XK3190-C601

WEIGHING INDICATOR

(BATCHING VERSION)

MANUAL

PLEASE READ THIS MANUAL VERY CAREFULLY
BEFORE OPERATING

Dec 2006

Specifications subject to change without prior notice

CONTENTS

1. GETTING STARTED

CAUTION

- ***This is not a toy. Keep out of reach of children;***
- ***This indicator is not an explosion proof device;***
- ***This indicator is not a water proof device;***
- ***Do not open this indicator, no user serviceable parts inside. Always contact supplier for service.***

1.1 Introduction

XK3190-C601 weighing indicator (batching version) adopts MCS-51 SCM and high speed Σ - Δ A/D conversion method with max.100 times/s conversion speed. It can make up batching scale with load cell and other mechanical parts, applied in high speed and high precision weighing control occasion.

1.2 Features

- Calibration and operation all by panel keys;
- With parallel printing interface connected to stylus printer;
- Able to print out weighing records, accumulation value and formula;
- Able to save/check/delete weighing records, data protection at sudden power failure;
- With real clock, calendar;
- Able to set zero tracking range and auto/manual zero range;
- Able to set A/D conversion speed and digital

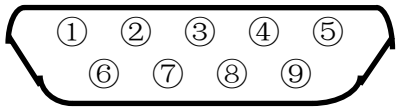
filter intensity;

- With self-checking for input/output hardware configuration and error code display function;
- With RS232 output(standard)or RS422 output (optional),communicating with PC by continuously send mode or command mode;
- With 20mA current loop output for connection of scoreboard;
- With 4~20mA analog output(optional);
- With 6 inputs and 7 relay outputs to control max. 2 materials;

1.3 Connecting to Other Devices[1]

1.3.1 Connection to load cell

Connect this indicator to load cell through the 9-pin load cell connector located at the back. Refer to the below table for load cell pin assignment.



PIN #	ASSIGNMENT
1	E-
2	S-
5	SHIELD
6	E+
7	S+
8	IN-
9	IN+

[1] Turn scale off and cut off power before making any connections or disconnections.

Short connect PIN 1 AND PIN 2, PIN 6 and PIN 7 when connected to load cell with a 4-wire cable;

CAUTION

- ***Connection between load cell and indicator must be reliable; shield-wire must be connected to ground reliably;***
- ***Load cell and indicator are all static-electricity-sensitive devices,measures must be taken to ensure safety.***

1.3.2 Connection to PC or SCOREBOARD or current display (optional)

From the 15-pin interface located at the back, you could

- Connect indicator to computer via RS232 output or RS422 output (optional);
- Connect indictor to scoreboard via 20mA current loop output;
- Connect indicator to current display with 4~20mA analog output.

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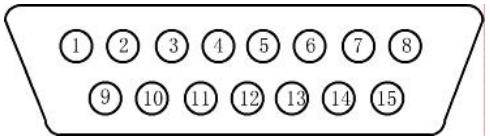
15-pin connector



PIN #	ASSIGNMENT	PIN #	ASSIGNMENT
1	RS422 OUTPUT+	9	SCOREBOARD OUT+
2	RS422 OUTPUT-	10	SCOREBOARD OUT-
3	RS422 IN-	12	4~20mA I-
4	RS422 IN+	13	4~20mA I+
6	RS232 RXD	14	CALIBRATION+
7	RS232 TXD	15	CALIBRATION-
8	GND		

Note1: RS422 output is optional;
Note2: Function of short-connect pin 14 and pin 15 is as what the calibration head performs.
Calibration head is a 15-pin connector with pin 14 and pin 15 short connected which is usually packed together with the manual.

- Connect indicator to computer via RS232 output or RS422 output (optional);

Data format for RS232 or RS422 is the same. Data is transmitted in ASCII code. Data format is as listed below(one group):

1	2	3	4	5	6	7	8	9	10
START	DATA								STOP

There are two modes to communicate with PC:

- Continuously send, and
- Command mode.

