

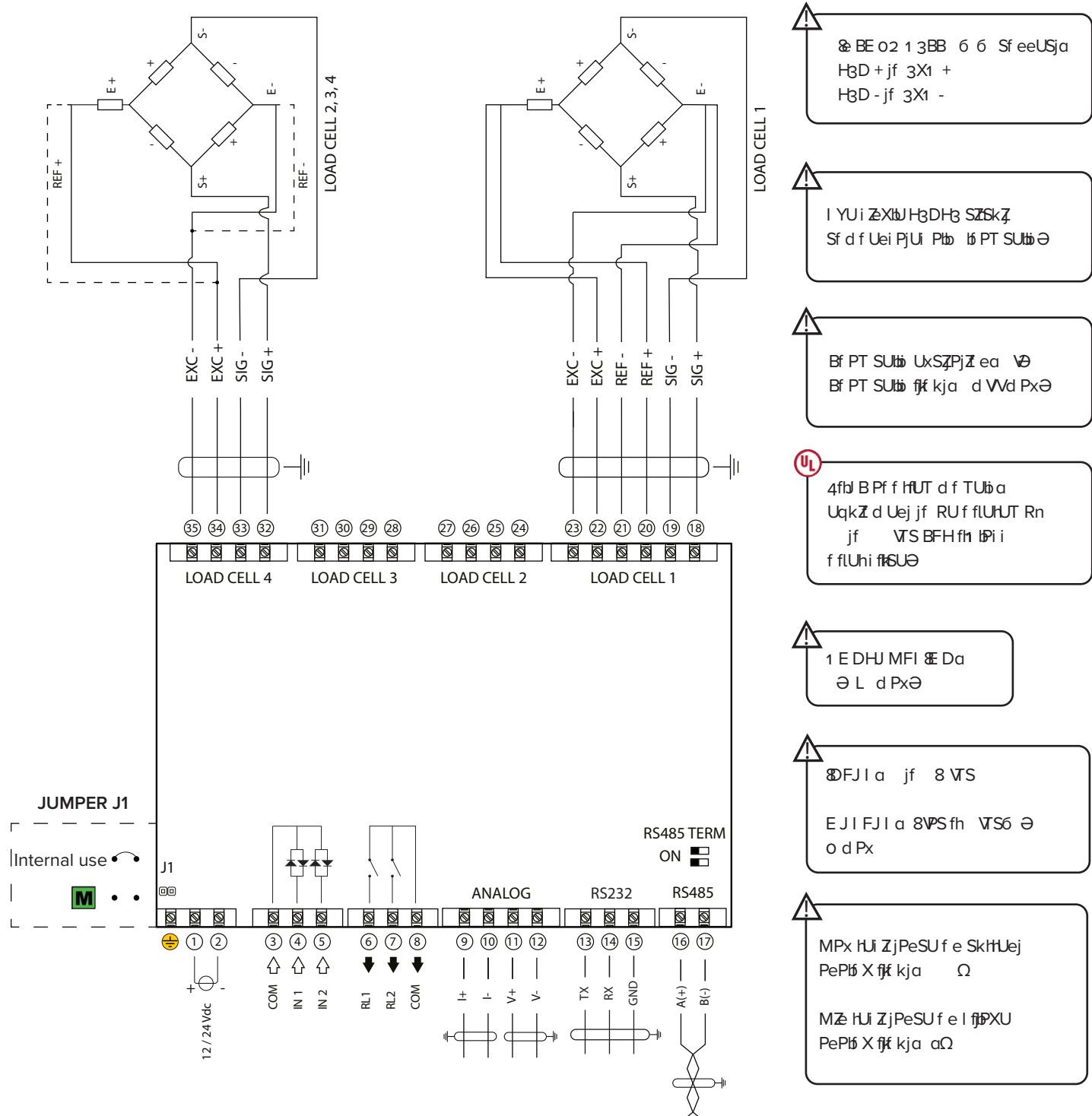
SCT-4X-AN

Quick Start Guide



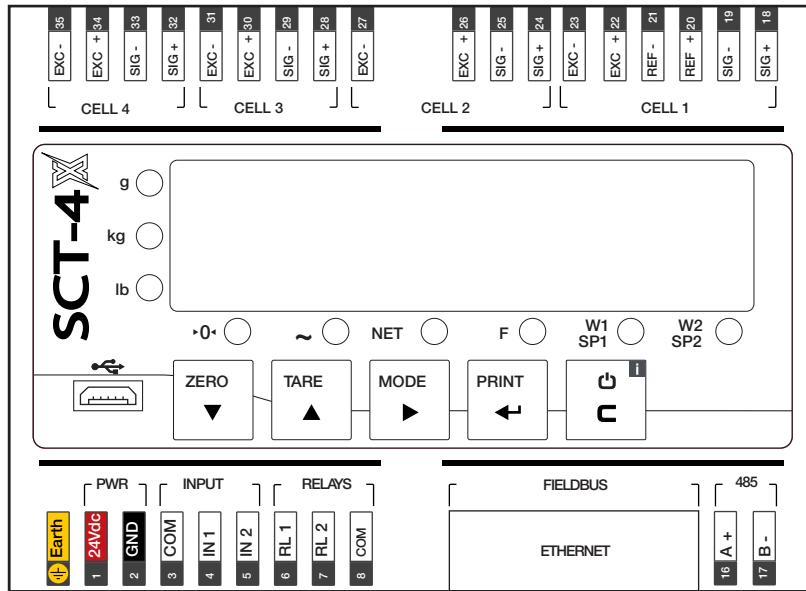
RICE LAKE[®]
WEIGHING SYSTEMS

1. Electrical Schematic



MPekPb PhU PI PZRlWf d GzSu BPdUL UZYzEx Hhi jUd i Pj l l l BzSuPaUsf d /d PekPb
L PhtPejn Zvdi PjZ e Z PI PZRlWf Pj l l l BzSuPaUsf d /l PhtPejZi

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).

