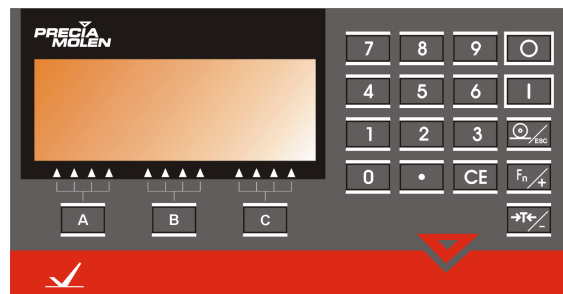
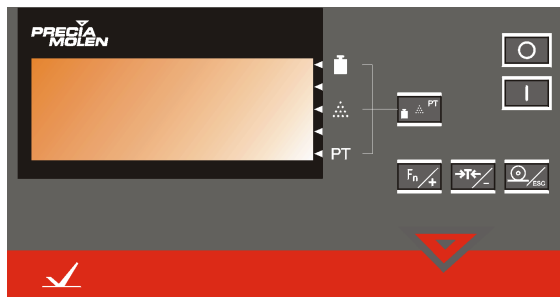


I 200

I200 B/M

Reference manual



04-15-00-1 MRA - 11/2001

**PRECIA[®]
MOLEN**



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General

The following communication protocols are available for the I 200 indicators:

(PC oriented) ASCII Protocols:

- Type A+:
 - Master A+ : automatic transmission of the string, periodical or after standstill;
 - Master B+ : transmission of the string upon the print command;
 - Slave A+ : exchange of data with a master system and receipt of commands;
- Postal slave : specific use (not treated in this document);
- Cash protocol : specific use (not treated in this document);
- Master C : specific use (not treated in this document);
- Master D : specific use (not treated in this document);

(PLC oriented) Binary protocols:

- J-BUS Slave : exchange of data with a master system and receipt of commands according to the standardised J-BUS structure.

Configuration

The protocol is selected during the configuration of the instrument, following the procedure described in the **Installation Guide**.

The table below shows the main configuration parameters needed to obtain a correct operation of the selected communication protocol.

Parameter	Item	ASCII Protocols			J-BUS
		Slave A+	Master A+	Master B+	
Accessory	ACC		1, 2, or 3		
Baud rate	BAUD		300, 600, 1200, 2400, 4800, 9600, 19200		
Transmission format	bits		7 or 8 bits/even, odd or no parity/1 or 2 stop bits		
Type of physical connection*	RS485		RS 485 or other		
Slave number	ADDR	Optional	Optional	Optional	Obligatory and ≠ 00
String transmission interval	PERIOD	Irrelevant	Obligatory**	Irrelevant	Irrelevant
String transmission tolerance	STAB	Irrelevant	Obligatory*	Irrelevant	Irrelevant
Address J-BUS memory	ADDR55	Irrelevant	Irrelevant	Irrelevant	Obligatory
Acknowledgement messages	ACK	Optional	Optional	Optional	Irrelevant
Checksum	CHECK	Optional	Optional	Optional	Irrelevant

* Depending on the accessory.

** Select automatic periodical transmission or automatic transmission at standstill.

Moreover, the ASCII protocols allow defining a configured string. This string is defined by configuration (item **TRARE**) by enabling the numbers of the blocks to be sent.

■ Additional information

The protocols use the standard ASCII code, expressed as hexadecimal values (00 to FF). Codes 0 to 20 have a special meaning as shown in the table below:

Dec.	Hex.	Symbol	Definition
00	00	NUL	Null
01	01	SOH	Start Of Heading
02	02	STX	Start of Text
03	03	ETX	End of Text
04	04	EOT	End Of Transmission
05	05	ENQ	Enquiry
06	06	ACK	Acknowledge
07	07	BEL	Bell
08	08	BS	Backspace
09	09	HT	Horizontal Tabulation
10	0A	LF	Line Feed
11	0B	VT	Vertical Tabulation
12	0C	FF	Form Feed
13	0D	CR	Carriage Return
14	0E	SO	Shift Out
15	0F	SI	Shift In
16	10	DLE	Data Link Escape

Dec.	Hex.	Symbol	Definition
17	11	DC1	Device Control 1 (Xon)
18	12	DC2	Device Control 2
19	13	DC3	Device Control 3 (Xoff)
20	14	DC4	Device Control 4
21	15	NAK	Negative Acknowledge
22	16	SYN	Synchronous idle
23	17	ETB	End of Transmission
24	18	CAN	Cancel
25	19	EM	End of Medium
26	1A	SUB	Substitute
27	1B	ESC	Escape
28	1C	FS	File Separator
29	1D	GS	Group Separator
30	1E	RS	Record Separator
31	1F	US	Unit Separator
32	20	SP	Space

ASCII Table

Dec. Code	Hex. Code	Binary value	Character	Key on Keyboard
00	00	0000 0000	NUL	Ctrl. @
01	01	0000 0001	SOH	Ctrl. A
02	02	0000 0010	STX	Ctrl. B
03	03	0000 0011	ETX	Ctrl. C
04	04	0000 0100	EOT	Ctrl. D
05	05	0000 0101	ENQ	Ctrl. E
06	06	0000 0110	ACK	Ctrl. F
07	07	0000 0111	BEL	Ctrl. G
08	08	0000 1000	BS	Ctrl. H
09	09	0000 1001	HT	Ctrl. I
10	0A	0000 1010	LF	Ctrl. J
11	0B	0000 1011	VT	Ctrl. K
12	0C	0000 1100	FF	Ctrl. L
13	0D	0000 1101	CR	Ctrl. M
14	0E	0000 1110	SO	Ctrl. N
15	0F	0000 1111	SI	Ctrl. O
16	10	0001 0000	DLE	Ctrl. P
17	11	0001 0001	DC1	Ctrl. Q
18	12	0001 0010	DC2	Ctrl. R
19	13	0001 0011	DC3	Ctrl. S
20	14	0001 0100	DC4	Ctrl. T
21	15	0001 0101	NAK	Ctrl. U
22	16	0001 0110	SYN	Ctrl. V
23	17	0001 0111	ETB	Ctrl. W
24	18	0001 1000	CAN	Ctrl. X
25	19	0001 1001	EM	Ctrl. Y
26	1A	0001 1010	SUB	Ctrl. Z
27	1B	0001 1011	ESC	Ctrl. [
28	1C	0001 1100	FS	Ctrl. \
29	1D	0001 1101	GS	Ctrl.]
30	1E	0001 1110	RS	Ctrl. ^
31	1F	0001 1111	US	Ctrl. _
32	20	0010 0000	SP	Space

