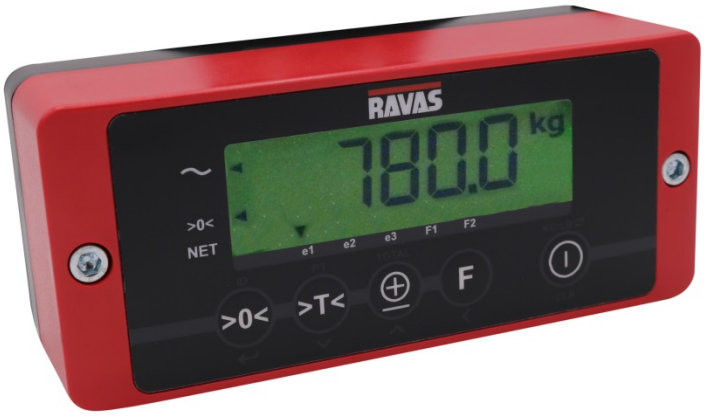
RAVAS ASCII PROTOCOL
INDICATOR 3200



Contents

RAVAS ASCII PROTOCOL

The indicator 3200 offers the possibility to communicate bi-directional with a PC or other hardware devices which can handle simple ASCII commands. (For activation of this application setting, please contact your scale dealer.)

Transfer Protocol:

Baudrate- 600 to 19200 (default = 9600)
Databits- 7 or 8 (default = 8)
Stopbits- 1 or 2 (default = 1)
Parity- odd/even/none (default = none)
Handshake-none

*ASCII commands**[2]

ASCII command	Response string	Operation
SZ<CR>	OK<CR>/ERR<CR>	Set zero value
RZ<CR>	OK<CR>/ERR<CR>	Reset zero value
SP<value><CR>*[1]	OK<CR>/ERR<CR>	Set preset tare value
RP<CR>	OK<CR>/ERR<CR>	Reset preset tare
RT<CR>	OK<CR>/ERR<CR>	Reset tare
ST<CR>	OK<CR>/ERR<CR>	Set tare
SR<CR>	OK<CR>/ERR<CR>	Set tare (also with a previous tare) *[3]
SG<CR>	G+0001.0<CR>	Send gross mode (continuously)
SN<CR>	N+0001.0<CR>	Send net mode (continuously)
SW<CR>	W+00010+000103805<CR>*[2]	Send weights mode (continuously)
SA<CR>	A;+000.0;+000.0<CR>	Send angle positions X and Y (continuously)
GP<CR>	P+0001.0<CR>	Get preset tare
GT<CR>	T+0001.0<CR>	Get tare
GG<CR>	G+0001.0<CR>	Get gross
GN<CR>	N+0001.0<CR>	Get net
GW<CR>	W+00010+000103805<CR>	Get net, gross, status and checksum
GA<CR>	A;+000.0;+000.0<CR>	Get angle positions X and Y
GE<CR>	See chapter GE command	Read out of last 50 messages
GI<CR>	See chapter GI command	Read out of general info and parameters
GS<CR>	See chapter GS command	Read out of status and calibration
GL<CR>	See chapter GL command	Read out total log file
RE<CR>	See chapter RE command	Reset the ERRORs database (passcode required)
MN<CR>	N+0001.0<CR>	Get net, wait for no motion
MG<CR>	G+0001.0<CR>	Get gross, wait for no motion
RS<CR>	S+0001.0;-01-<CR>	Send and Reset Subtotal,
AN<CR>	N+0001.0;0001<CR>	Get net and alibi nr., wait for no motion
AG<CR>	G+0001.0;0001<CR>	Get gross and alibi nr., wait for no motion

*1: If the scale is working in ranges with a number after the decimal point, the preset tare value should be given in accordingly. If the scale is working in ranges equal to or higher than 1 kg/lb, then the value should be entered with the decimal point at the end of the value. E.g. ranges 0.1/0.2/0.5 >> SP0001.5<CR>, ranges 1/2/5/10/20/50 >> SP00150.<CR>

*2: If an error state is reached (like overload or underload) the SW-command should be renewed after the error state has been resolved.

*3: This is a special tare command which is mainly used with order picking applications. It cancels the previous tare and sets a new tare value which includes the old tare value and the added net weight. If the weight does not get stable within 5 seconds an error will be generated.

Special commands ‘GW’ and ‘SW’

The ‘GW’ and ‘SW’ are commands with checksums. With these commands it is possible to get net, gross and status data. The response string does not have the decimal point information. The ‘SW’ update rate is slower than the other commands.

