

Interface Protocol

OH33-LRML-TI-G3-2C (214891), OH33-LRML-TI-G3-T4 (214892), OH34-LRML-TI-G3-T4 (214904)



Vendor: di-soric GmbH & Co. KG

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Vendor ID

Vendor Name	Hex	Dec
di-soric GmbH & Co. KG	0x0221	545

Product ID

Product	Product ID	DeviceID hex	DeviceID dec
OH33-LRML-TI-G3-2C	214891	0x000138	312
OH33-LRML-TI-G3-T4	214892	0x000138	312
OH34-LRML-TI-G3-T4	214904	0x000138	312

Identification

Parameter Description	Index dec	Index hex	R/W	Value	Datatype
Vendor name	16	0x0010	RO	di-soric GmbH & Co. KG	StringT
Vendor text	17	0x0011	RO	SOLUTIONS. CLEVER. PRACTICAL.	StringT
Product name	18	0x0012	RO	OH33-LRML-TI-G3-2C	StringT
Product ID	19	0x0013	RO	214891	StringT
Product text	20	0x0014	RO		StringT
Firmware version	23	0x0017	RO		StringT
Application specific tag	24	0x0018	RW		StringT

Features

Feature	Value
IO-Link Revision	1.1
Data Storage ("DS")	Yes
Block Parameter	Yes
Min. Cycle Time	5 ms
Transmission Rate	38,4 kbit/s (COM2)
Process Data Input (Device to Master)	4 Byte
Process Data Output (Master to Device)	N/A

Profile IDs

Device Profile				
ProfileID hex	ProfileID dec	Name short	Name long	Type Reference
0x0010	16	DMSS	Measuring and Switching Sensor, 1 channel	SSP 4.1.1 Smart Sensor
Common Application Profile				
ProfileID hex	ProfileID dec	Name short	Name long	Type Reference
0x4000	16384	I&D	Identification & Diagnosis	Common Profile
0x8101	33025	Locator	Locator	Common Profile
Function Class				

ProfileID hex	ProfileID dec	Name short	Name long	Type Reference
0x8013	32787	Object detection	Object detection Smart Sensor	Smart Sensor
0x8016	32790	Window Teach	Multi Teach Window Smart Sensor	Smart Sensor

Process Data Input (Device to Master)

Subindex	Name	Offset	Length	Range	Datatype
1	MDC	16	16 bit	0...6000 mm	IntegerT (16)
2	MDC - Scale	8	8 bit		IntegerT (8)
3	SSC.1	0	1 bit	false=Low true=High	BooleanT
4	SSC.2	1	1 bit	false=Low true=High	BooleanT

Oc tet	0								1								2								3							
Bit Of fs et	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Su bi nd ex	1								2								2														4	3
	MDC								MDC - Scale								MDC - Scale														SSC.2	SSC.1

Process Data Output (Master to Device)

Subindex	Name	Offset	Length	Range	Datatype
N/A					

Parameter

Variable id	Name	index	subindex	Access Rights	defaultValue	Value Range	Description	Datatype	Data Storage
V_DirectParameters_1	Reserved	0 (0x0000)	1 (0x01)	RW				UIntegerT (8)	X
V_DirectParam	Master Cycle	0 (0x0000)	2 (0x02)	RW			Communic	UIntegerT (8)	X

eters_1	Time						ation: Current communica tion cycle duration used by the master. This value defines the process data cycle.		
V_DirectParam eters_1	Min Cycle Time	0 (0x0000)	3 (0x03)	RW			Communic ation: Minimum communica tion cycle duration supported by the device. This value defines the lowest possible process data cycle.	UIntegerT (8)	X
V_DirectParam eters_1	M-Sequence Capability	0 (0x0000)	4 (0x04)	RW			Communic ation: Information on the structure and the supported features of the communica tion messages.	UIntegerT (8)	X
V_DirectParam eters_1	IO-Link Revision ID	0 (0x0000)	5 (0x05)	RW			Communic ation: Identifier for the	UIntegerT (8)	X

							currently used communication protocol revision.		
V_DirectParameters_1	Process Data Input Length	0 (0x0000)	6 (0x06)	RW			Communication: Information on width and features of the process input data (Process Data from Device to Master).	UIntegerT (8)	X
V_DirectParameters_1	Process Data Output Length	0 (0x0000)	7 (0x07)	RW			Communication: Information on width of the process output data (Process Data from Master to Device).	UIntegerT (8)	X
V_DirectParameters_1	Vendor ID 1	0 (0x0000)	8 (0x08)	RW			Identification: Highest octet of the Vendor ID. Combined with the parameter Vendor ID 2, this parameter defines the 16-bit	UIntegerT (8)	X

							value of the unique Vendor ID as assigned by the IO-Link Community .		
V_DirectParameters_1	Vendor ID 2	0 (0x0000)	9 (0x09)	RW			Identification: Lowest octet of the Vendor ID. Combined with the parameter Vendor ID 1, this parameter defines the 16-bit value of the unique Vendor ID as assigned by the IO-Link Community .	UIntegerT (8)	X
V_DirectParameters_1	Device ID 1	0 (0x0000)	10 (0x0A)	RW			Identification: Highest octet of the Device ID. Combined with the parameters Device ID 2 and 3, this parameter defines the	UIntegerT (8)	X

