TECHNICAL INFORMATION

Telegram Listing

Visionary-T Mini CX

SICK
Sensor Intelligence.

Described product

Visionary-T Mini CX

Manufacturer

SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch

Germany

Legal information

Original document

This document is an original document of SICK AG.

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1. Disclaimer

This document contains detailed information about single telegrams which can be used to communicate with the device and configure it. Sending telegrams with malformed data or in unproper order can harm the device. So it is highly recommended to use the provided API for unexperienced users!

The telegrams are not guaranteed to remain unchanged in other/newer firmware versions. This means, that if you are using the telegrams you take the responsibilty to take care of changes introduced by firmware updates.

The CoLa protocol specifications allows referencing variables and methods by index - however, only access/invocation by name is available for this device!

When reading the CoLa specifications keep in mind that the device uses CoLa-2. For the calculation of the telegram checksum please refer to the provided python example.

2. General

2.1. Introduction

This document describes the functional interfaces of the Visionary-T Mini CX V3S105-1x device, 2.0.0.469R. The Visionary-T Mini CX V3S105-1x device is a SOPAS device. SOPAS devices may have Variables, Methods and Events.

2.2. User Level

Whether a Variable can be written or a Method can be executed by a user depends on the least user level. Defined user levels are:

ID	Name	Description
0	Always (Run)	Always (Run)
1	Operator	Operator
2	Maintenance	Maintenance
3	Authorised Client	Authorised Client
4	Service	Service

Table 1: User Levels

2.3. Variables

Variables can always be read and can only be written by a user with sufficient user level.

2.4. Methods

Methods can be invoked by using certain parameters. The method will return with a structure of one or more return values. If a Method can be invoked depends on the least user level.

2.5. Events

Events can be registered and will then be fired by the device to the registered client. Most Events have parameters which are the data coming with the Event.

2.6. Datatypes

All items of the interface have certain data elements. These are the Variables itself, the parameters of Methods and Events and the return values of the Methods.

The structure of the data elements can be one of the following BasicType(s), Structures or Arrays.

Basic Type

Name	Description	Range of values
Bool	boolean	True(1), False(0)
USInt	unsigned short (8 bit)	(0..255)
UInt	unsigned int (16 bit)	(0..65535)
UDInt	unsigned double int (32 bit)	(0..4294967295)

Name	Description	Range of values
ULInt	unsigned long int (64 bit)	(0..18446744073709551616)
SInt	signed short (8 bit)	(-128..127)
Int	signed int (16 bit)	(-32768..32767)
DInt	signed double int (32 bit)	(-2147483648..2147483647)
LInt	signed long int (64 bit)	(-9223372036854775808..9223372036854775807)
Real	IEEE-754 single precision (32 bit) (float)	See specification in IEEE-754
LReal	IEEE-754 single precision (64 bit) (double)	See specification in IEEE-754
Enum8	short enumeration (8 bit)	certain values defined in a list of choises (0-255)
Enum16	short enumeration (16 bit)	certain values defined in a list of choises (0-65535)
String	array of visible characters (array of 8 bit)	a character = an USInt with values between 0x20..0xFF
FlexString	array of visible characters with preeding current length (UInt lenght) (array of 8 bit)	See description of String and FlexArray
Byte	bitset definition (8 bit). Detailed specification of bits UInt1..UInt16 = UInt (1..16 bit) Int1..Int16 = Int (1..16 bit) Enum1..Enum16 = Enum16 (1..16 bit) Bool = Bool (1 bit)	value is transfered as an array of USInt. See "XByte Serialisation" document for further details on bit ordering
Word	bitset definition (16 bit), see description of Byte	value is transfered as an array of USInt see "XByte Serialisation" document for further details on bit ordering.
DWord	bitset definition (32 bit), see description of Byte	value is transfered as an array of USInt see "XByte Serialisation" document for further details on bit ordering.
LWord	bitset definition (64 bit), see description of Byte	value is transfered as an array of USInt see "XByte Serialisation" document for further details on bit ordering.
XByte	bitset definition (8,16,24,32,... bit) see description of Byte	value is transfered as an array of USInt see "XByte Serialisation" document for further details on bit ordering.
SCont	bitset definition (8 bit). Detailed specification of bits UInt1..UInt16 = UInt (1..16 bit) Int1..Int16 = Int (1..16 bit) Enum1..Enum16 = Enum16 (1..16 bit) Bool = Bool (1 bit)	value is transfered as USInt.
Cont	bitset definition (16 bit), see description of SCont	value is transfered as UInt.
DCont	bitset definition (32 bit), see description of SCont	value is transfered as UDInt.
LCont	bitset definition (64 bit), see description of SCont	value is transfered as ULInt.

Table 2: Basic Datatypes

Struct

A structure is a sequence of further types. These types can be of a BasicType, Structs again or an Array.

Array

An Array is a repetition of a type. The length of the array is defined with each Array. The types can be of a BasicType, a Struct or an Array again (n- dimensional).

Flex Array

A FlexArray is a repetition of a type with a variable length. The maximum length of the array is defined with each FlexArray. The current length of the FlexArray is transferred as a UInt preceeding the Array itself. The types can be of a BasicType, a Struct or an Array again (n- dimensional).

3. Measurement data

This chapter gathers all information about the used formats and issues with the data streaming.

3.1. Introduction

There are two types of data connections:

Streaming

The device sends out cyclic data; so called *blobs* (**b**inary **l**arge **o**bject**s**).

Control

Channel for acyclic control messages (read variables from device, invoke methods on the device, …).

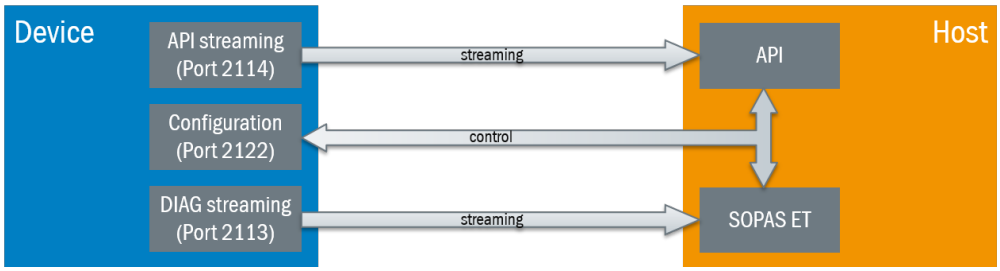

Figure 1. Connections with the device

The device provides a separation of the streaming into two channels via different ports.

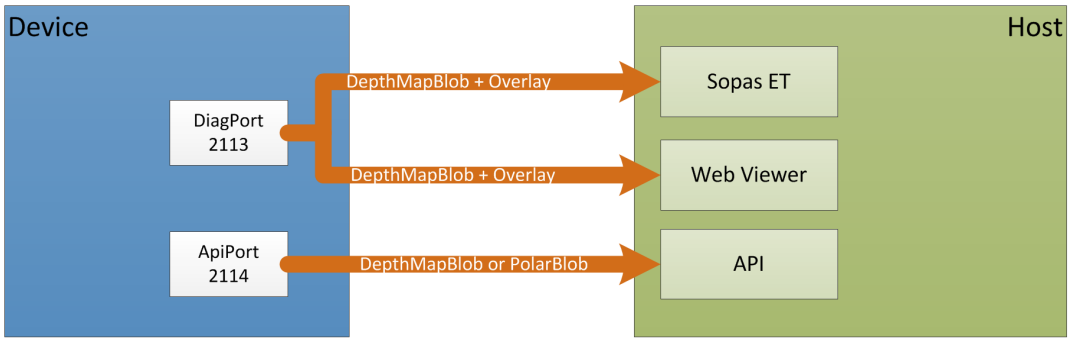

Figure 2. Streaming capabilities of the device

The diagnosis channel sends *depth map* frames containing distance, intensity and state maps. Those are complemented with visual overlays that support the diagnosis.

The API channel can be configured to send the intended data channels. Currently, only *depth map* data are supported.

The diagnostics data channel is used by Sopas ET. The ApiPort for the pure data transfer can be configured in the variable called BlobTcpPortAPI.

3.2. Blob format

A blob is formatted in a specific way that gathers all the needed information – see figure below:

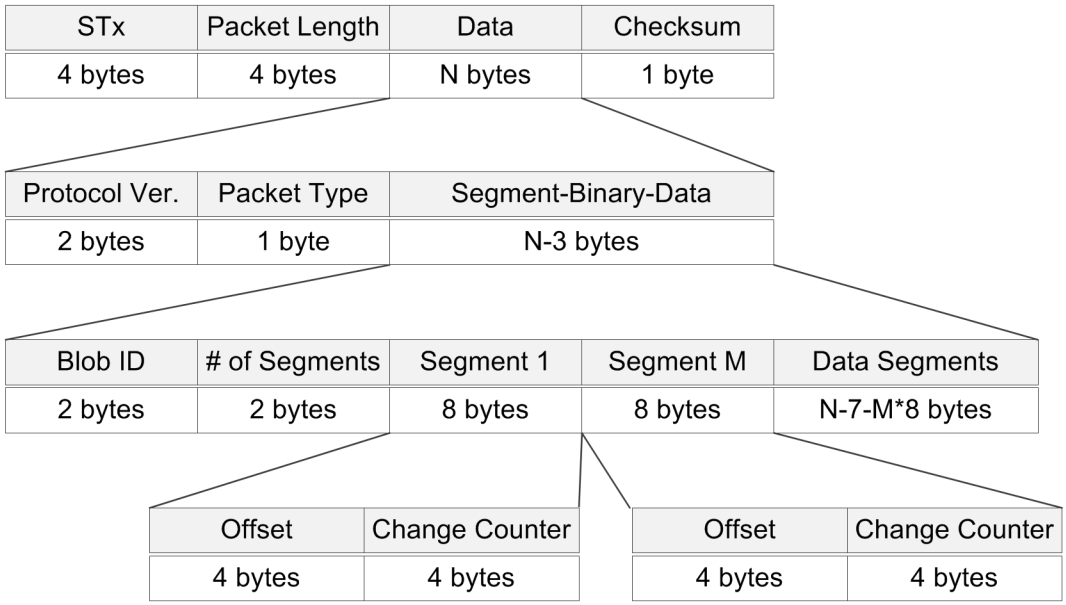

Figure 3. Blob structure overview

The following table describes the blob format items in detail:

Item Name	Description
STx	The framing header, always <0x02> <0x02> <0x02> <0x02>
Packet Length	The total number of bytes contained inside of Data
Data	Blob data without framing
Checksum	Not in use - Always <0x45>
Protocol Ver.	Always <0x00> <0x01>
Packet Type	Always <0x62>
Segment-Binary-Data	Blob data without Protocol Ver. and Packet Type
Blob ID	3D Data identification, always <0x00> <0x01>
# of Segments	The number of segments contained in this blob, M in this example
Segment 1..M	Each segment has its own 8 byte long description
Data Segments	Data Segments content (XML Metadata, Binary data and XML Overlays)
Offset	Defines where the segment data starts, counting begins after Packet Type
Change Counter	A counter value which will change if the segment content has changed

Figure 4. Items and description

3.3. Data Segments

We use the Blob ID = 1 and there are always the following three segments (in the given order):
1) XML metadata
2) Binary data
3) XML overlays

3.3.1. XML metadata

For how to extract the XML Metadata segment from the received data please refer to the Python example in *Data.py* and take a look inside the *Data.read()* method.

logging.debug("The whole XML segment:")
logging.debug(xmlSegment)

3.3.2. Binary data

This segment contains the binary measurement data as captured or computed by the device. For how to extract the measurement values from the binary data segment of the received data please refer to the Python example in *Data.py* and take a look inside the *Data.read()* method. For parsing the binary data itself please refer to the class *BinaryParser* in the same file. There you will also find how to extract the other data like version, frame number, data quality, device status, and so on.
The binary data is structured in several data sets (as specified in the XML metadata part) like shown in the next figure:

Dataset 1				**Dataset 2**			
Length = J	Data	CRC of Data	Length = J	Length = K	Data	CRC of Data	Length = K
4 Bytes	J – 8 Bytes	4 Bytes	4 Bytes	4 Bytes	K – 8 Bytes	4 Bytes	4 Bytes
	J Bytes				K Bytes		

Figure 5. Binary format: scans

Pitfalls

The timestamp is 64bit in an internal SICK format. See the code in the Python examples (in file Data.py method BinaryParser.logTimeStamp) how to extract date and time. Note that the devices do not contain a real time clock and hence the timestamp can only be used for relative comparisons.

Contrary to all other parts, the binary data (*Depthmap*) is delivered in little-endian.

3.3.3. XML overlays

The XML overlays are visualized in Sopas ET in order to support the device configuration. Hence, the XML overlay segment always contains an empty overlay for the *ApiPort*.

4. Interfaces

4.1. General Access

4.1.1. Variable: DeviceIdent

The following section contains a detailed description of the variable DeviceIdent.

Variable Overview

Variable Name	Description
DeviceIdent	Unique Identification of device

Read-Access	Always
Write-Access	No! (readonly)

Struct		
Name		
	FlexString	
	Length	0..32
	Initialisation	Visionary-T Mini CX V3S105-1x
Version		
	FlexString	
	Length	0..50
	Initialisation	2.0.0.469R

Variable Telegram Syntax

Read Variable:				
`sRN DeviceIdent`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DeviceIdent	String	11	Unique Identification of device

Read Variable Response:				
`sRA DeviceIdent <Name> <Version>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DeviceIdent	String	11	Unique Identification of device
Variable Data 1	Name	FlexString	32	
Variable Data 2	Version	FlexString	50	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 10 73 52 4E 20 44 65 76 69 63 65 49 64 65 6E 74 20 05	........sRN Devi ceIdent ·
Read Variable Response:	02 02 02 02 00 00 00 3B 73 52 41 20 44 65 76 69 63 65 49 64 65 6E 74 20 00 1D 56 69 73 69 6F 6E 61 72 79 2D 54 20 4D 69 6E 69 20 43 58 20 56 33 53 31 30 35 2D 31 78 00 0A 32 2E 30 2E 30 2E 34 36 39 52 21	.......;sRA Devi ceIdent ··Vision ary-T Mini CX V3 S105-1x··2.0.0.4 69R!

4.1.2. Variable: CidVersion

The following section contains a detailed description of the variable CidVersion.

Variable Overview

Variable Name	Description
CidVersion	Version of communication interface description

Read-Access	Always
Write-Access	No! (readonly)

UserType	
CidVersion	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
`sRN CidVersion`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	CidVersion	String	10	Version of communication interface description

Read Variable Response:				
`sRA CidVersion <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	CidVersion	String	10	Version of communication interface description
Variable Data	data	CidVersion	11	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0F 73 52 4E 20 43 69 64 56 65 72 73 69 6F 6E 20 7B	........sRN CidV ersion {
Read Variable Response:	02 02 02 02 00 00 00 1A 73 52 41 20 43 69 64 56 65 72 73 69 6F 6E 20 00 02 00 00 00 00 00 00 01 D5 03 A1	........sRA CidV ersion ....

4.1.3. Variable: LocationName

The following section contains a detailed description of the variable LocationName.

Variable Overview

Variable Name	Description
LocationName	Location of Device (set by user)

Read-Access	Always
Write-Access	Always

FlexString	
Length	0..16
Initialisation	not defined

Variable Telegram Syntax

Read Variable:

```
sRN LocationName
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	LocationName	String	12	Location of Device (set by user)

Read Variable Response:

```
sRA LocationName <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	LocationName	String	12	Location of Device (set by user)
Variable Data	data	FlexString	16	

