

IO-Link Interface Specification

Vibration sensor
Series HE050

IO-Link

1 General Information

1.1 Device Identification	
Vendor ID	1475 (0x05C3)
Device ID	5308417 (0x 510001)

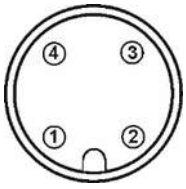
1.3 Features	
Data storage	Yes
Block parameterization	Yes

1.2 Communication Characteristics	
IO-Link revision	V1.1 (specification V1.1.2)
IO-Link backward compatibility	n/a
Data transmission rate	COM2 (38,4 kbit/s)
Min. cycle time	10 ms
Process data input	16 byte
Process data output	n/a
SIO mode support	yes
Compatible master port type	Class A, Class B (see NOTE)

NOTE: For use at IO-Link master port Class B, use 3-pole adapter or 3-wire cable.

1.4 Device Profile	
Identification and Diagnosis – I&D	16384 (0x4000)
Function Class - Product URI	33026 (0x8102)

2 Connection

Plug, M12, 4-pole	
	Pin 1: L+ 18…30 V DC Pin 2: Out 2 4…20 mA or switching output Pin 3: L- 0V / GND Pin 4: Out 1 IO-Link or switching output

3 Process Data Input

.sub	Name	Data type	Length (byte)	Bit-offset	Value	Unit	Comment
	PD Input (read only)	**record**	**16**				
.1	MDC1 vRMS	int16		112	0 .. 12800 32764: No Measurement Data	0.01 mm/s	Indicates the current measurement value of measurement data channel 1 - vRMS.
.2	MDC1 Scale	int8		104	-5		Shows the multiplier for the measurement value of measurement data channel 1 - vRMS. Multipier: 10^(scale).
.3	SSC1.1 Switching Signal	bool		96	0: Low 1: High		Indicates the current status of the switching signal 1 for measurement data channel 1 - vRMS.
.4	SSC1.2 Switching Signal	bool		97	0: Low 1: High		Indicates the current status of the switching signal 2 for measurement data channel 1 - vRMS.
.11	MDC2 aRMS	int16		80	0 .. 1400 32764: No Measurement Data	0.01 g	Indicates the current measurement value of measurement data channel 2 - aRMS.
.12	MDC2 Scale	int8		72	-2		Shows the multiplier for the measurement value of measurement data channel 2 - aRMS. Multipier: 10^(scale).
.13	SSC2.1 Switching Signal	bool		64	0: Low 1: High		Indicates the current status of the switching signal 1 for measurement data channel 2 - aRMS.
.14	SSC2.2 Switching Signal	bool		65	0: Low 1: High		Indicates the current status of the switching signal 2 for measurement data channel 2 - aRMS.
.21	MDC3 aPeak	int16		48	0 .. 1400 32764: No Measurement Data	0.01 g	Indicates the current measurement value of measurement data channel 3 - aPeak.
.22	MDC3 Scale	int8		40	-2		Shows the multiplier for the measurement value of measurement data channel 3 - aPeak. Multipier: 10^(scale).
.23	SSC3.1 Switching Signal	bool		32	0: Low 1: High		Indicates the current status of the switching signal 1 for measurement data channel 3 - aPeak.
.24	SSC3.2 Switching Signal	bool		33	0: Low 1: High		Indicates the current status of the switching signal 2 for measurement data channel 3 - aPeak.
.31	MDC4 Temperature	int16		16	-50 .. 100 32764: No Measurement Data	°C	Indicates the current measurement value of measurement data channel 4 - Temperature.
.32	MDC4 Scale	int8		8	0		Shows the multiplier for the measurement value of measurement data channel 4 - Temperature. Multipier: 10^(scale).
.33	SSC4.1 Switching Signal	bool		0	0: Low 1: High		Indicates the current status of the switching signal 1 for measurement data channel 4 – Temperature.
.34	SSC4.2 Switching Signal	bool		1	0: Low 1: High		Indicates the current status of the switching signal 2 for measurement data channel 4 - Temperature.
.37	DSC1 Maintenance Warning	bool		4	0: Inactive 1: Active		Indicates that at least one of the configured maintenance limits has been exceeded.

