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# SSI 9005

## Digital Panel Meter

### Instruction Set for Serial Interface

### Description

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**ERMA**

Electronic GmbH

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Version : Dezember 2006  
Technical subjects to change

## 1. General

The digital instrument SSI 9005 can be equipped with a isolated, bidirectional interface. The digital instrument is available with the RS 485 interface, the RS 232 interface and the courant-Loop-interface (TTY). The connection of the interfaces is specify in the manual of the instrument SSI 9005.

## 2. Communications protocol

The organization of the communications protocol is conformed to DIN ISO 1745. The information message consist of the transmission control character, the command an the optional datas.

The instrument SSI 9005 gives a answer to each command. A host wait for the answer and devaluate them.

### Transmission parameters

baud rate: : 300, 1200, 2400, 4800, 9600, 19200  
 parity : no  
 data bits : 8  
 stop bits : 1

### Transmission format:

<i>SOH</i>	D	D	<i>STX</i>	C	C	C	X..X	<i>ETX</i>	<i>BCC</i>
------------	---	---	------------	---	---	---	------	------------	------------

### Significance of the sign:

*SOH* (ASCII 01) : start of heading  
 D : adress (decimal) of the instrument  
*STX* (ASCII 02) : start of text  
 C : command signal sequence  
 : optional datas  
*ETX* (ASCII 03) : end of text  
*BCC* : control byte  
  
*ACK* (ASCII 06) : positive acknowledge from the receiver  
*NAK* (ASCII 21) : negative acknowledge from the receiver

### Generation of the control byte:

Carry out a exclusive-OR operation (XOR) for all bytes between *STX* (exclusive) and *ETX* (inclusive). The byte can be used direct as the control byte, if the value is higher as 32. If the value of the control byte is lower as 32, it must be added 32 to them.

### Possible message formats

Return of datas:

<i>STX</i>	<i>X..X</i>	<i>ETX</i>	<i>BCC</i>
------------	-------------	------------	------------

Positive acknowledge:

<i>ACK</i>
------------

Negative acknowledge (Errors):

<i>NAK</i>
------------

### Reasons of a negative acknowledge (Errors):

- command is unknown
- datas are wrong (to short or to long)
- datas contains wrong signs
- datas lies out of the value range
- wrong control byte





SSI 9005    type designation  
 X            X = 0 => no option analog output  
               X = 1 => with option analog output  
               Z = 1 => RS485  
               Z = 2 => RS232  
               Z = 3 => TTY

### 3.4. **Software version**

Read the software version

SOH	D	D	STX	V	E	R	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

X                    000 to 099 => software version of the instrument

### 3.5. **Number of production**

Read the number of production

SOH	D	D	STX	S	R	N	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	X	X	X	ETX	BCC
-----	---	---	---	---	---	---	-----	-----

X                    setting number of production

### 3.6. **Date of production**

Read the date of production

SOH	D	D	STX	D	A	T	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	0	X	X	X	X	X	ETX	BCC
-----	---	---	---	---	---	---	-----	-----

X                    setting date of production

## 4. Commands of configuration level (P-00)

### 4.1. Resolution (bits) of the encoder

Read the setting of resolution (bits)

SOH	D	D	STX	B	I	T	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the resolution of the connected encoder

SOH	D	D	STX	B	I	T	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting the resolution of the connected encoder  
                          valid values                    009 to 032

Answer of SSI 9005

ACK
-----

Example: Encoder with a resolution of 13 Bit

SOH	D	D	STX	B	I	T	0	1	3	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 4.2. Output code of the encoder

Read the setting code of the connected encoder

SOH	D	D	STX	G	B	C	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the code of the connected encoder

SOH	D	D	STX	G	B	C	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting code of the connected encoder  
                          valid values                    000 or 001

Answer of SSI 9005

ACK
-----

Example: Output code Gray

SOH	D	D	STX	G	B	C	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 4.3. Master/Slave Mode

Read the setting mode of the SSI 9005

SOH	D	D	STX	M	S	B	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the mode

SOH	D	D	STX	M	S	B	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting mode of the ssi 9005  
                           valid values                    000 or 001

Answer of SSI 9005

ACK
-----

Example: Slave-Mode

SOH	D	D	STX	M	S	B	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 4.4. Clock for Master-Mode

Read the setting clock of ssi 9005

SOH	D	D	STX	C	L	K	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the clock

SOH	D	D	STX	C	L	K	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting clock of ssi 9005  
                           valid values                    000 or 004

