

7. I²C-Interface

7.1 Configuration of I²C-Interface

Concerns only DCT 532i

Factory setting	050	0	0	0	0	00001
Slave address						
address	1					
	...					
	127					
Type of result register						
32bit IEEE float		0				
16bit integer		1				
Byte order of values						
Low byte first			0			
High byte first			1			
Mode of result register						
Value				0		
Percent of nominal				1		
Restore of address pointer						
no restore					0	
to last set address on next start						1
Digital meaning						
Count of result						00001 ... 10000

7.2 Register overview

Re-gister	Type 0 (Float)	Type 1 (Int 16)
0x00	Status	Status
0x01	Pressure	Pressure
0x02		
0x03		
0x04		
0x05	Temperature	Temperature
0x06		
0x07		
0x08		

0x40	Configuration	Configuration
0x41	Oversampling	Oversampling
0x42		
0x43	Slave Address	Slave Address
0x44	Pressure unit	Pressure unit
0x45	Nominal pressure lower	Nominal pressure lower
0x46		Decimal places
0x47		
0x48	Nominal pressure upper	Nominal pressure upper
0x49		
0x4A		
0x4B		
0x4C	Temperature unit	Temperature unit
0x4D		
0x4E	Nominal temperature lower	Nominal temperature lower
0x4F		Decimal places
0x50		
0x51	Nominal temperature upper	Nominal temperature upper
0x52		
0x53		
0x54		
0x55		

7.3 Explicit register description

Explanation:

r = only readable

r/w = read and write capable

d = don't care

0x00 – Status register:

7	6	5	4	3	2	1	0
ABS			ERR	SAT	OVER	UNDER	READY
r	d	d	r	r	r	r	r

bit 0	Result registers is READY
0 b =	Outdated values will be read
1 b =	Registers contain new values
Note:	This bit has same behaviour as hardware ready connector. Logic level is inverted because of open collector at output stage.
Note:	It is possible to poll update without using hard wiring, or to check with sensor has updated if more than one is used on bus.
bit 2	Value is out of UNDER nominal range
0 b =	Pressure value is in nominal range
1 b =	Pressure is too low
Note:	OVER and UNDER flags are stored until state register is read.
bit 3	Value SAT urated
0 b =	No saturation
1 b =	Output value or ADC is out of range
bit 4	Internal ERR or, transmitter does not work
0 b =	Transmitter is in normal operation
1 b =	Internal error or wrong setting is active
bit 7	Transmitter is ABS olute
0 b =	Pressure type of transmitter is relative
1 b =	Pressure type of transmitter is absolute

0x40 – Configuration register

7	6	5	4	3	2	1	0
ADD			RESTORE	MODE	ORDER	TYPE	
r/w	d	d	r/w	r/w	r/w	r/w	r/w

bit 0	TYPE of result register
0 b =	32bit IEEE float
1 b =	16bit integer
bit 1	Byte ORDER of values
0 b =	Low byte first
1 b =	High byte first
bit 2...3	MODE of result register
00b =	Value
01b =	Percent of nominal
10b =	reserved
11b =	reserved
bit 4	RESTORE address pointer
0 b =	No restore
1 b =	Restore to last set address on restart
Note:	Using this setting causes reset of register pointer to last written after each stop condition of readout.
bit 7	Set new I2C slave ADDRESS
0 b =	Slave address stays as it is
1 b =	Set this bit to apply previously set slave address

0x43 – Slave address register

7	6	5	4	3	2	1	0
SLAVE_ADDRESS							
r/w							d

bit 1...7	SLAVE ADDRESS which this transmitter acknowledges
Note:	To apply new address, it is necessary to set ADD bit in configuration register after new address is written.