							24-bit value of the vendor-specific Device ID.		
V_DirectParameters_1	Device ID 2	0 (0x0000)	11 (0x0B)	RW			Identification: Middle octet of the Device ID. Combined with the parameters Device ID 1 and 3, this parameter defines the 24-bit value of the vendor-specific Device ID.	UIntegerT (8)	X
V_DirectParameters_1	Device ID 3	0 (0x0000)	12 (0x0C)	RW			Identification: Lowest octet of the Device ID. Combined with the parameters Device ID 1 and 2, this parameter defines the 24-bit value of the vendor-specific Device ID.	UIntegerT (8)	X
V_DirectParameters_1	Reserved	0 (0x0000)	13 (0x0D)	RW				UIntegerT (8)	X
V_DirectParam	Reserved	0 (0x0000)	14 (0x0E)	RW				UIntegerT (8)	X

eters_1									
V_DirectParameters_1	Reserved	0 (0x0000)	15 (0x0F)	RW				UIntegerT (8)	X
V_DirectParameters_1	System Command	0 (0x0000)	16 (0x10)	RW			Application : Command interface for devices without ISDU support. Validity and execution of commands are not confirmed.		X
V_SystemCommand	System Command	2 (0x0002)	0 (0x00)	WO			Command interface for applications. A positive acknowledge indicates the complete and correct finalization of the requested function.		X
V_DeviceAccessLocks	Parameter Write Access	12 (0x000C)	1 (0x01)	RW			This lock prevents the write access to all read/write parameters of the		X

							device except for the parameter 'Device Access Locks'.		
V_DeviceAccessLocks	Data Storage	12 (0x000C)	2 (0x02)	RW			This lock prevents the write access to the device parameters via the data storage mechanism.		X
V_DeviceAccessLocks	Local Parameterization	12 (0x000C)	3 (0x03)	RW			This lock prevents the device settings from being changed via local operating elements on the device.		X
V_DeviceAccessLocks	Local User Interface	12 (0x000C)	4 (0x04)	RW			This lock prevents the access to the device settings and display via a local user interface. The user interface is disabled.		X

V_VendorName	Vendor Name	16 (0x0010)	0 (0x00)	RO	di-soric GmbH & Co. KG		The vendor name that is assigned to a Vendor ID.	StringT (64)	X
V_VendorText	Vendor Text	17 (0x0011)	0 (0x00)	RO	SOLUTIONS. CLEVER. PRACTICAL.		Additional information about the vendor.	StringT (64)	X
V_ProductID	Product ID	19 (0x0013)	0 (0x00)	RO			Vendor-specific product or type identification (e.g., item number or model number).	StringT (64)	X
V_ProductName	Product Name	18 (0x0012)	0 (0x00)	RO			Complete product name.	StringT (64)	X
V_ProductText	Product Text	20 (0x0014)	0 (0x00)	RO			Additional product information for the device.	StringT (64)	X
V_SerialNumber	Serial Number	21 (0x0015)	0 (0x00)	RO			Unique, vendor-specific identifier of the individual device.	StringT (16)	X
V_HardwareRevision	Hardware Revision	22 (0x0016)	0 (0x00)	RO			Unique, vendor-specific identifier of the hardware revision of the	StringT (64)	X

							individual device.		
V_FirmwareRevision	Firmware Revision	23 (0x0017)	0 (0x00)	RO			Unique, vendor-specific identifier of the firmware revision of the individual device.	StringT (64)	X
V_ApplicationSpecificTag	Application-specific Tag	24 (0x0018)	0 (0x00)	RW	***		Possibility to mark a device with user- or application-specific information.	StringT (32)	X
V_ErrorCount	Error Count	32 (0x0020)	0 (0x00)	RO			Number of errors that occurred in the technology-specific application since power on or restart.	UIntegerT (16)	X
V_DeviceStatus	Device Status	36 (0x0024)	0 (0x00)	RO		0=Device is OK 1=Maintenance required 2=Out of specification 3=Functional check 4=Failure	Indicator for the current device condition and diagnosis state.	UIntegerT (8)	X
V_DetailedDeviceStatus	Detailed Device Status	37 (0x0025)	0 (0x00)	RO			List of all currently pending events in	ArrayT (64)	X