Answer of SSI 9005

ACK
-----

Example: Clock = 200 kHz

SOH	D	D	STX	C	L	K	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 4.5. Zero definition

Read the setting number of zero definition

SOH	D	D	STX	N	U	L	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the zero definition of SSI 9005

SOH	D	D	STX	N	U	L	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of zero definition  
                           valid values                    000 or 001

Answer of SSI 9005

ACK
-----

Example: Zero definition with ± display

SOH	D	D	STX	N	U	L	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 4.6. Rotation direction

Read the setting number of rotation direction

SOH	D	D	STX	D	I	R	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the rotation direction

SOH	D	D	STX	D	I	R	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of rotation direction  
                           valid values                    000 or 001

Answer of SSI 9005

ACK
-----

Example: Rotation direction clockwise

SOH	D	D	STX	D	I	R	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----



Example: Offset value = 2.00000

SOH	D	D	STX	0	F	F	2	0	0	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	-----	-----

**Remark: Do not transfer the decimal point !**

#### 4.9. Decimal points

Read the setting of decimal point

SOH	D	D	STX	A	N	K	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the decimal point of SSI 9005

SOH	D	D	STX	A	N	K	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of decimal point  
                           valid values                    000 to 005

Answer of SSI 9005

ACK
-----

Example: Number of decimal point = 2

SOH	D	D	STX	A	N	K	0	0	2	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

#### 4.10. Data source of the display

Read the setting of data source for the display

SOH	D	D	STX	A	N	D	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the data source for the display

SOH	D	D	STX	A	N	D	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of data source for the display  
                           valid values                    000 to 003

Answer of SSI 9005

ACK
-----

Example: Data source for the display = 0 (Encoder value)

SOH	D	D	STX	A	N	D	0	0		ETX	BCC
-----	---	---	-----	---	---	---	---	---	--	-----	-----

#### 4.11. Reset time of the MIN/MAX-memory

Read the setting of reset time for MIN/MAX-memory

SOH	D	D	STX	R	S	Z	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the reset time of MIN/MAX-memory

SOH	D	D	STX	R	S	Z	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting reset time in seconds  
                          valid values                    000 to 100

Answer of SSI 9005

ACK
-----

Example: Reset time of MIN/MAX-memory = 10 (10 seconds)

SOH	D	D	STX	R	S	Z	0	1	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

#### 4.12. Function of digital user input 1

Read the setting for the digital user input 1

SOH	D	D	STX	F	D	1	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the function for the digital user input 1

SOH	D	D	STX	F	D	1	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of the function for the digital user input 1  
                          valid values                    000 to 010

Answer of SSI 9005

ACK
-----

Example: Function of the digital user input 1 = 7 (display test)

SOH	D	D	STX	F	D	1	0	0	7	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 4.13. Function of digital user input 2

Read the setting for the digital user input 2

SOH	D	D	STX	F	D	2	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the function for the digital user input 2

SOH	D	D	STX	F	D	2	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of the function for the digital user input 2  
                           valid values                    000 to 010

Answer of SSI 9005

ACK
-----

Example: Function of digital user input 2 = 2 (Taring of encoder)

SOH	D	D	STX	F	D	2	0	0	2	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 4.14. Function of push button '\*\*'

Read the setting of function for the push button \*

SOH	D	D	STX	F	T	*	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the function of the push button \*

SOH	D	D	STX	F	T	*	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of function for push button \*  
                           valid values                    000 to 005

Answer of SSI 9005

ACK
-----



Example: Function of push button  = 1 (Reset the MIN/MAX-memory)

SOH	D	D	STX	F	T	*	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

#### 4.15. Function of push button '-'

Read the setting of function for the push button 


SOH	D	D	STX	F	T	-	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the function of push button 

SOH	D	D	STX	F	T	-	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of function for push button   
                       valid values                    000 to 006

Answer of SSI 9005

ACK
-----

Example: Function of push button  = 3 (display the MIN value)

SOH	D	D	STX	F	T	-	0	0	3	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

#### 4.16. Function of push button '+'

Read the setting of push button 


SOH	D	D	STX	F	T	+	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----


Set the function of push button 

SOH	D	D	STX	F	T	+	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of function for push button   
                       valid values                    000 to 006

Answer of SSI 9005

ACK

Example: Function of push button  = 2 (display the MAX value)