Structure of the response string:

W	+00010	+00010	38	05	<CR>
Data ID	Net value	Gross value	Status(hex)	Checksum	End of string

Status bits:

Bit number	Bit definition	Status ‘0’	Status ‘1’
7 (MSB)	Indicator error	No errors	Indicator error
6	Tare active	No tare active	Tare active
5	Zero corrected	No zero correction	Zero corrected
4	Weight stable	Weight unstable	Weight stable
3	Within zero range	Out of zero range	Within zero range
2	Above max load	Under max load	Above max load
1	Setpoint 2 active	Setpoint 1 not active	Setpoint 1 active
0 (LSB)	Setpoint 1 active	Setpoint 2 not active	Setpoint 2 active

Example:
38 (hex) = 0011 1000(binair)
bit 5, zero corrected
bit 4, weight stable
bit 3, within zero range

Calculating the checksum:

The checksum is the inverted sum of all ASCII characters in the response string previous to the checksum.
Example:

Response string = W+00010+000103805<CR>

Add all hex values of the characters in the string.
[W]+[+]+[0]+[0]+[0]+[1]+[0]+[+]+[0]+[0]+[0]+[1]+[0]+[3]+[8]
Total is 2FA(hex)
Remove the most significant digit, result is FA(hex)
Invert the hexadecimal value, result is 05(hex)
Convert the hexadecimal value to characters, result is [0][5]

Special commands ‘AN’ and ‘AG’

With these special commands an extra value is sent together with the weight; the alibi number. It consists of 4 digits and is also saved in the indicators alibi memory. The number increases with every stored weighing.

The command works as follows:

- PC or terminal sends out the command AN or AG for demanding the net or gross weight respectively.
- Indicator waits for the weight to become stable after which it returns the demanded weight accompanied by the alibi number under which this weighing was stored in the alibi memory of the indicator. The indicator display will show the weight and alibi no. stored 3x repeating after which it returns to the weighing mode. The subtotal is added in the background.
- Format of the return string is: N+0001.0;0001<CR> or G+0001.0;0001<CR>

N = Net indicator
+ = sign indicator
0001.0 = weight value with decimal point
; = semi-colon separator sign
0001 = alibi number
<CR> = ending sign

ⓘ NOTE: in case of an error in the display the PC will receive the following strings instead of a weight:

Error display*1	Error Response string	**Meaning**
Overload	ooooooo<CR>	Above full scale
Underload	=======<CR>	Gross below zero range
Underload	=======<CR>	Underload on AD converter
Overload	ooooooo<CR>	Overload on AD converter
--	=======<CR>	out of level

*1: All error messages can only be resolved at the weighing system.

Special command ‘GE’

With this command the last 50 errors of P93 can be read out. In these 50 errors only the most important user errors, like tip-loading or side-loading handling errors are taken into consideration. Other errors are summed up and will follow after the 50 errors have been sent.
The transmission will be completed by sending out a form feed <FF>.

<table>
<tr><th>Command</th><th>Function</th><th>Response indicator</th></tr>
<tr><td>GE<CR>
ASCII dec. value G = 071
ASCII dec. value E = 069</td><td>Get Errors: Retrieve the last 50 messages and the number of times that a message has been displayed</td><td>
<table>
<tr><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th></tr>
<tr><td>0</td><td>1</td><td>;</td><td>0</td><td>2</td><td>;</td><td>date</td><td>;</td><td>time</td><td></td></tr>
<tr><td>0</td><td>2</td><td>;</td><td>7</td><td>1</td><td>;</td><td>date</td><td>;</td><td>time</td><td></td></tr>
<tr><td>0</td><td>3</td><td>;</td><td>0</td><td>1</td><td>;</td><td>date</td><td>;</td><td>time</td><td></td></tr>
<tr><td>5</td><td>0</td><td>;</td><td>7</td><td>1</td><td>;</td><td>date</td><td>;</td><td>time</td><td></td></tr>
<tr><td>|</td><td>|</td><td>|</td><td>|</td><td>|</td><td colspan="5">etcetera</td></tr>
<tr><td>0</td><td>4</td><td>;</td><td>0</td><td>0</td><td>0</td><td>5</td><td></td><td></td><td></td></tr>
<tr><td>7</td><td>2</td><td>;</td><td>0</td><td>0</td><td>2</td><td>5</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>ASCII dec. value <FF> = 012</td><td>A sequence of data rows follows until the complete register is read. The data dump is closed by a Form Feed <FF></td><td>
01;02;030218;1254
02;71;230218;1123
03;71;230218;1435
01;0000
02;0001
03;0000
04;0001
06;0001
08;0000
09;0000
10;0000
21;0050
22;0046
25;0000
23;0016
24;0014
26;0000
40;0773
41;0005
42;0000
43;0000
44;0000
45;0000
46;0000
60;0000
61;0002
62;0001
71;0002
72;0000
92;0009
98;0000
99;0000
80;0043
81;0004
<FF>
</td></tr>
</table>

Explanation data lines

01;02;030218;1254 =

0	1	;	7	1	date	;	time
register no.		Separation sign	message no. displayed		Date in format ddmmyy	Separation sign	Time in format hhmm

The first retrieved from the database of P93 was the “71” which stands for tip-load handling.

