OPERATION MANUAL

DIGIFORCE® 9307
EtherCAT Manual

Valid from: **06.02.2020**
Applies to: **DIGIFORCE® 9307 V0x01**

Exclusion of warranty liability for operating manuals

All information in the present documentation was prepared and compiled with great care and reproduced subject to effective control measures. No warranty is provided for freedom from errors. We reserve the right to make technical changes. The present information as well as the corresponding technical data can change without notice. Reproduction of any part of this documentation or its processing or revision using electronic systems is prohibited without the manufacturer's prior written approval.

Components, devices and measured value sensors made by burster praezisionsmesstechnik (hereinafter referred to as "product") are the results of targeted development and meticulous research. As of the date of delivery, burster provides a warranty for the proper condition and functioning of these products covering material and production defects for the period specified in the warranty document accompanying the product. However, burster excludes guarantee or warranty obligations as well as any liability beyond that for consequential damages caused by improper use of the product, in particular the implied warranty of success in the market as well as the suitability of the product for a particular purpose. Furthermore, burster assumes no liability for direct, indirect or incidental damages as well as consequential or other damages arising from the provision and use of the present documentation.

Table of contents

1 Revision history

Changes from March 2017 to Revision A

Chapter	Changes
Front page	Date, device and firmware version
4 Parameters	Device ID added for EtherCAT Firmware V201900
5.1 General information on EtherCAT data transfer	New section 'Device ID' added
6 EtherCAT PDO – Process Data Objects	New update rate for sensor live values
7 EtherCAT SDO – Service Data Objects	Note for EtherCAT-Firmware V201900
7.1 Instrumentation configuration	Changed values for EtherCAT-Firmware V201900
7.2 Measurement results	Changed values for EtherCAT-Firmware V201900
8.2 Error codes	New chapter added

Note: To use the corresponding EtherCAT ESI file (available on burster website).

2 Introduction

2.1 General safety instructions

⚠️	**Warning concerning installation of the device and software** • Installation of the device and the interface must be carried out by qualified personnel only. Qualified personnel meets the following requirements: – You are familiar with the safety designs used in automation engineering, and understand how to deal with them in your capacity as configuration engineer. – You are an operator of automation systems and have been instructed in how to handle the system. You are familiar with the operation of the equipment described in this documentation. – You are a commissioning or service engineer and have successfully completed a training course qualifying you to repair automation systems. In addition you are authorized to commission, ground and label circuits and equipment in accordance with safety engineering standards. • Always observe the current safety and accident prevention regulations when commissioning the equipment. • Install automation engineering equipment and installations with sufficient protection against accidental actuation.
⚠️	**Warning concerning use of the device** • Take suitable precautions in both the hardware and software to prevent any undefined states of the automation installation in the event of an open circuit. • In installations where major damage to property or even personal injury may be caused by a malfunction, take suitable precautions to establish a safe operating state in the event of a fault. This may be achieved using limit switches, mechanical interlocks etc. for example. • Do not make unauthorized modifications to the device or to the EtherCAT interface.
!	**Notice** • Install the power, signal and sensor cables so as to prevent electromagnetic interference from impairing operation of the equipment. • Proper transportation, storage, installation and assembly plus careful operation and maintenance are essential for trouble-free and safe operation of the equipment. • Have non-functional instruments inspected by the manufacturer.

2.2   Intended use

The DIGIFORCE® 9307 is an instrument for monitoring repetitive production processes. Its core function is to record and analyze signals from processes in which physical variables, such as force, pressure or torque, vary as a function of displacement, angle or time according to a defined curve. The resultant measurement curve is analyzed using graphical evaluation elements such as windows, envelopes and thresholds. The result of the analysis is indexified as "OK" or "NOT OK" (NOK) and can be retrieved from various interfaces.

The instrument is not a substitute for a safety device; for instance it cannot be used as an emergency stop device in a press for when the pressure exceeds a set limit.

3 Trademarks and Patents

EtherCat® is a registred trademark and patended technology of Beckhoff Automation GmbH, Germany

Patents:

The EtherCAT Technology is covered, including but not limited to the following patent applications and patents: EP1590927, EP1789857, DE102004044764, DE102007017835 with corresponding applications or registrations in various other countries.

3.1 Model 9307 device data

Bus connector	RJ45
ESI file	burster_9307.xml

3.2 Electrical safety

Reverse voltage protection	Yes
Air clearance/leakage paths	To DIN EN 61010-1
Electrical isolation	Between fieldbus and internal electronics
Withstand voltage	DC 500 V

3.3   Electromagnetic compatibility

3.3.1   Interference immunity

Interference immunity to EN 61326-1:2006

Industrial locations

3.3.2   Emitted interference

Emitted interference to EN 61326-1:2006

Index A

EN 61000-3-2:2000

EN 61000-3-3:1995+A1:2001

3.4   Notes on CE labeling

burster equipment carrying the CE mark meets the requirements of the EU directives and the harmonized European standards (EN) cited therein.

The EU declarations of conformity are available to the relevant authorities as specified in the directives. A copy of the declaration of conformity is included in the relevant equipment documentation.

DIGIFORCE® Model 9307 EtherCAT

4   Installation

Please note that you can download various documents such as installation guidelines and specifications about EtherCAT at www.beckhoff.com

4.1   Connection of fieldbus lines

burster devices with a EtherCAT option have two **RJ 45** connectors for the fieldbus connection.

4.2   Meaning of LED states

Hardware up to December 2014

LED	Status	Description
LA	OFF	Port closed
	ON / Flickering	Port open
RN	OFF	The device is in state INIT
	Blinking	The device is in state PRE-OPERATIONAL
	Single flash	The device is in state SAFE-OPERATIONAL
	ON	The device is in state OPERATIONAL
ER	OFF	No error
	Blinking	Invalid configuration, general configuration error
	Single flash	Local error
	Double flash	Process data watchdog timeout / EtherCAT watchdog timeout
BOOT	Blinking	During boot process (internal communication between EtherCAT-fieldbus-processor and DIGIFORCE® main processing unit)

The status of the LEDs is corresponding to EtherCAT specification (for detailed information please see http://www.ethercat.de/default.htm "EtherCAT Indicator and Labeling ETG.1300 S (R) V1.1.0").

DIGIFORCE® Model 9307 EtherCAT

Hardware from December 2014

LED	Status	Description
LA	OFF	Port closed
	ON / Flickering	Port open
RN	OFF	The device is in state INIT
	Blinking	The device is in state PRE-OPERATIONAL
	Single flash	The device is in state SAFE-OPERATIONAL
	ON	The device is in state OPERATIONAL
ER	OFF	No error
	Blinking	Invalid configuration, general configuration error
	Single flash	Local error
	Double flash	Process data watchdog timeout / EtherCAT watchdog timeout
BOOT	Blinking	During boot process (internal communication between EtherCAT-fieldbus-processor and DIGIFORCE® main processing unit)

All other LEDs are reserved for other fieldbus interfaces (e.g. PROFIBUS, PROFINET, EtherNet/IP).

4.3　Configuration menu in DIGIFORCE® 9307

To access the menu

Start in measurement mode. After power on the measurement mode is always set. The display will look differently dependent on your settings or your last measurements.

You can go to "Main setup menu" in measurement mode by pressing the **[F5]** key twice.

This is how it works

1.　In measurement mode, press the **[F5]** key twice.

P 0	ProgName			Menu 9
		Main setup menu		

Basic setup menu

Program number　　　　0
Program name　　　　　ProgName
Channel settings
Measurement mode
Evaluation
Realtime switchpoints
Test operation simple
Test operation complex
Sensor test
Setup user-defined values
Copy programs

				Enter

2.

3.　Press **[Enter]** to open the "Basic setup menu".

P 0	ProgName			Menu 19
		Basic setup menu		

Measurement menu function key definition
Assignment of the PLC outputs
Access authorisation
Measurement menu display control
Info menu
LCD setup
Date and time
Language
Interface setup (RS232/USB/Ethernet)
Acknowledgement function setup
Order sheet setup
EtherCAT field bus setup

				Enter

4.

5. Select "EtherCAT field bus setup" menu with ▼ or ▲ and press **[Enter]**.

6.

Parameters

Device ID (from V201900)	Device Identification Value (used for slave identificarion, 0 is not valid)
Control via	**EtherCAT**: DIGIFORCE® 9307 responds solely to control signals (inputs) on the EtherCAT interface **PLC:** DIGIFORCE® 9307 responds solely to control signals (inputs) on the PLC I/O interface. When controlled via PLC I/O, data is still transferred in the cyclical EtherCAT Process Data Objects (PDO)
State machine	Status of the EtherCAT fieldbus state machine INIT The device is in state INIT PRE-OP The device is in state PRE-OPERATIONAL SAFE-OP The device is in state SAFE-OPERATIONAL OP The device is in state OPERATIONAL
SW version of Interface	Version of the field bus card software

5 EtherCAT – General information

5.1 General information on EtherCAT data transfer

The DIGIFORCE 9307 with EtherCAT uses for the data transfer the EtherCAT technology CoE (CANopen over EtherCAT). There are two types of data – data whih are transferred with each cycle (PDO – Process Data Objects) and data which are transferred on demand only (SDO – Service Data Objects). The SDO-Data are addressed via a combination of Index and Subindex which you will find in the tables below.

The device (Slave) is controlled using the data transferred from Master to Slave. This data always consists of four bytes for the DIGIFORCE® 9307 unit. The function of these four bytes is explained in chapter 5.1 Overview of the PDO packet content page 18.

The DIGIFORCE® 9307 sends cyclic 140 bytes to Master. This packet contains PLC status, evaluation information and 30 measurement values which are user selectable within the 9307 configuration and the live values of max. 3 active measurement channels.

The DIGIFORCE® 9307 supports both types of Explicit Device Identification: **SII Configured Station Alias** and Device Identification Value **(ID Value)**. The SII configured station alias can be set by a master or a configuration tool. This value is stored in the device and is loaded at power-on into the register 0x0012:0x0013. The Device Identification Value **(ID Value)** can be set directly in the device EtherCAT menu (please refer to *Configuration menu in DIGIFORCE® 9307*). This value is loaded into the register 0x0134 on the master request.

Strings shoud be transferred with String-Ende (null terminated string)!

You will find further information about EtherCAT at: www.beckhoff.com.

5.2 Data conversion

5.2.1 Description of the data formats in this manual

The terms PLC inputs and PLC outputs refer to the DIGIFORCE® 9307 unit. These terms are reversed when referred to the Master.

The function of the PLC-In / PLC-Out bits is identical to the parallel PLC I/O ports on the unit itself and can be found within the DIGIFORCE® 9307 operating manual.

The floating-point numbers ("float") mentioned are four bytes long (32 bits) and are based on the IEEE-754 standard.

Numbers that are not specifically labeled or are labeled with "d" or "dec" are decimal numbers. (Example: 1234, 1234dec, dec1234, 1234d)

Numbers that are labeled with "0x" or "hex" are hexadecimal numbers. (Example: 0x1234, hex1234, 1234hex, 1234h)

Numbers that are labeled with "b" or "bin" are binary numbers. (Example: b1100, bin1100, 1100b, 1100bin).

5.2.2 Handling problems that arise when reading floating-point numbers

This only concerns cases in which floating-point numbers need to be read from the DIGIFORCE 9307 unit.

Floating-point numbers (data type REAL), according to IEEE 754, are encoded as four bytes for transfer. This may create problems depending on the type of PLC used.

Cause

In the DIGIFORCE® 9307-EtherCat, the sign byte is transferred first. Some PLCs expect this byte in the highest of the four addresses not in the lowest address. This inevitably leads to misinterpretation of the numeric value. In this case the order of the four bytes has to be changed by the PLC as shown in the figure.

Diagram 1:   Exchange of the order of bytes caused by misinterpretation of the numeric value

6 EtherCAT PDO – Process Data Objects

6.1 Overview of the PDO packet content

Transfer from Master to Slave

Content	Length/Bytes	Bytes
PLC inputs	4	4

Transfer from Slave to Master

Content	Length/Bytes	Bytes
PLC output status	4	Σ 140 bytes
Evaluation info	4	
12 evaluation values (float) , selectable list M5-1*	12x4	
12 evaluation values (float) , selectable list M5-2*	12x4	
6 evaluation values (float), selectable list curve*	6x4	
3 life values (X, Y1, Y2) *1	3x4	

* The selectable list contains values which are defined within the DIGIFORCE® 9307 device. The following values are available:

- General curve data Y1
- General curve data Y2
- Evaluation results of mathematical functions
- Evaluation results of each evaluation element (e.g. window entry/exit window extended evaluation results like Min/Max window limits Xmin, Xmax, Ymin, Ymax threshold crossing point.)

*1 The live values of the sensor channels are updated at a rate of 500 … 1000 Hz. The values are only updated when the DIGIFORCE® 9307 is ready to record measurements or is actively taking a measurement (after a measurement and during evaluation the values are not updated for a period of typ. 30 msec).

How to define the selectable list: The parameterization of the selectable lists is done in the main setup menu "Setup user defined values" (Note that this setting is specific for each measurement program. For details refer to the DIGIFORCE® 9307 operation manual, section 5.13 User defined values.)

6.2 PDO – Process Data Objects – Transfer from Master to Slave

Four bytes of PLC-In data for the DIGIFORCE® 9307 are always transferred from the EtherCAT Master to the DIGIFORCE® 9307. These bits have the same function as the parallel PLC inputs to the DIGIFORCE® 9307 unit. (See detailed documentation of these signals within the DIGIFORCE® 9307 operation manual, section 5.3.9 Assigning PLC outputs). Also the signal timing is available within the DIGIFORCE® 9307 operation manual.

6.2.1 PLC inputs byte 1 (Master to Slave)

PLC inputs Byte 1 (Master → Slave)		
Valid values:	**IN_PROG0** Measurement program number Bit 0	Bit 0 LSB
	IN_PROG1 Measurement program number Bit 1	Bit 1
Set reserved bits to '0'	**IN_PROG2** Measurement program number Bit 2	Bit 2
	IN_PROG3 Measurement program number Bit 3	Bit 3
	IN_PROG4 Measurement program number Bit4	Bit 4
	IN_RES1 reserved input 1	Bit 5
	-	Bit 6
	-	Bit 7 MSB

6.2.2   PLC inputs byte 2 (Master to Slave)

PLC inputs Byte 2 (Master → Slave)		
Valid values:	**IN_STROBE** Apply program number	Bit 0 LSB
	IN_ACK_OK IO Acknowledgement	Bit 1
Set reserved bits to '0'	**IN_ACK_NOK** NIO Acknowledgement	Bit 2
	IN_TEST_OP Setup mode (evaluation without counter)	Bit 3
	IN_TEST_OPC Setup mode (recording a set of curves)	Bit 4
	IN_AUTO Instrument is kept in measurement mode (AUTO mode)	Bit 5
	IN_RES2 reserved input 2	Bit 6
	IN_REF_MEAS Reference travel for incremental sensors with distance coding	Bit 7 MSB

6.2.3   PLC inputs byte 3 (Master to Slave)

PLC inputs Byte 3 (Master → Slave)		
Valid values:	**IN_RESET** Reset all statistical data	Bit 0 LSB
	IN_PROG6* Measurement program no. bit 6 (binary coded)	Bit 1
Set reserved bits to '0'	**IN_STEST** Sensor test	Bit 2
	IN_PROG5* Measurement program no. bit 5 (binary coded)	Bit 3
	IN_LTEST Line test, all PLC-Outputs are set to high	Bit 4
	IN_TAREX Tare the X-channel	Bit 5
	IN_TAREY1 Tare Y-channel 1	Bit 6
	IN_TAREY2 Tare Y-channel 2	Bit 7 MSB

* IN_PROG[6..5] necessary with 9307 firmware for 128 measurement programs. If not used set this bits to "0".

6.2.4   PLC inputs byte 4 (Master to Slave)

PLC inputs Byte 4 (Master → Slave)		
Valid values:	**IN_START** Start / stop for measurement	Bit 0 LSB
	-	Bit 1
Set reserved bits to '0'	-	Bit 2
	-	Bit 3
	-	Bit 4
	-	Bit 5
	-	Bit 6
	-	Bit 7 MSB

6.3 PLC outputs – Transfer from Slave to Master

The data refers to the PLC output of the DIGIFORCE® 9307. The data described here is the data transferred from the DIGIFORCE® 9307 to the EtherCAT Master.

The function of the PLC-In / PLC-Out bits is identical to the parallel PLC I/O ports on the unit itself and can be found within the DIGIFORCE® 9307 operation manual for the unit. Also the signal timing is available within the DIGIFORCE® 9307 operation manualPLC outputs byte 1

6.3.1 PLC outputs byte 1

PLC outputs Byte 1 (Slave →Master)		
Valid values:	**OUT_READY** Ready for the measurement	Bit 0 LSB
	OUT_ERROR • Start measurement if READY = Ø • Measurement-channel overdrive • Device error during boot-up procedure	Bit 1
	OUT_NOK_ONL1 Online- NOK 1, online signal for "Window" evaluation element	Bit 2
	OUT_NOK_ONL2 Online- NOK 2, online signal for "Window" evaluation element	Bit 3
	OUT_OK Overall measurement result was OK	Bit 4
	OUT_NOK Overall measurement result was NOK	Bit 5
	OUT_S1 Online switching signal 1	Bit 6
	OUT_S2 Online switching signal 2	Bit 7 MSB

6.3.2 PLC outputs byte 2 (9307 adjustable outputs)

PLC outputs Byte 2 (Slave →Master)		
Valid values:	PLC_OUT8	Bit 0 LSB
	PLC_OUT7	Bit 1
	PLC_OUT6	Bit 2
	PLC_OUT5	Bit 3
	PLC_OUT4	Bit 4
	PLC_OUT3	Bit 5
	PLC_OUT2	Bit 6
	PLC_OUT1	Bit 7 MSB

6.3.3 PLC outputs byte 3 (9307 adjustable outputs)

PLC outputs Byte 3 (Slave →Master)		
Valid values:	PLC_OUT9	Bit 0 LSB
	PLC_OUT10	Bit 1
	PLC_OUT11	Bit 2
	PLC_OUT12	Bit 3
	PLC_OUT13	Bit 4
	PLC_OUT14	Bit 5
	PLC_OUT15	Bit 6
	PLC_OUT16	Bit 7 MSB

6.3.4 PLC outputs byte 4 (9307 adjustable outputs)

PLC outputs Byte 4 (Slave →Master)		
Valid values:	reserved	Bit 0 LSB
	PLC_OUT23	Bit 1
	PLC_OUT22	Bit 2
	PLC_OUT21	Bit 3
	PLC_OUT20	Bit 4
	PLC_OUT19	Bit 5
	PLC_OUT18	Bit 6
	PLC_OUT17	Bit 7 MSB

NOTE	Note that PLC outputs PLC_OUT[23..1] could be assigned with different functions. The assignment could be changed within the DIGIFORCE® 9307 basic setup menu "Assignment of the PLC outputs"(see DIGIFORCE® 9307 operation manual chapter 5.3.9 Assigning PLC outputs).

6.3.5 Default assignment of output byte [4..2] adjustable outputs

9307 adjustable PLC outputs default assignment		
	PLC_OUT1	OUT_STROBE
	PLC_OUT2	OUT_OK_SENSORTEST
	PLC_OUT3	OUT_NOK_WINDOW_9
	PLC_OUT4	OUT_PROG0
	PLC_OUT5	OUT_PROG1
	PLC_OUT6	OUT_PROG2
	PLC_OUT7	OUT_PROG3
	PLC_OUT8	OUT_PROG4
	PLC_OUT9	OUT_S3
	PLC_OUT10	OUT_S4
	PLC_OUT11	OUT_NOK_WINDOW_8
	PLC_OUT12	OUT_NOK_WINDOW_7
	PLC_OUT13	OUT_NOK_WINDOW_6
	PLC_OUT14	OUT_NOK_WINDOW_5
	PLC_OUT15	OUT_NOK_WINDOW_4
	PLC_OUT16	OUT_NOK_WINDOW_3
	PLC_OUT17	OUT_NOK_WINDOW_2
	PLC_OUT18	OUT_NOK_WINDOW_1
	PLC_OUT19	OUT_WARNING_TARE
	PLC_OUT20	OUT_WARNING_TOOLCOUNT
	PLC_OUT21	OUT_WARNING_TOTAL
	PLC_OUT22	OUT_TEST_OP_SIMPLE
	PLC_OUT23	OUT_TEST_OP_COMPLEX

6.4 Evaluation info – Transfer from Slave to Master

The evaluation info (4 byte) contains the evaluation result of each element.