SOH	D	D	STX	F	T	+	0	0	2	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**4.17. Blank out leading zeros**

Abfragen der Anzahl der führenden Nullen

SOH	D	D	STX	L	D	Z	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Antwort des SSI 9005

STX	V	X	X	X		ETX	BCC
-----	---	---	---	---	--	-----	-----

XXX = Anzahl aus Parameter P0-16 des SSI 9005

Setzen der Anzahl der führenden Nullen in P0-16 des Gerätes

SOH	D	D	STX	L	D	Z	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

XXX = 000 - 031 Wert für Parameter P0-16 des SSI 9005

**4.18. Blank out following zeros**

Abfragen der Anzahl der ausgeblendeten Nullen

SOH	D	D	STX	R	A	Z	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Antwort des SSI 9005

STX	V	X	X	X		ETX	BCC
-----	---	---	---	---	--	-----	-----

XXX = Anzahl aus Parameter P0-17 des SSI 9005

Setzen der Anzahl der führenden Nullen in P0-16 des Gerätes

SOH	D	D	STX	L	D	Z	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

XXX = 000 - 031 Wert für Parameter P0-17 des SSI 9005

## 4.19. Access-code

Read the setting of access-code

SOH	D	D	STX	C	O	D	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	V	X	X	X	X	X	ETX	BCC
-----	---	---	---	---	---	---	-----	-----

Setting the access-code

SOH	D	D	STX	C	O	D	V	0	0	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	-----	-----

V sign positive: ' ' (ASCII 20h)  
 X access-code  
 valid values 00000 to 00999

Answer of SSI 9005

ACK
-----

Example: Access-code = 123

SOH	D	D	STX	C	O	D		0	0	1	2	3	ETX	BCC
-----	---	---	-----	---	---	---	--	---	---	---	---	---	-----	-----

## 5. Commands of alarm output level (P-02)

### 5.1. Commands of alarm output 1

#### 5.1.1. Data source for alarm output 1

Read the setting of data source for the alarm output 1

SOH	D	D	STX	G	1	D	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the data source for the alarm output 1

SOH	D	D	STX	G	1	D	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X setting number of data source for the alarm output 1  
 valid values 000 to 004

Answer of SSI 9005

ACK

Example: Data source for alarm output 1 = 1 (Encoder value)

SOH	D	D	STX	G	1	D	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**5.1.2. Switching logic of alarm output 1**

Read the setting of switching logic for the alarm output 1

SOH	D	D	STX	G	1	C	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the switching logic of alarm output 1

SOH	D	D	STX	G	1	C	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of switching logic for the alarm output 1  
                       valid values                    000 to 003

Answer of SSI 9005

ACK

Example: Switching logic of alarm output 1 = 1 (contact closed at high limit)

SOH	D	D	STX	G	1	C	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**5.1.3. Alarm point of alarm output 1**

Read the setting of alarm point for alarm output 1

SOH	D	D	STX	G	1	W	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	V or X	X	X	X	X	X	ETX	BCC
-----	--------	---	---	---	---	---	-----	-----

Set the alarm point of alarm output 1

SOH	D	D	STX	G	1	W	V or X	X	X	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	--------	---	---	---	---	---	-----	-----

## 5. Commands of alarm output level (P-02)

V	sign	positive: ' ' (ASCII 20h) negative: '-' (ASCII 2Dh)
X	alarm point valid values	-99999 to 999999

Answer of SSI 9005

ACK
-----

Example: Alarm point of alarm output 1 = 2500

SOH	D	D	STX	G	1	W		0	0	2	5	0	0	ETX	BCC
-----	---	---	-----	---	---	---	--	---	---	---	---	---	---	-----	-----

### 5.1.4. Hysteresis of alarm output 1

Read the setting of hysteresis for the alarm output 1

SOH	D	D	STX	G	1	H	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	X	X	X	ETX	BCC
-----	---	---	---	---	---	---	-----	-----

Set the hysteresis of alarm output 1

SOH	D	D	STX	G	1	H	0	0	X	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	-----	-----

X	hysteresis valid values	000001 to 001000
---	----------------------------	------------------

Answer of SSI 9005

ACK
-----

Example: Hysteresis of alarm output 1 = 100

SOH	D	D	STX	G	1	H	0	0	0	1	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	-----	-----

### 5.1.5. Release delay time of alarm output 1

Read the setting of release delay time for the alarm output 1

SOH	D	D	STX	G	1	F	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the release delay time of alarm output 1**

