RAVAS ASCII PROTOCOL
INDICATOR 3200 and 5200

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RAVAS ASCII PROTOCOL

The indicators 3200/5200 offer 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 for wired connection over the RS232 port:

Baudrate- 9600
Databits- 8
Stopbits- 1
Parity- none
Handshake-none

Transfer Protocol for wireless connection over the BLE port:

Baudrate- 115200
Databits- 8
Stopbits- 1
Parity- none
Handshake-none

Setup for Servicing 3200 indicator

For using the Servicing Commands, the proper data protocol of the selected communication port of the indicator should be set. Please follow next instructions;

- Press the totalizing button (no. 3) for 12 seconds until the display shows [USEr]
- Press the totalizing button shortly. The display will show [SUP.]
- Press the enter button (no. 1 from the left) shortly to enter the Supervisor Menu. The display will show [00000] with the rightest digit blinking. For entering the supervisor mode, a password is required.
- Enter the password [05220] and press the enter button. The display will show [bLE] which stands for the Bluetooth port.
  If the communication needs to be handled over the wired RS232 port, you need to push the totalizing button shortly. Next proceed with the following steps;
- Press the enter button shortly to enter the Bluetooth (or RS232) port settings.

The displays default is [NonE] but it is possible that another data protocol has been set. In that case note down this and underlying settings so you will be able to restore the same settings after servicing. For going through these settings please check the Supervisor flow diagram at the back of this manual.
If the default value [NonE] is set proceed with following steps;

- Press the totalizing button shortly. The display will show [PC]
- Press the enter button shortly to enter the PC settings. The display will show [bidir]
- Press the enter button shortly to enter the PC settings. The display will shortly show [SEt] and next return to the main Supervisor menu [SUP.]
- Press the On/Off button (no.5 from the left) shortly to return to the weighing mode.

Setup for Servicing 5200 indicator

For using the Servicing Commands, the proper data protocol of the selected communication port of the indicator should be set. Please follow next instructions;

- Press the arrow down key twice.
- Press the settings key.
- Select “Service Menu.
- Enter the password [5220] and press the enter button.
- Select “Communication”.
- Select “BLT4.0 on-board”.
- Select “Info”.
  On the next page you will see the Bluetooth address of the module and whether it is connected or not to a device.

If you want to use the RS232 port for servicing, please follow next instructions;

- Press the arrow down key twice.
- Press the settings key.
- Select “Service Menu.
- Enter the password [5220] and press the enter button.
- Select “Communication”.
- Select “RS232 on-board”.
- Select “Protocol”.
- Select “PC”.
- Press “Enter”.
- Select for Stopbits [1], for Databits [8], for Parity [None] and for Baudrate [9600].

Press “Back” several times to return to the main screen.

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)
SL<CR>	See chapter SL command	Similar to SW but including errors
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>/ERR<CR>[*4]	Get net, wait for no motion
MG<CR>	G+0001.0<CR>/ERR<CR>[*4]	Get gross, wait for no motion
RS<CR>	S+0001.0;-01-<CR>	Send and Reset Subtotal,
AN<CR>[*5]	N+0001.0;0001<CR>/ERR<CR>[*4,6]	Get net and alibi nr., wait for no motion
AG<CR>[*5]	G+0001.0;0001<CR>/ERR<CR>[*4,6]	Get gross and alibi nr., wait for no motion
P85;123ABC;DEF456<CR>	See chapter P85 command	Set the iForkmodule BLEiD's

*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 active (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.

*4: In case the weight is not stable within 5 seconds, an error will be returned instead of the weight. Make sure the weight is stable and resend the command.
*5: The weight is automatically added to the total of the indicator and if a printer is attached it will automatically send the print command.
If the total is not used it will be reset automatically as soon as the total weight reaches the value 99999 or the sequence number reaches 99, whichever comes first.
*6: If the alibi number reaches the value 9999, it will start again with 0001 and overwrite the first dataset according FIFO.

SERVICE commands

SERVICE command	Response string	Operation
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)
GA<CR>	A;+000.0;+000.0<CR>	Get angle positions X and Y
SA<CR>	A;+000.0;+000.0<CR>	Send angle positions X and Y (continuously)

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 respons string doesn’t 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 send along 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 a maximum of 5 seconds 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.

(NOTE: In case of no stable weight for more than 5 seconds an error will be send instead of the weight.)