Write Variable:

```
sWN LocationName <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	LocationName	String	12	Location of Device (set by user)
Variable Data	data	FlexString	16	

Write Variable Response:				
sWA LocationName				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	LocationName	String	12	Location of Device (set by user)

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 11 73 52 4E 20 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 20 75	........sRN Loca tionName u
Read Variable Response:	02 02 02 02 00 00 00 1E 73 52 41 20 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 20 00 0B 6E 6F 74 20 64 65 66 69 6E 65 64 45	........sRA Loca tionName ··not d efinedE
Write Variable:	02 02 02 02 00 00 00 1E 73 57 4E 20 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 20 00 0B 6E 6F 74 20 64 65 66 69 6E 65 64 4F	........sWN Loca tionName ··not d efinedO
Write Variable Response:	02 02 02 02 00 00 00 11 73 57 41 20 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 20 7F	........sWA Loca tionName ·

4.1.4. Variable: SerialNumber

The following section contains a detailed description of the variable SerialNumber.

Variable Overview

Variable Name	Description
SerialNumber	serial number of device

Read-Access	Always
Write-Access	No! (readonly)

FlexString	
Length	0..8
Initialisation	12345678

Variable Telegram Syntax

Read Variable:				
sRN SerialNumber				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	SerialNumber	String	12	serial number of device

Read Variable Response:				
sRA SerialNumber <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	SerialNumber	String	12	serial number of device
Variable Data	data	FlexString	8	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 11 73 52 4E 20 53 65 72 69 61 6C 4E 75 6D 62 65 72 20 6C	····sRN Seri alNumber l
Read Variable Response:	02 02 02 02 00 00 00 1B 73 52 41 20 53 65 72 69 61 6C 4E 75 6D 62 65 72 20 00 08 31 32 33 34 35 36 37 38 63	····sRA Seri alNumber ··12345 678c

4.1.5. Variable: FirmwareVersion

The following section contains a detailed description of the variable FirmwareVersion.

Variable Overview

Variable Name	Description
FirmwareVersion	Version of the application software

Read-Access	Always
Write-Access	No! (readonly)

FlexString	
Length	0..16
Initialisation	XXXXXXXXXX

Variable Telegram Syntax

Read Variable:				
sRN FirmwareVersion				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	FirmwareVersion	String	15	Version of the application software

Read Variable Response:				
sRA FirmwareVersion <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	FirmwareVersion	String	15	Version of the application software
Variable Data	data	FlexString	16	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 14 73 52 4E 20 46 69 72 6D 77 61 72 65 56 65 72 73 69 6F 6E 20 04	····sRN Firm wareVersion ·
Read Variable Response:	02 02 02 02 00 00 00 20 73 52 41 20 46 69 72 6D 77 61 72 65 56 65 72 73 69 6F 6E 20 00 0A 58 58 58 58 58 58 58 58 58 58 01	···· sRA Firm wareVersion ··XX XXXXXXXX·

4.1.6. Variable: DeviceType

The following section contains a detailed description of the variable DeviceType.

Variable Overview

Variable Name	Description
DeviceType	DeviceType

Communication Name	DItype
Read-Access	Always
Write-Access	No! (readonly)

FlexString	
Length	0..18
Initialisation	V3SXXX-XXXXXXX

Variable Telegram Syntax

Read Variable:				
sRN DItype				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DItype	String	6	DeviceType

Read Variable Response:				
sRA DItype <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DItype	String	6	DeviceType
Variable Data	data	FlexString	18	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0B 73 52 4E 20 44 49 74 79 70 65 20 7A	........sRN DIty pe z
Read Variable Response:	02 02 02 02 00 00 00 1B 73 52 41 20 44 49 74 79 70 65 20 00 0E 56 33 53 58 58 58 2D 58 58 58 58 58 58 58 60	........sRA DIty pe ..V3SXXX-XXXX XXX`

4.1.7. Variable: Manufacturer

The following section contains a detailed description of the variable Manufacturer.

Variable Overview

Variable Name	Description
Manufacturer	Manufacturer

Communication Name	DImanf
Read-Access	Always
Write-Access	No! (readonly)

FlexString	
Length	0..18
Initialisation	SICK AG

Variable Telegram Syntax

Read Variable:				
sRN DImanf				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DImanf	String	6	Manufacturer

Read Variable Response:				
sRA DImanf <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DImanf	String	6	Manufacturer
Variable Data	data	FlexString	18	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0B 73 52 4E 20 44 49 6D 61 6E 66 20 66	........sRN DImanf f
Read Variable Response:	02 02 02 02 00 00 00 14 73 52 41 20 44 49 6D 61 6E 66 20 00 07 53 49 43 4B 20 41 47 5A	........sRA DImanf ..SICK AGZ

4.1.8. Variable: OrderNumber

The following section contains a detailed description of the variable OrderNumber.

Variable Overview

Variable Name	Description
OrderNumber	This variable's value matches the SICK order number (million number) in SAP.

Communication Name	OrdNum
Read-Access	Always
Write-Access	No! (readonly)

FlexString	
Length	0..32
Initialisation	1234567

Variable Telegram Syntax

Read Variable:				
sRN OrdNum				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	OrdNum	String	6	This variable's value matches the SICK order number (million number) in SAP.

Read Variable Response:				
sRA OrdNum <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	OrdNum	String	6	This variable's value matches the SICK order number (million number) in SAP.
Variable Data	data	FlexString	32	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0B 73 52 4E 20 4F 72 64 4E 75 6D 20 60	........sRN OrdN um `
Read Variable Response:	02 02 02 02 00 00 00 14 73 52 41 20 4F 72 64 4E 75 6D 20 00 07 31 32 33 34 35 36 37 58	........sRA OrdN um ..1234567X

4.1.9. Variable: BootloaderIdentification

The following section contains a detailed description of the variable BootloaderIdentification.

Variable Overview

Variable Name	Description
BootloaderIdentification	Shows the identification string of the current bootloader.

Communication Name	FIBootloaderIdent
Read-Access	Always
Write-Access	No! (readonly)

FlexString	
Length	0..80

Variable Telegram Syntax

Read Variable:				
`sRN FIBootloaderIdent`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	FIBootloaderIdent	String	17	Shows the identification string of the current bootloader.

Read Variable Response:				
`sRA FIBootloaderIdent <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	FIBootloaderIdent	String	17	Shows the identification string of the current bootloader.
Variable Data	data	FlexString	80	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 16  73 52 4E 20 46 49 42 6F` `6F 74 6C 6F 61 64 65 72  49 64 65 6E 74 20 15`	`····sRN FIBo` `otloaderIdent ·`

Read Variable Response:	`02 02 02 02 00 00 00 18  73 52 41 20 46 49 42 6F`
	`6F 74 6C 6F 61 64 65 72  49 64 65 6E 74 20 00 00`
	`1A`
		`····sRA FIBo`
		`otloaderIdent ··`
		`·`

4.1.10. Variable: KernelVersion

The following section contains a detailed description of the variable KernelVersion.

Variable Overview

Variable Name	Description
KernelVersion	Returns the version of the Linux Kernel.

Read-Access	Always
Write-Access	No! (readonly)

FlexString	
Length	0..80

Variable Telegram Syntax

Read Variable:				
`sRN KernelVersion`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	KernelVersion	String	13	Returns the version of the Linux Kernel.

Read Variable Response:				
`sRA KernelVersion <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	KernelVersion	String	13	Returns the version of the Linux Kernel.
Variable Data	data	FlexString	80	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 12  73 52 4E 20 4B 65 72 6E` `65 6C 56 65 72 73 69 6F  6E 20 0E`	`·····sRN Kern` `elVersion ·`
Read Variable Response:	`02 02 02 02 00 00 00 14  73 52 41 20 4B 65 72 6E` `65 6C 56 65 72 73 69 6F  6E 20 00 00 01`	`·····sRA Kern` `elVersion ···`

4.1.11. Variable: FpgaBitstreamVersion

The following section contains a detailed description of the variable FpgaBitstreamVersion.

Variable Overview

Variable Name	Description
FpgaBitstreamVersion	Returns the version of the FPGA bitstream: Will return 0.0 or 255.255 if FPGA bitstream is corrupted.

Read-Access	Always
Write-Access	No! (readonly)

FlexString	
Length	0..20
Initialisation	255.255

Variable Telegram Syntax

Read Variable:				
`sRN FpgaBitstreamVersion`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	FpgaBitstreamVersion	String	20	Returns the version of the FPGA bitstream: Will return 0.0 or 255.255 if FPGA bitstream is corrupted.

Read Variable Response:				
`sRA FpgaBitstreamVersion <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	FpgaBitstreamVersion	String	20	Returns the version of the FPGA bitstream: Will return 0.0 or 255.255 if FPGA bitstream is corrupted.
Variable Data	data	FlexString	20	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		

Read Variable:	`02 02 02 02 00 00 00 19  73 52 4E 20 46 70 67 61`
	`42 69 74 73 74 72 65 61  6D 56 65 72 73 69 6F 6E`
	`20 46`
		`........sRN Fpga`
		`BitstreamVersion`
		` F`

Read Variable Response:	`02 02 02 02 00 00 00 22  73 52 41 20 46 70 67 61`
	`42 69 74 73 74 72 65 61  6D 56 65 72 73 69 6F 6E`
	`20 00 07 32 35 35 2E 32  35 35 60`
		`.......\"sRA Fpga`
		`BitstreamVersion`
		` ..255.255``

4.1.12. Method: GetAccessMode

The following section contains a detailed description of the method GetAccessMode.

Method Overview

Method Name	Description
GetAccessMode	This function is used to query the current operation mode. The operation mode corresponds to the User Level of an active login. If this value differs from User Level RUN (value = 0) then the device is in configuration mode.

Invocation Access	Always

Return Values	
opmode	
USInt	
Value Range	0..255

Method Telegram Syntax

Method Invocation:				
sMN GetAccessMode				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sMN	String	3	Request (SOPAS Method by Name)
Command	GetAccessMode	String	13	returns actual operation mode

Method Return Value:				
sAN GetAccessMode <opmode>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sAN	String	3	Result (SOPAS Method Result)
Command	GetAccessMode	String	13	returns actual operation mode
Return Value 1	opmode	USInt	1	

Method Telegram Examples

Example: Default Values		
Method telegram examples with parameter data and return value data set to default values.		
Method Invocation:	02 02 02 02 00 00 00 12 73 4D 4E 20 47 65 74 41 63 63 65 73 73 4D 6F 64 65 20 21	····sMN GetA ccessMode !
Method Return Value:	02 02 02 02 00 00 00 13 73 41 4E 20 47 65 74 41 63 63 65 73 73 4D 6F 64 65 20 00 2D	····sAN GetA ccessMode ·-

4.1.13. Method: Run

The following section contains a detailed description of the method Run.

Method Overview

Method Name	Description
Run	This function is used to logout from the device. It switches the devive back to running mode if it's currently in configuration mode due to an active login.

Invocation Access	Always

Return Values		
success		
	Bool	
	Value Range	False, True
	Initialisation	False

Method Telegram Syntax

Method Invocation:				
sMN Run				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sMN	String	3	Request (SOPAS Method by Name)
Command	Run	String	3	Change operation mode to "Run"

Method Return Value:				
sAN Run <success>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sAN	String	3	Result (SOPAS Method Result)
Command	Run	String	3	Change operation mode to "Run"
Return Value 1	success	Bool	1	

Method Telegram Examples

Example: Default Values		
Method telegram examples with parameter data and return value data set to default values.		
Method Invocation:	02 02 02 02 00 00 00 08 73 4D 4E 20 52 75 6E 20 39	····sMN Run 9
Method Return Value:	02 02 02 02 00 00 00 09 73 41 4E 20 52 75 6E 20 00 35	····sAN Run ·5

4.1.14. Variable: SCParamsChanged

The following section contains a detailed description of the variable SCParamsChanged.

Variable Overview

Variable Name	Description
SCParamsChanged	Flag is set if parameters may have been changed but are not saved permanently

Communication Name	SCParmChngd
Read-Access	Always
Write-Access	No! (readonly)

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:				
sRN SCParmChngd				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	SCParmChngd	String	11	Flag is set if parameters may have been changed but are not saved permanently

Read Variable Response:				
sRA SCParmChngd <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	SCParmChngd	String	11	Flag is set if parameters may have been changed but are not saved permanently
Variable Data	data	Bool	1	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 10 73 52 4E 20 53 43 50 61 72 6D 43 68 6E 67 64 20 17	····sRN SCPa rmChngd ·
Read Variable Response:	02 02 02 02 00 00 00 11 73 52 41 20 53 43 50 61 72 6D 43 68 6E 67 64 20 00 18	····sRA SCPa rmChngd ··

4.1.15. Method: WriteEeprom

The following section contains a detailed description of the method WriteEeprom.

Method Overview

Method Name	Description
WriteEeprom	Method writes all permanent parameters from the SOPAS mirror to the ParamEEprom

Communication Name	mEEwriteall
Invocation Access	AuthorizedClient, Service

Return Values	
Success	
Bool	
Value Range	False, True
Initialisation	False

Method Telegram Syntax

Method Invocation:				
sMN mEEwriteall				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sMN	String	3	Request (SOPAS Method by Name)
Command	mEEwriteall	String	11	Method writes all permanent parameters from the SOPAS mirror to the ParamEEprom

Method Return Value:				
sAN mEEwriteall <Success>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sAN	String	3	Result (SOPAS Method Result)
Command	mEEwriteall	String	11	Method writes all permanent parameters from the SOPAS mirror to the ParamEEprom
Return Value 1	Success	Bool	1	

Method Telegram Examples

Example: Default Values		
Method telegram examples with parameter data and return value data set to default values.		
Method Invocation:	02 02 02 02 00 00 00 10 73 4D 4E 20 6D 45 45 77 72 69 74 65 61 6C 6C 20 01	........sMN mEEw riteall ·
Method Return Value:	02 02 02 02 00 00 00 11 73 41 4E 20 6D 45 45 77 72 69 74 65 61 6C 6C 20 00 0D	........sAN mEEw riteall ··

4.1.16. Method: RebootDevice

The following section contains a detailed description of the method RebootDevice.

Method Overview

Method Name	Description
RebootDevice	Method shuts the device down but saves the parameter before shutdown ist executed

Communication Name	mSCreboot
Invocation Access	AuthorizedClient, Service

Method Telegram Syntax

Method Invocation:				
sMN mSCreboot				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sMN	String	3	Request (SOPAS Method by Name)
Command	mSCreboot	String	9	Method shuts the device down but saves the parameter before shutdown ist executed

Method Return Value:				
sAN mSCreboot				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sAN	String	3	Result (SOPAS Method Result)
Command	mSCreboot	String	9	Method shuts the device down but saves the parameter before shutdown ist executed

Method Telegram Examples

Example: Default Values		
Method telegram examples with parameter data and return value data set to default values.		
Method Invocation:	02 02 02 02 00 00 00 0E 73 4D 4E 20 6D 53 43 72 65 62 6F 6F 74 20 0C	........sMN mSCr eboot .
Method Return Value:	02 02 02 02 00 00 00 0E 73 41 4E 20 6D 53 43 72 65 62 6F 6F 74 20 00	........sAN mSCr eboot .

4.1.17. Method: LoadFactoryDefaults

The following section contains a detailed description of the method LoadFactoryDefaults.

Method Overview

Method Name	Description
LoadFactoryDefaults	The method resets all variables to their default value.

Communication Name	mSCloadfacdef
Invocation Access	AuthorizedClient, Service

Method Telegram Syntax

Method Invocation:				
sMN mSCloadfacdef				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sMN	String	3	Request (SOPAS Method by Name)
Command	mSCloadfacdef	String	13	The method resets all variables to their default value.

Method Return Value:				
sAN mSCloadfacdef				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sAN	String	3	Result (SOPAS Method Result)
Command	mSCloadfacdef	String	13	The method resets all variables to their default value.

Method Telegram Examples

Example: Default Values		
Method telegram examples with parameter data and return value data set to default values.		
Method Invocation:	02 02 02 02 00 00 00 12 73 4D 4E 20 6D 53 43 6C 6F 61 64 66 61 63 64 65 66 20 08	........sMN mSCl oadfacdef ·
Method Return Value:	02 02 02 02 00 00 00 12 73 41 4E 20 6D 53 43 6C 6F 61 64 66 61 63 64 65 66 20 04	........sAN mSCl oadfacdef ·

4.1.18. Method: LoadApplicationDefaults

The following section contains a detailed description of the method LoadApplicationDefaults.

Method Overview

Method Name	Description
LoadApplicationDefaults	The method resets all application relevant variables to their default value

Communication Name	mSCloadappdef
Invocation Access	AuthorizedClient, Service

Method Telegram Syntax

Method Invocation:				
sMN mSCloadappdef				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sMN	String	3	Request (SOPAS Method by Name)
Command	mSCloadappdef	String	13	The method resets all application relevant variables to their default value

Method Return Value:				
sAN mSCloadappdef				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sAN	String	3	Result (SOPAS Method Result)
Command	mSCloadappdef	String	13	The method resets all application relevant variables to their default value

Method Telegram Examples

Example: Default Values		
Method telegram examples with parameter data and return value data set to default values.		
Method Invocation:	02 02 02 02 00 00 00 12 73 4D 4E 20 6D 53 43 6C 6F 61 64 61 70 70 64 65 66 20 0D	····sMN mSCl oadappdef ·
Method Return Value:	02 02 02 02 00 00 00 12 73 41 4E 20 6D 53 43 6C 6F 61 64 61 70 70 64 65 66 20 01	····sAN mSCl oadappdef ·

4.2. System Health (Diagnostics)

4.2.1. Variable: EMsgInfo

The following section contains a detailed description of the variable EMsgInfo.

Variable Overview

Variable Name	Description
EMsgInfo	Info messages which are stored in volatile memory. They are informations and do not indicate an error condition.

Communication Name	MSinfo
Read-Access	Always
Write-Access	No! (readonly)

Array		
Length		25
	UserType	
	ErrStructType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
`sRN MSinfo`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	MSinfo	String	6	Info messages which are stored in volatile memory. They are informations and do not indicate an error condition.

Read Variable Response:				
`sRA MSinfo <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	MSinfo	String	6	Info messages which are stored in volatile memory. They are informations and do not indicate an error condition.
Variable Data	data	Array	2050	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0B  73 52 4E 20 4D 53 69 6E 66 6F 20 7F`	`........sRN MSinfo .`

Read Variable Response:	02 02 02 02 00 00 03 5D 73 52 41 20 4D 53 69 6E 66 6F 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 70	·······]sRA MSin fo ············· ·····p

4.2.2. Variable: EMsgWarning

The following section contains a detailed description of the variable EMsgWarning.

Variable Overview

Variable Name	Description
EMsgWarning	Error message on level WARNING which is stored in non volatile memory (EEPROM) TODO: storing

Communication Name	MSwarn
Read-Access	Always
Write-Access	No! (readonly)

Array		
Length		25
	UserType	
	ErrStructType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:

```
sRN MSwarn
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	MSwarn	String	6	Error message on level WARNING which is stored in non volatile memory (EEPROM) TODO: storing

Read Variable Response:

```
sRA MSwarn <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	MSwarn	String	6	Error message on level WARNING which is stored in non volatile memory (EEPROM) TODO: storing
Variable Data	data	Array	2050	

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	02 02 02 02 00 00 00 0B 73 52 4E 20 4D 53 77 61 72 6E 20 7B	........sRN MSwarn {

Read Variable Response:

```
02 02 02 02 00 00 03 5D  73 52 41 20 4D 53 77 61   ·······]sRA MSwa
72 6E 20 00 00 00 00 00  00 00 00 00 00 00 00 00   rn ·············
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
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00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
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00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ················
00 00 00 00 00 74                                  ·····t
```


4.2.3. Variable: EMsgError

The following section contains a detailed description of the variable EMsgError.

Variable Overview

Variable Name	Description
EMsgError	Error message on level ERROR which is stored in non volatile memory (EEPROM) TODO: storing

Communication Name	MSerr
Read-Access	Always
Write-Access	No! (readonly)

Array	
Length	10
UserType	
ErrStructType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:

```
sRN MSerr
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	MSerr	String	5	Error message on level ERROR which is stored in non volatile memory (EEPROM) TODO: storing

Read Variable Response:

```
sRA MSerr <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	MSerr	String	5	Error message on level ERROR which is stored in non volatile memory (EEPROM) TODO: storing
Variable Data	data	Array	820	

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	02 02 02 02 00 00 00 0A 73 52 4E 20 4D 53 65 72 72 20 14	........sRN MSerr .

Read Variable Response:

```
02 02 02 02 00 00 01 5E   73 52 41 20 4D 53 65 72   ·······^sRA MSer
72 20 00 00 00 00 00 00   00 00 00 00 00 00 00 00   r ··············
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ················
00 00 00 00 00 00 1B                                ·······
```

4.2.4. Variable: EMsgFatal

The following section contains a detailed description of the variable EMsgFatal.

Variable Overview

Variable Name	Description
EMsgFatal	Error message on level FATAL which is stored in non volatile memory (EEPROM) TODO: storing

Communication Name	MSfat
Read-Access	Always
Write-Access	No! (readonly)

Array		
Length		10
	UserType	
	ErrStructType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
sRN MSfat				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	MSfat	String	5	Error message on level FATAL which is stored in non volatile memory (EEPROM) TODO: storing

Read Variable Response:				
sRA MSfat <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	MSfat	String	5	Error message on level FATAL which is stored in non volatile memory (EEPROM) TODO: storing
Variable Data	data	Array	820	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0A 73 52 4E 20 4D 53 66 61 74 20 02	········sRN MSfa t ·
Read Variable Response:	02 02 02 02 00 00 01 5E 73 52 41 20 4D 53 66 61 74 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0D	·······^sRA MSfa t ·············· ·······

4.2.5. Variable: SysTemperatureCurrentValue

The following section contains a detailed description of the variable SysTemperatureCurrentValue.

Variable Overview

Variable Name	Description
SysTemperatureCurrentValue	Current temperature of the device.

Read-Access	Always
Write-Access	No! (readonly)

Int	
Value Range	-32768..32767
Physical Unit	°C
Physical Unit Factor	10.0

Variable Telegram Syntax

Read Variable:

```
sRN SysTemperatureCurrentValue
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	SysTemperatureCurrentValue	String	26	Current temperature of the device.

Read Variable Response:

```
sRA SysTemperatureCurrentValue <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	SysTemperatureCurrentValue	String	26	Current temperature of the device.
Variable Data	data	Int	2	

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	02 02 02 02 00 00 00 1F 73 52 4E 20 53 79 73 54 65 6D 70 65 72 61 74 75 72 65 43 75 72 72 65 6E 74 56 61 6C 75 65 20 78	........sRN SysT emperatureCurren tValue x
Read Variable Response:	02 02 02 02 00 00 00 21 73 52 41 20 53 79 73 54 65 6D 70 65 72 61 74 75 72 65 43 75 72 72 65 6E 74 56 61 6C 75 65 20 00 00 77	.......!sRA SysT emperatureCurren tValue ..w

4.2.6. Variable: SysTemperatureWarningMargin

The following section contains a detailed description of the variable SysTemperatureWarningMargin.

Variable Overview

Variable Name	Description
SysTemperatureWarningMargin	warning range for the sytem temperature

Read-Access	Always
Write-Access	Service

Int	
Value Range	-32768..32767
Initialisation	50
Physical Unit	°C
Physical Unit Factor	10.0

Variable Telegram Syntax

Read Variable:

```
sRN SysTemperatureWarningMargin
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	SysTemperatureWarningMargin	String	27	The margin to systems error limit. If temperature raises above the margin, the device will change into warning state.

Read Variable Response:

```
sRA SysTemperatureWarningMargin <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	SysTemperatureWarningMargin	String	27	The margin to systems error limit. If temperature raises above the margin, the device will change into warning state.
Variable Data	data	Int	2	

Write Variable:

```
sWN SysTemperatureWarningMargin <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	SysTemperatureWarningMargin	String	27	The margin to systems error limit. If temperature raises above the margin, the device will change into warning state.
Variable Data	data	Int	2	