Dec. Code	Hex. Code	Binary value	Character	Key on Keyboard
33	21	0010 0001	!	!
34	22	0010 0010	"	"
35	23	0010 0011	#	#
36	24	0010 0100	\$	\$
37	25	0010 0101	%	%
38	26	0010 0110	&	&
39	27	0010 0111	'	'
40	28	0010 1000	((
41	29	0010 1001))
42	2A	0010 1010	*	*
43	2B	0010 1011	+	+
44	2C	0010 1100	,	,
45	2D	0010 1101	-	-
46	2E	0010 1110	.	.
47	2F	0010 1111	/	/
48	30	0011 0000	0	0
49	31	0011 0001	1	1
50	32	0011 0010	2	2
51	33	0011 0011	3	3
52	34	0011 0100	4	4
53	35	0011 0101	5	5
54	36	0011 0110	6	6
55	37	0011 0111	7	7
56	38	0011 1000	8	8
57	39	0011 1001	9	9
58	3A	0011 1010	:	:
59	3B	0011 1011	;	;
60	3C	0011 1100	<	<
61	3D	0011 1101	=	=
62	3E	0011 1110	>	>
63	3F	0011 1111	?	?
64	40	0100 0000	@	@
65	41	0100 0001	A	A

Dec. Code	Hex. Code	Binary value	Character	Key on Keyboard
66	42	0100 0010	B	B
67	43	0100 0011	C	C
68	44	0100 0100	D	D
69	45	0100 0101	E	E
70	46	0100 0110	F	F
71	47	0100 0111	G	G
72	48	0100 1000	H	H
73	49	0100 1001	I	I
74	4A	0100 1010	J	J
75	4B	0100 1011	K	K
76	4C	0100 1100	L	L
77	4D	0100 1101	M	M
78	4E	0100 1110	N	N
79	4F	0100 1111	O	O
80	50	0101 0000	P	P
81	51	0101 0001	Q	Q
82	52	0101 0010	R	R
83	53	0101 0011	S	S
84	54	0101 0100	T	T
85	55	0101 0101	U	U
86	56	0101 0110	V	V
87	57	0101 0111	W	W
88	58	0101 1000	X	X
89	59	0101 1001	Y	Y
90	5A	0101 1010	Z	Z
91	5B	0101 1011	[[
92	5C	0101 1100	\	\
93	5D	0101 1101]]
94	5E	0101 1110	^	^
95	5F	0101 1111	'	'
96	60	0110 0000		

Dec. Code	Hex. Code	Binary value	Character	Key on Keyboard
97	61	0110 0001	a	a
98	62	0110 0010	b	b
99	63	0110 0011	c	c
100	64	0110 0100	d	d
101	65	0110 0101	e	e
102	66	0110 0110	f	f
103	67	0110 0111	g	g
104	68	0110 1000	h	h
105	69	0110 1001	i	i
106	6A	0110 1010	j	j
107	6B	0110 1011	k	k
108	6C	0110 1100	l	l
109	6D	0110 1101	m	m
110	6E	0110 1110	n	n
111	6F	0110 1111	o	o
112	70	0111 0000	p	p
113	71	0111 0001	q	q
114	72	0111 0010	r	r
115	73	0111 0011	s	s
116	74	0111 0100	t	t
117	75	0111 0101	u	u
118	76	0111 0110	v	v
119	77	0111 0111	w	w
120	78	0111 1000	x	x
121	79	0111 1001	y	y
122	7A	0111 1010	z	z
123	7B	0111 1011	{	{
124	7C	0111 1100		
125	7D	0111 1101	}	}
126	7E	0111 1110	~	~
127	7F	0111 1111	(DEL)	

ASCII protocols 2

General principle

Structure of the messages

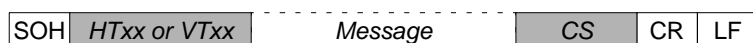
All messages have the following general structure:



1	Instrument number:			
	• 1 start character	09H 0BH	HT VT	Slave Protocol Master Protocol
	• Instrument number: 2 digital ASCII characters (0 to 9)			
2	Checksum: EXOR of all preceding characters: 2 ASCII bytes			

The instrument number and checksum are optional elements and defined during configuration.

To facilitate reading of the following paragraphs, the following presentation will be used.

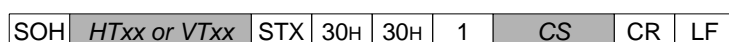


If there is no Slave number (i.e. $dir = 00$), the instrument number (1: HTxx or VTxx) must not be included in the string.

Acknowledgement

The acknowledgement message is **optional**. If it is enabled in the configuration menu, the absence of this message in the answer from the computer, or a negative acknowledgement, results in the renewed transmission of the same string by the indicator. After THREE fruitless attempts transmission of the string is abandoned.

The acknowledgement message is as follows:



1	Report	6FH	o	String received
		6EH	n	String not conform
		69H	i	Unknown block or command
		61H	a	Slave not ready

If a request is sent to the indicator, but this request is incoherent, the acknowledgement - if configured - is sent instead of the normally expected answer.

Master A+ protocol

Communication principle

Periodical transmission

The Master A+ protocol periodically sends data strings to a slave computer. The intervals between the transmissions is set by means of a parameter. Setting the transmission interval at zero (= at 0 ms) results in a transmission as often as possible (in this case the intervals are not controlled).

Transmission at standstill

The data string is transmitted as soon as a stable weight value superior to the preset tolerance has been detected and this weight has fallen below this same tolerance since the last transmission.

■ Structure of the messages

String transmitted by the indicator

SOH	VTxx	1	-----	1	CS	CR	LF
-----	------	---	-------	---	----	----	----

-
- 1 Data blocks, each with:
- 1 block start character STX (02H)
 - 2 digital ASCII characters (30H to 39H) to define the block number
 - Data (for details and data structure, see "Detail data blocks and commands", page 11)
-

■ Master B+ protocol

In principle, the Master B+ protocol is identical to the Master A+ protocol described above, except that the string is transmitted by the Print command. The data received corresponds with the values at the moment they are printed out.

■ Slave A+ protocols

■ Communication principle

The Slave A+ protocol allows the following functionalities:

- transmission of the data string on request of the computer,
- transmission of a string of 1 to 4 data blocks on request of the computer,
- receipt of a data block transmitted by the computer,
- transmission of the write status of the data blocks received on request of the computer,
- receipt of a command transmitted by the computer,
- transmission of the status of the command received on request of the computer.

All data are exchanged at the computer's initiative.

