



# Sauter GmbH

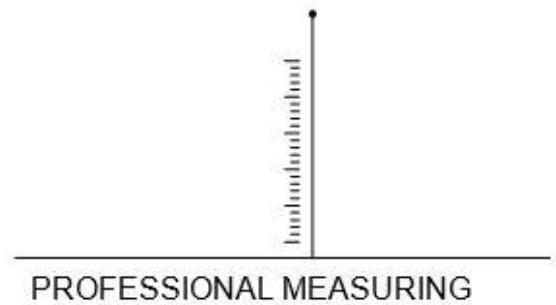
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## ASCII Protocol

### SAUTER CE HS

V. 1.0  
02/2020  
GB





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# Introduction

ASCII, or PC protocol, is an ASCII based protocol available over Ethernet and Serial connections. It's not binary data, but an asynchronous half duplex protocol.

## RS232/422:

This protocol supports an address field which is used to select devices on a bus. Address 255 is used as an auto transmit mode in which the instrument continues sends the selected indicator value with a fixed time interval. Address 0 disables the address mode.

## Ethernet:

Introduced later is the ASCII protocol over Ethernet/TCP. One TCP connection can be setup at port 23. ASCII over TCP is automatically enabled when both RS232 and RS422 are not set to ASCII.

## Register commands:

Introduced together with TCP support are the Register command functions. A number of predefined functions, controlled by using the device registers.

# 1 Basics

The SAUTER devices that support the protocol and the used interface.

## 1.1 Devices

The following SAUTER devices support the ASCII protocol:

Device Series	ASCII support	TCP and Register command support
<b>CE HSx CE HSxM series</b>	Yes	Yes, starting at version <b>v1.5.0.9.0.1</b>
<b>1020 series</b>	Yes	Yes, starting at version <b>v1.4.0.9.0.5</b>
<b>Flex 2100</b>	Yes	No, in progress
<b>Flex</b>	Yes	No, in progress
<b>Flex Multichannel</b>	Yes	No, in progress

## 1.2 Interface

The SAUTER ASCII protocol supports RS232 and RS422 multi drop. RS485 2 wire is not supported.

When both RS232 and RS422 are not set to ASCII, the TCP connection is automatically enabled. One TCP connection can be made at port 23.

## 2 Serial parameters

The following parameters are used within the ASCII protocol over RS232 and RS422.

### 2.1 Baud rate/Auto transmit interval

Baud rate	Auto transmit interval (minimum time in ms.)
1200	40
2400	40
4800	20
9600	10
19k2	5
38k4	3
57k6	2
115k2	1

### 2.2 Parity

Parity
None(default)
Odd
Even
Mark
Space

### 2.3 Stop bits

Stop bits
1 stop bit(default)
2 stop bit

### 2.4 Data bits

Data bits
8 data bits fixed

### 3 3 Request/Reply format

ASCII characters are always in UPPERCASE.

#### Request frame

ASCII... ASCII<CR>

#### Reply frame

ASCII... ASCII<CR>

#### Reply successful

OK<CR>

#### Reply error

ERR<CR>

## 4 Indicators

When address is set to 255 the selected indicator will be sent out continuously. The following indicators are available:

Indicator no.	Name	Description
0, 1	WEIGHER	Multi range net weigher value
2	FAST GROSS	Unfiltered gross weigher value
3	FAST NET	Unfiltered net weigher value
4	DISPLAY GROSS	Filtered gross weigher value
5	DISPLAY NET	Filtered net weigher value
6	TARE	Tare value
7	PEAK	Highest reached weigher value
8	VALLEY	Lowest reached weigher value
9	HOLD*	Stored weigher value
10	WEIGHER x10	Multi range net weigher value shown with extra decimal
11	FAST GROSS x10	Unfiltered gross weigher value shown with extra decimal
12	FAST NET x10	Unfiltered net weigher value shown with extra decimal
13	DISPLAY GROSS x10	Filtered gross weigher value shown with extra decimal
14	DISPLAY NET x10	Filtered net weigher value shown with extra decimal

15	TARE x10	Tare value shown with extra decimal
16	PEAK x10	Highest reached weigher value shown with extra decimal
17	VALLEY x10	Lowest reached weigher value shown with extra decimal
18	HOLD x10*	Stored weigher value shown with extra decimal
19	SIGNAL	Direct mV value from the load cell(s)

\*Hold and Holdx10 are added in the 1020 firmware version V1.5.1.9.0.6 and above. And in the CE HSx/CE HSxM series firmware version V1.6.1.9.0.3 and above.

**The 1020 FMD has different indicator values:**

Indicator no.	Name	Description
0, 1	FAST TRACKING	Unfiltered tracking value
2	TRACKING	Filtered tracking value
3	PEAK	Highest reached weigher value
4	VALLEY	Lowest reached weigher value
5	HOLD	Hold value - stored with zero button in hold mode, or with hold input
6	T.I.R.	Total Indicated Readout value - the difference between the peak hold and valley hold value
7	FAST TRACKING x10	Fast tracking shown with extra decimal
8	TRACKING x10	Tracking shown with extra decimal
9	PEAK x10	Peak shown with extra decimal
10	VALLEY x10	Valley shown with extra decimal
11	HOLD x10	Hold shown with extra decimal
12	T.I.R x10	T.I.R. shown with extra decimal
13	SAMPLE	Direct ADC value from the load cell(s)

## 5 Supported commands

The following commands are available in the ASCII protocol.

### 5.1 Open/Close connection

Use these commands to open or close a connection. These commands do not apply for a TCP connection.

**Device address > 0 and < 255**

Request	Reply	Description
OP[space]1<CR>	OK<CR>	Open connection to device with address = 1
OP<CR>	O:001<CR>	Check open connection
CL<CR>		Close connection, no reply
OP<CR>		Check open connection, no reply so no connection

**Device address 0**

**Always open mode**

Open or close connection is not possible. The connection is always open.