4 Parameter Data

4.1 Identification

Index	Parameter	Access	Data type	Length	Default	Description
16 (0x10)	Vendor Name	R	string	32	HAUBER-Elektronik GmbH	The vendor name that is assigned to a Vendor ID.
17 (0x11)	Vendor Text	R	string	32	Your partner for condition monitoring	Additional information about the vendor.
18 (0x12)	Product Name	R	string	32	HE050	Complete product name.
19 (0x13)	Product ID	R	string	32	HE050	Vendor-specific product or type identification (e.g., item number or model number).
20 (0x14)	Product Text	R	string	32	Vibration sensor type HE050 with IO-Link	Additional product information for the device.
21 (0x15)	Serial Number	R	string	16		Unique, vendor-specific identifier of the individual device.
22 (0x16)	Hardware Revision	R	string	8	HW**.**	Unique, vendor-specific identifier of the hardware revision of the individual device.
23 (0x17)	Firmware Revision	R	string	8	FW**.**	Unique, vendor-specific identifier of the firmware revision of the individual device.
24 (0x18)	Application Specific Tag	R/W	string	32	***	Possibility to mark a device with user- or application-specific information.
25 (0x19)	Function Tag	R/W	string	32	***	Possibility to mark a device with function-specific information.
26 (0x1A)	Location Tag	R/W	string	32	***	Possibility to mark a device with location-specific information.
27 (0x1B)	Product URI	R	string	100	https://hauber-elektronik.de	Vendor specific URI for additional information about the product.

4.2 Diagnosis Parameters

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Value	Unit	Description
36 (0x24)	Device Status	R	uint	8 bit		0 1 2 3 4		Indicator for the current device condition and diagnosis state. *Device is OK* *Maintenance required* *Out of Specification* *Functional check* *Failure*
37 (0x25)	**Detailed Device Status**	R	array [S0]	12 byte				List of all currently pending events in the device.
.1	Element 1		octetstr	3 byte	36	0		
.2	Element 2		octetstr	3 byte	24	0		
.3	Element 3		octetstr	3 byte	12	0		
.4	Element 4		octetstr	3 byte	0	0		
176 (0xB0)	**Device Characteristics**	R	record	6				Shows relevant key characteristics of the device for use in applications.
.1	Measurement Range		int16		32	0 .. 128 mm/s / 0 .. 14 g (peak)		Shows the maximum measurement range for vibration measurements as specified.
.2	Measurement Bandwidth		int16		16	0: 10 .. 1000 Hz		Shows the maximum frequency range for vibration measurements as specified.
.3	Supply Current Requirement		uint16		0	700	mA	Shows the maximum specified supply current for the device excluding load.
177 (0xB1)	**MDC1 Descriptor vRMS**	R	record	11				Descriptor for the characteristic of the measurement data channel 1 - vRMS.
.1	Lower Value		int32		56	0		Shows the lower value of measurement range.
.2	Upper Value		int32		24	12800		Shows the upper value of measurement range.
.3	Unit Code		uint16		8	1061		Shows the unique code for the physical unit.
.4	Scale		int8		0	-5		Shows the multiplier for measurement value - 10exp(scale).
178 (0xB2)	**MDC2 Descriptor aRMS**	R	record	11				Descriptor for the characteristic of the measurement data channel 2 - aRMS.
.1	Lower Value		int32		56	0		Shows the lower value of measurement range.
.2	Upper Value		int32		24	1400		Shows the upper value of measurement range.
.3	Unit Code		uint16		8	1089		Shows the unique code for the physical unit.
.4	Scale		int8		0	-2		Shows the multiplier for measurement value - 10exp(scale).

