E2 Interface for EE891-Series:

Additional to the specification E2 interface "specification E2-interface_ex.doc":

Readable parameters

These parameters/values [hex] can be read by the E2 interface:

command:	return-value	kind	format	measuring-range	output
Group (two bytes)	0x037B (891_d)		unsigned int.		
Sub-Group	0x09		byte		
Available measured variables	0x08		byte		
Statusbyte:[1)]	0x0_		byte		
Measuring value 1:		Not defined			
Measuring value 2:		Not defined			
Measuring value 3:		CO2 eg. for handhelds and fast response	unsigned int.	0 – 2000 or 0 – 5000 or 0 – 10000	ppm
Measuring value 4:		CO2 Averaged Value eg. for climate control	unsigned int.	0 – 2000 or 0 – 5000 or 0 – 10000	ppm

[1)] Gives information on whether last measurement was successful

Available parameters in custom area

- Firmware-Mainversion
- Firmware-Subversion
- Offset CO_2
- Gain CO_2
- Upper calibration point CO_2
- Lower calibration point CO_2
- Last customer adjustment
- Last customer adjustment of CO_2
- Serial number
- Part name
- Error code
- global measurement time interval
- Special features

For additional information also view application notes AN0101 *optimised power consumption* and AN0102 *changing the measuring time interval and response time*.

Electrical requirements

Symbol	Parameter	Minimum	Maximum	Unit	Remark
V_{DD}	Bus-High-Voltage	3,6	5,2	V	For a minimum of supply current use 4.5V to 5.0V
f_{CLK}	Clock frequency	500	5000	Hz	The maximum achievable data rate depends on the combination of line capacity and the pull-up resistors.
Rup	Pull-up resistor	4,7	100	kΩ	

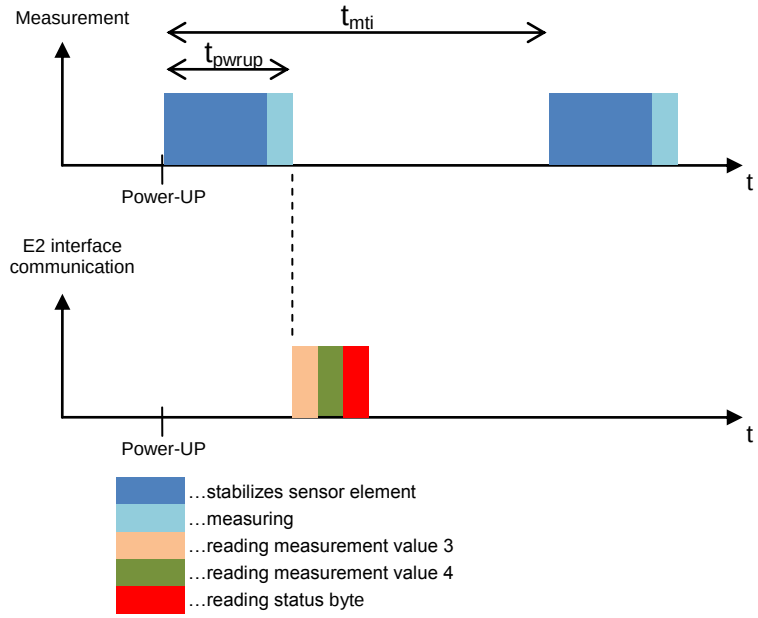
Error Code List

Error Code	Description
1	Supply Voltage Low detected
200	Sensor Counts Low possible damage of electronic or sensor-cell
201	Sensor Counts High possible damage of electronic or sensor-cell
202	Supply Voltage Breakdown at current peak for measurement maybe the internal resistance of supply unit is to high

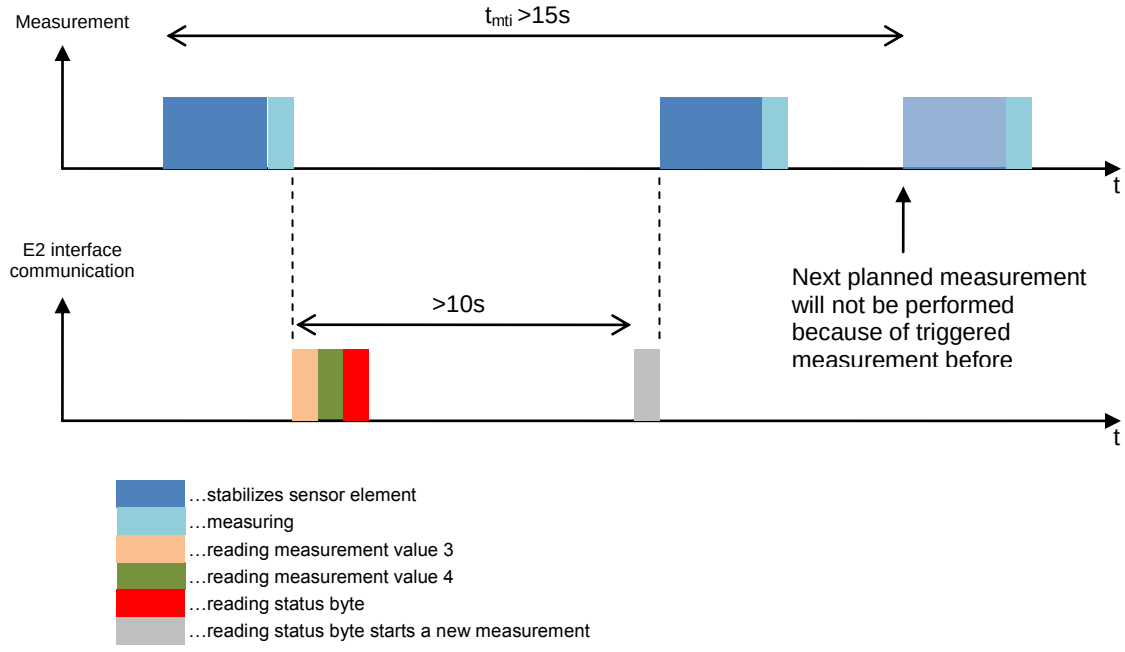
Measurement Timing

	minimum	typical	maximum
t_{pwrup}		5s	10s
t_{stab}		4,3s	9,3s
t_{meas}		0,7s	
t_{mti}	15s		3600s

Examples:



When the measuring time interval is > 15s, a measurement can be triggered by reading the status byte.
Note: Because of sensor design, a measurement will only be triggered, if the last measurement dates back longer than 10s.



Timing for write commands

Writing a byte (with control byte 0x10) to the device is done by writing the flash memory which takes <=150ms for each byte. During this time, E2-communication interrupts are deactivated. Trying to communicate with the device while the flash is written forces the clock low extension which holds the clock line low until the write routine has finished.
Note: When writing the measurement interval (address 0xC6 and 0xC7) both values will be written into the flash together after both values were sent to the device. Writing will start after sending both bytes and will cause a communication delay of <=300ms.