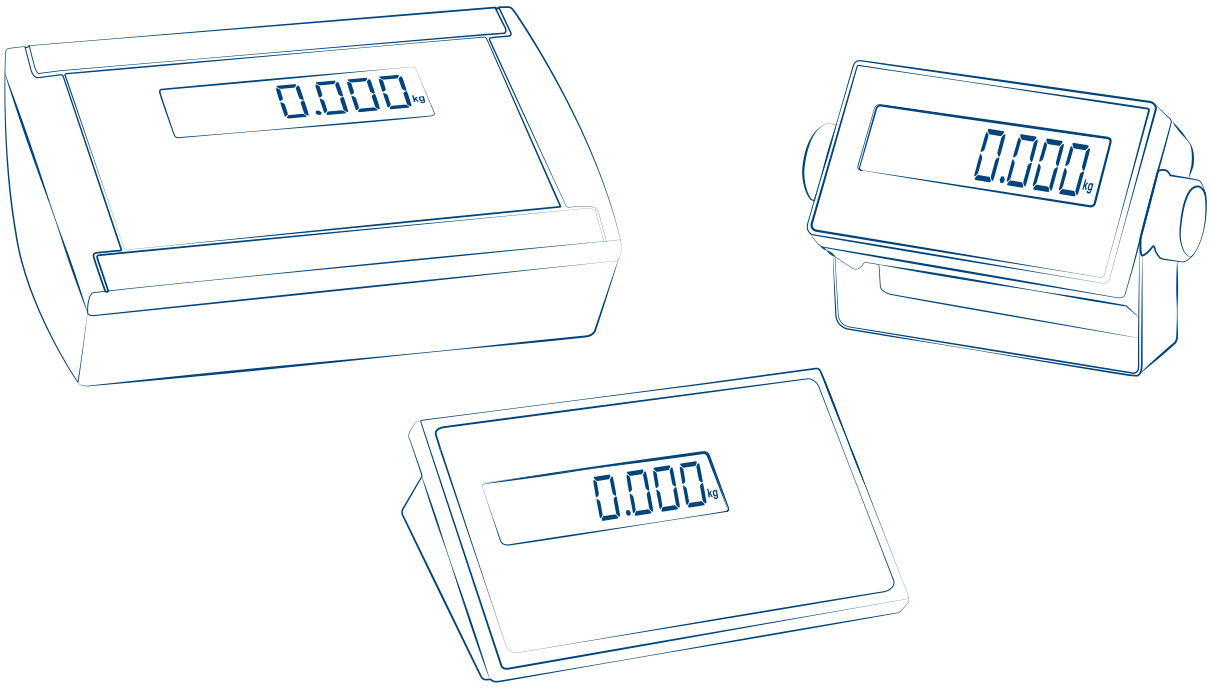
DINI ARGEO
Scales - Weighing systems

DFW • DFWL

TECHNICAL MANUAL - v4

ENGLISH



www.diniargeo.com

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CONTENTS BY TOPIC

1. INTRODUCTION AND WARNINGS

This product represents the best solution for multi-function weighing applications, offering ease of use, high precision in reading the weight and many functions to speed-up and simplify everyday work.

This manual provides an overview of the product's potentials: through the configuration menu, you can adapt the product functionality to the weighing application to be realised.

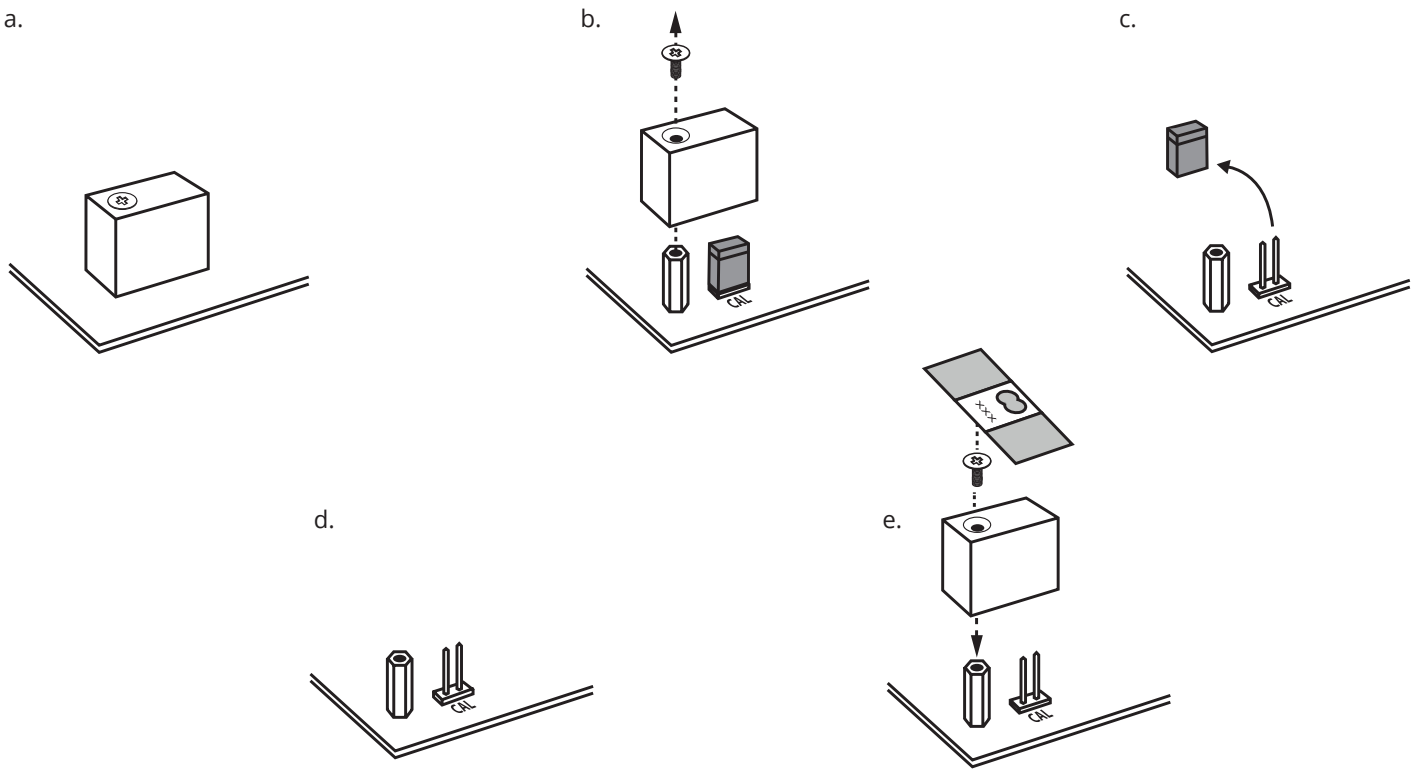
WARNINGS:

- Do not make repairs or replace electronic components of the instrument boards.
- Only use original spare parts.
- Any tampering with the equipment or use of non-original spare parts voids the warranty and relieves the manufacturer of any liability.
- Before any installation or repair that involves access to electronic parts, turn off the device and disconnect any source of power supply (battery, 230V network or other).
- Always use network power supply sources regulated within ± 10% of the rated voltage;
- In applications in connection with third parties, always follow the specifications given on the approval decree of the equipment.
- Do not immerse in water.
- Do not wash with water jets (except versions with specific IP protection degree).
- Protect from direct rainfall (except versions with specific IP protection degree).
- Do not use aggressive cleaning solvents or substances.
- Do not install in potentially explosive environments.
- Earth connect any earth socket located on the equipment casing, using a cable with a diameter of at least 16 mm2.

2. TECHNICAL FEATURES

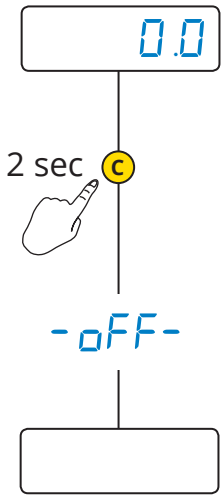
Power supply via mains / Battery charger		110-230Vac
MAX consumption		5VA
Analog channels for reading of load cells		4
Managed / displayed scales		1
Connectable cells		16 da 350 Ohm
Load cells power supply		5V
Maximum load cells power supply current		20mA
Maximum operating temperature range CE-M - OIML		-10°C + 40°C
Maximum operating temperature range		-10°C + 60°C LCD/-20°C + 60°C LED
OIML divisions		10000e 3x3000e
Divisions for internal use		100d ... 1.000.000d
Optional Digital relays (only for DFW family)	Number	2 / 4
	Features	48 Vac, 60 Vdc,15 mA, 10 Ω Max
Optional Digital inputs (only for DFW family)	Number	2 / 4
	Features	12 / 24 Vdc, 5:20 mA
Optional analog output (only for DFW family)		0:10 Vdc, 0:20 mA
Serial ports		2