A. Continuously send

Data transmitted is tare weight or net weight from the display of the indicator. Each time it sends one frame data to pc, one frame consists of 9 groups while the data format of one group is as listed above. Below is the content for one frame:

GROUP NO.	CONTENT	NOTES
1	=	START SIGNAL
2	+ OR −	SIGN SINAL
3	WEIGHING DATA	High digit
4		:
5		:
6		If decimal point is 3, then this group is "."
7		If decimal point is 2, then this group is "."
8		If decimal point is 1, then this group is "."
9		Low digit

For example,
Now the indicator displays 50.00KG, then the frame indicator sends to PC is : =+0050.00;
If the indicator displays -0.040KG, then the frame indicator sends to PC is : =-000.040;

B. Command mode

Indicator will act according to instruction from computer, please refer to following notes and table:

AD: address of indicator (example A in ASCII code 41);

NN: address of memory pc wants to read/write;

C1: Content pc wants to read/write (000 digit);

C2: Content pc wants to read/write (00 digit);

C3: Content pc wants to read/writ (0 digit);

XH: Verify result for high 4 digits;

XL: Verify result for low 4 digits;

Notes:

- Address indicator could set is from 1~26, while communication address is corresponding from A~Z;
- Instruction from A~Z is transferred in ASCII code; but the example listed in table is in Hex. code. When communicating with PC via the hyper terminal software(This software is with windows operating system),you should choose "transmit in hex format", or else you must convert the example to ASCII code;
- Instruction Q,R,S,T U is read/write operation for data memory. There are many strings in data memory, but one instruction from pc only triggers one operation, hence several instructions should be sent from pc one by one to do these operations

Instruction table is listed in appendix

- Connect indictor to scoreboard via 20mA current loop output;

Data is transmitted serially in binary code with baud rate 600. Data format is as listed below (one group):

0	1	2	3	4	5	6	7	8	9	10
START	DATA(Low is prior to high)								SIGN	STOP

Indicator sends one frame data to scoreboard per 100ms, one frame consists of 3 groups while the data format of one group is as listed above. Below is the content for one frame:

Group 1	0	1	2	3	4	5	6	7	8	9	10
	Start	D0	D1	D2	D3	D4	D5	D6	D7	SIGN	STOP
		X			Y			G16	G17	0	1
Group 2	0	1	2	3	4	5	6	7	8	9	10
	Start	D0	D1	D2	D3	D4	D5	D6	D7	SIGN	STOP
		G8	G9	G10	G11	G12	G13	G14	G15	0	1
Group 3	0	1	2	3	4	5	6	7	8	9	10
	Start	D0	D1	D2	D3	D4	D5	D6	D7	SIGN	STOP
		G0	G1	G2	G3	G4	G5	G6	G7	1	1

For group one, Sign bit is 0; X(D0,D1,D2)means decimal point (0~3); Y (D3) means sign(1 for negative while 0 for positive); Y (D4) means display weight type(1 for net weight while 0 for tare weight); G17 and G16 is binary code;

For group two, Sign bit is 0; G15~G8 is binary code;

For group three, Sign bit is 1; G7~G0 is binary code;

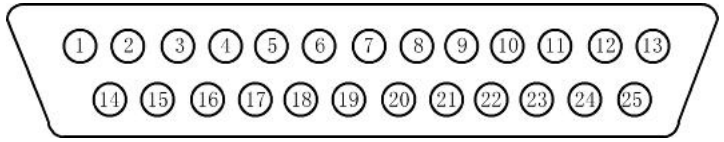
From G0~G17 consists of 18 bit binary code, low prior to high. with content of weighing data

- Connect indicator to current display via 4~20mA analog output (optional)

When indicator is at zero,then current display will show 0; when indicator is at the weight corresponding to 20mA, then current display will show 20mA. (Refer to parameter setting for how to set the weight corresponding to 20mA).

