

Type AirLINE8653

IO-Link

Object Description

Inhalt

1	Overview.....	3
2	Objects.....	4
2.1	Cyclic data (Process data).....	4
2.1.1	Input (PDin) from device to master.....	4
2.1.2	Output (PDout) from master to device	4
2.2	System Commands	5
2.3	Acyclic data (On-Request Data).....	5
2.3.1	Supported common data objects.....	5
2.3.2	Device specific objects.....	6
2.3.2.1	Parameters	6
2.3.2.1.1	Switching Cycle Counter Parameters.....	7
2.3.2.1.2	Runtime Measurement Parameters.....	7
2.3.2.2	Diagnosis	8
2.3.2.2.1	Switching Cycle Counter Diagnosis.....	9
2.3.2.2.2	Maintenance Diagnosis	10
2.3.2.2.3	Runtime Measurement Diagnosis	10

1 Overview

Used datatypes:

Unsigned8	8 bit: unsigned integer
Unsigned16	16 bit: unsigned integer
Unsigned32	32 bit: unsigned integer
Float32	32 bit: float value IEEE 754

2.1 Cyclic data (Process data)

Sub-Index	Bit-Offset	Length (bits)	Data type	Description
0x01	0	8	Unsigned8	NAMUR Status: NAMUR status of device 0: Diagnostics inactive 1: Diagnostics active 2: Maintenance required 3: Out of specification 4: Function check 5: Failure, error or fault

Sub-Index	Bit-Offset	Length (bits)	Data type	Description
0x01	16	8	Unsigned8	BM0_Valves: Cyclic input for valves
0x02	8	8	Unsigned8	BM0_ext Feedback up: Cyclic input for external position feedbacks of the upper end position
0x03	0	8	Unsigned8	BM0_ext Feedback Down: Cyclic input for external position feedbacks of the lower end position

Bits	23							16	15							8	7							0
Sub-Index	0x01								0x02								0x03							
Data type	Unsigned8								Unsigned8								Unsigned8							
Name	BM0_Valves								BM0_ext Feedback up								BM0_ext Feedback Down							
Length (Bits)	8								8								8							

2.2 System Commands

The device supports the following system commands:

Value hex (dec)	Description
0x80 (128)	Device reset
0x82 (130)	Restore factory settings

2.3 Acyclic data (On-Request Data)

2.3.1 Supported common data objects

Index (dec)	Name	Data type	Length	Access		Remark *)
				Read	Write	
0x0000 (0)	Direct Parameter Page 1	RecordT		X		Redirected to the page communication channel, see 10.7.5
0x0001 (1)	Direct Parameter Page 2	RecordT		X	X	Redirected to the page communication channel, see 10.7.5
0x0002 (2)	System-Command	UIntegerT	1 octet		X	Command Code Definition (See B.2.2)
0x0003 (3)	Data Storage Index	RecordT	variable	X	X	Set of data objects for storage (See B.2.3)
0x000C (12)	Device Access Locks	RecordT	2 octets	X	X	Standardized Device locking functions (See B.2.4)
0x0010 (16)	Vendor Name	String	max. 64 octets	X		Informative (See B.2.8)
0x0011 (17)	Vendor Text	String	max. 64 octets	X		Additional vendor information (See B.2.9)
0x0012 (18)	Product Name	String	max. 64 octets	X		Detailed product or type name (See B.2.10)
0x0013 (19)	Product ID	String	max. 64 octets	X		Product or type identification (See B.2.11 for details)
0x0014 (20)	Product Text	String	max. 64 octets	X		Description of Device function or characteristic (See B.2.12)
0x0015 (21)	Serial- Number	String	max. 16 octets	X		Vendor specific serial number (See B.2.13)
0x0016 (22)	Hardware Revision	String	max. 64 octets	X		Vendor specific format (See B.2.14)
0x0017 (23)	Firmware Revision	String	max. 64 octets	X		Vendor specific format (See B.2.15)
0x0018 (24)	Application Specific Tag	String	19 octets	X	X	Tag location or tag function defined by user (See B.2.16)
0x0024 (36)	Device Status	UIntegerT	1 octet	X		Contains current status of the Device (See B.2.18) Supported since firmware revision A.3.2.0
0x0025 (37)	Detailed Device Status	ArrayT of OctetStringT3	variable	X		See B.2.19

*) Referenced chapters refer to "IO-Link Interface and System Specification"
(File name: IOL-Interface-Spec_10002_V112_Jul13)

2.3.2 Device specific objects

2.3.2.1 Parameters

Object 0x2C32 Fault Values

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	0	x	x

Description of the subindices

Unit 1: State of valve in case of an error (bit field). Is only considered if the corresponding valve is not activated in 'Fault Actions'.

Valve activated: the valve is actuated in case of an error

Valve not activated: the valve is not actuated in case of an error

Object 0x2C33 Fault Actions

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	0	x	x

Description of the subindices:

Unit 1: Action in case of an error (bit field).