Request	Reply	Description
OP<CR>	O:000<CR>	Check open connection, connection is always open if device address is 0
CL<CR>		Close connection not possible, is always open, no reply

**Device address 255**

**Auto transmit mode**

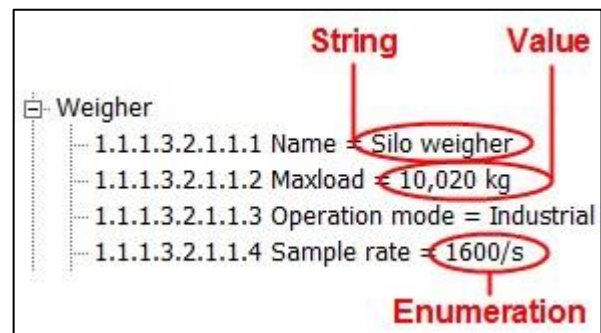
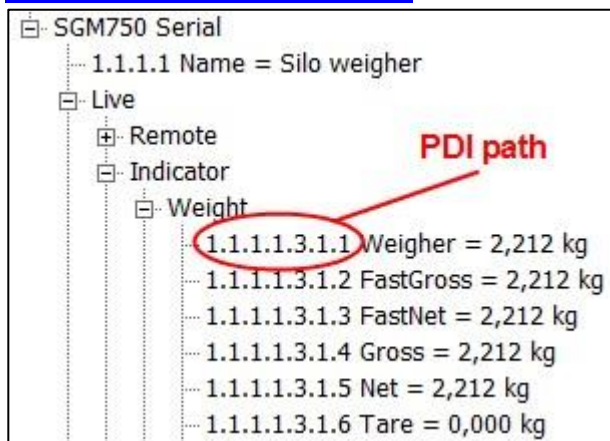
Open or close connection is not possible. The connection is always open.

The instrument will send the selected indicator value continuously.

Request	Reply	Description
OP<CR>		Open connection not possible, connection is always open if device address is 255
CL<CR>		Close connection not possible, is always open, auto reply

**5.2 PDI commands**

PDI (SAUTER Device Interface) represents the device configuration in a tree structure. Every property has its own unique path number. The tree is used in the SAUTER configuration tools Pi Mach II and PDI Client, both available at [www.SAUTER.com/software](http://www.SAUTER.com/software)



Request	Reply	Description
PDI available?		
GM<CR>	OK<CR>/ERR<CR>	Check if PDI interface is available
Values		
GM1.1.1.1.3.1.1<CR>	M1.1.1.1.3.1.1: 2.212kg<CR>	Get PDI property Weigher
GM1.1.1.3.2.1.1.2<CR>	M1.1.1.3.2.1.1.2: 10.020kg	Get PDI property Maxload
GM1.1.1.3.2.1.1.2=10050<CR>	OK<CR>/ERR<CR>	Set PDI property Maxload
Strings		



GM1.1.1.3.2.1.1.1<CR> GM1.1.1.3.2.1.1.1=Silo 2<CR>	M1.1.1.3.2.1.1.1:Silo weigher<CR> OK<CR>/ERR<CR>	Get PDI property Name Set PDI property Name
<b>Enumerations</b>		
GM1.1.1.3.2.1.1.4<CR> GM1.1.1.3.2.1.1.4=6<CR>	M1.1.1.3.2.1.1.4:8<CR> OK<CR>/ERR<CR>	Get PDI property Sample rate Set PDI property Sample rate <i>(Enumerations always start at 0. Sample rate for example has 9 options. The options correspond with values 0 - 8)</i>
<b>Auto repeat</b>		
SM1.1.1.3.1.1<CR>	M1.1.1.3.1.1: 2.212kg<CR>	Set auto repeat read PDI property

### 5.3 Interpreter commands

The interpreter commands are available on the FLEX series, 1020 series and CE HSX series.

Request	Reply	Description
<b>Interpreter Extended Register</b>		
IX<CR>	X000900<CR>	Get number of registers
IX[space]5:[space]1234<CR>	OK<CR>/ERR<CR>	Set register 5
IX[space]5<CR>	X001234<CR>	Get register 5*
<b>Recipe parameters</b>		
IR<CR>	R000014<CR>	Get number of recipes
IR[space]3:[space/sign]1234<CR>	OK<CR>/ ERR<CR>	Set recipe value 3 [**1]
IR[space]3<CR>	R001234<CR>	Get recipe value 3 [**1]
<b>Indicators</b>		
II<CR>	I000030<CR>	Get number of indicators
II[space]18:[space/sign]1234<CR>	OK<CR>/ ERR<CR>	Set indicator 18
II[space]18<CR> II[space]19<CR>	I+01234<CR>	Get indicator 18
	I-- --<CR>	Get indicator 19 (=not available)
<b>Inputs, Outputs and Marker</b>		
IM<CR>	IM001000<CR>	Get number of I/O/M
IM[space]401:[space]1<CR>	OK<CR>/ ERR<CR>	Set marker 401
IM[space]401<CR>	IM 00100000<CR>	Get markers 401..408
IM[space]409:[space]0<CR>	OK<CR>/ ERR<CR>	Reset marker 409
<b>Query and Mark result</b>		
I=<CR>	=+00029+001000121< CR>	Query result value <i>Result index: +00029</i> <i>Result value: +00100</i> <i>Result tag: 01 (hex format)</i> <i>Checksum: 21(hex format)</i>
I=[space]29<CR>	OK<CR>/ ERR<CR>	Mark result value (=delete)

\* If you read out a register with a value above 99999 the return value will always be 99999. On 1020 and CE HSX series the registers above 100 are floating registers and will always return 99999.

**\*\*1 - Not supported on 1020 series and CE HSX series**

## 5.4 Calibration commands

The calibration commands are available on the 1020 series and CE HSX series.

Request	Reply	Description
Calibration support		
CE<CR>	E000002<CR>	Get CAL code
CE[space]02<CR>	OK<CR>/ERR<CR>	Enter CAL code
CZ<CR>	OK<CR>/ERR<CR>	Set zero value
CG[space]0500<CR> ( value)	OK<CR>/ERR<CR>	Set gain value
CS<CR>	OK<CR>/ERR<CR>	Save calibration
CM<CR>	M+10009<CR>	Get max load
CM[space]10009<CR> (value)	OK<CR>/ERR<CR>	Set max load

When using the ASCII protocol for calibration, follow these steps.

- Empty the weigher
- Enter CE<CR> to get the CAL code // Reply for example E000003
- Enter CE 3<CR>
- Enter CZ<CR> to set the zero point
- Load the weigher // For example 500kg
- Enter CE<CR> to get the CAL code // Reply for example E000004
- Enter CE 4<CR>
- Enter CG 500<CR> to set the gain point
- Enter CS<CR> to save the calibration

## 5.5 Configuration commands

The configuration commands are available on the 1020 series and CE HSX series.