- 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

Errors returned to PC

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**
3200	5200	3200	5200	
Err02	Forks overloaded	=======<CR>	N=======<CR>	Above full scale
Err06	Load cell overloaded	=======<CR>	N=======<CR>	Overload on AD converter
-----	Not allowed	ERR<CR>	ERR<CR>	Gross below zero range
-----	Underload	ERR<CR>	N-- - --<CR>	Underload on AD converter
Err_L	Not level	=======<CR>	N-- - --<CR>	out of level
Side	Load not centered	ERR<CR>	N-- - --<CR>	Side load error
Tip	Load not centered	ERR<CR>	N-- - --<CR>*2	Tip load error

*1: All error messages can only be resolved at the weighing system.
*2: Depending on the given command it will return a “G” for gross or a “N” for net.

Special command ‘P85’ (only for 3200 indicator used for servicing)

With this command you can set the BLEiD’s of the forkmodules by PC connection. The BLEiD is printed on the label which is placed on the forkmodule. (only software version 1.01 and later)

Special command ‘GE’

With this command the last 50 errors 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. In the table underneath these are marked with an asterisk “*”. 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>.

Example of Error logging:

Indicator 3200

```
01;71;170418;1400
02;71;300318;1232
03;71;300318;1232
04;71;300318;1448
05;02;130418;1409
06;02;130418;1417
07;02;130418;1419
08;02;130418;1419
09;02;130418;1419
10;02;130418;1419
11;71;130418;1613
12;71;130418;1634
13;02;130418;1728
14;71;130418;1730
15;71;170418;0836
16;71;170418;0854
17;71;170418;1359
18;71;170418;1400
01;0000
02;0007
03;0000
04;0001
06;0000
08;0000
09;0000
10;0000
21;0066
22;0059
23;0051
24;0052
25;0000
26;0000
40;0056
41;0002
42;0000
43;0000
44;0001
45;0001
46;0002
60;0000
61;0000
62;0000
71;0011
72;0000
80;0010
81;0001
92;0011
98;0000
99;0000
<FF>
```

Indicator 5200

```
01;02;110220;1206
02;01;070220;1414
02;01
03;03
04;01
21;10
22;12
23;20
24;22
40;21
92;04
01;02
41;17
<FF>
```

Explanation data lines

01;71;170418;1400 =

0	1	;	7	1	;	1	7	0	4	1	8	;	1	4	0	0
register counter.		Separation sign	error no. displayed		Sep. sign	D	D	M	M	Y	Y	Sep. sign	H	H	M	M

The first error retrieved from the database was registered on the date 17th April 2018 at 14:00h and was error “71” which stands for unsafe tip-load handling.

71;0011 =

7	1	;	0	0	1	1
error no.		Separation sign	Number of times displayed			

‘71’ which stands for tip-load handling, was registered 11 times since the unit has been put in the field.

Error list indicator 3200

function	Log No.	Displayed Text
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"
LOW BATTERY FORK 1 CRITICAL	11	“LoBAF”
LOW BATTERY FORK 2 CRITICAL	12	“LoBAF”
LOW BATTERY INDICATOR CRITICAL	13	“LoBAt”
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”
ERROR WITH CORRECTION SENSOR not found	39	“ErrCS”
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 *1	46	"SCall"
LOW BAT INDICATOR	60	
LOW BAT FORK 1 (only active with wireless units)	61	F1 

LOW BAT FORK 2 (only active with wireless units)	62	F2
OFF CENTRE LOAD TIP (only active with wireless units)	71	"tiP" *
OFF CENTRE LOAD SIDE (only active with wireless units)	72	"SidE" *
ERROR in RDC transfer (only active whit RDC-a protocol)	80	“trErr”
RDC buffer full (only active whit RDC-a protocol)	81	“FULL”
ERROR EEPROM	82	“ErrEP”
GROSS NEGATIVE UNDERLOAD	92	"-----"
CALIBRATION POINT MUST BE HIGHER THAN PREVIOUS ONE	98	"Err98"
ZEROING/TARING or PRINTING ACTION WHILE UNIT SWITCHED	99	"Err99"

*: These errors are registered in the P93 database with time and date stamp. All other errors will be shown as the number of times that they occurred and are only visible via the GE or GL command.

*1: This error will only occur when the system has been calibrated (CA_)or parameters (CF_) have been changed more than 99 times. It concerns only legal for trade scales. For non-legal for trade scales this message will never occur. In that case the audit trail numbers will return to 00.

In case of this error message a service visit from a RAVAS employee or RAVAS agent will always be needed to check the unit and if needed recalibrate and re-stamp the scale.

A password [20399] is required for this.