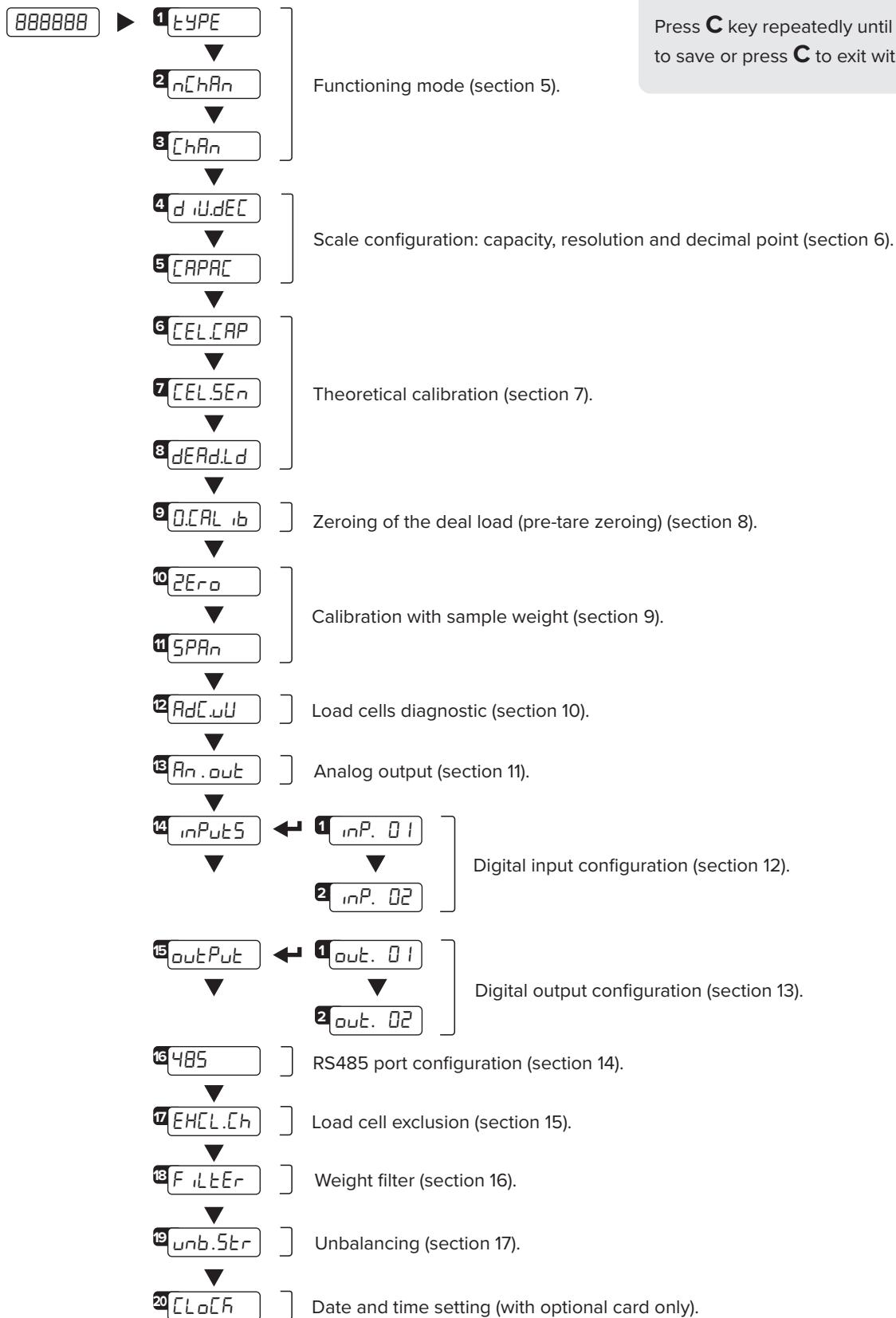
Weighing mode	
▼	Clears the displayed gross weight.
▲	Short press: executes semiautomatic tare. Long press: allows to enter known tare.
▶	Long press: switches between scales (only in Mode 2 "ind. [h]").
◀	Short press: executes data transmission on the printer serial port. Long press: Setpoint configuration.
C	ON/Standby of the instrument.

3. Indicator Light Descriptions

►□▼	Weight on zero.
~	Unstable weight.
NET	A tare is active.
F	A function is active.
W1 SP1	Digital output 1 is active.
W2 SP2	Digital output 2 is active.

4. Configuration Menu

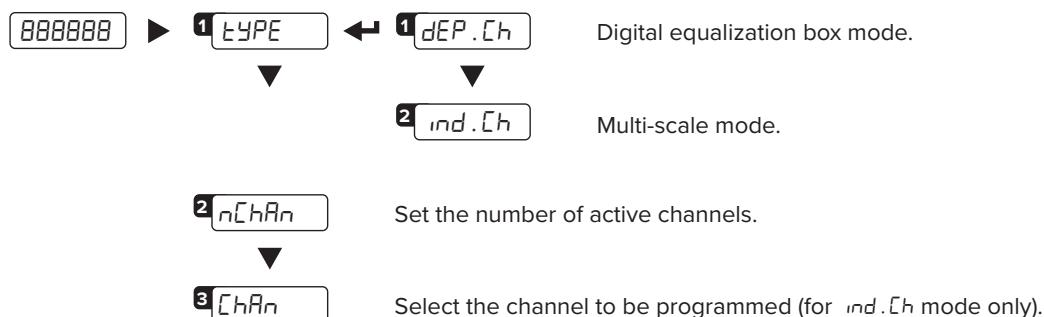
1. Reboot the weight transmitter
2. Press the ► key when display shows the **888888** message:



HOW TO EXIT THE MENU AND SAVE YOUR CONFIGURATION

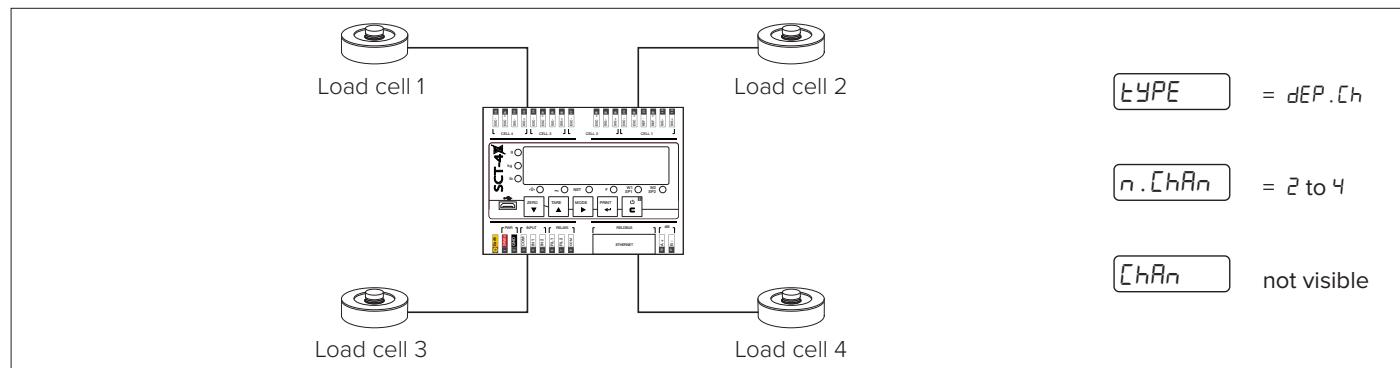
Press **C** key repeatedly until **SaUEP** appears; press **◀** to save or press **C** to exit without saving.