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Value	Unit	Description
179 (0xB3)	**MDC3 Descriptor aPeak**	R	record	11				Descriptor for the characteristic of the measurement data channel 3 - aPeak.
.1	Lower Value		int32		56	0		Shows the lower value of measurement range.
.2	Upper Value		int32		24	1400		Shows the upper value of measurement range.
.3	Unit Code		uint16		8	1089		Shows the unique code for the physical unit.
.4	Scale		int8		0	-2		Shows the multiplier for measurement value - 10exp(scale).
180 (0xB4)	**MDC4 Descriptor Temperature**	R	record	11				Descriptor for the characteristic of the measurement data channel 4 - Temperature.
.1	Lower Value		int32		56	-50		Shows the lower value of measurement range.
.2	Upper Value		int32		24	100		Shows the upper value of measurement range.
.3	Unit Code		uint16		8	1001		Shows the unique code for the physical unit.
.4	Scale		int8		0	0		Shows the multiplier for measurement value - 10exp(scale).
224 (0xE0)	**Operating hours**	R	uint32	4		0 .. 2^{32}-1	h	Shows the overall hours of operation since initial commissioning. (updated every 0.25h, resolution 1h)
225 (0xE1)	**Temperature Indicator**	R	uint8	1		0 1 2 3 4		Indicates the operation at critical ambient temperatures or excess of specification limits. *Operating condition OK* *Close to upper limit* *Upper limit exceeded* *Close to lower limit* *Lower limit exceeded*
226 (0xE2)	**Temperature Monitor**	R	record	9				Contains parameters showing current and past conditions of temperature exposure since initial commissioning.
.1	OVT Operating Hours		uint32		40	0 .. 2^{32}-1	h	Shows the overall hours of operation above the specified temperature range since initial commissioning. (updated every 0.25h, resolution 1h)
.2	OVT Exceeded Counter		uint16		24	0 .. 65535		Shows the number of number of transitions to operating temperatures above the specified temperature range since initial commissioning. (incremented on each OVT threshold transition, pos. slope only)
.3	Max. Temperature		int8		16	-50 .. +100	°C	Shows the maximum observed temperature since initial commissioning. (resolution 1K)
.4	Min. Temperature		int8		8	-50 .. +100	°C	Shows the minimum observed temperature since initial commissioning. (resolution 1K)
.5	Operating Temperature		int8		0	-50 .. +100	°C	Shows the currently measured ambient temperature. (resolution 1K, tolerance +/-5K)
227 (0xE3)	**Power Monitor**	R	record	12				Contains parameters showing current and past conditions of power cycles since initial commissioning.
.1	Power Cycles		uint32		96	0 .. 2^{32}-1		Shows the number of power cycles since initial commissioning. (incremented on power-on)
.2	Maximum Uptime		uint32		64	0 .. 2^{32}-1	s	Shows the maximum observed powered operating time between power cycles in seconds since initial commissioning. (updated every 0.25 hours, resolution 1 second)
.3	Average Uptime		uint32		32	0 .. 2^{32}-1	s	Shows the average observed powered operating time between power cycles in seconds since initial commissioning. (updated every 0.25 hours, resolution 1 second)
.4	Uptime		uint32		0	0 .. 2^{32}-1	s	Shows the current operating time since the last power cycle in seconds. (resolution 1 second)

4.3 Maintenance Functions

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Default	Value	Unit	Description
208 (0xD0)	**Maintenance Config vRMS**	R/W	record	8					
.1	Overrun Threshold		int32		32	0	0: Disabled 1 .. 12800	0.01 mm/s	Defines the threshold for triggering of vRMS maintenance monitoring.
.2	Incident Count Limit		uint16		16	0	0: Disabled 1 .. 100000		Defines the limit for the number of transitions above the 'Overrun Threshold'. The according maintenance alarm will be set, if this limit is exceeded.
.3	Incident Operating Limit		uint16		0		0: Disabled 1 .. 10000	h	Defines the limit for the accumulated operating time in hours above the 'Overrun Threshold'. The according maintenance alarm will be set, if this limit is exceeded.
209 (0xD1)	**Maintenance Config aRMS**	R/W	record	8					
.1	Overrun Threshold		int32		32	0	0: Disabled 1 .. 1400	0.01 g	Defines the threshold for triggering of aRMS maintenance monitoring.
.2	Incident Count Limit		uint16		16	0	0: Disabled 1 .. 100000		Defines the limit for the number of transitions above the 'Overrun Threshold'. The according maintenance alarm will be set, if this limit is exceeded.
.3	Incident Operating Limit		uint16		0		0: Disabled 1 .. 10000	h	Defines the limit for the accumulated operating time in hours above the 'Overrun Threshold'. The according maintenance alarm will be set, if this limit is exceeded.
210 (0xD2)	**Maintenance Config aPeak**	R/W	record	8					
.1	Overrun Threshold		int32		32	0	0: Disabled 1 .. 1400	0.01 g	Defines the threshold for triggering of aPeak maintenance monitoring.
.2	Incident Count Limit		uint16		16	0	0: Disabled 1 .. 100000		Defines the limit for the number of transitions above the 'Overrun Threshold'. The according maintenance alarm will be set, if this limit is exceeded.
.3	Incident Operating Limit		uint16		0		0: Disabled 1 .. 10000	h	Defines the limit for the accumulated operating time in hours above the 'Overrun Threshold'. The according maintenance alarm will be set, if this limit is exceeded.
211 (0xD3)	**Maintenance Config Temperature**	R/W	record	8					
.1	Overrun Threshold		int32		32	0	0: Disabled 1 .. 100	°C	Defines the threshold for triggering of temperature maintenance monitoring.
.2	Incident Count Limit		uint16		16	0	0: Disabled 1 .. 100000		Defines the limit for the number of transitions above the 'Overrun Threshold'. The according maintenance alarm will be set, if this limit is exceeded.
.3	Incident Operating Limit		uint16		0	0	0: Disabled 1 .. 10000	h	Defines the limit for the accumulated operating time in hours above the 'Overrun Threshold'. The according maintenance alarm will be set, if this limit is exceeded.
213 (0xD5)	**Maintenance Config Operating Time**	R/W	uint16	2		0		h	Defines the limit for the accumulated operating time for a planned maintenance cycle in hours. The according maintenance alarm will be set, if this limit is exceeded.
216 (0xD8)	**Maintenance Monitor vRMS**	R	record	6					
.1	Overrun Time		uint32		16		0 .. 2^{32}-1	h	Shows the accumulated operating time in hours of operation above the configured threshold since the last maintenance reset. (updated every 0.25h, resolution 1h)
.2	Overrun Count		uint16		0		0 .. 65535		Shows the number of transitions above the configured threshold since the last maintenance reset. (no overflow)
217 (0xD9)	**Maintenance Monitor aRMS**	R	record	6					
.1	Overrun Time		uint32		16		0 .. 2^{32}-1	h	Shows the accumulated operating time in hours of operation above the configured threshold since the last maintenance reset. (updated every 0.25h, resolution 1h)
.2	Overrun Count		uint16		0		0 .. 65535		Shows the number of transitions above the configured threshold since the last maintenance reset. (no overflow)
218 (0xDA)	**Maintenance Monitor aPeak**	R	record	6					
.1	Overrun Time		uint32		16		0 .. 2^{32}-1	h	Shows the accumulated operating time in hours of operation above the configured threshold since the last maintenance reset. (updated every 0.25h, resolution 1h)
.2	Overrun Count		uint16		0		0 .. 65535		Shows the number of transitions above the configured threshold since the last maintenance reset. (no overflow)