Request to read the string

Request from the computer

SOH	HTxx	CS	CR	LF
-----	------	----	----	----

Response by the indicator

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----

- 1 Data blocks, each with:
- 1 block start character 02H STX
 - 2 digital ASCII characters (30H to 39H) to define the block number
 - Data (for details and data structure, see "Detail data blocks and commands", page 11)

Read request of n data blocks

Request from the computer

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----


- 1 Requested data blocks, each with:
- 1 block start character 05H ENQ
 - 2 digital ASCII characters (30H to 39H) to define the block number
 - 1 character to select the type of data:

4CH	L	Current data
49H	I	Printed data

Response by the indicator

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----

- 1 Data blocks, each with:
- 1 block start character 02H STX
 - 2 digital ASCII characters (30H to 39H) to define the block number
 - Data (for details and data structure, see "Detail data blocks and commands", page 11)


 In a request all data must be of the same type (current data or printed data). The maximum number of data blocks in a request is **4**.

Write request of n data blocks

Request from the computer

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----

- 1 Data blocks, each with:
- 1 block start character 02H STX
 - 2 digital ASCII characters (30H to 39H) to define the block number
 - Data (for details and data structure, see "Detail data blocks and commands", page 11)

 The maximum number of data blocks in a same request is **4**.

■ Request to write the status of n data blocks

Request from the computer

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----

- 1 Requested data blocks, each with:
- 1 block start character 05H ENQ
 - 2 digital ASCII characters (30H to 39H) to define the block number
 - 1 character 3FH ? Status request

Response by the indicator

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----

- 1 Data blocks, each with:
- 1 block start character 02H STX
 - 2 digital ASCII characters (30H to 39H) to define the block number
 - Report

63H	c	Data is being written
6DH	m	Data is coherent and stored in memory
72H	r	Data has been refused

■ Transmission of a command

Request from the computer

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----

- 1 Command block to be executed:
- 1 block start character 10H DLE
 - 2 digital ASCII characters (30H to 39H) to define the command number*
 - Switch 4DH M Execution of the command

* See "Commands", page 34.

■ Command status request

Request from the computer

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----

- 1 Command status request block:
- 1 block start character 10H DLE
 - 2 digital ASCII characters (30H to 39H) to define the command number*
 - Switch 3FH ? Command status request

* See "Detail data blocks and commands", page 11.

Response by the indicator

SOH	HTxx	1	1	CS	CR	LF
-----	------	---	---	----	----	----

- 1 Command status block:
- 1 block start character 10H DLE
 - 2 digital ASCII characters (30H to 39H) to define the command number
 - Command status

63H	c	Command is being executed
74H	t	Command has been executed
72H	r	Command has been refused


Detail data blocks and commands

Data blocks

The accessibility of certain data blocks available at the indicator's configuration level depends on the functional configuration. The table below briefly describes the various blocks and their transmission conditions.



ATTENTION: Depending on the instrument's functional configuration, the same block number may have a different meaning.

Block n°		Data	Access		Remarks
			Basic I200 B	Multi-function I200 M	
01	30H 31H	Gross weight	R	R	
02	30H 32H	Tare weight	R/W	R/W	
03	30H 33H	Net weight	R	R	
04	30H 34H	Status	R	R	See detail
05	30H 35H	Status weighing ranges	R	R	
06	30H 36H	Ticket number	R	R	8 characters
08	30H 38H	Number of selected channel	R	R	n = 1 digital character 1: Channel A 2: Channel B 3: Channel AB
09	30H 39H	Number of channel to be selected	R/W	R/W	As above
11	31H 31H	Display message	-	R/W	
15	31H 35H	User function	R	R	See detail
 The contents of blocks 16 to 26 depends on the function type used.					
<i>COUNTING FUNCTION</i>					
16	31H 36H	Number of pieces being weighed	R	R	
17	31H 37H	Unit weight of the pieces	R	R/W	
18	31H 38H	Number of samples	R	R/W	
19	31H 39H	Unit weight in kg or g*	-	R/W	
20	32H 30H	High tolerance	-	R/W	Unit: Piece
21	32H 31H	Low tolerance	-	R/W	
22	32H 32H	Tolerance check target weight	-	R/W	
23	32H 33H	Tolerance check deviation	-	R	
24	32H 34H	Tolerance check result	-	R	
25	32H 35H	Number of weighings over high tolerance	-	R	
26	32H 36H	Number of weighings below low tolerance	-	R	
<i>TOLERANCE CHECK FUNCTION</i>					
20	32H 30H	High tolerance	-	R/W	
21	32H 31H	Low tolerance	-	R/W	
22	32H 32H	Tolerance check target weight	-	R/W	
23	32H 33H	Tolerance check deviation	-	R	
24	32H 34H	Tolerance check result	-	R	
25	32H 35H	Number of weighings over high tolerance	-	R	
26	32H 36H	Number of weighings below low tolerance	-	R	
<i>FORMULA WEIGHING FUNCTION</i>					
16	31H 36H	Target of formula weighing	-	R/W	
17	31H 37H	Intermediary net weight	-	R	
18	31H 38H	Percentage	-	R	
19	31H 39H	Type of formula weighing	-	R	
<i>CALCULATING FUNCTION</i>					
16	31H 36H	Value of the calculating factor	-	R/W	
17	31H 37H	Calculated weight	-	R	
18	31H 38H	Calculating operator	-	R	

Block n°		Data	Access		Remarks
			Basic I200 B	Multi-function I200 M	
<i>ALL FUNCTIONS</i>					
27	32H 37H	Weighing number of the running batch	-	R	
28	32H 38H	Total of weighings of the running batch	-	R	
80	38H 30H	Date	R	R	Refreshed after print out or acceptance of the batch
81	38H 31H	Time	R	R	
82	38H 32H	Stored tare	R/W	R/W	
Blocks 98 and 99 are reserved for the DSD.					
98	39H 38H	DSD identification number	R	R	
99	39H 39H	DSD record number	R	R	

* Not shown during the configuration.

Block 01: Gross weight

30H	31H	1	2
-----	-----	---	---

1	Absolute Gross weight value: 7 digital ASCII characters and decimal point (0 to 9 and .)		
2	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ kilogram _g_ gram

Block 02: Tare weight

30H	32H	1	2
-----	-----	---	---

1	Absolute Tare weight value: 7 digital ASCII characters and decimal point (0 to 9 and .)		
2	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ kilogram _g_ gram

Block 03: Net weight

30H	33H	1	2
-----	-----	---	---

1	Absolute Net weight value: 7 digital ASCII characters and decimal point (0 to 9 and .)		
2	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ kilogram _g_ gram

Block 04: Measurement status

30H	34H	1
-----	-----	---

1	Status: 4 bytes
---	-----------------

- Byte 1

0	0	1	1	b3	**	*	b0	* Not used	** b2 = b3
---	---	---	---	----	----	---	----	------------	------------

b3	Net weight	1	Net weight below zero or $-7e \leq \text{Gross} < 0$
		0	Net weight equal to or higher than zero
b0	Preset tare	1	Preset tare
		0	No Preset tare