5. Function Mode



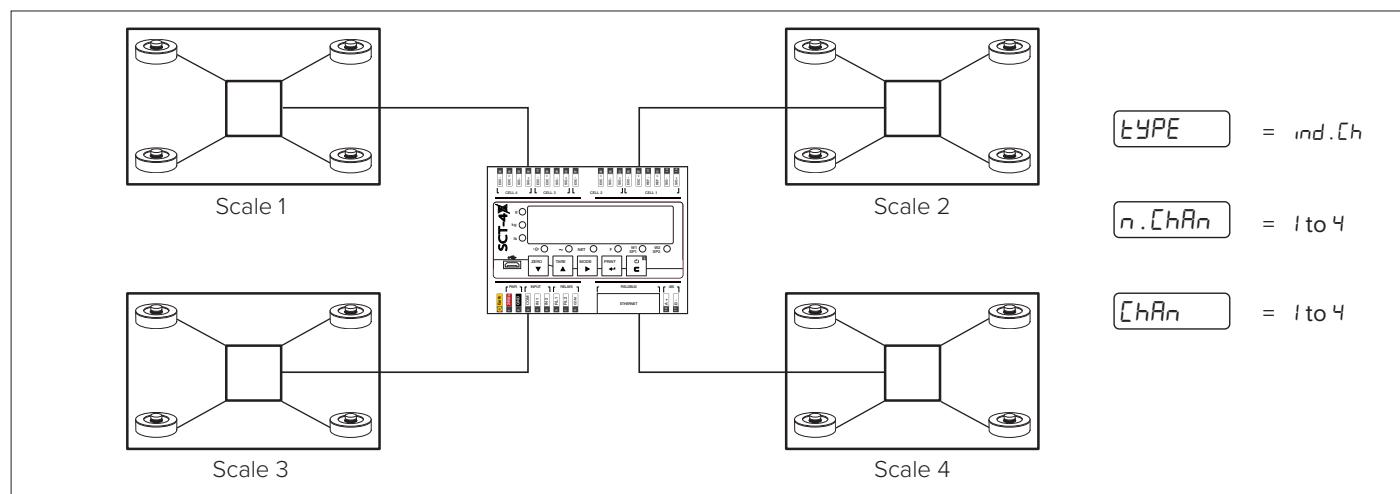
MODE 1 “DEP.CH”

Allows to connect directly the load cells, equalize them (if necessary) and transmit each load cell data and the total weight through Fieldbus.

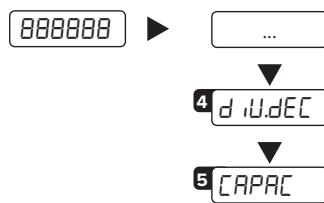


MODE 2 “IND.CH”

Allows to manage up to 4 independent scales and transmit all data of each scale through Fieldbus.



6. Maximum Scale Capacity, Increment and Decimal Point Settings



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).

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:

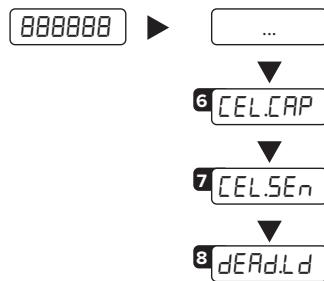
$$d.IU.dEC = 0.05$$

$$CAPAC = 3000.00$$

*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.

7. Theoretical Calibration



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

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

Dead load weight (from -9999.9 to 99999.9).

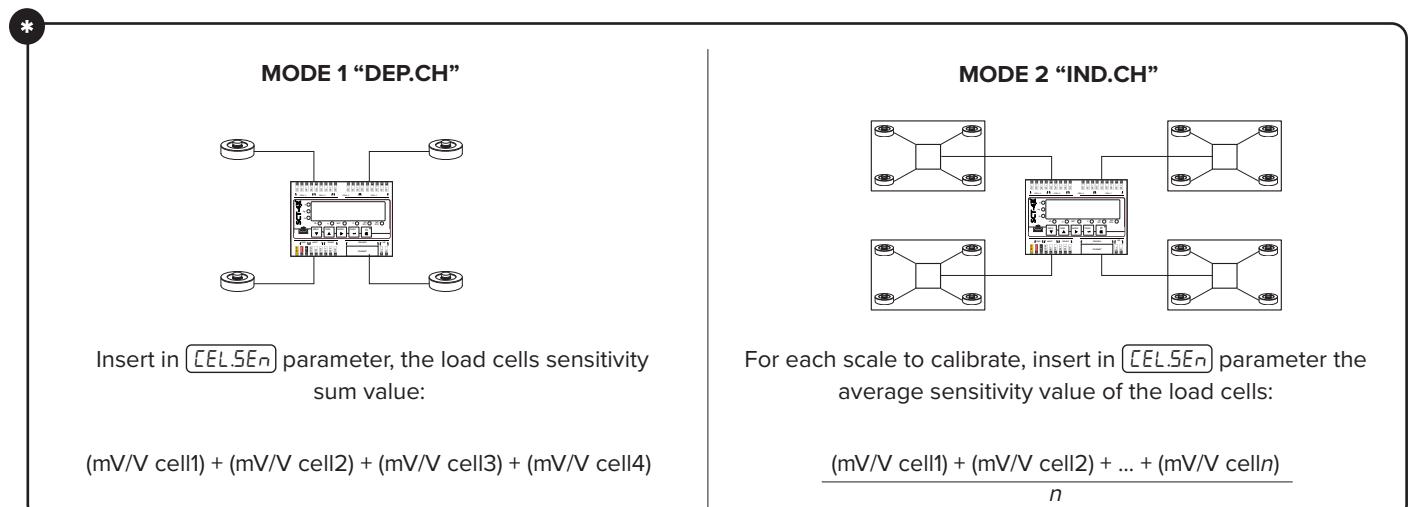
1. Set [d.IU.dEC] and [CAPAC] (section 4).