6.4.1 Evaluation info byte 1

Evaluation info byte 1 (Slave →Master)		
Valid values:	Window_1_NOK	Bit 0 LSB
	Window_2_NOK	Bit 1
	Window_3_NOK	Bit 2
	Window_4_NOK	Bit 3
	Window_5_NOK	Bit 4
	Window_6_NOK	Bit 5
	Window_7_NOK	Bit 6
	Window_8_NOK	Bit 7 MSB

6.4.2 Evaluation info byte 2

Evaluation info byte 2 (Slave →Master)		
Valid values:	Window_9_NOK	Bit 0 LSB
	Window_10_NOK	Bit 1
	Trapezoid_X1_NOK	Bit 2
	Trapezoid_X2_NOK	Bit 3
	Trapezoid_Y1_NOK	Bit 4
	Trapezoid_Y2_NOK	Bit 5
	Threshold_1_NOK	Bit 6
	Threshold _2_NOK	Bit 7 MSB

6.4.3 Evaluation info byte 3

Evaluation info byte 3 (Slave →Master)		
Valid values:	Threshold_3_NOK	Bit 0 LSB
	Threshold_4_NOK	Bit 1
	Envelope_1_NOK	Bit 2
	Envelope_2_NOK	Bit 3
	Math_Evaluation_1_NOK	Bit 4
	Math_Evaluation_2_NOK	Bit 5
	Math_Evaluation_3_NOK	Bit 6
	Math_Evaluation_4_NOK	Bit 7 MSB

6.4.4 Evaluation info byte 4

Evaluation info byte 4 (Slave →Master)		
Valid values:	Math_Evaluation_5_NOK	Bit 0 LSB
	Math_Evaluation_6_NOK	Bit 1
	Rotary_Switch_1_NOK	Bit 2
	Rotary_Switch_2_NOK	Bit 3
	MeasChannel_Overload	Bit 4
	Curve_Y1_NOK	Bit 5
	Curve_Y2_NOK	Bit 6
	Global_NOK	Bit 7 MSB

6.5   Byte reference list

Data from Master to Slave

Byte	Function	Section	Comments
0	PLC inputs Byte 1	5.2.1	
1	PLC inputs Byte 2	5.2.2	
2	PLC inputs Byte 3	5.2.3	
3	PLC inputs Byte 4	5.2.4	

Data from Salve to Master

Byte	Function	Section	Comments
0	PLC outputs Byte 1	5.3.1	
1	PLC outputs Byte 2	5.3.2	
2	PLC outputs Byte 3	5.3.3	
3	PLC outputs Byte 4	5.3.4	
4	Evaluation info Byte 1	5.4.1	
5	Evaluation info Byte 2	5.4.2	
6	Evaluation info Byte 3	5.4.3	
7	Evaluation info Byte 4	5.4.4	
8	M5-1 value_1 (1st Byte)	see DIGIFORCE® 9307 operation manual chapter 5.13	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
9	M5-1 value_1 (2nd Byte)	see above	
10	M5-1 value_1 (3rd Byte)	see above	
11	M5-1 value_1 (4th Byte)	see above	
12	M5-1 value_2 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
13	M5-1 value_2 (2nd Byte)	see above	
14	M5-1 value_2 (3rd Byte)	see above	
15	M5-1 value_2 (4th Byte)	see above	
16	M5-1 value_3 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
17	M5-1 value_3 (2nd Byte)	see above	
18	M5-1 value_3 (3rd Byte)	see above	
19	M5-1 value_3 (4th Byte)	see above	

Byte	Function	Section	Comments
20	M5-1 value_4 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
21	M5-1 value_4 (2nd Byte)	see above	
22	M5-1 value_4 (3rd Byte)	see above	
23	M5-1 value_4 (4th Byte)	see above	
24	M5-1 value_5 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
25	M5-1 value_5 (2nd Byte)	see above	
26	M5-1 value_5 (3rd Byte)	see above	
27	M5-1 value_5 (4th Byte)	see above	
28	M5-1 value_6 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
29	M5-1 value_6 (2nd Byte)	see above	
30	M5-1 value_6 (3rd Byte)	see above	
31	M5-1 value_6 (4th Byte)	see above	
32	M5-1 value_7 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
33	M5-1 value_7 (2nd Byte)	see above	
34	M5-1 value_7 (3rd Byte)	see above	
35	M5-1 value_7 (4th Byte)	see above	
36	M5-1 value_8 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
37	M5-1 value_8 (2nd Byte)	see above	
38	M5-1 value_8 (3rd Byte)	see above	
39	M5-1 value_8 (4th Byte)	see above	
40	M5-1 value_9 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
41	M5-1 value_9 (2nd Byte)	see above	
42	M5-1 value_9 (3rd Byte)	see above	
43	M5-1 value_9 (4th Byte)	see above	
44	M5-1 value_10 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
45	M5-1 value_10 (2nd Byte)	see above	
46	M5-1 value_10 (3rd Byte)	see above	
47	M5-1 value_10 (4th Byte)	see above	
48	M5-1 value_11 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
49	M5-1 value_11 (2nd Byte)	see above	

Byte	Function	Section	Comments
50	M5-1 value_11 (3rd Byte)	see above	
51	M5-1 value_11 (4th Byte)	see above	
52	M5-1 value_12 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-1 (32-Bit float)
53	M5-1 value_12 (2nd Byte)	see above	
54	M5-1 value_12 (3rd Byte)	see above	
55	M5-1 value_12 (4th Byte)	see above	
56	M5-2 value_1 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
57	M5-2 value_1 (2nd Byte)	see above	
58	M5-2 value_1 (3rd Byte)	see above	
59	M5-2 value_1 (4th Byte)	see above	
60	M5-2 value_2 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
61	M5-2 value_2 (2nd Byte)	see above	
62	M5-2 value_2 (3rd Byte)	see above	
63	M5-2 value_2 (4th Byte)	see above	
64	M5-2 value_3 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
65	M5-2 value_3 (2nd Byte)	see above	
66	M5-2 value_3 (3rd Byte)	see above	
67	M5-2 value_3 (4th Byte)	see above	
68	M5-2 value_4 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
69	M5-2 value_4 (2nd Byte)	see above	
70	M5-2 value_4 (3rd Byte)	see above	
71	M5-2 value_4 (4th Byte)	see above	
72	M5-2 value_5 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
73	M5-2 value_5 (2nd Byte)	see above	
74	M5-2 value_5 (3rd Byte)	see above	
75	M5-2 value_5 (4th Byte)	see above	
76	M5-2 value_6 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
77	M5-2 value_6 (2nd Byte)	see above	
78	M5-2 value_6 (3rd Byte)	see above	
79	M5-2 value_6 (4th Byte)	see above	

Byte	Function	Section	Comments
80	M5-2 value_7 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
81	M5-2 value_7 (2nd Byte)	see above	
82	M5-2 value_7 (3rd Byte)	see above	
83	M5-2 value_7 (4th Byte)	see above	
84	M5-2 value_8 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
85	M5-2 value_8 (2nd Byte)	see above	
86	M5-2 value_8 (3rd Byte)	see above	
87	M5-2 value_8 (4th Byte)	see above	
88	M5-2 value_9 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
89	M5-2 value_9 (2nd Byte)	see above	
90	M5-2 value_9 (3rd Byte)	see above	
91	M5-2 value_9 (4th Byte)	see above	
92	M5-2 value_10 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
93	M5-2 value_10 (2nd Byte)	see above	
94	M5-2 value_10 (3rd Byte)	see above	
95	M5-2 value_10 (4th Byte)	see above	
96	M5-2 value_11 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
97	M5-2 value_11 (2nd Byte)	see above	
98	M5-2 value_11 (3rd Byte)	see above	
99	M5-2 value_11 (4th Byte)	see above	
100	M5-2 value_12 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 List M5-2 (32-Bit float)
101	M5-2 value_12 (2nd Byte)	see above	
102	M5-2 value_12 (3rd Byte)	see above	
103	M5-2 value_12 (4th Byte)	see above	
104	M1_Curvevalue_1 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 value in curve M1 (32-Bit float)
105	M1_Curvevalue_1 (2nd Byte)	see above	
106	M1_Curvevalue_1 (3rd Byte)	see above	
107	M1_Curvevalue_1 (4th Byte)	see above	
108	M1_Curvevalue_2 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 value in curve M1
109	M1_Curvevalue_2 (2nd Byte)	see above	

Byte	Function	Section	Comments
110	M1_Curvevalue_2 (3rd Byte)	see above	(32-Bit float)
111	M1_Curvevalue_2 (4th Byte)	see above	
112	M1_Curvevalue_3 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 value in curve M1 (32-Bit float)
113	M1_Curvevalue_3 (2nd Byte)	see above	
114	M1_Curvevalue_3 (3rd Byte)	see above	
115	M1_Curvevalue_3 (4th Byte)	see above	
116	M1_Curvevalue_4 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 value in curve M1 (32-Bit float)
117	M1_Curvevalue_4 (2nd Byte)	see above	
118	M1_Curvevalue_4 (3rd Byte)	see above	
119	M1_Curvevalue_4 (4th Byte)	see above	
120	M1_Curvevalue_5 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 value in curve M1 (32-Bit float)
121	M1_Curvevalue_5 (2nd Byte)	see above	
122	M1_Curvevalue_5 (3rd Byte)	see above	
123	M1_Curvevalue_5 (4th Byte)	see above	
124	M1_Curvevalue_6 (1st Byte)	see above	User defined value in DIGIFORCE® 9307 value in curve M1 (32-Bit float)
125	M1_Curvevalue_6 (2nd Byte)	see above	
126	M1_Curvevalue_6 (3rd Byte)	see above	
127	M1_Curvevalue_6 (4th Byte)	see above	
128	Live value Channel X (1st Byte)		(32-Bit float) Channel X live value Updating rate of the live values $100/_{sec.}$
129	Live value Channel X (2nd Byte)		
130	Live value Channel X (3rd Byte)		
131	Live value Channel X (4th Byte)		
132	Live value Channel Y1 (1st Byte)		(32-Bit float) Channel Y1 live value Updating rate of the live values $100/_{sec.}$
133	Live value Channel Y1 (2nd Byte)		
134	Live value Channel Y1 (3rd Byte)		
135	Live value Channel Y1 (4th Byte)		
136	Live value Channel Y2 (1st Byte)		(32-Bit float) Channel Y2 live value Updating rate of the live values $100/_{sec.}$
137	Live value Channel Y2 (2nd Byte)		
138	Live value Channel Y2 (3rd Byte)		
139	Live value Channel Y2 (4th Byte)		

7 EtherCAT SDO – Service Data Objects

EtherCAT-Firmware V201900 and above

Note: The current EtherCAT specification does not have any error codes in case the device cannot perform a command due to its current state, e.g. an optional analogue card is not build-in. If you write some data into the device, it is recommended to read the value back and compare it with the set value to be sure the device has accepted your parameter. Additionally, the device sends an emergency message if a parameter cannot be read or written. EtherCAT Master can read out these emergency messages. One message consists of 5 bytes: **CFGER** and means **Configuratiuon Error**. Please also use them with read commands, especially if the expected value is a 0 (zero). If the device fails to return data due to its current state, it sets all data bytes to zero and sends an emergency message.

The services are described from the point of view of the Master.

The SDO EtherCAT services allow access to following DIGIFORCE® 9307 functions:

- Complete device configuration

- Transfer of component/worker/job data for logging

- Retrieval of large amounts of process and curve data

- Abbreviations
  WO   Write Only
  RO   Read Only
  RW   Read and Write
  Event!   Writing an arbitrary byte initiates action
  BOOL   Data type Boolean
  FLT   Data type Float, floating point number according to IEEE754, Length = 4 Byte
  STR*n*   Data type String, String of *n* Bytes
  U8   Data type Unsigned 8, Length = 1 Byte
  U16   Data type Unsigned 16, Length = 2 Byte
  U32   Data type Unsigned 32, Length = 4 Byte

7.1 Instrument configuration

7.1.1 Index 0x2000: Master Outputs

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2000	1	IN_PROG0	*0* *1*	Set Not set	BOOL		WO
0x2000	2	IN_PROG1	*0* *1*	Set Not set	BOOL		WO
0x2000	3	IN_PROG2	*0* *1*	Set Not set	BOOL		WO
0x2000	4	IN_PROG3	*0* *1*	Set Not set	BOOL		WO
0x2000	5	IN_PROG4	*0* *1*	Set Not set	BOOL		WO
0x2000	6	IN_STROBE	*0* *1*	Set Not set	BOOL		WO
0x2000	7	IN_ACK_OK	*0* *1*	Set Not set	BOOL		WO

0x2000	8	IN_ACK_NOK	0 1	Set Not set		BOOL		WO
0x2000	9	IN_TEST_OP	0 1	Set Not set		BOOL		WO
0x2000	10	IN_TEST_OPC	0 1	Set Not set		BOOL		WO
0x2000	11	IN_AUTO	0 1	Set Not set		BOOL		WO
0x2000	12	IN_REF_MEAS	0 1	Set Not set		BOOL		WO
0x2000	13	IN_RESET	0 1	Set Not set		BOOL		WO
0x2000	14	IN_PROG6*	0 1	Set Not set		BOOL		WO
0x2000	15	IN_STEST	0 1	Set Not set		BOOL		WO
0x2000	16	IN_PROG5*	0 1	Set Not set		BOOL		WO
0x2000	17	IN_LTEST	0 1	Set Not set		BOOL		WO
0x2000	18	IN_TAREX	0 1	Set Not set		BOOL		WO
0x2000	19	IN_TAREY1	0 1	Set Not set		BOOL		WO
0x2000	20	IN_TAREY2	0 1	Set Not set		BOOL		WO
0x2000	21	IN_START	0 1	Set Not set		BOOL		WO

*) IN_PROG 6…5 in firmware with 128 Measurement programs

7.1.2 Index 0x2001: Master Inputs

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2001	1	OUT_READY	0 1	Set Not set	BOOL		RO
0x2001	2	OUT_ERROR	0 1	Set Not set	BOOL		RO
0x2001	3	OUT_NOK_ONL1	0 1	Set Not set	BOOL		RO
0x2001	4	OUT_NOK_ONL2	0 1	Set Not set	BOOL		RO
0x2001	5	OUT_OK	0 1	Set Not set	BOOL		RO
0x2001	6	OUT_NOK	0 1	Set Not set	BOOL		RO
0x2001	7	OUT_S1	0 1	Set Not set	BOOL		RO
0x2001	8	OUT_S2	0 1	Set Not set	BOOL		RO
0x2001	9	OUT_USER_DEF_8	0 1	Set Not set	BOOL		RO
0x2001	10	OUT_USER_DEF_7	0 1	Set Not set	BOOL		RO
0x2001	11	OUT_USER_DEF_6	0 1	Set Not set	BOOL		RO

0x2001	12	OUT_USER_DEF_5	0 1	Set Not set	BOOL		RO
0x2001	13	OUT_USER_DEF_4	0 1	Set Not set	BOOL		RO
0x2001	14	OUT_USER_DEF_3	0 1	Set Not set	BOOL		RO
0x2001	15	OUT_USER_DEF_2	0 1	Set Not set	BOOL		RO
0x2001	16	OUT_USER_DEF_1	0 1	Set Not set	BOOL		RO
0x2001	17	OUT_USER_DEF_9	0 1	Set Not set	BOOL		RO
0x2001	18	OUT_USER_DEF_10	0 1	Set Not set	BOOL		RO
0x2001	19	OUT_USER_DEF_11	0 1	Set Not set	BOOL		RO
0x2001	20	OUT_USER_DEF_12	0 1	Set Not set	BOOL		RO
0x2001	21	OUT_USER_DEF_13	0 1	Set Not set	BOOL		RO
0x2001	22	OUT_USER_DEF_14	0 1	Set Not set	BOOL		RO
0x2001	23	OUT_USER_DEF_15	0 1	Set Not set	BOOL		RO
0x2001	24	OUT_USER_DEF_16	0 1	Set Not set	BOOL		RO
0x2001	25	OUT_USER_DEF_23	0 1	Set Not set	BOOL		RO
0x2001	26	OUT_USER_DEF_22	0 1	Set Not set	BOOL		RO
0x2001	27	OUT_USER_DEF_21	0 1	Set Not set	BOOL		RO
0x2001	28	OUT_USER_DEF_20	0 1	Set Not set	BOOL		RO
0x2001	29	OUT_USER_DEF_19	0 1	Set Not set	BOOL		RO
0x2001	30	OUT_USER_DEF_18	0 1	Set Not set	BOOL		RO
0x2001	31	OUT_USER_DEF_17	0 1	Set Not set	BOOL		RO
0x2001	32	Window 1 state	0 1	Set Not set	BOOL		RO
0x2001	33	Window 2 state	0 1	Set Not set	BOOL		RO
0x2001	34	Window 3 state	0 1	Set Not set	BOOL		RO
0x2001	35	Window 4 state	0 1	Set Not set	BOOL		RO
0x2001	36	Window 5 state	0 1	Set Not set	BOOL		RO
0x2001	37	Window 6 state	0 1	Set Not set	BOOL		RO
0x2001	38	Window 7 state	0 1	Set Not set	BOOL		RO
0x2001	39	Window 8 state	0 1	Set Not set	BOOL		RO

0x2001	40	Window 9 state	0 1	Set Not set	BOOL		RO
0x2001	41	Window 10 state	0 1	Set Not set	BOOL		RO
0x2001	42	Trapezoid window X1 State	0 1	Set Not set	BOOL		RO
0x2001	43	Trapezoid window X2 state	0 1	Set Not set	BOOL		RO
0x2001	44	Trapezoid window Y1 state	0 1	Set Not set	BOOL		RO
0x2001	45	Trapezoid window Y2 state	0 1	Set Not set	BOOL		RO
0x2001	46	Threshold 1 state	0 1	Set Not set	BOOL		RO
0x2001	47	Threshold 2 state	0 1	Set Not set	BOOL		RO
0x2001	48	Threshold 3 state	0 1	Set Not set	BOOL		RO
0x2001	49	Threshold 4 state	0 1	Set Not set	BOOL		RO
0x2001	50	Envelope 1 state	0 1	Set Not set	BOOL		RO
0x2001	51	Envelope 2 state	0 1	Set Not set	BOOL		RO
0x2001	52	Mathematical function 1 state	0 1	Set Not set	BOOL		RO
0x2001	53	Mathematical function 2 state	0 1	Set Not set	BOOL		RO
0x2001	54	Mathematical function 3 state	0 1	Set Not set	BOOL		RO
0x2001	55	Mathematical function 4 state	0 1	Set Not set	BOOL		RO
0x2001	56	Mathematical function 5 state	0 1	Set Not set	BOOL		RO
0x2001	57	Mathematical function 6 state	0 1	Set Not set	BOOL		RO
0x2001	58	Rotary switch 1 state	0 1	Set Not set	BOOL		RO
0x2001	59	Rotary switch 2 state	0 1	Set Not set	BOOL		RO
0x2001	60	Channel overdriven	0 1	Set Not set	BOOL		RO
0x2001	61	Channel Y1 is NOK	0 1	Set Not set	BOOL		RO
0x2001	62	Channel Y2 is NOK	0 1	Set Not set	BOOL		RO
0x2001	63	Overall result is NIO	0 1	Set Not set	BOOL		RO
0x2001	64	User-defined result 1	0 1	Set Not set	FLT	4	RO
0x2001	65	User-defined result 2	0 1	Set Not set	FLT	4	RO
0x2001	66	User-defined result 3	0 1	Set Not set	FLT	4	RO
0x2001	67	User-defined result 4	0 1	Set Not set	FLT	4	RO

0x2001	68	User-defined result 5	0 1	Set Not set	FLT	4	RO
0x2001	69	User-defined result 6	0 1	Set Not set	FLT	4	RO
0x2001	70	User-defined result 7	0 1	Set Not set	FLT	4	RO
0x2001	71	User-defined result 8	0 1	Set Not set	FLT	4	RO
0x2001	72	User-defined result 9	0 1	Set Not set	FLT	4	RO
0x2001	73	User-defined result 10	0 1	Set Not set	FLT	4	RO
0x2001	74	User-defined result 11	0 1	Set Not set	FLT	4	RO
0x2001	75	User-defined result 12	0 1	Set Not set	FLT	4	RO
0x2001	76	User-defined result 13	0 1	Set Not set	FLT	4	RO
0x2001	77	User-defined result 14	0 1	Set Not set	FLT	4	RO
0x2001	78	User-defined result 15	0 1	Set Not set	FLT	4	RO
0x2001	79	User-defined result 16	0 1	Set Not set	FLT	4	RO
0x2001	80	User-defined result 17	0 1	Set Not set	FLT	4	RO
0x2001	81	User-defined result 18	0 1	Set Not set	FLT	4	RO
0x2001	82	User-defined result 19	0 1	Set Not set	FLT	4	RO
0x2001	83	User-defined result 20	0 1	Set Not set	FLT	4	RO
0x2001	84	User-defined result 21	0 1	Set Not set	FLT	4	RO
0x2001	85	User-defined result 22	0 1	Set Not set	FLT	4	RO
0x2001	86	User-defined result 23	0 1	Set Not set	FLT	4	RO
0x2001	87	User-defined result 24	0 1	Set Not set	FLT	4	RO
0x2001	88	User-defined result 25	0 1	Set Not set	FLT	4	RO
0x2001	89	User-defined result 26	0 1	Set Not set	FLT	4	RO
0x2001	90	User-defined result 27	0 1	Set Not set	FLT	4	RO
0x2001	91	User-defined result 28	0 1	Set Not set	FLT	4	RO
0x2001	92	User-defined result 29	0 1	Set Not set	FLT	4	RO
0x2001	93	User-defined result 30	0 1	Set Not set	FLT	4	RO
0x2001	94	Live value of channel X	0 1	Set Not set	FLT	4	RO
0x2001	95	Live value of channel Y1	0 1	Set Not set	FLT	4	RO

| 0x2001 | 96 | Live value of channel Y2 | 0
1 | Set
Not set | FLT | 4 | RO |

7.1.3   General settings (Index 0x2030)

Index 0x2030, Subindex 1 to 20

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	0	Number of subindices	115		U8	1	RO
0x2030	1…9	Reserved	-	Not possible			X
0x2030	10	Device detection	DIGIFORCE model 9307		STR 18	18	RO
0x2030	11	Serial number	12345678		STR 11	11	RO
0x2030	12	Software version	V201100		STR 25	25	RO
0x2030	13	Version boot loader software	V201100		STR 25	25	RO
0x2030	14	Software version Field bus interface	EC-201400		STR 25	25	RO
0x2030	15	Optional analog interface enabled	0 1 2 3 4 5 6 7	No option Torque Piezo Torque+Piezo Resistance Torque+Resistance Piezo+Resistance Torque+Piezo+ Resistance	U16	2	RO
0x2030	16	Info: Calibration date analog interface	07.11.2012		STR 10	10	RO
0x2030	17	Info: Calibration date optional analog interface	07.11.2012		STR 10	10	RO
0x2030	18	Reserved	-	Not possible			XX
0x2030	19	Station name	Stat14 right		STR 15	15	RW
0x2030	20	Tool counter	0 … 4294967296		U32	4	RO