1.3.3 Connection with printer

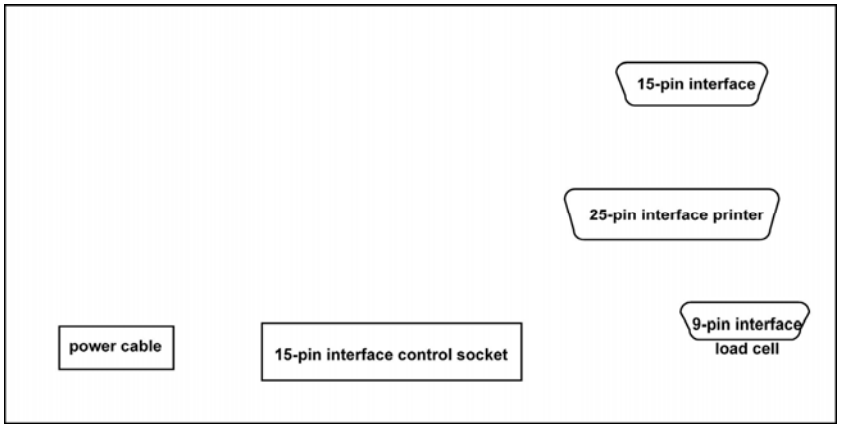
25-pin interface



PIN #	ASSIGNMENT	PIN #	ASSIGNMENT
1	ST	7	D5
2	D0	8	D6
3	D1	9	D7
4	D2	11	BUSY
5	D3	25	GND
6	D4		

Description for each pin is as listed in above table. After connect to stylus printer, indicator could print out weighing records, accumulation value and formula.

1.4 Layout at the back of various interfaces



2. TECHNICAL PARAMETERS AND SPECIFICATIONS

- Accuracy: Class III,N=3000
- A/D Conversion Method: Σ － Δ
- Input Signal Range: 0mV ~ 15mV
- Net input signal range: 3mV ~ 15mV
- Nonlinearity: ≦0.01%FS
- Temperature rate at FS: ≦8PPM/℃
- Load Cell Excitation: DC5V, I ＝ 350mA

- Load cell connection mode: 6-wire mode, auto compensation at long distance
- Display Digits: 6 x numeric bits and 1 sign bit with 0.5 inch character height plus 18 status indicators
- Division: 1/2/5/10/20/50
- Clock display: time and date display
- Key: 8 press keys with soft-touching PVC material
- Built-in 20mA current loop output for connection of scoreboard
- Built-in RS232C output(standard) or RS422 output(optional) for connection of pc with selectable baud rate and communication mode
- Built-in parallel printing interface for connection of stylus printer
- Relay output: touching capacity at AC 220V,0.5A
- Input: Switch touching point (close effective)
- Operation Environment: 0°~40°C Non-condensed. R.H.≦90%
- Power Source: AC220V(-15%~+10%);50HZ(-2%~+2%)

3. LAYOUT AT FRONT AND DESCRIPTION

Key board:

[START] key

Press this key, then indicator start working in automatic control status;

[STOP] key

Press this key, then indicator stop working in automatic control status;

[ESC] key

Press this key to return to weighing status from parameter setting status;

SET ◀ **key**

Press this key to

- enter into date/time setting mode or
- printing setting mode or
- accumulation value check mode or
- accumulation value clear mode or

shift to left digit when setting parameter value

CALIB ▶ **key**

Press this key to

- enter into calibration mode;
- shift to right digit when setting parameter value

TARE ▲

key

Press this key to

- tare off the weight of a container when weighing display is positive and stable;
- increase value at a digit when setting parameter value