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

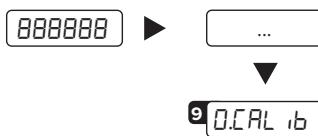
3. Set in [CEL.SEn] the theoretical signal value of the load cells. *

4. Enter in [dERd.Ld] step. The display shows the theoretical dead load value. Modify the value and confirm with ↵.

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



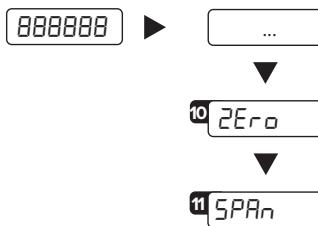
8. Zero Mechanical Tare (pre-tare zeroing)



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.

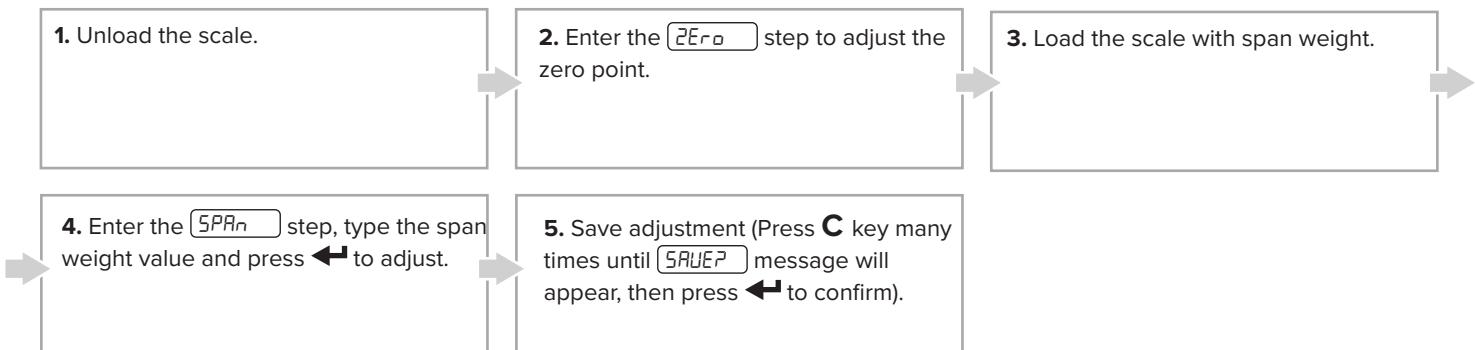
9. Calibration with Sample Weight



Zero point acquisition.



Sample weight acquisition.



10. Load Cell Diagnostics (μ V/V)

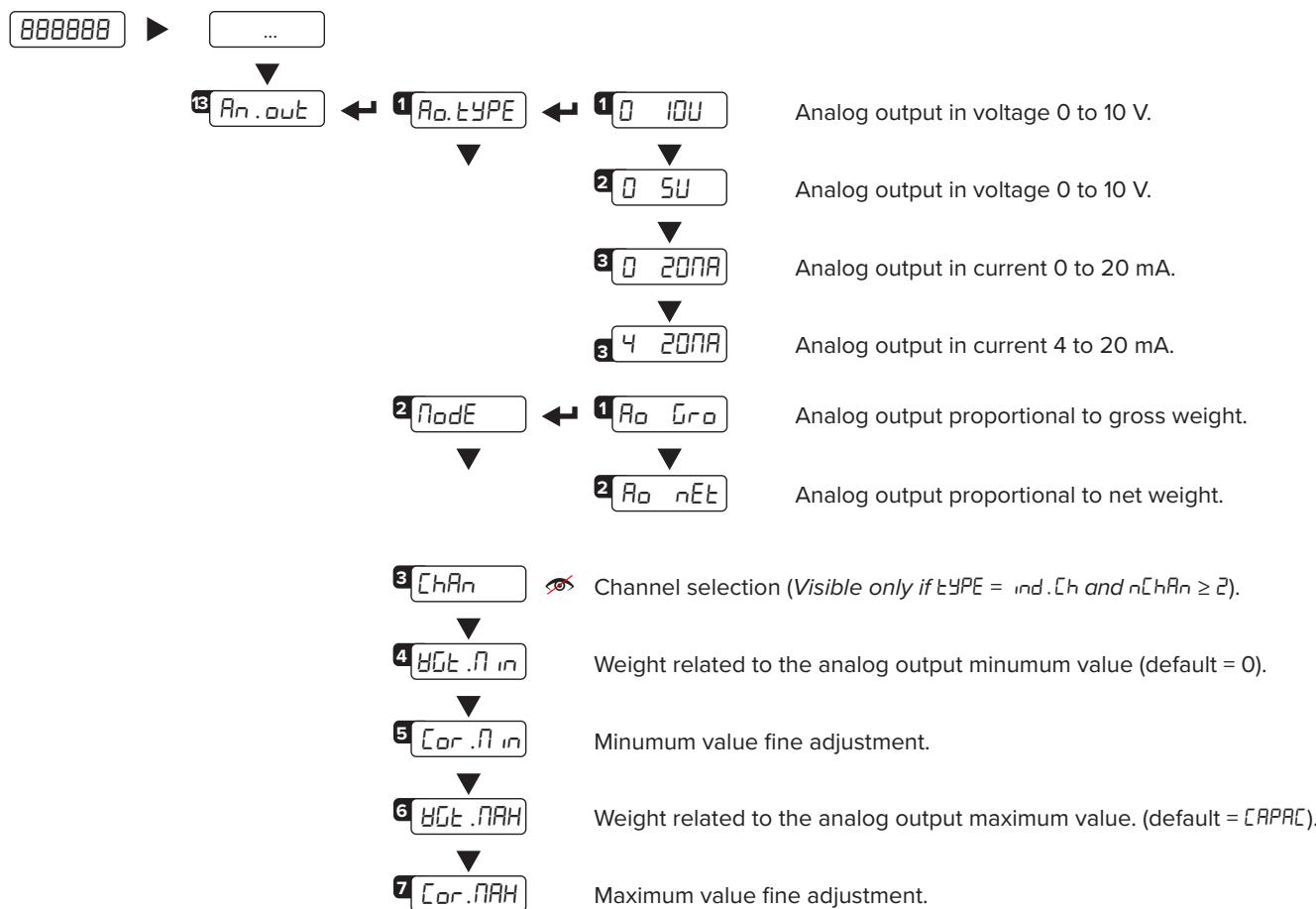


It allows to verify signal of each channel. It must be included into the range 0 to 3 mV/V. Signal have to be stable and it have to increase by increasing the weight on the scale.



