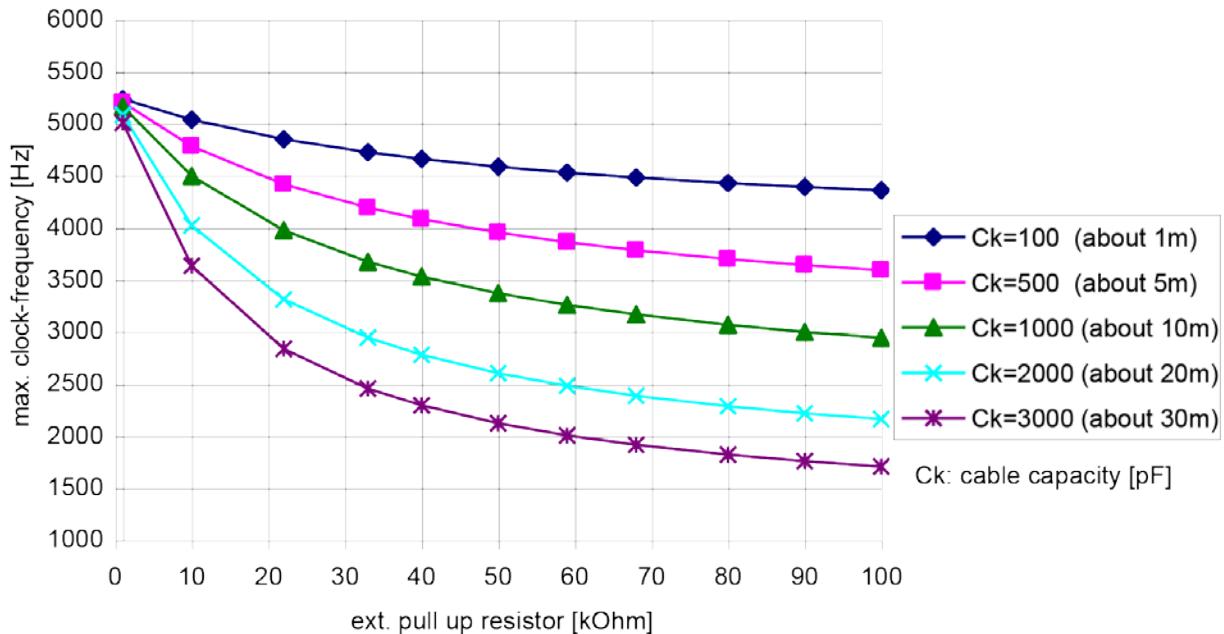
2.3 EE08
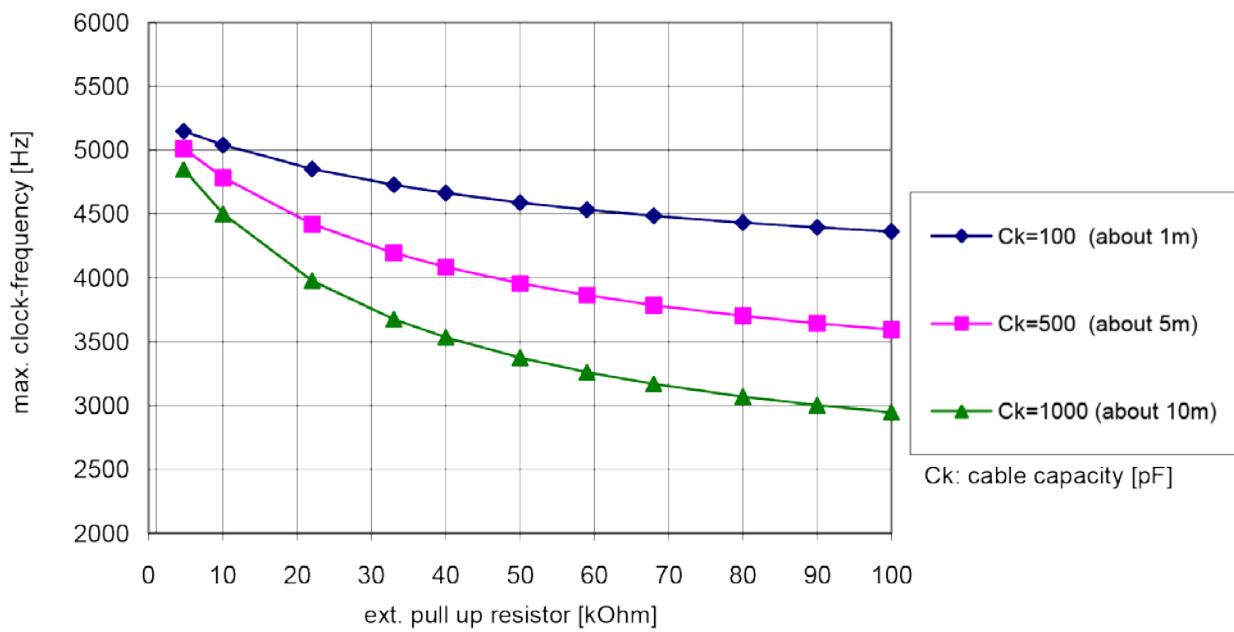
3   Measurement Timing