Request	Reply	Description
s/w damping factor		
FL<CR>	F000005<CR>	Get s/w damping factor (overall filter) Set
FL[space]5<CR>	OK<CR>/ERR<CR>	s/w damping factor (overall filter)
Virtual display support		

DR<CR>	R000004<CR>	Get display refresh rate
DR[space]4<CR> DS<CR>	OK<CR>/ERR<CR>	Set display refresh rate
DS[space]6<CR> DP<CR>	S000006<CR>	Get weigher format step size
DP[space]3<CR>	OK<CR>/ERR<CR> D000003<CR>	Set weigher format step size
	OK<CR>/ERR<CR>	Get weigher format decimal point position
		Set weigher format decimal point position
Display filter support		
DD<CR>	D000006<CR>	Get display filter damping
DD[space]6<CR> DZ<CR>	OK<CR>/ERR<CR> Z+00.050<CR>	Set display filter damping
DZ[space]00050<CR>	OK<CR>/ERR<CR> A+00.060<CR>	Get display zero suppress
DA<CR>	OK<CR>/ERR<CR>	Set display zero suppress
DA[space]00060<CR>		Get display filter range
		Set display filter range
Zero-tracking support		
TR<CR>	R+00.020<CR>	Get zero tracking range
TR[space]00020<CR> TS<CR>	OK<CR>/ERR<CR> S+00.020<CR>	Set zero tracking range
TS[space]00020<CR>	OK<CR>/ERR<CR> T000020<CR>	Get zero tracking step
TT<CR>	OK<CR>/ERR<CR>	Set zero tracking step
TT[space]000020<CR>		Get zero tracking time
		Set zero tracking time
No-motion/stable support		
NR<CR>	R+00.002<CR>	Get stable range
NR[space]00002<CR>	OK<CR>/ERR<CR> T000100<CR>	Set stable range
NT<CR>	OK<CR>/ERR<CR>	Get stable time
NT[space]000100<CR>		Set stable time

## 5.6 Weighing commands

The weighing commands are available on the FLEX series, 1020 series and CE HSX series.

Request	Reply	Description
Current display value		
SD<CR> GD<CR>	+02.212<CR>/ERR<CR> +02.212<CR>/ERR<CR>	Set auto-transmit Display value Get Display value
Set/reset system zero		
SZ<CR> RZ<CR>	OK<CR>/ERR<CR> OK<CR>/ERR<CR>	Set Zero Reset Zero
Set/reset tare		
ST<CR> RT<CR>	OK<CR>/ERR<CR> OK<CR>/ERR<CR>	Set Tare Reset Tare
Reset peak/valley		
RP<CR> RV<CR>	OK<CR>/ERR<CR> OK<CR>/ERR<CR>	Reset Peak Reset Valley

Get various channels		
GN<CR>	N+00.456<CR>	Get net
GG<CR>	G+00.694<CR>	Get gross
GT<CR>	T+00.238<CR>	Get tare
GP<CR>	P+03.074<CR>	Get peak
GV<CR>	V+00.082<CR> F+00.456<CR>	Get valley
GF<CR>	S000.985<CR>	Get fast net (no display damping) Get
GS<CR>	X+0.0456<CR>	A/D sample
GX<CR>		Get extended net (net x 10)
Long string commands		
GW<CR>	W+00456+006944CD9<CR>	Get fast net+gross, status & checksum
LW<CR>	W+00456+006944CD9<CR>	Get long net+gross, status & checksum
LN<CR>	N+00456+004564CE6<CR>	Get net+fast net , status & checksum
LF<CR>	F+00456+006944CEA<CR>	Get long fast net+gross, status & checksum
LX<CR>	X+04556+069364CCE<CR>	Get long extended net (net x 10) + extended gross (gross x 10), status & checksum
Auto-transmit mode support		
SN<CR>	N+00.456<CR>	Set auto-transmit net
SG<CR>	G+00.694<CR>	Set auto-transmit gross
SW<CR>	W+00456+006944CD9<CR>	Set auto-transmit long weight
SP<CR>	P+03.074<CR>	Set auto-transmit peak Set
SV<CR>	V-00.082<CR>	auto-transmit valley
SF<CR>	F+00.456<CR>	Set auto-transmit fast net
SX<CR>	X+0.0456<CR>	Set auto-transmit extended net (net x 10)
Weigher preset tare support		
PT<CR>	P+00.231<CR>	Get preset tare value
PT <sub>[space]</sub> 00231<CR>	OK<CR>/ERR<CR>	Set preset tare value
PS<CR>	OK<CR>/ERR<CR>	Set preset tare on
Stub function to fool SAIASSI		
AG<CR>	OK<CR>/ERR<CR>	Stub function to fool SAIASSI
Info		
IV<CR> IS<CR>*	V:0101<CR> S:001000<CR>	Get version number Get system status
ID<CR>	D:0624<CR>	Get device ID code

\* IS (System status) definition:

Bit #	Called	Definition
0	Stable weight	Weigher signal is stable
1	Zero set	Weigher zero is corrected
2	Tare active	Tare or preset tare is active
7	Register commands	Register command mode is enabled

**The 1020 FMD has a few exceptions:**

Request	Reply	Description
NOT AVAILABLE		
<i>GG&lt;CR&gt; SG&lt;CR&gt;</i>	<i>G+00.694&lt;CR&gt;</i> <i>G+00.694&lt;CR&gt;</i>	<i>Get gross</i> <i>Set auto-transmit gross</i>
T.I.R. support		
GT<CR> ST<CR> RT<CR>	T+14.238<CR> T+14.238<CR> OK<CR>/ERR<CR>	Get T.I.R. Set auto-transmit T.I.R. Reset T.I.R.

**5.7 Status and checksum**

The long string commands return 2 weigher values, status and checksum. The status and checksum are represented in a hexadecimal format.

For example, the command `GW<CR>` returns `W+00324+003244CE9<CR>` where “4C” represents the status bits and “E9” represents the checksum. Status bits:

Bit #	Called	Definition
0	Hardware overload	Hardware overload/underload detected on load cell
1	Maximum load	Overload detected on load cell
2	Stable weight	Weigher signal is stable
3	Stable range	Weigher signal is in stable range
4	Zero set	Weigher zero is corrected
5	Zero center	Weigher in center of zero range
6	Zero range	Weigher is in zero range, zero is possible
7	Zero track range	Weigher signal is in zero tracking range, zero tracking is possible

“4C” from the example is binary 0100 1100, so stable weight, stable range and zero range are active.