72;0025 =

7	2	;	0	0	2	5
message no.		Separation sign	Number of times displayed			

‘72’, which stands for side-load handling, was registered 25 times since the unit has been put in the field.

List of messages 3200 indicating device

function	Log Nummer	Disp Txt
LOAD CELL SIGNAL UNSTABLE	1	"Err01"*
IFORKS OVERLOADED ON MAXIMUM CAPACITY	2	"Err02"*
TARA WHILE NEGATIVE WEIGHT	3	"Err03"
ZERO OUT OF RANGE	4	"Err04"
IFORKS OVERFLOW ADC	6	"Err06"*
CALIBRATION OUT OF RANGE NEGATIVE	8	"Err08"
CALIBRATION OUT OF RANGE SIGNAL TOO LOW	9	"Err09"
CALIBRATION POINT LOWER THAN PREVIOUS POINT	10	"Err10"
COMMUNICATION FAILURE FORK 1	21	"ErrF1"
COMMUNICATION FAILURE FORK 2	22	"ErrF2"
COMMUNICATION FORK 1 TOO FEW SAMPLES received	23	"Er_F1"
COMMUNICATION FORK 2 TOO FEW SAMPLES received	24	"Er_F2"
COMMUNICATION FAILURE 1AD	25	“ErrAd”
COMMUNICATION 1AD TOO FEW SAMPLES received	26	“Er_Ad”
LEVEL MAX	40	"Err L"
OIML restriction while printing	41	"OInnL"
NTEP restriction while printing	42	"ntEP"
OIML restriction while calibration	43	"OInnL"
NTEP restriction while calibration	44	"ntEP"
CALIBRATION NOT ALLOWED PROTECTED BY JUMPER	45	"Cal-J"
AUDITTRAIL OUT OF RANGE	46	"SCall"
LOW BAT INDICATOR	60	
LOW BAT FORK 1	61	F1
LOW BAT FORK 2	62	F2
OFF CENTRE LOAD TIP (only active when P13 ≠ no)	71	"tiP"*

OFF CENTRE LOAD SIDE (only active when P13 ≠ no)	72	"SidE"*
ERROR in RDC transfer	80	“trErr”
RDC buffer full	81	“FULL”
GROSS NEGATIVE UNDERLOAD	92	"-----"
CALIBRATION POINT MUST BE HIGHER THAN PREVIOUS ONE	98	"Err98"
ZEROING WHILE UNIT SWITCHED	99	"Err99"

*: these errors are registered only in the P93 database.

Special command ‘RE’

With this command the list of errors can be reset to none. For this a password is required.

Command	Function	Response indicator
RE<CR> ASCII dec. value G = 082 ASCII dec. value E = 069	Reset Errors: Reset the error messages	1 2 3 4 5 6 7 8 9 10 P A S S W O R D ?
5220 + ↵	Password and Enter	O K

Special command ‘GI’

With this command the firmware versions of all the µP’s can be read out and all the settings of the parameters will be listed, after which the transfer is ended by sending the form feed command <FF>.

<table>
<tr><th>Command</th><th>Function</th><th>Response indicator</th></tr>
<tr><td>GI<CR>
ASCII dec. value G = 071
ASCII dec. value I = 073</td><td>Get Info: Read out the general data as firmware versions and parameter settings</td><td>
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr>
<tr><td>S</td><td>T</td><td>M</td><td>;</td><td>V</td><td>0</td><td>.</td><td>6</td><td></td><td></td></tr>
<tr><td>N</td><td>R</td><td>F</td><td>M</td><td>;</td><td>V</td><td>0</td><td>.</td><td>2</td><td></td></tr>
<tr><td>P</td><td>0</td><td>1</td><td>;</td><td>0</td><td>1</td><td></td><td></td><td></td><td></td></tr>
<tr><td>|</td><td>|</td><td>|</td><td>|</td><td>|</td><td colspan="5">Etcetera</td></tr>
<tr><td>P</td><td>9</td><td>9</td><td>;</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>ASCII dec. value <FF> = 012</td><td>A sequence of data rows follows until the complete register is read. The data dump is closed by a Form Feed <FF></td><td>
STM;V0.22
NRFM;V0.3_t
NRFS;V0.7
NRFT1;V0.7
NRFT2;V0.7
MacS;179DBD
Mac1;1E399CD
Mac2;7C82C7
P001;1
P002;5
P003;10
P004;1000
P005;02500
P006;0.5
P007;3
P008;0.25
P009;002
P010;002
P012;nO
P013;nO
P015;nO
P017;0
P018;9.812
P019;EU
P020;9600
P021;8_n_1
P022;Cr
P025;9
P026;4
P028;StAnd
P030;9600
P031;8_n_1
P032;Cr
P035;6
P036;4
P040;nO
P041;1
P042;1.00
P043;1.00
P044;1.00
P045;1.00
P046;3
P048;5.0
P049;002
P060;12.0
P061;02
P062;3.7
P063;120
P064;08
P068;00000
</td></tr>
</table>