3.1   EE03

	minimum	typical	maximum
t_{pwrup}		350 ms	600 ms
t_{meas}		250 ms	450 ms
t_{cfree} @2.5 V & +25 °C @3.3 V & -40 °C **@3.3 V & +25 °C** @3.3 V & +85 °C @5.5 V & +25 °C		3.4 sec 2.1 sec **3.0 sec** 3.8 sec 2.5 sec	

(t_{pwrup} = power up time ; t_{meas} = measuring time ; t_{cfree} = internal measuring interval)

3.2   EE07

	minimum	typical	maximum
t_{pwrup}		270 ms	300 ms
t_{meas}		260 ms	300 ms
t_{cfree}		1.0 sec	

(t_{pwrup} = power up time – t_{meas} = measuring time – t_{cfree} = internal measuring interval)

3.3   EE08

	minimum	typical	maximum
t_{pwrup} [1]		300 ms	500 ms
$t_{pwrup\ analog}$ [1]		1 s	2 s
t_{meas}		150 ms	
t_{cfree}		2.0 sec	

(t_{pwrup} = power up time – t_{meas} = measuring time – t_{cfree} = internal measuring interval)

1.)   Max. 20ms from switching on to +UB stable (90% from final Value)

3.4 Examples:

1.) Free running mode
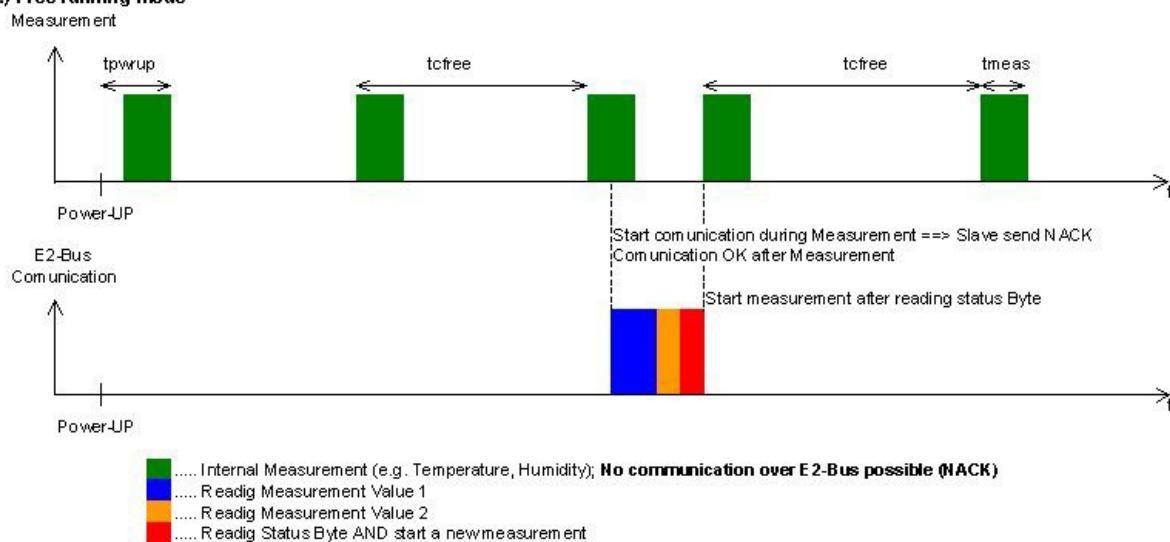
2.) Trigger mode (tc < tcfree)
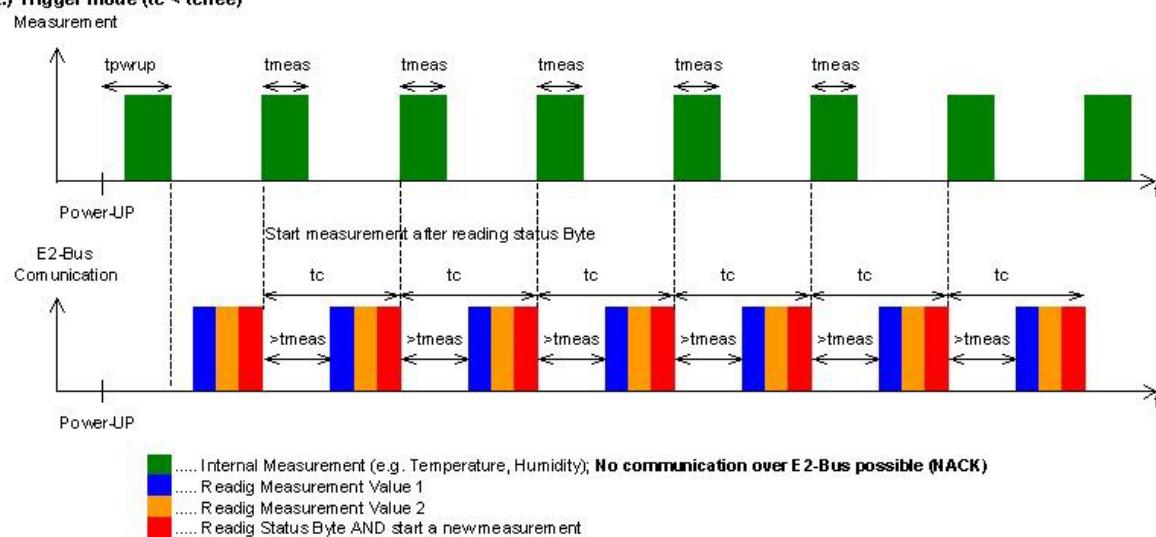
tc = time cycle (Query interval if the measurement get started with the query of the status byte)