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Default	Value	Unit	Description
219 (0xDB)	**Maintenance Monitor Temperature**	R	record	6					
.1	Overrun Time		uint32		16		0 .. 2^{32}-1	h	Shows the accumulated operating time in hours of operation above the configured threshold since the last maintenance reset. (updated every 0.25h, resolution 1h)
.2	Overrun Count		uint16		0		0 .. 65535		Shows the number of transitions above the configured threshold since the last maintenance reset. (no overflow)
221 (0xDD)	**Time Since Maintenance**	R	uint32	4			0 .. 2^{32}-1	h	Shows the time in powered operation since the last maintenance reset. (updated every 0.25h, resolution 1h, backward counting, no underflow)
223 (0xDF)	**Maintenance Status Diag**	R	record	2					Shows if which Incident Limit is exceeded.
.1	vRMS Exceeded Time Alarm		bool		0	0	0: Inactive 1: Active		Shows if vRMS Incident Operating Limit is exceeded.
.2	vRMS Exceeded Count Alarm		bool		1	0	0: Inactive 1: Active		Shows if vRMS Incident Count Limit is exceeded.
.3	aRMS Exceeded Time Alarm		bool		2	0	0: Inactive 1: Active		Shows if aRMS Incident Operating Limit is exceeded.
.4	aRMS Exceeded Count Alarm		bool		3	0	0: Inactive 1: Active		Shows if aRMS Incident Count Limit is exceeded.
.5	aPeak Exceeded Time Alarm		bool		4	0	0: Inactive 1: Active		Shows if aPeak Incident Operating Limit is exceeded.
.6	aPeak Exceeded Count Alarm		bool		5	0	0: Inactive 1: Active		Shows if aPeak Incident Count Limit is exceeded.
.7	Temperature Exceeded Time Alarm		bool		6	0	0: Inactive 1: Active		Shows if Temperature Incident Operating Limit is exceeded.
.8	Temperature Exceeded Count Alarm		bool		7	0	0: Inactive 1: Active		Shows if Temperature Incident Count Limit is exceeded.
.16	Maintenance Cycle Exceeded Alarm		bool		15	0	0: Inactive 1: Active		Shows if operating time for a planned maintenance cycle Incident Limit is exceeded.