Error list indicator 5200

function	Log No.	Displayed Text
ERROR NOT STABLE	1	“Weight not stable”
IFORKS OVERLOADED ON MAXIMUM CAPACITY	2	"Forks overloaded" *
TARA WHILE NEGATIVE WEIGHT	3	"Not allowed"
ZERO OUT OF RANGE	4	"Out of zero range"
IFORKS OVERFLOW ADC	6	"Load cell overloaded" *
CALIBRATION OUT OF RANGE NEGATIVE	8	"Negative weight"
CALIBRATION OUT OF RANGE SIGNAL TOO LOW	9	"LC signal too low"
CALIBRATION POINT LOWER THAN PREVIOUS POINT	10	"Cal. point too low"
LOW BATTERY FORK 1 CRITICAL	11	“Charge battery F1!”
LOW BATTERY FORK 2 CRITICAL	12	“Charge battery F2!”
LOW BATTERY INDICATOR CRITICAL	13	“Charge battery ind.!”
COMMUNICATION FAILURE FORK 1	21	"No signal F1"
COMMUNICATION FAILURE FORK 2	22	"No signal F2"
COMMUNICATION FORK 1 TOO FEW SAMPLES received	23	"Bad signal F1"
COMMUNICATION FORK 2 TOO FEW SAMPLES received	24	"Bad signal F2"
LEVEL MAX	40	"Not level"
OIML restriction while printing	41	"OIML not alllowed"
NTEP restriction while printing	42	"NTEP not allowed"
OIML restriction while calibration	43	"OIML Cal. locked"
NTEP restriction while calibration	44	"NTEP Cal. locked"
LOW BAT INDICATOR	60	“Low battery indicator”
LOW BAT FORK 1 (only active with wireless units)	61	“Low battery F1”
LOW BAT FORK 2 (only active with wireless units)	62	“Low battery F2”

OFF CENTRE LOAD TIP (only active with wireless units)	71	"Load not centered" *
OFF CENTRE LOAD SIDE LEFT (only active with wireless units)	72	" Load not centered " *
OFF CENTRE LOAD SIDE RIGHT (only active with wireless units)	73	" Load not centered " *
ERROR in RDC transfer (only active whit RDC-a protocol)	80	“trErr”
RDC buffer full (only active whit RDC-a protocol)	81	“FULL”
ERROR EEPROM	82	“ErrEP”
GROSS NEGATIVE UNDERLOAD	92	"Underload"
ERROR FRAM	97	“FRAM error”
ZEROING/TARING or PRINTING ACTION WHILE UNIT SWITCHED	99	"Only in default units"
ERROR CONFIG	100	“Configuration error”
ERROR VERSION F1	101	“Wrong firmware F1”
ERROR VERSION F2	102	“Wrong firmware F2”
ERROR BARO TEMP	103	“Height sensor error”
OTHER BARO DISAGREE	104	“Height sensor error”
OTHER GSENSOR DISAGREE	105	“G-sensor error”
OTHER ACTION NOT PERMITTED IN CURRENT STATE	106	“Not allowed”
OTHER UNINSPECTED DATA RECEIVED	107	“Data mismatch”
OTHER TAC INVALID	108	“Invalid TAC code”
OTHER CAL INVALID	109	“Invalid CAL code”
OTHER ACTION NOT AVAILABLE	110	“Retry”
OTHER TARE ALREADY ACTIVE	111	“Tare already active”
OTHER PRESET TARE INVALID	112	“Preset tare invalid”
OTHER INVALID INPUT	113	“Invalid input”
OTHER CALIBRATION	114	“Calibration error”
OTHER IND POWER TOO LOW	115	“Ind. Power too low!!”

*: These errors are registered in the database with time and date stamp. All other errors will be shown as the number of times that they occurred and are only visible via the GE or GL command.

Special command ‘RE’

With this command the list of errors can be reset to none. For this a password [5220<CR>] is required. All errors in the database of the indicator will be erased.
Only use this option if you want to start out with a fresh unit **after** a service.
Note that there is a difference in the way the response is handled between the indicator 3200 and indicator 5200. This is due to the fact that the 5200 has much more possible errors than the 3200 which would put a big pressure on the 5200’s database if we would print them all each time. Therefore the 5200 only prints the recorded errors.

Example routine:

Command	Reply indicator	
	3200	5200
RE <CR>	PASSWORD?	PASSWORD?
5220 <CR>	OK	OK
GE <CR>	01;0000 02;0000 03;0000 04;0000	<FF>

	06;0000 08;0000 09;0000 10;0000 21;0000 22;0000 23;0000 24;0000 25;0000 26;0000 40;0000 41;0000 42;0000 43;0000 44;0000 45;0000 46;0000 60;0000 61;0000 62;0000 71;0000 72;0000 80;0000 81;0000 92;0000 98;0000 99;0000 <FF>	

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>.