The checksum is the inverted sum of all ASCII characters. The return value `W+00324+003244C` from the example:

$$W + + + 0 + 0 + 3 + 2 + 4 + + + 0 + 0 + 3 + 2 + 4 + 4 + C =$$

**5.7.1**  $57+2B+30+30+33+32+34+2B+30+30+33+32+34+34+43 = 316$  (hex)

Remove the most significant digit = 16 (hex)

Invert the hex value = E9

Convert the hex value E9 to ASCII characters ‘E’ and ‘9’

## 6 Setup example

### PDI setup RS232 address 0, indicator 1

```
[-] RS232
  ... 1.1.3.3.4.1 Protocol = ASCII
  ... 1.1.3.3.4.2 Address = 0
  ... 1.1.3.3.4.3 Stopbits = 1
  ... 1.1.3.3.4.4 Parity = None
  ... 1.1.3.3.4.5 Baudrate = 57600
  ... 1.1.3.3.4.6 Indicator = 1
```

### PDI setup RS422 address 2, indicator 1

```
[-] RS422
  ... 1.1.3.3.5.1 Protocol = ASCII
  ... 1.1.3.3.5.2 Address = 2
  ... 1.1.3.3.5.3 Stopbits = 1
  ... 1.1.3.3.5.4 Parity = None
  ... 1.1.3.3.5.5 Baudrate = 9600
  ... 1.1.3.3.5.6 Indicator = 1
```

#### 6.1 PDI setup RS232 address 255(=auto transmit), indicator 8

```
[-] RS232
  ... 1.1.3.3.4.1 Protocol = ASCII
  ... 1.1.3.3.4.2 Address = 255
  ... 1.1.3.3.4.3 Stopbits = 1
  ... 1.1.3.3.4.4 Parity = None
  ... 1.1.3.3.4.5 Baudrate = 57600
  ... 1.1.3.3.4.6 Indicator = 8
```

#### 6.2 Ethernet

Both RS232 and RS422 must not be set to ASCII. Connect to the IP address of device on port number 23.

```
[-] Ethernet
  ... 1.1.3.3.2.1 MAC = 1E:30:6C:A2:45:5E
  ... 1.1.3.3.2.2 Name = Penko
  ... 1.1.3.3.2.3 Address = 10.1.2.66
  ... 1.1.3.3.2.4 Mask = 255.255.255.0
  ... 1.1.3.3.2.5 Gateway = 0.0.0.0
  ... 1.1.3.3.2.6 DHCP = DISABLE
```

For this setting, connect to 10.1.2.66:23

## 7 Advanced features

By using register commands, all device parameters can be read and/or written.

The following parameters are used:

Request	Reply	Description
<b>Input registers (request parameters)</b>		
IX[space]75:[space]000000<CR>	OK<CR>/ERR<CR>	Write register 75 (write function register 1)
IX[space]76:[space]000000<CR>	OK<CR>/ERR<CR>	Write register 76 (write function register 2)
IX[space]77:[space]000000<CR>	OK<CR>/ERR<CR>	Write register 77 (write function register 3)
IX[space]78:[space]000000<CR>	OK<CR>/ERR<CR>	Write register 78 (write function register 4)
<b>Output registers (reply results)</b>		
IX[space]71<CR> IX[space]72<CR>	X000000<CR>	Read register 71 (read function register 1)
IX[space]73<CR> IX[space]74<CR>	X000000<CR>	Read register 72 (read function register 2)
	X000000<CR>	Read register 73 (read function register 3)
	X000000<CR>	Read register 74 (read function register 4)
<b>Controls</b>		
RE<CR>	OK<CR>/ ERR<CR>	Enable register command mode
RD<CR>	OK<CR>/ ERR<CR>	Disable register command mode
RX<CR>	OK<CR>/ ERR<CR>	Execute the action
IS<CR>	S:128000<CR>	Status, bit 7 (0x80) indicates mode is active

### Input:

Parameter	Data type	Description
1	DINT	Low 2 bytes = function code   High 2 bytes = 0
2	DINT	Input parameter, depending on function code
3	DINT	Input parameter, depending on function code
4	DINT	Input parameter, depending on function code <b>For FLEX Multichannel, enter the weigher number (1,2,3 or 4) to perform the action on*</b>

\* Not applicable for PDI functions (function codes 2xx)

### Output:

Result	Data type	Description
1	DINT	Low 2 bytes = function code   High 2 bytes = error code
2	DINT	Result, depending on function code
3	DINT	Result, depending on function code
4	DINT	Result, depending on function code

### Input parameter 1:

Low word → Function code  
High word → 0

### Output result 1:

Low word → Function code

High word → Error code

The other parameter and result registers depend on the used function.

### Activating:

The register command mode is activated by sending command RE. Extended registers 71 -78 are cleared. Bit 7 (0x80) of the IS command indicates that the register command mode is active.

Deactivate the register command mode by sending command RD.

### Usage:

Write register 75, and depending on the function code also write register 76, 77 and 78.

Execute the function by sending command RX.

Read register 71, 72, 73 and 74 for the result of the function.

## 7.1 Function codes

The following function codes are present:

Name	Code	Description
NOP	0	No Operation
CAL_ZERO	1	Calibrate zero by weight
CAL_SPAN	2	Calibrate span by weight
CAL_MV	3	Calibrate in mV/V
CAL_DEADLOAD	4	Calibrate dead load by measuring weight
CAL_INSERT	5	Calibrate multipoint insert by measuring weight
CAL_POINT	6	Calibrate multipoint read point at parameter index
CAL_DELETE	7	Calibrate multipoint delete point at parameter index
CAL_GEOGRAPHIC_ORIGIN_SET	8	Calibrate set geographic origin calibration
CAL_GEOGRAPHIC_ORIGIN_GET	9	Calibrate get geographic origin calibration
CAL_GEOGRAPHIC_LOCAL_SET	10	Calibrate set geographic local calibration
CAL_GEOGRAPHIC_LOCAL_GET	11	Calibrate get geographic local calibration
IND_MAXLOAD_SET	101	Indicator set maximum load
IND_MAXLOAD_GET	102	Indicator get maximum load
PDI_PATH_SET	201	PDI path set
PDI_PROPERTY_SET	202	PDI property set
PDI_PROPERTY_GET	203	PDI property get



