SCU-P100
Control Unit

Addendum to TI and OI

SICK
Sensor Intelligence.

Described Product	Product name:	SCU-P100
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NOTICE
Hazard which *could* result in property damage.

[!] Important technical information for this
     product

+**i** Supplementary information

+**i**↵ Link to information at another place

C E

CONTENTS

1 Important Information

1.1 General notes

Modifications in SCU menu navigation are described in these instructions.

These supplement the SCU Operating Instructions and the Technical Information.

> **+i** Version 1.0 of this document is valid only as an Addendum to Operating Instructions SCU version 2.2 and/or Technical Information SCU, version 2.2.

1.2 Responsibility of user

▶ Observe all safety information in the Operating Instructions or Technical Information of the SCU.
▶ If anything is not clear: Please contact SICK Customer Service.

Retention of document

This Addendum to the Operating Instructions must be kept available for reference.

▶ Must be conveyed to new owners.

1.3 Additional documentation/information

▶ Observe the supplied documents.

Additional instructions

The following documents are applicable in addition to this Addendum to the Operating Instructions:

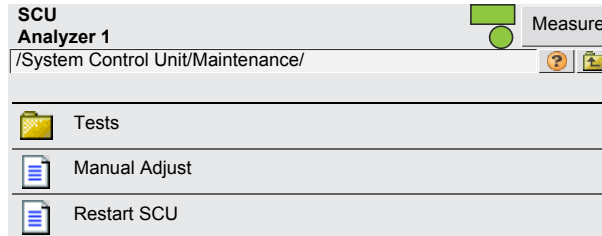● Operating Instructions SCU
● Technical Information SCU

2 Addendum to Operating Instructions SCU up to version 2.2

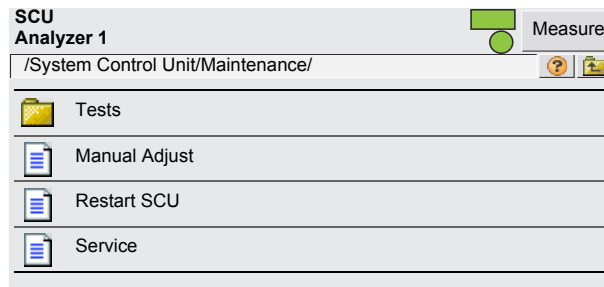## 2.1 Modification of Section 4.5.7: Maintenance

Previously:

Fig. 1: Menu: System Control Unit/Maintenance

Modification: Additional menu item: Service

The function of menu item "Service" is described in Section 2.2.

Fig. 2: Modification: Menu: System Control Unit/Maintenance

2.2 Service – maintenance log and restoring of saved parameter sets

> **+i** Access to this menu requires at least the "Authorized User" level.

Fig. 3: Menu: System Control Unit/Maintenance/Service.

SCU Analyzer 1		Measure
/System Control Unit/Maintenance/Service/		? 🔼
📄	Service Log	
📄	Parameter	
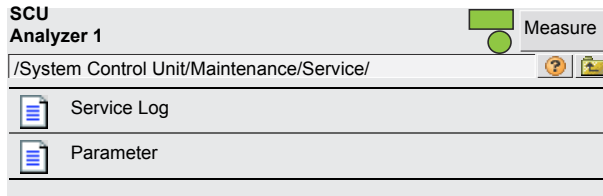
Functions in this menu:

- Filing service notes
- Activating saved parameter sets.

Filing and editing service notes

Fig. 4: Filing and editing service notes

| SCU Analyzer 1					Measure
/System Control Unit/Maintenance/Service Log/					? 🔼
Save	Mark	Edit	Copy	Replace	Next
Index		Entry			
1					Zero
2					Zero
3					Zero
4					Zero
5					Zero
6					Zero
7					Zero
8					Zero
9					Zero
10					Zero
11					Zero
12					Zero
13					Zero
14					Zero
15					Zero

Notes and remarks concerning the performed service can be saved here.

> **+i** This information is only accessible at Service level.