Index 0x2030, Subindex 21 to 40

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	21	Standard value for tool counter	0 … 4294967296		U32	4	RW
0x2030	22	Reset tool counter	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO
0x2030	23	Language	0 1 2 3 4	german english french spanish italian	U16	2	RW
0x2030	24	Date	[dd.mm.yyyy]	e.g.: 21.09.1963	STR 10	10	RW
0x2030	25	Time	[hh:mm:ss], 24h	e.g.: 22:15:00	STR 8	8	RW
0x2030	26	LCD brightness	1 … 10	Integer value (10 max.)	U16	2	RW
0x2030	27	Background graphical display bright/dark	0 1	dark bright	U16	2	RW
0x2030	28	Measurement menu function key definition F1	0 1 2 3 4 5 6 7 8 9 10 11 12 13	Off Meas. menu page up Meas. menu page down Meas. program incremental Meas. program decremental Tare X Tare Y Tare Y2 Measurement Start/Stop Acknowledge OK parts Acknowledge NOK parts Sensor test Reference measurement Edit mode	U16	2	RW
0x2030	29	Measurement menu function key definition F2	0 1 2 3 4 5 6 7 8 9 10 11 12 13	Off Meas. menu page up Meas. menu page down Meas. program incremental Meas. program decremental Tare X Tare Y Tare Y2 Measurement Start/Stop Acknowledge OK parts Acknowledge NOK parts Sensor test Reference measurement Edit mode	U16	2	RW
0x2030	30	Measurement menu function key definition F3	0 1 2 3 4 5	Off Meas. menu page up Meas. menu page down Meas. program incremental Meas. program decremental Tare X	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
			6	Tare Y			
			7	Tare Y2			
			8	Measurement Start/Stop			
			9	Acknowledge OK parts			
			10	Acknowledge NOK parts			
			11	Sensor test			
			12	Reference measurement			
			13	Edit mode			
0x2030	31	Measurement menu function key definition F4	0	Off	U16	2	RW
			1	Meas. menu page up			
			2	Meas. menu page down			
			3	Meas. program incremental			
			4	Meas. program decremental			
			5	Tare X			
			6	Tare Y			
			7	Tare Y2			
			8	Measurement Start/Stop			
			9	Acknowledge OK parts			
			10	Acknowledge NOK parts			
			11	Sensor test			
			12	Reference measurement			
			13	Edit mode			
0x2030	32	Meas. menu display control GRAPHIC	0	Meas. menu disabled	U16	2	RW
			1	Meas. menu enabled			
0x2030	33	Meas. menu display control Show CURVE ARRAY	0	Meas. menu disabled	U16	2	RW
			1	Meas. menu enabled			
0x2030	34	Meas. menu display control GENERAL CURVE DATA	0	Meas. menu disabled	U16	2	RW
			1	Meas. menu enabled			
0x2030	35	Meas. menu display control TOTAL (Off/Smiley/text)	0	Off	U16	2	RW
			1	Smiley			
			2	Text			
0x2030	36	Meas. menu display control ENTRY/EXIT VALUES	0	Meas. menu disabled	U16	2	RW
			1	Meas. menu enabled			
0x2030	37	Meas. menu display control USER DEFINED MEAS. VALUES	0	Meas. menu disabled	U16	2	RW
			1	Meas. menu enabled			
0x2030	38	Meas. menu display control STATISTICS	0	Meas. menu disabled	U16	2	RW
			1	Meas. menu enabled			
0x2030	39	Meas. menu display control ORDER SHEET	0	Meas. menu disabled	U16	2	RW
			1	Meas. menu enabled			
0x2030	40	Meas. menu display control	0	Meas. menu disabled	U16	2	RW
			1	Meas. menu enabled			

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		ROTARY SWITCH					

Index 0x2030, Subindex 41 to 58

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	41	Display the measurement menu, read the currently displayed measurement menu **Note**: The menu is selected here, but not yet displayed. Display only occurs through access to index 30/115.	101 102 103 104 105 106 107 108 109 110 111 112 113	Y1 displaying meas. curves Y2 displaying meas. curves Y1 / Y2 displaying meas. curves General curve data Y1 General curve data Y2 Smiley, Pass/Fail display. Entry/Exit of window Entry/Exit of evaluation elements (except for window) User selected values 1 - 12 User selected values 13 - 24 Display statistics Order sheet Results of evaluation rotary switch	U16	2	RW
0x2030	42	Access authorisation Password protection on/off	0 1	Password protection on Password protection off	U16	2	RW
0x2030	43	Access authorisation BASIC SETUP MENUE	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	44	Access authorisation MIN. SETUP MENUE	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	45	Access authorisation MAIN SETUP MENUE	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	46	Access authorisation CHANNEL SETUP MENUE	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	47	Access authorisation MEASUREMENT MODE	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	48	Access authorisation EVALUATION	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	49	Access authorisation SWITCHPOINTS	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	50	Access authorisation TEST OPERATION SIMPLE	0 1	Access level disabled Access level enabled	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	51	Access authorisation TEST OPERATION COMPLEX	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	52	Access authorisation SENSOR TEST	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	53	Access authorisation USER DEFINED VALUES	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	54	Access authorisation COPY PROGRAMS	0 1	Access level disabled Access level enabled	U16	2	RW
0x2030	55	Reserved	-	-	-	-	-
0x2030	56	Controller password	0000 … 9999		U16	2	RW
0x2030	57	Set Controller password to default	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO
0x2030	58	User password	0000 … 9999		U16	2	RW

Index 0x2030, Subindex 59 (Assignment PLC outputs 1)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	59	PLC output 1 (Pin 2)	0	Switchpoint S3	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	1	Switchpoint S4	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	2	Strobe (switch program)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	3	A0 (switch program)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	4	A1 (switch program)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	5	A2 (switch program)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	6	A3 (switch program)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	7	A4 (switch program)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	8	Tare warning	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	9	Warning tool counter	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	10	Warning Total	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	11	OK sensor test	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	12	Test operation simple	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	59	PLC output 1 (Pin 2)	13	Test operation complex	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	14	Measurement running	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	15	Configuration operation	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	16	Acknowledgement alarm	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	17	Acknowledgement lock	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	18	Acknowledgement OK (green)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	19	Acknowledgement NOK (red)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	20	NOK window 1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	21	NOK window 2	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	22	NOK window 3	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	23	NOK window 4	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	24	NOK window 5	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	25	NOK window 6	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	26	NOK window 7	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	27	NOK window 8	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	28	NOK window 9	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	29	NOK window 10	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	30	NOK trapezoid window X 1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	31	NOK trapezoid window X 3	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	32	NOK trapezoid window Y 1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	33	NOK trapezoid window X 2	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	34	NOK threshold 1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	35	NOK threshold 2	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	36	NOK threshold 3	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	37	NOK threshold 4	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	38	NOK envelope 1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	39	NOK envelope 2	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	59	PLC output 1 (Pin 2)	*40*	NOK result math 1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*41*	NOK result math 2	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*42*	NOK result math 3	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*43*	NOK result math 4	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*44*	NOK result math 5	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*45*	NOK result math 6	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*46*	NOK channel Y1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*47*	NOK channel Y2	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*48*	NOK rotary switch 1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*49*	NOK rotary switch 2	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*50*	PC logging active (OUT_PC_LOGGING)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*51*	Reference measurement	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*52*	A5 (switch program.) (only if 128 MP)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*53*	A6 (switch program) (only if 128 MP)	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*54*	OK channel Y1	U16	2	RW
0x2030	59	PLC output 1 (Pin 2)	*55*	OK channel Y2	U16	2	RW

Index 0x2030, Subindexs 60 to 81 (Assignment PLC outputs 2 to 23)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	60	PLC output 2 (Pin 6)	*see subindex 59*		U16	2	RW
0x2030	61	PLC output 3 (Pin 8)	*see subindex 59*		U16	2	RW
0x2030	62	PLC output 4 (Pin 9)	*see subindex 59*		U16	2	RW
0x2030	63	PLC output 5 (Pin 10)	*see subindex 59*		U16	2	RW
0x2030	64	PLC output 6 (Pin 11)	*see subindex 59*		U16	2	RW
0x2030	65	PLC output 7 (Pin 12)	*see subindex 59*		U16	2	RW
0x2030	66	PLC output 8 (Pin 13)	*see subindex 59*		U16	2	RW
0x2030	67	PLC output 9 (Pin 16)	*see subindex 59*		U16	2	RW
0x2030	68	PLC output 10 (Pin 17)	*see subindex 59*		U16	2	RW
0x2030	69	PLC output 11 (Pin 21)	*See subindex 59*		U16	2	RW
0x2030	70	PLC output 12 (Pin 22)	*see subindex 59*		U16	2	RW
0x2030	71	PLC output 13 (Pin 23)	*see subindex 59*		U16	2	RW
0x2030	72	PLC output 14 (Pin 24)	*see subindex 59*		U16	2	RW
0x2030	73	PLC output 15 (Pin 25)	*see subindex 59*		U16	2	RW
0x2030	74	PLC output 16 (Pin 26)	*see subindex 59*		U16	2	RW
0x2030	75	PLC output 17 (Pin 27)	*seesub index 59*		U16	2	RW
0x2030	76	PLC output 18 (Pin 28)	*see subindex 59*		U16	2	RW
0x2030	77	PLC output 19 (Pin 29)	*see subindex 59*		U16	2	RW
0x2030	78	PLC output 20 (Pin 30)	*see subindex 59*		U16	2	RW
0x2030	79	PLC output 21 (Pin 31)	*see subindex 59*		U16	2	RW
0x2030	80	PLC output 22 (Pin 32)	*see subindex 59*		U16	2	RW
0x2030	81	PLC output 23 (Pin 33)	*see subindex 59*		U16	2	RW

Index 0x2030, Subindexs 82 to 115

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	82	Order sheet: Operator	Michael_ Mueller		STR 64	64	RW
0x2030	83	Order sheet: Order number	AN_123456		STR 64	64	RW
0x2030	84	Order sheet: Batch	BATCH_ 257-3		STR 64	64	RW
0x2030	85	Order sheet: Component	Cylinder_right		STR 64	64	RW
0x2030	86	Order sheet: Serial number 1	SN_12345678 9		STR 64	64	RW
0x2030	87	Order sheet: Serial number 2	SN_98765432 1		STR 64	64	RW
0x2030	88	Order sheet: Shift number	1 … 6		U16	2	RW
0x2030	89	Order sheet: Shift name Current shift	Shiftname_ Current_Shift		STR 64	64	RW
0x2030	90	Order sheet: Shift name Shift 1	Shiftname_ Shift1		STR 64	64	RW
0x2030	91	Order sheet: Shift name Shift 2	Shiftname_ Shift2		STR 64	64	RW
0x2030	92	Order sheet: Shift name Shift 3	Shiftname_ Shift3		STR 64	64	RW
0x2030	93	Order sheet: Shift name Shift 4	Shiftname_ Shift4		STR 64	64	RW
0x2030	94	Order sheet: Shift name Shift 5	Shiftname_ Shift5		STR 64	64	RW
0x2030	95	Order sheet: Shift name Shift 6	Shiftname_ Shift6		STR 64	64	RW
0x2030	96	Order sheet: Reset shift counter Shift selection through writing the shift number	Shift number	EVENT! Writing the shift number clears the shift counter concerned	U16	2	WO
0x2030	97	Order sheet: Shift counter read-out quantity of current shift	0 … 4294967296		U32	4	RO
0x2030	98	Order sheet: Shift counter read-out quantity of shift 1	0 … 4294967296		U32	4	RO
0x2030	99	Order sheet: Shift counter read-out quantity of shift 2	0 … 4294967296		U32	4	RO
0x2030	100	Order sheet: Shift counter read-out quantity of shift 3	0 … 4294967296		U32	4	RO
0x2030	101	Order sheet: Shift counter read-out quantity of shift 4	0 … 4294967296		U32	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2030	102	Order sheet: Shift counter read-out quantity of shift 5	*0 … 4294967296*		U32	4	RO
0x2030	103	Order sheet: Shift counter read-out quantity of shift 6	*0 … 4294967296*		U32	4	RO
0x2030	104	Order sheet: Shift counter read-out quantity of current NOK counts	*0 … 4294967296*		U32	4	RO
0x2030	105	Order sheet: Shift counter read-out quantity of NOK counts shift 1	*0 … 4294967296*		U32	4	RO
0x2030	106	Order sheet: Shift counter read-out quantity of NOK counts shift 2	*0 … 4294967296*		U32	4	RO
0x2030	107	Order sheet: Shift counter read-out quantity of NOK counts shift 3	*0 … 4294967296*		U32	4	RO
0x2030	108	Order sheet: Shift counter read-out quantity of NOK counts shift 4	*0 … 4294967296*		U32	4	RO
0x2030	109	Order sheet: Shift counter read-out quantity of NOK counts shift 5	*0 … 4294967296*		U32	4	RO
0x2030	110	Order sheet: Shift counter read-out quantity of NOK counts shift 6	*0 … 4294967296*		U32	4	RO
0x2030	111	Acknowledgement function on/off	*0* *1*	Acknowledgement function off Acknowledgement function on	U16	2	RW
0x2030	112	Acknowledgement function: Acknowledge OK parts on/off	*0* *1*	Not active User has to confirm OK parts (F-Key or PLC input)	U16	2	RW
0x2030	113	Acknowledgement function: Acknowledge NOK parts on/off	*0* *1*	Not active User has to confirm NOK parts (F-Key or PLC input)	U16	2	RW
0x2030	114	Acknowledgement function: Buzzer volume	*0 ... 10*	10: max. volume	U16	2	
0x2030	115	Update display (refresh view)	*Event!*	Writing an arbitrary byte initiates action	U8		

7.1.4 Communication: Change menu, display update, fault indication (Index 0x2032)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2032	0	Number of subindices	*12*		U8	1	RO
0x2032	1 - 9	Reserved	-	-	x	x	x
0x2032	10	Go to menu	*0* *1* *2*	Meas. Menu Graphical test menu Complex test menu EVENT! and entry	U16	2	WO
0x2032	11	Initiate update of the LCD display	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2032	12	Fault status of the internal serial communication	*0x00000001*	PREFIX addressing fault	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000002*	Enquiry received in Device mode	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000004*	Blockcheck error	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000008*	Command fault	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000010*	Parameter error	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000020*	Timeout Receive Timer	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000040*	Timeout Response Timer	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000080*	Invalid ! or ?	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000100*	Invalid configuration	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000200*	Scaling fault	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000400*	No valid measurements are available	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00000800*	A/D converter overdriven	U32	4	RO
0x2032	12	Fault status of the internal serial communication	*0x00001000*	Fault reading from EEPROM	U32	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2032	12	Fault status of the internal serial communication	0x00002000	Overdrive resulting from scaling	U32	4	RO
0x2032	12	Fault status of the internal serial communication	0x00004000	Reading out the measurement curve was interrupted by the beginning of a new measurement	U32	4	RO
0x2032	12	Fault status of the internal serial communication	0x00008000	Invalid envelope limits	U32	4	RO
0x2032	12	Fault status of the internal serial communication	0x00010000	The calibration has not worked	U32	4	RO

7.1.5 Minimal setup menu (Index 0x2033)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2033	0	Number of subindices	13		U8	1	RO
0x2033	1 - 9	Reserved slots	-	-	x	x	x
0x2033	10	Set program number	0 ... 31 0…127	In the standard device In the corresponding device version	U16	2	RW
0x2033	11	Program name	Program name		STR 20	20	RW
0x2033	12	Reset statistics of measurement program	0 ... 31 0…127	In the standard device In the corresponding device version EVENT! Selection through writing the program number	U16	2	WO
0x2033	13	Reset statistics in all measurement programs	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO

7.1.6 General channel settings (Index 0x2034)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2034	0	Number of subindices	34		U8	1	RO
0x2034	1 - 9	Reserved slots	-	-			X
0x2034	10	Channel settings channel X **Note**: First make the settings in indices 10, 11, 12, then initiate with subindex 13!	0 1 2 3 4 5 6 7 8 9	Terminals: A, strain gauge A, Potentiometer A, standard signal B, strain gauge B, Potentiometer B, standard signal C, Incr. TTL C, Incr. sinus 1Vpp C, Incr. sinus 11 uApp D, strain gauge	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
			10	D, Potentiometer			
			11	D, standard signal			
			12	D, Incr. TTL			
			13	E, resistance			
			14	F, Piezo			
			15	time			
			16	reserved			
			17	C, SSI			
			18	C, EnDat			
0x2034	11	Channel settings channel Y1 **Note**: First make the settings in indices 10, 11, 12, then initiate with subindex 13!		Terminals:	U16	2	RW
			0	A, strain gauge			
			1	A, Potentiometer			
			2	A, standard signal			
			3	B, strain gauge			
			4	B, Potentiometer			
			5	B, standard signal			
			6	C, Incr. TTL			
			7	C, Incr.sinus 1Vpp			
			8	C, Incr. sinus 11 uApp			
			9	D, strain gauge			
			10	D, Potentiometer			
			11	D, standard signal			
			12	D, Incr. TTL			
			13	E, resistance			
			14	F, Piezo			
			15	time			
			16	reserved			
			17	C, SSI			
			18	C, EnDat			
0x2034	12	Channel settings channel Y2 **Note**: First make the settings in indices 10, 11, 12, then initiate with subindex 13!		Terminals:	U16	2	RW
			0	A, strain gauge			
			1	A, Potentiometer			
			2	A, standard signal			
			3	B, strain gauge			
			4	B, Potentiometer			
			5	B, standard signal			
			6	C, Incr. TTL			
			7	C, Incr. sinus 1Vpp			
			8	C, Incr. sinus 11 uApp			
			9	D, strain gauge			
			10	D, Potentiometer			
			11	D, standard signal			
			12	D, Incr. TTL			
			13	E, resistance			
			14	F, Piezo			
			15	Time			
			16	off			
			17	C, SSI			
			18	C, EnDat			
0x2034	13	Accept channel settings	Event!	The settings from indices 10, 11, 12 are being stored. Writing an arbitrary byte initiates action.	U8	1	WO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2034	14	Filter channel X **Note**: Entry is not available for the channel settings "Time" and "Incremental".	0 1 2 3 4 5 6 7 8	Off 5 Hz filter 10 Hz filter 25 Hz filter 50 Hz filter 100 Hz filter 200 Hz filter 400 Hz filter 800 Hz filter	U16	2	RW
0x2034	15	Filter channel Y1 **Note**: Entry is not available for the channel settings "Time" and "Incremental".	0 1 2 3 4 5 6 7 8	Off 5 Hz filter 10 Hz filter 25 Hz filter 50 Hz filter 100 Hz filter 200 Hz filter 400 Hz filter 800 Hz filter	U16	2	RW
0x2034	16	Filter channel Y2 **Note**: Entry is not available for the channel settings "Time" and "Incremental"	0 1 2 3 4 5 6 7 8	Off 5 Hz filter 10 Hz filter 25 Hz filter 50 Hz filter 100 Hz filter 200 Hz filter 400 Hz filter 800 Hz filter	U16	2	RW
0x2034	17	Transmitter supply channel X **Note**: Entry is not available for the channel settings "Piezo" and "Resistance".	0 1	Transmitter supply off Transmitter supply on	U16	2	RW
0x2034	18	Transmitter supply channel Y1 **Note**: Entry is not available for the channel settings "Piezo" and "Resistance".	0 1	Transmitter supply off Transmitter supply on	U16	2	RW
0x2034	19	Transmitter supply channel Y2 **Note**: Entry is not available for the channel settings "Piezo" and "Resistance".	0 1	Transmitter supply off Transmitter supply on	U16	2	RW
0x2034	20	Set unit channel X **Note**: Entry is not available for the	0 1 2 3	User defined unit 1 User defined unit 2 User defined unit 3 mm	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		channel settings "Time" and "Resistance".	*4* *5* *6* *7* *8* *9* *10* *11* *12*	N kN Nm Ncm Grd Bar V s ms			
0x2034	21	Set unit channel Y1 **Note**: Entry is not available for the channel settings "Time" and "Resistance".	*0* *1* *2* *3* *4* *5* *6* *7* *8* *9* *10* *11* *12*	User defined unit 1 User defined unit 2 User defined unit 3 mm N kN Nm Ncm Grd Bar V s ms	U16	2	RW
0x2034	22	Set unit channel Y2 **Note**: Entry is not available for the channel settings "Off", "Time" and "Resistance".	*0* *1* *2* *3* *4* *5* *6* *7* *8* *9* *10* *11* *12*	User defined unit 1 User defined unit 2 User defined unit 3 mm N kN Nm Ncm Grd Bar V s ms	U16	2	RW
0x2034	23	Set user defined unit 1	*abcd*		STR 4	4	RW
0x2034	24	Set user defined unit 2	*abcd*		STR 4	4	RW
0x2034	25	Set user defined unit 3	*ijkl*		STR 4	4	RW
0x2034	26	Take the tare value for channel X and return the measured value **Note**: Entry is not available for the channel settings "Time", "Incremental" and "Resistance".	*EVENT!*		FLT	4	RO
0x2034	27	Take the tare value for channel Y1 and	*EVENT!*		FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		return the measured value **Note**: Entry is not available for the channel settings "Time", "Incremental" and "Resistance".					
0x2034	28	Take the tare value for channel Y2 and return the measured value **Note**: Entry is not available for the channel settings "Time", "Incremental" and "Resistance".	*EVENT!*		FLT	4	RO
0x2034	29	Channel to be scaled	*0* *1* *2*	Channel X Channel Y1 Channel Y2	U 16	2	WO
0x2034	30	Lower scale value		Concerns the channel selected under subindex 29	FLT	4	RW
0x2034	31	Upper scale value		Concerns the channel selected under subindex 29	FLT	4	RW
0x2034	32	Lower calibration value		Concerns the channel selected under subindex 29	FLT	4	RW
0x2034	33	Upper calibration value		Concerns the channel selected under subindex 29	FLT	4	RW
0x2034	34	Perform scaling (as per subindex 29 ... 33)	*EVENT*	Entry is not available for the channel settings "Off", "Time", "Incremental" and "Resistance".	U8	1	WO

7.1.7 Channel settings "Potentiometer" (Index 0x2035)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2035	0	Number of subindices	*12*		U8	1	RO
0x2035	1 - 9	Reserved	-	-			X
0x2035	10	Potentiometer excitation channel X	*0* *1*	5 V excitation 10 V excitation	U16	2	RW
0x2035	11	Potentiometer excitation channel Y1	*0* *1*	5 V excitation 10 V excitation	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2035	12	Potentiometer excitation channel Y2	0 1	5 V excitation 10 V excitation	U16	2	RW

7.1.8 Channel settings "Standard signal" (Index 0x2036)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2036	0	Number of subindices	12		U8	1	RO
0x2036	1 - 9	Reserved	-	-			X
0x2036	10	Standard signal input channel X	0 1	5 V input range 10 V input range	U16	2	RW
0x2036	11	Standard signal input channel Y1	0 1	5 V input range 10 V input range	U16	2	RW
0x2036	12	Standard signal input channel Y2	0 1	5 V input range 10 V input range	U16	2	RW