							the device.		
V_CP_FunctionTag	Function Tag	25 (0x0019)	0 (0x00)	RW	***		Possibility to mark a device with function-specific information.	StringT (32)	X
V_CP_LocationTag	Location Tag	26 (0x001A)	0 (0x00)	RW	***		Possibility to mark a device with location-specific information.	StringT (32)	X
V_SSP_TI_TeachSelect	Teach Select	58 (0x003A)	0 (0x00)	RW	1	1=SSC.1 2=SSC.2	Selects the switching signal channel for which a teach procedure will be applied.	UIntegerT (8)	
V_SSP_TI_TeachResult	State	59 (0x003B)	1 (0x01)	RO	0	0=Idle 1=SP1 success 2=SP2 success 3=SP1, SP2 success 4=Wait for command 5=Busy 7=Error	Indicates the current state of the teach procedure.	UIntegerT (4)	X
V_SSP_TI_TeachResult	Flag SP1 TP1	59 (0x003B)	2 (0x02)	RO	false	false=Initial or not ok true=Ok	Indicates the current teach result for the teach point.	BooleanT	X
V_SSP_TI_TeachResult	Flag SP1 TP2	59 (0x003B)	3 (0x03)	RO	false	false=Initial or not ok true=Ok	Indicates the current teach result for the teach	BooleanT	X

V_SSP_TI_TeachResult	Flag SP2 TP1	59 (0x003B)	4 (0x04)	RO	false	false=Initial or not ok true=Ok	point. Indicates the current teach result for the teach point.	BooleanT	X
V_SSP_TI_TeachResult	Flag SP2 TP2	59 (0x003B)	5 (0x05)	RO	false	false=Initial or not ok true=Ok	Indicates the current teach result for the teach point.	BooleanT	X
V_SSP_SSC01_Param	SP1	60 (0x003C)	1 (0x01)	RW	6000		Defines the setpoint 1 value for the switching signal channel.	IntegerT (32)	X
V_SSP_SSC01_Param	SP2	60 (0x003C)	2 (0x02)	RW	200		Defines the setpoint 2 value for the switching signal channel.	IntegerT (32)	X
V_SSP_SSC01_Config	Logic	61 (0x003D)	1 (0x01)	RW	0	0=High active 1=Low active	Defines the logical representation of the switching signal SSC in the process data.	UIntegerT (8)	X
V_SSP_SSC01_Config	Mode	61 (0x003D)	2 (0x02)	RW	1	0=Deactivated 1=Single point 128=Foreground Suppression 2=Window 3=Two point	Defines the evaluation mode for the switching signal	UIntegerT (8)	X

V_SSP_SSC0 1_Config	Hysteresis	61 (0x003D)	3 (0x03)	RW	0	0=0	SSC. Defines the hysteresis at the switchpoint . A higher hysteresis may help to increase stability in critical applications.	IntegerT (32)	X
V_SSP_SSC0 2_Param	SP1	62 (0x003E)	1 (0x01)	RW	6000		Defines the setpoint 1 value for the switching signal channel.	IntegerT (32)	X
V_SSP_SSC0 2_Param	SP2	62 (0x003E)	2 (0x02)	RW	200		Defines the setpoint 2 value for the switching signal channel.	IntegerT (32)	X
V_SSP_SSC0 2_Config	Logic	63 (0x003F)	1 (0x01)	RW	0	0=High active 1=Low active	Defines the logical representation of the switching signal SSC in the process data.	UIntegerT (8)	X
V_SSP_SSC0 2_Config	Mode	63 (0x003F)	2 (0x02)	RW	0	0=Deactivated 1=Single point 128=Foreground Suppression 2=Window 3=Two point	Defines the evaluation mode for the switching signal	UIntegerT (8)	X