Activating saved parameter sets. This can be done in three ways:

>>> Saving the current configuration
>>> Activating the parameter set saved last
>>> Restoring the configuration set at the factory

Fig. 5: Activating parameter sets
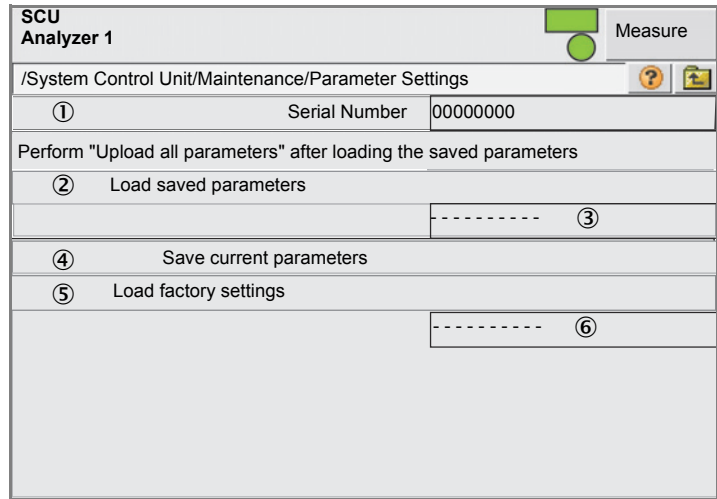
1   Software serial number
2   Button for loading the parameter set saved last[1]
3   Date of saving of the parameter set saved last
4   Button for saving the current parameter set.
    Caution: This overwrites a previously saved parameter set.
5   Loads the parameter set which was configured at the factory.
6   Date of creation of the factory settings

[1] When there are no data records or the software version and the saved data record do not match, the time-
stamp specification stays empty. This is typically the case with a software update. However, possibly existing
data records are maintained so that the data records are accessible again when a suitable version is loaded.

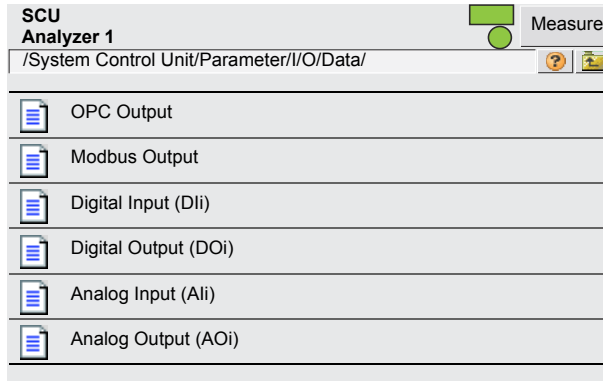+**i**   The SCU must be restarted after restoring a saved parameter set.

+**i**   The loading of saved data records or factory settings is logged in the logbook.

3 Addendum to Technical Information up to version 2.2

3.1 Modification of section 2.4.3: Additional functions for Modbus

Previously:

Menu: System Control Unit/Parameter/I/O/Data

SCU Analyzer 1 /System Control Unit/Parameter/I/O/Data/	Measure
📄 OPC Output	
📄 Modbus Output	
📄 Digital Input (DIi)	
📄 Digital Output (DOi)	
📄 Analog Input (AIi)	
📄 Analog Output (AOi)	

Supplement: Extension of Modbus functions:

›› MBOVi, Modbus output - values (see "Modbus register supporting blockwise transfer", page 10)
›› MBOFi, Modbus output – flags
›› MBIVi, Modbus input – values
›› MBIFi, Modbus input – flags
›› Modbus I/O (up to version YBR8 [2014-12])
  – Modbus Output (MBOi)
  – Modbus Input (MBIi)

SCU Analyzer 1 /System Control Unit/Parameter/I/O/Data/	Measure
📄 OPC Output	
📄 Modbus output - values (MBOVi)	
📄 Modbus output - flags (MBOFi)	
📄 Modbus input - values (MBIVi)	
📄 Modbus input - flags (MBIVi)	
📁 Modbus I/O (up to version YBR8[2014-12]=	
📄 Modbus Output (MBOi)	
📄 Modbus Input (MBIi)	
📄 Digital Input (DIi)	
📄 Digital Output (DOi)	
📄 Analog Input (AIi)	
📄 Analog Output (AOi)	
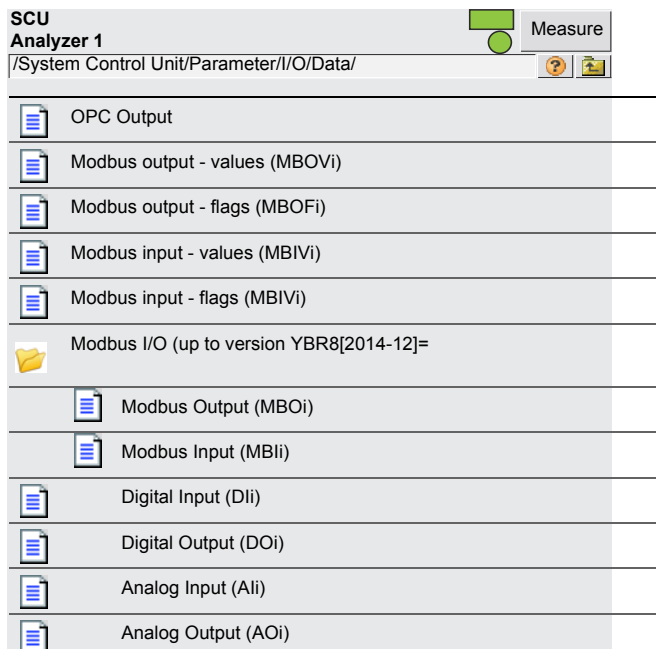
3.1.1 Modbus register supporting blockwise transfer