7.1.9 Channel settings "Strain gauge" (Index 0x2037)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2037	0	Number of subindices	24		U8	1	RO
0x2037	1 - 9	Reserved	-	-			X
0x2037	10	Strain gauge excitation channel X	0 1 2	2.5 V excitation 5 V excitation 10 V excitation	U16	2	RW
0x2037	11	Strain gauge excitation channel Y1	0 1 2	2.5 V excitation 5 V excitation 10 V excitation	U16	2	RW
0x2037	12	Strain gauge excitation channel Y2	0 1 2	2.5 V excitation 5 V excitation 10 V excitation	U16	2	RW
0x2037	13	Strain gauge input range channel X	0 1 2 3 4 5	1 mV/V input range 2 mV/V input range 4 mV/V input range 10 mV/V input range 20 mV/V input range 40 mV/V input range (40 mV/V are not allowed at 10 V excitation)	U16	2	RW
0x2037	14	Strain gauge input range channel Y1	0 1 2 3 4 5	1 mV/V input range 2 mV/V input range 4 mV/V input range 10 mV/V input range 20 mV/V input range 40 mV/V input range (40 mV/V are not allowed at 10 V excitation)	U16	2	RW
0x2037	15	Strain gauge input range channel Y2	0 1 2	1 mV/V input range 2 mV/V input range 4 mV/V input range	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
			3 *4* *5*	10 mV/V input range 20 mV/V input range 40 mV/V input range (40 mV/V are not allowed at 10 V excitation			
0x2037	16	Strain gauge sensitivity channel X	*0.01 ... 100.0*	IEEE754 Float	FLT	4	RW
0x2037	17	Strain gauge sensitivity channel Y1	*0.01 ... 100.0*	IEEE754 Float	FLT	4	RW
0x2037	18	Strain gauge sensitivity channel Y2	*0.01 ... 100.0*	IEEE754 Float	FLT	4	RW
0x2037	19	Request strain gauge level channel X	*0.01 ... 100.0*	IEEE754 Float	FLT	4	RO
0x2037	20	Request strain gauge level channel Y1	*0.01 ... 100.0*	IEEE754 Float	FLT	4	RO
0x2037	21	Request strain gauge level channel Y2	*0.01 ... 100.0*	IEEE754 Float	FLT	4	RO
0x2037	22	Strain gauge shunt channel X	*0* *1* *2* *3* *4* *5*	OFF 10 kOhm 59 kOHM 80 kOHM 100 kOHM 300 kOHM	U16	2	RW
0x2037	23	Strain gauge shunt channel Y1	*0* *1* *2* *3* *4* *5*	OFF 10 kOhm 59 kOHM 80 kOHM 100 kOHM 300 kOHM	U16	2	RW
0x2037	24	Strain gauge shunt channel Y2	*0* *1* *2* *3* *4* *5*	OFF 10 kOhm 59 kOHM 80 kOHM 100 kOHM 300 kOHM	U16	2	RW

7.1.10 Channel settings "Resistance" (Index 0x2038)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2038	0	Number of subindices	*12*		U8	1	RO
0x2038	1 - 9	Reserved	-	-			X
0x2038	10	Resistance input range channel X	*0* *1* *2*	200 mOhm range 2 kOhm range 100 kOhm range	U16	2	RW
0x2038	11	Resistance input range channel Y1	*0* *1* *2*	200 mOhm range 2 kOhm range 100 kOhm range	U16	2	RW
0x2038	12	Resistance input range channel Y2	*0* *1* *2*	200 mOhm range 2 kOhm range 100 kOhm range	U16	2	RW

7.1.11 Channel settings "Piezo" (Index 0x2039)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2039	0	Number of subindices	*15*		U8	1	RO
0x2039	1 - 9	Reserved	-	-			X
0x2039	10	Piezo input range channel X	*0* *1* *2* *3* *4* *5* *6* *7* *8* *9*	1nC range 2nC range 5nC range 10nC range 20nC range 40nC range 80nC range 200nC range 400nC range 1uC range	U16	2	RW
0x2039	11	Piezo input range channel Y1	*0* *1* *2* *3* *4* *5* *6* *7* *8* *9*	1nC range 2nC range 5nC range 10nC range 20nC range 40nC range 80nC range 200nC range 400nC range 1uC range	U16	2	RW
0x2039	12	Piezo input range channel Y2	*0* *1* *2* *3* *4* *5* *6* *7* *8* *9*	1nC range 2nC range 5nC range 10nC range 20nC range 40nC range 80nC range 200nC range 400nC range 1uC range	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2039	13	Piezo short-circuit on/to channel X	*0* *1*	Do not short-circuit piezo input Short-circuit piezo input	U16	2	WO
0x2039	14	Piezo short-circuit on/to channel Y1	*0* *1*	Do not short-circuit piezo input Short-circuit piezo input	U16	2	WO
0x2039	15	Piezo short-circuit on/to channel Y2	*0* *1*	Do not short-circuit piezo input Short-circuit piezo input	U16	2	WO

7.1.12 Channel settings "Incremental" (Index 0x2040)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2040	0	Number of subindices	*39*		U8	1	RO
0x2040	1 - 9	Reserved	-	-			X
0x2040	10	Incremental reference mark channel X	*0* *1* *2*	reference mark off reference mark on reference mark distance coded	U16	2	RW
0x2040	11	Incremental reference mark channel Y1	*0* *1* *2*	reference mark off reference mark on reference mark distance coded	U16	2	RW
0x2040	12	Incremental reference mark channel Y2	*0* *1* *2*	reference mark off reference mark on reference mark distance coded	U16	2	RW
0x2040	13	Incremental set value at reference mark channel X	*between - 9999999.0 and 9999999.0*	Float value, Float according to IEEE754	FLT	4	RW
0x2040	14	Incremental set value at reference mark channel Y1	*between - 9999999.0 and 9999999.0*	Float value, Float according to IEEE754	FLT	4	RW
0x2040	15	Incremental set value at reference mark channel Y2	*between - 9999999.0 and 9999999.0*	Float value, Float according to IEEE754	FLT	4	RW
0x2040	16	Incremental reference measurement on/off channel X	*0* *1*	off on	U16	2	RW
0x2040	17	Incremental reference measurement on/off channel Y1	*0* *1*	off on	U16	2	RW
0x2040	18	Incremental reference measurement on/off channel Y2	*0* *1*	off on	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2040	19	Incremental Set to value at start off/on channel X	0 1	on off	U16	2	RW
0x2040	20	Incremental Set to value at start off/on channel Y1	0 1	on off	U16	2	RW
0x2040	21	Incremental Set to value at start off/on channel Y2	0 1	on off	U16	2	RW
0x2040	22	Incremental set value at start channel X	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	23	Incremental set value at start channel Y1	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	24	Incremental set value at start channel Y2	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	25	Incremental nominal increment channel X	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	26	Incremental nominal increment channel Y1	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	27	Incremental nominal increment channel Y2	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	28	Incremental grating period channel X	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	29	Incremental grating period channel Y1	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	30	Incremental grating period channel Y2	between - 9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2040	31	Incremental interpolation channel X	between -1 and 65000	Integer value	U16	2	RW
0x2040	32	Incremental interpolation channel Y1	between -1 and 65000	Integer value	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2040	33	Incremental interpolation channel Y2	*between -1 and 65000*	Integer value	U16	2	RW
0x2040	34	Incremental termination resistor off/on channel X	*0* *1*	off on	U16	2	RW
0x2040	35	Incremental termination resistor off/on channel Y1	*0* *1*	off on	U16	2	RW
0x2040	36	Incremental termination resistor off/on channel Y2	*0* *1*	off on	U16	2	RW
0x2040	37	Direction of counting positive/negative channel X	*0* *1*	positive negative	U16	2	RW
0x2040	38	Direction of counting positive/negative channel X1	*0* *1*	positive negative	U16	2	RW
0x2040	39	Direction of counting positive/negative channel Y2	*0* *1*	positive negative	U16	2	RW

7.1.13 Channel settings "SSI" (Index 0x2041)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2041	0	Number of subindices	*39*		U8	1	RO
0x2041	1 .. 9	Reserved	-	-			X
0x2041	10	SSI sensor type channel X **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0* *1* *2*	Displacement sensor Singleturn encoder Multiturn encoder	U16	2	RW
0x2041	11	SSI sensor type channel Y1 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0* *1* *2*	Displacement sensor Singleturn encoder Multiturn encoder	U16	2	RW
0x2041	12	SSI sensor type channel Y2 **Note**: At the end, settings must be initiated through a	*0* *1* *2*	Displacement sensor Singleturn encoder Multiturn encoder	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		write access to indices 37/38/39.					
0x2041	13	SSI code channel X **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	0 1	Binary Gray code	U16	2	RW
0x2041	14	SSI code channel Y1 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	0 1	Binary Gray code	U16	2	RW
0x2041	15	SSI code channel Y2 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	0 1	Binary Gray code	U16	2	RW
0x2041	16	SSI format channel X **Note**: Only permitted for multiturn angle sensor! At the end, settings must be initiated through a write access to indices 37/38/39.	0 1	Right aligned Tree	U16	2	RW
0x2041	17	SSI format channel Y1 Note: Only permitted for multiturn angle sensor! At the end, settings must be initiated through a write access to indices 37/38/39.	0 1	Right aligned Tree	U16	2	RW
0x2041	18	SSI format channel Y2 **Note**: Only permitted for multiturn angle sensor! At the end, settings must be	0 1	Right aligned Tree	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		initiated through a write access to indices 37/38/39.					
0x2041	19	SSI parity channel X **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0* *1*	off even	U16	2	RW
0x2041	20	SSI parity channel Y1 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0* *1*	off even	U16	2	RW
0x2041	21	SSI parity channel Y2 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0* *1*	off even	U16	2	RW
0x2041	22	SSI clock frequency channel X **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0* *1* *2*	100 kHz 200 kHz 1 MHz	U16	2	RW
0x2041	23	SSI clock frequency channel Y1 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0* *1* *2*	100 kHz 200 kHz 1 MHz	U16	2	RW
0x2041	24	SSI clock frequency channel Y2 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0* *1* *2*	100 kHz 200 kHz 1 MHz	U16	2	RW
0x2041	25	SSI resolution channel X	*between - 9999999.0 and 9999999.0*	Float value, Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: Only permitted for displacement sensors! At the end, settings must be initiated through a write access to indices 37/38/39.					
0x2041	26	SSI resolution channel Y1 **Note**: Only permitted for displacement sensors! At the end, settings must be initiated through a write access to indices 37/38/39.	*between - 9999999.0 and 9999999.0*	Float value, Float according to IEEE754	FLT	4	RW
0x2041	27	SSI resolution channel Y2 **Note**: Only permitted for displacement sensors! At the end, settings must be initiated through a write access to indices 37/38/39.	*between - 9999999.0 and 9999999.0*	Float value, Float according to IEEE754	FLT	4	RW
0x2041	28	SSI total number of bits channel X **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0 ... 48*	Integer value	U16	2	RW
0x2041	29	SSI total number of bits channel Y1 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0 ... 48*	Integer value	U16	2	RW
0x2041	30	SSI total number of bits channel Y2 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0 ... 48*	Integer value	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2041	31	SSI bit number angle singleturn or displacement channel X **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0 ... 32*	Integer value	U16	2	RW
0x2041	32	SSI bit number angle singleturn or displacement channel Y1 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0 ... 32*	Integer value	U16	2	RW
0x2041	33	SSI bit number angle singleturn or displacement channel Y2 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0 ... 32*	Integer value	U16	2	RW
0x2041	34	SSI bit number rotations for multiturn angle channel X **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0 ... 32*	Integer value	U16	2	RW
0x2041	35	SSI bit number rotations for multiturn angle channel Y1 **Note**: At the end, settings must be initiated through a write access to indices 37/38/39.	*0 ... 32*	Integer value	U16	2	RW
0x2041	36	SSI bit number rotations for multiturn angle channel Y2	*0 ... 32*	Integer value	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: At the end, settings must be initiated through a write access to indices 37/38/39.					
0x2041	37	Check & initiate SSI settings channel X	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2041	38	Check & initiate SSI settings channel Y1	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2041	39	Check & initiate SSI settings channel Y2	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO

7.1.14 Channel settings "EnDat" (Index 0x2042)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2042	0	Number of subindices	*57*		U8	1	RO
0x2042	1 .. 9	Reserved	-	-			X
0x2042	10	Read-out EnDat sensor data channel X **Note**: At the end, settings must be initiated through a write access to subindex 16.	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	11	Read-out EnDat sensor data channel Y1 **Note**: At the end, settings must be initiated through a write access to subindex 17.	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	12	Read-out EnDat sensor data channel Y2 **Note**: At the end, settings must be initiated through a write access to subindex 18.	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	13	EnDat clock frequency channel X **Note**: At the end, settings must be initiated through a write access to subindex 16.	*0* *1* *2* *3*	100k Hz 200 kHz 1 MHz 2 MHz	U16	2	RW
0x2042	14	EnDat clock frequency channel Y1 **Note**: At the end, settings must be initiated through a write access to subindex 17.	*0* *1* *2* *3*	100k Hz 200 kHz 1 MHz 2 MHz	U16	2	RW
0x2042	15	EnDat clock frequency channel Y2	*0* *1* *2* *3*	100k Hz 200 kHz 1 MHz 2 MHz	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: At the end, settings must be initiated through a write access to subindex 18.					
0x2042	16	Copy EnDat sensor setup channel X **Note**: Sensor data must be read beforehand, and the clock frequency must be set.	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	17	Copy EnDat sensor setup channel Y1 **Note**: Sensor data must be read beforehand, and the clock frequency must be set.	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	18	Copy EnDat sensor setup channel Y2 **Note**: Sensor data must be read beforehand, and the clock frequency must be set.	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	19	EnDat status channel X **Note**: See comment at the end of the index.	*0* *1*	Ready Error	U16	2	RW
0x2042	20	EnDat status channel Y1 **Note**: See comment at the end of the index.	*0* *1*	Ready Error	U16	2	RW
0x2042	21	EnDat status channel Y2 **Note**: See comment at the end of the index.	*0* *1*	Ready Error	U16	2	RW
0x2042	22	EnDat standard channel X **Note**: See comment at the end of the index.	*0* *1*	EnDat 2.1 EnDat 2.2	U16	2	RW
0x2042	23	EnDat standard channel Y1	*0* *1*	EnDat 2.1 EnDat 2.2	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: See comment at the end of the index.					
0x2042	24	EnDat standard channel Y2 **Note**: See comment at the end of the index.	*0* *1*	EnDat 2.1 EnDat 2.2	U16	2	RW
0x2042	25	EnDat name of sensor channel X **Note**: Only available with EnDat 2.2! See comment at the end of the index.	*"angle z-axis"*		STR 20	20	RW
0x2042	26	EnDat name of sensor channel Y1 **Note**: Only available with EnDat 2.2! See comment at the end of the index.	*"angle z-axis"*		STR 20	20	RW
0x2042	27	EnDat name of sensor channel Y2 **Note**: Only available with EnDat 2.2! See comment at the end of the index.	*"angle z-axis"*		STR 20	20	RW
0x2042	28	EnDat sensor serial number channel X **Note**: See comment at the end of the index.	*SN1234567890*		STR 20	20	RW
0x2042	29	EnDat sensor serial number channel Y1 **Note**: See comment at the end of the index.	*SN1234567890*		STR 20	20	RW
0x2042	30	EnDat sensor serial number channel Y2 **Note**: See comment at the end of the index.	*SN1234567890*		STR 20	20	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2042	31	EnDat sensor type channel X **Note**: See comment at the end of the index.	*0* *1* *2*	Displacement Singelturn encoder Multiturn encoder	U16	2	RW
0x2042	32	EnDat sensor type channel Y1 **Note**: See comment at the end of the index.	*0* *1* *2*	Displacement Singelturn encoder Multiturn encoder	U16	2	RW
0x2042	33	EnDat sensor type channel Y2 **Note**: See comment at the end of the index.	*0* *1* *2*	Displacement Singelturn encoder Multiturn encoder	U16	2	RW
0x2042	34	EnDat total number of bits channel X **Note**: See comment at the end of the index.	*0 ... 48*	Integer value	U16	2	RW
0x2042	35	EnDat total number of bits channel Y1 **Note**: See comment at the end of the index.	*0 ... 48*	Integer value	U16	2	RW
0x2042	36	EnDat total number of bits channel Y2 **Note**: See comment at the end of the index.	*0 ... 48*	Integer value	U16	2	RW
0x2042	37	EnDat bit number displacement or angle singleturn channel X **Note**: See comment at the end of the index.	*0 ... 32*	Integer value	U16	2	RW
0x2042	38	EnDat bit number displacement or angle singleturn channel Y1 **Note**: See comment at the end of the index.	*0 ... 32*	Integer value	U16	2	RW
0x2042	39	EnDat bit number displacement or	*0 ... 32*	Integer value	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		angle singleturn channel Y2 **Note**: See comment at the end of the index.					
0x2042	40	EnDat bit number angle multiturn channel X **Note**: See comment at the end of the index.	*0 ... 32*	Integer value	U16	2	RW
0x2042	41	EnDat bit number angle multiturn channel Y1 **Note**: See comment at the end of the index.	*0 ... 32*	Integer value	U16	2	RW
0x2042	42	EnDat bit number angle multiturn channel Y2 **Note**: See comment at the end of the index.	*0 ... 32*	Integer value	U16	2	RW
0x2042	43	EnDat resolution channel X **Note**: See comment at the end of the index.	*between -9999999.0 and 9999999.0*	Float value	FLT	4	RW
0x2042	44	EnDat resolution channel Y1 **Note**: See comment at the end of the index.	*between -9999999.0 and 9999999.0*	Float value	FLT	4	RW
0x2042	45	EnDat resolution channel Y2 **Note**: See comment at the end of the index.	*between -9999999.0 and 9999999.0*	Float value	FLT	4	RW
0x2042	46	EnDat measuring length for displacement sensor channel X **Note**: See comment at the end of the index.	*16-Bit-Integer value*		U16	2	RW
0x2042	47	EnDat measuring length for	*16-Bit-Integer value*		U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		displacement sensor channel Y1 **Note**: See comment at the end of the index.					
0x2042	48	EnDat measuring length for displacement sensor channel Y2 **Note**: See comment at the end of the index.	*16-Bit-Integer value*		U16	2	RW
0x2042	49	EnDat unit of measuring length channel X **Note**: See comment at the end of the index.	*0* *1* *2* *3*	GP (grating period) µm (Micrometer) mm (Millimeter) m (Meter)	U16	2	RW
0x2042	50	EnDat unit of measuring length channel Y1 **Note**: See comment at the end of the index.	*0* *1* *2* *3*	GP (grating period) µm (Micrometer) mm (Millimeter) m (Meter)	U16	2	RW
0x2042	51	EnDat unit of measuring length channel Y2 **Note**: See comment at the end of the index.	*0* *1* *2* *3*	GP (grating period) µm (Micrometer) mm (Millimeter) m (Meter)	U16	2	RW
0x2042	52	EnDat max. clock frequency channel X **Note**: Only available with EnDat 2.2! See comment at the end of the index.	*16-Bit-Integer value*		U16	2	RW
0x2042	53	EnDat max. clock frequency channel Y1 **Note**: Only available with EnDat 2.2! See comment at the end of the index.	*16-Bit-Integer value*		U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2042	54	EnDat max. clock frequency channel Y2 **Note**: Only available with EnDat 2.2! See comment at the end of the index.	*16-Bit-Integer value*		U16	2	RW
0x2042	55	Transmit EnDat manual sensor setup channel X **Note**: Sensor data must be entered beforehand into the indices 19 ... 54!	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	56	Transmit EnDat manual sensor setup channel Y1 **Note**: Sensor data must be entered beforehand into the indices 19 ... 54!	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	57	Transmit EnDat manual sensor setup channel Y2 **Note**: Sensor data must be entered beforehand into the indices 19 ... 54!	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2042	19 ... 54	Comment on slots 19 … 54: Reading these entries only makes sense if the data has been read from the sensor beforehand (indices 10, 11, 12) It is also possible to write sensor data here. A certain risk is hidden here: If data that is not appropriate for the sensor has been written, the results of the sensor measurements can no longer be read correctly!					

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		In cases of doubt, the data should not be written here manually, but should instead be read out of the sensor through indices 10/11/12. After all the sensor data for the channel concerned has been written, they still have to be transferred into the device through a write access to indices 55/56/57, and then adopted by the device's internal FPGA through write access to indices 16/17/18.					

