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AN ISO/IEC 17025:2017
ACCREDITED CALIBRATION COMPANY

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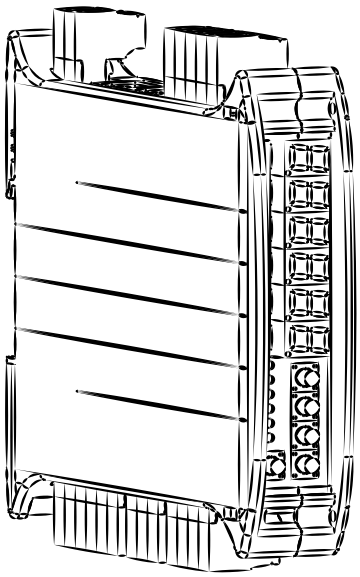
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SCT-1SX-MODBUS TCP/IP

Quick Start Guide

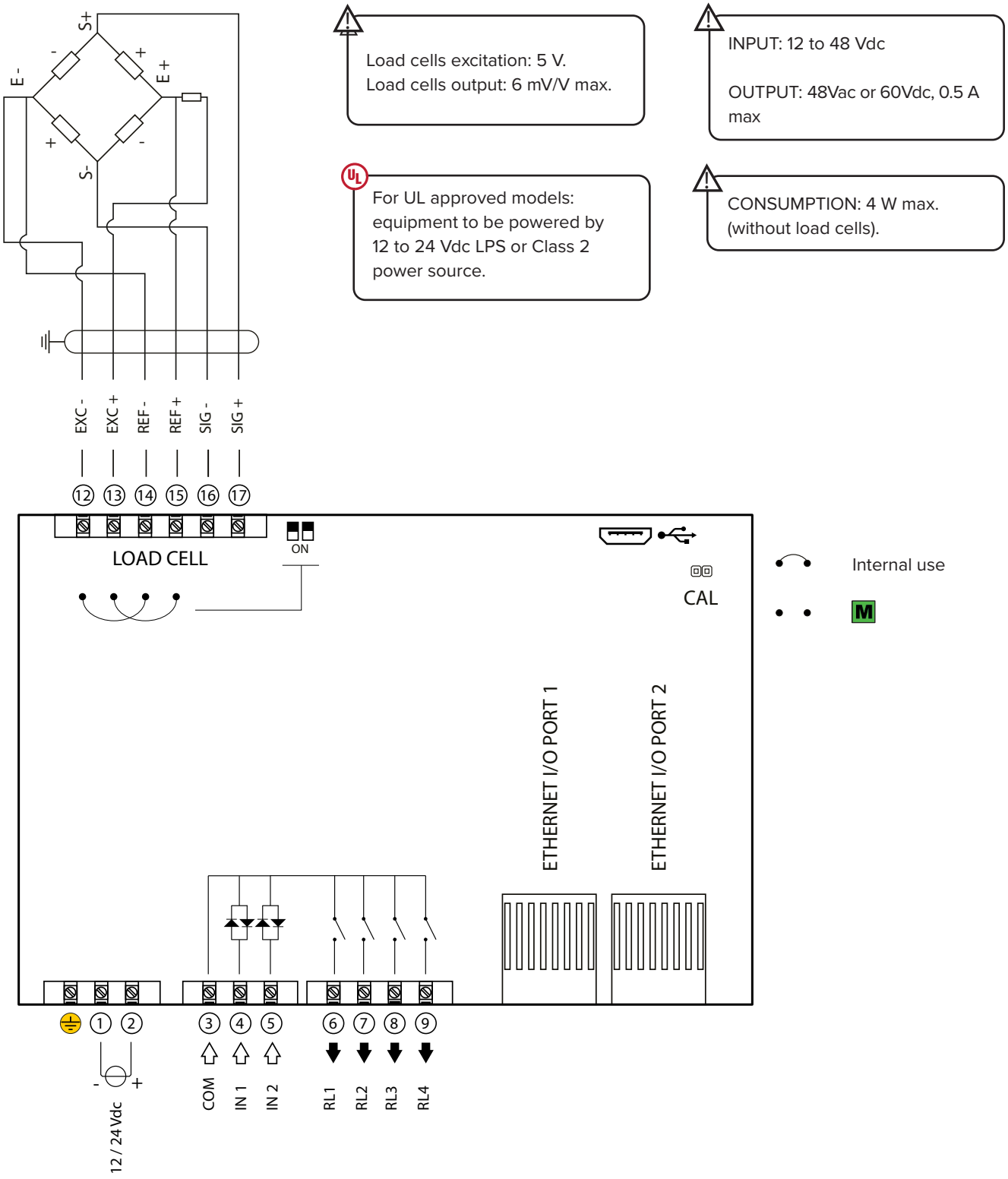


RICE LAKE®
WEIGHING SYSTEMS

September 29, 2023

PN 219717 Rev A

1. Electrical Schematic



Load cells excitation: 5 V.
Load cells output: 6 mV/V max.

INPUT: 12 to 48 Vdc

OUTPUT: 48Vac or 60Vdc, 0.5 A max

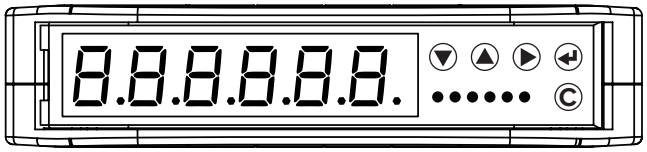
For UL approved models: equipment to be powered by 12 to 24 Vdc LPS or Class 2 power source.

CONSUMPTION: 4 W max. (without load cells).

Manuals are available from Rice Lake Weighing Systems at www.ricelake.com/manuals
Warranty information is available at www.ricelake.com/warranties

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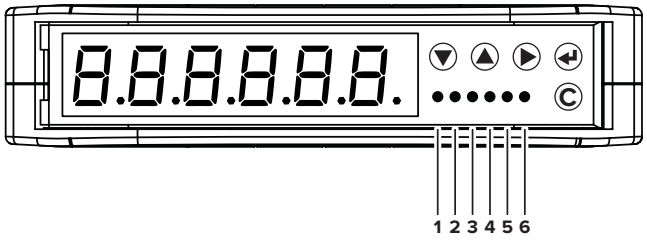
2. Key Functions



Configuration menu	
▼	Decreases digit / Scrolls down.
▲	Increases digit / Scrolls up.
▶	Enters the setup. Selects digit to modify.
↵	Enters a step / Confirms.
C	Clears / Exits a step (no save).

Weighing mode	
▼	Clears the displayed gross weight.
▲	Short press: executes semiautomatic tare. Long press: allows to enter known tare.
▶	Activates / deactivates the function.
↵	Short press executes data transmission on the printer serial port. Long press: Setpoint configuration.
C	ON/Standby of the instrument.