Example of information logging indicator 3200:

```
STM;V0.21          (firmware release for the STM µ-processor on the main board)
NRFM;V0.3_t        (firmware release for the Nordic chip on the receiver option board)
NRFS;V0.6          (firmware release for the Nordic chip on the main board)
NRFT1;V0.7         (firmware release for the Nordic chip on the transmitter board F1)
NRFT2;V0.7         (firmware release for the Nordic chip on the transmitter board F2)
MacS;179DBD        (UID address for the Nordic chip on the main board)
Mac1;1E39CD        (UID address for the Nordic chip on the transmitter board F1)
Mac2;7C82C7        (UID address for the Nordic chip on the transmitter board F2)
P001;1             (setting of the start-up units)
P002;5             (setting of the smallest greaduation)
P003;10            (setting of the biggest graduation)
P004;1000          (setting of the maximum number of divisions)
P005;02500         (setting of the maximum capacity)
P006;0.5           (setting of the motion detection)
P007;3             (setting of the filter size)
P008;0.25          (setting of the zero track)
P009;002           (setting of the negative zero range)
P010;002           (setting of the positive zero range)
P012;nO            (setting of the power on zero mode)
P013;oinmL         (setting of the legal for trade version)
P015;nO            (setting of units switch activity)
P017;0             (setting of the Data Protocol for BLE in the SUP. menu)
P018;9.812         (setting of the gravity value working area)
P019;EU            (setting of the date/time format)
P020;9600          (setting of the baudrate for RS232 connection main board)
P021;8_n_1         (setting of the interface protocol for RS232 connection main board)
P023;05            (setting for the transmission rate of the remote protocol)
P024;Cr            (setting of the end character for RS232 connection main board)
P025;4             (setting of the Data Protocol for RS232 connection main board)
P026;4             (setting of the no. of LF for the RS232 connection main board)
P028;StAnd         (setting of the printout format)
P030;9600          (setting of the baudrate for COM3 connection main board)
P031;8_n_1         (setting of the interface protocol for COM3 connection main board)
P032;Cr            (setting of the end character for COM3 connection main board)
P035;6             (setting of the Data Protocol for COM3 connection main board)
P036;4             (setting of the no. of LF for the COM3 connection main board)
P040;G-SrA         (setting of leveling device mode)
P041;1             (setting of the delay time for the leveling device)
P042;1.00          (setting of the correction factor for +X direction leveling device)
P043;1.00          (setting of the correction factor for -X direction leveling device)
P044;1.00          (setting of the correction factor for +Y direction leveling device)
P045;1.00          (setting of the correction factor for -Y direction leveling device)
P046;3             (setting of the filter size for the leveling device)
P047;5.0           (setting of the switch off angle for the X direction lev. device)
P048;5.0           (setting of the switch off angle for the Y direction lev. device)
P049;002           (setting of the maximum allowed underload)
P060;FLt           (setting of the battery used for the indicator)
P061;02            (setting of the low battery switch off time for the indicator)
P062;3.7           (setting of the battery supply for the transmitter modules)
P063;120           (setting of the auto shut off time for the transmitter modules)
P064;08            (setting of the low batt. switch off time for the transm. Modules)
P068;00000         (setting not implemented yet > future use)
P070;YES           (setting of the clear tare mode)
P071;100           (setting of the maximum allowed tip-load)
P072;015           (setting of the maximum allowed side-load)
P080;0             (setting of the corner calibration enabling)
P081;0.000         (setting of the corner correction factor for load cell A)
```

```
P082;0.000          (setting of the corner correction factor for load cell B)
P083;0.000          (setting of the corner correction factor for load cell C)
P084;0.000          (setting of the corner correction factor for load cell D)
P085;1E39Cd-7C82C7  (setting of the connected transmitter device UID's)
P086;6              (setting of the communication filter for the tranmitters)
P096;1              (setting of the hardware configuration)
P098;001            (setting of the terminal no.)
P122;00             (setting of the auto off function in USER menu)
P123;00             (setting of the sleep function in USER menu)
P124;01             (setting of the auto reconnect time transmission modules [fixed])
P125;20             (setting of back light off in USER menu)
P126;100            (setting of the back light brightness in USER menu)
<FF>
```