Valve marked: in case of an error, the valve retains its current state

Valve not marked: in case of an error, the valve assumes the state from 'Fault Values'

Object 0x2C6D Feedback Signal Inverted Up

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	-	x	x

Invert feedback input signal (bit field)

Object 0x2C6E Feedback Signal Inverted Down

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	-	x	x

Invert feedback input signal (bit field)

2.3.2.1.1 Switching Cycle Counter Parameters

Object 0x2C18 SCC Limit Actuator Unit 1

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01 – 0x08	Actuator X	Unsigned32	30 000 000	x	x

Description of the subindices

Actuator X: Limit switching cycle counter for each actuator

Object 0x2C30 Activate SCC Pilot

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	0	x	x

Description of the subindices

Unit 1: activates/deactivates switching cycle counter for pilot valves (bit field)

Object 0x2C31 Activate SCC Actuator

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	0	x	x

Description of the subindices

Unit 1: activates/deactivates switching cycle counter for actuators (bit field)

2.3.2.1.2 Runtime Measurement Parameters

Object 0x2C68 Measurement Actuator Run Time Up

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	-	x	x

Selected actuators that will take part in automatic teach function (bit field). After teach function has started, the actuators that reached the maximum number of measure cycles are removed from bit field by software

Object 0x2C69 Measurement Actuator Run Time Down

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	-	x	x

Selected actuators that will take part in automatic teach function (bit field). After teach function has started, the actuators that reached the maximum number of measure cycles are removed from bit field by software

Object 0x2C6A Start Measurement Actuator Run Time

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	0	x	x

Write 1 to start the automatic teach function (Will be stopped as soon as all actuators have reached the maximum number of measurement cycles). Write 0 will stop the current measurement

Object 0x2C6B Tolerance Actuator Run Time

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned8	30	x	x

Tolerance in percent of run time before a maintenance message is sent

Object 0x2C6C Time Out Actuator Run Time

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Unit 1	Unsigned32	60000	x	x

Time out in milliseconds of actuator movement

2.3.2.2 Diagnosis**Object 0x2004 Device Status Object**

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01	Device Status NamurNe107	Unsigned8		x	
0x02	Device Temperature	Float32	0	x	
0x03	Device Supply Voltage	Float32	-	x	
0x04	Operation Time_[s]	Unsigned32	-	x	
0x05	Maximum Device Temperature	Unsigned16	-	x	
0x06	Minimum Device Temperature	Unsigned16	-	x	
0x07	Maximum Device Voltage	Float32	-	x	
0x08	Minimum Device Voltage	Float32	-	x	
0x0D	Device Boot Counter	Unsigned32	-	x	
0x11	Voltage Drop Counter	Unsigned32	-	x	
0x12	Operation Time Since Last Boot	Unsigned32	0	x	

Description of the subindices

Device Status NamurNe107:	Namur status of the device (see also 2.1.1 Input (PDIn) from device to master)
Device Temperature:	Device temperature in [K]
Device Supply Voltage:	Supply voltage of the device in [K]
Operation Time_[s]:	Time, which the device is operating in [s]

Maximum Device Temperature:	Highest ever-measured temperature in [K]
Minimum Device Temperature:	Lowest ever measured temperature in [K]
Maximum Device Voltage:	Highest supply voltage measured during running time in [V]
Minimum Device Voltage:	Lowest supply voltage measured during running time in [V]
Device Current:	Current consumption of the device in [A]
Maximum Device Current:	Highest ever-measured current consumption in [A]
Minimum Device Current:	Lowest ever measured current consumption in [A]
Device Boot Counter:	Device boot counter
Voltage Drop Counter:	Count of voltage drops since last device restart
Operation Time Since Last Boot:	Operating duration since last boot in [s]

Object 0x2C2A Channel Diagnostics Unit 1

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01 – 0x08	Channel X	Unsigned16	0	x	

Description of the subindices

Channel X: Channel diagnostics (bit field)

1 - 3: unused

4: Short circuit of the position feedback – upper end position

5: Short circuit of the position feedback – lower end position

6: Wire break of the position feedback – upper end position

7: Wire break of the position feedback – lower end position

8: Position feedback error – upper end position

9: Position feedback error – lower end position

10: Actuator maintenance necessary

11: Pilot valve maintenance necessary

12: Scheduled maintenance necessary

13– 14: Reserved

15: Actuator runtime of move to upper position too long

16: Actuator runtime of move to lower position too long

2.3.2.2.1 Switching Cycle Counter Diagnosis

Object 0x2C0B Actual SCC Pilot Unit 1

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01 – 0x08	Valve X	Unsigned32	0	x	x

Description of the subindices

Valve X: current status of the switching cycle counter of each pilot valve (set to 0 after maintenance, the maintenance message is then deleted by the device)

Object 0x2C11 Actual SCC Actuator Unit 1

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01 – 0x08	Actuator X	Unsigned32	0	x	x

Description of the subindices

Actuator X: current status of the switching cycle counter of each actuator (set to 0 after maintenance, the maintenance message is then deleted by the device)

2.3.2.2.2 Maintenance Diagnosis**Object 0x2C1E Last Maintenance Actuator Unit 1**

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01 – 0x08	Actuator X	Unsigned32	0	x	x

Description of the subindices

Actuator X: Last scheduled maintenance of each actuator. Value is entered by the device as soon as 'Next Maintenance Actuator Unit 1' is once again larger than the current system period (value in seconds since 01.01.1970).

Object 0x2C24 Next Maintenance Actuator Unit 1

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01 – 0x08	Actuator X	Unsigned32	0	x	x

Description of the subindices

Actuator X: Next scheduled maintenance of each actuator (value in seconds since 01.01.1970).

2.3.2.2.3 Runtime Measurement Diagnosis**Object 0x2C50 Actual Run Time Up Unit 1**

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01 – 0x08	Actuator X	Unsigned32	0	x	

Actual time the actuator needs to reach the upper end position in milliseconds

Object 0x2C56 Actual Run Time Down Unit 1

Sub-Index	Name	Data type	Default	Access	
				Read	Write
0x01 – 0x08	Actuator X	Unsigned32	0	x	

Actual time the actuator needs to reach the lower end position in milliseconds