4.4 Observation

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Default	Value	Unit	Description
236 (0xEC)	**Observation Data**	R	record	23					Provides a set of relevant data suitable for observation purposes.
.1	Measurement Value - vRMS		int16		168			0.01 mm/s	Indicates the current measurement value of measurement data channel 1 - vRMS.
.2	SSC1.1		uint8		160				Indicates the current status of the switching signal 1.1
							0 1		*Low* *High*
.3	SSC1.2		uint8		152				Indicates the current status of the switching signal 1.2
							0 1		*Low* *High*
.4	Measurement Value - aRMS		int16		136			0.01 g	Indicates the current measurement value of measurement data channel 2 - aRMS.
.5	SSC2.1		uint8		128				Indicates the current status of the switching signal 2.1
							0 1		*Low* *High*
.6	SSC2.2		uint8		120				Indicates the current status of the switching signal 2.2
							0 1		*Low* *High*
.7	Measurement Value - aPeak		int16		104			0.01 g	Indicates the current measurement value of measurement data channel 3 – aPeak
.8	SSC3.1		uint8		96				Indicates the current status of the switching signal 3.1
							0 1		*Low* *High*
.9	SSC3.2		uint8		88				Indicates the current status of the switching signal 3.2
							0 1		*Low* *High*
.10	Measurement Value - Temperature		int16		72			°C	Indicates the current measurement value of measurement data channel 4 – Temperature
.11	SSC4.1		uint8		64				Indicates the current status of the switching signal 4.1
							0 1		*Low* *High*
.12	SSC4.2		uint8		56				Indicates the current status of the switching signal 4.2
							0 1		*Low* *High*
.13	Maintenance Warning		uint8		48				Indicates that at least one of the configured maintenance limits has been exceeded.
							0 1		*Low* *High*
254 (0xFE)	**Test Incident Index**	R/W	uint8	1		0			1s/50ms rule applies see events -> Test events
							0 1 2 3 4 5		*All incidents inactive* *Warning incident 1 active, 2 no change* *Warning incident 1 inactive, 2 no change* *Error incident 2 active, 1 no change* *Error incident 2 inactive, 1 no change* *Warning incident 1 + Error incident 2 active*

4.5 Configuration Parameters

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Default	Value	Unit	Description
64 (0x40)	**SSC1.1 Param vRMS**	R/W	record	8					Defines the setpoint values for switching signal channel 1 for the vRMS measurement channel.
.1	SP1		int32		32	0	0 .. 12800	0.01 mm/s	Defines the setpoint 1 value for the switching signal channel.
.2	SP2		int32		0	0	0 .. 12800	0.01 mm/s	Defines the setpoint 2 value for the switching signal channel.
65 (0x41)	**SSC1.1 Config vRMS**	R/W	record	6					Defines the configuration parameter for switching signal channel 1 for the vRMS measurement channel.
.1	Logic		uint8		40	0			Defines the logical representation of the switching signal SSC in the process data.
							0		*High active*
							1		*Low active*
.2	Mode		uint8		32	0			Defines the evaluation mode for the switching signal SSC.
							0		*Deactivated (constant)*
							1		*Single point*
							2		*Window*
.3	Hyst		int32		0	0			Defines the hysteresis at the switchpoint. The hysteresis is internally fixed to 2% of the setpoint setting.
							0		*Fix*
66 (0x42)	**SSC1.2 Param vRMS**	R/W	record	8					Defines the setpoint values for switching signal channel 2 for the vRMS measurement channel.
.1	SP1		int32		32	0	0 .. 12800	0.01 mm/s	Defines the setpoint 1 value for the switching signal channel.
.2	SP2		int32		0	0	0 .. 12800	0.01 mm/s	Defines the setpoint 2 value for the switching signal channel.
67 (0x43)	**SSC1.2 Config vRMS**	R/W	record	6					Defines the configuration parameter for switching signal channel 2 for the vRMS measurement channel.
.1	Logic		uint8		40	0			Defines the logical representation of the switching signal SSC in the process data.
							0		*High active*
							1		*Low active*
.2	Mode		uint8		32	0			Defines the evaluation mode for the switching signal SSC.
							0		*Deactivated (constant)*
							1		*Single point*
							2		*Window*
.3	Hyst		int32		0	0			Defines the hysteresis at the switchpoint. The hysteresis is internally fixed to 2% of the setpoint setting.
							0		*Fix*
68 (0x44)	**SSC2.1 Param aRMS**	R/W	record	8					Defines the setpoint values for switching signal channel 1 for the aRMS measurement channel.
.1	SP1		int32		32	0	0 .. 1400	0.01 g	Defines the setpoint 1 value for the switching signal channel.
.2	SP2		int32		0	0	0 .. 1400	0.01 g	Defines the setpoint 2 value for the switching signal channel.
69 (0x45)	**SSC2.1 Config aRMS**	R/W	record	6					Defines the configuration parameter for switching signal channel 1 for the aRMS measurement channel.
.1	Logic		uint8		40	0			Defines the logical representation of the switching signal SSC in the process data.
							0		*High active*
							1		*Low active*
.2	Mode		uint8		32	0			Defines the evaluation mode for the switching signal SSC.
							0		*Deactivated (constant)*
							1		*Single point*
							2		*Window*
.3	Hyst		int32		0	0			Defines the hysteresis at the switchpoint. The hysteresis is internally fixed to 2% of the setpoint setting.
							0		*Fix*
70 (0x46)	**SSC2.2 Param aRMS**	R/W	record	8					Defines the setpoint values for switching signal channel 2 for the aRMS measurement channel.
.1	SP1		int32		32	0	0 .. 1400	0.01 g	Defines the setpoint 1 value for the switching signal channel.
.2	SP2		int32		0	0	0 .. 1400	0.01 g	Defines the setpoint 2 value for the switching signal channel.