7.1.15 Tare (Index 0x2043)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2043	0	Number of subindices	27		U8	1	RO
0x2043	1 .. 9	Reserved	-	-			X
0x2043	10	Tare at meas. start channel X	0 1	off on	U16	2	RW
0x2043	11	Tare at meas. start channel Y1	0 1	off on	U16	2	RW
0x2043	12	Tare at meas. start channel Y2	0 1	off on	U16	2	RW
0x2043	13	Standard value for tare channel X	between -9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2043	14	Standard value for tare channel Y1	between -9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2043	15	Standard value for tare channel Y2	between -9999999.0 and 9999999.0	Float value, Float according to IEEE754	FLT	4	RW
0x2043	16	Tare warning on/off channel X	0 1	off on	U16	2	RW
0x2043	17	Tare warning on/off channel Y1	0 1	off on	U16	2	RW
0x2043	18	Tare warning on/off channel Y2	0 1	off on	U16	2	RW
0x2043	19	Set tare warning limit channel X	between 1.0 and 20.0	Float value, Float according to IEEE754	FLT	4	RW
0x2043	20	Set tare warning limit channel Y1	between 1.0 and 20.0	Float value Float according to IEEE754	FLT	4	RW
0x2043	21	Set tare warning limit channel Y2	between 1.0 and 20.0	Float value Float according to IEEE754	FLT	4	RW
0x2043	22	Tare channel X	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO
0x2043	23	Delete tare channel X	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO
0x2043	24	Tare channel Y1	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO
0x2043	25	Delete tare channel Y1	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO
0x2043	26	Tare channel Y2	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO
0x2043	27	Delete tare channel Y2	EVENT!	Writing an arbitrary byte initiates action	U8	1	WO

7.1.16 Measurement mode (Index 0x2044)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2044	0	Number of subindices	*36*		U8	1	RO
0x2044	1 .. 9	Reserved	-	-			X
0x2044	10	X sampling off/on	*0* *1*	off on	U16	2	RW
0x2044	11	X sample rate	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	12	Y1 sampling off/on	*0* *1*	off on	U16	2	RW
0x2044	13	Y1 sample rate	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	14	Y2 sampling off/on	*0* *1*	off on	U16	2	RW
0x2044	15	Y2 sample rate	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	16	Time sampling off/on	*0* *1*	off on	U16	2	RW
0x2044	17	Time sample rate	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	18	Set reference of curve **Note**: "Underrun" is not permitted if the channel concerned is set to time.	*0* *1* *2* *3* *4* *5* *6* *7* *8* *9*	Absolute Final force Y1 reference line overrun Y1 reference line underrun Y1 trigger overrun Y1 trigger underrun Y2 reference line overrun (not allowed when channel Y2 is off) Y2 reference line underrun (not allowed when channel Y2 is off) Y2 trigger overrun (not allowed when channel Y2 is off) Y2 trigger underrun (not allowed when channel Y2 is off)	U16	2	RW
0x2044	19	Set reference line Y1	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	20	Set reference line Y2	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	21	Set trigger line Y1	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2044	22	Set trigger line Y2	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	23	Pretrigger display on/off	*0* *1*	off on	U16	2	RW
0x2044	24	Set return point	*0* *1* *2* *3*	XMIN XMAX YMIN YMAX	U16	2	RW
0x2044	25	Set "Record curve to"	*0* *1*	Entire curve Up to return point	U16	2	RW
0x2044	26	Set start mode	*0* *1* *2* *3* *4* *5* *6*	External X internal overrun X internal underrun Y1 internal overrun Y1 internal underrun Y2 internal overrun (not possible if Y2 is switched off) Y2 internal underrun (not possible if Y2 is switched off)	U16	2	RW
0x2044	27	Set stop mode	*0* *1* *2* *3* *4* *5* *6* *7* *8*	External X internal overrun X internal underrun Y1 internal overrun Y1 internal underrun Timeout Defined number of measured values Y2 internal overrun (not possible if Y2 is switched off) Y2 internal underrun (not possible if Y2 is switched off)	U16	2	RW
0x2044	28	Set X start value for internal start	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	29	Set Y1 start value for internal start	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	30	Set Y2 start value for internal start	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	31	Set X stop value for internal start	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2044	32	Set Y1 stop value for internal stop	*between*	Float value	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
			-9999999.0 and 9999999.0	Float according to IEEE754			
0x2044	33	Set Y2 stop value for internal stop	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2044	34	Set the "stop" timeout value	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2044	35	Set the "stop" number of measured values	0 bis 5000	Integer value	U16	2	RW
0x2044	36	Set bend-up factor	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW

7.1.17 Evaluation window 1 (Index 0x2045)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2045	0	Number of subindices	43		U8	1	RO
0x2045	1 .. 9	Reserved	-	-			X
0x2045	10	Window 1 off/on	0 1	off on	U16	2	RW
0x2045	11	Window 1 limit Xmin **Note**: At the end, entry must be adopted through subindex 15.	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2045	12	Window 1 limit Xmax **Note**: At the end, entry must be adopted through subindex 15.	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2045	13	Window 1 limit Ymin **Note**: At the end, entry must be adopted through subindex 15.	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2045	14	Window 1 limit Ymax **Note**: At the end, entry must be	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		adopted through subindex 15.					
0x2045	15	Window 1 copy limit **Note**: Values entered into indices 11, 12, 13, 14 are adopted	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2045	16	Window 1 entry left **Note**: At the end, entry must be adopted through subindex 24.	*0* *1*	no yes	U16	2	RW
0x2045	17	Window 1 entry right **Note**: At the end, entry must be adopted through subindex 24.	*0* *1*	no yes	U16	2	RW
0x2045	18	Window 1 entry bottom **Note**: At the end, entry must be adopted through subindex 24.	*0* *1*	no yes	U16	2	RW
0x2045	19	Window 1 entry top **Note**: At the end, entry must be adopted through subindex 24.	*0* *1*	no yes	U16	2	RW
0x2045	20	Window 1 exit left **Note**: At the end, entry must be adopted through subindex 24.	*0* *1*	no yes	U16	2	RW
0x2045	21	Window 1 exit right **Note**: At the end, entry must be adopted through subindex 24.	*0* *1*	no yes	U16	2	RW
0x2045	22	Window 1 exit bottom **Note**: At the end, entry must be adopted through subindex 24.	*0* *1*	no yes	U16	2	RW
0x2045	23	Window 1 exit top	*0* *1*	no yes	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: At the end, entry must be adopted through subindex 24.					
0x2045	24	Copy window entry/exit **Note**: Values entered into indices 16 - 23 are adopted	*EVENT!*	no yes	U8	1	WO
0x2045	25	Window 1 evaluation	*0* *1*	off on	U16	2	RW
0x2045	26	Window 1 curve segment for evaluation	*0* *1* *2*	Forward Return Complete curve	U16	2	RW
0x2045	27	Window 1 online evaluation	*0* *1* *2* *3* *4*	Off left - right right - left bottom - top top - bottom	U16	2	RW
0x2045	28	Window 1 online signal number	*1 or 2*		U16	2	RW
0x2045	29	Window 1 Online signal level	*0* *1*	Low active High active	U16	2	RW
0x2045	30	Window 1 "Evaluate only first passage"	*0* *1*	Evaluate all passages (like 9310) Evaluate only fist passage (like 9306)	U16	2	RW
0x2045	31	Window 1 channel Y1/Y2	*1* *2*	Channel Y1 Channel Y2	U16	2	RW
0x2045	32	Window 1 calculate bend in window	*0* *1*	no yes	U16	2	RW
0x2045	33	Window 1 delta gradient for bend	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2045	34	Window 1 delta-Y for bend	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2045	35	Window 1 calculate absolute maximum	*0* *1*	no yes	U16	2	RW
0x2045	36	Window 1 calculate absolute minimum	*0* *1*	no yes	U16	2	RW
0x2045	37	Window 1 calculate local maximum	*0* *1*	no yes	U16	2	RW
0x2045	38	Window 1 set delta-Y for local maximum	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2045	39	Window 1 set local minimum	*0* *1*	no yes	U16	2	RW
0x2045	40	Window 1 set delta-Y for local minimum	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2045	41	Window 1 calculate mean value	*0* *1*	no yes	U16	2	RW
0x2045	42	Window 1 calculate gradient	*0* *1*	no yes	U16	2	RW
0x2045	43	Window 1 calculate area under curve	*0* *1*	no yes	U16	2	RW

7.1.18   Evaluation window 2 (Index 0x2046)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2046	0	Number of subindices	*43*		U8	1	RO
0x2046	1 .. 9	Reserved	-	-			X
0x2046	10 ...	See index 0x2045					

7.1.19   Evaluation window 3 (Index 0x2047)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2047	0	Number of subindices	*43*		U8	1	RO
0x2047	1 .. 9	Reserved	-	-			X
0x2047	10 ...	See index 0x2045					

7.1.20 Evaluation window 4 (Index 0x2048)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2048	0	Number of subindices	*43*		U8	1	RO
0x2048	1 .. 9	Reserved	-	-			X
0x2048	10 ...	See index 0x2045					

7.1.21 Evaluation window 5 (Index 0x2049)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2049	0	Number of subindices	*43*		U8	1	RO
0x2049	1 .. 9	Reserved	-	-			X
0x2049	10 ...	See index 0x2045					

7.1.22 Evaluation window 6 (Index 0x2050)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2050	0	Number of subindices	*43*		U8	1	RO
0x2050	1 .. 9	Reserved	-	-			X
0x2050	10 ...	See index 0x2045					

7.1.23 Evaluation window 7 (Index 0x2051)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2051	0	Number of subindices	*43*		U8	1	RO
0x2051	1 .. 9	Reserved	-	-			X
0x2051	10 ...	See index 0x2045					

7.1.24 Evaluation window 8 (Index 0x2052)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2052	0	Number of subindices	*43*		U8	1	RO
0x2052	1 .. 9	Reserved	-	-			X
0x2052	10 ...	See index 0x2045					

7.1.25 Evaluation window 9 (Index 0x2053)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2053	0	Number of subindices	*43*		U8	1	RO
0x2053	1 .. 9	Reserved	-	-			X
0x2053	10 ...	See index 0x2045					

7.1.26 Evaluation window 10 (Index 0x2054)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2054	0	Number of subindices	*43*		U8	1	RO
0x2054	1 .. 9	Reserved	-	-			X
0x2054	10 ...	See index 0x2045					

7.1.27 Evaluation trapezoid window X1 (Index 0x2055)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2055	0	Number of subindices	*26*		U8	1	RO
0x2055	1 .. 9	Reserved	-	-			X
0x2055	10 ...	Trapezoid X1 off/on	*0* *1*	off on	U16	2	RW
0x2055	11	Trapezoid X1 limit Xmin	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2055	12	Trapezoid X1 limit Xmax **Note**: At the end, entry must be adopted through subindex 17.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2055	13	Trapezoid X1 Y limit max. left **Note**: At the end, entry must be adopted through subindex 17.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2055	14	Trapezoid X1 Y limit max. right **Note**: At the end, entry must be adopted through subindex 17.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2055	15	Trapezoid X1 Y limit min. left **Note**: At the end, entry must be adopted through subindex 17.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2055	16	Trapezoid X1 Y limit min. right **Note**: At the end, entry must be adopted through subindex 17.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2055	17	Trapezoid X1 copy the limits **Note**: Values entered into indices 11 - 16 are adopted	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2055	18	Trapezoid X1 entry left **Note**: At the end, entry must be adopted through subindex 22.	*0* *1*	no yes	U16	2	RW
0x2055	19	Trapezoid X1 entry right **Note**: At the end, entry must be adopted through subindex 22.	*0* *1*	no yes	U16	2	RW
0x2055	20	Trapezoid X1 exit left **Note**: At the end, entry must be adopted through subindex 22.	*0* *1*	no yes	U16	2	RW
0x2055	21	Trapezoid X1 exit right Note: At the end, entry must be adopted through subindex 22.	*0* *1*	no yes	U16	2	RW
0x2055	22	Trapezoid X1 copy entry/exit **Note**: Values entered into indices 16 - 21 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2055	23	Trapezoid X1 evaluation	0 1	off on	U16	2	RW
0x2055	24	Trapezoid X1 curve segment for evaluation	0 1 2	Forward Return Complete curve	U16	2	RW
0x2055	25	Trapezoid X1 "Evaluate only first passage"	0 1	Evaluate all passages (like 9310) Evaluate only first passage (like 9306)	U16	2	RW
0x2055	26	Trapezoid X1 channel Y1/Y2	1 2	Channel Y1 Channel Y2	U16	2	RW

7.1.28 Evaluation trapezoid window X2 (Index 0x2056)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2056	0	Number of subindices	26		U8	1	RO
0x2056	1 .. 9	Reserved	-	-			X
0x2056	10 ...	See index 0x2055					

7.1.29 Evaluation trapezoid window Y1 (Index 0x2057)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2057	0	Number of subindices	26		U8	1	RO
0x2057	1 .. 9	Reserved	-	-			X
0x2057	10	Trapezoid Y1 off/on	0 1	off on	U16	2	RW
0x2057	11	Trapezoid Y1 limit Ymin	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2057	12	Trapezoid Y1 limit Ymax **Note**: At the end, entry must be adopted through subindex 17.	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2057	13	Trapezoid Y1 X limit min top **Note**: At the end, entry must be adopted through subindex 17.	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2057	14	Trapezoid Y1 X limit max top	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: At the end, entry must be adopted through subindex 17.					
0x2057	15	Trapezoid Y1 X limit min bottom **Note**: At the end, entry must be adopted through subindex 17.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2057	16	Trapezoid Y1 X limit max bottom **Note**: At the end, entry must be adopted through subindex 17.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2057	17	Trapezoid Y1 copy limits **Note**: Values entered into indices 11 - 16 are adopted	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2057	18	Trapezoid Y1 entry bottom **Note**: At the end, entry must be adopted through subindex 22.	*0* *1*	no yes	U16	2	RW
0x2057	19	Trapezoid Y1 entry top **Note**: At the end, entry must be adopted through subindex 22.	*0* *1*	no yes	U16	2	RW
0x2057	20	Trapezoid Y1 exit bottom **Note**: At the end, entry must be adopted through subindex 22.	*0* *1*	no yes	U16	2	RW
0x2057	21	Trapezoid Y1 exit top **Note**: At the end, entry must be adopted through subindex 22.	*0* *1*	no yes	U16	2	RW
0x2057	22	Trapezoid Y1 copy entry/exit	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: Values entered into indices 16 - 21 are adopted					
0x2057	23	Trapezoid Y1 evaluation	0 1	off on	U16	2	RW
0x2057	24	Trapezoid Y1 Curve segment for evaluation	0 1 2	Forward Return Complete curve	U16	2	RW
0x2057	25	Trapezoid Y1 "Evaluate only first passage"	0 1	Evaluate all passages (like 9310) Evaluate only first passages (like 9306)	U16	2	RW
0x2057	26	Trapezoid Y1 channel Y1/Y2	1 2	Channel Y1 Channel Y2	U16	2	RW

7.1.30 Evaluation trapezoid window Y2 (Index 0x2058)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2058	0	Number of subindices	26		U8	1	RO
0x2058	1 .. 9	Reserved	-	-			X
0x2058	10 ...	See index 0x2057					

7.1.31 Evaluation threshold 1 (Index 0x2059)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2059	0	Number of subindices	34		U8	1	RO
0x2059	1 .. 9	Reserved	-	-			X
0x2059	10	Threshold 1 off/on	0 1	off on	U16	2	RW
0x2059	11	Threshold 1 type of threshold	0 1	Type X (vertical) Type Y (horizontal)	U16	2	RW
0x2059	12	Threshold 1 position Type X: X value Type Y: Y value **Note**: At the end, entry must be adopted through subindex 15.	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW
0x2059	13	Threshold 1 limit For type X: Ymin For type Y: Xmin **Note**: At the end, entry must be adopted through subindex 15.	between -9999999.0 and 9999999.0	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2059	14	Threshold 1 limit For type X: Ymax For type Y: Xmax **Note**: At the end, entry must be adopted through subindex 15.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2059	15	Threshold 1 copy position and limits **Note**: Values entered into indices 11 - 14 are adopted	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2059	16	Threshold 1 passage Type X: left > right Type Y: bottom > top **Note**: At the end, entry must be adopted through subindex 18.	*0* *1*	no yes	U16	2	RW
0x2059	17	Threshold 1 passage Type X: right > left Type Y: top > bottom **Note**: At the end, entry must be adopted through subindex 18.	*0* *1*	no yes	U16	2	RW
0x2059	18	Threshold 1 Copy passage **Note**: Values entered into indices 16 - 17 are adopted	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2059	19	Threshold 1 evaluation	*0* *1*	off on	U16	2	RW
0x2059	20	Threshold 1 Curve segment for evaluation	*0* *1* *2*	Forward Return Complete curve	U16	2	RW
0x2059	21	Threshold 1 "Evaluate only first passage"	*0* *1*	Evaluate all passages (like 9310) Evaluate only first passage (like 9306)	U16	2	RW
0x2059	22	Threshold 1 Channel Y1/Y2	*1* *2*	Channel Y1 Channel Y2	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2059	23	Threshold 1 Calculate bend **Note**: Only for type Y	*0* *1*	no yes	U16	2	RW
0x2059	24	Threshold 1 Delta gradient for bend	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2059	25	Threshold 1 Delta Y bend	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2059	26	Threshold 1 Calculate absolute maximum **Note**: Only for type Y	*0* *1*	no yes	U16	2	RW
0x2059	27	Threshold 1 Calculate absolute minimum **Note**: Only for type Y	*0* *1*	no yes	U16	2	RW
0x2059	28	Threshold 1 Calculate local maximum **Note**: Only for type Y	*0* *1*	no yes	U16	2	RW
0x2059	29	Threshold 1 Delta Y local maximum	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2059	30	Threshold 1 Calculate local minimum **Note**: Only for type Y	*0* *1*	no yes	U16	2	RW
0x2059	31	Threshold 1 Delta Y local minimum	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2059	32	Threshold 1 Calculate mean value **Note**: Only for type Y	*0* *1*	no yes	U16	2	RW
0x2059	33	Threshold 1 Calculate gradient **Note**: Only for type Y	*0* *1*	no yes	U16	2	RW
0x2059	34	Threshold 1 Calculate area	*0* *1*	no yes	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: Only for type Y					

7.1.32 Evaluation threshold 2 (Index 0x2060)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2060	0	Number of subindices	*34*		U8	1	RO
0x2060	1 .. 9	Reserved	-	-			X
0x2060	10 ...	See index 0x2059					

7.1.33 Evaluation threshold 3 (Index 0x2061)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2061	0	Number of subindices	*34*		U8	1	RO
0x2061	1 .. 9	Reserved	-	-			X
0x2061	10 ...	See index 0x2059					

7.1.34 Evaluation threshold 4 (Index 0x2062)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2062	0	Number of subindices	*34*		U8	1	RO
0x2062	1 .. 9	Reserved	-	-			X
0x2062	10 ...	See index 0x2059					

7.1.35 Evaluation envelope 1 (Index 0x2063 to 0x2067)

Index/subindex data on request

7.1.36 Evaluation envelope 2 (Index 0x2068 to 0x2069 and 0x2070 to 0x2072)

Index /subindex data on request

7.1.37 Evaluation rotary switch 1 (Index 0x2073)

Index /subindex data on request

7.1.38 Evaluation rotary switch 2 (Index 0x2074)

Index /subindex data on request

7.1.39 Evaluation mathematical functions (Index 0x2075)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2075	0	Number of subindices	*83*		U8	1	RO
0x2075	1 .. 9	Reserved	-	-			X
0x2075	10	Math. function Constant 1	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	11	Math. function Constant 2	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	12	Math. function Constant 3	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	13	Math. function Constant 4	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	14	Math. function Constant 5	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	15	Math. function Constant 6	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	16	Math. function Constant 7	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	17	Math. function Constant 8	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	18	Math. function Constant 9	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	19	Math. function Constant 10	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	20	Math. function formula row 1 operand A **Note**: At the end, entry must be adopted through subindex 23.	*Integer value*	See operand table in appendix	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2075	21	Math. function formula row 1 operator **Note**: At the end, entry must be adopted through subindex 23.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	22	Math. function formula row 1 operand B **Note**: At the end, entry must be adopted through subindex 23.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	23	Math. function Copy formula 1 **Note**: Values entered into indices 20 - 22 are adopted	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	24	Math. function formula row 2 operand A **Note**: At the end, entry must be adopted through subindex 27.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	25	Math. function formula row 2 Operator **Note**: At the end, entry must be adopted through subindex 27.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	26	Math. function formula row 2 operand B **Note**: At the end, entry must be adopted through subindex 27.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	27	Math. function Copy formula 2 **Note**: Values entered into indices 24 - 26 are adopted	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2075	28	Math. function formula row 3 operand A **Note**: At the end, entry must be adopted through subindex 31.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	29	Math. function formula row 3 operator **Note**: At the end, entry must be adopted through subindex 31.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	30	Math. function formula row 3 operand B **Note**: At the end, entry must be adopted through subindex 31.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	31	Math. function Copy formula 3 **Note**: Values entered into indices 28 - 30 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	32	Math. function formula row 4 operand A **Note**: At the end, entry must be adopted through subindex 35.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	33	Math. function formula row 4 operator **Note**: At the end, entry must be adopted through subindex 35.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	34	Math. function formula row 4 operand B	*Integer value*	See operand table in appendix	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: At the end, entry must be adopted through subindex 35.					
0x2075	35	Math. function Copy formula 4 **Note**: Values entered into indices 32 - 34 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	36	Math. function formula row 5 operand A **Note**: At the end, entry must be adopted through subindex 39.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	37	Math. function formula row 5 operator **Note**: At the end, entry must be adopted through subindex 39.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	38	Math. function formula row 5 operand B **Note**: At the end, entry must be adopted through subindex 39.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	39	Math. function Copy formula 5 **Note**: Values entered into indices 36 - 38 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	40	Math. function formula row 6 operand A **Note**: At the end, entry must be adopted through subindex 43.	*Integer value*	See operand table in appendix	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2075	41	Math. function formula row 6 operator **Note**: At the end, entry must be adopted through subindex 43.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	42	Math. function formula row 6 operand B **Note**: At the end, entry must be adopted through subindex 43.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	43	Math. function Copy formula 6 **Note**: Values entered into indices 40 - 42 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	44	Math. function formula row 7 operand A **Note**: At the end, entry must be adopted through subindex 47.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	45	Math. function formula row 7 operator **Note**: At the end, entry must be adopted through subindex 47.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	46	Math. function formula row 7 operand B **Note**: At the end, entry must be adopted through subindex 47.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	47	Math. function Copy formula 7	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: Values entered into indices 44 - 46 are adopted.					
0x2075	48	Math. function formula row 8 operand A **Note**: At the end, entry must be adopted through subindex 51.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	49	Math. function formula row 8 operator **Note**: At the end, entry must be adopted through subindex 51.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	50	Math. function formula row 8 operand B **Note**: At the end, entry must be adopted through subindex 51.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	51	Math. function Copy formula 8 **Note**: Values entered into indices 48 - 50 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	52	Math. function formula row 9 operand A **Note**: At the end, entry must be adopted through subindex 55.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	53	Math. function formula row 9 operator **Note**: At the end, entry must be adopted through subindex 55.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2075	54	Math. function formula row 9 operand B **Note**: At the end, entry must be adopted through subindex 55.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	55	Math. function Copy formula 9 **Note**: Values entered into indices 52 - 54 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	56	Math. function formula row 10 operand A **Note**: At the end, entry must be adopted through subindex 59.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	57	Math. function formula row 10 operator **Note**: At the end, entry must be adopted through subindex 59.	*0* *1* *2* *3*	Sum up Subtract Multiply Divide	U16	2	RW
0x2075	58	Math. function formula row 10 operand B **Note**: At the end, entry must be adopted through subindex 59.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	59	Math. function Copy formula 10 **Note**: Values entered into indices 56 - 58 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	60	Math. function Evaluation operand 1	*Integer value*	See operand table in appendix	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: At the end, entry must be adopted through subindex 63.					
0x2075	61	Math. function Evaluation operand 1 Min. tolerance limit **Note**: At the end, entry must be adopted through subindex 63.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	62	Math. function Evaluation operand 1 Max. tolerance limit **Note**: At the end, entry must be adopted through subindex 63.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	63	Math. function Copy evaluation1 **Note**: Values entered into indices 60 - 62 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	64	Math. function Evaluation operand 2 **Note**: At the end, entry must be adopted through subindex 67.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	65	Math. function Evaluation operand 2 Min. tolerance limit **Note**: At the end, entry must be adopted through subindex 67.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	66	Math. function Evaluation operand 2 Max. tolerance limit	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: At the end, entry must be adopted through subindex 67.					
0x2075	67	Math. function Copy evaluation 2 **Note**: Values entered into indices 64 - 66 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	68	Math. function Evaluation operand 3 **Note**: At the end, entry must be adopted through subindex 71.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	69	Math. function Evaluation operand 3 Min. tolerance limit **Note**: At the end, entry must be adopted through subindex 71.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	70	Math. function Evaluation operand 3 Max. tolerance limit **Note**: At the end, entry must be adopted through subindex 71.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	71	Math. function Copy evaluation 3 **Note**: Values entered into indices 68 - 70 are adopted.	EVENT	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	72	Math. function Evaluation operand 4	*Integer value*	See operand table in appendix	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Note: At the end, entry must be adopted through subindex 75.					
0x2075	73	Math. function Evaluation operand 4 Min. tolerance limit **Note**: At the end, entry must be adopted through subindex 75.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	74	Math. function Evaluation operand 4 Max-tolerance limit **Note**: At the end, entry must be adopted through subindex 75.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	75	Math. function Copy evaluation 4 **Note**: Values entered into indices 72 - 74 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	76	Math. function Evaluation operand 5 **Note**: At the end, entry must be adopted through subindex 79.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	77	Math. function Evaluation operand 5 Min. tolerance limit **Note**: At the end, entry must be adopted through subindex 79.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	78	Math. function Evaluation operand	*between -9999999.0 and*	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		5 Max. tolerance limit **Note**: At the end, entry must be adopted through subindex 79.	*9999999.0*				
0x2075	79	Math. function Copy evaluation 5 **Note**: Values entered into indices 76 - 78 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2075	80	Math. function Evaluation operand 6 **Note**: At the end, entry must be adopted through subindex 83.	*Integer value*	See operand table in appendix	U16	2	RW
0x2075	81	Math. function Evaluation operand 6 Min. tolerance limit **Note**: At the end, entry must be adopted through subindex 83.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	82	Math. function Evaluation operand 6 Max. tolerance limit **Note**: At the end, entry must be adopted through subindex 83.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2075	83	Math. function Copy evaluation 6 **Note**: Values entered into indices 80 - 82 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO

7.1.40 Tolerance band for evaluation elements (Index 0x2076)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2076	0	Number of subindices	*13*		U8	1	RO
0x2076	1 .. 9	Reserved	-	-			X
0x2076	10	Tolerance band X **Note**: At the end, entry must be adopted through subindex 13.	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2076	11	Tolerance band Y1 **Note**: At the end, entry must be adopted through subindex 13.	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2076	12	Tolerance band Y2 **Note**: At the end, entry must be adopted through subindex 13.	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2076	13	Copy tolerance bands **Note**: Values entered into indices 10 - 12 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO

7.1.41 Realtime switchpoints S1 (Index 0x2077)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2077	0	Number of subindices	*14*		U8	1	RO
0x2077	1 .. 9	Reserved	-	-			X
0x2077	10	Switchpoint S1 value **Note**: At the end, entry must be adopted through subindex 14.	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2077	11	Switchpoint S1 channel **Note**: At the end, entry must be adopted through subindex 14.	*0* *1* *2*	Channel X Channel Y1 Channel Y2	U16	2	RW
0x2077	12	Switchpoint S1 level **Note**: At the end, entry must be adopted through subindex 14.	*0* *1*	Low active High active	U16	2	RW
0x2077	13	Switchpoint 1 reference **Note**: At the end, entry must be adopted through subindex 14.	*0* *1*	Absolute reference Trigger reference	U16	2	RW
0x2077	14	Switchpoint 1 Copy settings **Note**: Values entered into indices 10 - 13 are adopted.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO

7.1.42 Realtime switchpoints S2 (Index 0x2078)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2078	0	Number of subindices	*14*		U8	1	RO
0x2078	1 .. 9	Reserved	-	-			X
0x2078	10..	See index 0x2077					

7.1.43 Realtime switchpoints S3 (Index 0x2079)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2079	0	Number of subindices	*14*		U8	1	RO
0x2079	1 .. 9	Reserved	-	-			X
0x2079	10..	See index 0x2077					

7.1.44 Realtime switchpoints S4 (Index 0x2080)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2080	0	Number of subindices	*14*		U8	1	RO
0x2080	1 .. 9	Reserved	-	-			X
0x2080	10..	See index 0x2077					

7.1.45 Sensortest (Index 0x2081)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2081	0	Number of subindices	*22*		U8	1	RO
0x2081	1 .. 9	Reserved	-	-			X
0x2081	10	Sensor test Channel X on/off	*0* *1*	off on	U16	2	RW
0x2081	11	Sensor test Channel Y1 on/off	*0* *1*	off on	U16	2	RW
0x2081	12	Sensor test Channel Y2 on/off	*0* *1*	off on	U16	2	RW
0x2081	13	Sensor test Channel X measure reference value	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2081	14	Sensor test Channel Y1 measure reference value	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2081	15	Sensor test Channel Y2 measure reference value	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2081	16	Sensor test Channel X reference value	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2081	17	Sensor test Channel Y1 reference value	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2081	18	Sensor test Channel Y2 reference value	*between -9999999.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2081	19	Sensor test Channel X allowed deviation	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2081	20	Sensor test Channel Y1 allowed deviation	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2081	21	Sensor test Channel Y2 allowed deviation	*between 0.0 and 9999999.0*	Float value Float according to IEEE754	FLT	4	RW
0x2081	22	Initiate sensor test **Note**: Read access initiates the sensor test and delivers the result.	*0* *1*	NOK OK	U16	2	RO

7.1.46 Setup user-defined values (Index 0x2082)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2082	0	Number of subindices	*39*		U8	1	RO
0x2082	1 .. 9	Reserved	-	-			X
0x2082	10	User-defined values value 1	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	11	User-defined values value 2	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	12	User-defined values value 3	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	13	User-defined values value 4	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	14	User-defined values value 5	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	15	User-defined values value 6	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	16	User-defined values value 7	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	17	User-defined values value 8	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	18	User-defined values value 9	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	19	User-defined values value 10	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	20	User-defined values value 11	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	21	User-defined values value 12	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	22	User-defined values value 13	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	23	User-defined values value 14	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	24	User-defined values value 15	*Integer value*	See operand table in appendix	U16	2	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2082	25	User-defined values value 16	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	26	User-defined values value 17	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	27	User-defined values value 18	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	28	User-defined values value 19	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	29	User-defined values value 20	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	30	User-defined values value 21	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	31	User-defined values value 22	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	32	User-defined values value 23	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	33	User-defined values value 24	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	34	User-defined values value 25 **Note**: Values 25 ... 30 will also be displayed as results in process window M1 (curve)	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	35	User-defined values value 26	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	36	User-defined values value 27	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	37	User-defined values value 28	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	38	User-defined values value 29	*Integer value*	See operand table in appendix	U16	2	RW
0x2082	39	User-defined values value 30	*Integer value*	See operand table in appendix	U16	2	RW

7.1.47 Copy/initialize measurement programs (Index 0x2083)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2083	0	Number of subindices	*16*		U8	1	RO
0x2083	1 .. 9	Reserved	-	-		X	X
0x2083	10	Meas. program number source **Note**: The settings from indices 10 - 12 are being adopted through indices 13, 14 or 15.	*0 ... 31* *0…127*	In the standard device In the corresponding device version	U16	2	WO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2083	11	Meas. program number Target start **Note**: The settings from indices 10 - 12 are being adopted through indices 13, 14 or 15.	*0 ... 31* *0…127*	In the standard device In the corresponding device version	U16	2	WO
0x2083	12	Meas. program number Target end **Note**: The settings from indices 10 - 12 are being adopted through indices 13, 14 or 15.	*0 ... 31* *0…127*	In the standard device In the corresponding device version	U16	2	WO
0x2083	13	Copy whole program setup **Note**: Copy according to entries in indices 10 - 12.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2083	14	Copy sensor setup **Note**: Copy according to entries in indices 10 - 12.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2083	15	Initialize selected programs **Note**: Initializing according to indices 11 - 12.	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO
0x2083	16	Initialize all measurement programs	*EVENT*	Writing an arbitrary byte initiates action	U8	1	WO

7.1.48 Reference curve Y1, Y2 (Index 0x2084 to 0x2088)

Index/subindex data on request

7.1.49 Test operation (Index 0x2089)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2089	0	Number of subindices	*12*		U8	1	RO
0x2089	1…9	Reserved					
0x2089	10	Current measurement value channel X	*Float value*	Float according to IEEE754	FLT	4	RO
0x2089	11	Current measurement value channel Y1	*Float value*	Float according to IEEE754	FLT	4	RO
0x2089	12	Current measurement value channel Y2	*Float value*	Float according to IEEE754	FLT	4	RO

7.1.50 Zoom and autoscale (Index 0x2090)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2090	0	Number of subindices	*20*		U8	1	RO
0x2090	1…9	Reserved	-	-		X	X
0x2090	10	Switching autoscale/fix scale	*0* *1*	Autoscale off Autoscale on	U16	2	RW
0x2090	11	Fix scale Xmin channel Y1 **Note**: At the end, entry must be adopted through subindex 15.	*Float value*	Float according to IEEE754	FLT	4	RW
0x2090	12	Fix scale Xmax channel Y1 **Note**: At the end, entry must be adopted through subindex 15.	*Float value*	Float according to IEEE754	FLT	4	RW
0x2090	13	Fix scale Ymin channel Y1 **Note**: At the end, entry must be adopted through subindex 15.	*Float value*	Float according to IEEE754	FLT	4	RW
0x2090	14	Fix scale Ymax channel Y1 **Note**: At the end, entry must be adopted through subindex 15.	*Float value*	Float according to IEEE754	FLT	4	RW

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2090	15	Copy fix scale channel Y1 **Note**: Values entered into indices 11 - 14 are adopted.	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO
0x2090	16	Fix scale Xmin channel Y2 **Note**: At the end, entry must be adopted through subindex 20.	*Float value*	Float according to IEEE754	FLT	4	RW
0x2090	17	Fix scale Xmax channel Y2 **Note**: At the end, entry must be adopted through subindex 20.	*Float value*	Float according to IEEE754	FLT	4	RW
0x2090	18	Fix scale Ymin channel Y2 **Note**: At the end, entry must be adopted through subindex 20.	*Float value*	Float according to IEEE754	FLT	4	RW
0x2090	19	Fix scale Ymax channel Y2 **Note**: At the end, entry must be adopted through subindex 20.	*Float value*	Float according to IEEE754	FLT	4	RW
0x2090	20	Copy fix scale channel Y2 **Note**: Values entered into indices 16 - 19 are adopted.	*EVENT!*	Writing an arbitrary byte initiates action	U8	1	WO

7.2 Measurement results

7.2.1 Status of measurement (index 0x2100)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2100	0	Number of subindices	*12*		U8	1	RO
0x2100	1…9	Reserved				X	X
0x2100	10	Index of the last measured value of the current curve **Caution**: The number of the pair of values is shown on the display. The subindex begins at 0, the number at 1!	*16 Bit Integer value*	0 means that there is no measurement curve	U16	2	RO
0x2100	11	Running measurement curve counter	*32 Bit Integer value*	This counter is incremented by 1 when a measurement curve is newly acquired	U32	4	RO
0x2100	12	Amount of curves in current array of curves	*0…10*	Integer value between 0 and 10	U16	2	RO

7.2.2 Further information for current measurement curve (index 0x2101)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2101	0	Number of subindices	*22*		U8	1	RO
0x2101	1…9	Reserved	-	-		X	X
0x2101	10	Toolcounter	*32 Bit Integer value*		U32	4	RO
0x2101	11	NOK counter (sum)	*32 Bit Integer value*		U32	4	RO
0x2101	12	Total evaluation	*0* *1*	NOK OK	U16	2	RO
0x2101	13	Evaluation channel Y1	*0* *1*	NOK OK	U16	2	RO
0x2101	14	Evaluation channel Y2	*0* *1*	NOK OK	U16	2	RO
0x2101	15	Index of the curve´s return point **Caution**: The number of the pair of values is shown on the display. The subindex begins at 0, the number at 1!	*16 Bit Integer value*		U16	2	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2101	16	Index of the last measured value of the curve **Caution**: The number of the pair of values is shown on the display. The subindex begins at 0, the number at 1!	*16 Bit Integer value*		U16	2	RO
0x2101	17	Status overdrive of the A/D converter	*0* *1*	No overdrive Overdrive	U16	2	RO
0x2101	18	Date of recording	*String in format dd.mm.yyyy*		STR10	10	RO
0x2101	19	Time of recording hh:mm:ss	*String in format hh:mm:ss*		STR8	8	RO
0x2101	20	Unit channel X	*String with max. 4 characters, e.g. "N" or "inch"*		STR4	4	RO
0x2101	21	Unit channel Y1	*String with max. 4 characters, e.g. "N" or "inch"*		STR4	4	RO
0x2101	22	Unit channel Y2	*String with max. 4 characters, e.g. "N" or "inch"*		STR4	4	RO

7.2.3 Further information for current pretrigger curve (index 0x2102)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2102	0	Number of subindices	*13*		U8	1	RO
0x2102	1…9	Reserved	-	-		X	X
0x2102	10	Pretrigger recording on/off	*0* *1*	off on	U16	2	RO
0x2102	11	Whole amount of pretrigger values	*32 Bit Integer value*		U32	4	RO
0x2102	12	Index of first pretrigger value (0…255)	*0…255*	Integer value between 0…255	U16	2	RO
0x2102	13	Index of X-last pretrigger value (0…255)	*0…255*	Integer value between 0…255	U16	2	RO

7.2.4 General curve data channel Y1 (index 0x2103)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2103	0	Number of subindices	*23*		U8	1	RO
0x2103	1…9	Reserved	-	-		X	X
0x2103	10	X-minimum, X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	11	X-minimum, Y1-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	12	X-maximum, X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	13	X-maximum, Y1-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	14	Y1-minimum, X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	15	Y1-minimum, Y1-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	16	Y1-maximum, X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	17	Y1-maximum, Y1-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	18	First value X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	19	First value Y1-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	20	Last value X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	21	Last value Y1-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	22	Return point X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2103	23	Return point Y1-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO

7.2.5 General curve data channel Y2 (index 0x21014)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2104	0	Number of subindices	*23*		U8	1	RO
0x2104	1…9	Reserved	-	-		X	X
0x2104	10	See index 0x2103					

7.2.6 Request measurement results of user-defined values (index 0x2105)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2105	0	Number of subindices	*99*		U8	1	RO
0x2105	1…9	Reserved	-	-		X	X
0x2105	10	User-defined value 1 name	*String with the*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
			designator of the value				
0x2105	11	User-defined value 1 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	12	User-defined value 1 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	13	User-defined value 2 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	14	User-defined value 2 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	15	User-defined value 2 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	16	User-defined value 3 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	17	User-defined value 3 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	18	User-defined value 3 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	19	User-defined value 4 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	20	User-defined value 4 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	21	User-defined value 4 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	22	User-defined value 5 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	23	User-defined value 5 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2105	24	User-defined value 5 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	25	User-defined value 6 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	26	User-defined value 6 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	27	User-defined value 6 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	28	User-defined value 7 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	29	User-defined value 7 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	30	User-defined value 7 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	31	User-defined value 8 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	32	User-defined value 8 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	33	User-defined value 8 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	34	User-defined value 9 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	35	User-defined value 9 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	36	User-defined value 9 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2105	37	User-defined value 10 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	38	User-defined value 10 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	39	User-defined value 10 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	40	User-defined value 11 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	41	User-defined value 11 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	42	User-defined value 11 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	43	User-defined value 12 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	44	User-defined value 12 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	45	User-defined value 12 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	46	User-defined value 13 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	47	User-defined value 13 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	48	User-defined value 13 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	49	User-defined value 14 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	50	User-defined value 14 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2105	51	User-defined value 14 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	52	User-defined value 15 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	53	User-defined value 15 measurement value	Float value	Float according to IEEE754	FLT	4	RO
0x2105	54	User-defined value 15 unit	String with max. 4 characters, e.g. "N" or "inch"	See operand table in appendix	STR 4	4	RO
0x2105	55	User-defined value 16 name	String with the designator of the value	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	56	User-defined value 16 measurement value	Float value	Float according to IEEE754	FLT	4	RO
0x2105	57	User-defined value 16 unit	String with max. 4 characters, e.g. "N" or "inch"	See operand table in appendix	STR 4	4	RO
0x2105	58	User-defined value 17 name	String with the designator of the value	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	59	User-defined value 17 measurement value	Float value	Float according to IEEE754	FLT	4	RO
0x2105	60	User-defined value 17 unit	String with max. 4 characters, e.g. "N" or "inch"	See operand table in appendix	STR 4	4	RO
0x2105	61	User-defined value 18 name	String with the designator of the value	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	62	User-defined value 18 measurement value	Float value	Float according to IEEE754	FLT	4	RO
0x2105	63	User-defined value 18 unit	String with max. 4 characters, e.g. "N" or "inch"	See operand table in appendix	STR 4	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2105	64	User-defined value 19 name	String with the designator of the value	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	65	User-defined value 19 measurement value	Float value	Float according to IEEE754	FLT	4	RO
0x2105	66	User-defined value 19 unit	String with max. 4 characters, e.g. "N" or "inch"	See operand table in appendix	STR 4	4	RO
0x2105	67	User-defined value 20 name	String with the designator of the value	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	68	User-defined value 20 measurement value	Float value	Float according to IEEE754	FLT	4	RO
0x2105	69	User-defined value 20 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	70	User-defined value 21 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	71	User-defined value 21 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	72	User-defined value 21 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	73	User-defined value 22 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	74	User-defined value 22 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	75	User-defined value 22 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	76	User-defined value 23 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	77	User-defined value 23 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2105	78	User-defined value 23 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	79	User-defined value 24 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	80	User-defined value 24 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	81	User-defined value 24 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	82	User-defined value 25 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	83	User-defined value 25 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	84	User-defined value 25 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	85	User-defined value 26 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	86	User-defined value 26 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	87	User-defined value 26 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	88	User-defined value 27 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	89	User-defined value 27 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	90	User-defined value 27 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2105	91	User-defined value 28 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	92	User-defined value 28 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	93	User-defined value 28 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	94	User-defined value 29 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	95	User-defined value 29 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	96	User-defined value 29 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO
0x2105	97	User-defined value 30 name	*String with the designator of the value*	Designator = "0" means that no value is defined for this value number	STR 16	16	RO
0x2105	98	User-defined value 30 measurement value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2105	99	User-defined value 30 unit	*String with max. 4 characters, e.g. "N" or "inch"*	See operand table in appendix	STR 4	4	RO

7.2.7   Statistic measurement result evaluation element window 1 (EvElem 1)

Index/subindex data on request

7.2.8   Statistic measurement result evaluation element window 2 (EvElem 2)

Index/subindex data on request

7.2.9   Statistic measurement result evaluation element window 3 (EvElem 3)

Index/subindex data on request

7.2.10   Statistic measurement result evaluation element window 4 (EvElem 4)

Index/subindex data on request

7.2.11   Statistic measurement result evaluation element window 5 (EvElem 5)

Index/subindex data on request

7.2.12   Statistic measurement result evaluation element window 6 (EvElem 6)

Index/subindex data on request

7.2.13   Statistic measurement result evaluation element window 7 (EvElem 7)

Index/subindex data on request

7.2.14   Statistic measurement result evaluation element window 8 (EvElem 8)

Index/subindex data on request

7.2.15   Statistic measurement result evaluation element window 9 (EvElem 9)

Index/subindex data on request

7.2.16   Statistic measurement result evaluation element window 10 (EvElem 10)

Index/subindex data on request

7.2.17   Statistic measurement result evaluation element threshold 1 (EvElem 11)

Index/subindex data on request

7.2.18   Statistic measurement result evaluation element threshold 2 (EvElem 12)

Index/subindex data on request

7.2.19   Statistic measurement result evaluation element threshold 3 (EvElem 13)

Index/subindex data on request

7.2.20   Statistic measurement result evaluation element threshold 4 (EvElem 14)

Index/subindex data on request

7.2.21 Statistic measurement result evaluation element trapezoid window X1 (EvElem 15)

Inde /subindex data on request

7.2.22 Statistic measurement result evaluation element trapezoid window X2 (EvElem 16)

Index/subindex data on request

7.2.23 Statistic measurement result evaluation element trapezoid window Y1 (EvElem 17)

Index/subindex data on request

7.2.24 Statistic measurement result evaluation element trapezoid window Y2 (EvElem 18)

Index/subindex data on request

7.2.25 Statistic measurement result evaluation element envelope 1 (EvElem 19)

Index/subindex data on request

7.2.26 Statistic measurement result evaluation element envelope 2 (EvElem 20)

Index/subindex data on request

7.2.27 Statistic measurement result evaluation element mathematical calculation 1 (EvElem 21)

Index/subindex data on request

7.2.28 Statistic measurement result evaluation element mathematical calculation 2 (EvElem 22)

Index/subindex data on request

7.2.29 Statistic measurement result evaluation element mathematical calculation 3 (EvElem 23)

Index/subindex data on request

7.2.30 Statistic measurement result evaluation element mathematical calculation 4 (EvElem 24)

Index/subindex data on request

7.2.31 Statistic measurement result evaluation element mathematical calculation 5 (EvElem 25)

Index/subindex data on request

7.2.32 Statistic measurement result evaluation element mathematical calculation 6 (EvElem 26)

Index/subindex data on request

7.2.33 Read-out X-coordinates of current measurement curve (index 0x2132)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2132	0	Number of subindices	*11*		U8	1	RO
0x2132	1…9	Reserved	-	-		X	X
0x2132	10	Index of the last coordinate; if 0, there is no curve	*Integer value 0…4999*		U32	4	RO
0x2132	11	Read curve values The values are read as a binary array. The floating point numbers are encoded accordinaly to IEEE754 und being transferred without any separators. The last curve index shoud be read at index 10. Number of curve values = last index + 1	-	-			RO