3. Indicator Light Descriptions

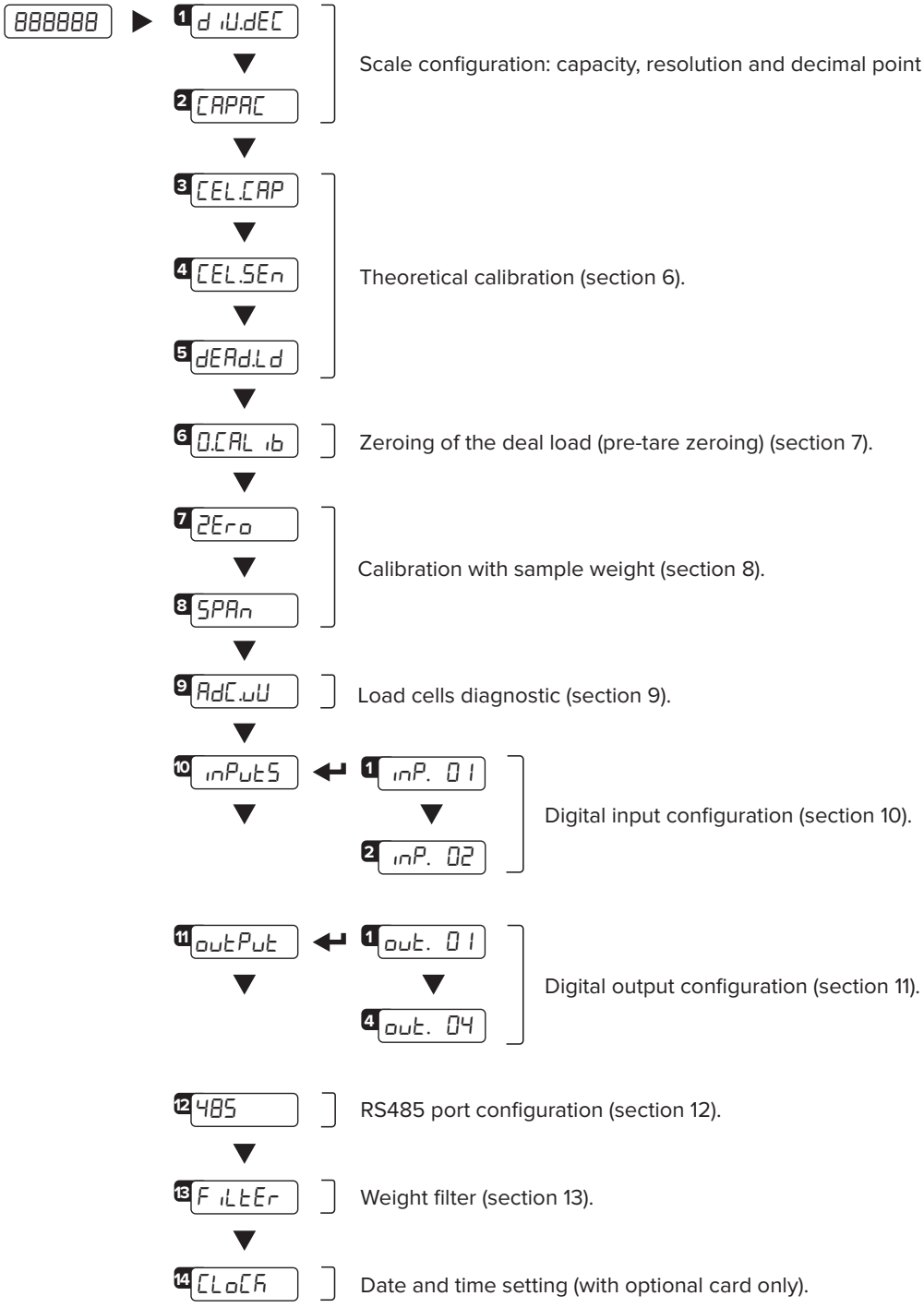


1	Weight on zero.
2	Unstable weight.
3	A tare is active.
4	A function is active.
5	Digital output 1 is active.
6	Digital output 2 is active.

4. Configuration Menu

1. Reboot the weight transmitter

2. Press the ▶ key when display shows the 888888 message:



HOW TO EXIT THE MENU AND SAVE YOUR CONFIGURATION

1. Press **C** key repeatedly until SAVEP appears; press ↵ to save or press **C** to exit without saving.

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5. Maximum Scale Capacity, Increment and Decimal Point Settings

888888 ▶ 1 d iU.dEC

Set the decimal point position and the minimum scale increment*1
(0.001 - 0.002 - 0.005 - 0.01 - 0.02 - 0.05 - 0.1 - 0.2 - 0.5 - 1 - 2 - 5 - 10 - 20 - 50).

▼

2 CAPAC

Set the maximum scale capacity*2 *(max 999999).*

Examples:

For a 60000 lb scale, with 2 lb increment:
d iU.dEC = 2
CAPAC = 60000

For a 10000 g scale, with 0.1 g increment:
d iU.dEC = 0.1
CAPAC = 10000.0

For a 3000 lb scale, with 0.05 lb increment:
d iU.dEC = 0.05
CAPAC = 3000.00

*1 *Increment = the amount that the scale will increment by as weight is added or removed.*
*2 *Maximum capacity = the maximum weight that can be measured using the scale you are creating.*

6. Theoretical Calibration

888888 ▶ ...