3. APPROVAL

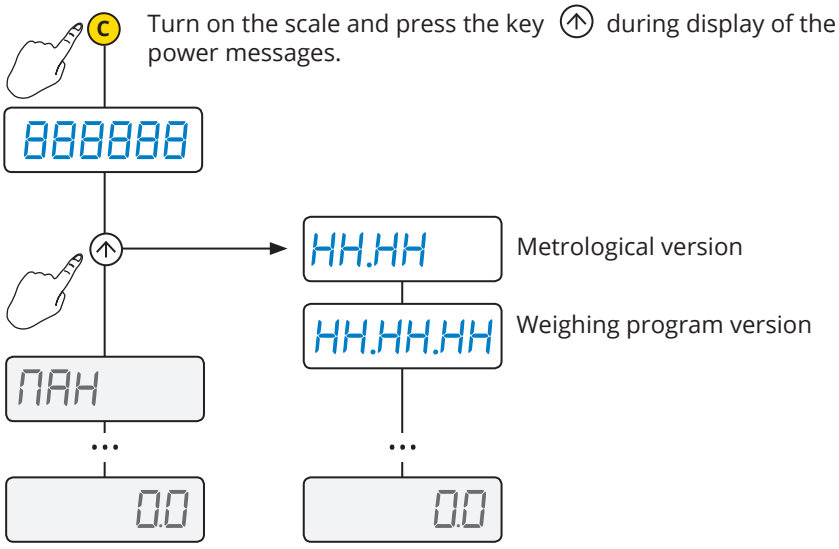


How to display the metrological version of the instrument

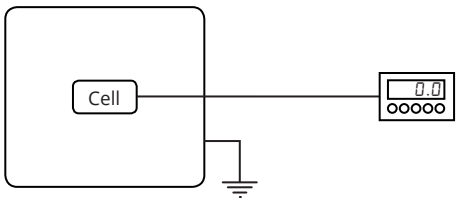
1. Turn off the scale



2. Follow the procedure:

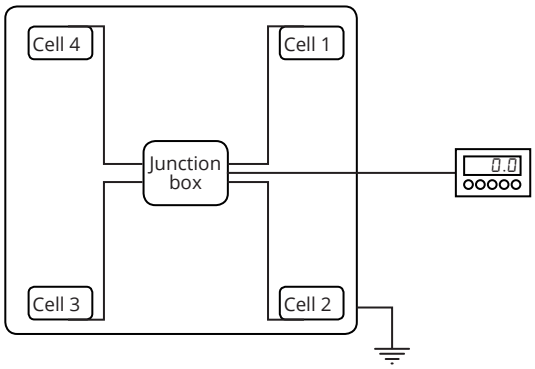


4. CONNECTIONS

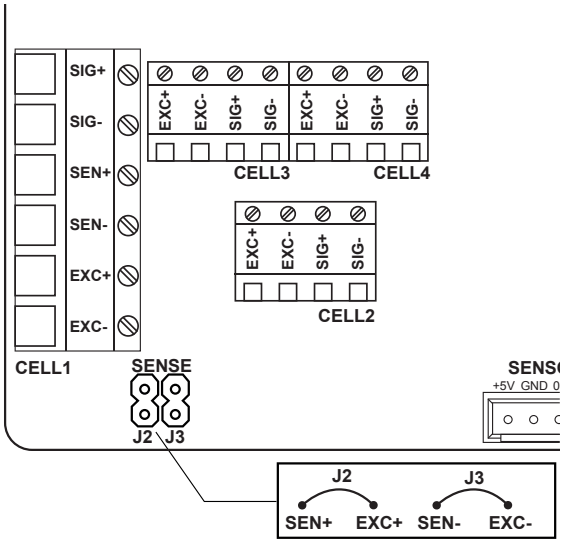


Single channel

Connect the scale to the main terminal board using the first reading channel of the A/D converter.



Terminal board of reference for connection to 1 channel

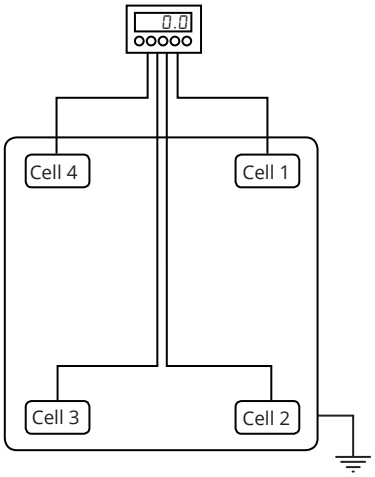


NOTES:

- For connection with 6 wires with “Sense”, remove jumpers J2 and J3.
- For connection with 4 wires, install jumpers J2 and J3.

WARNING:

Make the connections with indicator off and feeder disconnected. Comply with the electronic specifications indicated in the table on page 4



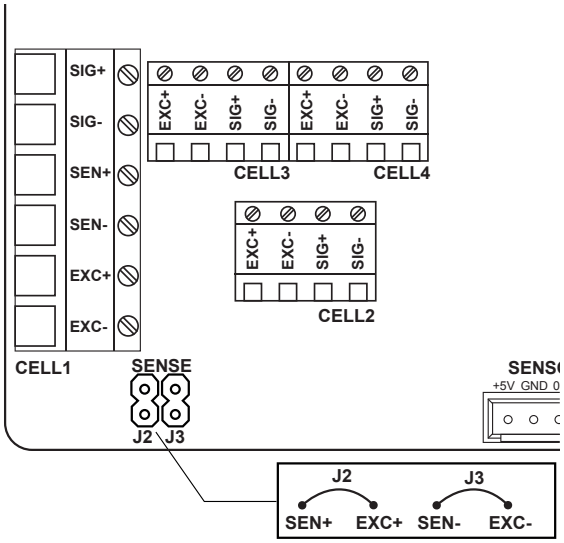
Multichannel with digital equalisation

You can use the 4 channels of the converter to connect 2, 3 or 4 independent scales/cells, digitally equalising them without using junction boxes.

Terminal boards of reference for connection to 4 channels

NOTES:

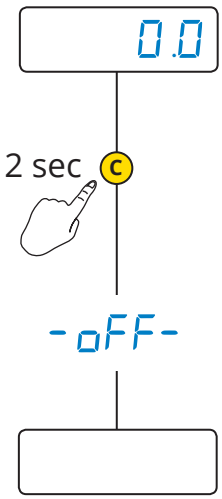
- Install jumpers J2 and J3.



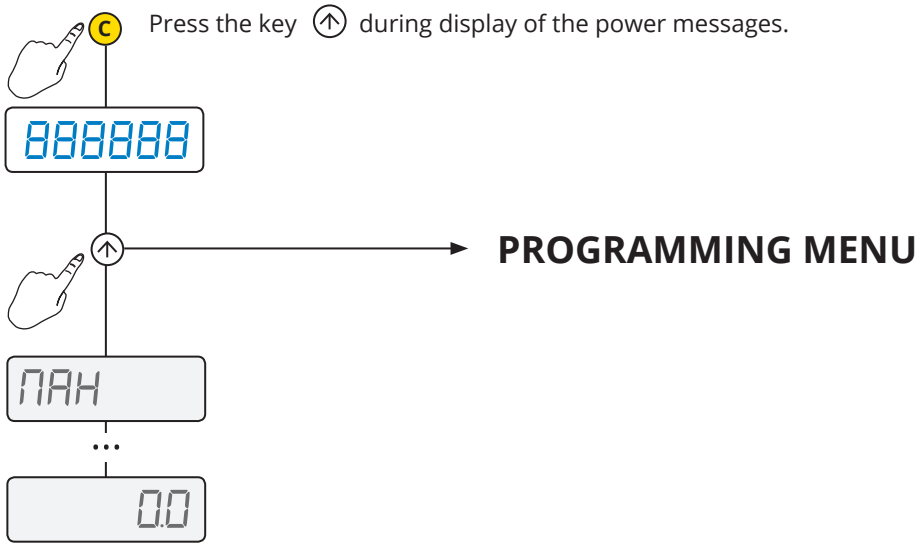
5. PROGRAMMING

How to access the programming menu

1. Turn off the scale



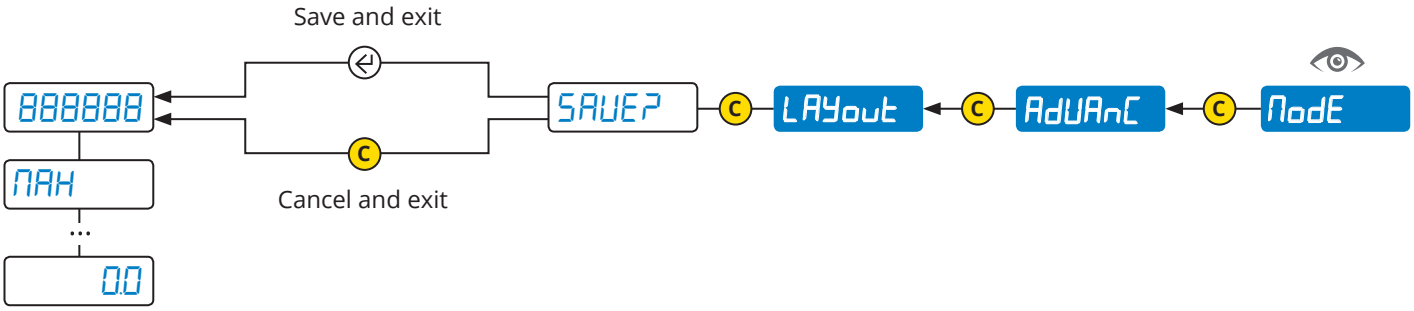
2. Follow the procedure:



How to save the programming and exit the menu

To save the programming changes made, repeatedly press the key C browsing the menu in reverse, until the message SAVE? appears: press ↵ to save or C to exit without saving.