The values and status of the Modbus output files of the SCU can be configured. The input values can also be configured.

- Tags for output: MBOV, MBOF
- Tags for input: MBIV, MVIF

+i
"V"= Value
"F"= Flag

Values of Modbus outputs: MBOVi

Number	250
Memory for the values	Input register 0..499
Position:	2 registers = 32 bits per value; the sequence of values is contiguous
Data type	Depending on the type of tag, Int32 or Float32 according to IEEE754
Memory for the status of the values	Discrete inputs 0 ... 2999
Position:	12-bit status per value; only the first 5 statuses are described in the sequence F, MReq, C, U, E. The other 7 are assigned with 0 at present and are not used. These status blocks are contiguous.

Assignment: One tag is allowed as source. If NULL, INULL, FNULL or no valid tag is specified as source, the MBOV can also be written with a formula (as AO).

> **!** **NOTE:Maximum number of Modbus input registers and Modbus Discrete Inputs per read command**
> Max. 125 Modbus Input Registers can be transferred with a read command according to the MODBUS Application Protocol Specification V1.1b.

Flags of Modbus outputs: MBOFi

Number	500
Memory for the values	Discrete inputs 4000..4499
Position:	The flags are contiguous

Assignment: One tag is allowed as source. Tag values with 0 or for Float32 according to IEEE754 values with an amount < 0.5 are transferred as 0, other tag values as 1. If NULL, INULL, FNULL or no valid tag is specified as source, the MBOF can also be written with a formula (as AO).

> **!** **NOTE:Maximum number of Modbus Discrete Inputs per read command**
> Max. 2000 Modbus Discrete Inputs can be transferred with one read command according to the MODBUS Application Protocol Specification V1.1b.

Values of Modbus inputs: MBIVi

Number	50
Memory for the values	Holding Register 2000..2099
Position:	2 registers = 32 bits per value; the sequence of values is contiguous

Interpretation: 2 registers are read for each MBIV and, depending on the configuration, interpreted as Int32 or Float32 according to IEEE754.

> **!** **NOTE:Maximum number of Modbus Holding Registers per write command**
> Max. 125 Modbus Holding Registers can be transferred with one write command according to the MODBUS Application Protocol Specification V1.1b.

Flags of Modbus inputs: MBIFi

Number	100
Memory for the values	Coil 0..99
Position:	The flags are contiguous

> **!** **NOTE:Maximum number of Modbus Coils per write command**
> Max. 2000 Modbus Coils can be transferred with one write command according to the MODBUS Application Protocol Specification V1.1b.

Diagnosis support

In addition to the Parameter fields, the Edit windows, as configured, also show the Modbus register type, the register addresses and the current Modbus data with a slight time delay. In order to make it easier to detect possible interpretation problems with the MBIV, the 32-bit data contents are also shown there in hexadecimal format at the Service level.

Adjustability of sequence of bytes

The sequence of bytes can be adjusted for the Modbus registers shown here in the Modbus Configuration window separate for data types Int32 and Float32 according to IEEE754. The default setting matches the assignment of the previously used registers. Standard sequence of bytes : CD_AB.
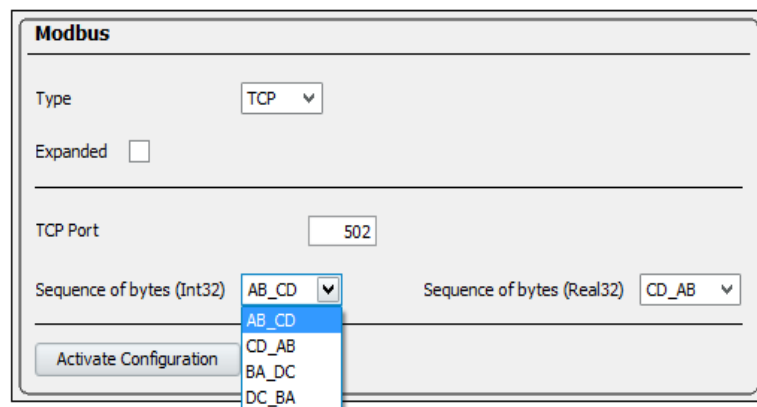
> **!** **NOTE:**
> The setting of the sequence of bytes affects only the MBOV and MBIV used here. It does NOT affect the old Modbus MBO and MBI

3.2 Modification of Sections 2.4.3.2: Modbus outputs

3.2.1 Modbus register setting up to version YBR8 [2014-12]

(In TI: New Section 2.4.3.3)

Naming of MBI$_i$

The MBIi can be named and provided with a unit. This information is output on the measuring screen.