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Default	Value	Unit	Description
71 (0x47)	**SSC2.2 Config aRMS**	R/W	record	6					Defines the configuration parameter for switching signal channel 2 for the aRMS measurement channel.
.1	Logic		uint8		40	0			Defines the logical representation of the switching signal SSC in the process data.
							0		*High active*
							1		*Low active*
.2	Mode		uint8		32	0			Defines the evaluation mode for the switching signal SSC.
							0		*Deactivated (constant)*
							1		*Single point*
							2		*Window*
.3	Hyst		int32		0	0			Defines the hysteresis at the switchpoint. The hysteresis is internally fixed to 2% of the setpoint setting.
							0		*Fix*
72 (0x48)	**SSC3.1 Param aPeak**	R/W	record	8					Defines the setpoint values for switching signal channel 1 for the aPeak measurement channel.
.1	SP1		int32		32	0	0 .. 1400	0.01 g	Defines the setpoint 1 value for the switching signal channel.
.2	SP2		int32		0	0	0 .. 1400	0.01 g	Defines the setpoint 2 value for the switching signal channel.
73 (0x49)	**SSC3.1 Config aPeak**	R/W	record	6					Defines the configuration parameter for switching signal channel 1 for the aPeak measurement channel.
.1	Logic		uint8		40	0			Defines the logical representation of the switching signal SSC in the process data.
							0		*High active*
							1		*Low active*
.2	Mode		uint8		32	0			Defines the evaluation mode for the switching signal SSC.
							0		*Deactivated (constant)*
							1		*Single point*
							2		*Window*
.3	Hyst		int32		0	0			Defines the hysteresis at the switchpoint. The hysteresis is internally fixed to 2% of the setpoint setting.
							0		*Fix*
74 (0x4A)	**SSC3.2 Param aPeak**	R/W	record	8					Defines the setpoint values for switching signal channel 2 for the aPeak measurement channel.
.1	SP1		int32		32	0	0 .. 1400	0.01 g	Defines the setpoint 1 value for the switching signal channel.
.2	SP2		int32		0	0	0 .. 1400	0.01 g	Defines the setpoint 2 value for the switching signal channel.
75 (0x4B)	**SSC3.2 Config aPeak**	R/W	record	6					Defines the configuration parameter for switching signal channel 2 for the aPeak measurement channel.
.1	Logic		uint8		40	0			Defines the logical representation of the switching signal SSC in the process data.
							0		*High active*
							1		*Low active*
.2	Mode		uint8		32	0			Defines the evaluation mode for the switching signal SSC.
							0		*Deactivated (constant)*
							1		*Single point*
							2		*Window*
.3	Hyst		int32		0	0			Defines the hysteresis at the switchpoint. The hysteresis is internally fixed to 2% of the setpoint setting.
							0		*Fix*
76 (0x4C)	**SSC4.1 Param Temperature**	R/W	record	8					Defines the setpoint values for switching signal channel 1 for the temperature measurement channel.
.1	SP1		int32		32	50	-50 .. 100	°C	Defines the setpoint 1 value for the switching signal channel.
.2	SP2		int32		0	80	-50 .. 100	°C	Defines the setpoint 2 value for the switching signal channel.
77 (0x4D)	**SSC4.1 Config Temperature**	R/W	record	6					Defines the configuration parameter for switching signal channel 1 for the temperature measurement channel.
.1	Logic		uint8		40	0			Defines the logical representation of the switching signal SSC in the process data.
							0		*High active*
							1		*Low active*
.2	Mode		uint8		32	0			Defines the evaluation mode for the switching signal SSC.
							0		*Deactivated (constant)*
							1		*Single point*
							2		*Window*
.3	Hyst		int32		0	0	0 .. 20	K	Defines the hysteresis at the switchpoint.