0x44 – Pressure unit register

7	6	5	4	3	2	1	0
UNIT							
r/w							

bit 0...7	Pressure UNIT (according to units in HART protocol)
0x01	inH2O @ 68°F
0x02	inHg @ 0°C
0x03	ftH2O @ 68°F
0x04	mmH2O @ 68°F
0x05	mmHG @ 0°C
0x06	psi
0x07	bar
0x08	mbar
0x09	g/cm ²
0x0A	kg/cm ²
0x0B	Pa
0x0C	kPa
0x0D	Torr
0x0E	atm
0x91	inH2O @ 60°F
0xAA	cmH2O @ 4°C
0xAB	mH2O @ 4°C
0xAC	cmHg @ 0°C
0xAD	lb/ft ²
0xAE	hPa
0xB0	kg/m ²
0xB1	ftH2O @ 4°C
0xB2	ftH2O @ 60°F
0xB3	mHg @ 0°C
0xED	Mpa
0xEE	inH2O @ 4°C
0xEF	mmH2O @ 4°C

0x4d – Temperature unit register

7	6	5	4	3	2	1	0
UNIT							
r/w							



bit 0...7	Temperature UNIT (according to units in HART protocol)
0x20	°C
0x21	°F
0x22	°R
0x23	K
Note:	If pressure or temperature unit is set to an invalid value, slave will not acknowledge.
Note:	If 16bit integer mode is selected and nominal values can not be displayed with 0...5 decimal places, ERROR flag is set and DECIMAL_PLACES will be 0xff.

0x47 / 0x50 – Decimal places register

7	6	5	4	3	2	1	0
DECIMAL_PLACES							
r							

bit 0...7	Count of DECIMAL_PLACES
Note:	Available only when 16bit integer type is selected.
Note:	Value will be calculated automatically according to nominal range.

8. Decommissioning

	Danger of injury from media escaping under pressure - Dismount in an orderly fashion when the machine is depressurized and the power supply has been switched off. - Check whether the medium needs to be drained before dismounting!
	Danger of injury from the measured medium - Depending on the measured medium, suitable precautions should be taken, e.g. protective gloves, goggles.

9. Maintenance

The device is, in principle, maintenance free. If necessary, the housing of the device may be cleaned with a damp cloth and a non-aggressive cleaning solution while it is switched off.

With certain media may, however, deposits or contamination may accumulate on the diaphragm. The specification of appropriate maintenance intervals for inspection is recommended in this case. Once the device has been properly decommissioned, the diaphragm can normally be cleaned with a non-aggressive cleaning solution and a soft brush or sponge. Care should be taken while doing so. If the diaphragm is covered in limescale, decalcification by BD SENSORS is recommended. See the Servicing/Repair section with regard to this.

Incorrect cleaning can result in irreparable damage to the measuring cell. For this reason, you should never use sharp objects or compressed air to clean the diaphragm.


10. Servicing/Repair

10.1 Recalibration

It is possible that the offset value or the scaling value may shift during the lifetime of the device. This is indicated by a deviation in the output signal value with reference to the set measurement range start or end values respectively. If either of these two phenomena should occur after a prolonged period of use, recalibration is recommended in order to ensure a continued high level of accuracy.

10.2 Return

Whenever the device is returned, no matter whether for recalibration, decalcification, modification or repair, it must be carefully cleaned and packed such that there is no risk of breakage. The device must be accompanied by a notice of return giving a detailed description of the fault. If your device has come into contact with pollutants, then a notice of decontamination will also be needed. You can find the relevant templates on our website at www.bdsensors.de. Should you send in your device without a notice of decontamination and doubts with regard to the medium used should arise in our service department, repair work will commence only once an appropriate notice has been received.

	Danger of injury from pollutants - If the device has come into contact with pollutants, wear suitable protective clothing, e.g. gloves, goggles, when cleaning it.
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11. Disposal

The device must be disposed of in accordance with European Directives 2002/96/EC and 2003/108/EC (Waste Electrical and Electronic Equipment). Waste electrical products may not be disposed of with household waste!

Depending on the medium used, residues on the device may constitute a hazard to the environment. You should therefore take appropriate precautions if necessary and dispose of the device properly.

12. Guarantee Conditions

The guarantee conditions are subject to the statutory warranty period of 24 months, starting from the date of dispatch. No warranty claims will be accepted if the device has been used improperly, modified or damaged. The warranty does not cover damaged diaphragms. Warranty cover also excludes any claims for defects that have arisen as a result of normal wear.

13. Declaration of Conformity / CE

The supplied device fulfills the statutory requirements. The relevant directives, harmonized standards and documents are listed in the EU Declaration of Conformity applicable to the product. This can be found at <http://www.bdsensors.de>. In addition, the operational safety of the device is confirmed by the CE mark on the type plate.