V_SSP_SSC0 2_Config	Hysteresis	63 (0x003F)	3 (0x03)	RW	0	0=0	SSC. Defines the hysteresis at the switchpoint . A higher hysteresis may help to increase stability in critical applications.	IntegerT (32)	X
V_SSC11_DS	SSC.1 Delay Time	66 (0x0042)	0 (0x00)	RW	0	0...10000	Defines the delay time for the switching signal of signal channel 1	UIntegerT (16)	X
V_SSC12_DS	SSC.2 Delay Time	67 (0x0043)	0 (0x00)	RW	0	0...10000	Defines the delay time for the switching signal of signal channel 2	UIntegerT (16)	X
V_SO1_DELA Y_CTRL	SSC.1 Delay Control	68 (0x0044)	0 (0x00)	RW	0	0=Disabled Timer 1=T-on delay 2=T-off delay 3=T-on/T-off delay	SSC.1 Delay Control [disabled, Ton, Toff, Ton/Toff].	UIntegerT (8)	X
V_SO2_DELA Y_CTRL	SSC.2 Delay Control	69 (0x0045)	0 (0x00)	RW	0	0=Disabled Timer 1=T-on delay 2=T-off delay 3=T-on/T-off delay	SSC.2 Delay Control [disabled, Ton, Toff, Ton/Toff].	UIntegerT (8)	X
V_OutputMode inSIOMode	Switching Output (Pin 4)	70 (0x0046)	0 (0x00)	RW	0	0=SSC.1 PP 1=SSC.1 NPN 2=SSC.1 PNP	polarity of the switching	UIntegerT (8)	X

						3=SSC.2 PP 4=SSC.2 NPN 5=SSC.2 PNP	output		
V_OutputMode	Multi I/O (Pin 2)	71 (0x0047)	0 (0x00)	RW	1	0=Deactivated 1=Teach High active 2=Teach Low active 3=SSC.1 PP 4=SSC.1 NPN 5=SSC.1 PNP 6=SSC.2 PP 7=SSC.2 NPN 8=SSC.2 PNP	Operation mode for Multi I/O (Pin 2)	UIntegerT (8)	X
V_SensorPresets	Sensor Mode	72 (0x0048)	0 (0x00)	RW	0	0=Precision (Factory Setting) 1=High Functional Reliability 2=Speed		UIntegerT (8)	X
V_DD_OutputModeinSIOMode	Switching Output (Pin 4)	73 (0x0049)	0 (0x00)	RW	0	0=Deviation Detection PP High active 1=Deviation Detection NPN High active 2=Deviation Detection PNP High active 3=Deviation Detection PP Low active 4=Deviation Detection NPN Low active 5=Deviation Detection PNP Low active	polarity of the switching output	UIntegerT (8)	X
V_DD_OutputMode	Multi I/O (Pin 2)	74 (0x004A)	0 (0x00)	RW	1	0=Deactivated 1=Teach-In Deviation Detection Mode High active 2=Teach-In Deviation Detection Mode Low active	Operation mode for Multi I/O (Pin 2)	UIntegerT (8)	X

						3=Deviation Detection PP High active 4=Deviation Detection NPN High active 5=Deviation Detection PNP High active 6=Deviation Detection PP Low active 7=Deviation Detection NPN Low active 8=Deviation Detection PNP Low active			
V_interference _protection	Anti Crosstalk	78 (0x004E)	0 (0x00)	RW	0	0=Off 1=1 Sensor mode 2=2 Sensor mode - Sensor 1 3=2 Sensor mode - Sensor 2 4=3 Sensor mode - Sensor 1 5=3 Sensor mode - Sensor 2 6=3 Sensor mode - Sensor 3		UIntegerT (8)	X
V_Switchcount erSSC11	Switch Counter SSC.1	85 (0x0055)	0 (0x00)	RO			Number of switching after power-up or reset for switching signal channel 1 of sensor 1	UIntegerT (32)	X
V_Temperatur e	Temperature	87 (0x0057)	0 (0x00)	RO			Sensor temperatur e	IntegerT (16)	X