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Default	Value	Unit	Description
78 (0x4E)	**SSC4.2 Param Temperature**	R/W	record	8					Defines the setpoint values for switching signal channel 2 for the temperature measurement channel.
.1	SP1		int32		32	50	-50 .. 100	°C	Defines the setpoint 1 value for the switching signal channel.
.2	SP2		int32		0	80	-50 .. 100	°C	Defines the setpoint 2 value for the switching signal channel.
79 (0x4F)	**SSC4.2 Config Temperature**	R/W	record	6					Defines the configuration parameter for switching signal channel 2 for the temperature measurement channel.
.1	Logic		uint8		40	0	0 1		Defines the logical representation of the switching signal SSC in the process data. *High active* *Low active*
.2	Mode		uint8		32	0	0 1 2		Defines the evaluation mode for the switching signal SSC. *Deactivated (constant)* *Single point* *Window*
.3	Hyst		uint32		0	0	0 .. 20	K	Defines the hysteresis at the switchpoint.
84 (0x54)	**SSC1.1 Ext Config vRMS - Off Delay**	R/W	uint16	2	16	0	0: Disabled 1 .. 60000	ms	Defines the minimum duration of a stable inactive state of the vRMS detection signal on the switching signal channel 1. Shorter inactive signals will be suppressed.
85 (0x55)	**SSC1.2 Ext Config vRMS - Off Delay**	R/W	uint16	2	16	0	0: Disabled 1 .. 60000	ms	Defines the minimum duration of a stable inactive state of the vRMS detection signal on the switching signal channel 2. Shorter inactive signals will be suppressed.
86 (0x56)	**SSC2.1 Ext Config aRMS - Off Delay**	R/W	uint16	2	16	0	0: Disabled 1 .. 60000	ms	Defines the minimum duration of a stable inactive state of the aRMS detection signal on the switching signal channel 1. Shorter inactive signals will be suppressed.
87 (0x57)	**SSC2.2 Ext Config aRMS - Off Delay**	R/W	uint16	2	16	0	0: Disabled 1 .. 60000	ms	Defines the minimum duration of a stable inactive state of the aRMS detection signal on the switching signal channel 2. Shorter inactive signals will be suppressed.
88 (0x58)	**SSC3.1 Ext Config aPeak - Off Delay**	R/W	uint16	2	16	0	0: Disabled 1 .. 60000	ms	Defines the minimum duration of a stable inactive state of the aPeak detection signal on the switching signal channel 1. Shorter inactive signals will be suppressed.
89 (0x59)	**SSC3.2 Ext Config aPeak - Off Delay**	R/W	uint16	2	16	0	0: Disabled 1 .. 60000	ms	Defines the minimum duration of a stable inactive state of the aPeak detection signal on the switching signal channel 2. Shorter inactive signals will be suppressed.
90 (0x5A)	**SSC4.1 Ext Config Temperature - Off Delay**	R/W	uint16	2	16	0	0: Disabled 1 .. 60000	ms	Defines the minimum duration of a stable inactive state of the temperature detection signal on the switching signal channel 1. Shorter inactive signals will be suppressed.
91 (0x5B)	**SSC4.2 Ext Config Temperature - Off Delay**	R/W	uint16	2	16	0	0: Disabled 1 .. 60000	ms	Defines the minimum duration of a stable inactive state of the temperature detection signal on the switching signal channel 2. Shorter inactive signals will be suppressed.
96 (0x60)	**Filter Config**	R/W	uint8	1		0	0 1 2 3		Defines the filter bandwith for vibration signal evaluation. The filter has a 3rd order Butterworth characteristic according to DIN ISO 2954. *10 .. 1000 Hz* *10 .. 500 Hz* *10 .. 100 Hz* *10 .. 50 Hz*
112 (0x70)	**I/O Config - C/Q Function**	R/W	uint8	1		0	0 1 2 3 4 5 6 7 8		Defines the I/O function for C/Q (Pin 4) in SIO mode. *Inactive* *SSC1.1 - vRMS* *SSC1.2 - vRMS* *SSC2.1 - aRMS* *SSC2.2 - aRMS* *SSC3.1 - aPeak* *SSC3.2 - aPeak* *SSC4.1 - Temperature* *SSC4.2 - Temperature*
113 (0x71)	**I/O Config - I/Q Function**	R/W	uint8	1		0	0 1 2 3 4 5 6 7 8 11 12 13 14		Defines the I/O type and function for I/Q (Pin 2). *Inactive* *SSC1.1 - vRMS* *SSC1.2 - vRMS* *SSC2.1 - aRMS* *SSC2.2 - aRMS* *SSC3.1 - aPeak* *SSC3.2 - aPeak* *SSC4.1 - Temperature* *SSC4.2 - Temperature* *Analog 4 .. 20mA - vRMS* *Analog 4 .. 20mA - aRMS* *Analog 4 .. 20mA - aPeak* *Analog 4 .. 20mA - Temperature*
114 (0x72)	**AO Param vRMS - SP**	R/W	int32	1		12800	0 .. 12800	0.01 mm/s	Defines the upper limit of the vRMS measurement range for the analog output. The upper limit corresponds to the maximum analog output current (20 mA).