ZERO ▼ key

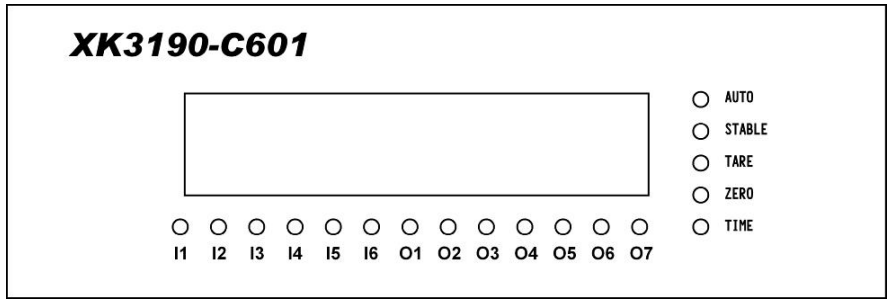
Press this key to

- set weight displayed to zero;
- decrease value at a digit when setting parameter value

[ENTER] key

Press this key to confirm the current input by key;

INDICATORS AND PANEL



I1 INDICATOR

This is an input indicator. It will be on when [START] key is pressed or when there is a short connect between pin 1 and pin 2 of control socket as listed in below table;

I2 INDICATOR

This is an input indicator. It will be on when [STOP] key is pressed or when there is a short connect between pin 1 and pin 3 of control socket as listed in below table;

I3 INDICATOR

This is an input indicator. It will be on when there is a short connect between pin 1 and pin 4 of control
socket as listed in below table. This input is usually given when weighing indicator works in manual control mode to start the charge control process.

I4 INDICATOR

This is an input indicator. It will be on when there is a short connect between pin 1 and pin 5 of control socket as listed in below table. This input is usually given when weighing indicator works in manual control mode to start the discharge control process.

I5 INDICATOR

This is an input indicator. It will be on when there is a short connect between pin 1 and pin 6 of control socket as listed in below table. This input is usually given when weighing indicator works in manual control mode and after I3 input has been given. Or it is usually given when weighing indicator works in automatic control mode and after I1 input has been given,

be sure to keep this input always when working in automatic mode and there is no required condition for charge material.

I6 INDICATOR

This is an input indicator. It will be on when there is a short connect between pin 1 and pin 7 of control socket as listed in below table. This input is usually given when weighing indicator works in manual control mode and after I4 input has been given. Or it is usually given when weighing indicator works in automatic control mode and after o6 output has been given, be sure to keep this input always when working in automatic mode and there is no required condition for discharge material.

O1 INDICATOR

This is an output indicator. It will be on when weighing indicator is at the process of fast feeding for the first material.

O2 INDICATOR

This is an output indicator. It will be on when weighing indicator is at the process of slow feeding for the first material.

O3 INDICATOR

This is an output indicator. It will be on when weighing indicator is at the process of fast feeding for the second material.

O4 INDICATOR

This is an output indicator. It will be on when weighing indicator is at the process of slow feeding for the second material.

O5 INDICATOR

This is an output indicator. It will be on when weighing indicator is at the process of discharging material.

O6 INDICATOR

This is an output indicator. It will be on when the weighed material just reaches the OK range.[2]

O7 INDICATOR

This is an output indicator. It will be on when the weighed material reaches out of the OK range. Usually under this condition, customers should do something until it gives O6 output.

AUTO INDICATOR

[2] OK range is a weight range that customers could accept. Suppose the set point for one material is A, minus or plus for this material customers could accept is Q, then weight from A-Q to A+Q is OK range.

This is an indicator to indicate which working mode the weighing indicator is at, if it's auto mode, then auto indicator will be on.

STABLE INDICATOR

This is an indicator to indicate a stable weight is being displayed.

TARE INDICATOR

This is an indicator to indicate tare function is in operation and net weight value being displayed;

ZERO INDICATOR

This is an indicator to indicate a net zero weight status.

TIME INDICATOR

This is an indicator to indicate current time is being displayed.