SOH	D	D	STX	G	1	F	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    release delay time in seconds  
                       valid values            000 to 060

Answer of SSI 9005

ACK
-----

Example: Release delay time of alarm output 1 = 0 (no release delay time)

SOH	D	D	STX	G	1	F	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**5.1.6. Operate delay time of alarm output 1****Read the setting of operate delay time for alarm output 1**

SOH	D	D	STX	G	1	S	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the operate delay time of alarm output 1**

SOH	D	D	STX	G	1	S	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    operate delay time in seconds  
                       valid values            000 to 0 60

Answer of SSI 9005

ACK
-----

Example: Operate delay time of alarm output 1 = 12 (12 seconds)

SOH	D	D	STX	G	1	S	0	1	2	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

## 5.2. Commands of alarm output 2

### 5.2.1. Data source for alarm output 2

Read the setting of data source for the alarm output 2

SOH	D	D	STX	G	2	D	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the data source for the alarm output 2

SOH	D	D	STX	G	2	D	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of data source for the alarm output 2  
                          valid values                    000 to 004

Answer of SSI 9005

ACK
-----

Example: Data source for alarm output 2 = 1 (Encoder value)

SOH	D	D	STX	G	2	D	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 5.2.2. Switching logic of alarm output 2

Read the setting of switching logic for the alarm output 2

SOH	D	D	STX	G	2	C	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the switching logic of alarm output 2

SOH	D	D	STX	G	2	C	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of switching logic for the alarm output 1  
                          valid values                    000 to 003

Answer of SSI 9005

ACK
-----





Answer of SSI 9005

ACK

Example: Hysteresis of alarm output 2 = 125

SOH	D	D	STX	G	2	H		0	0	1	2	5	ETX	BCC
-----	---	---	-----	---	---	---	--	---	---	---	---	---	-----	-----

**5.2.5. Release delay time of alarm output 2****Read the setting of release delay time for alarm output 2**

SOH	D	D	STX	G	2	F	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the release delay time of alarm output 2**

SOH	D	D	STX	G	2	F	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    release delay time in seconds  
                       valid values                    000 to 060

Answer of SSI 9005

ACK

Example: Release delay time of alarm output 2 = 5 (5 seconds)

SOH	D	D	STX	G	2	F	0	0	5	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**5.2.6. Operate delay time of alarm output 2****Read the setting of operate delay time for alarm output 2**

SOH	D	D	STX	G	2	S	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the operate delay time of alarm output 2**

SOH	D	D	STX	G	2	S	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    operate delay time in seconds  
                       valid values                    000 to 060

Answer of SSI 9005

ACK

Example: Operate delay time of alarm output 2 = 22 (22 seconds)

SOH	D	D	STX	G	2	S	0	2	2	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 5.3. Commands of alarm output 3

#### 5.3.1. Data source for alarm output 3

Read the setting of data source for the alarm output 3

SOH	D	D	STX	G	3	D	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the data source for the alarm output 1

SOH	D	D	STX	G	3	D	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of data source for the alarm output 3  
                          valid values                    000 to 004

Answer of SSI 9005

ACK

Example: Data source for alarm output 3 = 1 (Encoder value)

SOH	D	D	STX	G	3	D	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

#### 5.3.2. Switching logic of alarm output 3

Read the setting of switching logic for the alarm output 1

SOH	D	D	STX	G	3	C	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the switching logic of alarm output 3

SOH	D	D	STX	G	3	C	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of switching logic for the alarm output 3  
                          valid values                    000 to 003

Answer of SSI 9005

ACK

Example: Switching logic of alarm output 3 = 1 (contact closed at high limit)

SOH	D	D	STX	G	3	C	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**5.3.3. Alarm point of alarm output 3**

Read the setting of alarm point for alarm output 3

SOH	D	D	STX	G	3	W	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	V or X	X	X	X	X	X	ETX	BCC
-----	--------	---	---	---	---	---	-----	-----

Set the alarm point of alarm output 3

SOH	D	D	STX	G	3	W	V or X	X	X	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	--------	---	---	---	---	---	-----	-----

V	sign	positive: ' ' (ASCII 20h) negative: '-' (ASCII 2Dh)
X	alarm point valid values	-99999 to 999999