Index .sub	Parameter	Access	Data type	Length	Bit Offset	Default	Value	Unit	Description
115 (0x73)	**AO Param aRMS - SP**	R/W	int32	1		1400	0 .. 1400	0.01 g	Defines the upper limit of the aRMS measurement range for the analog output. The upper limit corresponds to the maximum analog output current (20 mA).
116 (0x74)	**AO Param aPeak - SP**	R/W	int32	1		1400	0 .. 1400	0.01 g	Defines the upper limit of the aPeak measurement range for the analog output. The upper limit corresponds to the maximum analog output current (20 mA).
117 (0x75)	**AO Param Temperature**	R/W	record	8					Defines the limits of the temperature measurement range for the analog output.
.1	SP1		int32		32	-40	-50 .. 100	°C	Defines one limit of the temperature measurement range for the analog output. The lower value of SP1 Or SP2 corresponds to the minimum analog output current (4 mA), the highest value to the highest current (20 mA).
.2	SP2		int32		0	80	-50 .. 100	°C	Defines one limit of the temperature measurement range for the analog output. The lower value of SP1 Or SP2 corresponds to the minimum analog output current (4 mA), the highest value to the highest current (20 mA).
120 (0x78)	**Event Config**	R/W	record	2					See table Event Codes
.1	Warning - Maintenance Diagnosis		bool		0	0	0: Disabled 1: Enabled		Enabled: an event is triggered if one of the maintenance alarms gets active. (Event code 0x8D01)

5 Command Interface

Index	Parameter	Access	Data type	Length	Value	Description
2 (0x02)	System Command	W	uint	8 bit	See command value	Command interface for applications. A positive acknowledge indicates the complete and correct finalization of the requested function.

Command Value	Command	Description
129 (0x81)	Application Reset	The parameters of the technology-specific application are set to default values. Identification parameters remain unchanged. An upload to the data storage of the master will be executed, if activated in the port configuration of the master.
131 (0x83)	Back-To-Box	The parameters of the device are set to factory default values and communication will be inhibited until the next power cycle. Note: Immediately detach the device from the master port!
176 (0xB0)	Maintenance Reset	Reset the maintenance status and maintenance monitor data.

6 Error Codes

Event code	Additional Code	Error Type	Comment
128 (0x80)	17 (0x11)	**Index not available**	R/W access to not implemented parameter index
128 (0x80)	18 (0x12)	**Subindex not available**	R/W access to not implemented parameter subindex
128 (0x80)	32 (0x20)	**Service temporarily not available**	Access to parameter not possible due to device state
128 (0x80)	33 (0x21)	**Service temporarily not available, local control**	Access to parameter inhibited due to local operation
128 (0x80)	34 (0x22)	**Service temporarily not available, device control**	Access to parameter inhibited due to wrong device state
128 (0x80)	35 (0x23)	**Access denied**	Write access to Read-only parameter
128 (0x80)	48 (0x30)	**Parameter value out of range**	Used for all R/W parameters, if value other than listed
128 (0x80)	49 (0x31)	**Parameter value above limit**	Used for all R/W parameters, if value above value range
128 (0x80)	50 (0x32)	**Parameter value below limit**	Used for all R/W parameters, if value below value range
128 (0x80)	51 (0x33)	**Parameter length overrun**	Used for all R/W parameters, if parameter length exceeded
128 (0x80)	52 (0x34)	**Parameter length underrun**	Used for all R/W parameters, if parameter length too small
128 (0x80)	53 (0x35)	**Function not available**	Access to command, which is not supported
128 (0x80)	54 (0x36)	**Function temporarily not available**	Access to command, which is not available due to device state
128 (0x80)	64 (0x40)	**Invalid parameter set**	Collision with other parameters at single parameter transfer
128 (0x80)	65 (0x41)	**Inconsistent parameter set**	Interfering parameters at block parameter transfer

7 Event Codes

Event Code	Event	Type	Description
Standard Application Events			
25376 (0x6320)	**Parameter error**	Error	internal parameter set corrupted - reset or exchange device
20496 (0x5010)	**Hardware error**	Error	non recoverable hardware misbehaviour - exchange device
HAUBER specific Application Events			
36097 (0x8D01)	**Maintenance request**	Warning	The limit for a configured maintenance cycle has been reached. - Check sensor and execute required maintenance actions.
36161 (0x8D41)	**No Measurement Data**	Warning	The sensor element is in saturation. Measurement is not possible. - check sensor environment for excessive vibrations
36163 (0x8D43)	**Temperature range exceeded**	Warning	The ambient temperature is outside the specified temperature range - check sensor environment