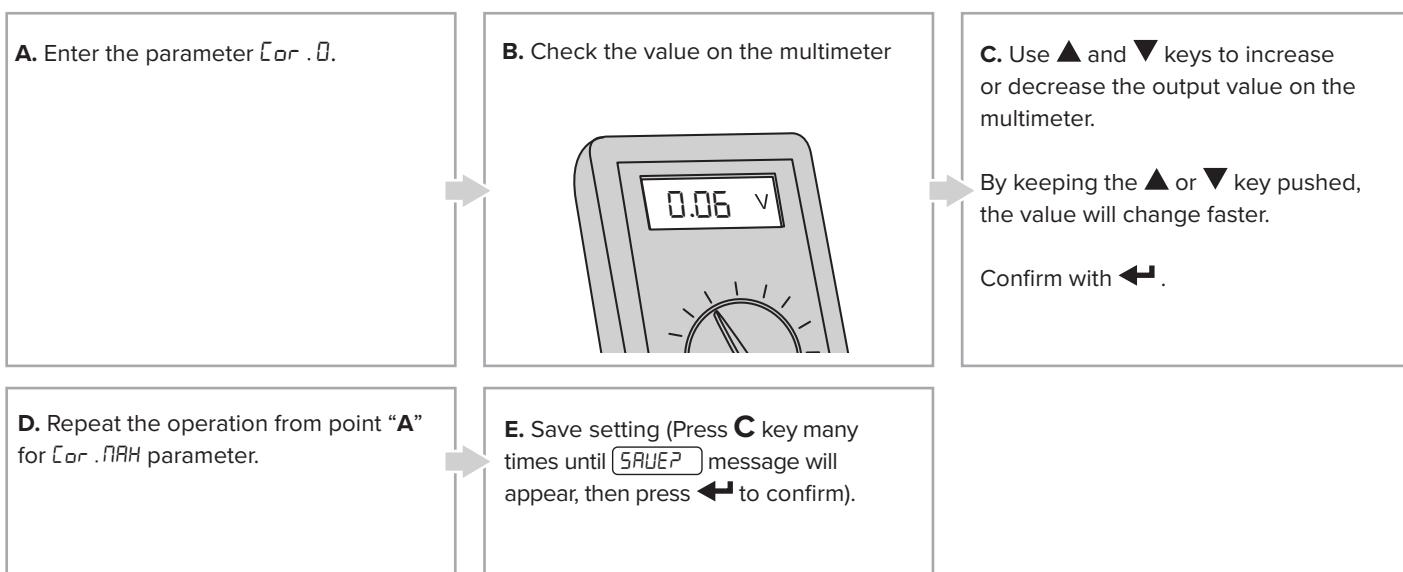
With more channels connected, it's possible to scroll between channels with keys ▼ and ▲.

11. Analog Output



11.1 ANALOG OUTPUT FINE ADJUSTMENT

1. Connect a multimeter to pin 9 (+) and 10 (-) for the current analog output or 11 (+) and 12 (-) for the voltage analog output.
2. Follow the procedure:

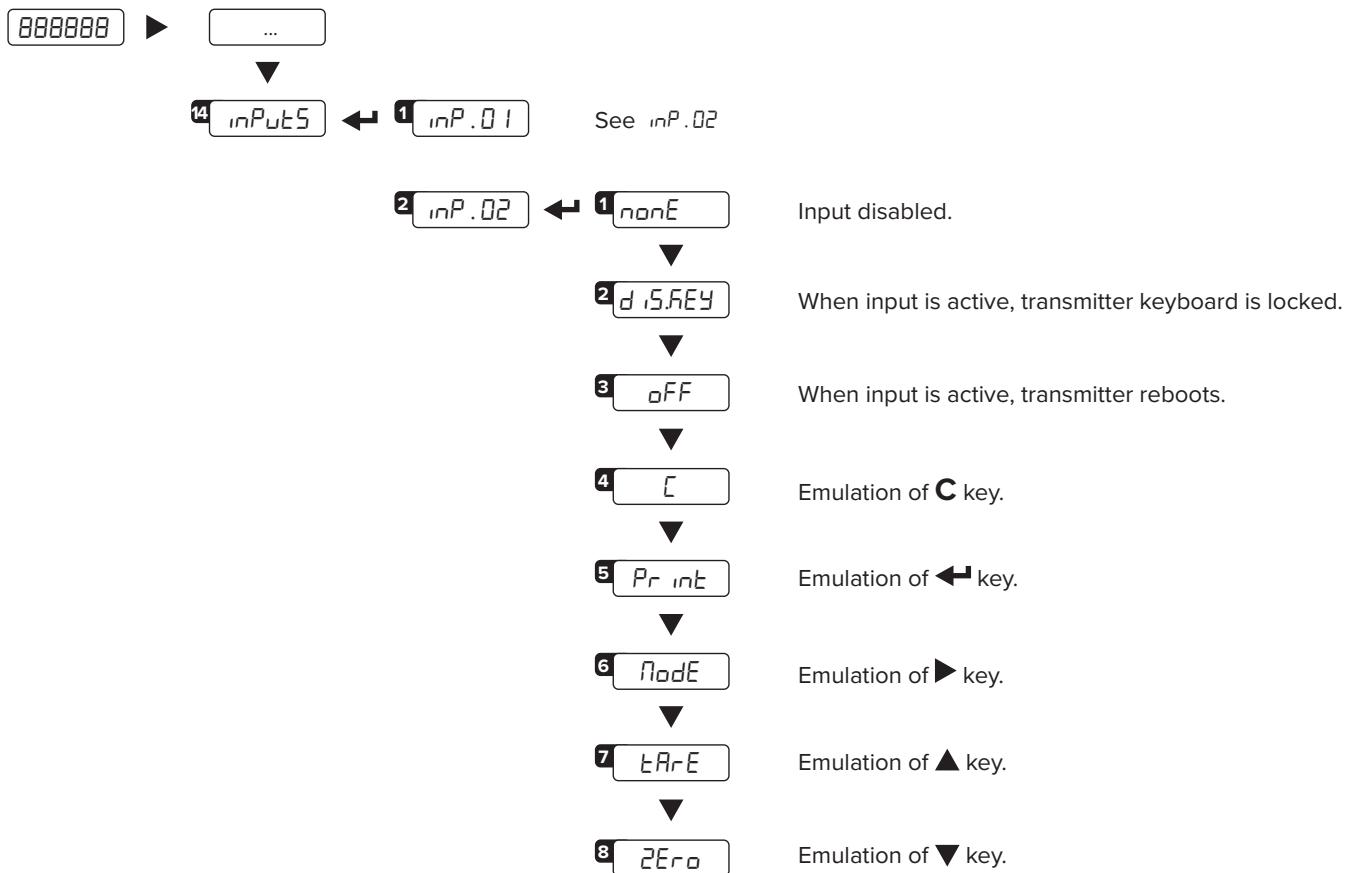


11.2 EXAMPLES

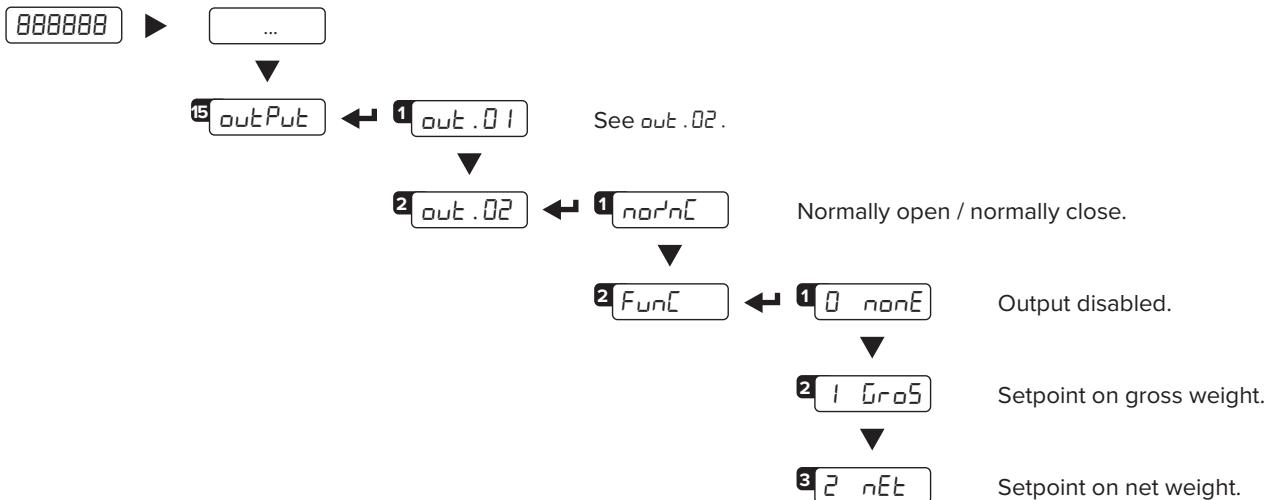
Analog output setting for gross weight at 10 V with a 1000 lb scale: Analog output setting for net weight at 4 20 mA with a 20000 lb scale:

- Connect a multimeter to pins 11 (+) e 12 (-).
- Select $0\text{-}10\text{ V}$ in the parameter $\text{Ro}.TYPE$.
- Select Ro_G in the parameter RoAdE .
- Select the channel (if necessary) in the parameter ChAn .
- Set the weight at 0 V in the parameter $\text{HGT}.VAL$ (default = 0 lb).
- Set the weight at 10 V in the parameter $\text{HGT}.VAL$ (default = 1000 lb).
- Correct, if necessary, the output values as shown in section 11.2.
- Connect a multimeter to pins 9 (+) e 10 (-).
- Select $4\text{-}20\text{ mA}$ in the parameter $\text{Ro}.TYPE$.
- Select Ro_N in the parameter RoAdE .
- Select the channel (if necessary) in the parameter ChAn .
- Set the weight at 4 mA in the parameter $\text{HGT}.VAL$ (default = 0 lb).
- Set the weight at 20 mA in the parameter $\text{HGT}.VAL$ (default = 20000 lb).
- Correct, if necessary, the output values as shown in section 11.2.

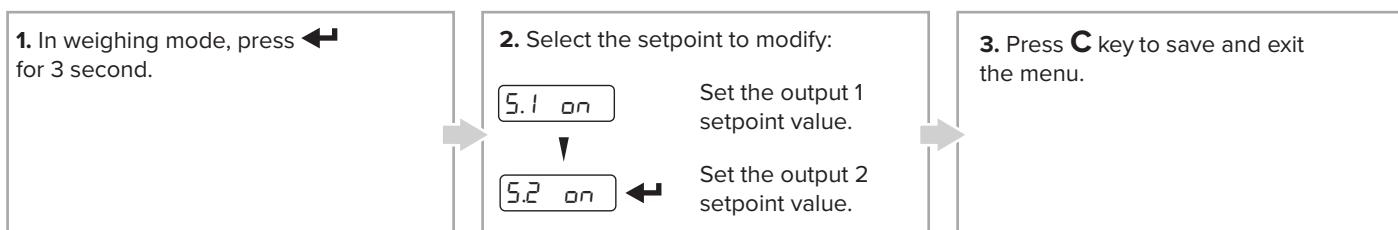
12. Input Settings



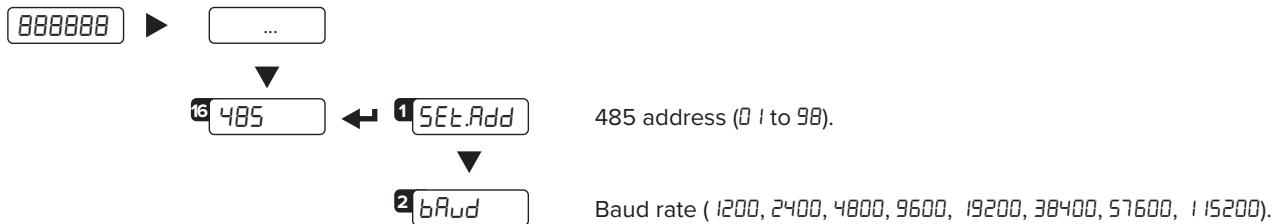
13. Output Settings



13.1 HOW TO PROGRAM SETPOINTS



14. RS485 Port

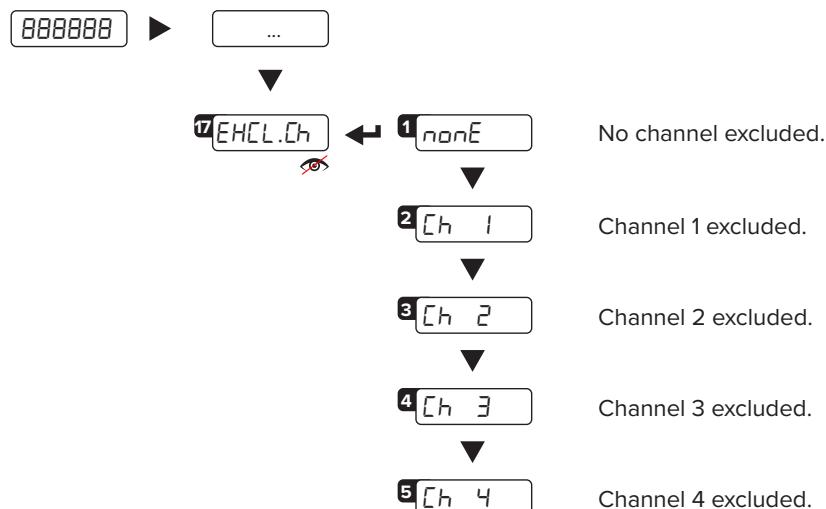


The RS485 port is configured by default to communicate in Modbus RTU (section 18).