Explanation data lines

STM;V0.21 =

S	T	M	;	V	0	.	2	1
main processor STM			Separation sign	Firmware version				

The firmware version of the main processor of this device is V0.21. (4/9/2019: V1.01)
NRFM;V0.3_t = Firmware version of the BLE-Master processor on the iFork receiver option board is V0.3_t. (4/9/2019: V0.8t, only visible for wireless units)
NRFS;V0.6 = Firmware version of the BLE-Slave processor on the main board is V0.6. (4/9/2019: V0.9)
NRFT1;V0.7 = Firmware version of the BLE processor of the iForks transmitter module 1 is V0.7. (4/9/2019: V2.0, only visible for wireless units) *1
NRFT2;V0.7 = Firmware version of the BLE processor of the iForks transmitter module 2 is V0.7. (4/9/2019: V2.0, only visible for wireless units) *1

MacS;179DBD

M	a	c	S	;	1	7	9	D	B	D
Mac address Bluetooth Slave (fixed on mainboard)				Separation sign	Mac address					

The Mac addressse 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, only visible for wireless units)
Mac2; ABC123 = Mac address of the Bluetooth Fork2 (placed on the iForks transmitter module 2, only visible for wireless units)

P001;1 =

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

Parameter 001 was set on value 1 which stands for the start-up unit of the device. In this example that would be 'kg'. For the complete parameter list please see document [ms-ravas-

3200-eu-rev-20190919.pdf] for wired units or [ms-ravas-iforks-32-(xt)-eu-rev-20191128.pdf] for wireless units.

*1: The firmware versions of the transmitters should always be the same! If they differ the iForks are likely to malfunction. In that case uploading of firmware is necessary.