Note: at back of the indicator, there is a 15-pin control socket for input or output control

Pin 1 to Pin 7 is for input description:

Pin 7	Pin 6	Pin 5	Pin 4	Pin 3	Pin 2	Pin 1
Discharge Permitted	Charge Permitted	Discharge	Charge	Stop	Start	Public
I6	I5	I4	I3	I2	I1	

When any of the pin from 2 to 7 is short connected to pin 1, it just gives indicator one kind of input, corresponding input I indicator will be on;

Pin 8 to Pin 15 is for output description:

Pin 15	Pin 14	Pin 13	Pin 12	Pin 11	Pin 10	Pin 9	Pin 8
12V	NOT OK	OK	Discharge	Slow 2	Fast 2	Slow 1	Fast 1
	O7	O6	O5	O4	O3	O2	O1

When indicator is at the process of one of the statement, corresponding output O indicator will be on.

There is a connection between this 15-pin control socket and relay box with a cable offered by the supplier, when O indicator is on, corresponding relay will work.

4.Parameter Setting and Calibration

4.1 Parameter setting[3]

There are three types of parameter to be set, they are:

[SET—0]: Parameter for check

[SET—1]: Parameter for configuration and function

[3] Calibration head must be put on to set parameter for [set-1] and [set-2], or else, parameter value can't be saved;

[SET—2]: Parameter for control

Key function description at parameter setting status as followed:

- **[↑][↓][←][→]:** Shift between digits or increase value at digit
- **[STOP]:** Return to last parameter setting
- **[ESC]:** Return to weighing status

[SET-0]:

Press [SET] key, it will display [set-0], then press [ENTER] key, operate step by step refer to following table:

Item	Display	Parameter description	Remark
1	[d**.**.**]	Current date set	Could set
2	[t**.**.**]	Current time set	Could set
3	[n ****]	Accumulation time	Check only
4	[A ******]	Accumulation value	Check only
5	[De1 0]	Clear accumulation value or not[4]	Press[ENTER], finish

[SET-1]:

Press [SET] key, it will display [set-0], press [↑] key until it shows [set-1], then press [ENTER] key, operate step by step refer to following table:

[4] 0-not clear; 1-clear

Item	Display	Parameter description	Remark
1	[H ABCD]	Hardware configuration[5] A- PC connection B- Scoreboard connection C- Printer connection D- Analog output	For example: [H 1111]
2	[n ABCD]	Zero parameter[6] A- Outside code or inner code display B- Zero tracking range C- Manual zero range D- Auto zero range	For example: [n 0222]

[5] 0-No need for these connection; 1-need for these connection

[6] Parameter A:0-outside code display; 1-inner code display

Parameter B: 1~8

B	1	2	3	4	5	6	7	8
(e)	0.5	1	1.5	2	2.5	3	3.5	4

Parameter C,D:0~5

C,D	0	1	2	3	4	5
F.S%	0	2	4	10	20	100

3	**[FLt EF]**	E-AD parameter setting[7] E- AD sampling speed F- AD filter intensity	For example: [FLt 22]
4	**[Adr **]**	Address for indicator[8] (1~26)	
5	**[bt *]**	Baud rate(0~4) 0-600;1-1200;2-2400;3-4800;4-9600	
6	**[tod *]**	Communication mode 0- Continuously send 1- Command mode	
7		**[Pt *]**	
8	**[PL *]**	Printing language: 0- English 1- Chinese	
9	**[AtP *]**	Auto printing: 0- No auto printing 1- Auto printing	
10	**[A******]**	20mA analog output weight value set[9]	
11	**[Prt *]**	To print above parameter set value or not	0- No 1- Yes

[SET-2]:

Press [SET] key, it will display [set-0], press [↑] key until it shows [set-2], then press [ENTER] key, operate step by step refer to following table:

Item	Display	Parameter description	Remark
1	**[C ABCD]**	Control parameter setting[10]	For example: [C 0101]

[7] E:

E	0	1	2	3
Times/s	12.5	25	50	100

The higher E is, the faster speed and less stability it will be

F:

F	0	1	2	3	4
Intensity	Weaker	weak	Middle	Strong	Stronger

The higher F is, the more stability and more delay it will be

[8] When A of parameter H set as 0, parameter Adr,bt,tod is disabled;

[9] When D of parameter H set as 0, parameter A****** is disabled; If D of H is set as 1, then indicator will output 20mA analog signal when it reaches the value A****** set