- Byte 2

0	0	1	1	b3	b2	b1	b0
---	---	---	---	----	----	----	----

b3 b2	Decimal point position	00	XXXXX
		01	XXXX.X
		10	XXX.XX
		11	XX.XXX

b1	⇒ Standstill
b0	Out of range ($\text{Gross} > P_{\text{MAX}}$ or $\text{Gross} < 0$)

• Byte 3

0	0	1	1	b3	b2	b1	b0
---	---	---	---	----	----	----	----

b3	⇒ Zeroing range (gross or net)		
b2	1 ⇒ Out of range - 7e: $-7e \leq \text{Gross} < 0$		
b1 b0	Out of range	00	Not out of range
		01	Out of range - (Gross < -7e)
		10	Out of range + (Gross > P _{MAX} +7e)
		11	ADC out of range

• Byte 4

0	0	1	1	*	*	b1	b0	* Reserved
---	---	---	---	---	---	----	----	------------

b1 b0	Type of weight displayed	00	Indicator switched to Gross weight display mode
		10	Indicator switched to Net weight display mode (tare ≠ 0)

Block 05: Status of weighing ranges

30H	35H	1
-----	-----	---

1	Status of weighing range: 2 bytes
---	-----------------------------------

• Byte 1

0	0	1	1	*	*	b1	b0	* Reserved
---	---	---	---	---	---	----	----	------------

b1b0	Active weighing range	01	Weighing range W1
		10	Weighing range W2

• Byte 2: Not significant



This block is used for dual range indicators only.

Block 06: Ticket number

30H	36H	1
-----	-----	---

1	Ticket number: 8 digital ASCII characters (0 to 9)
---	--

Block 08: Number of selected channel

30H	38H	1
-----	-----	---

1	Whole value: 1 digital ASCII character* (0 to 9)
	* see Remark at "Block 08" in table at page 12.

Block 09: Number of channel to be selected

30H	39H	1
-----	-----	---

1	Identical to block 8
---	----------------------

Block 20: High tolerance

32H	30H	1	2	3
-----	-----	---	---	---

1	High tolerance polarity sign (+ / -)			
2	High tolerance: 6 digital ASCII characters (0 to 9)			
3	Unit: 3 ASCII bytes	50H 63H 73H	Pcs	pieces

This setpoint is defined by: <Target number of pieces> + <High tolerance>.

Block 21: Low tolerance

32H	31H	1	2	3
-----	-----	---	---	---

1	Low tolerance polarity sign (+ / -)			
2	Low tolerance: 6 digital ASCII characters (0 to 9)			
3	Unit: 3 ASCII bytes	50H 63H 73H	Pcs	pieces

This setpoint is defined by: <Target number of pieces> - <Low tolerance>.

Block 22: Target value tolerance checks

32H	32H	1	2	3
-----	-----	---	---	---

1	Target polarity sign (+ / -)			
2	Low tolerance: 6 digital ASCII characters (0 to 9)			
3	Unit: 3 ASCII bytes	50H 63H 73H	Pcs	pieces

Block 23: Deviation on tolerance checks

32H	33H	1	2	3
-----	-----	---	---	---

1	Deviation polarity sign (+ / -)			
2	Low tolerance: 6 digital ASCII characters (0 to 9)			
3	Unit: 3 ASCII bytes	50H 63H 73H	Pcs	pieces

Block 24: Result tolerance checks

32H	34H	1
-----	-----	---

1	Result tolerance checks: ASCII characters 2BH 2BH	++	Weight over high tolerance
	2DH 2DH	--	Weight below low tolerance
	20H 20H	—	Weight within tolerances

Block 25: Number of weighings over high tolerance

32H	35H	1
-----	-----	---

1	Number of weighings over high tolerance for the running batch: 4 digital ASCII characters (0 to 9)			
---	--	--	--	--

Block 26: Number of weighing below low tolerance

32H	36H	1
-----	-----	---

1	Number of weighings below low tolerance for the running batch: 4 digital ASCII characters (0 to 9)			
---	--	--	--	--

■ TOLERANCE CHECK FUNCTION:

Block 20: High tolerance

32H	30H	1	2	3
-----	-----	---	---	---

1	High tolerance polarity sign (+ / -)			
2	High tolerance: 7 digital ASCII characters and decimal point (0 to 9 and .)			
3	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ _g_	kilogram gram

This setpoint is defined by: <target weight> + <high tolerance>.

Block 21: Low tolerance

32H	31H	1	2	3
-----	-----	---	---	---

1	Low tolerance polarity sign (+ / -)			
2	Low tolerance: 7 digital ASCII characters and decimal point (0 to 9 and .)			
3	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ _g_	kilogram gram

This setpoint is defined by: <target weight> - <low tolerance>.

Block 22: Target weight for tolerance checks

32H	32H	1	2	3
-----	-----	---	---	---

1	Target weight polarity sign (+ / -)			
2	Target weight: 7 digital ASCII characters and decimal point (0 to 9 and .)			
3	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ _g_	kilogram gram

Block 23: Error on tolerance checks

32H	33H	1	2	3
-----	-----	---	---	---

1	Error polarity sign (+ / -)			
2	Error: 7 digital ASCII characters and decimal point (0 to 9 and .)			
3	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ _g_	kilogram gram

Block 24: Result tolerance checks

32H	34H	1
-----	-----	---

1	Result tolerance checks: 2 ASCII characters	2BH 2BH 2DH 2DH 20H 20H	++ -- _	Weight over high tolerance Weight below tolerance Weight within tolerances
---	---	-------------------------------	---------------	--

Block 25: Number of weighings over high tolerance

32H	35H	1
-----	-----	---

1	Number of weighing over high tolerance for the running batch: 4 digital ASCII characters (0 to 9)			
---	---	--	--	--

Block 26: Number of weighings below low tolerance

32H	36H	1
-----	-----	---

1	Number of weighing below low tolerance for the running batch: 4 digital ASCII characters (0 to 9)			
---	---	--	--	--

■ **FORMULA WEIGHING FUNCTION:**

Block 16: Target weight for formula weighing

31H	36H	1	2	3
-----	-----	---	---	---

1	Target weight polarity sign (+ / -)			
2	Target weight: 7 digital ASCII characters and decimal point (0 to 9 and .)			
3	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ _g_	kilogram gram

Block 17: Intermediary net weight

31H	37H	1	2	3
-----	-----	---	---	---

1	Intermediary net weight polarity sign (+ / -)			
2	Intermediary net weight value: 7 digital ASCII characters and decimal point (0 to 9 and .)			
3	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ _g_	kilogram gram

Block 18: Percentage

31H	38H	1	2	3
-----	-----	---	---	---

1	Percentage polarity sign (+ / -)			
2	Percentage value: 7 digital ASCII characters and decimal point (0 to 9 and .)			
3	Percentage unit: 3 ASCII bytes	25H 20H 20H 25H 2EH 20H	%_ %_	Percent Permill

block 19: Type of formula weighing

31H	39H	1
-----	-----	---

1	Type of formula weighing: 6 characters	20H 20H 20H 20H 30H 25H 20H 20H 31H 30H 30H 25H	_0% Relative 100% Absolute
---	--	--	-------------------------------