Example of information logging indicator 5200:

```
USER;Set_Clock;Time;14:39:37
USER;Set_Clock;Date;11-02-20
USER;Display_settings;Brightness;100%
USER;Display_settings;Power_save;off
USER;Display_settings;Key_functions;on
USER;Display_settings;Language;English
USER;Display_settings;Decimal_point;,
USER;Display_settings;Date_format;EU
USER;Button_Functions;Printer;Function;Print
USER;Button_Functions;Printer;Location;none
USER;Button_Functions;Send_WiFi;Function;Send_WiFi
USER;Button_Functions;Send_WiFi;Location;none
USER;Button_Functions;Summing;Function;Add_to_total
USER;Button_Functions;Summing;Location;Row1Button3
USER;Button_Functions;Tare;Location;Row1Button4
USER;Button_Functions;PTARE;Location;Row1Button5
USER;Button_Functions;Zero;Location;Row1Button6
USER;Button_Functions;ID1SCAN;Location;none
USER;Button_Functions;ID2SCAN;Location;none
USER;Button_Functions;ID3SCAN;Location;none
USER;Button_Functions;ID4SCAN;Location;none
USER;Button_Functions;PT1SCAN;Location;none
USER;Button_Functions;PT2SCAN;Location;none
USER;Button_Functions;TOGGLE_WEIGHT/PIECE;Location;none
USER;Button_Functions;Reference_weight;Location;none
USER;Button_Functions;WEIGHING_MODE;Location;none
USER;Button_Functions;PIECE_COUNT_MODE;Location;none
USER;Button_Functions;SCALE_SELECTION;Location;none
Service;Weigher;Settings;Unit_label;kg
Service;Weigher;Settings;On_screen_type_plate;on
Service;Weigher;Settings;Scale_Capacity:2500
Service;Weigher;Settings;Multi_Range:2000
Service;Weigher;Settings;Step_Min:0
Service;Weigher;Settings;Step_Max:1
Service;Weigher;Settings;Gravity_Original:9812
Service;Weigher;Settings;Gravity_Final:9812
Service;Weigher;Settings;Legal_for_trade:1
Service;Weigher;Settings;Zero_track:0,2
Service;Weigher;Settings;Zero_range:50
Service;Weigher;Settings;Alibi:off
Service;Weigher;Settings;Piece_resolution:10
Service;Communication;Printer_settings;Linefeed:1
Service;Communication;Printer_settings;Header:
Service;Communication;Printer_settings;Footer:
Service;Communication;BLT4.0_on-board;Protocol:PC
Service;Communication;RS232_on-board;Protocol:PC
Service;Communication;RS232_on-board;Stopbits:0
Service;Communication;RS232_on-board;Databits:15
Service;Communication;RS232_on-board;Parity:0
Service;Communication;RS232_on-board;Baudrate:9600
Service;Communication;USB_on-board;SCAN_ID:1170
Service;Communication;Com_10;Protocol:None
Service;Communication;Com_10;Stopbits:0
Service;Communication;Com_10;Databits:15
Service;Communication;Com_10;Parity:None
```

```
Service;Communication;Com_10;Baudrate:9600
Service;Communication;Com_20;Protocol:None
Service;Communication;Com_20;Stopbits:0
Service;Communication;Com_20;Databits:15
Service;Communication;Com_20;Parity:None
Service;Communication;Com_20;Baudrate:9600
Service;Power_settings;Power_save_mode;Dim_timer:60
Service;Power_settings;Power_save_mode;Sleep_timer:300
Service;Power_settings;Power_save_mode;Deep_sleep_timer:8
Service;Power_settings;Power_supply;Custom;100%_Voltage:120
Service;Power_settings;Power_supply;Custom;Low_bat_Voltage:108
Service;Power_settings;Power_supply;Custom;Absolute_shutdown:105
Service;Scale_type_software:BLE
Service;Defaults;Button_Functions;Printer;Function;Print
Service;Defaults;Printer;Location;none
Service;Defaults;Button_Functions;Send_WiFi;Function;Send_WiFi
Service;Defaults;Send_WiFi;Location;none
Service;Defaults;Summing;Send_WiFi;Function;Add_to_total
Service;Defaults;Summing;Location;Row1Button3
Service;Defaults;Tare;Location;Row1Button4
Service;Defaults;PTARE;Location;Row1Button5
Service;Defaults;Zero;Location;Row1Button6
Service;Defaults;ID1SCAN;Location;none
Service;Defaults;ID2SCAN;Location;none
Service;Defaults;ID3SCAN;Location;none
Service;Defaults;ID4SCAN;Location;none
Service;Defaults;PT1SCAN;Location;none
Service;Defaults;PT2SCAN;Location;none
Service;Defaults;TOGGLE_WEIGHT/PIECE;Location;none
Service;Defaults;Reference_weight;Location;none
Service;Defaults;WEIGHING_MODE;Location;none
Service;Defaults;PIECE_COUNT_MODE;Location;none
Service;Defaults;SCALE_SELECTION;Location;none
Service;Defaults;Factory_reset;Print;Send_WiFi;Function;Print
Service;Defaults;Factory_reset;Print;Location;none
Service;Defaults;Factory_reset;Send_WiFi;Send_WiFi;Function;Send_WiFi
Service;Defaults;Factory_reset;Send_WiFi;Location;none
Service;Defaults;Factory_reset;Summing;Send_WiFi;Function;Add_to_total
Service;Defaults;Factory_reset;Summing;Location;Row1Button3
Service;Defaults;Factory_reset;Tare;Location;Row1Button4
Service;Defaults;Factory_reset;PTARE;Location;Row1Button5
Service;Defaults;Factory_reset;Zero;Location;Row1Button6
Service;Defaults;Factory_reset;ID1SCAN;Location;none
Service;Defaults;Factory_reset;ID2SCAN;Location;none
Service;Defaults;Factory_reset;ID3SCAN;Location;none
Service;Defaults;Factory_reset;ID4SCAN;Location;none
Service;Defaults;Factory_reset;PT1SCAN;Location;none
Service;Defaults;Factory_reset;PT2SCAN;Location;none
Service;Defaults;Factory_reset;TOGGLE_WEIGHT/PIECE;Location;none
Service;Defaults;Factory_reset;Reference_weight;Location;none
Service;Defaults;Factory_reset;WEIGHING_MODE;Location;none
Service;Defaults;Factory_reset;PIECE_COUNT_MODE;Location;none
Service;Defaults;Factory_reset;SCALE_SELECTION;Location;none
NXP:1.0.7.1.0.A
NRFM:1.0.t;1.0.t
NRFS:1.0.1.9.0.0
NRFT1:2
NRFT2:2
MacS:RAVAS5200_D3F8C6
Mac1:3A4970
Mac2:4D4FB8
<FF>
```

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>.

Example of status logging indicator 3200:

```
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>
```

Explanation data lines

VF1;4.0V =
Supply voltage of Fork1 is given in Volts. In this example it is 4.0 Volts. (only for wireless units)
VF2;4.0V =
Supply voltage of Fork2 is given in Volts. In this example it is 4.0 Volts. (only for wireless units)
VFI;13.2V =
Supply voltage of the indicator is given in Volts. In this example it is 13.2 Volts.

W±00185;G-000.17 =
The actual displayed weight in basic units (P01 depending) and present level of the G-sensor in fork 2 in grades(°) are given. In this example the actual weight is 185 kg and the number of grades in (driving direction) is 0.17°.