2	**[Pt 0]**	Cycle times[11]	
3	**[t0 **]**[12]	Delay time before charge	
4	**[t1 **]**	Delay time at fast feed finish	
5	**[t2 **]**	Delay time at slow feed finish	
6	**[t3 **]**[13]	Output time for dot-makeup	
7	**[t4 **]**	Output time for interval of dot-makeup	
8	**[t5 **]**	Output time for OK range	
9	**[t6 **]**	Delay time at discharge finish	
10	**[t7 **]**	Delay time when next cycle begins	
11	**[L******]**	Zero range[14]	
12	**[A******]**	Set point for material 1	
13	**[b******]**	Ahead value for fast feed of material 1	
14	**[C******]**	Ahead value for slow feed of material 1	
15	**[d******]**	Q of ok range for material 1	Refer to Footnote2
16	**[P******]**	Set point for material 2	
17	**[q******]**	Ahead value for fast feed of material 2	
18	**[r******]**	Ahead value for slow feed of material 2	
19	**[t******]**	Q of ok range for material 2	Refer to Footnote2
20	**[Prt *]**	To print above parameter set value or not	0- NO 1- Yes

Note: After calibration and these three-group parameters are set, indicator could work properly.

4.2 Calibration[15]

Press [Calib] key, indicator will display [CALIb],it indicates that it's at calibration status. Press [ENTER] key, then calibrate step by step as followed table:

[10] A: Plus or minus scale selection, 0-plus scale;1-minus scale
B: Ahead value auto correction selection,0-no correction;1-correction
C: Not OK range deal selection:0-not deal, continue cycle;1-wait until it reaches ok range
D:Dot-makeup or not when it's lack of weight,0-no;1-yes

[11] One cycle is from charge to discharge, times is from 0~99 while 0 means times is limitless

[12] From t0 to t7, value set is from 0.0~9.9 seconds; always leave these parameter as default setting, they are time to control the total process more precisely

[13] When D of C parameter set as 0, parameter t3 and t4 are disabled

[14] Indicator will treat as discharge finish when tare weight is less than zero range
Print and accumulation will only function when tare weight is more than zero range

[15] Calibration head must be put on to save calibration data

Item	Display	Parameter description	Remark
1	[dC *]	Decimal point(0~3)	Press[ENTER] after input
2	[E *]	Division:1/2/5/10/20/ 50	Press[ENTER] after input
3	[F******]	Full range	Press[ENTER] after input
4	[r 0]	Keep former zero 0- Reconfirm current zero 1- Skip zero confirmation	Input 0,then go to step 5(recommended) Input 1, then go to step 6
5	[noLoAd]	Zero confirmation[16]	
6	[AdLoAd]	Load weight	Press [ENTER] when stable indicator is on
7	[000000]	Input loaded weight value	Press [ENTER] after input
8	[******]	Display current weight value	Exit calibration status

5.INSTRUCTION FOR OPERATION

[16] Ensure there is no load and stable indicator is on

5.1 Turning on

When indicator is powered on, it will display 0~9, then it comes to weighing status. If the unloaded scale divates from zero point but still within auto zero range, then indicator will come to zero automatically;

Before Weighing

Make sure that:

a. The load cell signal cable is connected and properly secured.
b. The scale is turned on.

5.2 Zero manually

If the unloaded scale divates from zero after auto zero when turned on, but it's still within manual zero range and the stable indicator is on, press [ZERO] key, then indicator will come to zero and zero indicator will be on;

5.3 Tare

At weighing status, when the current display is positive and stable, press [TARE] key will tare off the current weight and indicator will display 0, zero indicator is on

5.4 Date/time set

Press[SET] key, and then press [ENTER] key and set date, then press [ENTER] key and set time.