Write Variable Response:

```
sWA SysTemperatureWarningMargin
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge

Write Variable Response:				
sWA SysTemperatureWarningMargin				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command	SysTemperatureWarningMargin	String	27	The margin to systems error limit. If temperature raises above the margin, the device will change into warning state.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 20 73 52 4E 20 53 79 73 54 65 6D 70 65 72 61 74 75 72 65 57 61 72 6E 69 6E 67 4D 61 72 67 69 6E 20 0E	·····sRN SysT emperatureWarnin gMargin ·
Read Variable Response:	02 02 02 02 00 00 00 22 73 52 41 20 53 79 73 54 65 6D 70 65 72 61 74 75 72 65 57 61 72 6E 69 6E 67 4D 61 72 67 69 6E 20 00 32 33	·····"sRA SysT emperatureWarnin gMargin ·23
Write Variable:	02 02 02 02 00 00 00 22 73 57 4E 20 53 79 73 54 65 6D 70 65 72 61 74 75 72 65 57 61 72 6E 69 6E 67 4D 61 72 67 69 6E 20 00 32 39	·····"sWN SysT emperatureWarnin gMargin ·29
Write Variable Response:	02 02 02 02 00 00 00 20 73 57 41 20 53 79 73 54 65 6D 70 65 72 61 74 75 72 65 57 61 72 6E 69 6E 67 4D 61 72 67 69 6E 20 04	····· sWA SysT emperatureWarnin gMargin ·

4.2.7. Variable: SysTemperatureErrorLimit

The following section contains a detailed description of the variable SysTemperatureErrorLimit.

Variable Overview

Variable Name	Description
SysTemperatureErrorLimit	Systems highest allowed temperature. May depend on configuration.

Read-Access	Always
Write-Access	No! (readonly)

Int	
Value Range	-32768..32767
Initialisation	750
Physical Unit	°C
Physical Unit Factor	10.0

Variable Telegram Syntax

Read Variable:				
sRN SysTemperatureErrorLimit				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	SysTemperatureErrorLimit	String	24	Systems highest allowed temperature. May depend on configuration.

Read Variable Response:				
sRA SysTemperatureErrorLimit <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	SysTemperatureErrorLimit	String	24	Systems highest allowed temperature. May depend on configuration.
Variable Data	data	Int	2	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 1D 73 52 4E 20 53 79 73 54 65 6D 70 65 72 61 74 75 72 65 45 72 72 6F 72 4C 69 6D 69 74 20 77	····sRN SysT emperatureErrorL imit w
Read Variable Response:	02 02 02 02 00 00 00 1F 73 52 41 20 53 79 73 54 65 6D 70 65 72 61 74 75 72 65 45 72 72 6F 72 4C 69 6D 69 74 20 02 EE 94	····sRA SysT emperatureErrorL imit ·

4.2.8. Variable: doutOverload

The following section contains a detailed description of the variable doutOverload.

Variable Overview

Variable Name	Description
doutOverload	Digital output overheated, i.e. due to a overload

Communication Name	DoOvrld
Read-Access	Always
Write-Access	No! (readonly)

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:				
sRN DoOvrld				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DoOvrld	String	7	Digital output overheated, i.e. due to a overload

Read Variable Response:				
sRA DoOvrld <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DoOvrld	String	7	Digital output overheated, i.e. due to a overload
Variable Data	data	Bool	1	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0C 73 52 4E 20 44 6F 4F 76 72 6C 64 20 07	........sRN DoOvrld .
Read Variable Response:	02 02 02 02 00 00 00 0D 73 52 41 20 44 6F 4F 76 72 6C 64 20 00 08	........sRA DoOvrld ..

4.2.9. Variable: digitalIOStatus

The following section contains a detailed description of the variable digitalIOStatus.

Variable Overview

Variable Name	Description
digitalIOStatus	Digital output status, true if neither overload nor any pin error.

Read-Access	Always
Write-Access	No! (readonly)

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:				
sRN digitalIOStatus				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	digitalIOStatus	String	15	Digital output status, true if neither overload nor any pin error.

Read Variable Response:				
sRA digitalIOStatus <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	digitalIOStatus	String	15	Digital output status, true if neither overload nor any pin error.
Variable Data	data	Bool	1	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 14 73 52 4E 20 64 69 67 69 74 61 6C 49 4F 53 74 61 74 75 73 20 27	····sRN digi talIOStatus '
Read Variable Response:	02 02 02 02 00 00 00 15 73 52 41 20 64 69 67 69 74 61 6C 49 4F 53 74 61 74 75 73 20 00 28	····sRA digi talIOStatus ·(

4.2.10. Variable: OpVoltageStatus

The following section contains a detailed description of the variable OpVoltageStatus.

Variable Overview

Variable Name
OpVoltageStatus

Read-Access	Always
Write-Access	No! (readonly)

UserType	
ThreeLevels	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
sRN OpVoltageStatus				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	OpVoltageStatus	String	15	

Read Variable Response:				
sRA OpVoltageStatus <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	OpVoltageStatus	String	15	
Variable Data	data	ThreeLevels	0	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 14 73 52 4E 20 4F 70 56 6F 6C 74 61 67 65 53 74 61 74 75 73 20 26	····sRN OpVo ltageStatus &
Read Variable Response:	02 02 02 02 00 00 00 15 73 52 41 20 4F 70 56 6F 6C 74 61 67 65 53 74 61 74 75 73 20 00 29	····sRA OpVo ltageStatus ·)

4.2.11. Variable: TempLevel

The following section contains a detailed description of the variable TempLevel.

Variable Overview

Variable Name	Description
TempLevel	Temperature level

Communication Name	TmpLvl
Read-Access	Always
Write-Access	No! (readonly)

UserType	
ThreeLevels	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
sRN TmpLvl				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	TmpLvl	String	6	Temperature level

Read Variable Response:				
sRA TmpLvl <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	TmpLvl	String	6	Temperature level
Variable Data	data	ThreeLevels	0	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0B 73 52 4E 20 54 6D 70 4C 76 6C 20 70	........sRN TmpLvl p
Read Variable Response:	02 02 02 02 00 00 00 0C 73 52 41 20 54 6D 70 4C 76 6C 20 00 7F	........sRA TmpLvl ..

4.2.12. Variable: PowerOnCnt

The following section contains a detailed description of the variable PowerOnCnt.

Variable Overview

Variable Name	Description
PowerOnCnt	The number of power on cycles

Communication Name	ODpwrc
Read-Access	Always
Write-Access	No! (readonly)

UDInt	
Value Range	0..4294967295
Initialisation	0

Variable Telegram Syntax

Read Variable:				
sRN ODpwrc				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	ODpwrc	String	6	The number of power on cycles

Read Variable Response:				
sRA ODpwrc <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	ODpwrc	String	6	The number of power on cycles
Variable Data	data	UDInt	4	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0B 73 52 4E 20 4F 44 70 77 72 63 20 72	........sRN ODpwrc r
Read Variable Response:	02 02 02 02 00 00 00 0F 73 52 41 20 4F 44 70 77 72 63 20 00 00 00 00 7D	........sRA ODpwrc ....}

4.2.13. Variable: DailyOpHours

The following section contains a detailed description of the variable DailyOpHours.

Variable Overview

Variable Name	Description
DailyOpHours	The runtime duration since last power on. Non persistent !

Communication Name	ODopdaily
Read-Access	Always
Write-Access	No! (readonly)

Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	h

Variable Telegram Syntax

Read Variable:				
`sRN ODopdaily`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	ODopdaily	String	9	The runtime duration since last power on. Non persistent !

Read Variable Response:				
`sRA ODopdaily <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	ODopdaily	String	9	The runtime duration since last power on. Non persistent !
Variable Data	data	Real	4	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0E  73 52 4E 20 4F 44 6F 70 64 61 69 6C 79 20 02`	`·····sRN ODop daily ·`
Read Variable Response:	`02 02 02 02 00 00 00 12  73 52 41 20 4F 44 6F 70 64 61 69 6C 79 20 00 00  00 00 0D`	`·····sRA ODop daily ·····`

4.2.14. Variable: OpHours

The following section contains a detailed description of the variable OpHours.

Variable Overview

Variable Name	**Description**
OpHours	The total number of operating hours since last service reset. Can be reset by the service

Communication Name	ODoprh
Read-Access	Always
Write-Access	No! (readonly)

Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	h

Variable Telegram Syntax

Read Variable:				
sRN ODoprh				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	ODoprh	String	6	The total number of operating hours since last service reset. Can be reset by the service

Read Variable Response:				
sRA ODoprh <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	ODoprh	String	6	The total number of operating hours since last service reset. Can be reset by the service
Variable Data	data	Real	4	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0B 73 52 4E 20 4F 44 6F 70 72 68 20 61	····sRN ODop rh a
Read Variable Response:	02 02 02 02 00 00 00 0F 73 52 41 20 4F 44 6F 70 72 68 20 00 00 00 00 6E	····sRA ODop rh ····n

4.2.15. Variable: TemperatureValues

The following section contains a detailed description of the variable TemperatureValues.

Variable Overview

Variable Name	Description
TemperatureValues	List of all available temperatures. Ordered by significance in terms of calibration.

Read-Access	Service
Write-Access	No! (readonly)

Array		
Length		0..128
	Int	
	Value Range	-32768..32767
	Physical Unit	°C
	Physical Unit Factor	10.0

Variable Telegram Syntax

Read Variable:				
sRN TemperatureValues				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	TemperatureValues	String	17	List of all available temperatures. Ordered by significance in terms of calibration.

Read Variable Response:				
sRA TemperatureValues <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	TemperatureValues	String	17	List of all available temperatures. Ordered by significance in terms of calibration.
Variable Data	data	Array	256	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 16 73 52 4E 20 54 65 6D 70 65 72 61 74 75 72 65 56 61 6C 75 65 73 20 1B	····sRN Temp eratureValues ·
Read Variable Response:	02 02 02 02 00 00 00 18 73 52 41 20 54 65 6D 70 65 72 61 74 75 72 65 56 61 6C 75 65 73 20 00 00 14	····sRA Temp eratureValues ·· ·

4.2.16. Variable: TemperatureNames

The following section contains a detailed description of the variable TemperatureNames.

Variable Overview

Variable Name	Description
TemperatureNames	List of all names for variable TemperatureValues

Read-Access	Service
Write-Access	No! (readonly)

Array		
Length		0..128
	FlexString	
	Length	0..128

Variable Telegram Syntax

Read Variable:				
sRN TemperatureNames				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	TemperatureNames	String	16	List of all names for variable TemperatureValues

Read Variable Response:				
sRA TemperatureNames <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	TemperatureNames	String	16	List of all names for variable TemperatureValues
Variable Data	data	Array	16384	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 15 73 52 4E 20 54 65 6D 70 65 72 61 74 75 72 65 4E 61 6D 65 73 20 77	····sRN Temp eratureNames w
Read Variable Response:	02 02 02 02 00 00 00 17 73 52 41 20 54 65 6D 70 65 72 61 74 75 72 65 4E 61 6D 65 73 20 00 00 78	····sRA Temp eratureNames ··x

4.2.17. Variable: illuminationActive

The following section contains a detailed description of the variable illuminationActive.

Variable Overview

Variable Name	Description
illuminationActive	Shows whether illumination is active.

Read-Access	Always
Write-Access	No! (readonly)

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:				
sRN illuminationActive				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	illuminationActive	String	18	Shows whether illumination is active.

Read Variable Response:				
sRA illuminationActive <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	illuminationActive	String	18	Shows whether illumination is active.
Variable Data	data	Bool	1	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 17 73 52 4E 20 69 6C 6C 75 6D 69 6E 61 74 69 6F 6E 41 63 74 69 76 65 20 48	····sRN illu minationActive H
Read Variable Response:	02 02 02 02 00 00 00 18 73 52 41 20 69 6C 6C 75 6D 69 6E 61 74 69 6F 6E 41 63 74 69 76 65 20 00 47	····sRA illu minationActive · G

4.2.18. Variable: DeviceTime

The following section contains a detailed description of the variable DeviceTime.

Variable Overview

Variable Name	Description
DeviceTime	Timestamp of the device in milliseconds. Returns the 32 LSBs of the timestamp which can be used to synchronize with the timestamp of the Frame.

Read-Access	Always
Write-Access	No! (readonly)

UDInt	
Value Range	0..4294967295
Initialisation	0

Variable Telegram Syntax

Read Variable:				
`sRN DeviceTime`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DeviceTime	String	10	Timestamp of the device in milliseconds. Returns the 32 LSBs of the timestamp which can be used to synchronize with the timestamp of the Frame.

Read Variable Response:				
`sRA DeviceTime <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DeviceTime	String	10	Timestamp of the device in milliseconds. Returns the 32 LSBs of the timestamp which can be used to synchronize with the timestamp of the Frame.
Variable Data	data	UDInt	4	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0F 73 52 4E 20 44 65 76 69 63 65 54 69 6D 65 20 62`	`........sRN Devi ceTime b`
Read Variable Response:	`02 02 02 02 00 00 00 13 73 52 41 20 44 65 76 69 63 65 54 69 6D 65 20 00 00 00 00 6D`	`........sRA Devi ceTime ....m`

4.2.19. Variable: humidity

The following section contains a detailed description of the variable humidity.

Variable Overview

Variable Name	Description
humidity	Relative Humidity in %

Read-Access	Always
Write-Access	No! (readonly)

LReal	
Value Range	See specification IEEE 754 0.0..100.0

Variable Telegram Syntax

Read Variable:				
`sRN humidity`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	humidity	String	8	Relative Humidity in %

Read Variable Response:				
`sRA humidity <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	humidity	String	8	Relative Humidity in %
Variable Data	data	LReal	8	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0D  73 52 4E 20 68 75 6D 69` `64 69 74 79 20 76`	`····sRN humi` `dity v`
Read Variable Response:	`02 02 02 02 00 00 00 15  73 52 41 20 68 75 6D 69` `64 69 74 79 20 00 00 00  00 00 00 00 00 79`	`····sRA humi` `dity ····y`

4.3. Connection Settings

4.3.1. Variable: BlobTransportProtocolAPI

The following section contains a detailed description of the variable BlobTransportProtocolAPI.

Variable Overview

Variable Name
BlobTransportProtocolAPI

Read-Access	Always
Write-Access	AuthorizedClient, Service

Enum8			
Default Value		TCP	
	Value	Name	Description
	0	TCP	TCP Protocol
	1	UDP	UDP Protocol

Variable Telegram Syntax

Read Variable:				
`sRN BlobTransportProtocolAPI`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobTransportProtocolAPI	String	24	

Read Variable Response:				
`sRA BlobTransportProtocolAPI <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobTransportProtocolAPI	String	24	
Variable Data	data	Enum8	1	

Write Variable:				
`sWN BlobTransportProtocolAPI <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobTransportProtocolAPI	String	24	
Variable Data	data	Enum8	1	

Write Variable Response:				
`sWA BlobTransportProtocolAPI`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobTransportProtocolAPI	String	24	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 1D 73 52 4E 20 42 6C 6F 62 54 72 61 6E 73 70 6F 72 74 50 72 6F 74 6F 63 6F 6C 41 50 49 20 61	........sRN Blob TransportProtoco lAPI a
Read Variable Response:	02 02 02 02 00 00 00 1E 73 52 41 20 42 6C 6F 62 54 72 61 6E 73 70 6F 72 74 50 72 6F 74 6F 63 6F 6C 41 50 49 20 00 6E	........sRA Blob TransportProtoco lAPI .n
Write Variable:	02 02 02 02 00 00 00 1E 73 57 4E 20 42 6C 6F 62 54 72 61 6E 73 70 6F 72 74 50 72 6F 74 6F 63 6F 6C 41 50 49 20 00 64	........sWN Blob TransportProtoco lAPI .d
Write Variable Response:	02 02 02 02 00 00 00 1D 73 57 41 20 42 6C 6F 62 54 72 61 6E 73 70 6F 72 74 50 72 6F 74 6F 63 6F 6C 41 50 49 20 6B	........sWA Blob TransportProtoco lAPI k

4.3.2. Variable: BlobTcpPortAPI

The following section contains a detailed description of the variable BlobTcpPortAPI.

Variable Overview

Variable Name
BlobTcpPortAPI

Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	1025..65535
Initialisation	2114

Variable Telegram Syntax

Read Variable:				
`sRN BlobTcpPortAPI`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobTcpPortAPI	String	14	

Read Variable Response:				
`sRA BlobTcpPortAPI <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobTcpPortAPI	String	14	
Variable Data	data	UInt	2	

Write Variable:				
sWN BlobTcpPortAPI <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobTcpPortAPI	String	14	
Variable Data	data	UInt	2	

Write Variable Response:				
sWA BlobTcpPortAPI				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobTcpPortAPI	String	14	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 13 73 52 4E 20 42 6C 6F 62 54 63 70 50 6F 72 74 41 50 49 20 6A	........sRN Blob TcpPortAPI j
Read Variable Response:	02 02 02 02 00 00 00 15 73 52 41 20 42 6C 6F 62 54 63 70 50 6F 72 74 41 50 49 20 08 42 2F	........sRA Blob TcpPortAPI ·B/
Write Variable:	02 02 02 02 00 00 00 15 73 57 4E 20 42 6C 6F 62 54 63 70 50 6F 72 74 41 50 49 20 08 42 25	........sWN Blob TcpPortAPI ·B%
Write Variable Response:	02 02 02 02 00 00 00 13 73 57 41 20 42 6C 6F 62 54 63 70 50 6F 72 74 41 50 49 20 60	........sWA Blob TcpPortAPI `

4.3.3. Variable: BlobUdpAutoTransmit

The following section contains a detailed description of the variable BlobUdpAutoTransmit.

Variable Overview

Variable Name	Description
BlobUdpAutoTransmit	Enables Auto transmit to specified Client

Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:				
`sRN BlobUdpAutoTransmit`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpAutoTransmit	String	19	Enables Auto transmit to specified Client

Read Variable Response:				
`sRA BlobUdpAutoTransmit <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpAutoTransmit	String	19	Enables Auto transmit to specified Client
Variable Data	data	Bool	1	

Write Variable:				
`sWN BlobUdpAutoTransmit <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpAutoTransmit	String	19	Enables Auto transmit to specified Client
Variable Data	data	Bool	1	

Write Variable Response:				
`sWA BlobUdpAutoTransmit`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpAutoTransmit	String	19	Enables Auto transmit to specified Client

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		

Read Variable:	`02 02 02 02 00 00 00 18  73 52 4E 20 42 6C 6F 62`
	`55 64 70 41 75 74 6F 54  72 61 6E 73 6D 69 74 20`
	`08`
		`........sRN Blob`
		`UdpAutoTransmit`
		`.`

Read Variable Response:	`02 02 02 02 00 00 00 19  73 52 41 20 42 6C 6F 62`
	`55 64 70 41 75 74 6F 54  72 61 6E 73 6D 69 74 20`
	`00 07`
		`........sRA Blob`
		`UdpAutoTransmit`
		`..`

Write Variable:	`02 02 02 02 00 00 00 19  73 57 4E 20 42 6C 6F 62`
	`55 64 70 41 75 74 6F 54  72 61 6E 73 6D 69 74 20`
	`00 0D`
		`........sWN Blob`
		`UdpAutoTransmit`
		`..`

Write Variable Response:	`02 02 02 02 00 00 00 18  73 57 41 20 42 6C 6F 62`
	`55 64 70 41 75 74 6F 54  72 61 6E 73 6D 69 74 20`
	`02`
		`........sWA Blob`
		`UdpAutoTransmit`
		`.`

4.3.4. Variable: BlobUdpReceiverIPAPI

The following section contains a detailed description of the variable BlobUdpReceiverIPAPI.

Variable Overview

Variable Name	Description
BlobUdpReceiverIPAPI	The IP Address where the blob data will be send to.

Read-Access	Always
Write-Access	AuthorizedClient, Service

FlexString	
Length	0..45
Initialisation	192.168.1.2

Variable Telegram Syntax

Read Variable:

```
sRN BlobUdpReceiverIPAPI
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpReceiverIPAPI	String	20	The IP Address where the blob data will be send to.

Read Variable Response:

```
sRA BlobUdpReceiverIPAPI <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpReceiverIPAPI	String	20	The IP Address where the blob data will be send to.
Variable Data	data	FlexString	45	

Write Variable:

```
sWN BlobUdpReceiverIPAPI <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpReceiverIPAPI	String	20	The IP Address where the blob data will be send to.
Variable Data	data	FlexString	45	

Write Variable Response:

```
sWA BlobUdpReceiverIPAPI
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpReceiverIPAPI	String	20	The IP Address where the blob data will be send to.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 19 73 52 4E 20 42 6C 6F 62 55 64 70 52 65 63 65 69 76 65 72 49 50 41 50 49 20 75	····· sRN Blob UdpReceiverIPAPI u
Read Variable Response:	02 02 02 02 00 00 00 26 73 52 41 20 42 6C 6F 62 55 64 70 52 65 63 65 69 76 65 72 49 50 41 50 49 20 00 0B 31 39 32 2E 31 36 38 2E 31 2E 32 59	····· &sRA Blob UdpReceiverIPAPI ··192.168.1.2Y
Write Variable:	02 02 02 02 00 00 00 26 73 57 4E 20 42 6C 6F 62 55 64 70 52 65 63 65 69 76 65 72 49 50 41 50 49 20 00 0B 31 39 32 2E 31 36 38 2E 31 2E 32 53	····· &sWN Blob UdpReceiverIPAPI ··192.168.1.2S
Write Variable Response:	02 02 02 02 00 00 00 19 73 57 41 20 42 6C 6F 62 55 64 70 52 65 63 65 69 76 65 72 49 50 41 50 49 20 7F	····· sWA Blob UdpReceiverIPAPI ·

4.3.5. Variable: BlobUdpReceiverPortAPI

The following section contains a detailed description of the variable BlobUdpReceiverPortAPI.

Variable Overview

Variable Name
BlobUdpReceiverPortAPI

Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	1025..65535
Initialisation	2114

Variable Telegram Syntax

Read Variable:

```
sRN BlobUdpReceiverPortAPI
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpReceiverPortAPI	String	22	

Read Variable Response:

```
sRA BlobUdpReceiverPortAPI <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpReceiverPortAPI	String	22	
Variable Data	data	UInt	2	

Write Variable:				
sWN BlobUdpReceiverPortAPI <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpReceiverPortAPI	String	22	
Variable Data	data	UInt	2	

Write Variable Response:				
sWA BlobUdpReceiverPortAPI				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpReceiverPortAPI	String	22	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 1B 73 52 4E 20 42 6C 6F 62 55 64 70 52 65 63 65 69 76 65 72 50 6F 72 74 41 50 49 20 55	····sRN Blob UdpReceiverPortA PI U
Read Variable Response:	02 02 02 02 00 00 00 1D 73 52 41 20 42 6C 6F 62 55 64 70 52 65 63 65 69 76 65 72 50 6F 72 74 41 50 49 20 08 42 10	····sRA Blob UdpReceiverPortA PI ·B·
Write Variable:	02 02 02 02 00 00 00 1D 73 57 4E 20 42 6C 6F 62 55 64 70 52 65 63 65 69 76 65 72 50 6F 72 74 41 50 49 20 08 42 1A	····sWN Blob UdpReceiverPortA PI ·B·
Write Variable Response:	02 02 02 02 00 00 00 1B 73 57 41 20 42 6C 6F 62 55 64 70 52 65 63 65 69 76 65 72 50 6F 72 74 41 50 49 20 5F	····sWA Blob UdpReceiverPortA PI _

4.3.6. Variable: BlobUdpControlPortAPI

The following section contains a detailed description of the variable BlobUdpControlPortAPI.

Variable Overview

Variable Name
BlobUdpControlPortAPI

Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	1025..65535
Initialisation	2114

Variable Telegram Syntax

Read Variable:				
`sRN BlobUdpControlPortAPI`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpControlPortAPI	String	21	

Read Variable Response:				
`sRA BlobUdpControlPortAPI <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpControlPortAPI	String	21	
Variable Data	data	UInt	2	

Write Variable:				
`sWN BlobUdpControlPortAPI <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpControlPortAPI	String	21	
Variable Data	data	UInt	2	

Write Variable Response:				
`sWA BlobUdpControlPortAPI`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpControlPortAPI	String	21	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		

Read Variable:	`02 02 02 02 00 00 00 1A 73 52 4E 20 42 6C 6F 62`
	`55 64 70 43 6F 6E 74 72 6F 6C 50 6F 72 74 41 50`
	`49 20 2B`
		`........sRN Blob`
		`UdpControlPortAP`
		`I +`

Read Variable Response:	`02 02 02 02 00 00 00 1C 73 52 41 20 42 6C 6F 62`
	`55 64 70 43 6F 6E 74 72 6F 6C 50 6F 72 74 41 50`
	`49 20 08 42 6E`
		`........sRA Blob`
		`UdpControlPortAP`
		`I ·Bn`

Write Variable:	`02 02 02 02 00 00 00 1C 73 57 4E 20 42 6C 6F 62`
	`55 64 70 43 6F 6E 74 72 6F 6C 50 6F 72 74 41 50`
	`49 20 08 42 64`
		`........sWN Blob`
		`UdpControlPortAP`
		`I ·Bd`

Write Variable Response:	`02 02 02 02 00 00 00 1A 73 57 41 20 42 6C 6F 62`
	`55 64 70 43 6F 6E 74 72 6F 6C 50 6F 72 74 41 50`
	`49 20 21`
		`........sWA Blob`
		`UdpControlPortAP`
		`I !`

4.3.7. Variable: BlobUdpHeaderEnabled

The following section contains a detailed description of the variable BlobUdpHeaderEnabled.

Variable Overview

Variable Name	Description
BlobUdpHeaderEnabled	Enable Header in UDP Packets

Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	True

Variable Telegram Syntax

Read Variable:

```
sRN BlobUdpHeaderEnabled
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpHeaderEnabled	String	20	Enable Header in UDP Packets

Read Variable Response:

```
sRA BlobUdpHeaderEnabled <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpHeaderEnabled	String	20	Enable Header in UDP Packets
Variable Data	data	Bool	1	

Write Variable:

```
sWN BlobUdpHeaderEnabled <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpHeaderEnabled	String	20	Enable Header in UDP Packets
Variable Data	data	Bool	1	

Write Variable Response:

```
sWA BlobUdpHeaderEnabled
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpHeaderEnabled	String	20	Enable Header in UDP Packets

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 19 73 52 4E 20 42 6C 6F 62 55 64 70 48 65 61 64 65 72 45 6E 61 62 6C 65 64 20 77	........sRN Blob UdpHeaderEnabled w
Read Variable Response:	02 02 02 02 00 00 00 1A 73 52 41 20 42 6C 6F 62 55 64 70 48 65 61 64 65 72 45 6E 61 62 6C 65 64 20 01 79	........sRA Blob UdpHeaderEnabled ·y
Write Variable:	02 02 02 02 00 00 00 1A 73 57 4E 20 42 6C 6F 62 55 64 70 48 65 61 64 65 72 45 6E 61 62 6C 65 64 20 01 73	........sWN Blob UdpHeaderEnabled ·s
Write Variable Response:	02 02 02 02 00 00 00 19 73 57 41 20 42 6C 6F 62 55 64 70 48 65 61 64 65 72 45 6E 61 62 6C 65 64 20 7D	........sWA Blob UdpHeaderEnabled }

4.3.8. Variable: BlobUdpHeartbeatInterval

The following section contains a detailed description of the variable BlobUdpHeartbeatInterval.

Variable Overview

Variable Name	Description
BlobUdpHeartbeatInterval	The maximum Interval between two heartbeats in ms (0 = disabled)

Read-Access	Always
Write-Access	AuthorizedClient, Service

UDInt	
Value Range	0..10000000
Initialisation	0
Physical Unit	ms

Variable Telegram Syntax

Read Variable:

```
sRN BlobUdpHeartbeatInterval
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpHeartbeatInterval	String	24	The maximum Interval between two heartbeats in ms (0 = disabled)

Read Variable Response:

```
sRA BlobUdpHeartbeatInterval <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpHeartbeatInterval	String	24	The maximum Interval between two heartbeats in ms (0 = disabled)
Variable Data	data	UDInt	4	

Write Variable:				
sWN BlobUdpHeartbeatInterval <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpHeartbeatInterval	String	24	The maximum Interval between two heartbeats in ms (0 = disabled)
Variable Data	data	UDInt	4	

Write Variable Response:				
sWA BlobUdpHeartbeatInterval				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpHeartbeatInterval	String	24	The maximum Interval between two heartbeats in ms (0 = disabled)

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 1D 73 52 4E 20 42 6C 6F 62 55 64 70 48 65 61 72 74 62 65 61 74 49 6E 74 65 72 76 61 6C 20 6A	........sRN Blob UdpHeartbeatInte rval j
Read Variable Response:	02 02 02 02 00 00 00 21 73 52 41 20 42 6C 6F 62 55 64 70 48 65 61 72 74 62 65 61 74 49 6E 74 65 72 76 61 6C 20 00 00 00 00 65	........!sRA Blob UdpHeartbeatInte rval ....e
Write Variable:	02 02 02 02 00 00 00 21 73 57 4E 20 42 6C 6F 62 55 64 70 48 65 61 72 74 62 65 61 74 49 6E 74 65 72 76 61 6C 20 00 00 00 00 6F	.......!sWN Blob UdpHeartbeatInte rval ....o
Write Variable Response:	02 02 02 02 00 00 00 1D 73 57 41 20 42 6C 6F 62 55 64 70 48 65 61 72 74 62 65 61 74 49 6E 74 65 72 76 61 6C 20 60	........sWA Blob UdpHeartbeatInte rval `

4.3.9. Variable: BlobUdpMaxPacketSizeAPI

The following section contains a detailed description of the variable BlobUdpMaxPacketSizeAPI.

Variable Overview

Variable Name	Description
BlobUdpMaxPacketSizeAPI	The maximum size of a single UDP Packet

Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	100..65535
Initialisation	1024

Variable Telegram Syntax

Read Variable:				
`sRN BlobUdpMaxPacketSizeAPI`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpMaxPacketSizeAPI	String	23	The maximum size of a single UDP Packet

Read Variable Response:				
`sRA BlobUdpMaxPacketSizeAPI <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpMaxPacketSizeAPI	String	23	The maximum size of a single UDP Packet
Variable Data	data	UInt	2	

Write Variable:				
`sWN BlobUdpMaxPacketSizeAPI <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpMaxPacketSizeAPI	String	23	The maximum size of a single UDP Packet
Variable Data	data	UInt	2	

Write Variable Response:				
`sWA BlobUdpMaxPacketSizeAPI`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpMaxPacketSizeAPI	String	23	The maximum size of a single UDP Packet

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	`02 02 02 02 00 00 00 1C  73 52 4E 20 42 6C 6F 62`
	`55 64 70 4D 61 78 50 61  63 6B 65 74 53 69 7A 65`
	`41 50 49 20 0C`
		`........sRN Blob`
		`UdpMaxPacketSize`
		`API .`

Read Variable Response:	`02 02 02 02 00 00 00 1E  73 52 41 20 42 6C 6F 62`
	`55 64 70 4D 61 78 50 61  63 6B 65 74 53 69 7A 65`
	`41 50 49 20 04 00 07`
		`........sRA Blob`
		`UdpMaxPacketSize`
		`API ...`

Write Variable:	`02 02 02 02 00 00 00 1E  73 57 4E 20 42 6C 6F 62`
	`55 64 70 4D 61 78 50 61  63 6B 65 74 53 69 7A 65`
	`41 50 49 20 04 00 0D`
		`........sWN Blob`
		`UdpMaxPacketSize`
		`API ...`

Write Variable Response:	`02 02 02 02 00 00 00 1C  73 57 41 20 42 6C 6F 62`
	`55 64 70 4D 61 78 50 61  63 6B 65 74 53 69 7A 65`
	`41 50 49 20 06`
		`........sWA Blob`
		`UdpMaxPacketSize`
		`API .`

4.3.10. Variable: BlobUdpIdleTimeBetweenPacketsAPI

The following section contains a detailed description of the variable BlobUdpIdleTimeBetweenPacketsAPI.

Variable Overview

Variable Name	Description
BlobUdpIdleTimeBetweenPacketsAPI	The time in uS the device waits before sending a new Packet

Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	10..10000
Initialisation	10
Physical Unit	µs

Variable Telegram Syntax

Read Variable:

```
sRN BlobUdpIdleTimeBetweenPacketsAPI
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpIdleTimeBetweenPacketsAPI	String	32	The time in uS the device waits before sending a new Packet

Read Variable Response:

```
sRA BlobUdpIdleTimeBetweenPacketsAPI <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpIdleTimeBetweenPacketsAPI	String	32	The time in uS the device waits before sending a new Packet
Variable Data	data	UInt	2	

Write Variable:

```
sWN BlobUdpIdleTimeBetweenPacketsAPI <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpIdleTimeBetweenPacketsAPI	String	32	The time in uS the device waits before sending a new Packet
Variable Data	data	UInt	2	

Write Variable Response:

```
sWA BlobUdpIdleTimeBetweenPacketsAPI
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpIdleTimeBetweenPacketsAPI	String	32	The time in uS the device waits before sending a new Packet

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 25 73 52 4E 20 42 6C 6F 62 55 64 70 49 64 6C 65 54 69 6D 65 42 65 74 77 65 65 6E 50 61 63 6B 65 74 73 41 50 49 20 55	·······%sRN Blob UdpIdleTimeBetwe enPacketsAPI U
Read Variable Response:	02 02 02 02 00 00 00 27 73 52 41 20 42 6C 6F 62 55 64 70 49 64 6C 65 54 69 6D 65 42 65 74 77 65 65 6E 50 61 63 6B 65 74 73 41 50 49 20 00 0A 50	·······'sRA Blob UdpIdleTimeBetwe enPacketsAPI ··P
Write Variable:	02 02 02 02 00 00 00 27 73 57 4E 20 42 6C 6F 62 55 64 70 49 64 6C 65 54 69 6D 65 42 65 74 77 65 65 6E 50 61 63 6B 65 74 73 41 50 49 20 00 0A 5A	·······'sWN Blob UdpIdleTimeBetwe enPacketsAPI ··Z
Write Variable Response:	02 02 02 02 00 00 00 25 73 57 41 20 42 6C 6F 62 55 64 70 49 64 6C 65 54 69 6D 65 42 65 74 77 65 65 6E 50 61 63 6B 65 74 73 41 50 49 20 5F	·······%sWA Blob UdpIdleTimeBetwe enPacketsAPI _

4.3.11. Variable: BlobUdpHeaderEnabled

The following section contains a detailed description of the variable BlobUdpHeaderEnabled.

Variable Overview

Variable Name	Description
BlobUdpHeaderEnabled	Enable Header in UDP Packets

Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	True

Variable Telegram Syntax

Read Variable:

```
sRN BlobUdpHeaderEnabled
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpHeaderEnabled	String	20	Enable Header in UDP Packets

Read Variable Response:

```
sRA BlobUdpHeaderEnabled <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpHeaderEnabled	String	20	Enable Header in UDP Packets
Variable Data	data	Bool	1	

Write Variable:				
sWN BlobUdpHeaderEnabled <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpHeaderEnabled	String	20	Enable Header in UDP Packets
Variable Data	data	Bool	1	

Write Variable Response:				
sWA BlobUdpHeaderEnabled				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpHeaderEnabled	String	20	Enable Header in UDP Packets

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 19 73 52 4E 20 42 6C 6F 62 55 64 70 48 65 61 64 65 72 45 6E 61 62 6C 65 64 20 77	····sRN Blob UdpHeaderEnabled w
Read Variable Response:	02 02 02 02 00 00 00 1A 73 52 41 20 42 6C 6F 62 55 64 70 48 65 61 64 65 72 45 6E 61 62 6C 65 64 20 01 79	····sRA Blob UdpHeaderEnabled ·y
Write Variable:	02 02 02 02 00 00 00 1A 73 57 4E 20 42 6C 6F 62 55 64 70 48 65 61 64 65 72 45 6E 61 62 6C 65 64 20 01 73	····sWN Blob UdpHeaderEnabled ·s
Write Variable Response:	02 02 02 02 00 00 00 19 73 57 41 20 42 6C 6F 62 55 64 70 48 65 61 64 65 72 45 6E 61 62 6C 65 64 20 7D	····sWA Blob UdpHeaderEnabled }

4.3.12. Variable: BlobUdpFECEnabled

The following section contains a detailed description of the variable BlobUdpFECEnabled.

Variable Overview

Variable Name	Description
BlobUdpFECEnabled	Enable Forward Error Correction for UDP Packets

Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:				
`sRN BlobUdpFECEnabled`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	BlobUdpFECEnabled	String	17	Enable Forward Error Correction for UDP Packets

Read Variable Response:				
`sRA BlobUdpFECEnabled <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	BlobUdpFECEnabled	String	17	Enable Forward Error Correction for UDP Packets
Variable Data	data	Bool	1	

Write Variable:				
`sWN BlobUdpFECEnabled <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	BlobUdpFECEnabled	String	17	Enable Forward Error Correction for UDP Packets
Variable Data	data	Bool	1	

Write Variable Response:				
`sWA BlobUdpFECEnabled`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	BlobUdpFECEnabled	String	17	Enable Forward Error Correction for UDP Packets

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 16  73 52 4E 20 42 6C 6F 62` `55 64 70 46 45 43 45 6E  61 62 6C 65 64 20 08`	`........sRN Blob` `UdpFECEnabled ·`
Read Variable Response:	`02 02 02 02 00 00 00 17  73 52 41 20 42 6C 6F 62` `55 64 70 46 45 43 45 6E  61 62 6C 65 64 20 00 07`	`........sRA Blob` `UdpFECEnabled ··`
Write Variable:	`02 02 02 02 00 00 00 17  73 57 4E 20 42 6C 6F 62` `55 64 70 46 45 43 45 6E  61 62 6C 65 64 20 00 0D`	`........sWN Blob` `UdpFECEnabled ··`
Write Variable Response:	`02 02 02 02 00 00 00 16  73 57 41 20 42 6C 6F 62` `55 64 70 46 45 43 45 6E  61 62 6C 65 64 20 02`	`........sWA Blob` `UdpFECEnabled ·`

4.4. Frontend Settings

4.4.1. Camera Controls

4.4.1.1. Variable: frontendMode

The following section contains a detailed description of the variable frontendMode.

Variable Overview

Variable Name	Description
frontendMode	(Persistent) state that specifies the mode of the device (continuous, stop, externalTrigger)

Read-Access	Always
Write-Access	AuthorizedClient, Service

Enum8			
Default Value		CONTINUOUS	
	Value	Name	Description
	0	CONTINUOUS	
	1	STOP	

Variable Telegram Syntax

Read Variable:				
`sRN frontendMode`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	frontendMode	String	12	(Persistent) state that specifies the mode of the device (continuous, stop, externalTrigger)

Read Variable Response:				
`sRA frontendMode <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	frontendMode	String	12	(Persistent) state that specifies the mode of the device (continuous, stop, externalTrigger)
Variable Data	data	Enum8	1	

Write Variable:				
`sWN frontendMode <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	frontendMode	String	12	(Persistent) state that specifies the mode of the device (continuous, stop, externalTrigger)
Variable Data	data	Enum8	1	

Write Variable Response:				
`sWA frontendMode`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge

Write Variable Response:				
sWA frontendMode				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command	frontendMode	String	12	(Persistent) state that specifies the mode of the device (continuous, stop, externalTrigger)

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 11 73 52 4E 20 66 72 6F 6E 74 65 6E 64 4D 6F 64 65 20 42	........sRN fron tendMode B
Read Variable Response:	02 02 02 02 00 00 00 12 73 52 41 20 66 72 6F 6E 74 65 6E 64 4D 6F 64 65 20 00 4D	........sRA fron tendMode ·M
Write Variable:	02 02 02 02 00 00 00 12 73 57 4E 20 66 72 6F 6E 74 65 6E 64 4D 6F 64 65 20 00 47	........sWN fron tendMode ·G
Write Variable Response:	02 02 02 02 00 00 00 11 73 57 41 20 66 72 6F 6E 74 65 6E 64 4D 6F 64 65 20 48	........sWA fron tendMode H

4.4.1.2. Method: SingleStep

The following section contains a detailed description of the method SingleStep.

Method Overview

Method Name	Description
SingleStep	Software trigger to acquire a frame when frontendMode is STOP (Single frame).

Communication Name	PLAYNEXT
Invocation Access	Always

Method Telegram Syntax

Method Invocation:				
sMN PLAYNEXT				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sMN	String	3	Request (SOPAS Method by Name)
Command	PLAYNEXT	String	8	Request single image from device.

Method Return Value:				
sAN PLAYNEXT				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sAN	String	3	Result (SOPAS Method Result)
Command	PLAYNEXT	String	8	Request single image from device.

Method Telegram Examples

Example: Default Values		
Method telegram examples with parameter data and return value data set to default values.		
Method Invocation:	02 02 02 02 00 00 00 0D 73 4D 4E 20 50 4C 41 59 4E 45 58 54 20 73	........sMN PLAY NEXT s
Method Return Value:	02 02 02 02 00 00 00 0D 73 41 4E 20 50 4C 41 59 4E 45 58 54 20 7F	........sAN PLAY NEXT ·

4.4.1.3. Variable: framePeriodUs

The following section contains a detailed description of the variable framePeriodUs.

Variable Overview

Variable Name	Description
framePeriodUs	The frame period of the 3D frontend used.

Read-Access	Always
Write-Access	AuthorizedClient, Service

UDInt	
Value Range	33333..1000000
Initialisation	40000
Physical Unit	µs

Variable Telegram Syntax

Read Variable:

```
sRN framePeriodUs
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	framePeriodUs	String	13	The frame period of the 3D frontend used.

Read Variable Response:

```
sRA framePeriodUs <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	framePeriodUs	String	13	The frame period of the 3D frontend used.
Variable Data	data	UDInt	4	

Write Variable:

```
sWN framePeriodUs <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	framePeriodUs	String	13	The frame period of the 3D frontend used.
Variable Data	data	UDInt	4	

Write Variable Response:				
sWA framePeriodUs				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	framePeriodUs	String	13	The frame period of the 3D frontend used.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 12 73 52 4E 20 66 72 61 6D 65 50 65 72 69 6F 64 55 73 20 11	····sRN fram ePeriodUs ·
Read Variable Response:	02 02 02 02 00 00 00 16 73 52 41 20 66 72 61 6D 65 50 65 72 69 6F 64 55 73 20 00 00 9C 40 C2	····sRA fram ePeriodUs ··@
Write Variable:	02 02 02 02 00 00 00 16 73 57 4E 20 66 72 61 6D 65 50 65 72 69 6F 64 55 73 20 00 00 9C 40 C8	····sWN fram ePeriodUs ··@
Write Variable Response:	02 02 02 02 00 00 00 12 73 57 41 20 66 72 61 6D 65 50 65 72 69 6F 64 55 73 20 1B	····sWA fram ePeriodUs ·

4.4.1.4. Variable: timeSynchronizationEnabled

The following section contains a detailed description of the variable timeSynchronizationEnabled.

Variable Overview

Variable Name	Description
timeSynchronizationEnabled	Enables time sync feature to synchronize multiple devices. Needs a running PTP/NTP Client to work.

Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:				
`sRN timeSynchronizationEnabled`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	timeSynchronizationEnabled	String	26	Enables time sync feature to synchronize multiple devices. Needs a running PTP/NTP Client to work.

Read Variable Response:				
`sRA timeSynchronizationEnabled <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	timeSynchronizationEnabled	String	26	Enables time sync feature to synchronize multiple devices. Needs a running PTP/NTP Client to work.
Variable Data	data	Bool	1	

Write Variable:				
`sWN timeSynchronizationEnabled <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	timeSynchronizationEnabled	String	26	Enables time sync feature to synchronize multiple devices. Needs a running PTP/NTP Client to work.
Variable Data	data	Bool	1	

Write Variable Response:				
`sWA timeSynchronizationEnabled`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	timeSynchronizationEnabled	String	26	Enables time sync feature to synchronize multiple devices. Needs a running PTP/NTP Client to work.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		

Read Variable:	`02 02 02 02 00 00 00 1F  73 52 4E 20 74 69 6D 65`
	`53 79 6E 63 68 72 6F 6E  69 7A 61 74 69 6F 6E 45`
	`6E 61 62 6C 65 64 20 6D`
		`·····sRN time`
		`SynchronizationE`
		`nabled m`

Read Variable Response:	`02 02 02 02 00 00 00 20  73 52 41 20 74 69 6D 65`
	`53 79 6E 63 68 72 6F 6E  69 7A 61 74 69 6F 6E 45`
	`6E 61 62 6C 65 64 20 00  62`
		`····· sRA time`
		`SynchronizationE`
		`nabled ·b`

Write Variable:	`02 02 02 02 00 00 00 20  73 57 4E 20 74 69 6D 65`
	`53 79 6E 63 68 72 6F 6E  69 7A 61 74 69 6F 6E 45`
	`6E 61 62 6C 65 64 20 00  68`
		`····· sWN time`
		`SynchronizationE`
		`nabled ·h`

Write Variable Response:	`02 02 02 02 00 00 00 1F  73 57 41 20 74 69 6D 65`
	`53 79 6E 63 68 72 6F 6E  69 7A 61 74 69 6F 6E 45`
	`6E 61 62 6C 65 64 20 67`
		`·····sWA time`
		`SynchronizationE`
		`nabled g`

4.4.1.5. Variable: timeSynchronizationOffset

The following section contains a detailed description of the variable timeSynchronizationOffset.

Variable Overview

Variable Name	Description
timeSynchronizationOffset	Trigger offset. Used to shift the trigger which allows non overlapping acquisition of several devices.

Read-Access	Always
Write-Access	AuthorizedClient, Service

UDInt	
Value Range	0..1000000
Initialisation	0
Physical Unit	µs

Variable Telegram Syntax

Read Variable:

```
sRN timeSynchronizationOffset
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	timeSynchronizationOffset	String	25	Trigger offset. Used to shift the trigger which allows non overlapping acquisition of several devices.

Read Variable Response:

```
sRA timeSynchronizationOffset <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	timeSynchronizationOffset	String	25	Trigger offset. Used to shift the trigger which allows non overlapping acquisition of several devices.
Variable Data	data	UDInt	4	

Write Variable:

```
sWN timeSynchronizationOffset <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	timeSynchronizationOffset	String	25	Trigger offset. Used to shift the trigger which allows non overlapping acquisition of several devices.
Variable Data	data	UDInt	4	

Write Variable Response:

```
sWA timeSynchronizationOffset
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	timeSynchronizationOffset	String	25	Trigger offset. Used to shift the trigger which allows non overlapping acquisition of several devices.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 1E 73 52 4E 20 74 69 6D 65 53 79 6E 63 68 72 6F 6E 69 7A 61 74 69 6F 6E 4F 66 66 73 65 74 20 05	........sRN time SynchronizationO ffset ·
Read Variable Response:	02 02 02 02 00 00 00 22 73 52 41 20 74 69 6D 65 53 79 6E 63 68 72 6F 6E 69 7A 61 74 69 6F 6E 4F 66 66 73 65 74 20 00 00 00 00 0A	.......sRA time SynchronizationO ffset ·····
Write Variable:	02 02 02 02 00 00 00 22 73 57 4E 20 74 69 6D 65 53 79 6E 63 68 72 6F 6E 69 7A 61 74 69 6F 6E 4F 66 66 73 65 74 20 00 00 00 00 00 00	.......sWN time SynchronizationO ffset ·····
Write Variable Response:	02 02 02 02 00 00 00 1E 73 57 41 20 74 69 6D 65 53 79 6E 63 68 72 6F 6E 69 7A 61 74 69 6F 6E 4F 66 66 73 65 74 20 0F	........sWA time SynchronizationO ffset ·

4.4.2. Mounting Settings

4.4.2.1. Variable: sensorPosition

The following section contains a detailed description of the variable sensorPosition.

Variable Overview

Variable Name	Description
sensorPosition	Sensor position in 3D Cartesian coordinates.

Read-Access	Always
Write-Access	AuthorizedClient, Service

UserType	
Vector3	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:

```
sRN sensorPosition
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	sensorPosition	String	14	Sensor position in 3D Cartesian coordinates.

Read Variable Response:

```
sRA sensorPosition <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	sensorPosition	String	14	Sensor position in 3D Cartesian coordinates.
Variable Data	data	Vector3	12	

Write Variable:

```
sWN sensorPosition <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	sensorPosition	String	14	Sensor position in 3D Cartesian coordinates.
Variable Data	data	Vector3	12	

Write Variable Response:

```
sWA sensorPosition
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	sensorPosition	String	14	Sensor position in 3D Cartesian coordinates.

Variable Telegram Examples

Custom Value 1		
read/write variable sensorPosition with value of <X=0mm, Y=0mm, Z=3000mm> (TOP-DOWN)		
Read Variable:	02 02 02 02 00 00 00 13 73 52 4E 20 73 65 6E 73 6F 72 50 6F 73 69 74 69 6F 6E 20 40	····sRN sens orPosition @
Read Variable Response:	02 02 02 02 00 00 00 1F 73 52 41 20 73 65 6E 73 6F 72 50 6F 73 69 74 69 6F 6E 20 00 00 00 00 00 00 00 00 45 3B 80 00 B1	····sRA sens orPosition ····· ···E;·
Write Variable:	02 02 02 02 00 00 00 1F 73 57 4E 20 73 65 6E 73 6F 72 50 6F 73 69 74 69 6F 6E 20 00 00 00 00 00 00 00 00 45 3B 80 00 BB	····sWN sens orPosition ····· ···E;·
Write Variable Response:	02 02 02 02 00 00 00 13 73 57 41 20 73 65 6E 73 6F 72 50 6F 73 69 74 69 6F 6E 20 4A	····sWA sens orPosition J

4.4.2.2. Variable: sensorOrientation

The following section contains a detailed description of the variable sensorOrientation.

Variable Overview

Variable Name	Description
sensorOrientation	Sensor orientation in Euler angles.

Read-Access	Always
Write-Access	AuthorizedClient, Service

UserType	
RotationVector3f	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
`sRN sensorOrientation`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	sensorOrientation	String	17	Sensor orientation in Euler angles.

Read Variable Response:				
`sRA sensorOrientation <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	sensorOrientation	String	17	Sensor orientation in Euler angles.
Variable Data	data	RotationVector3f	12	

Write Variable:				
sWN sensorOrientation <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	sensorOrientation	String	17	Sensor orientation in Euler angles.
Variable Data	data	RotationVector3f	12	

Write Variable Response:				
sWA sensorOrientation				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	sensorOrientation	String	17	Sensor orientation in Euler angles.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 16 73 52 4E 20 73 65 6E 73 6F 72 4F 72 69 65 6E 74 61 74 69 6F 6E 20 2F	····sRN sens orOrientation /
Read Variable Response:	02 02 02 02 00 00 00 22 73 52 41 20 73 65 6E 73 6F 72 4F 72 69 65 6E 74 61 74 69 6F 6E 20 00 00 00 00 00 00 00 00 00 00 00 00 20	····"sRA sens orOrientation ·· ··
Write Variable:	02 02 02 02 00 00 00 22 73 57 4E 20 73 65 6E 73 6F 72 4F 72 69 65 6E 74 61 74 69 6F 6E 20 00 00 00 00 00 00 00 00 00 00 00 00 2A	····"sWN sens orOrientation ·· ··*
Write Variable Response:	02 02 02 02 00 00 00 16 73 57 41 20 73 65 6E 73 6F 72 4F 72 69 65 6E 74 61 74 69 6F 6E 20 25	····sWA sens orOrientation %

4.4.2.3. Variable: cameraToWorldMatrix

The following section contains a detailed description of the variable cameraToWorldMatrix.

Variable Overview

Variable Name	Description
cameraToWorldMatrix	Camera to world transformation matrix, contains sensor position and orientation as 4 by 4 matrix. This variable is read-only.

Communication Name	CWMat
Read-Access	Always
Write-Access	No! (readonly)

UserType	
Matrix4x4	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
sRN CWMat				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	CWMat	String	5	Camera to world transformation matrix, contains sensor position and orientation as 4 by 4 matrix. This variable is read-only.

Read Variable Response:				
sRA CWMat <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	CWMat	String	5	Camera to world transformation matrix, contains sensor position and orientation as 4 by 4 matrix. This variable is read-only.
Variable Data	data	Matrix4x4	64	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0A 73 52 4E 20 43 57 4D 61 74 20 23	·····sRN CWMa t #
Read Variable Response:	02 02 02 02 00 00 00 4A 73 52 41 20 43 57 4D 61 74 20 3F 80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F 80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F 80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F 80 00 00 2C	·····JsRA CWMa t ?····· ·····?····· ·····?···· ·····? ·,

4.4.2.4. Variable: cameraModel

The following section contains a detailed description of the variable cameraModel.

Variable Overview

Variable Name	Description
cameraModel	Information about the camera model, which contains: CameraID, ImageWidth, ImageHeight, FocalDistance, FocalDistanceUnit, IntrinsicK-Matrix, WorldToSensorDistortion-Matrix, SensorToWorldDistortion-Matrix, Transform-Matrix

Read-Access	Always
Write-Access	Always

UserType	
CameraModel	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
`sRN cameraModel`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	cameraModel	String	11	Information about the camera model, which contains: CameraID, ImageWidth, ImageHeight, FocalDistance, FocalDistanceUnit, IntrinsicK-Matrix, WorldToSensorDistortion-Matrix, SensorToWorldDistortion-Matrix, Transform-Matrix

Read Variable Response:				
`sRA cameraModel <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	cameraModel	String	11	Information about the camera model, which contains: CameraID, ImageWidth, ImageHeight, FocalDistance, FocalDistanceUnit, IntrinsicK-Matrix, WorldToSensorDistortion-Matrix, SensorToWorldDistortion-Matrix, Transform-Matrix
Variable Data	data	CameraModel	368	

Write Variable:				
`sWN cameraModel <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	cameraModel	String	11	Information about the camera model, which contains: CameraID, ImageWidth, ImageHeight, FocalDistance, FocalDistanceUnit, IntrinsicK-Matrix, WorldToSensorDistortion-Matrix, SensorToWorldDistortion-Matrix, Transform-Matrix
Variable Data	data	CameraModel	368	

Write Variable Response:				
`sWA cameraModel`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	cameraModel	String	11	Information about the camera model, which contains: CameraID, ImageWidth, ImageHeight, FocalDistance, FocalDistanceUnit, IntrinsicK-Matrix, WorldToSensorDistortion-Matrix, SensorToWorldDistortion-Matrix, Transform-Matrix

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 10 73 52 4E 20 63 61 6D 65 72 61 4D 6F 64 65 6C 20 39	········sRN came raModel 9
Read Variable Response:	02 02 02 02 00 00 01 3C 73 52 41 20 63 61 6D 65 72 61 4D 6F 64 65 6C 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 F9	·······<sRA came raModel ········ ············?·· ················ ············?·· ················ ············?·· ················ ················ ················ ················ ················ ····?·········· ················ ············?·· ················ ················ ····?·········· ················ ············?·· ····
Write Variable:	02 02 02 02 00 00 01 3C 73 57 4E 20 63 61 6D 65 72 61 4D 6F 64 65 6C 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F F0 00 00 00 00 00 00 F3	·······<sWN came raModel ········ ············?·· ················ ············?·· ················ ············?·· ················ ················ ················ ················ ················ ····?·········· ················ ············?·· ················ ················ ····?·········· ················ ············?·· ····
Write Variable Response:	02 02 02 02 00 00 00 10 73 57 41 20 63 61 6D 65 72 61 4D 6F 64 65 6C 20 33	········sWA came raModel 3

4.4.3. Filter Settings

4.4.3.1. Variable: enableIsolatedPixelFilter

The following section contains a detailed description of the variable enableIsolatedPixelFilter.

Variable Overview

Variable Name	Description
enableIsolatedPixelFilter	Switching the isolated pixel filter on and off

Communication Name	enIsoPixFilter
Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:

```
sRN enIsoPixFilter
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	enIsoPixFilter	String	14	Switching the isolated pixel filter on and off

Read Variable Response:

```
sRA enIsoPixFilter <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	enIsoPixFilter	String	14	Switching the isolated pixel filter on and off
Variable Data	data	Bool	1	

Write Variable:

```
sWN enIsoPixFilter <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	enIsoPixFilter	String	14	Switching the isolated pixel filter on and off
Variable Data	data	Bool	1	

Write Variable Response:

```
sWA enIsoPixFilter
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	enIsoPixFilter	String	14	Switching the isolated pixel filter on and off

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 13 73 52 4E 20 65 6E 49 73 6F 50 69 78 46 69 6C 74 65 72 20 50	........sRN enIs oPixFilter P
Read Variable Response:	02 02 02 02 00 00 00 14 73 52 41 20 65 6E 49 73 6F 50 69 78 46 69 6C 74 65 72 20 00 5F	........sRA enIs oPixFilter ._
Write Variable:	02 02 02 02 00 00 00 14 73 57 4E 20 65 6E 49 73 6F 50 69 78 46 69 6C 74 65 72 20 00 55	........sWN enIs oPixFilter .U
Write Variable Response:	02 02 02 02 00 00 00 13 73 57 41 20 65 6E 49 73 6F 50 69 78 46 69 6C 74 65 72 20 5A	........sWA enIs oPixFilter Z

4.4.3.2. Variable: isolatedPixelDistanceThres

The following section contains a detailed description of the variable isolatedPixelDistanceThres.