7.2.34 Read-out Y1-coordinates of current measurement curve (index 0x2133)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2133	0	Number of subindices	*11*		U8	1	RO
0x2133	1…9	Reserved	-	-		X	X
0x2133	10...11	See index 0x2132				X	X

7.2.35 Read-out Y2-coordinates of current measurement curve (index 0x2134)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2134	0	Number of subindices	*11*		U8	1	RO
0x2134	1…9	Reserved	-	-		X	X
0x2134	10..11	See index 0x2132				X	X

7.2.36 Read-out X-coordinates of current pretrigger curve (index 0x2135)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2135	0	Number of subindices	*11*		U8	1	RO
0x2135	1…9	Reserved	-	-		X	X
0x2135	10	Index of the last coordinate; if 0, there is no curve	*Integer value 0…255*		U32	4	RO
0x2135	11	Read pretrigger curve values The values are read as a binary array. The floating point numbers are encoded accordinaly to IEEE754 und being transferred without any separators. The last curve index shoud be read at index 10. Number of curve values = last index + 1	-	-			RO

7.2.37 Read-out Y1-coordinates of current pretrigger curve (index 0x2136)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2136	0	Number of subindices	*11*		U8	1	RO
0x2136	1…9	Reserved	-	-		X	X
0x2136	10..11	See index 0x2135				X	X

7.2.38 Read-out Y2-coordinates of current pretrigger curve (index 0x2137)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2137	0	Number of subindices	11		U8	1	RO
0x2137	1…9	Reserved	-	-	X	X	X
0x2137	10..11	See index 0x2135			X	X	X

7.2.39 Evaluation results window 1 (index 0x2138)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2138	0	Number of subindices	28		U8	1	RO
0x2138	1…9	Reserved	-	-	X	X	X
0x2138	10	Window 1 evaluation results OK/NOK	0 1	NOK OK	U16	2	RO
0x2138	11	Window 1 NOK counter	32bit-Integer value >= 0		U32	4	RO
0x2138	12	Window 1 entry of curve X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	13	Window 1 entry of curve Y-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	14	Window 1 exit of curve X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	15	Window 1 exit of curve Y-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	16	Window 1 absolute Y- maximum in window X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	17	Window 1 absolute Y-maximum in window Y-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	18	Window 1 absolute Y-minimum in window X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	19	Window 1 absolute Y-minimum in window Y-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	20	Window 1 local Y-maximum in window X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2138	21	Window 1 local Y-maximum in window Y-coordinate	Float value	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2138	22	Window 1 local Y-minimum in window X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2138	23	Window 1 local Y-minimum in window Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2138	24	Window 1 bend X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2138	25	Window 1 bend Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2138	26	Window 1 gradient value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2138	27	Window 1 Y-mean value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2138	28	Window 1 area below curve	*Float value*	Float according to IEEE754	FLT	4	RO

7.2.40 Evaluation results window 2 (index 0x2139)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2139	0	Number of subindices	*28*		U8	1	RO
0x2139	1…9	Reserved	-	-		X	X
0x2139	10…	See index 0x2138				X	X

7.2.41 Evaluation results window 3 (index 0x2140)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2140	0	Number of subindices	*28*		U8	1	RO
0x2140	1…9	Reserved	-	-		X	X
0x2140	10…	See index 0x2138				X	X

7.2.42 Evaluation results window 4 (index 0x2141)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2141	0	Number of subindices	*28*		U8	1	RO
0x2141	1…9	Reserved	-	-		X	X
0x2141	10…	See index 0x2138				X	X

7.2.43 Evaluation results window 5 (index 0x2142)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2142	0	Number of subindices	*28*		U8	1	RO
0x2142	1…9	Reserved	-	-		X	X
0x2142	10…	See index 0x2138				X	X

7.2.44 Evaluation results window 6 (index 0x2143)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2143	0	Number of subindices	*28*		U8	1	RO
0x2143	1…9	Reserved	-	-		X	X
0x2143	10…	See index 0x2138				X	X

7.2.45 Evaluation results window 7 (index 0x2144)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2144	0	Number of subindices	*28*		U8	1	RO
0x2144	1…9	Reserved	-	-		X	X
0x2144	10…	See index 0x2138				X	X

7.2.46 Evaluation results window 8 (index 0x2145)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2145	0	Number of subindices	*28*		U8	1	RO
0x2145	1…9	Reserved	-	-		X	X
0x2145	10…	See index 0x2138				X	X

7.2.47 Evaluation results window 9 (index 0x2146)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2146	0	Number of subindices	*28*		U8	1	RO
0x2146	1…9	Reserved	-	-		X	X
0x2146	10…	See index 0x2138				X	X

7.2.48 Evaluation results window 10 (index 0x2147)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2147	0	Number of subindices	28		U8	1	RO
0x2147	1…9	Reserved	-	-	X	X	X
0x2147	10…	See index 0x2138			X	X	X

7.2.49 Evaluation results threshold 1 (index 0x2148)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2148	0	Number of subindices	26		U8	1	RO
0x2148	1…9	Reserved	-	-	X	X	X
0x2148	10	Threshold 1 evaluation result OK/NOK	0 1	NOK OK	U16	2	RO
0x2148	11	Threshold 1 NOK counter	32bit-Integer value >= 0		U32	4	RO
0x2148	12	Threshold intersection point 1 X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2148	13	Threshold intersection point 1 Y-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2148	14	Threshold 1 absolute Y-maximum in threshold X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2148	15	Threshold 1 absolute Y-maximum in threshold Y-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2148	16	Threshold 1 absolute Y-minimum in threshold X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2148	17	Threshold 1 absolute Y-minimum in threshold Y-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2148	18	Threshold 1 local Y-maximum in threshold X-coordinate	Float value	Float according to IEEE754	FLT	4	RO
0x2148	19	Threshold 1 local Y-maximum in threshold	Float value	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		Y-coordinate					
0x2148	20	Threshold 1 local Y-minimum in threshold X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2148	21	Threshold 1 local Y-minimum in threshold Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2148	22	Threshold 1 bend X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2148	23	Threshold 1 bend Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2148	24	Threshold 1 gradient value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2148	25	Threshold 1 Y-mean value	*Float value*	Float according to IEEE754	FLT	4	RO
0x2148	26	Threshold 1 area below curve	*Float value*	Float according to IEEE754	FLT	4	RO

7.2.50 Evaluation results threshold 2 (index 0x2149)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2149	0	Number of subindices	*26*		U8	1	RO
0x2149	1…9	Reserved	-	-		X	X
0x2149	10…	See index 0x2148				X	X

7.2.51 Evaluation results threshold 3 (index 0x2150)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2150	0	Number of subindices	*26*		U8	1	RO
0x2150	1…9	Reserved	-	-		X	X
0x2150	10…	See index 0x2148				X	X

7.2.52 Evaluation results threshold 4 (index 0x2151)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2151	0	Number of subindices	*26*		U8	1	RO
0x2151	1…9	Reserved	-	-		X	X
0x2151	10…	See index 0x2148				X	X

7.2.53 Evaluation results trapezoid window X1 (index 0x2152)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2152	0	Number of subindices	*15*		U8	1	RO
0x2152	1…9	Reserved	-	-		X	X
0x2152	10	Trapezoid X 1 evaluation result OK/NOK	*0* *1*	NOK OK	U16	2	RO
0x2152	11	Trapezoid X 1 NOK counter	*32bit-Integer value >= 0*		U32	4	RO
0x2152	12	Trapezoid X 1 entry coordinate X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2152	13	Trapezoid X 1 entry coordinate Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2152	14	Trapezoid X 1 exit coordinate X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2152	15	Trapezoid X 1 exit coordinate Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO

7.2.54 Evaluation results trapezoid window X2 (index 0x2153)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2153	0	Number of subindices	*15*		U8	1	RO
0x2153	1…9	Reserved	-	-		X	X
0x2153	10…	See index 0x2152				X	X

7.2.55 Evaluation results trapezoid window Y1 (index 0x2154)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2154	0	Number of subindices	*15*		U8	1	RO
0x2154	1…9	Reserved	-	-		X	X
0x2154	10	Trapezoid Y1 evaluation results OK/NOK	*0* *1*	NOK OK	U16	2	RO
0x2154	11	Trapezoid Y1 NOK counter	*32bit-Integer value >= 0*		U32	4	RO
0x2154	12	Trapezoid Y1 entry coordinate X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2154	13	Trapezoid Y1 entry coordinate Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2154	14	Trapezoid Y1 exit coordinate X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2154	15	Trapezoid Y1 exit coordinate Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO

7.2.56 Evaluation results trapezoid window Y2 (index 0x2155)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2155	0	Number of subindices	*15*		U8	1	RO
0x2155	1…9	Reserved	-	-		X	X
0x2155	10…	See index 0x2154				X	X

7.2.57 Evaluation results envelope 1 (index 0x2156)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2156	0	Number of subindices	*15*		U8	1	RO
0x2156	1…9	Reserved	-	-		X	X
0x2156	10	Envelope 1 evaluation result OK/NOK	*0* *1*	NOK OK	U16	2	RO
0x2156	11	Envelope 1 NOK counter	*32bit-Integer value >= 0*		U32	4	RO
0x2156	12	Envelope 1 entry coordinate X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2156	13	Envelope 1 entry coordinate Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2156	14	Envelope 1 exit coordinate X-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO
0x2156	15	Envelope 1 exit coordinate Y-coordinate	*Float value*	Float according to IEEE754	FLT	4	RO

7.2.58 Evaluation results envelope 2 (index 0x2157)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2157	0	Number of subindices	*15*		U8	1	RO
0x2157	1…9	Reserved	-	-		X	X
0x2157	10…	See index 0x2156				X	X

7.2.59 Evaluation results rotary switch evaluation element 1 (index 0x2158)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	0	Number of subindices	*144*	-	U8	1	RO
0x2158	1…9	Reserved	-	-		X	X
0x2158	10	Rotary switch evaluation element 1 number of minima	*0…32*		U16	2	RO
0x2158	11	Rotary switch evaluation element 1 number of maxima	*0…32*		U16	2	RO
0x2158	12	Rotary switch evaluation element 1 mean value minima	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	13	Rotary switch evaluation element 1 mean value maxima	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	14	Rotary switch evaluation element 1 Max. Y-Diff. minima	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	15	Rotary switch evaluation element 1 Max. Y-Diff. maxima	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	16	Rotary switch evaluation element 1 evaluation result	*0* *1*	NOK OK	U16	2	RO
0x2158	17	Rotary switch evaluation element 1 X-coord. minima 1	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	18	Rotary switch evaluation element 1 X-coord. minima 2	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	19	Rotary switch evaluation element 1 X-coord. minima 3	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	20	Rotary switch evaluation element 1 X-coord. minima 4	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	21	Rotary switch evaluation element 1 X-coord. minima 5	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	22	Rotary switch evaluation element 1 X-coord. minima 6	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	23	Rotary switch evaluation element 1 X-coord. minima 7	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	24	Rotary switch evaluation element 1 X-coord. minima 8	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	25	Rotary switch evaluation element 1 X-coord. minima 9	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	26	Rotary switch evaluation element 1 X-coord. minima 10	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	27	Rotary switch evaluation element 1 X-coord. minima 11	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	28	Rotary switch evaluation element 1 X-coord. minima 12	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	29	Rotary switch evaluation element 1 X-coord. minima 13	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	30	Rotary switch evaluation element 1 X-coord. minima 14	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	31	Rotary switch evaluation element 1 X-coord. minima 15	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	32	Rotary switch evaluation element 1 X-coord. minima 16	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	33	Rotary switch evaluation element 1 X-coord. minima 17	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	34	Rotary switch evaluation element 1 X-coord. minima 18	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	35	Rotary switch evaluation element 1 X-coord. minima 19	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	36	Rotary switch evaluation element 1 X-coord. minima 20	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	37	Rotary switch evaluation element 1 X-coord. minima 21	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	38	Rotary switch evaluation element 1 X-coord. minima 22	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	39	Rotary switch evaluation element 1 X-coord. minima 23	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	40	Rotary switch evaluation element 1 X-coord. minima 24	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	41	Rotary switch evaluation element 1 X-coord. minima 25	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	42	Rotary switch evaluation element 1 X-coord. minima 26	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	43	Rotary switch evaluation element 1 X-coord. minima 27	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	44	Rotary switch evaluation element 1 X-coord. minima 28	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	45	Rotary switch evaluation element 1 X-coord. minima 29	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	46	Rotary switch evaluation element 1 X-coord. minima 30	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	47	Rotary switch evaluation element 1 X-coord. minima 31	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	48	Rotary switch evaluation element 1 X-coord. minima 32	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	49	Rotary switch evaluation element 1 Y-coord. minima 1	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	50	Rotary switch evaluation element 1 Y-coord. minima 2	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	51	Rotary switch evaluation element 1 Y-coord. minima 3	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	52	Rotary switch evaluation element 1 Y-coord. minima 4	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	53	Rotary switch evaluation element 1 Y-coord. minima 5	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	54	Rotary switch evaluation element 1 Y-coord. minima 6	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	55	Rotary switch evaluation element 1 Y-coord. minima 7	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	56	Rotary switch evaluation element 1 Y-coord. minima 8	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	57	Rotary switch evaluation element 1 Y-coord. minima 9	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	58	Rotary switch evaluation element 1 Y-coord. minima 10	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	59	Rotary switch evaluation element 1 Y-coord. minima 11	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	60	Rotary switch evaluation element 1 Y-coord. minima 12	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	61	Rotary switch evaluation element 1 Y-coord. minima 13	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	62	Rotary switch evaluation element 1 Y-coord. minima 14	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	63	Rotary switch evaluation element 1 Y-coord. minima 15	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	64	Rotary switch evaluation element 1 Y-coord. minima 16	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	65	Rotary switch evaluation element 1 Y-coord. minima 17	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	66	Rotary switch evaluation element 1 Y-coord. minima 18	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	67	Rotary switch evaluation element 1 Y-coord. minima 19	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	68	Rotary switch evaluation element 1 Y-coord. minima 20	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	69	Rotary switch evaluation element 1 Y-coord. minima 21	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	70	Rotary switch evaluation element 1 Y-coord. minima 22	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	71	Rotary switch evaluation element 1 Y-coord. minima 23	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	72	Rotary switch evaluation element 1 Y-coord. minima 24	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	73	Rotary switch evaluation element 1 Y-coord. minima 25	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	74	Rotary switch evaluation element 1 Y-coord. minima 26	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	75	Rotary switch evaluation element 1 Y-coord. minima 27	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	76	Rotary switch evaluation element 1 Y-coord. minima 28	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	77	Rotary switch evaluation element 1 Y-coord. minima 29	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	78	Rotary switch evaluation element 1 Y-coord. minima 30	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	79	Rotary switch evaluation element 1 Y-coord. minima 31	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	80	Rotary switch evaluation element 1 Y-coord. minima 32	*Float value*	Float according to IEEE754	FLT	4	ERHO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	81	Rotary switch evaluation element 1 X-coord. maxima 1	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	82	Rotary switch evaluation element 1 X-coord. maxima 2	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	83	Rotary switch evaluation element 1 X-coord. maxima 3	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	84	Rotary switch evaluation element 1 X-coord. maxima 4	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	85	Rotary switch evaluation element 1 X-coord. maxima 5	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	86	Rotary switch evaluation element 1 X-coord. maxima 6	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	87	Rotary switch evaluation element 1 X-coord. maxima 7	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	88	Rotary switch evaluation element 1 X-coord. maxima 8	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	89	Rotary switch evaluation element 1 X-coord. maxima 9	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	90	Rotary switch evaluation element 1 X-coord. maxima 10	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	91	Rotary switch evaluation element 1 X-coord. maxima 11	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	92	Rotary switch evaluation element 1 X-coord. maxima 12	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	93	Rotary switch evaluation element 1 X-coord. maxima 13	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	94	Rotary switch evaluation element 1 X-coord. maxima 14	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	95	Rotary switch evaluation element 1 X-coord. maxima 15	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	96	Rotary switch evaluation element 1 X-coord. maxima 16	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	97	Rotary switch evaluation element 1 X-coord. maxima 17	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	98	Rotary switch evaluation element 1 X-coord. maxima 18	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	99	Rotary switch evaluation element 1 X-coord. maxima 19	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	100	Rotary switch evaluation element 1 X-coord. maxima 20	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	101	Rotary switch evaluation element 1 X-coord. maxima 21	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	102	Rotary switch evaluation element 1 X-coord. maxima 22	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	103	Rotary switch evaluation element 1 X-coord. maxima 23	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	104	Rotary switch evaluation element 1 X-coord. maxima 24	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	105	Rotary switch evaluation element 1 X-coord. maxima 25	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	106	Rotary switch evaluation element 1 X-coord. maxima 26	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	107	Rotary switch evaluation element 1 X-coord. maxima 27	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	108	Rotary switch evaluation element 1 X-coord. maxima 28	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	109	Rotary switch evaluation element 1 X-coord. maxima 29	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	110	Rotary switch evaluation element 1 X-coord. maxima 30	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	111	Rotary switch evaluation element 1 X-coord. maxima 31	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	112	Rotary switch evaluation element 1 X-coord. maxima 32	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	113	Rotary switch evaluation element 1 Y-coord. maxima 1	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	114	Rotary switch evaluation element 1 Y-coord. maxima 2	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	115	Rotary switch evaluation element 1 Y-coord. maxima 3	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	116	Rotary switch evaluation element 1 Y-coord. maxima 4	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	117	Rotary switch evaluation element 1 Y-coord. maxima 5	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	118	Rotary switch evaluation element 1 Y-coord. maxima 6	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	119	Rotary switch evaluation element 1 Y-coord. maxima 7	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	120	Rotary switch evaluation element 1 Y-coord. maxima 8	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	121	Rotary switch evaluation element 1 Y-coord. maxima 9	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	122	Rotary switch evaluation element 1 Y-coord. maxima 10	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	123	Rotary switch evaluation element 1 Y-coord. maxima 11	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	124	Rotary switch evaluation element 1 Y-coord. maxima 12	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	125	Rotary switch evaluation element 1 Y-coord. maxima 13	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	126	Rotary switch evaluation element 1 Y-coord. maxima 14	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	127	Rotary switch evaluation element 1 Y-coord. maxima 15	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	128	Rotary switch evaluation element 1 Y-coord. maxima 16	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	129	Rotary switch evaluation element 1 Y-coord. maxima 17	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	130	Rotary switch evaluation element 1 Y-coord. maxima 18	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	131	Rotary switch evaluation element 1 Y-coord. maxima 19	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	132	Rotary switch evaluation element 1 Y-coord. maxima 20	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	133	Rotary switch evaluation element 1 Y-coord. maxima 21	*Float value*	Float according to IEEE754	FLT	4	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2158	134	Rotary switch evaluation element 1 Y-coord. maxima 22	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	135	Rotary switch evaluation element 1 Y-coord. maxima 23	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	136	Rotary switch evaluation element 1 Y-coord. maxima 24	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	137	Rotary switch evaluation element 1 Y-coord. maxima 25	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	138	Rotary switch evaluation element 1 Y-coord. maxima 26	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	139	Rotary switch evaluation element 1 Y-coord. maxima 27	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	140	Rotary switch evaluation element 1 Y-coord. maxima 28	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	141	Rotary switch evaluation element 1 Y-coord. maxima 29	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	142	Rotary switch evaluation element 1 Y-coord. maxima 30	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	143	Rotary switch evaluation element 1 Y-coord. maxima 31	*Float value*	Float according to IEEE754	FLT	4	RO
0x2158	144	Rotary switch evaluation element 1 Y-coord. maxima 32	*Float value*	Float according to IEEE754	FLT	4	RO

7.2.60 Evaluation results rotary switch evaluation element 2 (index 0x2159)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2159	0	Number of subindices	*144*	-	U8	1	RO
0x2159	1…9	Reserved	-	-		X	X
0x2159	10…	See index 0x2158				X	X

7.2.61 Evaluation results mathematical functions (index 0x2160)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2160	0	Number of subindices	*21*	-	U8	1	RO
0x2160	1…9	Reserved	-	-		X	X
0x2160	10	Math. functions evaluation result line 1	*0* *1*	NOK OK	U16	2	RO
0x2160	11	Math. functions evaluation result line 2	*0* *1*	NOK OK	U16	2	RO
0x2160	12	Math. functions evaluation result line 3	*0* *1*	NOK OK	U16	2	RO
0x2160	13	Math. functions evaluation result line 4	*0* *1*	NOK OK	U16	2	RO
0x2160	14	Math. functions evaluation result line 5	*0* *1*	NOK OK	U16	2	RO
0x2160	15	Math. functions evaluation result line 6	*0* *1*	NOK OK	U16	2	RO
0x2160	16	Math. functions NOK counter line 1	*32bit-Integer value >= 0*		U32	4	RO
0x2160	17	Math. functions NOK counter line 2	*32bit-Integer value >= 0*		U32	4	RO
0x2160	18	Math. functions NOK counter line 3	*32bit-Integer value >= 0*		U32	4	RO
0x2160	19	Math. functions NOK counter line 4	*32bit-Integer value >= 0*		U32	4	RO
0x2160	20	Math. functions NOK counter line 5	*32bit-Integer value >= 0*		U32	4	RO
0x2160	21	Math. functions NOK counter line 6	*32bit-Integer value >= 0*		U32	4	RO