5.5 Start/Stop

Press [START] key or short connect Pin 1 and Pin 2 as listed above, indicator will enter into automatic control status; press [STOP] key or short connect Pin 1 and Pin 3 as listed above, indicator will exit automatic control status;

5.6 Manual work mode

When scale is ready for weighing, short connect Pin 1 and Pin 4 of control socket(Indicator I3 will be on),then short connect Pin 1 and Pin 6 of control socket, (Indicator I5 will be on),then it will start charge material. When the loaded material reaches OK range, then short connect Pin 1 and Pin 5 of control socket(Indicator I4 will be on),then short connect Pin 1 and Pin 7 of control socket, (Indicator I6 will be on),then it will start discharge material. This is one cycle in manual work mode.

5.7 Automatic work mode

When scale is ready for weighing, press [START] key or short connect pin 1 and pin 2 of control socket to enter into automatic control mode. Always short connect Pin 1 and Pin 6 of control socket(Indicator I5 will be always on) if there is no required for charge material, and indicator will begin charge automatically. Always

short connect pin 1 and pin 7 of control socket(Indicator I6 will be always on)if there is no required for discharge material only when O6 is on. Then after o6 is on, indicator will begin discharge automatically. When indicator check that rest material in the hooper is within zero range, it will begin the next cycle automatically.

5.7 Input/Output hardware check

At inner code display status, user can check whether the hardware of input/output connectors are good or not. When there is input for I1, then O1 will be on; when there is input for I2, then O2 will be on….when there is input for I6, then O1~O7 will be on. If O indicator is not on, then it's not good.

6. OPERATION ERROR CODES

Err 1	**Can't meet requirement of tare**
Err 2	**Can't meet requirement of zero**
Err 3	**Incorrect input for date/time**
Err 4	**EEPROM chip is damaged**
Err P	**Printing cable is not connected or printer error, print any key to exit**

7. Appendix

Command		Note	Format	Example
A	PC send	handshake	02 AD 41 XH XL 03	02 41 41 30 30 03
	Indicator send	handshake	02 AD 41 XH XL 03	02 41 41 30 30 03
B	PC send	To read	02 AD 42 XH XL 03	02 41 42 30 33 03

		gross weight		
	Indicator send	Send gross weight	02 AD 42 ** ** ** ** ** ** ** ** XH XL 03	02 41 42 2B 30 30 30 2E 30 30 30 30 36 03
C	PC send	To read net weight	02 AD 43 XH XL 03	02 41 43 30 32 03
	Indicator send	Send net weight	02 AD 43 ** ** ** ** ** ** ** ** XH XL 03	02 41 43 2B 30 30 30 2E 30 30 30 30 37 03
D	PC send	To read tare eight	02 AD 44 XH XL 03	02 41 44 30 35 03
	Indicator send	Send tare weight	02 AD 44 ** ** ** ** ** ** ** ** XH XL 03	02 41 44 2B 30 30 30 2E 30 30 30 30 30 03
E	PC send	To tare	02 AD 45 XH XL 03	02 41 45 30 34 03
	Indicator send	Tare	02 AD 45 XH XL 03	02 41 45 30 34 03
F	PC send	To zero	02 AD 46 XH XL 03	02 41 46 30 37 03
	Indicator	Zero	02 AD 46 XH XL 03	02 41 46 30 37 03

G	PC send	To start	02 AD 47 XH XL 03	02 41 47 30 36 03
	Indicator send	start	02 AD 47 XH XL 03	02 41 47 30 36 03
H	PC send	To stop	02 AD 48 XH XL 03	02 41 48 30 39 03
	Indicator send `	Stop	02 AD 48 XH XL 03	02 41 48 30 39 03
I	PC send	To charge	02 AD 49 XH XL 03	02 41 49 30 38 03
	Indicator send	Begin charge	02 AD 49 XH XL 03	02 41 49 30 38 03
J	PC send	To discharge	02 AD 4A XH XL 03	02 41 4A 30 42 03
	Indicator send	Begin discharge	02 AD 4A XH XL 03	02 41 4A 30 42 03
K	PC send	To Pause/Continue	02 AD 4B XH XL 03	02 41 4B 30 41 03
	Indicator send	Pause/Continue	02 AD 4B XH XL 03	02 41 4B 30 41 03