		P070;YES **P071;100** **P072;015** **P080;0** **P081;1.000** **P082;1.000** **P083;1.000** **P084;1.000** **P085;1E39Cd-7C82C7** **P096;1** **P098;001** **P122;00** **P124;01** **P125;20** **P126;100** <FF>

Explanation data lines

STM;V0.22 =

S	T	M	;	V	0	.	2	2
main processor STM			Separation sign	Firmware version				

The firmware version of the main processor of this device is V0.22.
NRFM;V0.3_t = Firmware version of the BLE-Master processor of the iForks receiver module is V0.3_t.
NRFS;V0.7 = Firmware version of the BLE-Slave processor on the main board is V0.7.
NRFT1;V0.7 = Firmware version of the BLE processor of the iForks transmitter module 1 is V0.7.
NRFT2;V0.7 = Firmware version of the BLE processor of the iForks transmitter module 2 is V0.7.

M	a	c	S	;	A	B	C	1	2	3
Mac address Bluetooth Slave (fixed on mainboard)				Separation sign	Mac address					

The Mac addresses of the Bluetooth modules are given.
MacS; ABC123 = Mac address of the Bluetooth Slave (placed directly on the main board).
Mac1; ABC123 = Mac address of the Bluetooth Fork1 (placed on the iForks transmitter module 1).
Mac2; ABC123 = Mac address of the Bluetooth Fork2 (placed on the iForks transmitter module 2).

P01;01 =

P	0	1	;	0	1
Parameter no.			Separation sign	Setting of the parameter	

Parameter 01 was set on value 01 which stands for the start-up unit of the device. In this example that would be ‘kg’. For the complete parameter list please see the PI-3200 doc.

Special command ‘GS’

With this command the status of the device can be read out and information will be given about the calibration values and the last time a calibration and/or parameter setting had taken place. The data transfer will be ended with a form feed <FF>.

<table>
<tr><th>Command</th><th>Function</th><th>Response indicator</th></tr>
<tr><td>GS<CR>
ASCII dec. value G = 071
ASCII dec. value S = 083</td><td>Get Status: read out the status and calibration information of the device</td><td>
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr>
<tr><td>V</td><td>F</td><td>1</td><td>;</td><td>3</td><td>.</td><td>6</td><td>V</td><td></td><td></td></tr>
<tr><td>V</td><td>F</td><td>2</td><td>;</td><td>3</td><td>.</td><td>5</td><td>V</td><td></td><td></td></tr>
<tr><td>V</td><td>F</td><td>I</td><td>;</td><td>1</td><td>2</td><td>.</td><td>6</td><td>V</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>L</td><td>C</td><td>1</td><td>;</td><td>±</td><td>1</td><td>2</td><td>3</td><td>4</td><td></td></tr>
<tr><td>L</td><td>C</td><td>2</td><td>;</td><td>±</td><td>1</td><td>2</td><td>3</td><td>4</td><td></td></tr>
<tr><td>|</td><td>|</td><td>|</td><td>|</td><td>|</td><td colspan="5">Etcetera</td></tr>
<tr><td>G</td><td>S</td><td>3</td><td>;</td><td>±</td><td>1</td><td>2</td><td>3</td><td>4</td><td></td></tr>
</table>
</td></tr>
<tr><td>ASCII dec. value <FF> = 012</td><td>A sequence of data rows follows until the complete register is read. The data dump is closed by a Form Feed <FF></td><td>
VF1;4.0
VF2;4.0
VFI;13.2
W+00185;G-000.17
LC1;-0001066
LC2;-0001076
LC3;+0676794
LC4;-0001477
GS0;-0021;+0051;+1017
GSA0;+090.27;-090.00
GS1;-0019
GS2;+0053
GS3;+1019
GSC;+0750;+0.00000;+0.00000;+0.00000;+0.00000;+00.000000
CP0;-0001065;-0001074;-0001271;-0001470
CP1U;01500;+1029207;+1029207;+1029207;+1029207;00704.74
CP2U;00000;+0000000;+0000000;+0000000;+0000000;00000.00
CP3U;00000;+0000000;+0000000;+0000000;+0000000;00000.00
CP1D;00000;+0000000;+0000000;+0000000;+0000000;00000.00
CP2D;00000;+0000000;+0000000;+0000000;+0000000;00000.00
CP3D;00000;+0000000;+0000000;+0000000;+0000000;00000.00
CorA;01.0000
CorB;01.0000
CorC;01.0000
CorD;01.0000
CF;77;120218;1315
CA;02;120218;1315
<FF>
</td></tr>
</table>