▼

3 CEL.CAP

Set the total load cells capacity *(up to 999999).*

▼

4 CEL.SEn

Set the load cells sensitivity *(up to 999999).* ✱

▼

5 dEAd.Ld

Dead load weight *(from -9999.9 to 99999.9).*

1. Set d iU.dEC and CAPAC (section 4).

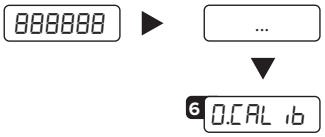
2. Set in CEL.CAP the total load cells capacity *(sum of the nominal load cell capacities).*

3. Set in CEL.SEn the theoretical signal value of the load cells. ✱

4. Enter in dEAd.Ld step. The display shows the theoretical dead load value. Modify the value and/or confirm with ↵.

5. Save calibration (Press **C** key many times until SAVEP message will appear, then press ↵ to confirm).

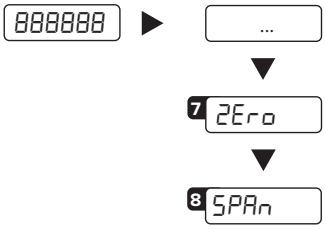
7. Zero Mechanical Tare (pre-tare zeroing)



Zeroing of the pre-tare (or mechanical tare).

This functionality allows to zero the weigh of the scale structure (e.g. empty silo, conveyor, etc.) without changing the calibration in memory.

8. Calibration with Sample Weight



Zero point acquisition.

Sample weight acquisition.

1. Unload the scale.

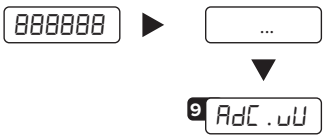
2. Enter the 2Ero step to adjust the zero point.

3. Load the scale with span weight.

4. Enter the SPAn step, type the span weight value and press ↵ to adjust.

5. Save adjustment (Press **C** key many times until SAVE? message will appear, then press ↵ to confirm).

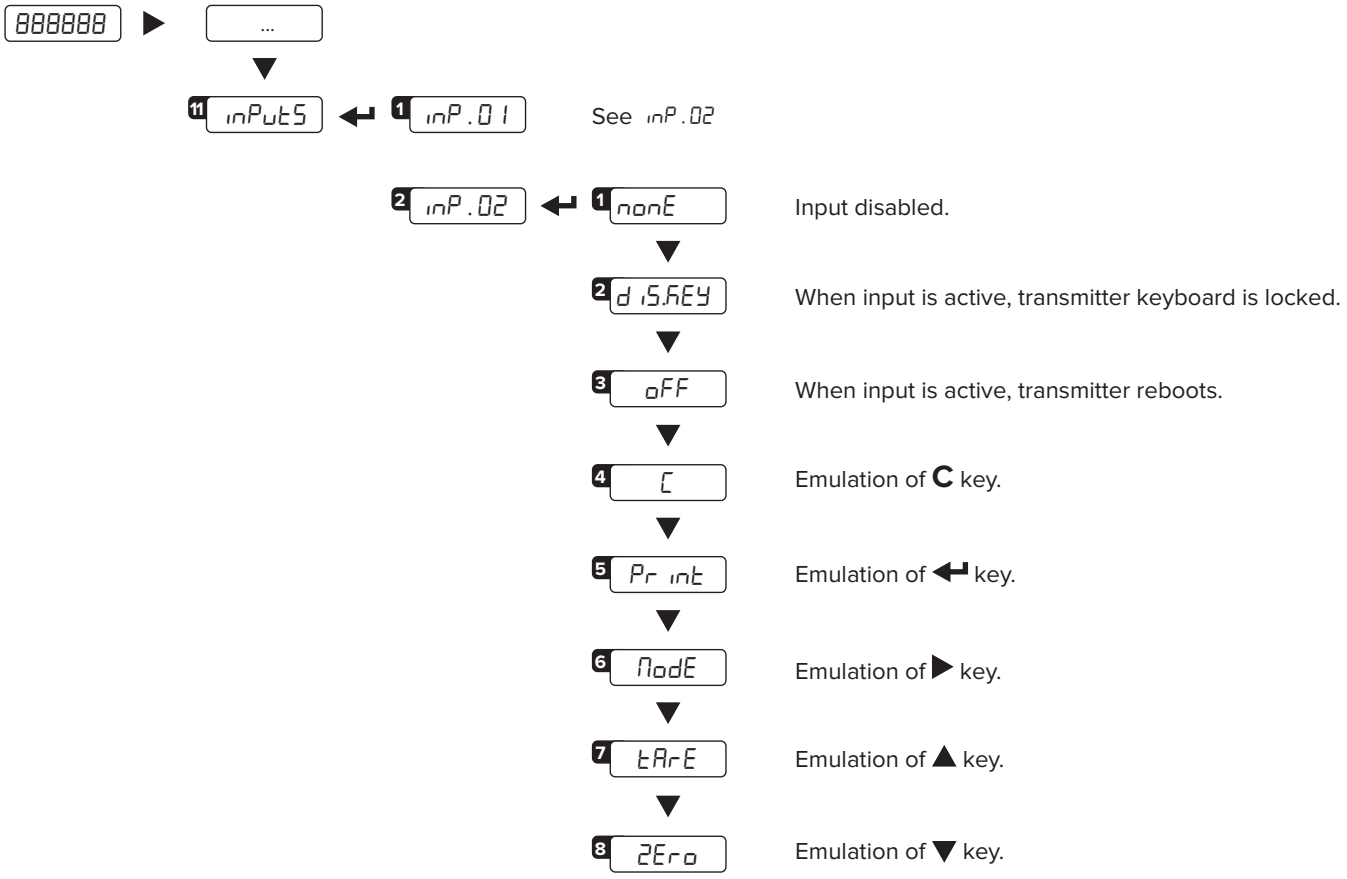
9. Load Cells Diagnostics (µV/V)