15. Load Cell Exclusion (for dependent channel systems)

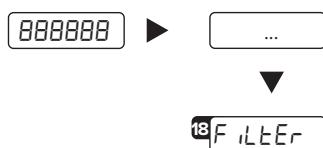
If a load cell is broken, it's possible to temporarily exclude the channel where it is connected and continue to weigh, pending replacement.

⚠ WARNING: this operation reduces the accuracy of the weighing system. We recommend use for liquid weighing or in applications where the load is evenly distributed.



Visible only in dEP .Ch mode.

16. 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 F10).

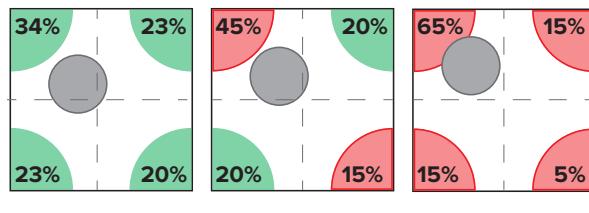
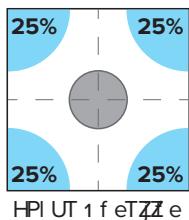
17. Unbalancing



The instrument has an active unbalance function as standard that signals if the load is unevenly distributed, compared to the condition saved via step **5 Str .unb**.

Imbalance occurs when the load distribution percentage value on a cell deviates by at least 10% for more than 3 seconds.

Example:



The unbalance condition is signalled via Modbus / Fieldbus or a digital output (refer to the complete manual to set the output).



This function is only available if *EHL.Cn = nonE*.
Use this function only in systems where the load is evenly distributed.

18. Programming Errors

MESSAGE	DESCRIPTION	SOLUTION
<i>Prec.</i>	Calibration error	First calibrate the zero point (<i>ZFa</i>), then proceed with sample weight acquisition (<i>SPAn</i>) (section 9).
<i>Err.Pnt</i>	Calibration error	Check the connection of the load cell. Verify the load cell signal is stable, valid and greater than the previously acquired point.
<i>Er 11</i>	Calibration error	Increase the calibration weight.
<i>Er 12</i>	Calibration error	Check the signal from the load cell increases when weight is incremented on the scale.
<i>Er 37</i>	Calibration error	Repeat calibration and verify capacity and division have been correctly set.
<i>Er 39</i>	Instrument not configured	Transmitter needs to be configurated.
<i>C.Er.36</i>	Calibration error	Verify the signal from the load cell is not negative.
<i>C.Er.37</i>	Calibration error	Verify the signal from the load cell is not negative.
<i>Err.Not</i>	Weight unstable	Check in <i>RdC.uU</i> parameter that the signal is stable. If the connection of the cells is with 4 wires, check that the sense jumpers are inserted.
<i>RdC.Err</i>	A/D converter error	Converter failure. Reboot the instrument.
<i>CEL.Err</i>	Global load cell error	Signal anomaly: check the load cells connection.
<i>Er.CEL.1</i> ... <i>Er.CEL.4</i>	Load cell error	Signal anomaly: check the indicated load cell connection.

19. Modbus

19.1 MODBUS REGISTERS - dEP.[h / ind.[h (1 SCALE)

Data	Register	DESCRIPTION																	
5 hfi l UZKj		5 hfi L UZKj Pt&Uθ																	
DUj l UZKj		DUj L UZKj Pt&Uθ																	
8f kj ijPjki HUXZjUh		<p>07 _{abi RHb} oSjZ U SYPeeUb 07 _{abi RHb} oSjZ U SYPeeUb 07 Df VkeSjZ eθ 07 9 Hpjki f VZef kj eθ θ 07 8 _{abi RHb} Hpjki f VZef kj eθθ</p> <table border="1" style="float: right;"> <tr> <td>Bit 15</td> <td>Bit 14</td> <td>Active Channel</td> </tr> <tr> <td></td> <td></td> <td>1 YPeeUb</td> </tr> </table>	Bit 15	Bit 14	Active Channel			1 YPeeUb	07 7 _{abi RHb} = HSPbU kef PTUT _{abi RHb} hfi l UZKj = _{abi RHb} I PHUFI _{abi RHb} I PHUFI _{abi RHb} j PHUZ PSjZ Uθ I PHUJLb=I PHUZ PSjZ Uθ 07 E I UHb PT Sf eT _{abi RHb} e Lb= Df ; = E I UHb PTIθ 07 J eTUHb PT Sf eT _{abi RHb} e Lb= Df ; = J eTUHb PTIθ 07 L UZKj HjPR _{abi RHb} Lb= J ei jPRbU; = HjPRbUθ 07 5 hfi L UZKj Ffθbññ Lb= "+" ; = "-"θ 07 DUj L UZKj Ffθbññ Lb= "+" ; = "-"θ										
Bit 15	Bit 14	Active Channel																	
		1 YPeeUb																	
		1 YPeeUb																	
		1 YPeeUb																	
		1 YPeeUb																	
1 fd d PeTi ijPjki HUXZjUh		BPI j HUSUZ UT Sf d d PeTθ																	
		<p>07 7 _{abi RHb} BPI j Sf d d PeT Hj kjbθ 07 BPI j Sf d d PeT Hj kjbθ 07 BPI j Sf d d PeT Hj kjbθ 07 BPI j Sf d d PeT Hj kjbθ 07 1 fñjZx f Vf If SU i UT Sf d d PeTi θ 07 1 fñjZx f Vf If SU i UT Sf d d PeTi θ 07 1 fñjZx f Vf If SU i UT Sf d d PeTi θ 07 1 fñjZx f Vf If SU i UT Sf d d PeTi θ</p>																	
E kjf kj ijPjki HUXZjUh	7	Df 4keSjZ eθ																	
		<p>07 7 _{abi RHb} Df VkeSjZ eθ 07 Df VkeSjZ eθ 07 2 ZKZPbfk kj ijPjki Lb= E 44; = E DIθ 07 _{abi RHb} 2 ZKZPbfk kj ijPjki Lb= E 44; = E DIθ</p>																	
μV1 YPeeUb		μV Pt&Uf VjYU SYPeeUb θ																	
μV1 YPeeUb		μV Pt&Uf VjYU SYPeeUb θ																	
μV1 YPeeUb		μV Pt&Uf VjYU SYPeeUb θ																	
μV1 YPeeUb		μV Pt&Uf VjYU SYPeeUb θ																	