Variable Overview

Variable Name	Description
isolatedPixelDistanceThres	The difference threshold between opened and closed map of isolated pixel filter.

Communication Name	isoPixelDistThres
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..10000
Initialisation	300

Variable Telegram Syntax

Read Variable:

```
sRN isoPixelDistThres
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	isoPixelDistThres	String	17	The difference threshold between opened and closed map of isolated pixel filter.

Read Variable Response:

```
sRA isoPixelDistThres <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	isoPixelDistThres	String	17	The difference threshold between opened and closed map of isolated pixel filter.
Variable Data	data	UInt	2	

Write Variable:				
sWN isoPixelDistThres <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	isoPixelDistThres	String	17	The difference threshold between opened and closed map of isolated pixel filter.
Variable Data	data	UInt	2	

Write Variable Response:				
sWA isoPixelDistThres				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	isoPixelDistThres	String	17	The difference threshold between opened and closed map of isolated pixel filter.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 16 73 52 4E 20 69 73 6F 50 69 78 65 6C 44 69 73 74 54 68 72 65 73 20 20	····sRN isoP ixelDistThres
Read Variable Response:	02 02 02 02 00 00 00 18 73 52 41 20 69 73 6F 50 69 78 65 6C 44 69 73 74 54 68 72 65 73 20 01 2C 02	····sRA isoP ixelDistThres ·, ·
Write Variable:	02 02 02 02 00 00 00 18 73 57 4E 20 69 73 6F 50 69 78 65 6C 44 69 73 74 54 68 72 65 73 20 01 2C 08	····sWN isoP ixelDistThres ·, ·
Write Variable Response:	02 02 02 02 00 00 00 16 73 57 41 20 69 73 6F 50 69 78 65 6C 44 69 73 74 54 68 72 65 73 20 2A	····sWA isoP ixelDistThres *

4.4.3.3. Variable: enableDistanceFilter

The following section contains a detailed description of the variable enableDistanceFilter.

Variable Overview

Variable Name	Description
enableDistanceFilter	Switching the distance based filtering on and off

Communication Name	enDistFilter
Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	True

Variable Telegram Syntax

Read Variable:				
`sRN enDistFilter`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	enDistFilter	String	12	Switching the distance based filtering on and off

Read Variable Response:				
`sRA enDistFilter <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	enDistFilter	String	12	Switching the distance based filtering on and off
Variable Data	data	Bool	1	

Write Variable:				
`sWN enDistFilter <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	enDistFilter	String	12	Switching the distance based filtering on and off
Variable Data	data	Bool	1	

Write Variable Response:				
`sWA enDistFilter`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	enDistFilter	String	12	Switching the distance based filtering on and off

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 11  73 52 4E 20 65 6E 44 69` `73 74 46 69 6C 74 65 72  20 6E`	`........sRN enDi` `stFilter n`
Read Variable Response:	`02 02 02 02 00 00 00 12  73 52 41 20 65 6E 44 69` `73 74 46 69 6C 74 65 72  20 01 60`	`........sRA enDi` `stFilter ·`
Write Variable:	`02 02 02 02 00 00 00 12  73 57 4E 20 65 6E 44 69` `73 74 46 69 6C 74 65 72  20 01 6A`	`........sWN enDi` `stFilter ·j`
Write Variable Response:	`02 02 02 02 00 00 00 11  73 57 41 20 65 6E 44 69` `73 74 46 69 6C 74 65 72  20 64`	`........sWA enDi` `stFilter d`

4.4.3.4. Variable: minDistanceThreshold

The following section contains a detailed description of the variable minDistanceThreshold.

Variable Overview

Variable Name	Description
minDistanceThreshold	The minimal distance threshold. All values below are set to zero if the distance based filter is active.

Communication Name	minDistThresh
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..16383
Initialisation	100
Physical Unit	mm

Variable Telegram Syntax

Read Variable:

```
sRN minDistThresh
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	minDistThresh	String	13	The minimal distance threshold. All values below are set to zero if the distance based filter is active.

Read Variable Response:

```
sRA minDistThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	minDistThresh	String	13	The minimal distance threshold. All values below are set to zero if the distance based filter is active.
Variable Data	data	UInt	2	

Write Variable:

```
sWN minDistThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	minDistThresh	String	13	The minimal distance threshold. All values below are set to zero if the distance based filter is active.
Variable Data	data	UInt	2	

Write Variable Response:

```
sWA minDistThresh
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	minDistThresh	String	13	The minimal distance threshold. All values below are set to zero if the distance based filter is active.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 12 73 52 4E 20 6D 69 6E 44 69 73 74 54 68 72 65 73 68 20 1F	........sRN minD istThresh ·
Read Variable Response:	02 02 02 02 00 00 00 14 73 52 41 20 6D 69 6E 44 69 73 74 54 68 72 65 73 68 20 00 64 74	........sRA minD istThresh ·dt
Write Variable:	02 02 02 02 00 00 00 14 73 57 4E 20 6D 69 6E 44 69 73 74 54 68 72 65 73 68 20 00 64 7E	........sWN minD istThresh ·d~
Write Variable Response:	02 02 02 02 00 00 00 12 73 57 41 20 6D 69 6E 44 69 73 74 54 68 72 65 73 68 20 15	........sWA minD istThresh ·

4.4.3.5. Variable: maxDistanceThreshold

The following section contains a detailed description of the variable maxDistanceThreshold.

Variable Overview

Variable Name	Description
maxDistanceThreshold	The maximal distance threshold. All values above are set to zero if the distance based filter is active.

Communication Name	maxDistThresh
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..16383
Initialisation	9000
Physical Unit	mm

Variable Telegram Syntax

Read Variable:

```
sRN maxDistThresh
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	maxDistThresh	String	13	The maximal distance threshold. All values above are set to zero if the distance based filter is active.

Read Variable Response:

```
sRA maxDistThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	maxDistThresh	String	13	The maximal distance threshold. All values above are set to zero if the distance based filter is active.
Variable Data	data	UInt	2	

Write Variable:				
sWN maxDistThresh <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	maxDistThresh	String	13	The maximal distance threshold. All values above are set to zero if the distance based filter is active.
Variable Data	data	UInt	2	

Write Variable Response:				
sWA maxDistThresh				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	maxDistThresh	String	13	The maximal distance threshold. All values above are set to zero if the distance based filter is active.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 12 73 52 4E 20 6D 61 78 44 69 73 74 54 68 72 65 73 68 20 01	····sRN maxD istThresh ·
Read Variable Response:	02 02 02 02 00 00 00 14 73 52 41 20 6D 61 78 44 69 73 74 54 68 72 65 73 68 20 23 28 05	····sRA maxD istThresh #(·
Write Variable:	02 02 02 02 00 00 00 14 73 57 4E 20 6D 61 78 44 69 73 74 54 68 72 65 73 68 20 23 28 0F	····sWN maxD istThresh #(·
Write Variable Response:	02 02 02 02 00 00 00 12 73 57 41 20 6D 61 78 44 69 73 74 54 68 72 65 73 68 20 0B	····sWA maxD istThresh ·

4.4.3.6. Variable: enableIntensityFilter

The following section contains a detailed description of the variable enableIntensityFilter.

Variable Overview

Variable Name	Description
enableIntensityFilter	Switching the Intensitybased filtering on and off

Communication Name	enIntFilter
Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	True

Variable Telegram Syntax

Read Variable:				
`sRN enIntFilter`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	enIntFilter	String	11	Switching the Intensitybased filtering on and off

Read Variable Response:				
`sRA enIntFilter <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	enIntFilter	String	11	Switching the Intensitybased filtering on and off
Variable Data	data	Bool	1	

Write Variable:				
`sWN enIntFilter <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	enIntFilter	String	11	Switching the Intensitybased filtering on and off
Variable Data	data	Bool	1	

Write Variable Response:				
`sWA enIntFilter`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	enIntFilter	String	11	Switching the Intensitybased filtering on and off

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 10  73 52 4E 20 65 6E 49 6E` `74 46 69 6C 74 65 72 20  17`	`........sRN enIn` `tFilter ·`
Read Variable Response:	`02 02 02 02 00 00 00 11  73 52 41 20 65 6E 49 6E` `74 46 69 6C 74 65 72 20  01 19`	`........sRA enIn` `tFilter ··`
Write Variable:	`02 02 02 02 00 00 00 11  73 57 4E 20 65 6E 49 6E` `74 46 69 6C 74 65 72 20  01 13`	`........sWN enIn` `tFilter ··`
Write Variable Response:	`02 02 02 02 00 00 00 10  73 57 41 20 65 6E 49 6E` `74 46 69 6C 74 65 72 20  1D`	`........sWA enIn` `tFilter ·`

4.4.3.7. Variable: minIntensityThreshold

The following section contains a detailed description of the variable minIntensityThreshold.

Variable Overview

Variable Name	Description
minIntensityThreshold	The minimal Intensity threshold. If the Intensity value of a pixel is below, the corresponding pixel in the distance map is set to zero, if the Intensity based filter is active.

Communication Name	minIntThresh
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..20000
Initialisation	5

Variable Telegram Syntax

Read Variable:

```
sRN minIntThresh
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	minIntThresh	String	12	The minimal Intensity threshold. If the Intensity value of a pixel is below, the corresponding pixel in the distance map is set to zero, if the Intensity based filter is active.

Read Variable Response:

```
sRA minIntThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	minIntThresh	String	12	The minimal Intensity threshold. If the Intensity value of a pixel is below, the corresponding pixel in the distance map is set to zero, if the Intensity based filter is active.
Variable Data	data	UInt	2	

Write Variable:

```
sWN minIntThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	minIntThresh	String	12	The minimal Intensity threshold. If the Intensity value of a pixel is below, the corresponding pixel in the distance map is set to zero, if the Intensity based filter is active.
Variable Data	data	UInt	2	

Write Variable Response:				
sWA minIntThresh				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	minIntThresh	String	12	The minimal Intensity threshold. If the Intensity value of a pixel is below, the corresponding pixel in the distance map is set to zero, if the Intensity based filter is active.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 11 73 52 4E 20 6D 69 6E 49 6E 74 54 68 72 65 73 68 20 66	........sRN minI ntThresh f
Read Variable Response:	02 02 02 02 00 00 00 13 73 52 41 20 6D 69 6E 49 6E 74 54 68 72 65 73 68 20 00 05 6C	........sRA minI ntThresh ..l
Write Variable:	02 02 02 02 00 00 00 13 73 57 4E 20 6D 69 6E 49 6E 74 54 68 72 65 73 68 20 00 05 66	........sWN minI ntThresh ..f
Write Variable Response:	02 02 02 02 00 00 00 11 73 57 41 20 6D 69 6E 49 6E 74 54 68 72 65 73 68 20 6C	........sWA minI ntThresh l

4.4.3.8. Variable: maxIntensityThreshold

The following section contains a detailed description of the variable maxIntensityThreshold.

Variable Overview

Variable Name	Description
maxIntensityThreshold	The maximal intensity threshold. If the intensity value of a pixel is above the corresponding pixel in the distance map is set to zero, if the intensity based filter is active.

Communication Name	maxIntThresh
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..20000
Initialisation	20000

Variable Telegram Syntax

Read Variable:				
`sRN maxIntThresh`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	maxIntThresh	String	12	The maximal intensity threshold. If the intensity value of a pixel is above the corresponding pixel in the distance map is set to zero, if the intensity based filter is active.

Read Variable Response:				
`sRA maxIntThresh <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	maxIntThresh	String	12	The maximal intensity threshold. If the intensity value of a pixel is above the corresponding pixel in the distance map is set to zero, if the intensity based filter is active.
Variable Data	data	UInt	2	

Write Variable:				
`sWN maxIntThresh <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	maxIntThresh	String	12	The maximal intensity threshold. If the intensity value of a pixel is above the corresponding pixel in the distance map is set to zero, if the intensity based filter is active.
Variable Data	data	UInt	2	

Write Variable Response:				
`sWA maxIntThresh`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	maxIntThresh	String	12	The maximal intensity threshold. If the intensity value of a pixel is above the corresponding pixel in the distance map is set to zero, if the intensity based filter is active.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 11  73 52 4E 20 6D 61 78 49` `6E 74 54 68 72 65 73 68  20 78`	`·····sRN maxI` `ntThresh x`
Read Variable Response:	`02 02 02 02 00 00 00 13  73 52 41 20 6D 61 78 49` `6E 74 54 68 72 65 73 68  20 4E 20 19`	`·····sRA maxI` `ntThresh N ·`
Write Variable:	`02 02 02 02 00 00 00 13  73 57 4E 20 6D 61 78 49` `6E 74 54 68 72 65 73 68  20 4E 20 13`	`·····sWN maxI` `ntThresh N ·`
Write Variable Response:	`02 02 02 02 00 00 00 11  73 57 41 20 6D 61 78 49` `6E 74 54 68 72 65 73 68  20 72`	`·····sWA maxI` `ntThresh r`

4.4.3.9. Variable: enDepthMask

The following section contains a detailed description of the variable enDepthMask.

Variable Overview

Variable Name	Description
enDepthMask	Enables Masking of Invalid Pixels on Depthmap.

Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	True

Variable Telegram Syntax

Read Variable:

```
sRN enDepthMask
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	enDepthMask	String	11	Enables Masking of Invalid Pixels on Depthmap.

Read Variable Response:

```
sRA enDepthMask <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	enDepthMask	String	11	Enables Masking of Invalid Pixels on Depthmap.
Variable Data	data	Bool	1	

Write Variable:

```
sWN enDepthMask <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	enDepthMask	String	11	Enables Masking of Invalid Pixels on Depthmap.
Variable Data	data	Bool	1	

Write Variable Response:

```
sWA enDepthMask
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	enDepthMask	String	11	Enables Masking of Invalid Pixels on Depthmap.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 10 73 52 4E 20 65 6E 44 65 70 74 68 4D 61 73 6B 20 1D	........sRN enDe pthMask ·
Read Variable Response:	02 02 02 02 00 00 00 11 73 52 41 20 65 6E 44 65 70 74 68 4D 61 73 6B 20 01 13	........sRA enDe pthMask ··
Write Variable:	02 02 02 02 00 00 00 11 73 57 4E 20 65 6E 44 65 70 74 68 4D 61 73 6B 20 01 19	........sWN enDe pthMask ··
Write Variable Response:	02 02 02 02 00 00 00 10 73 57 41 20 65 6E 44 65 70 74 68 4D 61 73 6B 20 17	........sWA enDe pthMask ·

4.4.3.10. Variable: enableEdgeCorrection

The following section contains a detailed description of the variable enableEdgeCorrection.

Variable Overview

Variable Name	Description
enableEdgeCorrection	Switching the edge correction on and off

Communication Name	enEdgeCorr
Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:

```
sRN enEdgeCorr
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	enEdgeCorr	String	10	Switching the edge correction on and off

Read Variable Response:

```
sRA enEdgeCorr <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	enEdgeCorr	String	10	Switching the edge correction on and off
Variable Data	data	Bool	1	

Write Variable:				
sWN enEdgeCorr <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	enEdgeCorr	String	10	Switching the edge correction on and off
Variable Data	data	Bool	1	

Write Variable Response:				
sWA enEdgeCorr				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	enEdgeCorr	String	10	Switching the edge correction on and off

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0F 73 52 4E 20 65 6E 45 64 67 65 43 6F 72 72 20 6B	····sRN enEd geCorr k
Read Variable Response:	02 02 02 02 00 00 00 10 73 52 41 20 65 6E 45 64 67 65 43 6F 72 72 20 00 64	····sRA enEd geCorr ·d
Write Variable:	02 02 02 02 00 00 00 10 73 57 4E 20 65 6E 45 64 67 65 43 6F 72 72 20 00 6E	····sWN enEd geCorr ·n
Write Variable Response:	02 02 02 02 00 00 00 0F 73 57 41 20 65 6E 45 64 67 65 43 6F 72 72 20 61	····sWA enEd geCorr a

4.4.3.11. Variable: lowerEdgeCorrectionThreshold

The following section contains a detailed description of the variable lowerEdgeCorrectionThreshold.

Variable Overview

Variable Name	Description
lowerEdgeCorrectionThreshold	The lower edge correction threshold.

Communication Name	lowerEdgeCorrThresh
Read-Access	Always
Write-Access	AuthorizedClient, Service

LReal	
Value Range	See specification IEEE 754 0.0..256.0
Initialisation	0.25

Variable Telegram Syntax

Read Variable:				
`sRN lowerEdgeCorrThresh`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	lowerEdgeCorrThresh	String	19	The lower edge correction threshold.

Read Variable Response:				
`sRA lowerEdgeCorrThresh <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	lowerEdgeCorrThresh	String	19	The lower edge correction threshold.
Variable Data	data	LReal	8	

Write Variable:				
`sWN lowerEdgeCorrThresh <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	lowerEdgeCorrThresh	String	19	The lower edge correction threshold.
Variable Data	data	LReal	8	

Write Variable Response:				
`sWA lowerEdgeCorrThresh`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	lowerEdgeCorrThresh	String	19	The lower edge correction threshold.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		

Read Variable:	`02 02 02 02 00 00 00 18  73 52 4E 20 6C 6F 77 65`
	`72 45 64 67 65 43 6F 72  72 54 68 72 65 73 68 20`
	`33`
		`........sRN lowe`
		`rEdgeCorrThresh`
		`3`

Read Variable Response:	`02 02 02 02 00 00 00 20  73 52 41 20 6C 6F 77 65`
	`72 45 64 67 65 43 6F 72  72 54 68 72 65 73 68 20`
	`3F D0 00 00 00 00 00 00  D3`
		`....... sRA lowe`
		`rEdgeCorrThresh`
		`?.....`

Write Variable:	`02 02 02 02 00 00 00 20  73 57 4E 20 6C 6F 77 65`
	`72 45 64 67 65 43 6F 72  72 54 68 72 65 73 68 20`
	`3F D0 00 00 00 00 00 00  D9`
		`....... sWN lowe`
		`rEdgeCorrThresh`
		`?.....`

Write Variable Response:	`02 02 02 02 00 00 00 18  73 57 41 20 6C 6F 77 65`
	`72 45 64 67 65 43 6F 72  72 54 68 72 65 73 68 20`
	`39`
		`........sWA lowe`
		`rEdgeCorrThresh`
		`9`

4.4.3.12. Variable: upperEdgeCorrectionThreshold

The following section contains a detailed description of the variable upperEdgeCorrectionThreshold.

Variable Overview

Variable Name	Description
upperEdgeCorrectionThreshold	The upper edge correction threshold.

Communication Name	upperEdgeCorrThresh
Read-Access	Always
Write-Access	AuthorizedClient, Service

LReal	
Value Range	See specification IEEE 754 0.0..65535.0
Initialisation	125.0

Variable Telegram Syntax

Read Variable:

```
sRN upperEdgeCorrThresh
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	upperEdgeCorrThresh	String	19	The upper edge correction threshold.

Read Variable Response:

```
sRA upperEdgeCorrThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	upperEdgeCorrThresh	String	19	The upper edge correction threshold.
Variable Data	data	LReal	8	

Write Variable:

```
sWN upperEdgeCorrThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	upperEdgeCorrThresh	String	19	The upper edge correction threshold.
Variable Data	data	LReal	8	

Write Variable Response:

```
sWA upperEdgeCorrThresh
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	upperEdgeCorrThresh	String	19	The upper edge correction threshold.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 18 73 52 4E 20 75 70 70 65 72 45 64 67 65 43 6F 72 72 54 68 72 65 73 68 20 32	····sRN uppe rEdgeCorrThresh 2
Read Variable Response:	02 02 02 02 00 00 00 20 73 52 41 20 75 70 70 65 72 45 64 67 65 43 6F 72 72 54 68 72 65 73 68 20 40 5F 40 00 00 00 00 00 62	···· sRA uppe rEdgeCorrThresh @_@·····b
Write Variable:	02 02 02 02 00 00 00 20 73 57 4E 20 75 70 70 65 72 45 64 67 65 43 6F 72 72 54 68 72 65 73 68 20 40 5F 40 00 00 00 00 00 68	···· sWN uppe rEdgeCorrThresh @_@·····h
Write Variable Response:	02 02 02 02 00 00 00 18 73 57 41 20 75 70 70 65 72 45 64 67 65 43 6F 72 72 54 68 72 65 73 68 20 38	····sWA uppe rEdgeCorrThresh 8

4.4.3.13. Variable: enableRemissionFilter

The following section contains a detailed description of the variable enableRemissionFilter.

Variable Overview

Variable Name	Description
enableRemissionFilter	Switching the remission filter on and off

Communication Name	enRemFilter
Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:

```
sRN enRemFilter
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	enRemFilter	String	11	Switching the remission filter on and off

Read Variable Response:

```
sRA enRemFilter <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	enRemFilter	String	11	Switching the remission filter on and off
Variable Data	data	Bool	1	

Write Variable:				
sWN enRemFilter <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	enRemFilter	String	11	Switching the remission filter on and off
Variable Data	data	Bool	1	

Write Variable Response:				
sWA enRemFilter				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	enRemFilter	String	11	Switching the remission filter on and off

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 10 73 52 4E 20 65 6E 52 65 6D 46 69 6C 74 65 72 20 1E	........sRN enRe mFilter ·
Read Variable Response:	02 02 02 02 00 00 00 11 73 52 41 20 65 6E 52 65 6D 46 69 6C 74 65 72 20 00 11	........sRA enRe mFilter ··
Write Variable:	02 02 02 02 00 00 00 11 73 57 4E 20 65 6E 52 65 6D 46 69 6C 74 65 72 20 00 1B	........sWN enRe mFilter ··
Write Variable Response:	02 02 02 02 00 00 00 10 73 57 41 20 65 6E 52 65 6D 46 69 6C 74 65 72 20 14	........sWA enRe mFilter ·

4.4.3.14. Variable: lowerRemissionFilterThreshold

The following section contains a detailed description of the variable lowerRemissionFilterThreshold.

Variable Overview

Variable Name	Description
lowerRemissionFilterThreshold	The lower remission filter threshold.

Communication Name	lowerRemFilterThresh
Read-Access	Always
Write-Access	AuthorizedClient, Service

LReal	
Value Range	See specification IEEE 754 0.0..10000.0
Initialisation	0.1

Variable Telegram Syntax

Read Variable:				
`sRN lowerRemFilterThresh`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	lowerRemFilterThresh	String	20	The lower remission filter threshold.

Read Variable Response:				
`sRA lowerRemFilterThresh <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	lowerRemFilterThresh	String	20	The lower remission filter threshold.
Variable Data	data	LReal	8	

Write Variable:				
`sWN lowerRemFilterThresh <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	lowerRemFilterThresh	String	20	The lower remission filter threshold.
Variable Data	data	LReal	8	

Write Variable Response:				
`sWA lowerRemFilterThresh`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	lowerRemFilterThresh	String	20	The lower remission filter threshold.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		

Read Variable:	`02 02 02 02 00 00 00 19  73 52 4E 20 6C 6F 77 65`
	`72 52 65 6D 46 69 6C 74  65 72 54 68 72 65 73 68`
	`20 46`
		`........sRN lowe`
		`rRemFilterThresh`
		` F`

Read Variable Response:	`02 02 02 02 00 00 00 21  73 52 41 20 6C 6F 77 65`
	`72 52 65 6D 46 69 6C 74  65 72 54 68 72 65 73 68`
	`20 3F B9 99 99 99 99 99  9A CC`
		`.......!sRA lowe`
		`rRemFilterThresh`
		` ?`

Write Variable:	`02 02 02 02 00 00 00 21  73 57 4E 20 6C 6F 77 65`
	`72 52 65 6D 46 69 6C 74  65 72 54 68 72 65 73 68`
	`20 3F B9 99 99 99 99 99  9A C6`
		`.......!sWN lowe`
		`rRemFilterThresh`
		` ?`

Write Variable Response:	`02 02 02 02 00 00 00 19  73 57 41 20 6C 6F 77 65`
	`72 52 65 6D 46 69 6C 74  65 72 54 68 72 65 73 68`
	`20 4C`
		`........sWA lowe`
		`rRemFilterThresh`
		` L`

4.4.3.15. Variable: upperRemissionFilterThreshold

The following section contains a detailed description of the variable upperRemissionFilterThreshold.

Variable Overview

Variable Name	Description
upperRemissionFilterThreshold	The upper remission filter threshold.

Communication Name	upperRemFilterThresh
Read-Access	Always
Write-Access	AuthorizedClient, Service

LReal	
Value Range	See specification IEEE 754 0.0..10000.0
Initialisation	1.0

Variable Telegram Syntax

Read Variable:

```
sRN upperRemFilterThresh
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	upperRemFilterThresh	String	20	The upper remission filter threshold.