7.2.62 Combined results (common curve data and evolution elements) (index 0x2161)

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2161	0	Number of subindi ces	*31*	-	U8	1	RO
0x2161	1…9	Reserved	-			X	X
0x2161	10	Combined results: general curve data Y1	*The data is bit coded and transmitted as STRUCT.* X-minimum, X-coord. (FL) X-minimum, Y1-coord. (FL) X-maximum, X-coord. (FL) X-maximum, Y1-coord. (FL) Y1-minimum, X-coord. (FL) Y1-minimum, Y1-coord.(FL) Y1-maximum, X-coord. (FL) Y1-maximum, Y1-coord.(FL) First value X-coord. (FL) First value Y1-coord. (FL) Last value X-coord. (FL) Last value Y1-coord. (FL) Return point X-coord. (FL) Return point Y1-coord. (FL)		STRUCT OF FLOATS	56	RO
0x2161	11	Combined results: general curve data Y2	See subindex 10		STRUCT OF FLOATS	56	RO
0x2161	12	Combined results: window 1	*The data is bit coded and transmitted as STRUCT.* Evaluation result (UINT32) Entry X-coordinate (FL) Entry Y-coordinate (FL) Exit X-coordinate (FL) Exit Y-coordinate (FL) Absolute Ymax X-coord. (FL) Absolute Ymax Y- coord.(FL) Absolute Ymin X- coord. (FL) Absolute Ymin Y- coord. (FL) Local Ymax X-coord. (FL) Local Ymax Y-coord. (FL) Local Ymin X-coord. (FL) Local Ymin Y-coord. (FL) Bending point X-coord. (FL) Bending point Y-coord. (FL) Mean value Y (FL) Gradient (FL) Area (FL) Window Xmin coord. (FL) Window Xmax coord. (FL) Window Ymin coord. (FL) Window Ymax coord. (FL)		STRUCT	88	RO
0x2161	13	Combined results: window 2	*See subindex 12*		STRUCT	88	RO

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
0x2161	14	Combined results: window 3	*See subindex 12*		STRUCT	88	RO
0x2161	15	Combined results: window 4	*See subindex 12*		STRUCT	88	RO
0x2161	16	Combined results: window 5	*See subindex 12*		STRUCT	88	RO
0x2161	17	Combined results: window 6	*See subindex 12*		STRUCT	88	RO
0x2161	18	Combined results: window 7	*See subindex 12*		STRUCT	88	RO
0x2161	20	Combined results: window 9	See subindex 12		STRUCT	88	RO
0x2161	21	Combined results: window 10	See subindex 12		STRUCT	88	RO
0x2161	22	Combined results: threshold 1	*The data is bit coded and transmitted as STRUCT:* Evaluation result (UINT16) Threshold type (UINT16) Threshold pass X (FL) Threshold pass Y (FL) Absolute Ymax X-coord. (FL) Absolute Ymax Y- coord. (FL) Absolute Ymin X- coord. (FL) Absolute Ymin Y- coord. (FL) Local Ymax X-coord. (FL) Local Ymax Y-coord. (FL) Local Ymin X-coord. (FL) Local Ymin Y-coord. (FL) Bending point X-coord. (FL) Bending point Y-coord. (FL) Mean value Y (FL) Gradient (FL) Area (FL) Threshold position (FL) Threshold min coord. (FL) Threshold max coord. (FL)		STRUCT	76	RO
0x2161	23	Combined results: threshold 2	See subindex 22		STRUCT	76	RO
0x2161	24	Combined results: threshold 3	See subindex 22		STRUCT	76	RO
0x2161	25	Combined results: threshold 4	See subindex 22		STRUCT	76	RO
0x2161	26	Combined results:	*The data is bit coded and transmitted as STRUCT:* Evaluation result (UINT32)		STRUCT	44	RO

DIGIFORCE® Model 9307 EtherCAT

Index	Sub-Index	Description	Value	Meaning of value	Type	Len	R/W
		trapezoid window X1	Entry X-coord. (FL) Entry Y-coord. (FL) Exit X-coord. (FL) Exit Y-coord. (FL) Xmin (FL) Xmax (FL) Ymax left (FL) Ymax right (FL) Ymin left (FL) Ymin right (FL)				
0x2161	27	Combined results: trapezoid window X2	*See subindex 26*		STRUCT	44	RO
0x2161	28	Combined results: trapezoid window Y1	*The data is bit coded and transmitted as STRUCT:* Evaluation result (UINT32) Entry X-coord. (FL) Entry Y-coord. (FL) Exit X-coord. (FL) Exit Y-coord. (FL) Ymin (FL) Ymax (FL) Xmin top (FL) Xmax top (FL) Xmin bottom (FL) Xmax bottom (FL)		STRUCT	44	RO
0x2161	29	Combined results: trapezoid window Y2	*See subindex 28*		STRUCT	44	RO
0x2161	30	Combined results: envelope 1	*The data is bit coded and transmitted as STRUCT:* Evaluation result (UINT32) Entry X-coordinate (FL) Entry Y-coordinate (FL) Exit X-coordinate (FL) Exit Y-coordinate (FL) Envelope 1 start (FL) Envelope 1 end (FL) Delta min (FL) Delta max (FL)		STRUCT	36	RO
0x2161	31	Combined results: envelope 2	*See subindex 30*		STRUCT	36	RO

8 Appendix

8.1 Operand table for mathematical functions

Number	ID of operant
0	OFF
100	Intermediate Result 1
101	Intermediate Result 2
102	Intermediate Result 3
103	Intermediate Result 4
104	Intermediate Result 5
105	Intermediate Result 6
106	Intermediate Result 7
107	Intermediate Result 8
108	Intermediate Result 9
109	Intermediate Result 10
200	Constant 1
201	Constant 2
202	Constant 3
203	Constant 4
204	Constant 5
205	Constant 6
206	Constant 7
207	Constant 8
208	Constant 9
209	Constant 10
300	General curve data Y1 – Start X
301	General curve data Y1 – Start Y
302	General curve data Y1 – End X
303	General curve data Y1 – End Y
304	General curve data Y1 – Abs. Xmax X-coordinate
305	General curve data Y1 – Abs. Xmax Y-coordinate

Number	ID of operant
306	General curve data Y1 – Abs. Xmin X-coordinate
307	General curve data Y1 – Abs. Xmin Y-coordinate
308	General curve data Y1 – Abs. Ymax X-coordinate
309	General curve data Y1 – Abs. Ymax Y-coordinate
310	General curve data Y1 – Abs. Ymin X-coordinate
311	General curve data Y1 – Abs. Ymin Y-coordinate
312	General curve data Y1 – Return point X-coordinate
313	General curve data Y1 – Return point Y-coordinate
314	Reference point
400	General curve data Y2 – Start X
401	General curve data Y2 – Start Y
402	General curve data Y2 – End X
403	General curve data Y2 –End Y
404	General curve data Y2 – Abs- Xmax X-coordinate
405	General curve data Y2 – Abs. Xmax Y-coordinate
406	General curve data Y2 – Abs. Xmin X-coordinate
407	General curve data Y2 – Abs. Xmin Y-coordinate
408	General curve data Y2 – Abs. Ymax X-coordinate
409	General curve data Y2 – Abs. Ymax Y-coordinate
410	General curve data Y2 – Abs. Ymin X-coordinate
411	General curve data Y2 – Abs. Ymin Y-coordinate
412	General curve data Y2 – Return point X-coordinate
413	General curve data Y2 – Return point Y-coordinate
414	Reference point
500	Window 1 – Entry X
501	Window 1 – Entry Y
502	Window 1 – Exit X
503	Window 1 – Exit Y
504	Window 1 – Abs. minimum X
505	Window 1 – Abs. minimum Y

Number	ID of operant
506	Window 1 – Abs. maximum X
507	Window 1 – Abs. maximum Y
508	Window 1 – Loc. minimum X
509	Window 1 – Loc. minimum Y
510	Window 1 – Loc. maximum X
511	Window 1 – Loc. maximum Y
512	Window 1 – Bend X
513	Window 1 – Bend Y
514	Window 1 – Mean value Y
515	Window 1 – Gradient
516	Window 1 – Area
517	Window 1 – Coordinate Xmin
518	Window 1 – Coordinate Xmax
519	Window 1 – Coordinate Ymin
520	Window 1 – Coordinate Ymax
600	Window 2 – Entry X
601	Window 2 – Entry Y
602	Window 2 – Exit X
603	Window 2 – Exit Y
604	Window 2 – Abs. minimum X
605	Window 2 – Abs. minimum Y
606	Window 2 – Abs. maximum X
607	Window 2 – Abs. maximum Y
608	Window 2 – Loc. minimum X
609	Window 2 – Loc. minimum Y
610	Window 2 – Loc. maximum X
611	Window 2 – Loc. maximum Y
612	Window 2 – Bend X
613	Window 2 – Bend Y
614	Window 2 – Mean value Y
615	Window 2 – Gradient

Number	ID of operant
616	Window 2 – Area
617	Window 2 – Coordinate Xmin
618	Window 2 – Coordinate Xmax
619	Window 2 – Coordinate Ymin
620	Window 2 – Coordinate Ymax
700	Window 3 – Entry X
701	Window 3 – Entry Y
702	Window 3 – Exit X
703	Window 3 – Exit Y
704	Window 3 – Abs. minimum X
705	Window 3 – Abs. minimum Y
706	Window 3 – Abs. maximum X
707	Window 3 – Abs. maximum Y
708	Window 3 – Loc. minimum X
709	Window 3 – Loc. maximum Y
710	Window 3 – Loc. maximum X
711	Window 3 – Loc. maximum Y
712	Window 3 – Bend X
713	Window 3 – Bend Y
714	Window 3 – Mean value Y
715	Window 3 – Gradient
716	Window 3 – Area
717	Window 3 – Coordinate Xmin
718	Window 3 – Coordinate Xmax
719	Window 3 – Coordinate Ymin
720	Window 3 – Coordinate Ymax
800	Window 4 – Entry X
801	Window 4 – Entry Y
802	Window 4 – Exit X
803	Window 4 – Exit Y

Number	ID of operant
804	Window 4 – Abs. minimum X
805	Window 4 – Abs. minimum Y
806	Window 4 – Abs. maximum X
807	Window 4 – Abs. maximum Y
808	Window 4 – Loc. minimum X
809	Window 4 – Loc. minimum Y
810	Window 4 – Loc. maximum X
811	Window 4 – Loc. maximum Y
812	Window 4 – Bend X
813	Window 4 – Bend Y
814	Window 4 – Mean value Y
815	Window 4 – Gradient
816	Window 4 – Area
817	Window 4 – Coordinate Xmin
818	Window 4 – Coordinate Xmax
819	Window 4 – Coordinate Ymin
820	Window 4 – Coordinate Ymax
900	Window 5 – Entry X
901	Window 5 – Entry Y
902	Window 5 – Exit X
903	Window 5 – Exit Y
904	Window 5 – Abs. minimum X
905	Window 5 – Abs. minimum Y
906	Window 5 – Abs. maximum X
907	Window 5 – Abs. maximum Y
908	Window 5 – Loc. minimum X
909	Window 5 – Loc. minimum Y
910	Window 5 – Loc. maximum X
911	Window 5 – Loc. maximum Y
912	Window 5 – Bend X
913	Window 5 – Bend Y

Number	ID of operant
914	Window 5 – Mean value Y
915	Window 5 – Gradient
916	Window 5 – Area
917	Window 5 – Coordinate Xmin
918	Window 5 – Coordinate Xmax
919	Window 5 – Coordinate Ymin
920	Window 5 – Coordinate Ymax
1000	Window 6 – Entry X
1001	Window 6 – Entry Y
1002	Window 6 – Exit X
1003	Window 6 – Exit Y
1004	Window 6 – Abs. minimum X
1005	Window 6 – Abs. maximum Y
1006	Window 6 – Abs. maximum X
1007	Window 6 – Abs. maximum Y
1008	Window 6 – Loc. minimum X
1009	Window 6 – Loc. minimum Y
1010	Window 6 – Loc. maximum X
1011	Window 6 – Loc. maximum Y
1012	Window 6 – Bend X
1013	Window 6 – Bend Y
1014	Window 6 – Mean value Y
1015	Window 6 – Gradient
1016	Window 6 – Area
1017	Window 6 – Coordinate Xmin
1018	Window 6 – Coordinate Xmax
1019	Window 6 – Coordinate Ymin
1020	Window 6 – Coordinate Ymax
1100	Window 7 – Entry X
1101	Window 7 – Entry Y

Number	ID of operant
1102	Window 7 – Exit X
1103	Window 7 – Exit Y
1104	Window 7 – Abs. minimum X
1105	Window 7 – Abs. minimum Y
1106	Window 7 – Abs. maximum X
1107	Window 7 – Abs. maximum Y
1108	Window 7 – Loc. minimum X
1109	Window 7 – Loc. minimum Y
1110	Window 7 – Loc. maximum X
1111	Window 7 – Loc. maximum Y
1112	Window 7 – Bend X
1113	Window 7 – Bend Y
1114	Window 7 – Mean value Y
1115	Window 7 – Gradient
1116	Window 7 – Area
1117	Window 7 – Coordinate Xmin
1118	Window 7 – Coordinate Xmax
1119	Window 7 – Coordinate Ymin
1120	Window 7 – Coordinate Ymax
1200	Window 8 – Entry X
1201	Window 8 – Entry Y
1202	Window 8 – Exit X
1203	Window 8 – Exit Y
1204	Window 8 – Abs. minimum X
1205	Window 8 – Abs. minimum Y
1206	Window 8 – Abs. maximum X
1207	Window 8 – Abs. maximum Y
1208	Window 8 – Loc. minimum X
1209	Window 8 – Loc. minimum Y
1210	Window 8 – Loc. maximum X
1211	Window 8 – Loc. maximum Y

Number	ID of operant
1212	Window 8 – Bend X
1213	Window 8 – Bend Y
1214	Window 8 – Mean value Y
1215	Window 8 – Gradient
1216	Window 8 – Area
1217	Window 8 – Coordinate Xmin
1218	Window 8 – Coordinate Xmax
1219	Window 8 – Coordinate Ymin
1220	Window 8 – Coordinate Ymax
1300	Window 9 – Entry X
1301	Window 9 – Entry Y
1302	Window 9 – Exit X
1303	Window 9 – Exit Y
1304	Window 9 – Abs. minimum X
1305	Window 9 – Abs. minimum Y
1306	Window 9 – Abs. maximum X
1307	Window 9 – Abs. maximum Y
1308	Window 9 – Loc. minimum X
1309	Window 9 – Loc. minimum Y
1310	Window 9 – Loc. maximum X
1311	Window 9 – Loc. maximum Y
1312	Window 9 – Bend X
1313	Window 9 – Bend Y
1314	Window 9 – Mean value Y
1315	Window 9 – Gradient
1316	Window 9 – Area
1317	Window 9 – Coordinate Xmin
1318	Window 9 – Coordinate Xmax
1319	Window 9 – Coordinate Ymin
1320	Window 9 – Coordinate Ymax

Number	ID of operant
1400	Window 10 – Entry X
1401	Window 10 – Entry Y
1402	Window 10 – Exit X
1403	Window 10 – Exit Y
1404	Window 10 – Abs. minimum X
1405	Window 10 – Abs. minimum Y
1406	Window 10 – Abs. maximum X
1407	Window 10 – Abs. maximum Y
1408	Window 10 – Loc. minimum X
1409	Window 10 – Loc. minimum Y
1410	Window 10 – Loc. maximum X
1411	Window 10 – Loc. maximum Y
1412	Window 10 – Bend X
1413	Window 10 – Bend Y
1414	Window 10 – Mean value Y
1415	Window 10 – Gradient
1416	Window 10 – Area
1417	Window 10 – Coordinate Xmin
1418	Window 10 – Coordinate Xmax
1419	Window 10 – Coordinate Ymin
1420	Window 10 – Coordinate Ymax
1500	Trapezoid window X1 – Entry X
1501	Trapezoid window X1 – Entry Y
1502	Trapezoid window X1 – Exit X
1503	Trapezoid window X1 – Exit Y
1504	Trapezoid window X1 – Coordinate Xmin
1505	Trapezoid window X1 – Coordinate Xmax
1506	Trapezoid window X1 – Coordinate Ymin left
1507	Trapezoid window X1 – Coordinate Ymin right
1508	Trapezoid window X1 – Coordinate Ymax left
1509	Trapezoid window X1 – Coordinate Ymax right

Number	ID of operant
1600	Trapezoid window X2 – Entry X
1601	Trapezoid window X2 – Entry Y
1602	Trapezoid window X2 – Exit X
1603	Trapezoid window X2 – Exit Y
1604	Trapezoid window X2 – Coordinate Xmin
1605	Trapezoid window X2 – Coordinate Xmax
1606	Trapezoid window X2 – Coordinate Ymin left
1607	Trapezoid window X2 – Coordinate Ymin right
1608	Trapezoid window X2 – Coordinate Ymax left
1609	Trapezoid window X2 – Coordinate Ymax right
1700	Trapezoid window Y1 – Entry X
1701	Trapezoid window Y1 – Entry Y
1702	Trapezoid window Y1 – Exit X
1703	Trapezoid window Y1 – Exit Y
1704	Trapezoid window Y1 – Coordinate Ymin
1705	Trapezoid window Y1 – Coordinate Ymax
1706	Trapezoid window Y1 – Coordinate Xmin bottom
1707	Trapezoid window Y1 –Coordinate Xmin top
1708	Trapezoid window Y1 – Coordinate Xmax bottom
1709	Trapezoid window Y1 – Coordinate Xmax top
1800	Trapezoid window Y2 – Entry X
1801	Trapezoid window Y2 – Entry Y
1802	Trapezoid window Y2 – Exit X
1803	Trapezoid window Y2 – Exit Y
1804	Trapezoid window Y2 – Coordinate Ymin
1805	Trapezoid window Y2 – Coordinate Ymax
1806	Trapezoid window Y2 .- Coordinate Xmin bottom
1807	Trapezoid window Y2 – Coordinate Xmin top
1808	Trapezoid window Y2 – Coordinate Xmax bottom

Number	ID of operant
1809	Trapezoid window Y2 – Coordinate Xmax top
1900	Threshold 1 – Pass X
1901	Threshold 1 – Pass Y
1902	Threshold 1 – Abs. minimum X
1903	Threshold 1 – Abs. minimum Y
1904	Threshold 1 – Abs. maximum X
1905	Threshold 1 – Abs. maximum Y
1906	Threshold 1 – Loc. minimum X
1907	Threshold 1 – Loc. minimum Y
1908	Threshold 1 – Loc. maximum X
1909	Threshold 1 – Loc. maximum Y
1910	Threshold 1 – Bend X
1911	Threshold 1 – Bend Y
1912	Threshold 1 – Mean value Y
1913	Threshold 1 – Gradient
1914	Threshold 1 – Area
1915	Threshold 1 – Coordinate X value
1916	Threshold 1 – Coordinate Ymin
1917	Threshold 1 – Coordinate Ymax
2000	Threshold 2 – Pass X
2001	Threshold 2 – Pass Y
2002	Threshold 2 – Abs. minimum X
2003	Threshold 2 – Abs. minimum Y
2004	Threshold 2 – Abs. maximum X
2005	Threshold 2 – Abs. maximum Y
2006	Threshold 2 – Loc. minimum X
2007	Threshold 2 – Loc. minimum Y
2008	Threshold 2 – Loc. maximum X
2009	Threshold 2 – Loc. maximum Y
2010	Threshold 2 – Bend X

Number	ID of operant
2011	Threshold 2 – Bend Y
2012	Threshold 2 – Mean value Y
2013	Threshold 2 – Gradient
2014	Threshold 2 – Area
2015	Threshold 2 – Coordinate X value
2016	Threshold 2 – Coordinate Ymin
2017	Threshold 2 – Coordinate Ymax
2100	Threshold 3 – Pass X
2101	Threshold 3 – Pass Y
2102	Threshold 3 – Abs. minimum X
2103	Threshold 3 – Abs. minimum Y
2104	Threshold 3 – Abs. maximum X
2105	Threshold 3 – Abs. maximum Y
2106	Threshold 3 – Loc. minimum X
2107	Threshold 3 – Loc. minimum Y
2108	Threshold 3 – Loc. maximum X
2109	Threshold 3 – Loc. maximum Y
2110	Threshold 3 – Bend X
2111	Threshold 3 – Bend Y
2112	Threshold 3 – Mean value Y
2113	Threshold 3 – Gradient
2114	Threshold 3 – Area
2115	Threshold 3 – Coordinate X value
2116	Threshold 3 – Coordinate Ymin
2117	Threshold 3 – Coordinate Ymax
2200	Threshold 4 – Pass X
2201	Threshold 4 – Pass Y
2202	Threshold 4 – Abs. minimum X
2203	Threshold 4 – Abs. minimum Y
2204	Threshold 4 – Abs. maximum X

Number	ID of operant
2205	Threshold 4 – Abs. maximum Y
2206	Threshold 4 – Loc. minimum X
2207	Threshold 4 – Loc. minimum Y
2208	Threshold 4 – Loc. maximum X
2209	Threshold 4 – Loc. maximum Y
2210	Threshold 4 – Bend X
2211	Threshold 4 – Bend Y
2212	Threshold 4 – Mean value Y
2213	Threshold 4 – Gradient
2214	Threshold 4 – Area
2215	Threshold 4 – Coordinate X value
2216	Threshold 4 – Coordinate Ymin
2217	Threshold 4 – Coordinate Ymax
2300	Envelope 1 – Entry X
2301	Envelope 1 – Entry Y
2302	Envelope 1 – Exit X
2303	Envelope 1 – Exit Y
2304	Envelope 1 – Coordinate Start X
2305	Envelope 1 – Coordinate End X
2400	Envelope 2 – Entry X
2401	Envelope 2 – Entry Y
2402	Envelope 2 – Exit X
2403	Envelope 2 – Exit Y
2404	Envelope 2 – Coordinate Start X
2405	Envelope 2 – Coordinate End X

8.2 Error codes

Error code	ID of operant
0xC065003A	Subindex does not exist (read access)
0xC0CF8013	Subindex does not exist (write access)
0xC0CF8006	Object is read only and can not be written
0xC0CF8010	Data type does not match
0xC0CF8011	Data length is too long
0xC0650028	Timeout
0xC065002F	Object is write ony and can not be read