Example *(read from right to left)*:



PROGRAMMING MENU

Parameter visible only in certain conditions.

Parameter or menu subject to approval.

MENU

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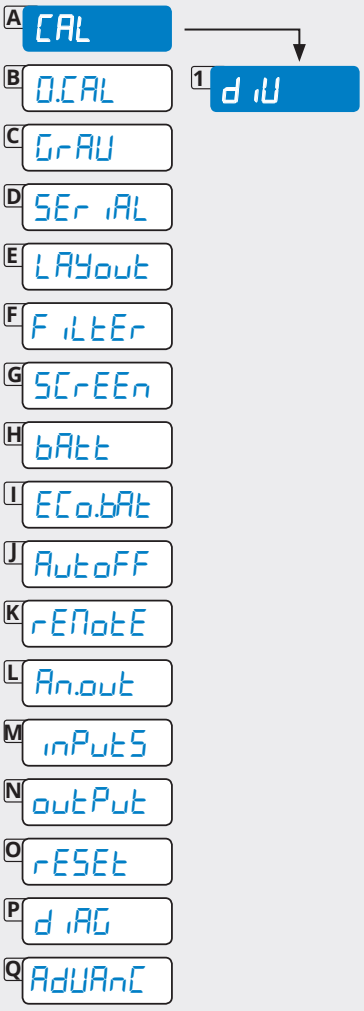
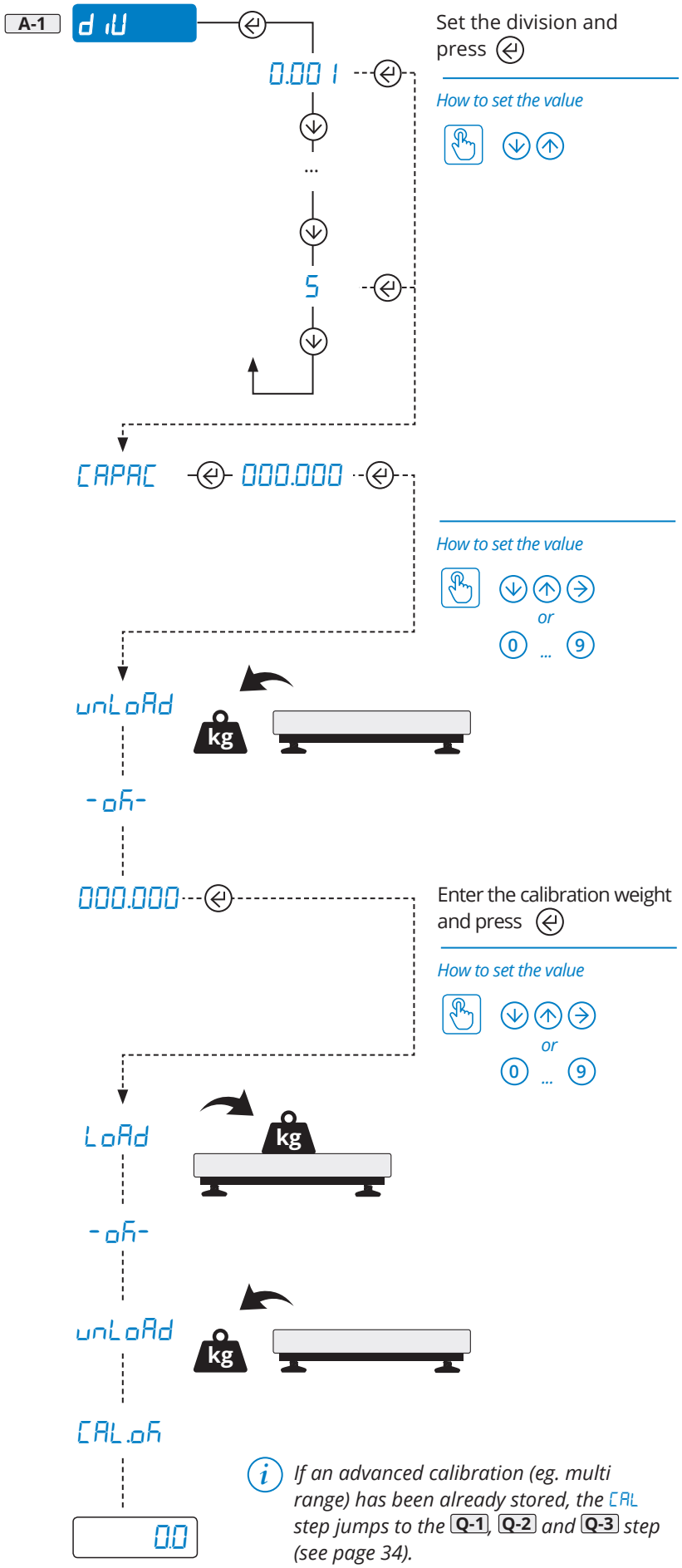


CAL Quick calibration

Start of the calibration procedure:



Set the division and press ↵

How to set the value

↓ ↑

How to set the value

↓ ↑ →
or
0 ... 9

Enter the calibration weight and press ↵

How to set the value

↓ ↑ →
or
0 ... 9

If an advanced calibration (eg. multi range) has been already stored, the CAL step jumps to the Q-1, Q-2 and Q-3 step (see page 34).

MENU

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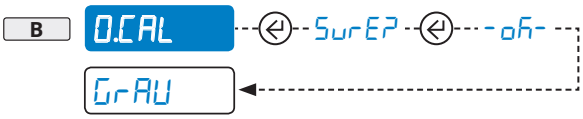
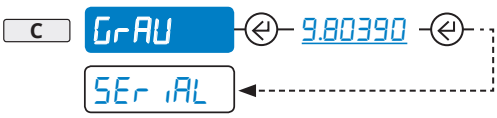
O.CAL Reset of the Pre-Tare

Acquisition of the zero point



GrAU Area of gravity of the place of use

Once the calibration is completed, for proper operation set the area of use in this pitch (if different from that of calibration).



Area of gravity
(9.7500 1...9.84999)

How to set the value

MENU

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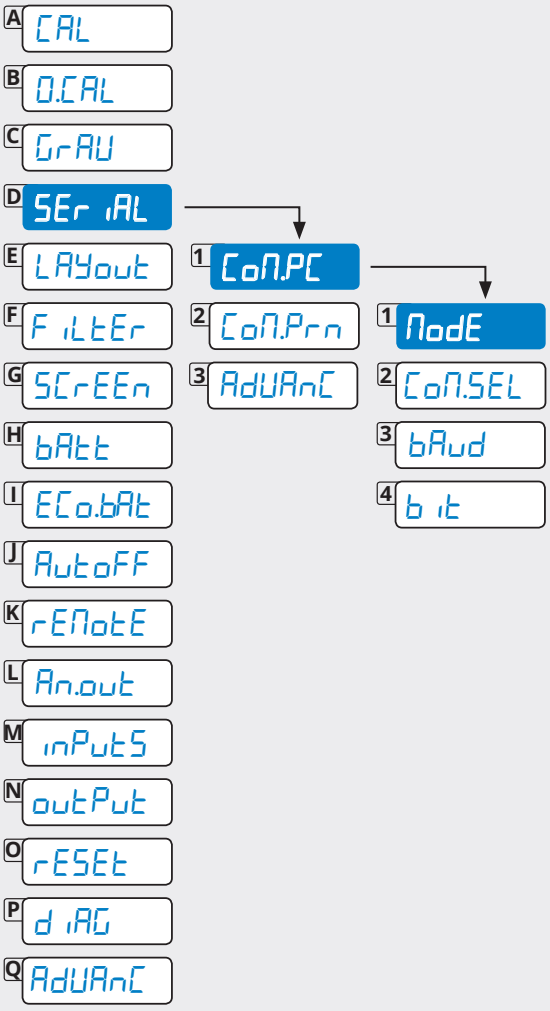
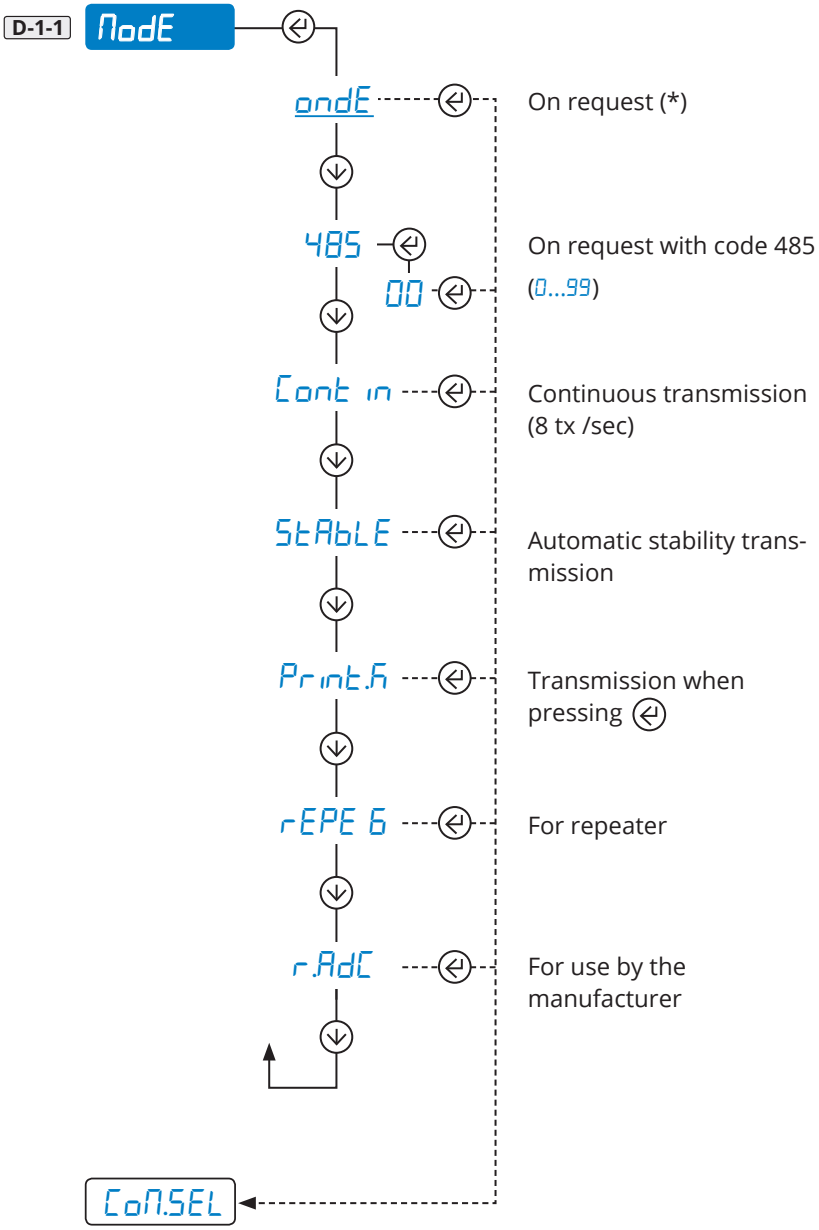