Read Variable Response:

```
sRA upperRemFilterThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	upperRemFilterThresh	String	20	The upper remission filter threshold.
Variable Data	data	LReal	8	

Write Variable:

```
sWN upperRemFilterThresh <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	upperRemFilterThresh	String	20	The upper remission filter threshold.
Variable Data	data	LReal	8	

Write Variable Response:

```
sWA upperRemFilterThresh
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	upperRemFilterThresh	String	20	The upper remission filter threshold.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 19 73 52 4E 20 75 70 70 65 72 52 65 6D 46 69 6C 74 65 72 54 68 72 65 73 68 20 47	····sRN uppe rRemFilterThresh G
Read Variable Response:	02 02 02 02 00 00 00 21 73 52 41 20 75 70 70 65 72 52 65 6D 46 69 6C 74 65 72 54 68 72 65 73 68 20 3F F0 00 00 00 00 00 00 87	····!sRA uppe rRemFilterThresh ?·····
Write Variable:	02 02 02 02 00 00 00 21 73 57 4E 20 75 70 70 65 72 52 65 6D 46 69 6C 74 65 72 54 68 72 65 73 68 20 3F F0 00 00 00 00 00 00 8D	····!sWN uppe rRemFilterThresh ?·····
Write Variable Response:	02 02 02 02 00 00 00 19 73 57 41 20 75 70 70 65 72 52 65 6D 46 69 6C 74 65 72 54 68 72 65 73 68 20 4D	····sWA uppe rRemFilterThresh M

4.4.3.16. Variable: enableAmbiguityFilter

The following section contains a detailed description of the variable enableAmbiguityFilter.

Variable Overview

Variable Name	Description
enableAmbiguityFilter	Switching the ambiguity filter on and off

Communication Name	enAmbFilter
Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:				
`sRN enAmbFilter`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	enAmbFilter	String	11	Switching the ambiguity filter on and off

Read Variable Response:				
`sRA enAmbFilter <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	enAmbFilter	String	11	Switching the ambiguity filter on and off
Variable Data	data	Bool	1	

Write Variable:				
sWN enAmbFilter <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	enAmbFilter	String	11	Switching the ambiguity filter on and off
Variable Data	data	Bool	1	

Write Variable Response:				
sWA enAmbFilter				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	enAmbFilter	String	11	Switching the ambiguity filter on and off

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 10 73 52 4E 20 65 6E 41 6D 62 46 69 6C 74 65 72 20 0A	........sRN enAm bFilter ·
Read Variable Response:	02 02 02 02 00 00 00 11 73 52 41 20 65 6E 41 6D 62 46 69 6C 74 65 72 20 00 05	........sRA enAm bFilter ··
Write Variable:	02 02 02 02 00 00 00 11 73 57 4E 20 65 6E 41 6D 62 46 69 6C 74 65 72 20 00 0F	........sWN enAm bFilter ··
Write Variable Response:	02 02 02 02 00 00 00 10 73 57 41 20 65 6E 41 6D 62 46 69 6C 74 65 72 20 00	........sWA enAm bFilter ·

4.4.3.17. Variable: scaleAmbiguityFilter

The following section contains a detailed description of the variable scaleAmbiguityFilter.

Variable Overview

Variable Name	Description
scaleAmbiguityFilter	Ambiguity difference scaling factor

Communication Name	scaleAmbFilter
Read-Access	Always
Write-Access	AuthorizedClient, Service

LReal	
Value Range	See specification IEEE 754 0.0..1.0
Initialisation	0.55

Variable Telegram Syntax

Read Variable:				
sRN scaleAmbFilter				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	scaleAmbFilter	String	14	Ambiguity difference scaling factor

Read Variable Response:				
sRA scaleAmbFilter <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	scaleAmbFilter	String	14	Ambiguity difference scaling factor
Variable Data	data	LReal	8	

Write Variable:				
sWN scaleAmbFilter <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	scaleAmbFilter	String	14	Ambiguity difference scaling factor
Variable Data	data	LReal	8	

Write Variable Response:				
sWA scaleAmbFilter				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	scaleAmbFilter	String	14	Ambiguity difference scaling factor

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 13 73 52 4E 20 73 63 61 6C 65 41 6D 62 46 69 6C 74 65 72 20 79	........sRN scal eAmbFilter y
Read Variable Response:	02 02 02 02 00 00 00 1B 73 52 41 20 73 63 61 6C 65 41 6D 62 46 69 6C 74 65 72 20 3F E1 99 99 99 99 99 9A AB	........sRA scal eAmbFilter ?
Write Variable:	02 02 02 02 00 00 00 1B 73 57 4E 20 73 63 61 6C 65 41 6D 62 46 69 6C 74 65 72 20 3F E1 99 99 99 99 99 9A A1	........sWN scal eAmbFilter ?
Write Variable Response:	02 02 02 02 00 00 00 13 73 57 41 20 73 63 61 6C 65 41 6D 62 46 69 6C 74 65 72 20 73	........sWA scal eAmbFilter s

4.4.3.18. Variable: binningOption

The following section contains a detailed description of the variable binningOption.

Variable Overview

Variable Name
binningOption

Read-Access	Always
Write-Access	AuthorizedClient, Service

Enum8			
Default Value		NONE	
	Value	Name	Description
	0	NONE	
	1	TWO_BY_TWO	
	2	FOUR_BY_FOUR	

Variable Telegram Syntax

Read Variable:

```
sRN binningOption
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	binningOption	String	13	

Read Variable Response:

```
sRA binningOption <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	binningOption	String	13	
Variable Data	data	Enum8	1	

Write Variable:

```
sWN binningOption <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	binningOption	String	13	
Variable Data	data	Enum8	1	

Write Variable Response:

```
sWA binningOption
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	binningOption	String	13	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 12 73 52 4E 20 62 69 6E 6E 69 6E 67 4F 70 74 69 6F 6E 20 27	····sRN binn ingOption '
Read Variable Response:	02 02 02 02 00 00 00 13 73 52 41 20 62 69 6E 6E 69 6E 67 4F 70 74 69 6F 6E 20 00 28	····sRA binn ingOption ·(
Write Variable:	02 02 02 02 00 00 00 13 73 57 4E 20 62 69 6E 6E 69 6E 67 4F 70 74 69 6F 6E 20 00 22	····sWN binn ingOption ·"
Write Variable Response:	02 02 02 02 00 00 00 12 73 57 41 20 62 69 6E 6E 69 6E 67 4F 70 74 69 6F 6E 20 2D	····sWA binn ingOption -

4.4.3.19. Variable: enableCropping

The following section contains a detailed description of the variable enableCropping.

Variable Overview

Variable Name	Description
enableCropping	Enables cropping of the image.

Read-Access	Always
Write-Access	AuthorizedClient, Service

Bool	
Value Range	False, True
Initialisation	False

Variable Telegram Syntax

Read Variable:

```
sRN enableCropping
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	enableCropping	String	14	Enables cropping of the image.

Read Variable Response:

```
sRA enableCropping <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	enableCropping	String	14	Enables cropping of the image.
Variable Data	data	Bool	1	

Write Variable:

```
sWN enableCropping <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name

Write Variable:				
sWN enableCropping <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command	enableCropping	String	14	Enables cropping of the image.
Variable Data	data	Bool	1	

Write Variable Response:				
sWA enableCropping				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	enableCropping	String	14	Enables cropping of the image.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 13 73 52 4E 20 65 6E 61 62 6C 65 43 72 6F 70 70 69 6E 67 20 50	........sRN enab leCropping P
Read Variable Response:	02 02 02 02 00 00 00 14 73 52 41 20 65 6E 61 62 6C 65 43 72 6F 70 70 69 6E 67 20 00 5F	........sRA enab leCropping ·_
Write Variable:	02 02 02 02 00 00 00 14 73 57 4E 20 65 6E 61 62 6C 65 43 72 6F 70 70 69 6E 67 20 00 55	........sWN enab leCropping ·U
Write Variable Response:	02 02 02 02 00 00 00 13 73 57 41 20 65 6E 61 62 6C 65 43 72 6F 70 70 69 6E 67 20 5A	........sWA enab leCropping Z

4.4.3.20. Variable: croppingPositionX

The following section contains a detailed description of the variable croppingPositionX.

Variable Overview

Variable Name	Description
croppingPositionX	The position of the cropping region along the x-axis.

Communication Name	cropPosX
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..423
Initialisation	0
Physical Unit	px

Variable Telegram Syntax

Read Variable:				
`sRN cropPosX`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	cropPosX	String	8	The position of the cropping region along the x-axis.

Read Variable Response:				
`sRA cropPosX <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	cropPosX	String	8	The position of the cropping region along the x-axis.
Variable Data	data	UInt	2	

Write Variable:				
`sWN cropPosX <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	cropPosX	String	8	The position of the cropping region along the x-axis.
Variable Data	data	UInt	2	

Write Variable Response:				
`sWA cropPosX`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	cropPosX	String	8	The position of the cropping region along the x-axis.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0D  73 52 4E 20 63 72 6F 70 50 6F 73 58 20 75`	`........sRN crop PosX u`
Read Variable Response:	`02 02 02 02 00 00 00 0F  73 52 41 20 63 72 6F 70 50 6F 73 58 20 00 00 7A`	`........sRA crop PosX ..z`
Write Variable:	`02 02 02 02 00 00 00 0F  73 57 4E 20 63 72 6F 70 50 6F 73 58 20 00 00 70`	`........sWN crop PosX ..p`
Write Variable Response:	`02 02 02 02 00 00 00 0D  73 57 41 20 63 72 6F 70 50 6F 73 58 20 7F`	`........sWA crop PosX .`

4.4.3.21. Variable: croppingPositionY

The following section contains a detailed description of the variable croppingPositionY.

Variable Overview

Variable Name	Description
croppingPositionY	The position of the cropping region along the y-axis.

Communication Name	cropPosY
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..511
Initialisation	0
Physical Unit	px

Variable Telegram Syntax

Read Variable:

```
sRN cropPosY
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	cropPosY	String	8	The position of the cropping region along the y-axis.

Read Variable Response:

```
sRA cropPosY <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	cropPosY	String	8	The position of the cropping region along the y-axis.
Variable Data	data	UInt	2	

Write Variable:

```
sWN cropPosY <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	cropPosY	String	8	The position of the cropping region along the y-axis.
Variable Data	data	UInt	2	

Write Variable Response:

```
sWA cropPosY
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	cropPosY	String	8	The position of the cropping region along the y-axis.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0D 73 52 4E 20 63 72 6F 70 50 6F 73 59 20 74	........sRN crop PosY t
Read Variable Response:	02 02 02 02 00 00 00 0F 73 52 41 20 63 72 6F 70 50 6F 73 59 20 00 00 7B	........sRA crop PosY ..{
Write Variable:	02 02 02 02 00 00 00 0F 73 57 4E 20 63 72 6F 70 50 6F 73 59 20 00 00 71	........sWN crop PosY ..q
Write Variable Response:	02 02 02 02 00 00 00 0D 73 57 41 20 63 72 6F 70 50 6F 73 59 20 7E	........sWA crop PosY ~

4.4.3.22. Variable: croppingWidth

The following section contains a detailed description of the variable croppingWidth.

Variable Overview

Variable Name	Description
croppingWidth	The width of the cropping region in pixels.

Communication Name	cropWidth
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..512
Initialisation	512
Physical Unit	px

Variable Telegram Syntax

Read Variable:				
sRN cropWidth				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	cropWidth	String	9	The width of the cropping region in pixels.

Read Variable Response:				
sRA cropWidth <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	cropWidth	String	9	The width of the cropping region in pixels.
Variable Data	data	UInt	2	

Write Variable:				
sWN cropWidth <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	cropWidth	String	9	The width of the cropping region in pixels.
Variable Data	data	UInt	2	

Write Variable Response:				
sWA cropWidth				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	cropWidth	String	9	The width of the cropping region in pixels.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0E 73 52 4E 20 63 72 6F 70 57 69 64 74 68 20 27	........sRN crop Width '
Read Variable Response:	02 02 02 02 00 00 00 10 73 52 41 20 63 72 6F 70 57 69 64 74 68 20 02 00 2A	........sRA crop Width ..*
Write Variable:	02 02 02 02 00 00 00 10 73 57 4E 20 63 72 6F 70 57 69 64 74 68 20 02 00 20	........sWN crop Width ..
Write Variable Response:	02 02 02 02 00 00 00 0E 73 57 41 20 63 72 6F 70 57 69 64 74 68 20 2D	........sWA crop Width -

4.4.3.23. Variable: croppingHeight

The following section contains a detailed description of the variable croppingHeight.

Variable Overview

Variable Name	Description
croppingHeight	The width of the cropping region in pixels.

Communication Name	cropHeight
Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	0..424
Initialisation	424
Physical Unit	px

Variable Telegram Syntax

Read Variable:				
`sRN cropHeight`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	cropHeight	String	10	The width of the cropping region in pixels.

Read Variable Response:				
`sRA cropHeight <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	cropHeight	String	10	The width of the cropping region in pixels.
Variable Data	data	UInt	2	

Write Variable:				
`sWN cropHeight <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	cropHeight	String	10	The width of the cropping region in pixels.
Variable Data	data	UInt	2	

Write Variable Response:				
`sWA cropHeight`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	cropHeight	String	10	The width of the cropping region in pixels.

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0F  73 52 4E 20 63 72 6F 70` `48 65 69 67 68 74 20 5E`	`........sRN crop` `Height ^`
Read Variable Response:	`02 02 02 02 00 00 00 11  73 52 41 20 63 72 6F 70` `48 65 69 67 68 74 20 01  A8 F8`	`........sRA crop` `Height ·`
Write Variable:	`02 02 02 02 00 00 00 11  73 57 4E 20 63 72 6F 70` `48 65 69 67 68 74 20 01  A8 F2`	`........sWN crop` `Height ·`
Write Variable Response:	`02 02 02 02 00 00 00 0F  73 57 41 20 63 72 6F 70` `48 65 69 67 68 74 20 54`	`........sWA crop` `Height T`

4.4.4. Ethernet Settings

4.4.4.1. Ethernet Base

4.4.4.1.1. Variable: EtherIPAddress

The following section contains a detailed description of the variable EtherIPAddress.

Variable Overview

Variable Name	Description
EtherIPAddress	IP-Address of the Device

Communication Name	EIIpAddr
Read-Access	Always
Write-Access	AuthorizedClient, Service

Array		
Length		4
Default Value		{192,168,1,10}
	USInt	
	Value Range	0..255

Variable Telegram Syntax

Read Variable:

```
sRN EIIpAddr
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EIIpAddr	String	8	IP-Address of the Device

Read Variable Response:

```
sRA EIIpAddr <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EIIpAddr	String	8	IP-Address of the Device
Variable Data	data	Array	4	

Write Variable:

```
sWN EIIpAddr <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	EIIpAddr	String	8	IP-Address of the Device
Variable Data	data	Array	4	

Write Variable Response:

```
sWA EIIpAddr
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	EIIpAddr	String	8	IP-Address of the Device

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0D 73 52 4E 20 45 49 49 70 41 64 64 72 20 69	........sRN EIIp Addr i
Read Variable Response:	02 02 02 02 00 00 00 11 73 52 41 20 45 49 49 70 41 64 64 72 20 C0 A8 01 0A 05	........sRA EIIp Addr ...
Write Variable:	02 02 02 02 00 00 00 11 73 57 4E 20 45 49 49 70 41 64 64 72 20 C0 A8 01 0A 0F	........sWN EIIp Addr ...
Write Variable Response:	02 02 02 02 00 00 00 0D 73 57 41 20 45 49 49 70 41 64 64 72 20 63	........sWA EIIp Addr c

4.4.4.1.2. Variable: EtherIPGateAddress

The following section contains a detailed description of the variable EtherIPGateAddress.

Variable Overview

Variable Name	Description
EtherIPGateAddress	IP-Address of the Ethernet Gateway

Communication Name	EIgate
Read-Access	Always
Write-Access	AuthorizedClient, Service

Array		
Length		4
Default Value		{0,0,0,0}
	USInt	
	Value Range	0..255

Variable Telegram Syntax

Read Variable:

```
sRN EIgate
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EIgate	String	6	IP-Address of the Ethernet Gateway

Read Variable Response:

```
sRA EIgate <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EIgate	String	6	IP-Address of the Ethernet Gateway
Variable Data	data	Array	4	

Write Variable:				
sWN EIgate <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	EIgate	String	6	IP-Address of the Ethernet Gateway
Variable Data	data	Array	4	

Write Variable Response:				
sWA EIgate				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	EIgate	String	6	IP-Address of the Ethernet Gateway

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0B 73 52 4E 20 45 49 67 61 74 65 20 74	........sRN EIgate t
Read Variable Response:	02 02 02 02 00 00 00 0F 73 52 41 20 45 49 67 61 74 65 20 00 00 00 00 7B	........sRA EIgate ....{
Write Variable:	02 02 02 02 00 00 00 0F 73 57 4E 20 45 49 67 61 74 65 20 00 00 00 00 71	........sWN EIgate ....q
Write Variable Response:	02 02 02 02 00 00 00 0B 73 57 41 20 45 49 67 61 74 65 20 7E	........sWA EIgate ~

4.4.4.1.3. Variable: EtherIPMask

The following section contains a detailed description of the variable EtherIPMask.

Variable Overview

Variable Name	Description
EtherIPMask	Netmask

Communication Name	EImask
Read-Access	Always
Write-Access	AuthorizedClient, Service

Array		
Length		4
Default Value		{255,255,255,0}
	USInt	
	Value Range	0..255

Variable Telegram Syntax

Read Variable:				
`sRN EImask`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EImask	String	6	Netmask

Read Variable Response:				
`sRA EImask <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EImask	String	6	Netmask
Variable Data	data	Array	4	

Write Variable:				
`sWN EImask <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	EImask	String	6	Netmask
Variable Data	data	Array	4	

Write Variable Response:				
`sWA EImask`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	EImask	String	6	Netmask

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0B  73 52 4E 20 45 49 6D 61 73 6B 20 77`	`........sRN EImask w`
Read Variable Response:	`02 02 02 02 00 00 00 0F  73 52 41 20 45 49 6D 61 73 6B 20 FF FF FF 00 87`	`........sRA EImask .`
Write Variable:	`02 02 02 02 00 00 00 0F  73 57 4E 20 45 49 6D 61 73 6B 20 FF FF FF 00 8D`	`........sWN EImask .`
Write Variable Response:	`02 02 02 02 00 00 00 0B  73 57 41 20 45 49 6D 61 73 6B 20 7D`	`........sWA EImask }`

4.4.4.1.4. Variable: EtherIPSpeedDuplex

The following section contains a detailed description of the variable EtherIPSpeedDuplex.

Variable Overview

Variable Name	Description
EtherIPSpeedDuplex	Speed and Duplex settings

Communication Name	EISpdDpx
Read-Access	Always
Write-Access	Service

Enum8			
Default Value		TX_AUTO	
	Value	Name	Description
	0	TX_AUTO	
	1	TX_10MB_HALF	
	2	TX_10MB_FULL	
	3	TX_100MB_HALF	
	4	TX_100MB_FULL	
	5	TX_1000MB_HALF	
	6	TX_1000MB_FULL	

Variable Telegram Syntax

Read Variable:				
`sRN EISpdDpx`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EISpdDpx	String	8	Speed and Duplex settings

Read Variable Response:				
`sRA EISpdDpx <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EISpdDpx	String	8	Speed and Duplex settings
Variable Data	data	Enum8	1	

Write Variable:				
`sWN EISpdDpx <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	EISpdDpx	String	8	Speed and Duplex settings
Variable Data	data	Enum8	1	

Write Variable Response:				
sWA EISpdDpx				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	EISpdDpx	String	8	Speed and Duplex settings

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0D 73 52 4E 20 45 49 53 70 64 44 70 78 20 68	........sRN EISp dDpx h
Read Variable Response:	02 02 02 02 00 00 00 0E 73 52 41 20 45 49 53 70 64 44 70 78 20 00 67	........sRA EISp dDpx ·g
Write Variable:	02 02 02 02 00 00 00 0E 73 57 4E 20 45 49 53 70 64 44 70 78 20 00 6D	........sWN EISp dDpx ·m
Write Variable Response:	02 02 02 02 00 00 00 0D 73 57 41 20 45 49 53 70 64 44 70 78 20 62	........sWA EISp dDpx b

4.4.4.1.5. Variable: EtherAddressingMode

The following section contains a detailed description of the variable EtherAddressingMode.

Variable Overview

Variable Name	Description
EtherAddressingMode	Which mode to use for Ethernet address assignement

Communication Name	EIAddrMode
Read-Access	Always
Write-Access	Service

Enum8			
Default Value		TX_IP_STATIC	
	Value	Name	Description
	0	TX_IP_STATIC	
	1	TX_IP_DHCP	

Variable Telegram Syntax

Read Variable:				
`sRN EIAddrMode`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EIAddrMode	String	10	Which mode to use for Ethernet address assignement

Read Variable Response:				
`sRA EIAddrMode <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EIAddrMode	String	10	Which mode to use for Ethernet address assignement
Variable Data	data	Enum8	1	

Write Variable:				
`sWN EIAddrMode <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	EIAddrMode	String	10	Which mode to use for Ethernet address assignement
Variable Data	data	Enum8	1	

Write Variable Response:				
`sWA EIAddrMode`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	EIAddrMode	String	10	Which mode to use for Ethernet address assignement

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0F  73 52 4E 20 45 49 41 64` `64 72 4D 6F 64 65 20 73`	`·····sRN EIAd` `drMode s`
Read Variable Response:	`02 02 02 02 00 00 00 10  73 52 41 20 45 49 41 64` `64 72 4D 6F 64 65 20 00  7C`	`·····sRA EIAd` `drMode ·|`
Write Variable:	`02 02 02 02 00 00 00 10  73 57 4E 20 45 49 41 64` `64 72 4D 6F 64 65 20 00  76`	`·····sWN EIAd` `drMode ·v`
Write Variable Response:	`02 02 02 02 00 00 00 0F  73 57 41 20 45 49 41 64` `64 72 4D 6F 64 65 20 79`	`·····sWA EIAd` `drMode y`

4.4.4.1.6. Variable: EtherIPSpeedDuplexNegotiated

The following section contains a detailed description of the variable EtherIPSpeedDuplexNegotiated.