19.2 MODBUS REGISTERS - *ind.ch* (4 SCALES)

Data	Register	DESCRIPTION
HjPjki HUXZjUh i SPbU		<p>04 _{abi RHb} Dfjki UT\varnothing 04 Dfjki UT\varnothing 04 Dfjki UT\varnothing 04 HSPbU PSjZU Lb= "ef"; = "nUi" \varnothing 04 2 USzI Pb Lb = ; = ; = ; = Hb 04 04 9 Jezf VMUPi kHJU Lb = "X"; = "aX"; = "j"; = "br" \varnothing 04 8 _{abi RHb}</p>
5 hfi l UZKjy i SPbU		<p>04 7 _{abi RHb} I PHU F1 Lb= F1 jPHU Z PSjZU \varnothing 04 I PHU Lb= I PHU Z PSjZU \varnothing 04 DUj L UZKjy FfBhzn Lb= "+"; = "-" \varnothing 04 = HSPbU kef PTUT \varnothing fi l UZKjy = \varnothing 04 E1 Uh\varnothing PT Sf eT\varnothing e Lb= Df; = fUh\varnothing PTI \varnothing 04 JeTU\varnothing PT Sf eT\varnothing e Lb= Df; = keTU\varnothing PTI \varnothing 04 HjPR\varnothing hn Lb= "kei jPRbU"; = "i jPRbU" \varnothing 04 5 hfi L UZKjy FfBhzn Lb= "+"; = "-" \varnothing</p>
HjPjki HUXZjUh i SPbU		HPd UPi HjPjki HUXZjUh i SPbU \varnothing
5 hfi l UZKjy i SPbU	7	5 hfi L UZKjy f Vi SPbU \varnothing
HjPjki HUXZjUh i SPbU	8	HPd UPi HjPjki HUXZjUh i SPbU \varnothing
5 hfi l UZKjy i SPbU	9	5 hfi L UZKjy f Vi SPbU \varnothing
HjPjki HUXZjUh i SPbU		HPd UPi HjPjki HUXZjUh i SPbU \varnothing
5 hfi l UZKjy i SPbU		5 hfi L UZKjy f Vi SPbU \varnothing
DUj l UZKjy i SPbU		DUj L UZKjy f Vi SPbU \varnothing
DUj l UZKjy i SPbU	7	DUj L UZKjy f Vi SPbU \varnothing
DUj l UZKjy i SPbU	8	DUj L UZKjy f Vi SPbU \varnothing
DUj l UZKjy i SPbU	9	DUj L UZKjy f Vi SPbU \varnothing
DUj l UZKjy i SPbU		DUj L UZKjy f Vi SPbU \varnothing

19.3 MODBUS REGISTERS FOR COMMAND SENDING

Data	Register	DESCRIPTION																		
1 f d d PeT		<p>MP₂ PI P₂ PR₁ Sf d d PeT a</p> <table border="1"> <thead> <tr> <th>Value</th><th>Command</th></tr> </thead> <tbody> <tr><td>7 Ux</td><td>Df Sf d d PeT</td></tr> <tr><td>7 Ux</td><td>HSP₁ pUf Z₂X</td></tr> <tr><td>7 Ux</td><td>I P₁U</td></tr> <tr><td>7 Ux</td><td>F₁U i₁U j₁U</td></tr> <tr><td>0 7 Ux</td><td>HUf f Z₁j i Uj Z₂X</td></tr> <tr><td>0 7 Ux</td><td>HUf f Z₁j i Uj Z₂X</td></tr> <tr><td>9 7 Ux</td><td>2 Z₁Pb₁f k₁i Uj Z₂X</td></tr> <tr><td>7 Ux</td><td>GURfjjYU L UZ₁Y₂j lPei d Z₂Uh</td></tr> </tbody> </table>	Value	Command	7 Ux	Df Sf d d PeT	7 Ux	HSP ₁ pUf Z ₂ X	7 Ux	I P ₁ U	7 Ux	F ₁ U i ₁ U j ₁ U	0 7 Ux	HUf f Z ₁ j i Uj Z ₂ X	0 7 Ux	HUf f Z ₁ j i Uj Z ₂ X	9 7 Ux	2 Z ₁ Pb ₁ f k ₁ i Uj Z ₂ X	7 Ux	GURfjjYU L UZ ₁ Y ₂ j lPei d Z ₂ Uh
Value	Command																			
7 Ux	Df Sf d d PeT																			
7 Ux	HSP ₁ pUf Z ₂ X																			
7 Ux	I P ₁ U																			
7 Ux	F ₁ U i ₁ U j ₁ U																			
0 7 Ux	HUf f Z ₁ j i Uj Z ₂ X																			
0 7 Ux	HUf f Z ₁ j i Uj Z ₂ X																			
9 7 Ux	2 Z ₁ Pb ₁ f k ₁ i Uj Z ₂ X																			
7 Ux	GURfjjYU L UZ ₁ Y ₂ j lPei d Z ₂ Uh																			
FPrPd UjUh		<p>4 Z₁ j f P₁Pd UjUh f VjYU Sf d d PeT₂</p> <p>FPrPd UjUh Z P₁b Pni Uxf HJ₁ i UT Z₂ PR₁ fbojU d f TU J₂S TUSZ₁ P₁b def i Z₂e₁S</p>																		
FPrPd UjUh		<p>HUSf eT f P₁Pd UjUh f VjYU Sf d d PeT₂</p> <p>FPrPd UjUh Z P₁b Pni Uxf HJ₁ i UT Z₂ PR₁ fbojU d f TU J₂S TUSZ₁ P₁b def i Z₂e₁S</p>																		

EXAMPLE 1

For zeroing the weight on the scale:

2. Set the command in byte 2

Byte	Value
1	7 Ux
2	7 Ux

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	7 Ux
2	7 Ux
3 _(MSB)	7 Ux
4	7 Ux
5	7 Ux
6 _(LSB)	38 7 Ux



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