PRINT	301	Print ticket or line to printer
PRINT_SUBTOTAL	302	Subtotals to printer not supported by CE HSX series
PRINT_TOTAL	303	Totals to printer
PRINT_DAYTOTAL	304	Day totals to printer not supported by CE HSX series
PRINT_BATCHTOTAL	305	Batch totals to printer not supported by CE HSX series
PRINT_LAYOUT	306	Custom total layout to printer not supported by CE HSX series and 1020
PRINT_ALIBI	307	Print to Alibi memory not supported by CE HSX series
PRINT_ALIBIMEMORY	308	print full alibi memory to printer not supported by CE HSX series
PRINT_EVENTMEMORY	309	print full event memory to printer not supported by CE HSX series
TOTAL_TOTALIZE	401	Totalize actual stable weight
TOTAL_SUBTOTAL	402	Read or reset actual subtotal
TOTAL_TOTAL	403	Read or reset actual totals
TOTAL_DAYTOTAL	404	Read or reset actual day totals
TOTAL_BATCHTOTAL	405	Read or reset actual batch totals
RFN_PROCESS_RECIPES_GET	501	Read MFL/CHK/BLT recipe
RFN_PROCESS_RECIPES_SET	502	Write MFL/CHK/BLT recipe
RFN_PROCESS_CONFIG_GET	601	Read MFL/CHK/BLT configuration
RFN_PROCESS_CONFIG_SET	602	Write MFL/CHK/BLT configuration
RFN_PROCESS_DATA	701	Read MFL/CHK/BLT process data

## 7.2 Error codes

The following error codes are present:

Name	Code	Description
<b>SUCCES</b>	<b>0</b>	<b>Function successful</b>
<b>WRN_WARNING</b>	<b>1000</b>	<b>System warnings:</b>
WRN_TIMEOUT	1001	Generic time-out warning
WRN_TOLOW	1002	Generic parameter to low warning
WRN_TOHIGH	1003	Generic parameter to high warning
WRN_ZERO	1004	Generic parameter/result is zero warning
WRN_NOTZERO	1005	Generic parameter/result is not zero warning
WRN_POSITIVE	1006	Generic parameter is positive warning
WRN_NEGATIVE	1007	Generic parameter is negative warning
WRN_FULL	1008	Generic something is full warning
WRN_EMPTY	1009	Generic something is empty warning

WRN_NOTFOUND	1010	Generic search not found warning
<b>WER_WARNING</b>	<b>1100</b>	<b>Weigher warnings:</b>
WER_NO_TARE	1101	Zero tare level, tare rst
<b>ERR_ERROR</b>	<b>2000</b>	<b>System errors:</b>
ERR_PARAMETER_INCORRECT	2001	Generic parameter error
ERR_TIMEOUT	2002	Generic time-out error
ERR_TOLOW	2003	Generic parameter to low error
ERR_TOHIGH	2004	Generic parameter to high error
ERR_ZERO	2005	Generic parameter/result is zero error
ERR_NOTZERO	2006	Generic parameter/result is not zero error
ERR_POSITIVE	2007	Generic parameter is positive error
ERR_NEGATIVE	2008	Generic parameter is negative error
ERR_FULL	2009	Generic something is full error
ERR_EMPTY	2010	Generic something is empty error
ERR_NOTFOUND	2011	Generic search not found error
ERR_FILE_NOT_FOUND	2012	Generic file not found error
<b>WER_ERROR</b>	<b>2100</b>	<b>Weigher errors:</b>
WER_NOT_STABLE	2101	Weigher not stable
WER_ABOVE_MAXLOAD	2102	Parameter above max load
WER_BELOW_ZERO	2103	Parameter below zero
WER_NOT_IN_ZERO_RANGE	2104	Not in zero range
WER_ARITHMIC_OVERFLOW	2105	Arrhythmic overflow occurred
WER_ADC_OVERFLOW	2106	A/D reads all 1's
WER_ADC_UNDERFLOW	2107	A/D reads all 0's
WER_GAIN_NEGATIVE	2108	Gain ref. < zero ref.
WER_GAIN_OVERFLOW	2109	Gain limit
WER_SAVE	2110	Save errors:
WER_SAVE_FLASH_EXHAUSTED	2111	Flash ROM exhausted
WER_SAVE_CREATE_HEADER	2112	Error on header creation
WER_SAVE_DATA_WRITE	2113	Error on data write
WER_SAVE_HEADER_VALIDATE	2114	Header validation failed
WER_SAVE_DEACTIVATE	2115	Deactivate old data fail
WER_LOAD	2116	Load errors
WER_LOAD_NOT_FOUND	2117	Item not found in store
WER_LOAD_DATA_ERROR	2118	Error in stored data
WER_BAD_CALIBRATION	2119	No calibration available
WER_NOT_ENABLED	2120	Action not enabled

WER_MCAL_NOT_FOUND	2121	Multi-point not found
WER_MCAL_OVERFLOW	2122	Calibration table full
WER_TARE_ACTIVE	2123	Not allowed, tare active
WER_NOT_ALLOWED	2124	Action is not allowed
WER_ADC_NOPOWER	2125	ADC has no power
<b>ERR_DOSER</b>	<b>2200</b>	<b>Doser errors</b>
<b>ERR_POSITION</b>	<b>2300</b>	<b>Position errors</b>
<b>ERR_SPCAPP</b>	<b>2400</b>	<b>SPC-application errors</b>
<b>ERR_SCOPE</b>	<b>2500</b>	<b>Scope errors</b>
<b>ERR_INTERPRETER</b>	<b>2600</b>	<b>Interpreter errors</b>
<b>ERR_USB</b>	<b>3000</b>	<b>USB errors - use USB routines for returning error texts</b>
<b>ERR_FLASH</b>	<b>3100</b>	<b>FLASH file system errors</b>

### 7.3 Calibration functions

This chapter describes the calibration function codes.