Answer of SSI 9005

ACK

Example: Alarm point of alarm output 3 = 2500

SOH	D	D	STX	G	3	W		0	0	2	5	0	0	ETX	BCC
-----	---	---	-----	---	---	---	--	---	---	---	---	---	---	-----	-----

**5.3.4. Hysteresis of alarm output 3**

Read the setting of hysteresis for the alarm output 3

SOH	D	D	STX	G	3	H	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	X	X	X	ETX	BCC
-----	---	---	---	---	---	---	-----	-----

Set the hysteresis of alarm output 3

## 5. Commands of alarm output level (P-02)

SOH	D	D	STX	<b>G</b>	<b>3</b>	<b>H</b>	0	0	X	X	X	X	ETX	BCC
-----	---	---	-----	----------	----------	----------	---	---	---	---	---	---	-----	-----

X                    hysteresis  
                       valid values                    000001 to 001000

Answer of SSI 9005

ACK
-----

Example: Hysteresis of alarm output 3 = 100

SOH	D	D	STX	<b>G</b>	<b>3</b>	<b>H</b>	0	0	0	1	0	0	ETX	BCC
-----	---	---	-----	----------	----------	----------	---	---	---	---	---	---	-----	-----

### 5.3.5. Release delay time of alarm output 3

**Read the setting of release delay time for the alarm output 1**

SOH	D	D	STX	<b>G</b>	<b>3</b>	<b>F</b>	ETX	BCC
-----	---	---	-----	----------	----------	----------	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the release delay time of alarm output 1**

SOH	D	D	STX	<b>G</b>	<b>3</b>	<b>F</b>	X	X	X	ETX	BCC
-----	---	---	-----	----------	----------	----------	---	---	---	-----	-----

X                    release delay time in seconds  
                       valid values                    000 to 060

Answer of SSI 9005

ACK
-----

Example: Release delay time of alarm output 3 = 0 (no release delay time)

SOH	D	D	STX	<b>G</b>	<b>3</b>	<b>F</b>	0	0	0	ETX	BCC
-----	---	---	-----	----------	----------	----------	---	---	---	-----	-----

### 5.3.6. Operate delay time of alarm output 3

**Read the setting of operate delay time for alarm output 3**

SOH	D	D	STX	<b>G</b>	<b>3</b>	<b>S</b>	ETX	BCC
-----	---	---	-----	----------	----------	----------	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the operate delay time of alarm output 3**

SOH	D	D	STX	G	3	S	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    operate delay time in seconds  
                       valid values                000 to 0 60

Answer of SSI 9005

ACK
-----

Example: Operate delay time of alarm output 3 = 12 (12 seconds)

SOH	D	D	STX	G	3	S	0	1	2	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**5.4. Commands of alarm output 4****5.4.1. Data source for alarm output 4**

Read the setting of data source for the alarm output 4

SOH	D	D	STX	G	4	D	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the data source for the alarm output 4**

SOH	D	D	STX	G	4	D	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of data source for the alarm output 4  
                       valid values                000 to 004

Answer of SSI 9005

ACK
-----

Example: Data source for alarm output 4 = 1 (Encoder value)

SOH	D	D	STX	G	4	D	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----



**5.4.4. Hysteresis of alarm output 4****Read the setting of hysteresis for the alarm output 4**

SOH	D	D	STX	G	4	H	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	X	X	X	ETX	BCC
-----	---	---	---	---	---	---	-----	-----

**Set the hysteresis of alarm output 4**

SOH	D	D	STX	G	4	H	0	0	X	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	-----	-----

X                    hysteresis  
                       valid values            000001 to 001000

Answer of SSI 9005

ACK
-----

Example: Hysteresis of alarm output 4 = 100

SOH	D	D	STX	G	4	H	0	0	0	1	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	-----	-----

**5.4.5. Release delay time of alarm output 4****Read the setting of release delay time for the alarm output 4**

SOH	D	D	STX	G	4	F	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the release delay time of alarm output 1**

SOH	D	D	STX	G	4	F	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    release delay time in seconds  
                       valid values            000 to 060

Answer of SSI 9005

ACK
-----

Example: Release delay time of alarm output 4 = 0 (no release delay time)

SOH	D	D	STX	G	4	F	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**5.4.6. Operate delay time of alarm output 4**

Read the setting of operate delay time for alarm output 4

SOH	D	D	STX	G	4	S	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the operate delay time of alarm output 1

SOH	D	D	STX	G	4	S	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    operate delay time in seconds  
                       valid values                    000 to 0 60