■ CALCULATION FUNCTION:Block 16: Value of calculation factor

31H	36H	1
-----	-----	---

1	Value of the calculation factor: 7 digital ASCII characters and decimal point (0 to 9 and .)			
---	--	--	--	--

Block 17: Calculated weight

31H	37H	1	2	3
-----	-----	---	---	---

1	Polarity sign of calculated weight (+ / -)			
2	Calculated weight value: 7 digital ASCII characters and decimal point (0 to 9 and .)			
3	Weight unit: 3 ASCII bytes	6BH 67H 20H 20H 67H 20H	kg_ _g_	kilogram gram

Block 18: Calculating operator

31H	38H	1
-----	-----	---

1	Calculating operator	2AH 2FH 20H	* / _	Multiplier Divider No factor (plus or initial stage)
---	----------------------	-------------------	-------------	--

■ **ALL FUNCTIONS:**

Block 27: Number of weighings of the running batch

32H	37H	1
-----	-----	---

1 Number of weighing of the running batch: 4 digital ASCII characters (0 to 9)

Block 28: Total of weighings of the running batch

32H	38H	1	2
-----	-----	---	---

1 Total of weighings of the running batch: 8 digital ASCII characters and decimal point (0 to 9 and .)

2	Unit: 3 ASCII bytes	6BH 67H 20H	kg_	kilogram
		20H 67H 20H	_g_	gram
		50H 63H 73H	Pcs	pieces

Block 80: Date

38H	30H	1
-----	-----	---

1 Date: 8 digital ASCII characters (0 to 9), format: ddmmyyyy

Block 81: Time

38H	31H	1
-----	-----	---

1 Time: 4 digital ASCII characters (0 to 9), format: hhmm

Block 82: Stored tare

38H	32H	1	2
-----	-----	---	---

1 Stored tare: 7 digital ASCII characters and decimal point (0 to 9 and .)

2	Weight unit: 3 ASCII bytes	6BH 67H 20H	kg_	kilogram
		20H 67H 20H	_g_	gram

Block 98: DSD identification number

39H	38H	1
-----	-----	---

1 DSD identification number: 2 digital ASCII characters (0 to 9)

Block 99: DSD record number

39H	39H	1
-----	-----	---

1 DSD record number: 5 digital ASCII characters (0 to 9)

Commands

Command n°		Meaning	Used in		Remarks
			Basic I200 B	Multi-function I200 M	
01	30H 31H	Zeroing request	X	X	
02	30H 32H	Switch to weighing range W2	X	X	
03	30H 33H	High Resolution display	X	X	
04	30H 34H	Semi-automatic taring	X	X	
05	30H 35H	Gross weight recall	X	X	
06	30H 36H	Print request	X	X	If printer configured
07	30H 37H	Use stored tare	X	X	
10	31H 30H	Display of message of block n° 11	-	X	
33	33H 33H	Change measuring channel	X	X	See detail block 09
90	39H 39H	Accept batch	-	X	
91	39H 31H	End of batch	-	X	
92	39H 32H	Cancel batch	-	X	
99	39H 39H	DSD recording request	X	X	If configured



If acknowledgement has been enabled, the instrument returns for all these commands the report of the receipt of the command (see Acknowledgement).

- The following commands are executed immediately after receipt (if the command has been accepted):
 - 02: Switch to weighing range W2,
 - 03: High Resolution display,
 - 05: Gross weight recall,
 - 07: Use stored tare,
 - 10: Display of the message of block n° 11,
 - 33: Change measuring channel,
 - 99: DSD recording request, (provided the relevant conditions have been met: DSD n° ≠ 0, if not: DSD n° =0).
- The following commands are executed with a delay (provided the command has been accepted and the relevant conditions have been met (standstill, zeroing range, etc.):
 - 01: Zeroing request,
 - 04: Semi-automatic taring,
 - 06: Print request,
 - 90: Acceptance of batch,
 - 91: End of batch,
 - 92: Cancel batch.

Execution of these commands is done by reading the **status** of the command (*running, terminated or refused*).

■ Examples of transmission of a string with Slave A+ protocol

■ Without checksum

■ Application

Suppose a I200 indicator has the following configuration:

- Slave A+ protocol,
- IdnrA: **00** (no Slave number),
- Message: blocks 1, 2, 3, 4 enabled,
- Checksum: **No**,
- Acknowledgement: No,
- Weight transmitted: display weight.

Baud rate and transmission format are supposed to be identical both on the indicator and the computer side, while the serial interface is functioning correctly.



As a default, blocks 4 (status), 1 (gross weight), 2 (tare weight) and 3 (net weight) are enabled. If no other block has been enabled, blocks 4, 1, 2 and 3 form the "**configured string**".

REMINDER: If there is no Slave number (i.e. $IdnrA = 00$), the instrument number (1: HTxx or VTxx) should not be included in the string.

■ Read request of configured string:

Under the conditions as mentioned above, the read request of the string may be resumed as follows:

Request from the computer

SOH	CR	LF
Hex.: 01H	0DH	0AH
Ctrl A	Ctrl M	Ctrl J

Response by the indicator

SOH	STX	04	0200	STX	01	123456.kg_	STX	02	000000.kg_	STX	03	123456.kg_	CR	LF
		1	2		3	4		5	6		7	8		

- | | | | |
|---------------------|--------------------------|-------------------------|------------------------|
| 1. Block n° status | 3. Block n° Gross weight | 5. Block n° Tare weight | 7. Block n° Net weight |
| 2. Status (4 bytes) | 4. Gross weight | 6. Tare weight | 8. Net weight |

■ Read request of a data block:

Example: Block 01: Gross weight

Request from the computer

SOH	ENQ	01	L	CR	LF
Hex.: 01H	05H	30H 31H	4CH	0DH	0AH
Ctrl A	Ctrl E	0 1	L	Ctrl M	Ctrl J

1. N° block Brut

Response by the indicator

SOH	STX	01	000456.kg_	CR	LF
-----	-----	----	------------	----	----

1
2

1. Block n° Gross weight
2. Gross weight

■ Request to write a data block:

Example: Block 02: Tare weight

Request from the computer

SOH	STX	02	000123.kg_			CR	LF
-----	-----	----	------------	--	--	----	----

Hex.: 01H 02H 30H 32H 30H30H30H31H32H33H2EH6BH67H20H 0DH 0AH

Ctrl A Ctrl B 0 2 000123.kg_ Ctrl M Ctrl J

1
2

1. Block n° Tare weight
2. (space)

A tare weight of 123 kg is loaded into the indicator.