SEr iAL Configuration of the serial ports

CoM.PC Communication with PC, PLC or Repeater

Selection of the communication mode



ⓘ ** For communication strings and controls, see page 41 - 42.*

ⓘ *For the string selection, see step* D-3-1.

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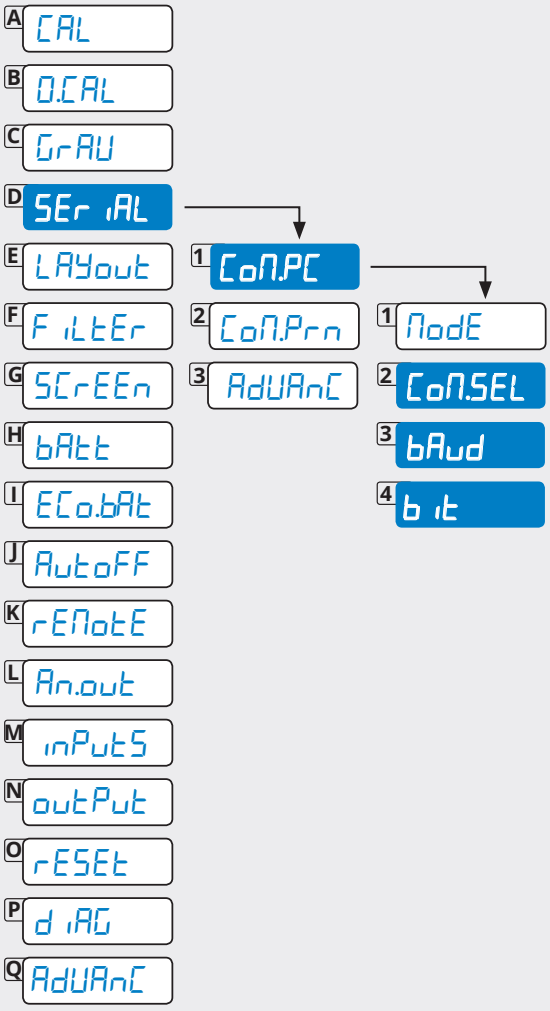
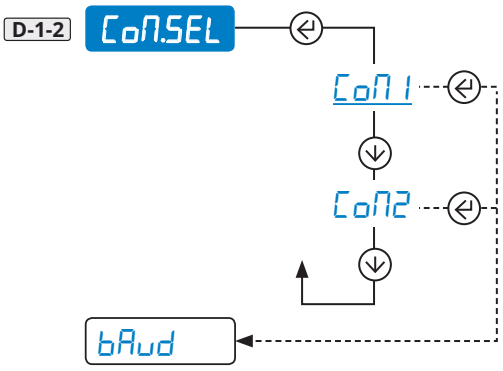
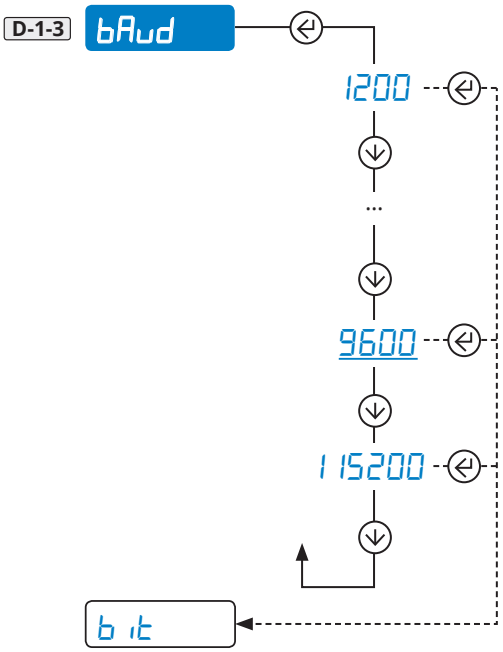


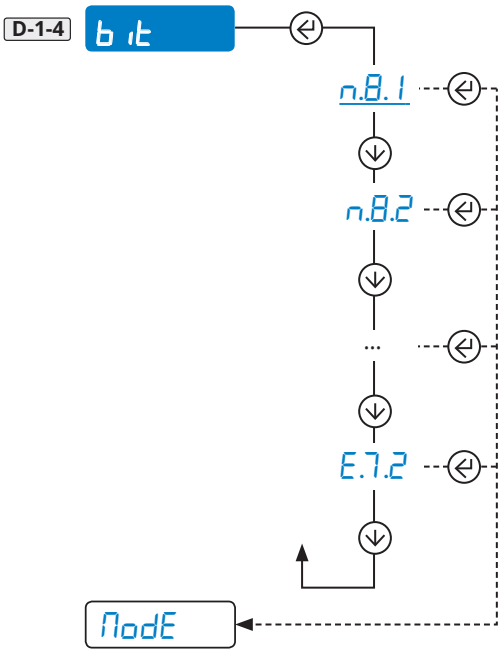
Selecting the COM port for connection with PC/PLC



Communication speed (Baud rate)



Configuration of the serial protocol



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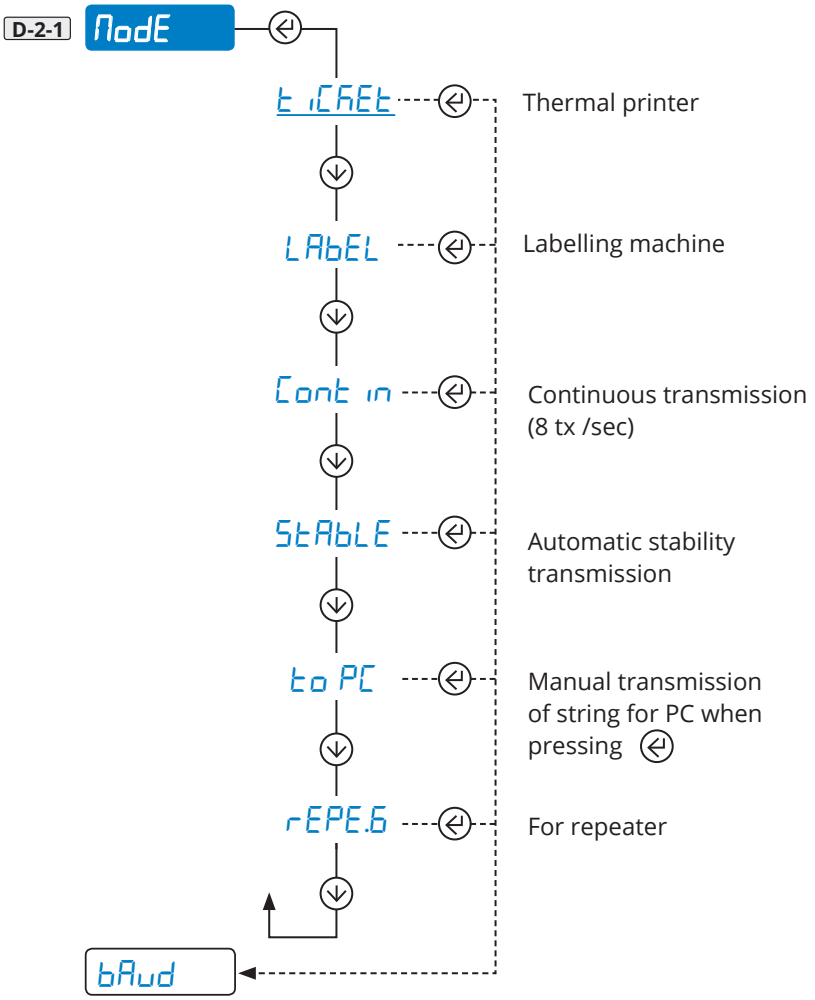
- B O.CAL
- C GrAU
- D SEr iAL
  - 1 CoN.PC
  - 2 CoN.Prn
    - 1 nodE
    - 2 bAud
    - 3 b it
    - 4 CtS
    - 5 PoWEr.P
  - 3 AdVAnC
- E LAYout
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdVAnC

SEr iAL Configuration of the serial ports

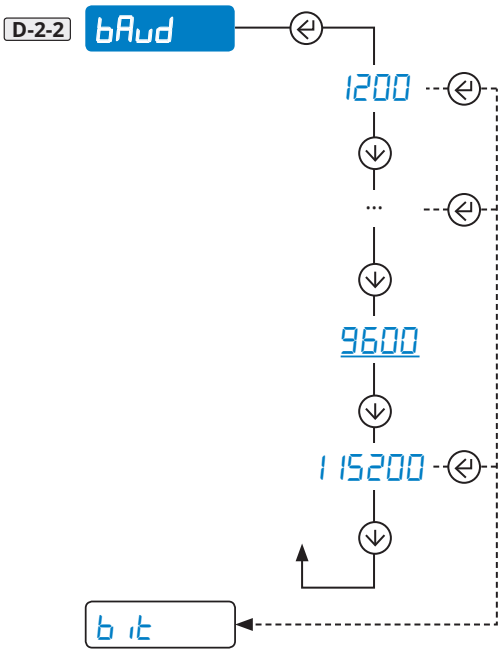
CoN.Prn Communication with printer or repeater or PC

Selection of the communication mode



For communication strings and controls, see page 41 - 42.

Communication speed (Baud rate)



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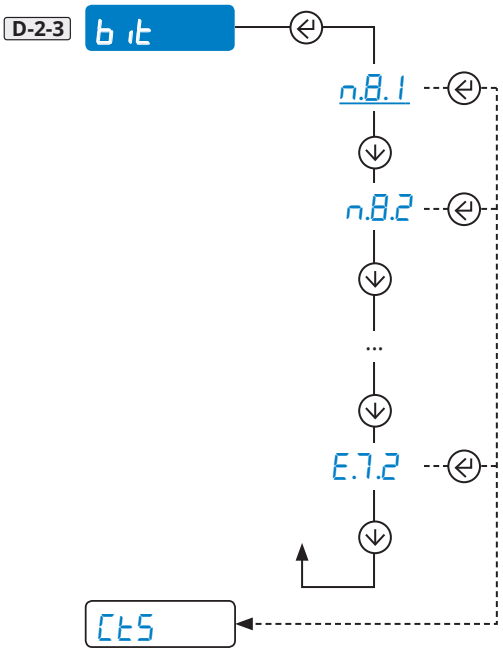
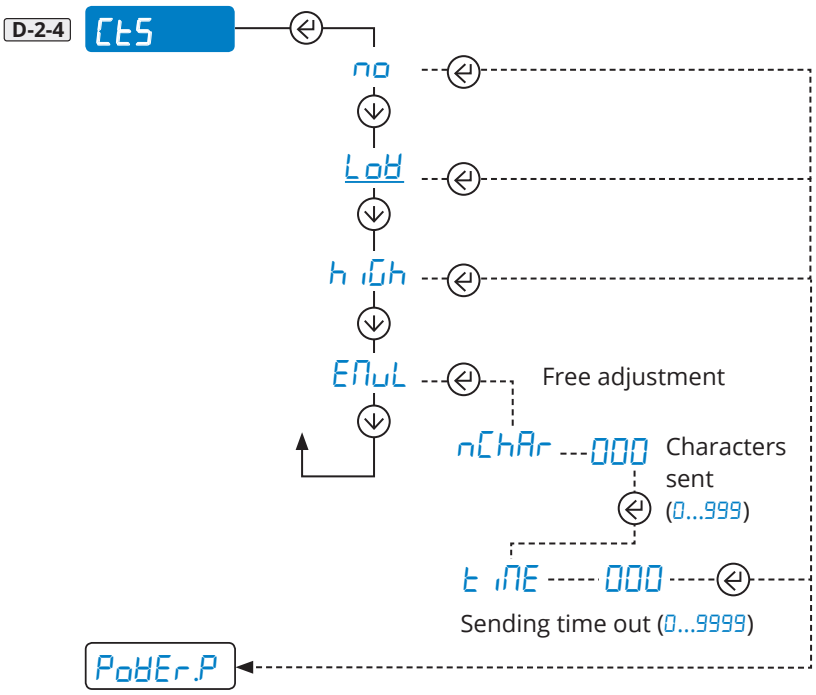
    - 2 bAud
    - 3 b it
    - 4 CtS
    - 5 PoWEr.P
  - 3 AdUAnC
- E LAYout
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdUAnC

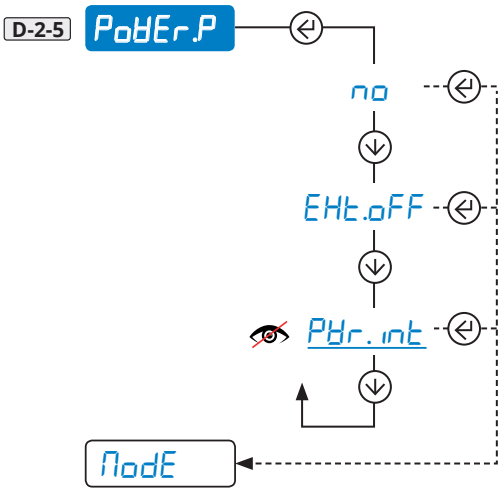
Configuration of the serial protocol



Printer control signal



Printer power supply / Radio-frequency module



For use by the manufacturer

Printer power supply from indicator via Vaux connector.
Visible only in modules equipped with Vaux, ref. Wiring schemes (see page 44).

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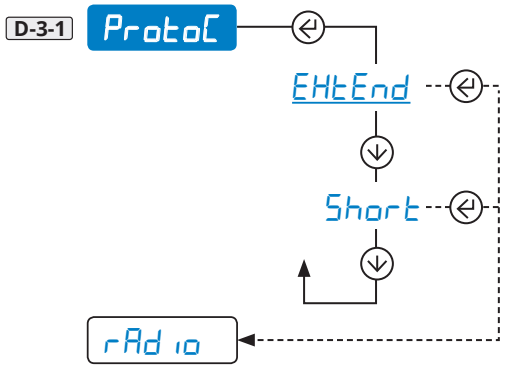
  - 2 Con.Prn
  - 3 AdUAnC
    - 1 ProtoC
    - 2 rAd io
    - 3 ttL.t iL
    - 4 tErn
- E LAYout
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC

SEr iAL Configuration of the serial ports

AdUAnC Advanced configurations

Communication protocol

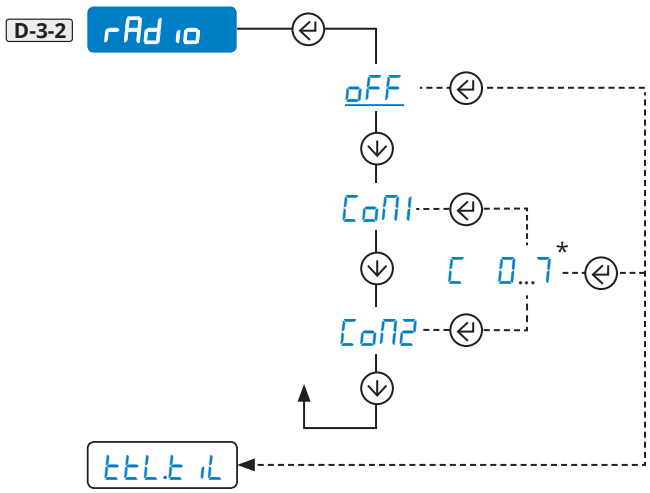
D-3-1 ProtoC



For communication strings and controls, see page 41 - 42.

Connection port of radio-frequency module (for use by the manufacturer)

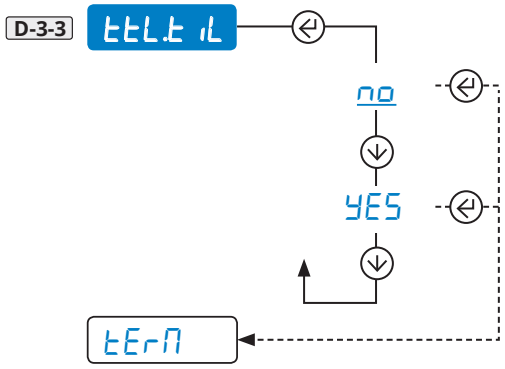
D-3-2 rAd io



* Selection of the radio channel.