Answer of SSI 9005

ACK
-----

Example: Operate delay time of alarm output 4 = 12 (12 seconds)

SOH	D	D	STX	G	4	S	0	1	2	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**6. Commands of analog output level (P-03)****6.1. Data source for analog output**

Read the setting of data source for the analog output

SOH	D	D	STX	D	A	D	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the data source of analog output

SOH	D	D	STX	D	A	D	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of data source for the analog output  
                       valid values                    000 to 003

Answer of SSI 9005

ACK
-----



Example: Data source for analog output = 1 (MAX value)

SOH	D	D	STX	D	A	D	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

## 6.2. Configuration of analog output

Read the setting of configuration for analog output

SOH	D	D	STX	D	A	C	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set the configuration of analog output

SOH	D	D	STX	D	A	C	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of configuration for the analog output  
                           valid values                    000 to 003

Answer of SSI 9005

ACK
-----

Example: Configuration of analog output = 2 (0 to 20 mA)

SOH	D	D	STX	D	A	C	0	0	2	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

## 6.3. Display value for minimal analog output signal

Read the display value for minimal analog output signal

SOH	D	D	STX	D	A	A	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	V or X	X	X	X	X	X	ETX	BCC
-----	--------	---	---	---	---	---	-----	-----

Set the display value for minimal analog output signal

SOH	D	D	STX	D	A	A	V or X	X	X	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	--------	---	---	---	---	---	-----	-----

## 7. Commands of interface level (P-04)

V	sign	positive: ' ' (ASCII 20h) negative: '-' (ASCII 2Dh)
X	display value valid values	-99999 to 999999

Answer of SSI 9005

ACK

Example: Display value for minimal analog output signal = -1000

SOH	D	D	STX	D	A	A	-	0	1	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	-----	-----

### 6.4. Display value for maximal analog output signal

Read the display value for the maximal analog output signal

SOH	D	D	STX	D	A	E	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	V or X	X	X	X	X	X	ETX	BCC
-----	--------	---	---	---	---	---	-----	-----

Set the display value for the maximal analog output signal

SOH	D	D	STX	D	A	E	V or X	X	X	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	--------	---	---	---	---	---	-----	-----

V	sign	positive: ' ' (ASCII 20h) negative: '-' (ASCII 2Dh)
X	display value valid values	-99999 to 999999

Answer of SSI 9005

ACK

Example: Display value for maximal analog output signale = 10000

SOH	D	D	STX	D	A	E	0	1	0	0	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	---	-----	-----

## 7. Commands of interface level (P-04)

### 7.1. Interface address

Read the address of the serial interface

SOH	D	D	STX	R	S	A	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the address of the serial interface**

SOH	D	D	STX	R	S	A	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    address of the serial interface  
                       valid values            0 to 31

Answer of SSI 9005

ACK
-----

Example: interface address = 5

SOH	D	D	STX	R	S	A	0	0	5	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**7.2. Interface baud rate****Read the setting of baud rate for the serial interface**

SOH	D	D	STX	R	S	B	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the baud rate of the serial interface**

SOH	D	D	STX	R	S	B	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X                    setting number of baud rate for the serial interface  
                       valid values            0 to 6

Answer of SSI 9005

ACK
-----

Example: number of baudrate = 6 (19200 baud)

SOH	D	D	STX	R	S	B	0	0	6	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

**7.3. Serial interface transfer mode****Read the transfer mode of the serial interface**

SOH	D	D	STX	R	S	M	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

**Set the transfer protocol of the serial interface**

SOH	D	D	STX	R	S	M	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

X            Number of the transfer mode  
               valid values            000 bis 002

Answer of SSI 9005

ACK
-----

Example: Number of the transfer mode = 0 (PC-Mode)

SOH	D	D	STX	R	S	M	0	0	0	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

## 7.4. Timer for Terminal-Mode with timing

Read the timer value

SOH	D	D	STX	R	T	T	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	V	0	X	X	X	X	ETX	BCC
-----	---	---	---	---	---	---	-----	-----

Change timer

SOH	D	D	STX	R	T	T	V	0	X	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	---	---	---	-----	-----

V            sign            positiv: ' ' (ASCII 20h)

X            Timer (transfer cycle)  
               valid values            00000 bis 03600

Answer SSI 9005

ACK
-----

Example: Timer (Transfer cycle = 60 sec)