Variable Overview

Variable Name	Description
EtherIPSpeedDuplexNegotiated	Speed and Duplex settings as negotiated when set to AUTO

Communication Name	EISpdDpxNet
Read-Access	Always
Write-Access	No! (readonly)

Enum8			
Default Value		TX_UNKNOWN_DUPLEX_SPEED	
	Value	Name	Description
	0	TX_UNKNOWN_DUPLEX_SPEED	
	1	TX_10MB_HALF	
	2	TX_10MB_FULL	
	3	TX_100MB_HALF	
	4	TX_100MB_FULL	
	5	TX_1000MB_HALF	
	6	TX_1000MB_FULL	

Variable Telegram Syntax

Read Variable:				
`sRN EISpdDpxNet`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EISpdDpxNet	String	11	Speed and Duplex settings as negotiated when set to AUTO

Read Variable Response:				
`sRA EISpdDpxNet <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EISpdDpxNet	String	11	Speed and Duplex settings as negotiated when set to AUTO
Variable Data	data	Enum8	1	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 10  73 52 4E 20 45 49 53 70` `64 44 70 78 4E 65 74 20  37`	`·····sRN EISp` `dDpxNet 7`
Read Variable Response:	`02 02 02 02 00 00 00 11  73 52 41 20 45 49 53 70` `64 44 70 78 4E 65 74 20  00 38`	`·····sRA EISp` `dDpxNet ·8`

4.4.4.1.7. Variable: EtherIPAddressDHCP

The following section contains a detailed description of the variable EtherIPAddressDHCP.

Variable Overview

Variable Name	Description
EtherIPAddressDHCP	IP-Address of the Device assigned by DHCP if active

Communication Name	EIIpAddrDHCP
Read-Access	Always
Write-Access	No! (readonly)

Array		
Length		4
Default Value		{192,168,0,1}
	USInt	
	Value Range	0..255

Variable Telegram Syntax

Read Variable:

```
sRN EIIpAddrDHCP
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EIIpAddrDHCP	String	12	IP-Address of the Device assigned by DHCP if active

Read Variable Response:

```
sRA EIIpAddrDHCP <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EIIpAddrDHCP	String	12	IP-Address of the Device assigned by DHCP if active
Variable Data	data	Array	4	

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	02 02 02 02 00 00 00 11 73 52 4E 20 45 49 49 70 41 64 64 72 44 48 43 50 20 76	........sRN EIIp AddrDHCP v
Read Variable Response:	02 02 02 02 00 00 00 15 73 52 41 20 45 49 49 70 41 64 64 72 44 48 43 50 20 C0 A8 00 01 10	........sRA EIIp AddrDHCP ...

4.4.4.1.8. Variable: EtherIPGateAddressDHCP

The following section contains a detailed description of the variable EtherIPGateAddressDHCP.

Variable Overview

Variable Name	Description
EtherIPGateAddressDHCP	IP-Address of the Ethernet Gateway assigned by DHCP if active

Communication Name	EIgateDHCP
Read-Access	Always
Write-Access	No! (readonly)

Array		
Length		4
Default Value		{0,0,0,0}
	USInt	
	Value Range	0..255

Variable Telegram Syntax

Read Variable:

```
sRN EIgateDHCP
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EIgateDHCP	String	10	IP-Address of the Ethernet Gateway assigned by DHCP if active

Read Variable Response:

```
sRA EIgateDHCP <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EIgateDHCP	String	10	IP-Address of the Ethernet Gateway assigned by DHCP if active
Variable Data	data	Array	4	

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	02 02 02 02 00 00 00 0F 73 52 4E 20 45 49 67 61 74 65 44 48 43 50 20 6B	........sRN EIga teDHCP k
Read Variable Response:	02 02 02 02 00 00 00 13 73 52 41 20 45 49 67 61 74 65 44 48 43 50 20 00 00 00 00 64	........sRA EIga teDHCP ····d

4.4.4.1.9. Variable: EtherIPMaskDHCP

The following section contains a detailed description of the variable EtherIPMaskDHCP.

Variable Overview

Variable Name	Description
EtherIPMaskDHCP	Netmask assigned by DHCP if active

Communication Name	EImaskDHCP
Read-Access	Always
Write-Access	No! (readonly)

Array		
Length		4
Default Value		{255,255,255,0}
	USInt	
	Value Range	0..255

Variable Telegram Syntax

Read Variable:

```
sRN EImaskDHCP
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EImaskDHCP	String	10	Netmask assigned by DHCP if active

Read Variable Response:

```
sRA EImaskDHCP <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EImaskDHCP	String	10	Netmask assigned by DHCP if active
Variable Data	data	Array	4	

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	02 02 02 02 00 00 00 0F 73 52 4E 20 45 49 6D 61 73 6B 44 48 43 50 20 68	........sRN EIma skDHCP h
Read Variable Response:	02 02 02 02 00 00 00 13 73 52 41 20 45 49 6D 61 73 6B 44 48 43 50 20 FF FF FF 00 98	........sRA EIma skDHCP ·

4.4.4.1.10. Variable: EtherMACAddress

The following section contains a detailed description of the variable EtherMACAddress.

Variable Overview

Variable Name	Description
EtherMACAddress	MAC-Address of the Device

Communication Name	EIMacAdr
Read-Access	Always
Write-Access	No! (readonly)

Array		
Length		6
Default Value		{0,6,0x77,0,0,0}
	USInt	
	Value Range	0..255

Variable Telegram Syntax

Read Variable:

```
sRN EIMacAdr
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	EIMacAdr	String	8	MAC-Address of the Device

Read Variable Response:

```
sRA EIMacAdr <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	EIMacAdr	String	8	MAC-Address of the Device
Variable Data	data	Array	6	

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	02 02 02 02 00 00 00 0D 73 52 4E 20 45 49 4D 61 63 41 64 72 20 7B	........sRN EIMa cAdr {
Read Variable Response:	02 02 02 02 00 00 00 13 73 52 41 20 45 49 4D 61 63 41 64 72 20 00 06 77 00 00 00 05	........sRA EIMa cAdr ..w....

4.4.5. Digital Outputs

4.4.5.1. Variable: IOValue

The following section contains a detailed description of the variable IOValue.

Variable Overview

Variable Name	Description
IOValue	All available IOs Values

Read-Access	Always
Write-Access	No! (readonly)

UserType	
V3SIOsState	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:

```
sRN IOValue
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	IOValue	String	7	All available IOs Values

Read Variable Response:

```
sRA IOValue <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	IOValue	String	7	All available IOs Values
Variable Data	data	V3SIOsState	6	

Variable Telegram Examples

Example: Default Values

Variable rest examples with data set to default values.

Read Variable:	02 02 02 02 00 00 00 0C 73 52 4E 20 49 4F 56 61 6C 75 65 20 22	........sRN IOValue "
Read Variable Response:	02 02 02 02 00 00 00 12 73 52 41 20 49 4F 56 61 6C 75 65 20 00 00 00 00 00 00 2D	........sRA IOValue ....

4.4.5.2. Variable: INOUT1_Function

The following section contains a detailed description of the variable INOUT1_Function.

Variable Overview

Variable Name	Description
INOUT1_Function	Function of INOUT1

Communication Name	DIO1Fnc
Read-Access	Always
Write-Access	AuthorizedClient, Service

UserType	
IOFunctionType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:

```
sRN DIO1Fnc
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DIO1Fnc	String	7	Function of INOUT1

Read Variable Response:

```
sRA DIO1Fnc <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DIO1Fnc	String	7	Function of INOUT1
Variable Data	data	IOFunctionType	0	

Write Variable:

```
sWN DIO1Fnc <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	DIO1Fnc	String	7	Function of INOUT1
Variable Data	data	IOFunctionType	0	

Write Variable Response:

```
sWA DIO1Fnc
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	DIO1Fnc	String	7	Function of INOUT1

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0C 73 52 4E 20 44 49 4F 31 46 6E 63 20 57	····sRN DIO1 Fnc W
Read Variable Response:	02 02 02 02 00 00 00 0D 73 52 41 20 44 49 4F 31 46 6E 63 20 00 58	····sRA DIO1 Fnc ·X
Write Variable:	02 02 02 02 00 00 00 0D 73 57 4E 20 44 49 4F 31 46 6E 63 20 00 52	····sWN DIO1 Fnc ·R
Write Variable Response:	02 02 02 02 00 00 00 0C 73 57 41 20 44 49 4F 31 46 6E 63 20 5D	····sWA DIO1 Fnc]

4.4.5.3. Variable: INOUT2_Function

The following section contains a detailed description of the variable INOUT2_Function.

Variable Overview

Variable Name	Description
INOUT2_Function	Function of INOUT2

Communication Name	DIO2Fnc
Read-Access	Always
Write-Access	AuthorizedClient, Service

UserType	
IOFunctionType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:

```
sRN DIO2Fnc
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DIO2Fnc	String	7	Function of INOUT2

Read Variable Response:

```
sRA DIO2Fnc <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DIO2Fnc	String	7	Function of INOUT2
Variable Data	data	IOFunctionType	0	

Write Variable:				
sWN DIO2Fnc <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	DIO2Fnc	String	7	Function of INOUT2
Variable Data	data	IOFunctionType	0	

Write Variable Response:				
sWA DIO2Fnc				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	DIO2Fnc	String	7	Function of INOUT2

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0C 73 52 4E 20 44 49 4F 32 46 6E 63 20 54	........sRN DIO2 Fnc T
Read Variable Response:	02 02 02 02 00 00 00 0D 73 52 41 20 44 49 4F 32 46 6E 63 20 00 5B	........sRA DIO2 Fnc .[
Write Variable:	02 02 02 02 00 00 00 0D 73 57 4E 20 44 49 4F 32 46 6E 63 20 00 51	........sWN DIO2 Fnc .Q
Write Variable Response:	02 02 02 02 00 00 00 0C 73 57 41 20 44 49 4F 32 46 6E 63 20 5E	........sWA DIO2 Fnc ^

4.4.5.4. Variable: INOUT3_Function

The following section contains a detailed description of the variable INOUT3_Function.

Variable Overview

Variable Name	Description
INOUT3_Function	Function of INOUT3

Communication Name	DIO3Fnc
Read-Access	Always
Write-Access	AuthorizedClient, Service

UserType	
IOFunctionType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
`sRN DIO3Fnc`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DIO3Fnc	String	7	Function of INOUT3

Read Variable Response:				
`sRA DIO3Fnc <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DIO3Fnc	String	7	Function of INOUT3
Variable Data	data	IOFunctionType	0	

Write Variable:				
`sWN DIO3Fnc <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	DIO3Fnc	String	7	Function of INOUT3
Variable Data	data	IOFunctionType	0	

Write Variable Response:				
`sWA DIO3Fnc`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	DIO3Fnc	String	7	Function of INOUT3

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0C 73 52 4E 20 44 49 4F 33 46 6E 63 20 55`	`·····sRN DIO3 Fnc U`
Read Variable Response:	`02 02 02 02 00 00 00 0D 73 52 41 20 44 49 4F 33 46 6E 63 20 00 5A`	`·····sRA DIO3 Fnc ·Z`
Write Variable:	`02 02 02 02 00 00 00 0D 73 57 4E 20 44 49 4F 33 46 6E 63 20 00 50`	`·····sWN DIO3 Fnc ·P`
Write Variable Response:	`02 02 02 02 00 00 00 0C 73 57 41 20 44 49 4F 33 46 6E 63 20 5F`	`·····sWA DIO3 Fnc _`

4.4.5.5. Variable: INOUT4_Function

The following section contains a detailed description of the variable INOUT4_Function.

Variable Overview

Variable Name	Description
INOUT4_Function	Function of INOUT4

Communication Name	DIO4Fnc
Read-Access	Always
Write-Access	AuthorizedClient, Service

UserType	
IOFunctionType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:

```
sRN DIO4Fnc
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DIO4Fnc	String	7	Function of INOUT4

Read Variable Response:

```
sRA DIO4Fnc <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DIO4Fnc	String	7	Function of INOUT4
Variable Data	data	IOFunctionType	0	

Write Variable:

```
sWN DIO4Fnc <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	DIO4Fnc	String	7	Function of INOUT4
Variable Data	data	IOFunctionType	0	

Write Variable Response:

```
sWA DIO4Fnc
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	DIO4Fnc	String	7	Function of INOUT4

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0C 73 52 4E 20 44 49 4F 34 46 6E 63 20 52	........sRN DIO4 Fnc R
Read Variable Response:	02 02 02 02 00 00 00 0D 73 52 41 20 44 49 4F 34 46 6E 63 20 00 5D	........sRA DIO4 Fnc .]
Write Variable:	02 02 02 02 00 00 00 0D 73 57 4E 20 44 49 4F 34 46 6E 63 20 00 57	........sWN DIO4 Fnc .W
Write Variable Response:	02 02 02 02 00 00 00 0C 73 57 41 20 44 49 4F 34 46 6E 63 20 58	........sWA DIO4 Fnc X

4.4.5.6. Variable: INOUT5_Function

The following section contains a detailed description of the variable INOUT5_Function.

Variable Overview

Variable Name	Description
INOUT5_Function	Function of INOUT5

Communication Name	DIO5Fnc
Read-Access	Always
Write-Access	AuthorizedClient, Service

UserType	
IOFunctionType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:

```
sRN DIO5Fnc
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DIO5Fnc	String	7	Function of INOUT5

Read Variable Response:

```
sRA DIO5Fnc <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DIO5Fnc	String	7	Function of INOUT5
Variable Data	data	IOFunctionType	0	

Write Variable:				
sWN DIO5Fnc <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	DIO5Fnc	String	7	Function of INOUT5
Variable Data	data	IOFunctionType	0	

Write Variable Response:				
sWA DIO5Fnc				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	DIO5Fnc	String	7	Function of INOUT5

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0C 73 52 4E 20 44 49 4F 35 46 6E 63 20 53	........sRN DIO5 Fnc S
Read Variable Response:	02 02 02 02 00 00 00 0D 73 52 41 20 44 49 4F 35 46 6E 63 20 00 5C	........sRA DIO5 Fnc .\
Write Variable:	02 02 02 02 00 00 00 0D 73 57 4E 20 44 49 4F 35 46 6E 63 20 00 56	........sWN DIO5 Fnc .V
Write Variable Response:	02 02 02 02 00 00 00 0C 73 57 41 20 44 49 4F 35 46 6E 63 20 59	........sWA DIO5 Fnc Y

4.4.5.7. Variable: INOUT6_Function

The following section contains a detailed description of the variable INOUT6_Function.

Variable Overview

Variable Name	Description
INOUT6_Function	Function of INOUT6

Communication Name	DIO6Fnc
Read-Access	Always
Write-Access	AuthorizedClient, Service

UserType	
IOFunctionType	See the chapter "User Types" for details.

Variable Telegram Syntax

Read Variable:				
`sRN DIO6Fnc`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	DIO6Fnc	String	7	Function of INOUT6

Read Variable Response:				
`sRA DIO6Fnc <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	DIO6Fnc	String	7	Function of INOUT6
Variable Data	data	IOFunctionType	0	

Write Variable:				
`sWN DIO6Fnc <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	DIO6Fnc	String	7	Function of INOUT6
Variable Data	data	IOFunctionType	0	

Write Variable Response:				
`sWA DIO6Fnc`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	DIO6Fnc	String	7	Function of INOUT6

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 0C 73 52 4E 20 44 49 4F 36 46 6E 63 20 50`	`·····sRN DIO6 Fnc P`
Read Variable Response:	`02 02 02 02 00 00 00 0D 73 52 41 20 44 49 4F 36 46 6E 63 20 00 5F`	`·····sRA DIO6 Fnc ·_`
Write Variable:	`02 02 02 02 00 00 00 0D 73 57 4E 20 44 49 4F 36 46 6E 63 20 00 55`	`·····sWN DIO6 Fnc ·U`
Write Variable Response:	`02 02 02 02 00 00 00 0C 73 57 41 20 44 49 4F 36 46 6E 63 20 5A`	`·····sWA DIO6 Fnc Z`

4.4.6. Time synchronisation

4.4.6.1. Variable: timeSyncMode

The following section contains a detailed description of the variable timeSyncMode.

Variable Overview

Variable Name
timeSyncMode

Read-Access	Always
Write-Access	AuthorizedClient, Service

Enum8			
Default Value		NONE	
	Value	Name	Description
	0	NONE	Disable timesync
	1	NTP	Use NTP Client
	2	PTP	Use PTP

Variable Telegram Syntax

Read Variable:				
`sRN timeSyncMode`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	timeSyncMode	String	12	

Read Variable Response:				
`sRA timeSyncMode <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	timeSyncMode	String	12	
Variable Data	data	Enum8	1	

Write Variable:				
`sWN timeSyncMode <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	timeSyncMode	String	12	
Variable Data	data	Enum8	1	

Write Variable Response:				
`sWA timeSyncMode`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	timeSyncMode	String	12	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 11 73 52 4E 20 74 69 6D 65 53 79 6E 63 4D 6F 64 65 20 7E	····sRN time SyncMode ~
Read Variable Response:	02 02 02 02 00 00 00 12 73 52 41 20 74 69 6D 65 53 79 6E 63 4D 6F 64 65 20 00 71	····sRA time SyncMode ·q
Write Variable:	02 02 02 02 00 00 00 12 73 57 4E 20 74 69 6D 65 53 79 6E 63 4D 6F 64 65 20 00 7B	····sWN time SyncMode ·{
Write Variable Response:	02 02 02 02 00 00 00 11 73 57 41 20 74 69 6D 65 53 79 6E 63 4D 6F 64 65 20 74	····sWA time SyncMode t

4.4.6.2. NTP Client

4.4.6.2.1. Variable: ntpClientServerAddress

The following section contains a detailed description of the variable ntpClientServerAddress.

Variable Overview

Variable Name
ntpClientServerAddress

Read-Access	Always
Write-Access	AuthorizedClient, Service

FlexString	
Length	0..255

Variable Telegram Syntax

Read Variable:

```
sRN ntpClientServerAddress
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	ntpClientServerAddress	String	22	

Read Variable Response:

```
sRA ntpClientServerAddress <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	ntpClientServerAddress	String	22	
Variable Data	data	FlexString	255	

Write Variable:

```
sWN ntpClientServerAddress <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	ntpClientServerAddress	String	22	
Variable Data	data	FlexString	255	

Write Variable Response:

```
sWA ntpClientServerAddress
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	ntpClientServerAddress	String	22	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 1B 73 52 4E 20 6E 74 70 43 6C 69 65 6E 74 53 65 72 76 65 72 41 64 64 72 65 73 73 20 4F	........sRN ntpC lientServerAddre ss O
Read Variable Response:	02 02 02 02 00 00 00 1D 73 52 41 20 6E 74 70 43 6C 69 65 6E 74 53 65 72 76 65 72 41 64 64 72 65 73 73 20 00 00 40	........sRA ntpC lientServerAddre ss ..@
Write Variable:	02 02 02 02 00 00 00 1D 73 57 4E 20 6E 74 70 43 6C 69 65 6E 74 53 65 72 76 65 72 41 64 64 72 65 73 73 20 00 00 4A	........sWN ntpC lientServerAddre ss ..J
Write Variable Response:	02 02 02 02 00 00 00 1B 73 57 41 20 6E 74 70 43 6C 69 65 6E 74 53 65 72 76 65 72 41 64 64 72 65 73 73 20 45	........sWA ntpC lientServerAddre ss E

4.4.6.2.2. Variable: ntpClientServerPort

The following section contains a detailed description of the variable ntpClientServerPort.

Variable Overview

Variable Name
ntpClientServerPort

Read-Access	Always
Write-Access	AuthorizedClient, Service

UInt	
Value Range	1..65535
Initialisation	123

Variable Telegram Syntax

Read Variable:

```
sRN ntpClientServerPort
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	ntpClientServerPort	String	19	

Read Variable Response:

```
sRA ntpClientServerPort <data>
```

Telegram Part	Telegram	Type	Length [Byte]	Description
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	ntpClientServerPort	String	19	
Variable Data	data	UInt	2	

Write Variable:				
sWN ntpClientServerPort <data>				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	ntpClientServerPort	String	19	
Variable Data	data	UInt	2	

Write Variable Response:				
sWA ntpClientServerPort				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	ntpClientServerPort	String	19	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 18 73 52 4E 20 6E 74 70 43 6C 69 65 6E 74 53 65 72 76 65 72 50 6F 72 74 20 20	····sRN ntpC lientServerPort
Read Variable Response:	02 02 02 02 00 00 00 1A 73 52 41 20 6E 74 70 43 6C 69 65 6E 74 53 65 72 76 65 72 50 6F 72 74 20 00 7B 54	····sRA ntpC lientServerPort ·{T
Write Variable:	02 02 02 02 00 00 00 1A 73 57 4E 20 6E 74 70 43 6C 69 65 6E 74 53 65 72 76 65 72 50 6F 72 74 20 00 7B 5E	····sWN ntpC lientServerPort ·{^
Write Variable Response:	02 02 02 02 00 00 00 18 73 57 41 20 6E 74 70 43 6C 69 65 6E 74 53 65 72 76 65 72 50 6F 72 74 20 2A	····sWA ntpC lientServerPort *

4.4.6.2.3. Variable: ntpClientTimeout

The following section contains a detailed description of the variable ntpClientTimeout.

Variable Overview

Variable Name
ntpClientTimeout

Read-Access	Always
Write-Access	AuthorizedClient, Service

UDInt	
Value Range	1..65535
Initialisation	10000

Variable Telegram Syntax

Read Variable:				
`sRN ntpClientTimeout`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	ntpClientTimeout	String	16	

Read Variable Response:				
`sRA ntpClientTimeout <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	ntpClientTimeout	String	16	
Variable Data	data	UDInt	4	

Write Variable:				
`sWN ntpClientTimeout <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	ntpClientTimeout	String	16	
Variable Data	data	UDInt	4	

Write Variable Response:				
`sWA ntpClientTimeout`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	ntpClientTimeout	String	16	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	`02 02 02 02 00 00 00 15 73 52 4E 20 6E 74 70 43 6C 69 65 6E 74 54 69 6D 65 6F 75 74 20 67`	`........sRN ntpClientTimeout g`
Read Variable Response:	`02 02 02 02 00 00 00 19 73 52 41 20 6E 74 70 43 6C 69 65 6E 74 54 69 6D 65 6F 75 74 20 00 00 27 10 5F`	`........sRA ntpClientTimeout ··' ·_`
Write Variable:	`02 02 02 02 00 00 00 19 73 57 4E 20 6E 74 70 43 6C 69 65 6E 74 54 69 6D 65 6F 75 74 20 00 00 27 10 55`	`........sWN ntpClientTimeout ··' ·U`
Write Variable Response:	`02 02 02 02 00 00 00 15 73 57 41 20 6E 74 70 43 6C 69 65 6E 74 54 69 6D 65 6F 75 74 20 6D`	`........sWA ntpClientTimeout m`

4.4.6.3. PTP

4.4.6.3.1. Variable: ptpMode

The following section contains a detailed description of the variable ptpMode.

Variable Overview

Variable Name
ptpMode

Read-Access	Always
Write-Access	AuthorizedClient, Service

Enum8			
Default Value		AUTO	
	Value	Name	Description
	0	AUTO	
	1	MASTER	
	2	SLAVE	

Variable Telegram Syntax

Read Variable:				
`sRN ptpMode`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRN	String	3	Read SOPAS Variable by Name
Command	ptpMode	String	7	

Read Variable Response:				
`sRA ptpMode <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sRA	String	3	SOPAS Variable Read Acknowledge
Command	ptpMode	String	7	
Variable Data	data	Enum8	1	

Write Variable:				
`sWN ptpMode <data>`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWN	String	3	Write SOPAS Variable by Name
Command	ptpMode	String	7	
Variable Data	data	Enum8	1	

Write Variable Response:				
`sWA ptpMode`				
Telegram Part	**Telegram**	**Type**	**Length [Byte]**	**Description**
Command Type	sWA	String	3	SOPAS Variable Write Acknowledge
Command	ptpMode	String	7	

Variable Telegram Examples

Example: Default Values		
Variable rest examples with data set to default values.		
Read Variable:	02 02 02 02 00 00 00 0C 73 52 4E 20 70 74 70 4D 6F 64 65 20 38	........sRN ptpM ode 8
Read Variable Response:	02 02 02 02 00 00 00 0D 73 52 41 20 70 74 70 4D 6F 64 65 20 00 37	........sRA ptpM ode .7
Write Variable:	02 02 02 02 00 00 00 0D 73 57 4E 20 70 74 70 4D 6F 64 65 20 00 3D	........sWN ptpM ode .=
Write Variable Response:	02 02 02 02 00 00 00 0C 73 57 41 20 70 74 70 4D 6F 64 65 20 32	........sWA ptpM ode 2

5. User Types

5.1. Type: CidVersion

The following section contains a detailed description of the user type CidVersion.

Type
CidVersion

Struct			
MajorVersion			
	UInt		
	Value Range	0..65535	
	Initialisation	2	
MinorVersion			
	UInt		
	Value Range	0..65535	
	Initialisation	0	
PatchVersion			
	UInt		
	Value Range	0..65535	
	Initialisation	0	
BuildNumber			
	UDInt		
	Value Range	0..4294967295	
	Initialisation	469	
VersionClassifier			
	Enum8		
	Default Value	R	
	Value	Name	Description
	0	C	Release Candidate
	1	A	Alpha
	2	B	Beta
	3	R	Release
	4	S	Special

5.2. Type: DevInfoGenericEntryType

The following section contains a detailed description of the user type DevInfoGenericEntryType.

Type	Description
DevInfoGenericEntryType	Auxiliary entries which can be used to add user information to the SOPAS Scan.

Struct			
key			
	String		
	Length	4	
value			
	Array		
	Length	0..32	
		USInt	
		Value Range	0..255

5.3. Type: DeviceStatus

The following section contains a detailed description of the user type DeviceStatus.

Type	Description
DeviceStatus	Current state of the device.

Enum8			
	Value	Name	Description
	0	DS_UnknownState	
	1	DS_Startup	
	2	DS_ServiceMode	
	3	DS_NormalOperation	
	4	DS_SuspendedOperation	
	5	DS_ServiceRecommended	
	6	DS_ServiceRequired	
	7	DS_RecoverableError	
	8	DS_FatalError	

5.4. Type: RequiredUserAction

The following section contains a detailed description of the user type RequiredUserAction.

Type	Description
RequiredUserAction	A Hint what can be done if the DeviceStatus is not DS_NormalOperation.

Cont		
Bit Length		16
ConfirmConfiguration		
0.0	**Bool**	
	Value Range	False, True
	Initialisation	False
CheckConfiguration		
0.1	**Bool**	
	Value Range	False, True
	Initialisation	False
CheckEnvironment		
0.2	**Bool**	
	Value Range	False, True
	Initialisation	False
CheckApplicationInterfaces		
0.3	**Bool**	
	Value Range	False, True
	Initialisation	False
CheckDevice		
0.4	**Bool**	
	Value Range	False, True
	Initialisation	False
RunSetupProcedure		
0.5	**Bool**	
	Value Range	False, True
	Initialisation	False
CheckFirmware		
0.6	**Bool**	
	Value Range	False, True
	Initialisation	False
Wait		
0.7	**Bool**	
	Value Range	False, True
	Initialisation	False
Reserved		
1.0	**UInt8**	
...	Value Range	0..255
1.7		

5.5. Type: IpParameter

The following section contains a detailed description of the user type IpParameter.

Type	Description
IpParameter	Parameter to configure a IP interface.

Struct	
udiIpAddress	IP Address
UDInt	
Value Range	0..4294967295
udiNetMask	Network Mask
UDInt	
Value Range	0..4294967295
udiDefaultGateway	Default Gateway
UDInt	
Value Range	0..4294967295
bDhcpEnabled	Is DHCP enabled
Bool	
Value Range	False, True
Initialisation	False
bDhcpAvailable	Is DHCP generally available on the device
Bool	
Value Range	False, True
Initialisation	False

5.6. Type: DeviceInfo

The following section contains a detailed description of the user type DeviceInfo.

Type
DeviceInfo

Struct	
DeviceInfoVersion	
UInt	
Value Range	0..65535
CidName	
FlexString	
Length	0..32
CidVersionStruct	
UserType	
CidVersion	See the chapter "User Types" for details.
DeviceStatus	
UserType	
DeviceStatus	See the chapter "User Types" for details.

Struct	
RequiredUserAction	
UserType	
RequiredUserAction	See the chapter "User Types" for details.
DeviceName	Name of device
FlexString	
Length	0..32
ApplicationSpecificName	
FlexString	
Length	0..32
ProjectName	Project name
FlexString	
Length	0..32
SerialNumber	Serial number of this device.
FlexString	
Length	0..32
TypeCode	This variable's value matches the SICK type code as it is used in SAP (first 18 characters).
FlexString	
Length	0..32
FirmwareVersion	
FlexString	
Length	0..32
OrderNumber	This variable's value matches the SICK order number (million number) in SAP.
FlexString	
Length	0..32

Struct		
Flags		
	SCont	
	Bit Length	8
	IsLittleEndian	
	0.0	**Bool**
		Value Range	False, True
		Initialisation	False
	ComByIndex	
	0.1	**Bool**
		Value Range	False, True
		Initialisation	False
	ComByName	
	0.2	**Bool**
		Value Range	False, True
		Initialisation	False
	SddAvailable	
	0.3	**Bool**
		Value Range	False, True
		Initialisation	False
	SupportsChallengeResponse	
	0.4	**Bool**
		Value Range	False, True
		Initialisation	False
	Reserved	
	0.5 ... 0.7	**UInt3** Value Range	0..7
auxEntries		
	Array	
	Length	0..12
		UserType
		DevInfoGenericEntryType	See the chapter "User Types" for details.
ScanIF		
	Array	
	Length	0..1
		Struct
		InterfaceNumber	
			UInt
			Value Range	0..65535
		InterfaceName	
			FlexString
			Length	0..64
GeneralComSettings		
	Array	
	Length	0..7
		UserType
		DevInfoGenericEntryType	See the chapter "User Types" for details.

Struct			
Endpoints			
	Array		
	Length		0..1
		Struct	
		Protocol	
			Enum8
			Value / Name / Description
			0 / CoLaB /
			1 / CoLa2_0 /
			2 / CoLa2_1 /
			3 / CoLaA /
			4 / HTTP /
			5 / HTTPS /
		EndpointSettings	
			Array
			Length / 0..1
			UserType / Struct[Endpoints].Array.Struct[EndpointSettings].Array.UserType

UserType	Struct[Endpoints].Array.Struct[EndpointSettings].Array.UserType
DevInfoGenericEntryType	See the chapter "User Types" for details.

5.7. Type: ErrTimeType

The following section contains a detailed description of the user type ErrTimeType.

Type	Description
ErrTimeType	TODO

Struct		
PwrOnCnt		
	UInt	
	Value Range	0..65535
	Initialisation	0
OpSecs		
	UDInt	
	Value Range	0..4294967295
	Initialisation	0
TimeOccur		
	UDInt	
	Value Range	0..4294967295
	Initialisation	0

5.8. Type: ErrStructType

The following section contains a detailed description of the user type ErrStructType.

Type	Description
ErrStructType	TODO

Struct	
ErrorId	
UDInt	
Value Range	0..4294967295
ErrorState	
UDInt	
Value Range	0..4294967295
FirstTime	
UserType	
ErrTimeType	See the chapter "User Types" for details.
LastTime	
UserType	
ErrTimeType	See the chapter "User Types" for details.
NumberOccurance	
UInt	
Value Range	0..65535
Initialisation	0
ErrReserved	
UInt	
Value Range	0..65535
Initialisation	0
ExtInfo	
FlexString	
Length	0..50

5.9. Type: V3SElectricalMonitoring

The following section contains a detailed description of the user type V3SElectricalMonitoring.

Type
V3SElectricalMonitoring

Struct	
LEDsCurrent	
Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	A
OperationVoltage	
Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	V
MinimalVoltage	
Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	V
MaximalVoltage	
Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	V

5.10. Type: V3SElectricalLimits

The following section contains a detailed description of the user type V3SElectricalLimits.

Type
V3SElectricalLimits

Struct	
MinAllowedLEDsCurrent	
Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	A
MaxAllowedLEDsCurrent	
Real	
Value Range	See specification IEEE 754
Initialisation	5.0
Physical Unit	A

Struct		
MinAllowedOpVoltage		
	Real	
	Value Range	See specification IEEE 754
	Initialisation	20.0
	Physical Unit	V
MaxAllowedOpVoltage		
	Real	
	Value Range	See specification IEEE 754
	Initialisation	28.0
	Physical Unit	V

5.11. Type: ThreeLevels

The following section contains a detailed description of the user type ThreeLevels.

Type
ThreeLevels

Enum8			
	Value	Name	Description
	0	INVALID	Unspecified, uninitalized, unkown
	1	ERROR	An error was detected
	2	WARNING	Reliability is questionable
	3	GOOD	Anything is like expected

5.12. Type: V3SProductionData

The following section contains a detailed description of the user type V3SProductionData.

Type
V3SProductionData

Struct		
MaterialNo		
	String	
	Length	7
ChangeNo		
	String	
	Length	4
DateCode		
	String	
	Length	4
SerialNo		
	String	
	Length	4

Struct	
Flag	
String	
Length	1
ProdSite	
String	
Length	2
ProdFam	
String	
Length	2
TraceFU	
String	
Length	2
ModelCode	
String	
Length	1
AuxData	
String	
Length	4

5.13. Type: V3SHardwareInfo

The following section contains a detailed description of the user type V3SHardwareInfo.

Type
V3SHardwareInfo

Struct	
ProcessorBoard	
UserType	
V3SProductionData	See the chapter "User Types" for details.
PowerIOBoard	
UserType	
V3SProductionData	See the chapter "User Types" for details.
ImagerBoard	
UserType	
V3SProductionData	See the chapter "User Types" for details.
IlluminationBoard	
UserType	
V3SProductionData	See the chapter "User Types" for details.

5.14. Type: LedConfig

The following section contains a detailed description of the user type LedConfig.

Type
LedConfig

Struct			
Color1			
	Enum8		
	Default Value	OFF	
	Value	Name	Description
	0	OFF	
	1	RED	
	2	GREEN	
	3	YELLOW	
	4	BLUE	
	5	MAGENTA	
	6	TURQOIS	
	7	WHITE	
	8	FUCHSIA	
	9	AQUA	
Color2			
	Enum8		
	Default Value	OFF	
	Value	Name	Description
	0	OFF	
	1	RED	
	2	GREEN	
	3	YELLOW	
	4	BLUE	
	5	MAGENTA	
	6	TURQOIS	
	7	WHITE	
Period			
	Enum8		
	Default Value	millisec500	
	Value	Name	Description
	1	millisec100	
	2	millisec200	
	3	millisec300	
	5	millisec500	
	10	millisec1000	
	15	millisec1500	
	20	millisec2000	
	25	millisec2500	
	30	millisec3000	

Struct	
DutyCyclePercent	
UInt	
Value Range	0..100
Initialisation	50
Physical Unit	byte

5.15. Type: KeyValue

The following section contains a detailed description of the user type KeyValue.

Type	Description
KeyValue	Key/Value item

Struct	
key	
FlexString	
Length	0..64
value	
FlexString	
Length	0..64

5.16. Type: E_USER_LEVEL_TYPE

The following section contains a detailed description of the user type E_USER_LEVEL_TYPE.

Type
E_USER_LEVEL_TYPE

Enum8			
	Value	Name	Description
	0	RUN	
	1	OPERATOR	
	2	MAINTENANCE	
	3	AUTHORIZED_CLIENT	
	4	SERVICE	
	5	SICKSERVICE	
	6	PRODUCTION	
	7	DEVELOPER	

5.17. Type: RemoteAddressDefine

The following section contains a detailed description of the user type RemoteAddressDefine.

Type
RemoteAddressDefine

FlexString	
Length	0..128

5.18. Type: CoLa2ClientIdentType

The following section contains a detailed description of the user type CoLa2ClientIdentType.

Type
CoLa2ClientIdentType

FlexString	
Length	0..32

5.19. Type: IOConfig

The following section contains a detailed description of the user type IOConfig.

Type
IOConfig

Struct				
Direction			0=input,1=output	
	Enum8			
	Default Value		Input	
		Value	Name	Description
		0	Input	
		1	Output	
PushPullMode			0=open-drain,1=push/pull	
	Enum8			
	Default Value		OpenDrain	
		Value	Name	Description
		0	OpenDrain	
		1	PushPull	
NPNorPNPMode			0=PNP,1=NPN	
	Enum8			
	Default Value		PNP	
		Value	Name	Description
		0	PNP	
		1	NPN	

Struct			
InputReaction	0=react on rising edge,1=react on falling edge,2=react on both		
	Enum8		
	Default Value	RisingEdge	
	Value	Name	Description
	0	RisingEdge	
	1	FallingEdge	
	2	Both	
NotificationMode	0=Polling,1=IRQ		
	Enum8		
	Default Value	Polling	
	Value	Name	Description
	0	Polling	
	1	IRQ	
SoftwareFilterSetting			
	USInt		
	Value Range	0..255	
	Initialisation	16	
ExternalTrigger	0=Disabled,1=Enabled		
	Enum8		
	Default Value	Disabled	
	Value	Name	Description
	0	Disabled	
	1	Enabled	

5.20. Type: IOConfigType

The following section contains a detailed description of the user type IOConfigType.

Type
IOConfigType

Struct			
Direction	0=input,1=output		
	Enum8		
	Default Value	Input	
	Value	Name	Description
	0	Input	
	1	Output	
InputConfigurationPart			
	UserType		
	IOConfig	See the chapter "User Types" for details.	

5.21. Type: IOFunctionType

The following section contains a detailed description of the user type IOFunctionType.

Type
IOFunctionType

Enum8			
Default Value		NoFunction	
	Value	Name	Description
	0	NoFunction	
	1	SteadyLOW	
	2	SteadyHIGH	
	3	DeviceStatus	
	4	DataQualityCheck	
	5	TemperatureWarning	
	6	DONTUSE_PollutionWarning	Planned to signal a possible pollution of the optics. Not yet used, but might be available in future.
	7	Trigger	
	8	DONTUSE_UserStart	Only needed to convert old data sets, don't use.
	9	DONTUSE_User2	Only needed to convert old data sets, don't use.
	10	DONTUSE_User3	Only needed to convert old data sets, don't use.
	11	DONTUSE_User4	Only needed to convert old data sets, don't use.
	12	DONTUSE_User5	Only needed to convert old data sets, don't use.
	13	DONTUSE_User6	Only needed to convert old data sets, don't use.
	14	DONTUSE_User7	Only needed to convert old data sets, don't use.
	15	DONTUSE_User8	Only needed to convert old data sets, don't use.
	16	DONTUSE_User9	Only needed to convert old data sets, don't use.
	17	DONTUSE_User10	Only needed to convert old data sets, don't use.
	18	DONTUSE_User11	Only needed to convert old data sets, don't use.
	19	DONTUSE_User12	Only needed to convert old data sets, don't use.
	20	DONTUSE_User13	Only needed to convert old data sets, don't use.
	21	DONTUSE_User14	Only needed to convert old data sets, don't use.
	22	DONTUSE_UserEnd	Only needed to convert old data sets, don't use.
	23	TriggerBusy	
	24	PowerSaveMode	
	26	JobOutput	Outputs the group detection result of the DT application
	27	TriggerTeach	Used to trigger Teach in DT application.
	28	IlluminationTrigger	Used to trigger an external illumination.
	30	DeviceWarning	Used to signal device warnings (in sync with yellow device LED).
	31	TemperatureCritical	Used to signal a critical device temperature.

5.22. Type: V3SIOsState

The following section contains a detailed description of the user type V3SIOsState.

Type
V3SIOsState

Struct	
INOUT1	
SInt	
Value Range	-128..127
INOUT2	
SInt	
Value Range	-128..127
INOUT3	
SInt	
Value Range	-128..127
INOUT4	
SInt	
Value Range	-128..127
INOUT5	
SInt	
Value Range	-128..127
INOUT6	
SInt	
Value Range	-128..127

5.23. Type: Matrix3x3d

The following section contains a detailed description of the user type Matrix3x3d.

Type
Matrix3x3d

Struct			
Values			
Array			
Length			9
Default Value			{1.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,1.0}
	LReal		
	Value Range		See specification IEEE 754

5.24. Type: Matrix4x4

The following section contains a detailed description of the user type Matrix4x4.

Type
Matrix4x4

Struct		
Values		
	Array	
	Length	16
	Default Value	{1.0f,0.0f,0.0f,0.0f,0.0f,1.0f,0.0f,0.0f,0.0f,0.0f,1.0f,0.0f,0.0f,0.0f,0.0f,1.0f}
		Real
		Value Range	See specification IEEE 754

5.25. Type: Matrix4x4d

The following section contains a detailed description of the user type Matrix4x4d.

Type
Matrix4x4d

Struct		
Values		
	Array	
	Length	16
	Default Value	{1.0,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,1.0}
		LReal
		Value Range	See specification IEEE 754

5.26. Type: Matrix5x1d

The following section contains a detailed description of the user type Matrix5x1d.

Type	Description
Matrix5x1d	Matrix of 5 columns and 1 row

Struct		
Values		
	Array	
	Length	5
	Default Value	{0.0,0.0,0.0,0.0,0.0}
		LReal
		Value Range	See specification IEEE 754

5.27. Type: Vector3

The following section contains a detailed description of the user type Vector3.

Type
Vector3

Struct	
X	
Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	mm
Y	
Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	mm
Z	
Real	
Value Range	See specification IEEE 754
Initialisation	0.0
Physical Unit	mm

5.28. Type: Plane

The following section contains a detailed description of the user type Plane.

Type
Plane

Struct	
Normal	Normal has to be of unit length
UserType	
Vector3	See the chapter "User Types" for details.
Point	
UserType	
Vector3	See the chapter "User Types" for details.

5.29. Type: RotationVector3i

The following section contains a detailed description of the user type RotationVector3i.

Type
RotationVector3i

Struct		
X		
	Int	
	Value Range	-180..180
	Initialisation	0
	Physical Unit	deg
Y		
	Int	
	Value Range	-180..180
	Initialisation	0
	Physical Unit	deg
Z		
	Int	
	Value Range	-180..180
	Initialisation	0
	Physical Unit	deg

5.30. Type: RotationVector3f

The following section contains a detailed description of the user type RotationVector3f.

Type
RotationVector3f

Struct		
X		
	Real	
	Value Range	See specification IEEE 754
	Initialisation	0.0
	Physical Unit	deg
Y		
	Real	
	Value Range	See specification IEEE 754
	Initialisation	0.0
	Physical Unit	deg
Z		
	Real	
	Value Range	See specification IEEE 754
	Initialisation	0.0
	Physical Unit	deg

5.31. Type: Box

The following section contains a detailed description of the user type Box.

Type
Box

Struct		
origin		
	UserType	
	Vector3	See the chapter "User Types" for details.
x		
	UserType	
	Vector3	See the chapter "User Types" for details.
y		
	UserType	
	Vector3	See the chapter "User Types" for details.
z		
	UserType	
	Vector3	See the chapter "User Types" for details.

5.32. Type: CameraModel

The following section contains a detailed description of the user type CameraModel.

Type
CameraModel

Struct		
CameraID		Unique camera identifier
	FlexString	
	Length	0..64
ImageWidth		Image width for which the calibration is valid
	DInt	
	Value Range	-2147483648..2147483647
ImageHeight		Image height for which the calibration is valid
	DInt	
	Value Range	-2147483648..2147483647
FocalDistance		Distance from the camera to the plane of best image sharpness
	LReal	
	Value Range	See specification IEEE 754
FocalDistanceUnit		Focus distance unit (Default is mm)
	FlexString	
	Length	0..8

Struct		
IntrinsicK		3x3 matrix with the intrinsic camera parameters: K = [fx s cx, 0 fy cy, 0 0 1]
	UserType	
	Matrix3x3d	See the chapter "User Types" for details.
WorldToSensorDistortion		5x1 matrix with the world to sensor lens distortion coefficients [k1, k2, p1, p2, k3]
	UserType	
	Matrix5x1d	See the chapter "User Types" for details.
SensorToWorldDistortion		5x1 matrix with the sensor to world lens distortion coefficients [k1, k2, p1, p2, k3]
	UserType	
	Matrix5x1d	See the chapter "User Types" for details.
Transform3D		Rigid transformation from camera reference point to sensor coordinates [R,t]
	UserType	
	Matrix4x4d	See the chapter "User Types" for details.

5.33. Type: PowerMode

The following section contains a detailed description of the user type PowerMode.

Type
PowerMode

Struct			
mode			
	Enum8		
	Default Value	INVALID	
	Value	Name	Description
	0	INVALID	Power mode is not set
	1	OFF	Device is/was powered off
	2	SUSPENDED	Device is in a suspended mode, with a longer wake-up time
	3	STANDBY	Device is in a stand-by mode, that allows a fast wake-up
	4	CONNECTED_STANDBY	Device is in a stand-by mode, that keeps command communications up and running
	5	STREAMING_STANDBY	Device is in a stand-by mode, that keeps streaming data albeit without usable data
	6	ACTIVE	Device is up and running

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Australia
Phone +61 (3) 9457 0600
1800 33 48 02 – tollfree
E-Mail sales@sick.com.au

Austria
Phone +43 (0) 2236 62288-0
E-Mail office@sick.at

Belgium/Luxembourg
Phone +32 (0) 2 466 55 66
E-Mail info@sick.be

Brazil
Phone +55 11 3215-4900
E-Mail comercial@sick.com.br

Canada
Phone +1 905.771.1444
E-Mail cs.canada@sick.com

Czech Republic
Phone +420 234 719 500
E-Mail sick@sick.cz

Chile
Phone +56 (2) 2274 7430
E-Mail chile@sick.com

China
Phone +86 20 2882 3600
E-Mail info.china@sick.net.cn

Denmark
Phone +45 45 82 64 00
E-Mail sick@sick.dk

Finland
Phone +358-9-25 15 800
E-Mail sick@sick.fi

France
Phone +33 1 64 62 35 00
E-Mail info@sick.fr

Germany
Phone +49 (0) 2 11 53 010
E-Mail info@sick.de

Greece
Phone +30 210 6825100
E-Mail office@sick.com.gr

Hong Kong
Phone +852 2153 6300
E-Mail ghk@sick.com.hk

Hungary
Phone +36 1 371 2680
E-Mail ertekesites@sick.hu

India
Phone +91-22-6119 8900
E-Mail info@sick-india.com

Israel
Phone +972 97110 11
E-Mail info@sick-sensors.com

Italy
Phone +39 02 27 43 41
E-Mail info@sick.it

Japan
Phone +81 3 5309 2112
E-Mail support@sick.jp

Malaysia
Phone +603-8080 7425
E-Mail enquiry.my@sick.com

Mexico
Phone +52 (472) 748 9451
E-Mail mexico@sick.com

Netherlands
Phone +31 (0) 30 229 25 44
E-Mail info@sick.nl

New Zealand
Phone +64 9 415 0459
0800 222 278 – tollfree
E-Mail sales@sick.co.nz

Norway
Phone +47 67 81 50 00
E-Mail sick@sick.no

Poland
Phone +48 22 539 41 00
E-Mail info@sick.pl

Romania
Phone +40 356-17 11 20
E-Mail office@sick.ro

Russia
Phone +7 495 283 09 90
E-Mail info@sick.ru

Singapore
Phone +65 6744 3732
E-Mail sales.gsg@sick.com

Slovakia
Phone +421 482 901 201
E-Mail mail@sick-sk.sk

Slovenia
Phone +386 591 78849
E-Mail office@sick.si

South Africa
Phone +27 10 060 0550
E-Mail info@sickautomation.co.za

South Korea
Phone +82 2 786 6321/4
E-Mail infokorea@sick.com

Spain
Phone +34 93 480 31 00
E-Mail info@sick.es

Sweden
Phone +46 10 110 10 00
E-Mail info@sick.se

Switzerland
Phone +41 41 619 29 39
E-Mail contact@sick.ch

Taiwan
Phone +886-2-2375-6288
E-Mail sales@sick.com.tw

Thailand
Phone +66 2 645 0009
E-Mail marcom.th@sick.com

Turkey
Phone +90 (216) 528 50 00
E-Mail info@sick.com.tr

United Arab Emirates
Phone +971 (0) 4 88 65 878
E-Mail contact@sick.ae

United Kingdom
Phone +44 (0)17278 31121
E-Mail info@sick.co.uk

USA
Phone +1 800.325.7425
E-Mail info@sick.com

Vietnam
Phone +65 6744 3732
E-Mail sales.gsg@sick.com

Detailed addresses and further locations at **www.sick.com**

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