TTL port / Inclinometer activation (for use by the manufacturer)

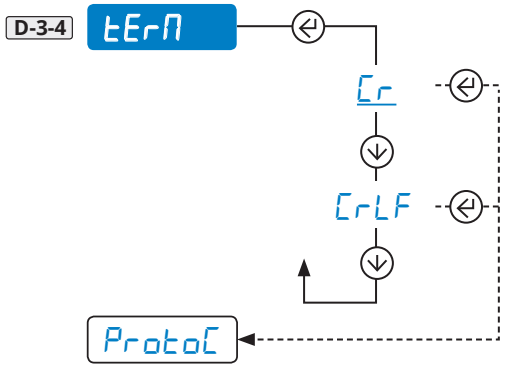
D-3-3 ttL.t iL



Only for DFWL models.

Closing character of each print line

D-3-4 tErn



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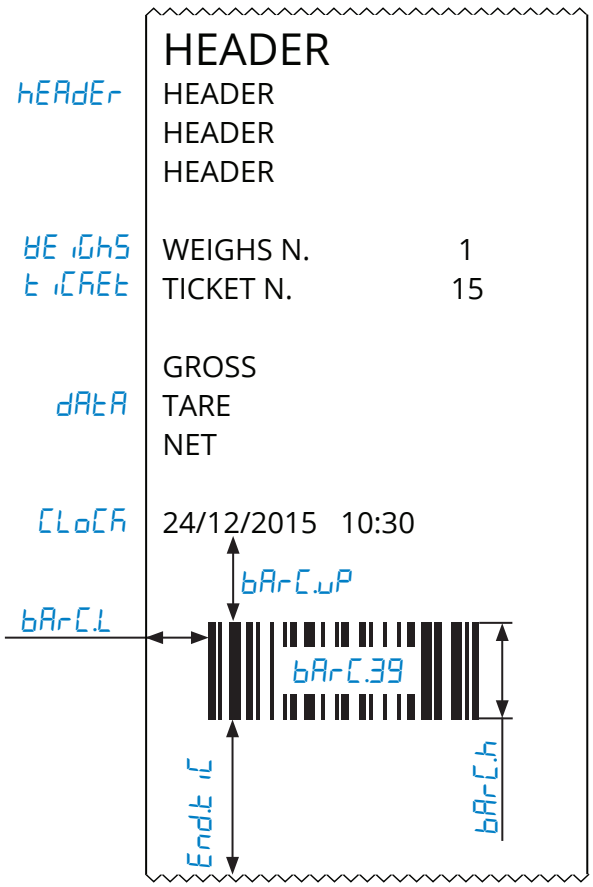
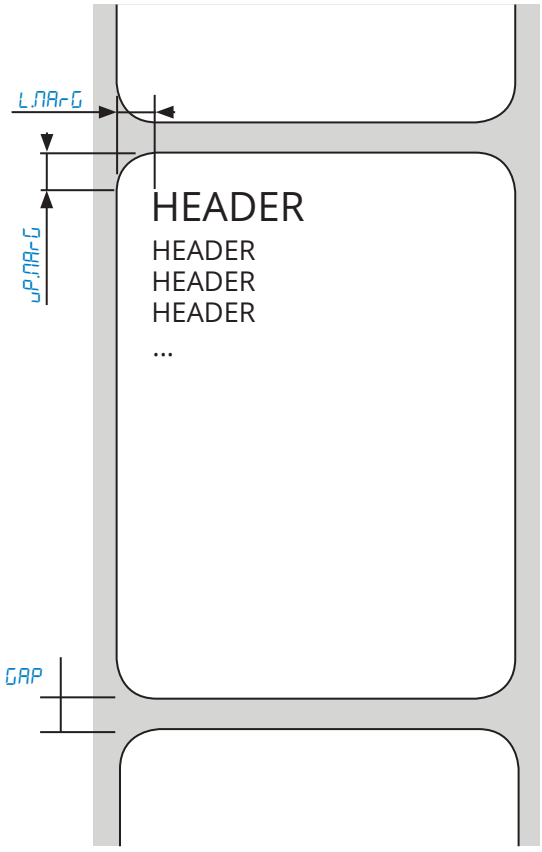
  - 2 ChAr
  - 3 hEAdEr
  - 4 dAtA
  - 5 WE iGhS
  - 6 t iCkEt
  - 7 CLoCk
  - 8 bArC.39
  - 9 bArC.uP
  - 10 bArC.L
  - 11 bArC.h
  - 12 bArC.dt
  - 13 CoP iES
  - 14 Endt iC
  - 15 b.L inE
  - 16 LAbEL
  - 17 Lb.SAUE
  - 18 tESt
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC

LAYout Print customisation

Parameters for receipt/label mode



Additional parameters for label mode



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  - 2 ChAr
    - 1 ChAr 1
    - 2 ChAr 2
  - 3 hEAdEr
  - 4 dAtA
  - 5 bE iGhS
  - 6 t iCkEt
  - 7 CLoCk
  - 8 bArC.39
  - 9 bArC.uP
  - 10 bArC.L
  - 11 bArC.h
  - 12 bArC.dt
  - 13 CoP iES
  - 14 End.t iC
  - 15 b.L inE
  - 16 LAbEL
  - 17 Lb.SAUE
  - 18 tESt
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdUAnC

Setting of the print language (itAL, EnGL, dEut, FrAn, ESPA, Ch inES)

E-1 LAnG

EnGL

...

Ch inES

ChAr

Character dimensions

E-2-1 ChAr 1

Main character

Label mode

Font.1 — 1 x 1,5 mm

Font.1d — 1 x 3 mm

Font.2 — 1,5 x 2,5 mm

Font.2d — 1,5 x 5 mm

Font.3 — 2 x 3 mm

Font.3d — 2 x 6 mm

Font.4 — 3 x 4 mm

Font.4d — 3 x 8 mm

Font.5 — 4 x 6 mm

Font.5d — 4 x 12 mm

Receipt mode

norMAL

doubLE

ChAr 2

E-2-2 ChAr 2 See ChAr 1

MENU

How to enter	How to browse	How to save and exit
1. Off ⏻ 2. On ⏻ 3. ↑	↑ = ↑ ↓ = ↓ → = ↵ ← = C	ⓘ Page 8	ⓘ Page 8

- A CAL
- B O.CAL
- C GrAU
- D SEr iAL
- E LAYout
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdUAnC

LAYout:
1. LAnG
2. ChAr
3. hEAdEr
4. dAtA
5. bE iGhS
6. t iCkEt
7. CLoCk
8. bArC.39
9. bArC.uP
10. bArC.L
11. bArC.h
12. bArC.dt
13. CoP iES
14. Endt iC
15. b.L inE
16. LAbEL
17. Lb.SAUE
18. tESt

hEAdEr:
1. EnAbLE
2. L inE 1
3. L inE 2
4. L inE 3
5. L inE 4

LAYout Print customisation

hEAdEr Print header

Enables header printing

E-3-1 EnAbLE

- no
- YES — Only 1st totalisation
- totAL — Only upon each totalisation
- ALWAYS — Also in total

→ L inE 1

Contents of the header lines

E-3-2 L inE 1 — First row of header

no — *Visible only in L inE 2, L inE 3 e L inE 4*

ChAr 1 / ChAr 2

01 032 → 032* — Enter the first character

02 032 → 032* — Enter the second character

... → 032*

24 032 → 032* — Enter the last character

→ L inE 2

How to set the value

↓ ↑ → or 0 ... 9

ⓘ *Repeat the operation to program L inE 2, L inE 3 and L inE 4. Select no to disable them.*