Explanation data lines

VF1;4.0V =
Supply voltage of Fork1 is given in Volts.
VF2;4.0V =
Supply voltage of Fork2 is given in Volts.
VFI;13.2V =
Supply voltage of the indicator is given in Volts.

W±12345;G±123.12 =
The actual displayed weight in basic units (P01 depending) and present level in grades(°) are given.

LC1;±1234567 =
The actual number of AD counts of load cell input 1 is given.
LC2;±1234567 =
The actual number of AD counts of load cell input 2 is given.
LC3;±1234567 =
The actual number of AD counts of load cell input 3 is given.
LC4;±1234567 =
The actual number of AD counts of load cell input 4 is given.

GS0;±XXXX;±YYYY;±ZZZZ =
The calibrated X,Y and Z values of the G-sensor (iFork) are given at zero degrees and zero load.
GSA0;±123.12;±123.12 =
The calibrated values of raw X and raw Y at 0 calibration of the CS001 correction sensor (1AD) are given.
GS1;±1234 =
The actual number of AD counts of G-sensor direction 1(X) is given.
GS2;±1234 =
The actual number of AD counts of G-sensor direction 2(Y) is given.
GS3;±1234 =
The actual number of AD counts of G-sensor direction 3(Z) is given.
GSC;±1000;±1.12345; ±1.12345; ±1.12345; ±1.12345;12.123456;
The used calibration weight, the compensation factors for P1, P2, P3 and P4 and the level offset are given in this order {Cal_Weight};{P1_Comp}, {P2_Comp}; {P3_Comp}; {P4_Comp};{Loffset_kg}.

CP0;±1234567; ±1234567;±1234567;±1234567 =
The AD counts of the 4 LC's at 0 kg of the original calibration are given. The first count is from LC-A, the second count is from LC-B etc.
CP1U;12345; ±1234567;±1234567;±1234567;±1234567;12345,12 =
The first calibration point up, the AD counts of the 4 LC's at the first calibration point and the gain factor are given.
CP2U;12345; ±1234567;±1234567;±1234567;±1234567;12345,12 =

The second calibration point up, the AD counts of the 4 LC's at this calibration point and the gain factor are given.
CP3U; 12345; ±1234567;±1234567;±1234567;±1234567;12345,12 =
The third calibration point up, the AD counts of the 4 LC's at this calibration point and the gain factor are given.
CP1D; 12345; ±1234567;±1234567;±1234567;±1234567;12345,12 =
The first calibration point down, the AD counts of the 4 LC's at this calibration point and the gain factor are given.
CP2D; 12345; ±1234567;±1234567;±1234567;±1234567;12345,12 =
The second calibration point down, the AD counts of the 4 LC's at this calibration point and the gain factor are given.
CP3D; 12345; ±1234567;±1234567;±1234567;±1234567;12345,12 =
The third calibration point down, the AD counts of the 4 LC's at this calibration point and the gain factor are given.

CorA;12.123 =
The correction factor at the original calibration for corner A is given
CorB; 12.123 =
The correction factor at the original calibration for corner B is given
CorC; 12.123 =
The correction factor at the original calibration for corner C is given
CorD; 12.123 =
The correction factor at the original calibration for corner D is given

CF;00;061017;1533 =
Present audit trail number for the parameter setting with the time stamp
CA;00;061017;1533 =
Present audit trail number for the calibration with the time stamp

Special command 'GL'

This command is used to retrieve all data of the commands 'GE', 'GI' and 'GS' combined in one dataflow without the form feeds in between but only a form feed at the end.

So the response would be the response at 'GE' minus the form feed, followed by the response at 'GI' minus the form feed, followed by the response at 'GS' with the form feed.