3.3 Modification, Section 2.5.6.2: Tags

1. Activation variables FAi and GAi:

   》》 Previously i = 1 ... 80
   》》 Modification: i = 1 ... 125

2. Variables BVi, PBVi, DBViR, DBViF:

   》》 Previously i = 1 ... 80
   》》 Modification: i = 1 ... 250

Tag name	Description	R/W[1]	I/R/B[2]
Activation variables			
FA$_i$ (i= **01 ... 125**)	Deactivation/activation of a formula; 0: Inactive, 1: Active	R/W	B
GA$_i$ (i= **01 ... 125**)	Deactivation/activation of a formula group; 0: Inactive, 1: Active	R/W	B
Variables			
BVi (i= **01 ... 250**)	Boolean variable [[3]]	R/W	B
PBV$_i$ (i= **01 ... 250**)	Previous value	R	B
DBV$_i$R (i= **01 ... 250**)	Detection of rising edge (R=rising). Becomes "TRUE" (1) when BVi changes from "FALSE" (0) to "TRUE" (1)	R	B
DBV$_i$F (i= **01 ... 250**)	Detection of falling edge (F=falling). Becomes "TRUE" (1) when BVi changes from "TRUE" (1) to"FALSE" (0)	R	B

[1] Read (R) / Write (W)
[2] Integer (I) / Real number (R) / Boolean value (B)

3.4 Modification, Section 2.5.7 Values and states

Previously:

Remote control			
MBO01 ... MB62	Modbus output	R/W	I/R[1]
MBI01 ... MBI62	Modbus input	R	I
OPCO01 ... OPCO96	OPC output	R/W	I/R[2]
OPCI01 ... OPCI96	OPC input	R	I/R[2]

[1] Depending on Modbus parameter setting.
[2] Depending on OPC parameter setting.

Supplement: Additional values and states for MBOVi, MBOFi, MBIVi and MBOFi

Remote control			
MBOV$_i$ i = 1 ... 250	Modbus output for Float32 according to IEEE754 or Int32 values(Input Register)	R/W	I/R[1]
MBOFi, i = 1 ... 500	Modbus output for status or flags (Discrete Inputs)	R/W	B
MBIVi, i = 1 50	Modbus input for Float32 according to IEEE754 or Int32 values (Holding Register)	R	I/R[1]
MBOFi, i = 1 ... 100	Modbus input for status or flags (Coil)	R/W	B
MBO01 ... MB62	Modbus output	R/W	I/R[1]
MBI01 ... MBI62	Modbus input	R	I
OPCO01 ... OPCO96	OPC output	R/W	I/R[2]
OPCI01 ... OPCI96	OPC input	R	I/R[2]

[1] Depending on Modbus parameter setting.
[2] Depending on OPC parameter setting.

3.5 Modification, Section 2.8.8 Filtered values (FVi)

Menu: System Control Unit/Parameter/Variables and Functions/Filtered Values

Previously:

Designation	Remark
Index	Consecutive number of the filtered value (FV01, FV02, ...).
Input signal/Source	Tag.

Filter Type	*Average*:
	    Arithmetic mean.
	    Suitable for noise-corrupted data without exceptional values.
	Median:
	    Values are sorted according to size and the mean value is taken. Suitable
	    for data that can contain exceptional values.
	1st derivation
	2nd derivation

Supplement: Description of mean value calculation, Robust Mean

Designation	Remark
Index	Consecutive number of the filtered value (FV01, FV02, ...).
Input signal/Source	Tag.

Filter Type	*Average*:
	    Arithmetic mean.
	    Suitable for noise-corrupted data without exceptional values.
	Median:
	    Values are sorted according to size and the mean value is taken. Suitable
	    for data that can contain exceptional values.
	RobustMean:
	    The introduced robust mean value calculation RobustMean acts like
	    a calculation of averages, but is able to detect exceptional values in
	    the input data which could lead to falsification and to exclude them
	    from the calculation

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