SOH	D	D	STX	R	T	T		0	0	0	6	0	ETX	BCC
-----	---	---	-----	---	---	---	--	---	---	---	---	---	-----	-----

## 7.5. Data source for terminal mode

Read data source for terminal-mode

SOH	D	D	STX	R	S	D	ETX	BCC
-----	---	---	-----	---	---	---	-----	-----

Answer of SSI 9005

STX	X	X	X	ETX	BCC
-----	---	---	---	-----	-----

Set data source of the serial interface

SOH	D	D	STX	R	S	D	X	X	X	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

## 8. Error message NAK

X            Data source for terminal mode  
              valid values            000 bis 003

Answer SSI 9005

ACK

Example: Data source for terminal-mode = 1 (average value)

SOH	D	D	STX	R	S	D	0	0	1	ETX	BCC
-----	---	---	-----	---	---	---	---	---	---	-----	-----

### 8. Error message NAK

#### Reasons for a error message

- command is unknown
- datas lies out of the valid value range
- datas are wrong (to short or to long)
- the instrument SSI 9005 is in the programming mode  
(Each command is receipt with a *NAK*, when the instrument is in the programming mode)

#### 8.1. Error word register

##### Read the error word register

SOH	D	D	STX	E	R	R	ETX	BCC
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Answer of SSI 9005

STX	X	X	X	ETX	BCC
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##### Explanation of error word register

Error word register	Significance
0	no error
10	command unknown
11	datas are wrong (to shortz)
12	datas are wrong (to long)
13	datas contains wrong signs

## 8. Error message NAK

14	datas lies out of the valid value range
15	wrong control byte

A error word be preserved as long as the error word register is read through. After the reading the error word register is cleared.

## 9. Command overview

AND	read or set the data source for the display
ANK	read or set the decimal points
BIT	read or set the resolution (bits) of the connected encoder
CLK	read or set the clock of the master-mode
COD	read or set the access-code for the programming
DAA	read or set the display value for the minimum analog output signal
DAC	read or set the configuration of the analog output
DAD	read or set the data source for the analog output
DAE	read or set the display value for the maximum analog output signal
DAT	read the data of production
DIR	read or set rotation direction
ERR	read the error word register
FD1	read or set the function of the digital user input 1
FD2	read or set the function of the digital user input 2
FT*	read or set the function of push button “ * ”
FT-	read or set the function of push button “ - ”
FT+	read or set the function of push button “ + ”
GBR	read or set the output code of the connected encoder
GER	read the type designation
GRS	carried out the main reset
G1C	read or set the switching logic of alarm output 1
G1D	read or set the data source for alarm output 1
G1F	read or set the release delay time of alarm output 1
G1H	read or set the hysteresis of alarm output 1
G1S	read or set the operate delay time of alarm output 1
G1W	read or set the alarm point of alarm output 1

## 9. Command overview

G2C	read or set the switching logic of alarm output 2
G2D	read or set the data source for alarm output 2
G2F	read or set the release delay time of alarm output 2
G2H	read or set the hysteresis of alarm output 2
G2S	read or set the operate delay time of alarm output 2
G2W	read or set the alarm point of alarm output 2
G3C	read or set the switching logic of alarm output 3
G3D	read or set the data source for alarm output 3
G3F	read or set the release delay time of alarm output 3
G3H	read or set the hysteresis of alarm output 3
G3S	read or set the operate delay time of alarm output 3
G3W	read or set the alarm point of alarm output 3
G4C	read or set the switching logic of alarm output 4
G4D	read or set the data source for alarm output 4
G4F	read or set the release delay time of alarm output 4
G4H	read or set the hysteresis of alarm output 4
G4S	read or set the operate delay time of alarm output 4
G4W	read or set the alarm point of alarm output 4
LDZ	Blank out leading zeros
MAX	read the MAX value
MIN	read the MIN value
MSB	read or set the mode master or the mode slave
MSW	read the MEASURED value
NUL	read or set the zero defination
OFF	read or set the offset value
RAZ	Blanking out following zeros
RSA	read or set the interface address
RSB	read or set the baud rate of the interface
RSD	read or set the data source for terminal mode



## 9. Command overview

RSM	read or set the transfer mode of the serial interface
RTT	read or set the timer value for the terminal mode
RSZ	read or set the reset time of MIN/MAX-memory
SCA	read or set the scaling factor
SRN	read or set the number of production
VER	read the software version

## **10. Notice**



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