LC1;-0001066 =
The actual number of AD counts of load cell input 1 is given. In this example -1066 counts.
LC2;±123456 =

The actual number of AD counts of load cell input 2 is given.
LC3;±123456 =
The actual number of AD counts of load cell input 3 is given.
LC4;±123456 =
The actual number of AD counts of load cell input 4 is given.
In case of an 1AD unit (hand pallet truck scale with LC-junction board) these values would be expected to be the same but could actually differ in the last 3 numbers because of the delay of 100 msec. per reading. The first 4 numbers should be the same for a properly working unit.
In case of an iFork unit these values will be different because the outputs of the load cells will always differ a little.
If there is a big difference in one of the load cell outputs than this is an indication that the load cell might be defect or the capacity of that load cell differs from the capacity of the other load cells.

GS0;-0021;+0051;+1017 =
The calibrated X,Y and Z values of the G-sensor are given at zero degrees and zero load. In this example X value is -21 counts, the Y value is +51 counts and the Z value is +1017 counts. (only for wireless units)

GSA0;+090.27;-090.00 =
The calibrated values of raw X and raw Y at 0 calibration of the CS001 correction sensor. In this example X value is +90.27 and Y value is -90.00 (only for wired units)

GS1;-0019 =
The actual number of AD counts of G-sensor direction 1(X) is given. In this example -19 counts. (only for wireless units)
GS2;+0053 =
The actual number of AD counts of G-sensor direction 2(Y) is given. In this example +53 counts. (only for wireless units)
GS3;+1019 =
The actual number of AD counts of G-sensor direction 3(Z) is given. In this example +1019 counts. (only for wireless units)

GSC;750.0;0.00000;0.00000;0.00000;0.00000;00.0000;
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}. In this example only a zero calibration was done for the G-sensor, leaving the values for the span calibration on 0. (only for wireless units)

CP0;-0001065;-0001074;-0001271;-0001470 =
The AD counts of the 4 LC's at 0 kg of the original weight calibration are given. In this example LC-A was -1065 counts, LC-B was -1074 counts, LC-C was -1271 counts and LC-D was -1470 counts.

CP1U; 01500;+1029207;+1029207;+1029207;+1029207;00704,74 =

The AD counts of the 4 LC's at the first calibration point UP of the original calibration are given as well as the gain factor. In this example the calibration point was 1500 (kg/lb depending on the setting of P01), the counts of the load cells were all 1029207 (which indicates that it was a wired 1AD unit) and the gain factor was 704.74.
CP2U; 00000;000000;000000;000000;000000;00000,00 =
The AD counts of the 4 LC's at the second calibration point UP of the original calibration are given as well as the gain factor. If as in this example no values are filled in the fields it means that no multi-calibration points were used.
CP3U; 00000;000000;000000;000000;000000;00000,00 =
The AD counts of the 4 LC's at the third calibration point UP of the original calibration are given as well as the gain factor.
CP1D; 00000;000000;000000;000000;000000;00000,00 =
The AD counts of the 4 LC's at the first calibration point DOWN of the original calibration are given as well as the gain factor. If as in this example no values are filled in the fields it means that the calibration down functionality was not used. This option is only available for approved weighing systems (P13 $\neq$ nO)

CP2D; 00000;000000;000000;000000;000000;00000,00 =
The AD counts of the 4 LC's at the second calibration point DOWN of the original calibration are given as well as the gain factor.
CP1D; 00500;000000;000000;000000;000000;00000,00 =
The AD counts of the 4 LC's at the third calibration point DOWN of the original calibration are given as well as the gain factor.

CorA;1.000 =
The correction factor at the original calibration for corner A is given. In this example no correction factors are given which means no corner calibration has been performed which makes sense for a wired 1AD unit.
For wireless units these factors would normally be different for each corner since each load cell has its own characteristics which slightly differ from each other and the mechanical construction influences this during the replacement of the weight.
CorB; 1.000 =
The correction factor at the original calibration for corner B is given.
CorC; 1.000 =
The correction factor at the original calibration for corner C is given.
CorD; 1.000 =
The correction factor at the original calibration for corner D is given.

CF;00;061017;1533 =
Present audit trail number {00] for the parameter setting with the time stamp [6th October 2017 at 15:33h]
CA;00;061017;1533 =
Present audit trail number for the calibration [00] with the time stamp [6th October 2017 at 15:33h]

Example of status logging indicator 5200:

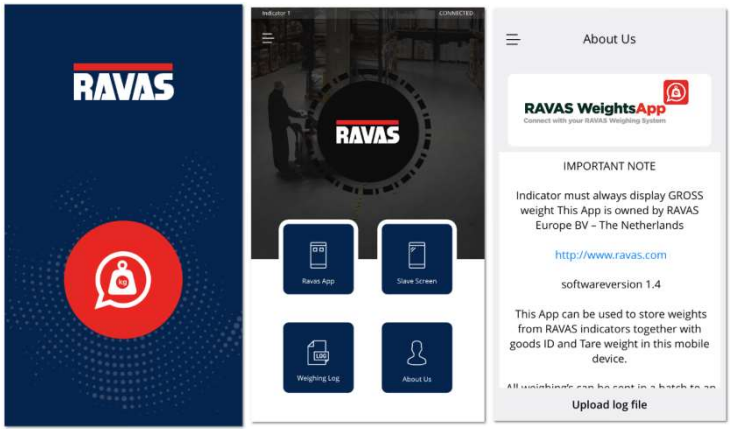
```
VF1:3.8<CR>
VF2:3.9<CR>
VFI:14.9<CR>
W+01165.G+0.3833G-0.1599<CR>
LcA:175239<CR>
LcB:4223443<CR>
LcC:3666762<CR>
LcD:712731<CR>
F1_GS0;22;0;1031<CR>
F2_GS0;15;-4;1016<CR>
GSA0;0;0<CR>
F1_GS1;29<CR>
F1_GS2;-3<CR>
F1_GS3;1049<CR>
F2_GS1;0<CR>
F2_GS2;-13<CR>
F2_GS3;1041<CR>
GSC;+00000.;-0.0012;-0.0013;+0.0000;+0.0000;+0.0040<CR>
CP0;0;293337;240334;193728;289420;+0.0000<CR>
CP1U;1500;2528895;2490806;2494138;3129453;+0.0000<CR>
CP2U;2500;2043407;1711195;4317352;3915846;-0.0231<CR>
CP3U;0;0;0;0;0;+0.0000<CR>
CP4U;0;0;0;0;0;+0.0000<CR>
CP1D;0;0;0;0;0;+0.0000<CR>
CP2D;0;0;0;0;0;+0.0000<CR>
CP3D;0;0;0;0;0;+0.0000<CR>
CP4D;0;0;0;0;0;+0.0000<CR>
CorA;+01.609<CR>
CorB;+01.109<CR>
CorC;+00.804<CR>
CorD;+00.477<CR>
TAC;13;110220;1358<CR>
CAL;14;110220;1343<CR>
<FF>
```

Note that some of the data is slightly different from the data response by indicator 3200 but those are minor differences due to different firmware setup.

Special command ‘GL’

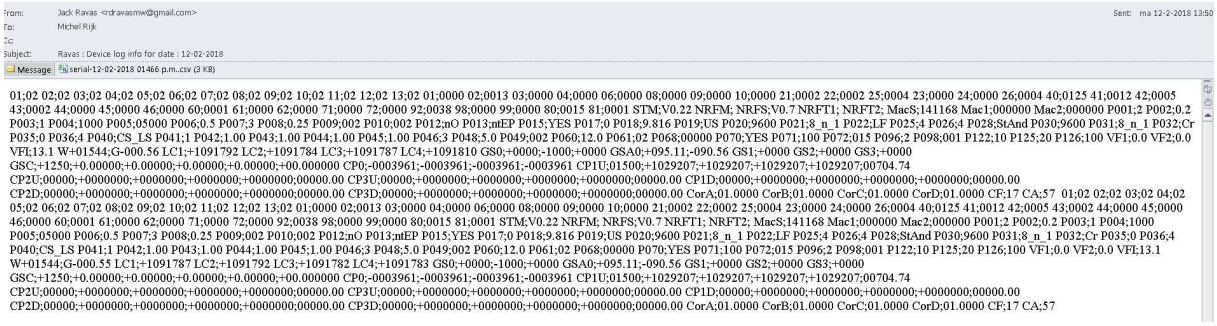
This command is used to retrieve all data of the commands ‘GE’, ‘GI’ and ‘GS’ combined in one dataflow without the form feeds in between but only a form feed at the end.

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.



In the RAVAS APP this command is automatically generated when pressing the [Upload Log File] button in the menu {About Us}.
You will be asked to send the saved log. The default email address is service @ravas.com. You may replace it by another address or add it with another email address.

In the email you will see the data as a CSV file as well as directly on the screen:



Special command [SL] (Version 0.32 and higher)

This command is used for customers who needs to have the proper error message in his reply to be able to perform the right action in his terminal.

The command is resembling the [SW]-command but in case of an error in the indicators display it will return the error number. For example; <ERR40> in case of a tilted position. The error numbers resemble the numbers of the errors list mentioned in the [GE]-command. It will be transmitted 2x/second. As soon as the error situation has been solved it will display the weight-string again.

In case of low battery of the forks it will also be transmitted but only once every 30 seconds. Only if the batteries are completely empty and the display of the indicator mentions “LOBAF”, it will be transmitted 2x/second as well since this is a critical situation.