#### 7.3.1 CAL\_ZERO

Calibrate zero by weight. Function code = 1.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
1	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
1	Not used	Not used	Not used

#### 7.3.2 CAL\_SPAN

Calibrate span by weight. Function code = 2.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
2	Span weight	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
2	Not used	Not used	Not used

Example - calibrate span on 1.200kg:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
2	1200	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
2	Not used	Not used	Not used

Example - calibrate span without loading scale - will result in **error**:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
2	1200	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
138215426	Not used	Not used	Not used

The result is **138215426**

- The function code (low word) is **2**
- The error code (high word) is **2109 - WER\_GAIN\_OVERFLOW, Gain limit**

### 7.3.2 CAL\_MV

Theoretic calibration by millivolts. Function code = 3.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
-------------	-------------	-------------	-------------

20

3	Fixed point mV/V value	Maximum weight at mV/V	Not used
---	------------------------	------------------------	----------

Reply:

Result 1	Result 2	Result 3	Result 4
3	Not used	Not used	Not used

Example - theoretic calibration of load cell 200kg @ 2.0012mV/V:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
3	20012	200	Not used

### 7.3.3 CAL\_DEADLOAD

Calibrate dead load by measuring weight. Function code = 4.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
4	Actual weight on scale	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
4	Not used	Not used	Not used

Example - calibration of dead load with 12kg on the scale:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
4	12	Not used	Not used

### 7.3.4 CAL\_INSERT

Multipoint calibration up to 10 points. Insert or replace a calibration point. Function code = 5.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
5	Actual weight on scale	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
5	Not used	Not used	Not used

Example - add calibration point of 10.000kg - if the point already exists, its ADC value is replaced:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
5	10000	Not used	Not used

### 7.3.5 CAL\_POINT

Multipoint calibration up to 10 points. Read the calibration point at index (1...10).  
Function code = 6.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
6	Index (1...10)	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
6	Index	Calibration reference weight	Calibration in mV

Example - read calibration point 1 (10.000kg @ 9.9975mV/V):

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
6	1	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
6	1	10000	9.9975

### 7.3.6 CAL\_DELETE

Multipoint calibration up to 10 points. Delete the calibration point at index (1...10).  
Function code = 7.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
-------------	-------------	-------------	-------------

7	Index (1...10)	Not used	Not used
---	----------------	----------	----------

Reply:

Result 1	Result 2	Result 3	Result 4
7	Index	Not used	Not used

Example - delete calibration point 1:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
7	1	Not used	Not used

### 7.3.7 CAL\_GEOGRAPHIC\_ORIGIN\_SET

Geographic correction. Set the origin calibration location. Function code = 8.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
8	Fixed point latitude degrees	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
8	Not used	Not used	Not used

Example - set origin latitude to 50.00 degrees:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
8	5000	Not used	Not used

### 7.3.8 CAL\_GEOGRAPHIC\_ORIGIN\_GET

Geographic correction. Get the origin calibration location. Function code = 9.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
9	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
9	Fixed point latitude degrees	Not used	Not used

Example - get origin latitude (50.00 degrees):

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
9	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
9	5000	Not used	Not used

### 7.3.9 CAL\_GEOGRAPHIC\_LOCAL\_SET

Geographic correction. Set the actual scale location. Function code = 10.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
10	Fixed point latitude degrees	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
10	Not used	Not used	Not used

Example - set actual latitude to 50.00 degrees:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
10	5000	Not used	Not used

### 7.3.10 CAL\_GEOGRAPHIC\_LOCAL\_GET

Geographic correction. Get the actual scale location. Function code = 11.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
11	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
11	Fixed point latitude degrees	Not used	Not used



Example - get location latitude (50.00 degrees):

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
11	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
11	5000	Not used	Not used

## 7.4 Indicator functions

This chapter describes the indicator function codes.

### 7.4.1 IND\_MAXLOAD\_SET

Set the indicator maximum load. Function code = 101.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
101	Max load	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
101	Not used	Not used	Not used

Example - set the maximum load to 10.020kg:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
101	10020	Not used	Not used

### 7.4.2 IND\_MAXLOAD\_GET

Get the indicator maximum load. Function code = 102.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
102	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4

102 Max load Not used	Not used
-----------------------	----------

Example - get the maximum load (10.020kg):

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
102	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
102 10020	Not used		Not used

## 7.5 PDI functions

This chapter describes the PDO function codes.

### 7.5.1 PDI\_PATH\_SET

Set the PDI path to perform the action on. Function code = 201.

Request:

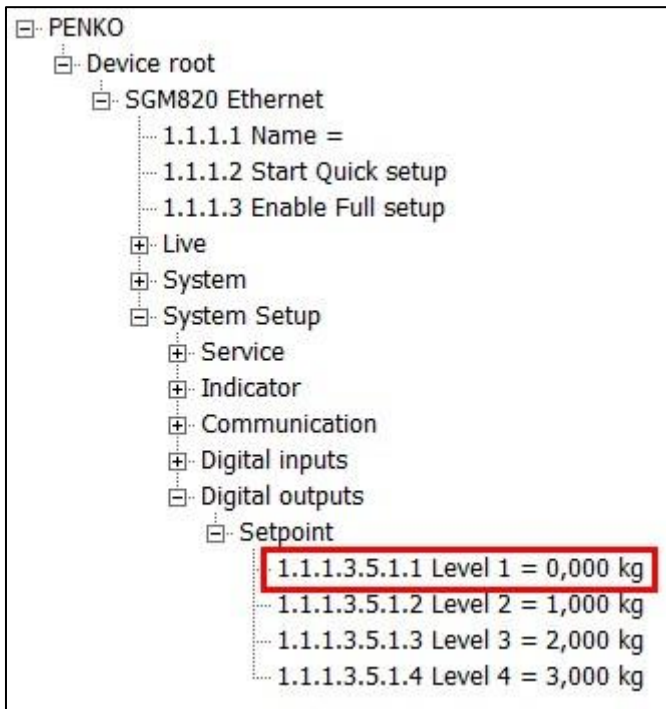
Parameter 1	Parameter 2	Parameter 3	Parameter 4
201	Path no. 1,2,3,4	Path no. 5,6,7,8	Path no. 9,10,11,12

Reply:

Result 1	Result 2	Result 3	Result 4
201	Path no. 1,2,3,4	Path no. 5,6,7,8	Path no. 9,10,11,12

PDI (SAUTER Device Interface) represents the device configuration in a tree structure. Every property has its own unique path number. The tree is used in the SAUTER configuration tools Pi Mach II and PDI Client, both available at [www.SAUTER.com/software](http://www.SAUTER.com/software)

For example, a part of the SAUTER CE HSX820 looks like this:



Setpoint 1 has path number 1.1.1.3.5.1.1. This results in the following input parameters:

Fill the path with zeros to make 12 numbers: 1.1.1.3.5.1.1.0.0.0.0.0

Parameter 1	PDI_PATH_SET	201
Parameter 2	0x01 0x01 0x01 0x03	16843011
Parameter 3	0x05 0x01 0x01 0x00	83951872
Parameter 4	0x00 0x00 0x00 0x00	0

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
201	16843011	83951872	0

Reply:

Result 1	Result 2	Result 3	Result 4
201	16843011	83951872	0

The PDI path is now set.  
If the path is not found, all zeros are returned.