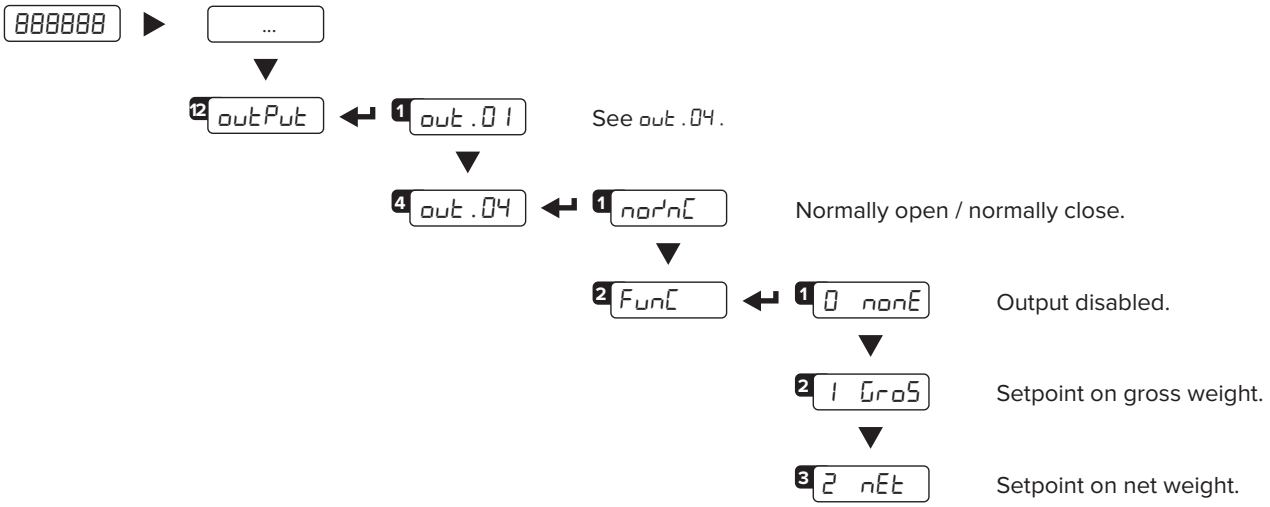
It allows to verify signal of each channel. It must be included into the range 0 to 3 mV/V. Signal have to be stable and it have to increase by increasing the weight on the scale.