■ Transmission of a command:

- **Example:** Zeroing request (Command n° 01)

Request from the computer

SOH	DLE	01	M	CR	LF
-----	-----	----	---	----	----

Hex.: 01H 10H 30H 31H 4DH 0DH 0AH

Ctrl A Ctrl P 0 2 M Ctrl M Ctrl J

1. Command n°

The indicator is reset to zero (provided the relevant conditions have been met).

- **Example:** Taring request (Command n° 04)

Request from the computer

SOH	DLE	04	M	CR	LF
-----	-----	----	---	----	----

Hex.: 01H 10H 30H 34H 4DH 0DH 0AH

Ctrl A Ctrl P 0 4 M Ctrl M Ctrl J

1. Command n°

The indicator is tared (provided the relevant conditions have been met).

- **Example:** DSD recording request (Command n° 99)

Request from the computer

		1			
SOH	DLE	99	M	CR	LF
Hex.: 01H	10H	39H 39H	4DH	0DH	0AH
Ctrl A	Ctrl P	9 9	M	Ctrl M	Ctrl J

1. Command n°

The weighing data are recorded (provided the relevant conditions have been met).

If the DSD has been configured with the default parameters (see the Installation Guide: 04-15-04-1 GI), the indicator returns the configured string + the DSD n° (5 characters, ≠ 0)*.

Response by the indicator

SOH	Trame configurée			STX	99	12345	CR	LF
				1	2			

1. DSD block n°
2. DSD n°

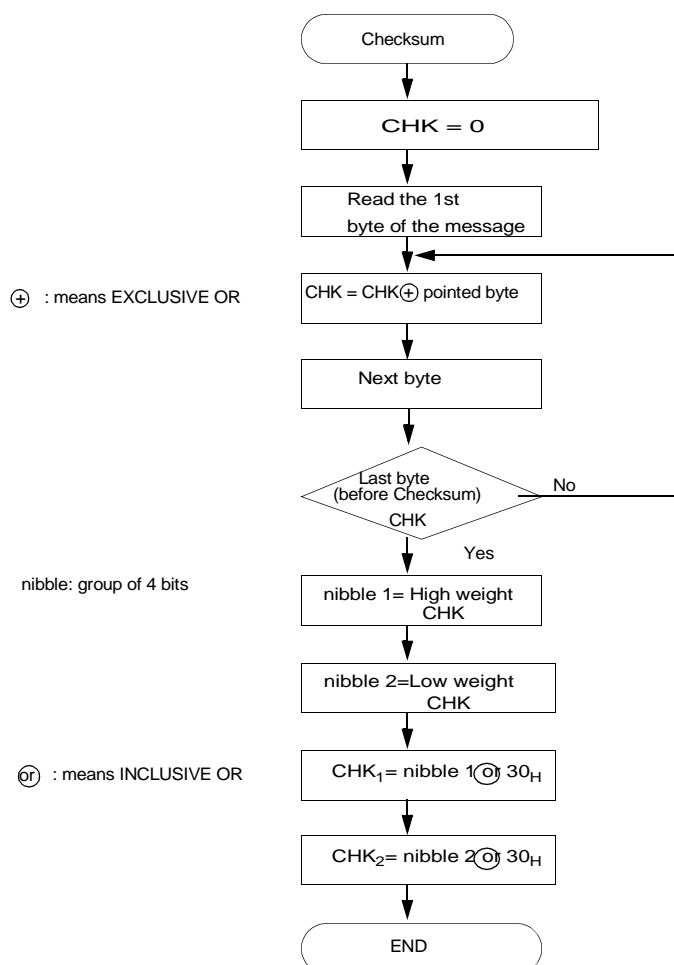
*If DSD n° = 00000 the weighing data have not been recorded.

■ With checksum

■ Definition and calculation

The checksum is the EXOR of all preceding characters, converted to 2 ASCII bytes.

Calculation algorithm:



Calculation example for a DSD recording request DSD (Command n° 99):

Checksum						
SOH	DLE	99	M	CS	CR	LF
Hex.: 01H	10H	39H 39H	4DH	CHK ₁ CHK ₂	0DH	0AH

ASCII	Hexadecimal	Binary
SOH	01H	0000 0001
DLE	10H	⊕ 0001 0000
9	39H	0001 0001 (1 st calculation) ⊕ 0011 1001
9	39H	0010 1000 (2 nd calculation) ⊕ 0011 1001
M	4DH	0001 0001 (3 rd calculation) ⊕ 0100 1101
5	CHK ₁ = nibble 1 ⊗ 30H = 35H	0101 1100 (Result)
<	CHK ₂ = nibble 2 ⊗ 30H = 3CH	0011 0101 0011 1100

CHK₁ = 35H
CHK₂ = 3CH

nibble 1 = 0101 nibble 2 = 1100
(30H: 0011 0000)

■ **Application**

Suppose a I200 indicator has the following configuration:

- Slave A+ protocol,
- IdnrA: **00** (no Slave number),
- Message: blocks 1, 2, 3, 4 enabled,
- Checksum: **Yes**,
- Acknowledgement: No,
- Weight transmitted: display weight.

Baud rate and transmission format are supposed to be identical both on the indicator and the computer side, while the serial interface is functioning correctly.



As a default, blocks 4 (status), 1 (gross weight), 2 (tare weight) and 3 (net weight) are enabled. If no other block has been enabled, blocks 4, 1, 2 and 3 constitute the "**configured string**".

REMINDER: If there is no Slave number ($IdnrA = 00$), the instrument number (1: HTxx or VTxx) must not be included in the string.

■ **Request to read the configured string:**

Under the conditions as mentioned above, the request to read the configured string may be resumed as follows:

Request from the computer

Checksum			
SOH	01	CR	LF
Hex.: 01H	30H 31H	0DH	0AH
Ctrl A	0 1	Ctrl M	Ctrl J

Response by the indicator

Checksum															
SOH	STX	04	0200	STX	01	000456.kg_	STX	02	000000.kg_	STX	03	000456.kg_	CS	CR	LF
		1	2		3	4		5	6		7	8			

- 1. Block n° status
- 2. Status (4 bytes)

- 3. Block n° Gross weight
- 4. Gross weight

- 5. Block n° Tare weight
- 6. Tare weight

- 7. Block n° Net weight
- 8. Net weight

■ Request to read a data block:

Example: Block 02: Tare weight

Request from the computer

		1		Checksum			
SOH	ENQ	02	L	4A	CR	LF	
Hex.:	01H	05H	30H 32H	4CH	34H 3AH	0DH	0AH
	Ctrl A	Ctrl E	0 2	L	4 :	Ctrl M	Ctrl J

1. N° block Tare weight

Response by the indicator

		1		2		Checksum			
SOH	STX	02	000123.kg_	CS	CR	LF			

1. N° block Tare weight
2. Tare weight

• **Example:** Block 16: Number of pieces

Request from the computer

		1		Checksum			
SOH	ENQ	16	L	4F	CR	LF	
Hex.:	01H	05H	31H 36H	4CH	34H 3FH	0DH	0AH
	Ctrl A	Ctrl E	1 6	L	4 ?	Ctrl M	Ctrl J

1. N° block Number of pieces

Response by the indicator

		1		2		Checksum			
SOH	STX	16	+000496Pcs	CS	CR	LF			

1. N° block number of pieces
2. Number of pieces

■ Transmission of a command:

• **Example:** Taring request (Command n° 04)

Request from the computer

		1		Checksum			
SOH	DLE	04	M	58	CR	LF	
Hex.:	01H	10H	30H 34H	4DH	35H 38H	0DH	0AH
	Ctrl A	Ctrl P	0 4	M	5 8	Ctrl M	Ctrl J

1. Command n°

The indicator is tared (provided the relevant conditions have been met).

- **Example:** Zeroing request (Command n° 01)

Request from the computer

	SOH	DLE	01	M	Checksum 5 =	CR	LF
Hex.:	01H	10H	30H 31H	4DH	35H 3DH	0DH	0AH
	Ctrl A	Ctrl P	0 1	M	5 =	Ctrl M	Ctrl J

1. *Command n°*

The indicator is reset to zero (provided the relevant conditions have been met).

- **Example:** DSD recording request (Command n° 99)

Request from the computer

	SOH	DLE	99	M	Checksum 5C	CR	LF
Hex.:	01H	10H	39H 39H	4DH	35H 3CH	0DH	0AH
	Ctrl A	Ctrl P	9 9	M	5 <	Ctrl M	Ctrl J

1. *Command n°*

The weighing data are recorded in the DSD (provided the relevant conditions have been met).

■ With checksum and Slave n° 1

If more than one instrument has been connected to the same Master, the slaves must be identified by a slave number (idnrA).

■ Application

Suppose a I200 indicator has the following configuration:

- Slave A+ protocol,
- IdnrA: **01** (Slave number 1),
- Checksum: **Yes**,
- Acknowledgement: No,
- Weight transmitted: display weight.

■ Transmission of a command:

- **Ex:** DSD recording request (Command n° 99)

Request from the computer

	SOH	HT	0 1	DLE	99	M	Checksum 54	CR	LF
Hex.:	01H	09H	30H 31H	10H	39H 39H	4DH	35H 34H	0DH	0AH
	Ctrl A	Ctrl I	0 1	Ctrl P	9 9	M	5 4	Ctrl M	Ctrl J

1. *Slave number 01*

2. *Command n°*

The weighing data are recorded in the DSD (provided the relevant conditions have been met).

Binary protocol: J-BUS 3

■ Introduction

The J-BUS communication protocol being a standardised protocol, its dialogueing principle is supposed to be known.

The instrument is functioning as a Slave.

■ Data type and structure

There are 4 different types of data.

- Numeric (*M*) : 2 words (4 bytes)
Binary value with polarity sign in 2 words (4 bytes): - 2147483648 à + 2147483647.
- Weight (*P*) : 2 words (4 bytes)
Binary value with polarity sign in 2 words (4 bytes): - 2147483648 à + 2147483647.
The decimal point position is found by reading the status of the measurement.
- Status (*S*) : 2 words (4 bytes)
4 ASCII bytes (30H to 3FH): in each byte only the 4 least significant bits have a meaning.
- Command (*C*) : 1 word (2 bytes)
 - byte 1: Switch for the M command in ASCII (4DH)
 - byte 2: any ASCII character* other than c, t and r.

Commands are transmitted by writing the word "Mx" in the address involved.

E.g.: "M_" (decimal value: 19712).

Reading the same area allows to determine the status of the last command:

- Mc Command received, (decimal value: 19811)
- At Command correctly executed, (decimal value: 16756)
- Ar Command refused, (decimal value: 16754)

■ Remarks

In the tables below, the following abbreviations are used in the column "*type*":

- N : Numeric,
- AN: Alphanumeric,
- I: Imposed,
- Nnp: Numeric, no polarity,
- Nhr : Numeric in High Resolution,
- P: Weight.

■ List of available data blocks

In the tables below, @ represents the start value of the address area set during the configuration (item *AdrE55*).

* Do not use the characters "c", "t" et "r": they are used by the instrument for the report.

Address	Functional mode	Type	Used in		Access	Remark
			I200 B	I200 M		
@ + 00	Reserved		X	X	R/W	
CURRENT DATA:						
@ + 02	Current data	I	X	X	R	0xxx xxxx xxxx xxxx: Data not available 1xxx xxxx xxxx xxxx: Data available
@ + 03	Gross weight	P	X	X	R	
@ + 05	Tare	P	X	X	R/W	
@ + 07	Net weight	P	X	X	R	
@ + 09	Status	S	X	X	R	As for A+ protocol
@ + 11	Status of weighing range	I	X	X	R	0011 0001 0011 0000: W1 or single range 0011 0010 0011 0000: W2
@ + 12	Ticket number	N	X	X	R	
@ + 14	Number of selected channel	N	X	X	R	1: channel A 2: channel B 3: channel AB
@ + 15	Number of channel to be selected	N	-	X	R/W	
@ + 16	Message	AN	X	X	R/W	Byte 1 Byte 2 Byte 3 Byte 4 Byte 5 Byte 6 Bytes 1 to 5 are displayed
@ + 19	User function	N	-	X	R/W	
@ + 20	Date	-	-	-	-	Not available in Current Data see: <i>Printed Data.</i>
@ + 24	Time	-	-	-	-	
@ + 26	Stored tare (under n° 0)	N	X	X	R/W	
@ + 28	Decimal point position in stored tare	I	X	X	R/W	xxxx xxxx 0000 0010: decimal point at position 2 (2 digits behind decimal point)
@ + 29	Weight unit of stored tare	AN	X	X	R/W	27495: "kg" 8295 : "g"
@ + 30	DSD identifier (DSD identification number and channel number)	N	X	X	R	1: channel A or single channel 2: channel B 3: channel AB
@ + 31	DSD record number	Nnp				from: "1" to : "65535"
Data for all functions						
@ + 32	Number of weighings in batch	N	-	X	R	
@ + 34	Total of weighings of batch	N	-	X	R	
Specific data for counting function						
@ + 36	Number of pieces being weighed	N	X	X	R	
@ + 38	Number of samples	N	X	X	R	
@ + 40	Piece unit weight	N	X*	X	R/W	*: Read only for I200 B
@ + 42	Decimal point position in unit weight	N	X*	X	R/W	xxxx xxxx 0000 0010: decimal point at position 2 (2 digits behind the dec. point) *: "Read only for I200 B"
@ + 43	Weight unit of piece unit weight	AN	-	X	R/W	27495: "kg" 8295 : "g"