## 7.5.2 PDI\_PROPERTY\_SET

Set a PDI property for the selected PDI path. Function code = 202.  
Sauter CE HS ASCII protocol.docx

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
202	Property value	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
202	Not used	Not used	Not used

Example - set setpoint 1 to 0.500kg (path must be selected with PDI\_PATH\_SET ):

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
202	500	Not used	Not used

### 7.5.3 PDI\_PROPERTY\_GET

Get a PDI property from the selected PDI path. Function code = 203.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
203	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
203	Property value integer/string	Property value string optional	Property value string optional

Example - get setpoint 1 (0.500kg) (path must be selected with PDI\_PATH\_SET ):

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
203	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
203	500	Not used	Not used

Example - get the software version number (1.4.3.9.0.1) (path must be selected with PDI\_PATH\_SET ):

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
1		3	4

203	Not used	Not used	Not used
-----	----------	----------	----------

Reply:

Result 1	Result 2	Result 3	Result 4
203	825111598	858667310	808333568

The result is a string containing the version number:

Result 2	825111598	0x31 0x2E 0x34 0x2E	1.4.
Result 3	858667310	0x33 0x2E 0x39 0x2E	3.9.
Result 4	808333568	0x30 0x2E 0x31 0x00	0.1

#### 1.4.3.9.0.1

## 7.6 Printer functions

This chapter describes the printer function codes.

### 7.6.1 PRINT

Print ticket or line layout, depending on set layout in device. Function code = 301.

For the CE HSX series printing is only available at the CE HSX720/820 and CE HSX750/850.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
301	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
301	Gross weight	Net weight	Tare weight

Example - print:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
301	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
301	699	620	79

Device printer layout settings

```

-----
DATE                03-09-14
TIME                11:02.51
TICKET NUMBER:     42

NET                 0,620 kg
Tare                0,079 kg
-----+
GROSS               0,699 kg
-----
  
```

Device printer layout settings

```

-----
NR    (PRESET)TARE kg    NET kg
75    0,079             0,620
76    0,079             0,620
77    0,079             0,620
-----
  
```

### 7.6.2 PRINT\_SUBTOTAL

Print subtotal to printer. Function code = 302.

Not applicable for the CE HSx/8xx series.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
302	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
302	Subtotal gross weight	Subtotal net weight	Subtotal tare weight

Example - print subtotal:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
302	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
302	3078	2742	336

Printed ticket:

DATE	03-09-14
TIME	13:53.25
TICKET NUMBER:	3
SUBTOTAL NET	2,742 kg
SUBTOTAL TARE	0,336 kg
	----- +
SUBTOTAL GROSS	3,078 kg

### 7.6.3 PRINT\_TOTAL

Print total to printer. Function code = 303.

For the CE HSX series printing is only available at the CE HSX720/820 (Ethernet) and CE HSX750/850 (serial).

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
303	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
303	Total gross weight	Total net weight	Total tare weight

Example - print total:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
303	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
303	7182	6398	784

Printed ticket:

-----	
DATE	03-09-14
TIME	14:02.04
TICKET NUMBER:	7
TOTAL NET	6,398 kg
TOTAL TARE	0,784 kg
	----- +
TOTAL GROSS	7,182 kg
-----	

#### 7.6.4 PRINT\_DAYTOTAL

Print day total to printer. Function code = 304.

Not applicable for the CE HSx/8xx series.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
304	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
304	Day total gross weight	Day total net weight	Day total tare weight

Example - print day total:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
304	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
304	3454	3118	336



Printed ticket:

```

-----
DATE                03-09-14
TIME                14:09.36
TICKET NUMBER:    3

DAY TOTAL NET      3,118 kg
DAY TOTAL TARE     0,336 kg
----- +
DAY TOTAL GROSS   3,454 kg
-----
    
```

### 7.6.5 PRINT\_BATCHTOTAL

Print batch total to printer. Function code = 305.

Not applicable for the CE HSx/8xx series.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
305	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
305	Batch total gross weight	Batch total net weight	Batch total tare weight

Example - print batch total:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
305	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
305	10636	9516	1120

Printed ticket:

```

-----
DATE                03-09-14
TIME                14:12.08
TICKET NUMBER:    10

BATCH TOTAL NET    9,516 kg
BATCH TOTAL TARE   1,120 kg
----- +
BATCH TOTAL GROSS 10,636 kg
-----
    
```

### 7.6.6 PRINT\_LAYOUT

Print to Printer function custom layout 1-n. Function code = 306.

Not supported by 1020 and CE HSX series.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
306	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
306	Layout number 1-n	Not used	Not used

Example - print with custom layout:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
306	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
306	1	Not used	Not used

### 7.6.7 PRINT\_ALIBI

Print to Alibi memory function. Store the actual stable weight in Alibi memory. Function code = 307.

For the CE HSX series Alibi memory is only available at the CE HSxM series.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
307	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
307	UID*	Gross/Net	Preset (Tare)

\* UID can exceed the maximum positive value of the LONG data type (signed). Use the DWORD data type (unsigned).

Example - write to Alibi memory, with active tare:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
307	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
307	1944985600	1315	112

Corresponding Alibi records:

Entry	Code	Date/Value	Time/Unit	UID
00001/00004	Alibi 001	03-09-14	15:00:46	<b>1944985600</b>
00002/00004	Net	<b>1.315</b>	kg	3803586561
00003/00004	Tare	<b>0.112</b>	kg	1269178371
00004/00004	Gross	1.427	kg	0718544901

Example - write to Alibi memory, without active tare:

Reply:

Result 1	Result 2	Result 3	Result 4
307	1660428288	1711	0

Corresponding Alibi records:

Entry	Code	Date/Value	Time/Unit	UID
00001/00002	Alibi 001	03-09-14	15:02:34	<b>1660428288</b>
00002/00002	Gross	<b>1.711</b>	kg	1133518849

## 7.6.8 PRINT\_ALIBIMEMORY

Print the complete Alibi memory to a printer. Function code = 308.