4   Additional information to EE07-02

The EE07-02 is an EE07 version optimized for very low power consumption. It is ideal for battery-powered devices. The diagram shows the EE07-02 max. permissible E2-bus voltage VE2 as function of the supply voltage VDD.
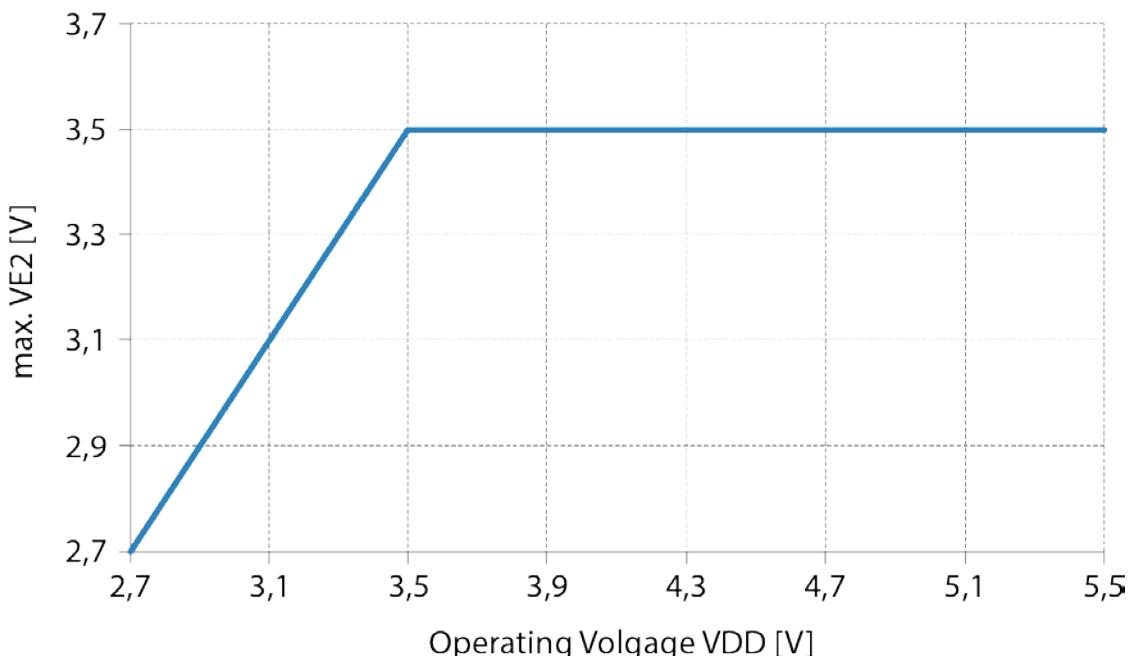
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