V_Special_Func_Selector	Deviation Detection Mode (DD-Mode)	88 (0x0058)	0 (0x00)	RW	0	0=Off 1=On		UIntegerT (8)	X
V_OperatingTime	Operating hours	93 (0x005D)	0 (0x00)	RO			duration of duty	UIntegerT (32)	X
V_StartUps	Count Of System Start-ups	94 (0x005E)	0 (0x00)	RO			count of system start-ups	UIntegerT (32)	X
V_Temperature_Max	Maximum Temperature	96 (0x0060)	0 (0x00)	RO			maximum temperature in use	IntegerT (16)	X
V_Temperature_Min	Minimum Temperature	97 (0x0061)	0 (0x00)	RO			minimum temperature in use	IntegerT (16)	X
V_DD_Setup	Teach Distance	98 (0x0062)	1 (0x01)	RW	6000	20...6500		UIntegerT (32)	X
V_DD_Setup	Teach Excess Gain	98 (0x0062)	2 (0x02)	RW	2000	0...65535		UIntegerT (32)	X
V_DD_Setup	Setpoint	98 (0x0062)	3 (0x03)	RW	75	0...100		UIntegerT (8)	X
V_DD_Setup	Hysteresis	98 (0x0062)	4 (0x04)	RW	10	0...100		UIntegerT (8)	X
V_DD_Setup	Auto level	98 (0x0062)	5 (0x05)	RW	1	0=Auto level OFF 1=Auto level ON		UIntegerT (8)	X
V_DD_Result	Distance Match	99 (0x0063)	1 (0x01)	RO		0...100		UIntegerT (8)	X
V_DD_Result	Excess Gain Match	99 (0x0063)	2 (0x02)	RO		0...100		UIntegerT (8)	X
V_DD_Result	Match	99 (0x0063)	3 (0x03)	RO		0...100		UIntegerT (8)	X
V_DD_Result	Background Detected	99 (0x0063)	4 (0x04)	RO		0=No background detected 1=Background detected		UIntegerT (8)	X
V_QualityOfTeach	Quality of Teach	102 (0x0066)	0 (0x00)	RO	0	0...100		UIntegerT (8)	X
V_QualityOfRun	Quality of Run	103 (0x0067)	0 (0x00)	RO	0			UIntegerT (8)	X
V_Excess_Gain	Excess Gain	104 (0x0068)	0 (0x00)	RO				UIntegerT (32)	X
V_SSP_TI_TeachWindowSize	Teach window size	16511 (0x407F)	0 (0x00)	RW		0=Auto	Size of spacing between	IntegerT (32)	X

							SP1 and SP2 after successful teach		
V_SSP_MDC_Descriptor	Unit	16512 (0x4080)	3 (0x03)	RO	1010	1001=°C 1005=° 1010=m 1034=m³ 1061=m/s 1076=m/s² 1077=Hz 1085=rpm 1088=kg 1120=N 1126=Nm 1130=Pa 1164=cSt 1186=W 1209=A 1240=V 1299=S/m 1322=kg/s 1342=% 1349=m³/h 1383=dB 1422=pH 1423=ppm 1675=B/s 1684=bit/s 1689=dBm 1691=°/s 1692=°/s² 1694=bit	Shows the physical unit.	UIntegerT (16)	X

System Commands

Command dec	Command hex	Description
65	0x41	Teach SP1
66	0x42	Teach SP2
75	0x4B	Teach Window
76	0x4C	Teach Object
77	0x4D	Teach Background

126	0x7E	Locator Start
127	0x7F	Locator Stop
166	0xA6	Teach Background
240	0xF0	IO-Link 1.1 system test command 240, Event 8DFE appears
241	0xF1	IO-Link 1.1 system test command 241, Event 8DFE disappears
242	0xF2	IO-Link 1.1 system test command 242, Event 8DFF appears
243	0xF3	IO-Link 1.1 system test command 243, Event 8DFF disappears

Errors

Error ID	Name	Description
8000	Device application error - no details	Service was denied by the technology-specific application. No detailed root-cause information is available.
8011	Index not available	Read or write access attempt to a non-existing index.
8012	Subindex not available	Read or write access attempt to a non-existing subindex of an existing index.
8020	Service temporarily not available	Parameter not accessible due to the current state of the technology-specific application.
8023	Access denied	Write access to a read-only parameter or read access to write-only parameter.
8030	Parameter value out of range	Written parameter value is outside of the permitted value range.
8031	Parameter value above limit	Written parameter value is above its specified value range.
8032	Parameter value below limit	Written parameter value is below its specified value range.
8033	Parameter length overrun	Written parameter is longer than specified.
8034	Parameter length underrun	Written parameter is shorter than specified.
8035	Function unavailable	Written command is not supported by the technology-specific application.
8036	Function temporarily unavailable	Written command is unavailable due to the current state of the technology-specific application.
8040	Invalid parameter set	Written single parameter value collides with other existing parameter settings.
8041	Inconsistent parameter set	Parameter set inconsistencies at the end of block parameter transfer. Device plausibility check failed.
8082	Application not ready	Read or write access denied. The technology-specific application is temporarily unavailable.

Events

Event Code	Name	Description
36350	Test Event 1	Event appears by setting index 2 to value 240, Event disappears by setting index 2 to value 241
36351	Test Event 2	Event appears by setting index 2 to value 242, Event disappears by setting index 2 to value 243
0	No malfunction	
20480	Device hardware fault	Exchange device
16384	Temperature fault	Overload
16912	Device temperature overrun	Clear source of heat
16928	Device temperature underrun	Insulate device
30480	Short circuit	Check installation
35840	Technology-specific application fault	Reset device
35841	Simulation active	Check operating mode
35904	Maintenance required - Cleaning	Clean device