L	PC send	To accumulate	02 AD 4C XH XL 03	02 41 4C 30 44 03
	Indicator send	Accumulate	02 AD 4C XH XL 03	02 41 4C 30 44 03
M	PC send	To print	02 AD 4D XH XL 03	02 41 4D 30 43 03
	Indicator send	Print	02 AD 4D XH XL 03	02 41 4D 30 43 03
N	PC send	To print accumulation value	02 AD 4E XH XL 03	02 41 4E 30 46 03
	Indicator send	Print accumulation value	02 AD 4E XH XL 03	02 41 4E 30 46 03
O	PC send	To print formula	02 AD 4F XH XL 03	02 41 4F 30 45 03
	Indicator send	Print formula	02 AD 4F XH XL 03	02 41 4F 30 45 03
P	PC send	To print calibration rate	02 AD 50 XH XL 03	02 41 50 31 31 03
	Indicator send	Print calibration rate	02 AD 50 XH XL 03	02 41 50 31 31 03
Q	PC send	To read content of calibration rate		
	Indicator send	Send content of calibration rate	02 AD 51 NN XH XL 03	02 41 51 30 32 30 03
R	PC send	To read parameter for batching	02 AD 52 NN XH XL 03	02 41 52 30 32 33 03
	Indicator send	Send parameter for batching	02 AD 52 NN C1 C2 C3 XH XL 03	02 41 52 30 30 30 30 31 33 03
S	PC send	To read	02 AD 53 NN XH XL 03	02 41 53 30 32 32

		accumulation value		03
	Indicator send	Send accumulation value	02 AD 53 NN C1 C2 C3 XH XL 03	02 41 53 30 30 30 30 31 32 03
T	PC send	To write content of calibration rate	02 AD 54 NN C1 C2 C3 XH XL 03	02 41 54 30 30 30 32 31 37 03
	Indicator send	Write content of calibration rate	02 AD 54 NN C1 C2 C3 XH XL 03	02 41 54 30 30 30 32 31 37 03
U	PC send	To write content of calibration rate	02 AD 55 NN C1 C2 C3 XH XL 03	02 41 55 30 32 35 35 31 36 03
	Indicator send	Write content of calibratio	02 AD 55 NN C1 C2 C3 XH XL 03	02 41 55 30 32 35 35 31 36 03

V	PC send	To clear accumulation value	02 AD 56 XH XL 03	02 41 56 31 37 03
	Indicator send	Clear accumulation value	02 AD 56 XH XL 03	02 41 56 31 37 03
W	PC send	To read date	02 AD 54 NN C1 C2 C3 XH XL 03	02 41 54 30 30 30 32 31 37 03
	Indicator send	Send date	02 AD 54 NN C1 C2 C3 XH XL 03	02 41 54 30 30 30 32 31 37 03
X	PC send	To read time	02 AD 58 XH XL 03	02 41 58 31 39 03
	Indicator send	Send time	02 AD 58 C1 C2 C3 C4 C5 C6 C7 C8 XH XL 03	02 41 58 30 34 3A 31 35 3A 32 36 31 44 03
Y	PC send	To write date	02 AD 59 C1 C2 C3 C4 C5 C6 C7 C8 XH XL 03	02 41 59 30 35 2D 30 37 2D 32 36 31 45 03
	Indicator	Write date	02 AD 59 C1 C2 C3 C4	02 41 59 30 35 2D

	send		C5 C6 C7 C8 XH XL 03	30 37 2D 32 36 31 45 03
Z	PC send	To write time	02 AD 5A C1 C2 C3 C4 C5 C6 C7 C8 XH XL 03	02 41 5A 30 39 3A 34 30 3A 32 36 31 32 03
	Indicator send	Write time	02 AD 5A C1 C2 C3 C4 C5 C6 C7 C8 XH XL 03	