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10.Input Settings



11. Output Settings



11.1 HOW TO PROGRAM SETPOINTS

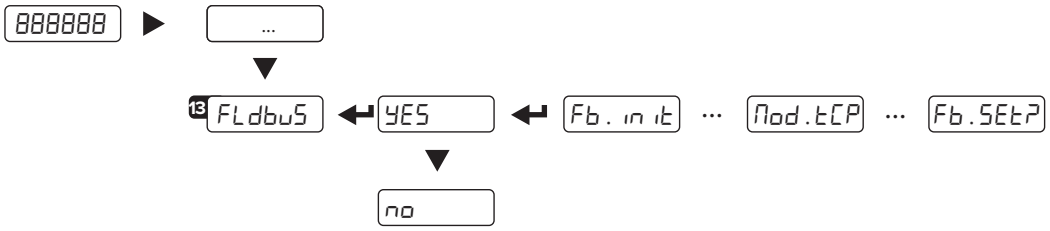
1. In weighing mode, press ↵ for 3 second.

2. Select the setpoint to modify:

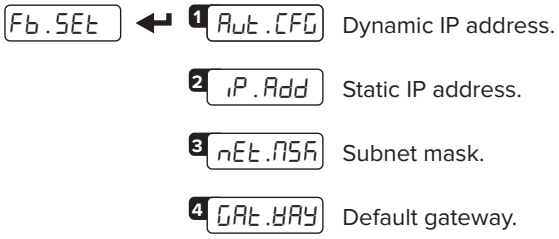
- S.1 on — Set the output 1 setpoint value.
- S.2 on ↵ — Set the output 2 setpoint value.

3. Press **C** key to save and exit the menu.

12. Fieldbus Settings

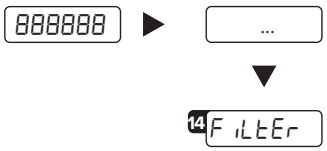


Set the IP address:



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13. Weight Filter



The active weight filter is displayed, alternating with the weight value.
Press ▲ and ▼ keys to scroll through the available filters (from slowest to fastest, F1 to F11).

14. Programming Errors

MESSAGE	DESCRIPTION	SOLUTION
PrEC.	Calibration error	First calibrate the zero point (ZEro), then proceed with sample weight acquisition (SPAn) (section 9).
Err.Pnt	Calibration error	Check the connection of the load cell. Verify the load cell signal is stable, valid and greater than the previously acquired point.
Er 11	Calibration error	Increase the calibration weight.
Er 12	Calibration error	Check the signal from the load cell increases when weight is incremented on the scale.
Er 37	Calibration error	Repeat calibration and verify capacity and division have been correctly set.
Er 39	Instrument not configured	Transmitter needs to be configurated.
C.Er.36	Calibration error	Verify the signal from the load cell is not negative.
C.Er.37	Calibration error	Verify the signal from the load cell is not negative.
Err.Not	Weight unstable	Check in AdC.uU parameter that the signal is stable. If the connection of the cells is with 4 wires, check that the sense jumpers are inserted.
AdC.Err	A/D converter error	Converter failure. Reboot the instrument.
CEL.Err	Global load cell error	Signal anomaly: check the load cells connection.