Address	Functional mode	Type	Used in		Access	Remark
			I200 B	I200 M		
Supplementary data for counting function (with tolerance check)						
@ + 44	High tolerance	N	-	X	R/W	
@ + 46	Low tolerance	N	-	X	R/W	
@ + 48	Target value for tolerance	N	-	X	R/W	
@ + 50	Error on tolerance check	N	-	X	R	
@ + 52		AN	-	X	R	
@ + 53		N	-	X	R	
@ + 55		N	-	X	R	
Specific data for tolerance check function						
@ + 57	High tolerance	Nhr	-	X	R/W	
@ + 59	Low tolerance	Nhr	-	X	R/W	
@ + 61	Target value for tolerance	Nhr	-	X	R/W	
@ + 63	Error on tolerance check	Nhr	-	X	R	
@ + 52	Result of tolerance check	AN	-	X	R	
@ + 53	Number of weighing over High tolerance	N	-	X	R	
@ + 55	Number of weighing below Low tolerance	N	-	X	R	
Specific data for formula weighing function						
@ + 65	Target value for formula weighing	Nhr	-	X	R/W	
@ + 67	Intermediary net weight	Nhr	-	X	R	
@ + 69	Percentage	AN	-	X	R	
@ + 71	Type of formula weighing	AN	-	X	R	
Specific data for calculation function						
@ + 74	Value of the calculation factor	N	-	X	R/W	
@ + 76	Calculated value	N	-	X	R	
@ + 78	Calculating operator	AN	-	X	R	
@ + 79	Reserved					

Address	Functional mode	Type	Used in		Access	Remark
			I200 B	I200 M		
PRINTED DATA:						
@ +80	Printed data / DSD	I	X	X	R	0xxx xxxx xxxx xxxx: Printed or recorded data not available 1xxx xxx0: Printed data available 1xxx xxx0: Recorded DSD data available
@ + 81	Gross weight	P	X	X	R	
@ + 83	Tare weight	P	X	X	R	
@ + 85	Net weight	P	X	X	R	
@ + 87	Status	S	X	X	R	As for A+ protocol
@ + 89	Status of weighing range	I	X	X	R	0011 0001 0011 0000: W1 or single range 0011 0010 0011 0000: W2
@ + 90	Ticket number	N	X	X	R	
@ + 92	Number of selected channel	N	X	X	R	1: channel A 2: channel B 3: channel AB
@ + 93	Number of channel to be selected	N	-	X	R	
@ + 94	Message	AN	X	X	R	Byte 1 Byte 2 Byte 3 Byte 4 Byte 5 Byte 6 Bytes 1 to 5 are displayed
@ + 97	User function	N	-	X	R	
@ + 98	Date	-	-	-	-	
@ + 102	Time	-	-	-	-	
@ + 104	Stored tare (under n° 0)	N	X	X	R	
@ + 106	Decimal point position in stored tare	I	X	X	R	xxxx xxxx 0000 0010: decimal point at position 2 (2 digits behind decimal point)
@ + 107	Weight unit of stored tare	AN	X	X	R	27495: "kg" 8295 : "g"
@ + 108	DSD identifier (DSD identification number and channel number)	N	X	X	R	1: channel A or single channel 2: channel B 3: channel AB
@ + 109	DSD record number	Nnp				from: "1" to : "65535"
Data for all functions						
@ + 110	Number of weighings in batch	N	-	X	R	
@ + 112	Total of weighings of batch	N	-	X	R	
Specific data for counting function						
@ + 114	Number of pieces being weighed	N	X	X	R	
@ + 116	Number of samples	N	X	X	R	
@ + 118	Piece unit weight	N	X*	X	R	*: Read only for I200 B
@ + 120	Decimal point position in unit weight	N	X*	X	R	xxxx xxxx 0000 0010: decimal point at position 2 (2 digits behind the dec. point) *: "Read only for I200 B"
@ + 121	Weight unit of piece unit weight	AN	-	X	R	27495: "kg" 8295 : "g"

Address	Functional mode	Type	Used in		Access	Remark
			I200 B	I200 M		
Supplementary data for counting function (with tolerance check)						
@ + 122	High tolerance	N	-	X	R	
@ + 124	Low tolerance	N	-	X	R	
@ + 126	Target value for tolerance	N	-	X	R	
@ + 128	Error on tolerance check	N	-	X	R	
@ + 130	Result of tolerance check	AN	-	X	R	
@ + 131	Number of weighing over High tolerance	N	-	X	R	
@ + 133	Number of weighing below Low tolerance	N	-	X	R	
Specific data for tolerance check function						
@ + 135	High tolerance	Nhr	-	X	R	
@ + 137	Low tolerance	Nhr	-	X	R	
@ + 139	Target value for tolerance	Nhr	-	X	R	
@ + 141	Error on tolerance check	Nhr	-	X	R	
@ + 130	Result of tolerance check	AN	-	X	R	
@ + 131	Number of weighing over High tolerance	N	-	X	R	
@ + 133	Number of weighing below Low tolerance	N	-	X	R	
Specific data for formula weighing function						
@ + 143	Target value for formula weighing	Nhr	-	X	R	
@ + 145	Intermediary net weight	Nhr	-	X	R	
@ + 147	Percentage	AN	-	X	R	
@ + 149	Type of formula weighing	AN	-	X	R	
Specific data for calculation function						
@ + 152	Value of the calculation factor	N	-	X	R	
@ + 154	Calculated value	N	-	X	R	
@ + 156	Calculating operator	AN	-	X	R	
@ + 157	Reserved					

 **Commands**

Address	Functional mode	Used in		Access	Remark
		I200 B	I200 M		
@ + 158	Commands	X	X	R/W	0xxx xxxx xxxx xxxx: Report not available 1xxx xxxx xxxx xxxx: Report available
@ + 159	Zeroing request	X	X	R/W	
@ + 160	Switch to weighing range W2	X	X	R/W	
@ + 161	Display High Resolution	X	X	R/W	
@ + 162	Semi-automatic taring	X	X	R/W	
@ + 163	Gross weight recall	X	X	R/W	
@ + 164	Print request	X	X	R/W	
@ + 165	Use stored tare	X	X	R/W	
@ + 166	Display block n° 11	X	X	R/W	
@ + 167	Change measuring channel	X	X	R/W	
@ + 168	Accept batch	-	X	R/W	
@ + 169	End of batch	-	X	R/W	
@ + 170	Cancel batch	-	X	R/W	
@ + 171	DSD recording request	X	X	R/W	
@ + 172	Reserved				



After execution of the last command, the status of all previous commands is deleted.



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