For the CE HSX series Alibi/printing is only available at the CE HSX820 and CE HSX850.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
308	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
308	Not used	Not used	Not used

Example - print the complete Alibi memory:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
308	Not used	Not used	Not used

Printed ticket:

Device: 1020				
Serial Number FFFFFFFF				
Date : 03-09-14 Time : 15:19:19				
Alibi Memory				
Number	UID	Code	Date/Value	Time/Unit
1	1660428288	Alibi 001	03-09-14	15:11:28
2	1133518849	Gross	1.711	kg
3	1941708803	Alibi 001	03-09-14	15:19:08
4	3786547204	Net	1.162	kg
5	3158056966	Tare	0.350	kg
6	0510926856	Gross	1.512	kg
7	1941708810	Alibi 001	03-09-14	15:19:08
8	3786547211	Net	1.162	kg
9	3158056973	Tare	0.350	kg
10	0510926863	Gross	1.512	kg

### 7.6.9 PRINT\_EVENTMEMORY

Print the complete Event log to a printer. Function code = 309.

For the CE HSX series Event/printing is only available at the CE HSX820 and CE HSX850.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
309	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
309	Not used	Not used	Not used

Example - print the complete Event log:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
309	Not used	Not used	Not used

Printer ticket:

```

Device: 1020
Serial Number FFFFFFFF
Date : 03-09-14   Time : 15:33:59
Event Log
Number UID      Code              Date/Value      Time/Unit
  1 0841613312 TAC Changed      30-06-14       11:43:48
  2 1371668481 Events Cleared   30-06-14       11:43:48
  3 1251344386 System Default  30-06-14       12:08:50
  4 1182662659 SoftwareUpdate  30-06-14       12:10:10
  5 4005953540 Alibi Cleared   30-06-14       13:50:20
  6 4005953541 Alibi Cleared   30-06-14       13:50:20
  7 2012479494 CAL Changed    30-06-14       13:58:34
  8 1503395847 CAL Changed    30-06-14       13:58:42
  9 4230086664 Alibi Cleared   30-06-14       14:29:58
 10 3949592585 SoftwareUpdate 31-07-14       09:11:28
    
```

## 7.7 Total functions

This chapter describes the total function codes.

### 7.7.1 TOTAL\_TOTALIZE

Totalize actual stable weight. Function code = 401.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
401	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
401	Added gross weight	Added net weight	Added tare weight

Example - add actual stable weight to total:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
401	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
401	1512	1162	350

### 7.7.2 TOTAL\_SUBTOTAL

Get the subtotal weights. Function code = 402.

Not applicable for the CE HSx/8xx series.

Leave parameter 2 empty to read the subtotal weights.

Set parameter 2 to **0x55AA55AA** to reset the subtotal weights.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
402	Optional	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
402	Subtotal gross weight	Subtotal net weight	Subtotal tare weight

Example - read the subtotal weights:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
402	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
402	12096	9296	2800

Example - reset the subtotal weights:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
402	1437226410	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
402	12096	9296	2800

When reading again, all subtotal weights are 0.

### 7.7.3 TOTAL\_TOTAL

Get the total weights. Function code = 403.

Leave parameter 2 empty to read the total weights.

Set parameter 2 to **0x55AA55AA** to reset the total weights.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
403	Optional	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
403	Total gross weight	Total net weight	Total tare weight

Example - read the total weights:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
403	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
403	12096	9296	2800

Example - reset the total weights:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
403	1437226410	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
403	12096	9296	2800

When reading again, all total weights are 0.

#### 7.7.4 TOTAL\_DAYTOTAL

Get the day total weights. Function code = 404.

Not applicable for the CE HSx/8xx series.

Leave parameter 2 empty to read the day total weights.

Set parameter 2 to **0x55AA55AA** to reset the day total weights.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
-------------	-------------	-------------	-------------

404	Optional	Not used	Not used
-----	----------	----------	----------

Reply:

Result 1	Result 2	Result 3	Result 4
404	Day total gross weight	Day total net weight	Day total tare weight

Example - read the day total weights:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
404	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
404	12096	9296	2800

Example - reset the day total weights:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
404	1437226410	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
404	12096	9296	2800

When reading again, all day total weights are 0.

### 7.7.5 TOTAL\_BATCHTOTAL

Get the batch total weights. Function code = 405.

Not applicable for the CE HSx/8xx series.

Leave parameter 2 empty to read the batch total weights.

Set parameter 2 to **0x55AA55AA** to reset the batch total weights.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
405	Optional	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
405	Batch total gross weight	Batch total net weight	Batch total tare weight



Example - read the batch total weights:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
405	Not used	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
405	12096	9296	2800

Example - reset the batch total weights:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
405	1437226410	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
405	12096	9296	2800

When reading again, all batch total weights are 0.

## 7.8 Controller functions

This chapter describes the controller functions for the belt weigher, check weigher and mono filler.

### 7.8.1 RFN\_PROCESS\_RECIPE\_GET

Get the value of the selected recipe parameter. Function code = 501.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
501	Recipe param	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
501	Recipe param	Value	Not used

Example - get the value of recipe parameter 1:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
-------------	-------------	-------------	-------------

501 1	Not used	Not used
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Reply:

Result 1	Result 2	Result 3	Result 4
501 1	2000		Not used

### 7.8.2 RFN\_PROCESS\_RECIPES\_SET

Set the value of the selected recipe parameter. Function code = 502.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
502	Recipe param	Value	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
502	Recipe param	Not used	Not used

Example - set the value of recipe parameter 2 to 500:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
502	2	500	Not used

### 7.8.3 RFN\_PROCESS\_CONFIG\_GET

Get the value of the selected configuration parameter. Function code = 601.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
601	Config param	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
601	Config param	Value	Not used

Example - get the value of configuration parameter 1:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
601	1	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
601	1	2000	Not used

#### 7.8.4 RFN\_PROCESS\_CONFIG\_SET

Set the value of the selected configuration parameter. Function code = 602.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
602	Config param	Value	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
602	Config param	Not used	Not used

Example - set the value of configuration parameter 2 to 500:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
602	2	500	Not used

#### 7.8.5 RFN\_PROCESS\_DATA

Get the value of the selected process data parameter. Function code = 701.

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
701	Process param	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4
701	Process param	Value	Not used

Example - get the value of process parameter 1:

Request:

Parameter 1	Parameter 2	Parameter 3	Parameter 4
701	1	Not used	Not used

Reply:

Result 1	Result 2	Result 3	Result 4

701	1	2000	Not used
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