15. Modbus TCP

15.1 MODBUS TCP REGISTERS

<table>
<tr><th>Data</th><th>Register</th><th colspan="2">DESCRIPTION</th></tr>
<tr><td rowspan="2">Gross weight</td><td>30001 (H)</td><td colspan="2" rowspan="2">Registers 30001 and 30002 contain the Gross Weight value.</td></tr>
<tr><td>30002 (L)</td></tr>
<tr><td rowspan="2">Net weight</td><td>30003 (H)</td><td colspan="2" rowspan="2">Registers 30003 and 30004 contain the Net Weight value.</td></tr>
<tr><td>30004 (L)</td></tr>
<tr><td rowspan="2">Input status register</td><td rowspan="2">30005</td><td>Bit 15 (msb)
Bit 14
Bit 13
Bit 12
Bit 11
Bit 10
Bit 9
Bit 8 (lsb)</td><td>Active channel.
Active channel.
No function.
No function.
No function.
No function.
Status of input n. 2.
Status of input n. 1.
<table><tr><th>Bit 15</th><th>Bit 14</th><th>Active Channel</th></tr><tr><td>0</td><td>0</td><td>Channel 1</td></tr><tr><td>0</td><td>1</td><td>Channel 2</td></tr><tr><td>1</td><td>0</td><td>Channel 3</td></tr><tr><td>1</td><td>1</td><td>Channel 4</td></tr></table></td></tr>
<tr><td>Bit 7 (msb)
Bit 6
Bit 5
Bit 4
Bit 3
Bit 2
Bit 1
Bit 0 (lsb)</td><td>1 = Scale unloaded (gross weight = 0).
Tare PT (1 = PT tare is active).
Tare (1 = Tare is active).
Overload condition (0 = No; 1 = Overload).
Underload condition (0 = No; 1 = Underload).
Weight Stability (0 = Unstable; 1 = Stable).
Gross Weight Polarity (0 = “+”; 1 = “-”).
Net Weight Polarity (0 = “+”; 1 = “-”).</td></tr>
<tr><td rowspan="2">Command status register</td><td rowspan="2">30006</td><td colspan="2">Last received command.</td></tr>
<tr><td>Bit 7 (msb)
Bit 6
Bit 5
Bit 4
Bit 3
Bit 2
Bit 1
Bit 0 (lsb)</td><td>Last command result.
Last command result.
Last command result.
Last command result.
Counting of processed commands.
Counting of processed commands.
Counting of processed commands.
Counting of processed commands.</td></tr>
<tr><td rowspan="2">Output status register</td><td rowspan="2">30007</td><td colspan="2">No Function.</td></tr>
<tr><td>Bit 7 (msb)
...
Bit 2
Bit 1
Bit 0 (lsb)</td><td>No function.
...
No function.
Digital output 2 status (0 = OFF; 1 = ON).
Digital output 1 status (0 = OFF; 1 = ON).</td></tr>
<tr><td>Selected page</td><td>30008</td><td colspan="2">Shows the value of the selected page (3001).</td></tr>
<tr><td>µV</td><td>30009</td><td colspan="2">µV value.</td></tr>
</table>

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15.2 MODBUS TCP REGISTERS FOR COMMAND SENDING

<table>
<tr><th>Data</th><th>Register</th><th>DESCRIPTION</th></tr>
<tr><td>Command</td><td>40001</td><td>Main available commands:
<table>
<tr><th>Value</th><th>Command</th></tr>
<tr><td>00 Hex</td><td>No command</td></tr>
<tr><td>01 Hex</td><td>Scale zeroing</td></tr>
<tr><td>02 Hex</td><td>Tare</td></tr>
<tr><td>03 Hex</td><td>Preset Tare</td></tr>
<tr><td>0A Hex</td><td>Setpoint 1 setting</td></tr>
<tr><td>0B Hex</td><td>Setpoint 2 setting</td></tr>
<tr><td>19 Hex</td><td>Digital output setting</td></tr>
<tr><td>22 Hex</td><td>Reboot the weight transmitter</td></tr>
</table></td></tr>
<tr><td rowspan="2">Parameter 1</td><td>40002 (H)</td><td rowspan="2">First parameter of the command.
Parameter is always expressed in absolute mode (no decimals, no sign).</td></tr>
<tr><td>40003 (L)</td></tr>
<tr><td rowspan="2">Parameter 2</td><td>40004 (H)</td><td rowspan="2">Second parameter of the command.
Parameter is always expressed in absolute mode (no decimals, no sign).</td></tr>
<tr><td>40005 (L)</td></tr>
<tr><td rowspan="3"></td><td>40006</td><td rowspan="3">Used in advanced configuration, refer to the complete Fieldbus manual for further information.</td></tr>
<tr><td>...</td></tr>
<tr><td>40016</td></tr>
</table>

EXAMPLE 1

For zeroing the weight on the scale:

2. Set the command in byte 2

Byte	Value
1	00 Hex
2	01 Hex

EXAMPLE 2

For setting a preset tare of 1000 lb:

1. Set the tare value in parameter 1 (byte 3, 4, 5, 6)
2. Set the command in byte 2

Byte	Value
1	00 Hex
2	03 Hex
$3_{(MSB)}$	00 Hex
4	00 Hex
5	03 Hex
$6_{(LSB)}$	E8 Hex

Notes

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Notes

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230 W. Coleman St. • Rice Lake, WI 54868 • USA USA: 800-472-6703 • International: +1-715-234-9171