MENU

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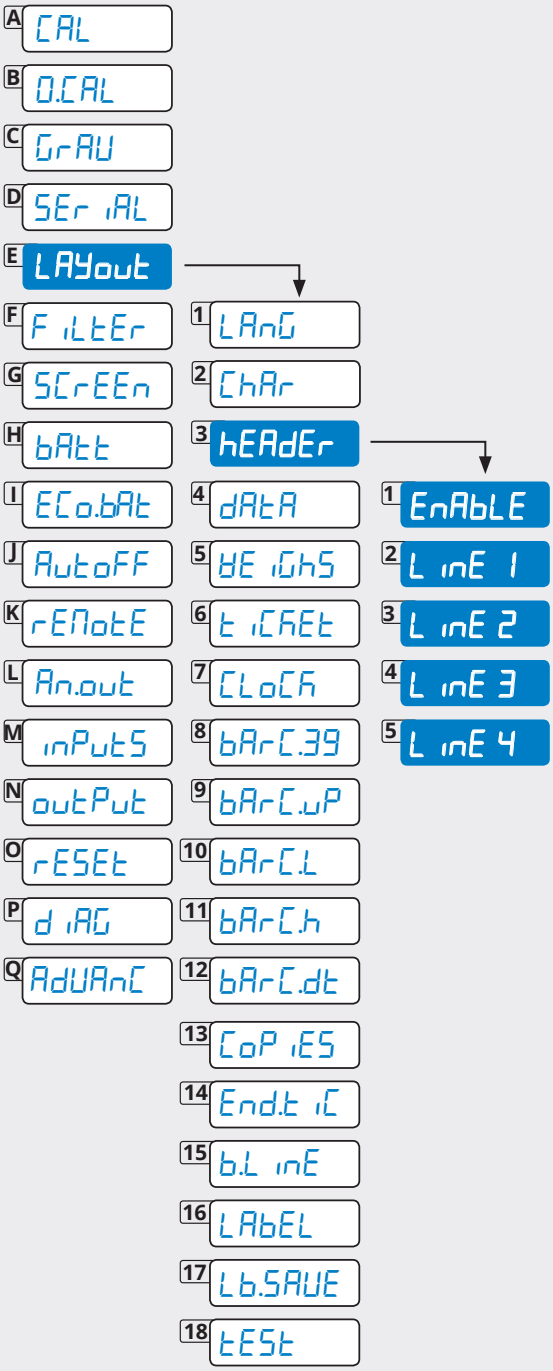
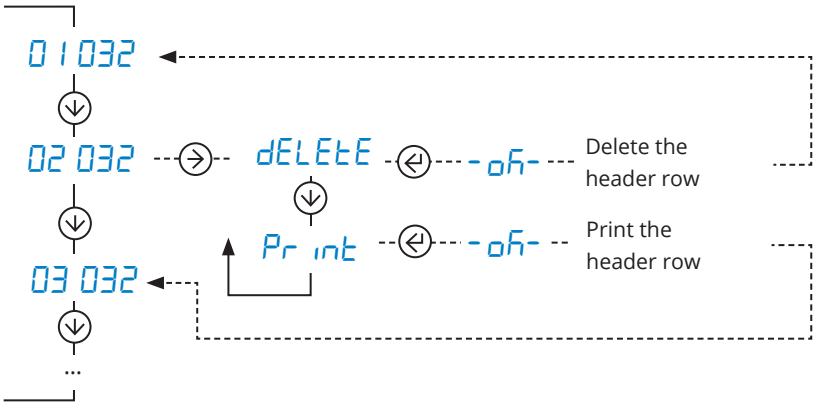
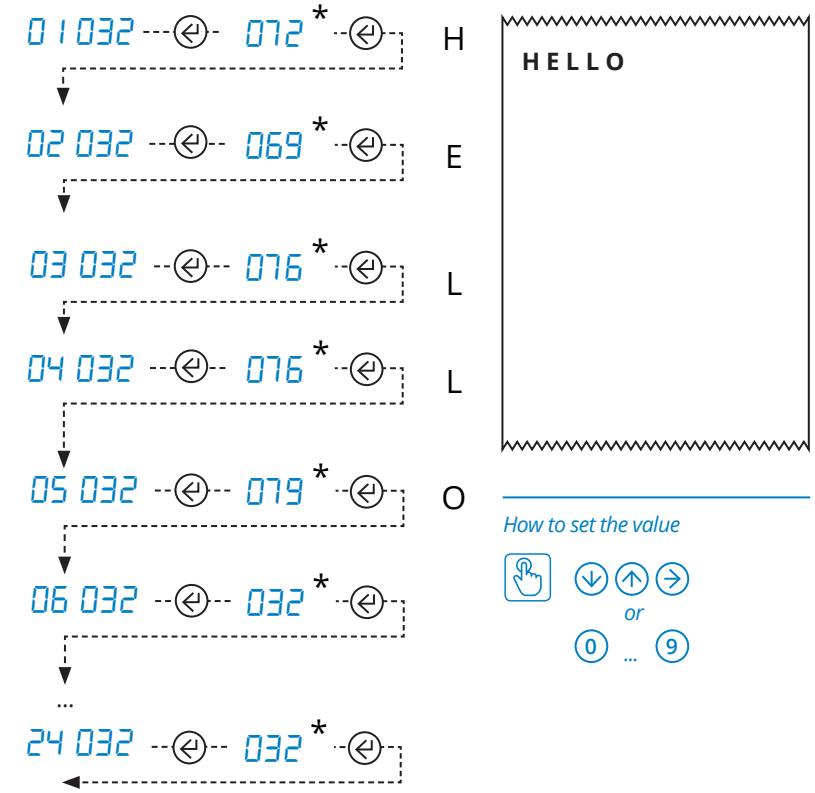
Page 8



How to print/delete the row being programmed



Programming example



List of characters

(*)

32		47	/	62	>	77	M	92	\	107	k	122	z
33	!	48	0	63	?	78	N	93	]	108	l	123	{
34	"	49	1	64	@	79	O	94	^	109	m	124	|
35	#	50	2	65	A	80	P	95	_	110	n	125	}
36	$	51	3	66	B	81	Q	96	‘	111	o	126	~
37	%	52	4	67	C	82	R	97	a	112	p		
38	&	53	5	68	D	83	S	98	b	113	q		
39	‘	54	6	69	E	84	T	99	c	114	r		
40	(	55	7	70	F	85	U	100	d	115	s		
41	)	56	8	71	G	86	V	101	e	116	t		
42	*	57	9	72	H	87	W	102	f	117	u		
43	+	58	:	73	I	88	X	103	g	118	v		
44	,	59	;	74	J	89	Y	104	h	119	w		
45	-	60	<	75	K	90	Z	105	i	120	x		
46	.	61	=	76	L	91	[	106	j	121	y		

MENU

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- D SEr iAL
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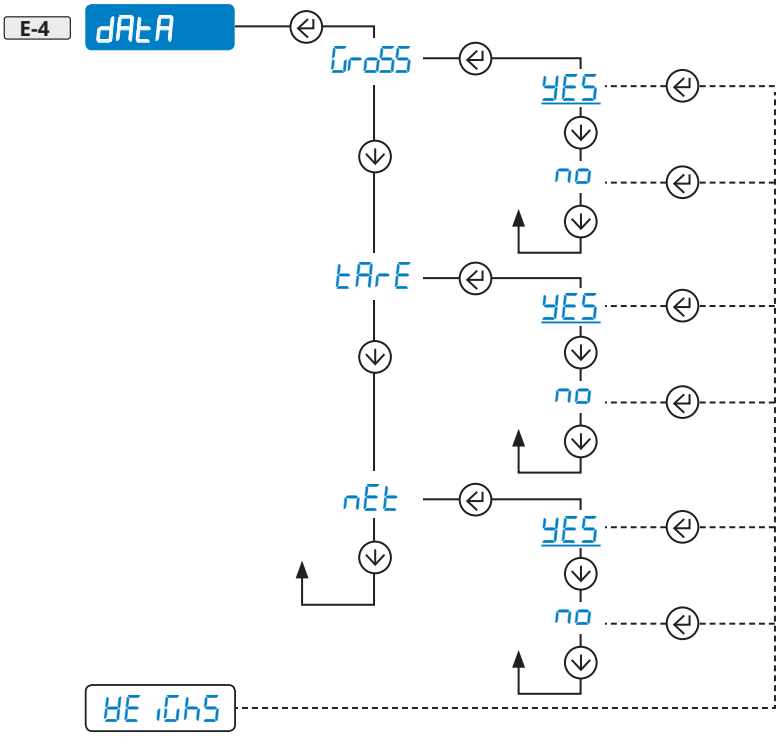
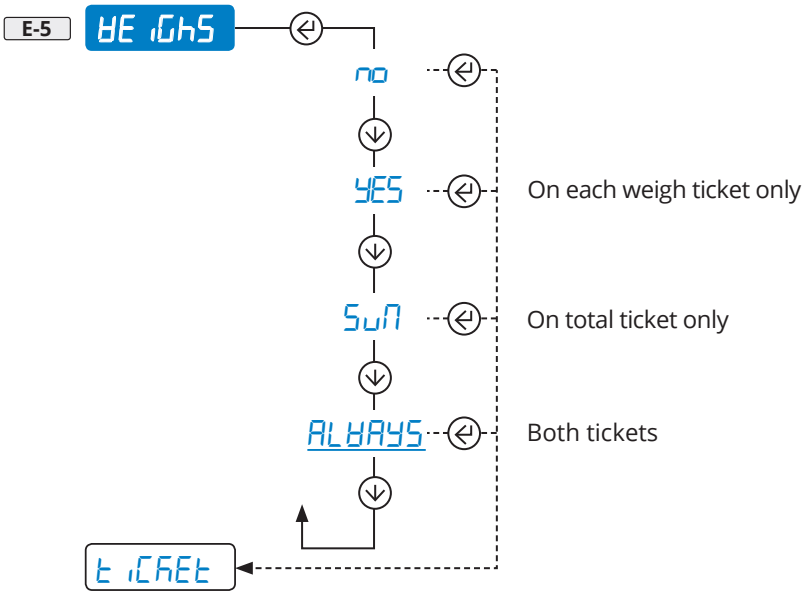
  - 3 hEAdEr
  - 4 dAtA
  - 5 bE iGhS
  - 6 t iCkEt
  - 7 CLoCk
  - 8 bArC.39
  - 9 bArC.uP
  - 10 bArC.L
  - 11 bArC.h
  - 12 bArC.dt
  - 13 CoP iES
  - 14 Endt iC
  - 15 b.L inE
  - 16 LAbEL
  - 17 Lb.SAUE
  - 18 tESt
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC

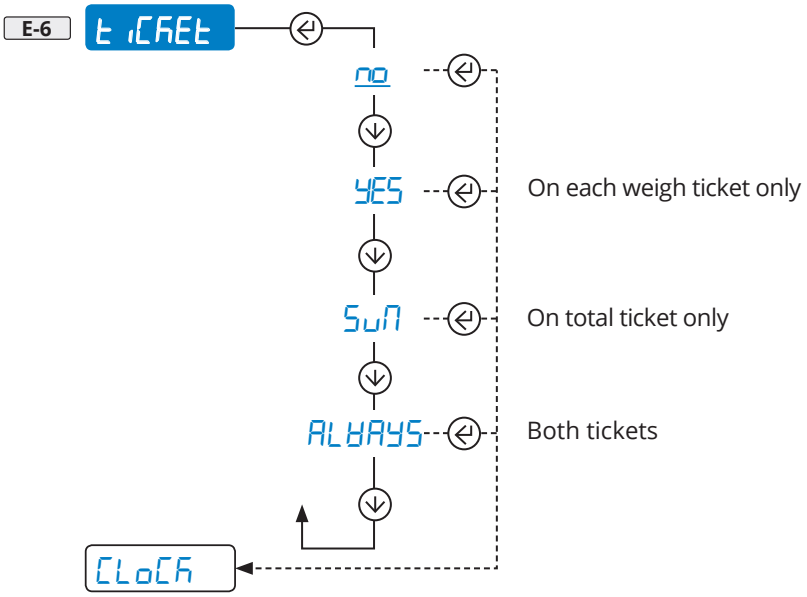
Selection of the weight data



Progressive weighed



Receipt/label progressive



MENU

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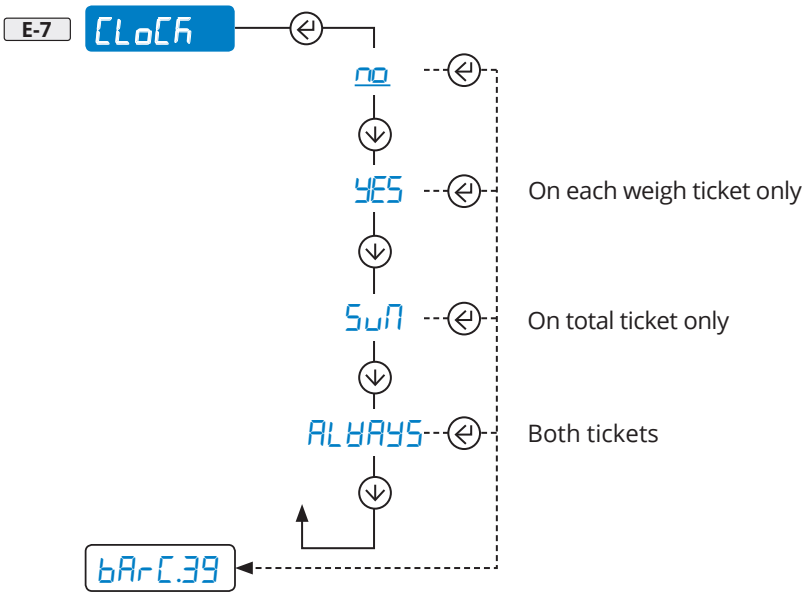
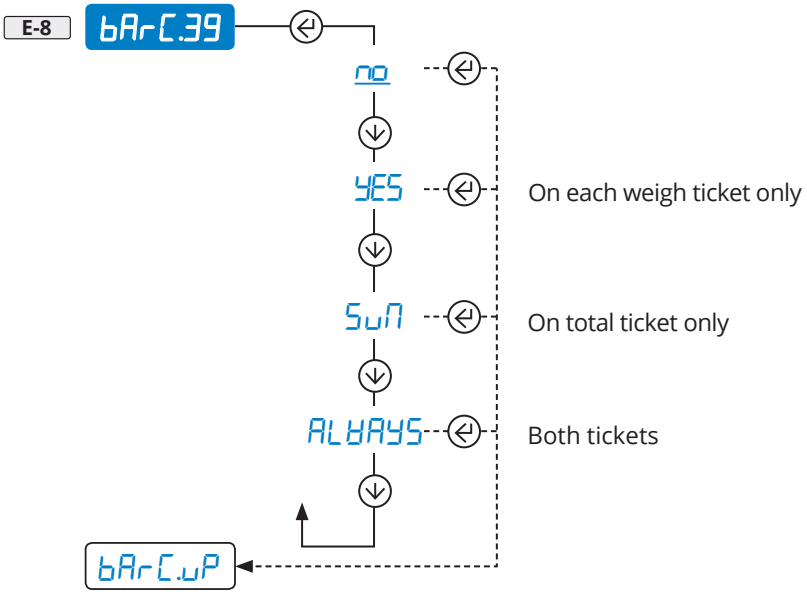
  - 3 hEAdEr
  - 4 dAtA
  - 5 WE iGhS
  - 6 t iCKEt
  - 7 CLoCK
  - 8 bArC.39
  - 9 bArC.uP
  - 10 bArC.L
  - 11 bArC.h
  - 12 bArC.dt
  - 13 CoP iES
  - 14 End.t iC
  - 15 b.L inE
  - 16 LAbEL
  - 17 Lb.SAUE
  - 18 tESt
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC

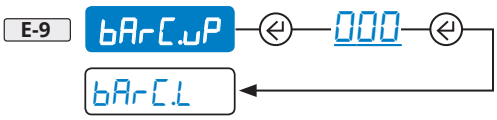
Date and time



Bar code 39

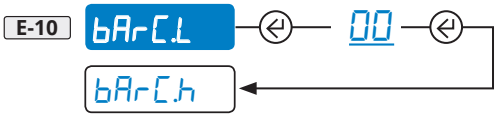


Barcode top margin (mm) — *Visible only if* bArC.39 **(E-8)** *is active*



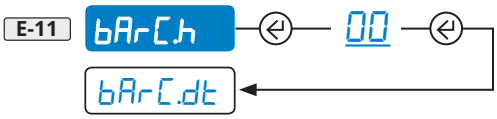
If ModE=t iCKEt (0...9)
If ModE=LAbEL (0...999)

Barcode left margin (mm) — *Visible only if* bArC.39 **(E-8)** *is active*



If ModE=t iCKEt (1...99)
If ModE=LAbEL (0...99)

Barcode height (mm) — *Visible only if* bArC.39 **(E-8)** *is active*



If ModE=t iCKEt (1...99)
If ModE=LAbEL (0...255)

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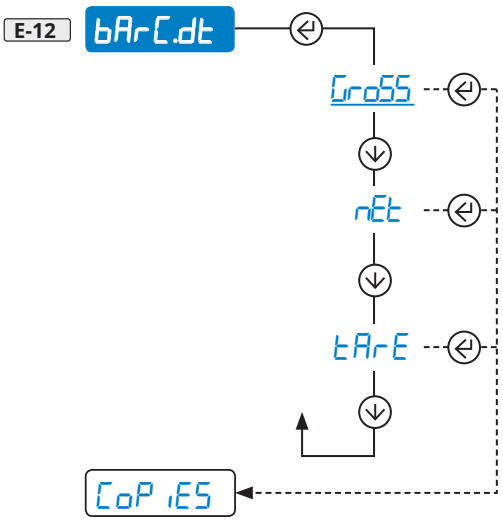
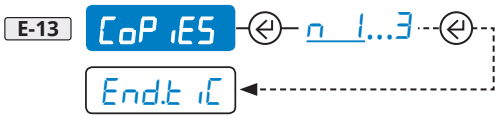
  - 3 hEAdEr
  - 4 dAtA
  - 5 HE iGhS
  - 6 t iCkEt
  - 7 CLoCk
  - 8 bArC.39
  - 9 bArC.uP
  - 10 bArC.L
  - 11 bArC.h
  - 12 bArC.dt
  - 13 CoP iES
  - 14 End.t iC
  - 15 b.L inE
  - 16 LAbEL
  - 17 Lb.SAUE
  - 18 tESt
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC

Selection of the weight data

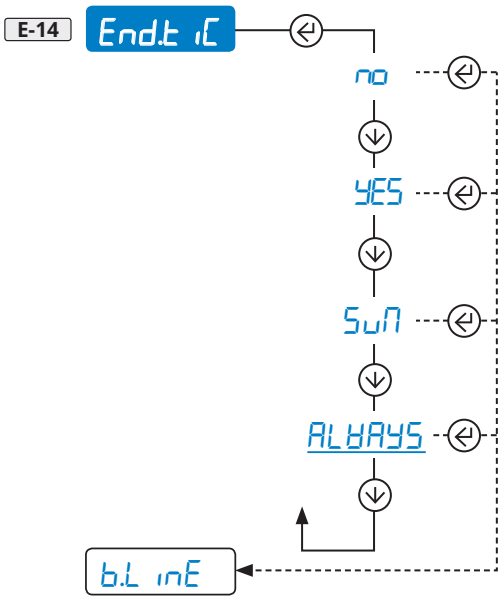
Visible only if bArC.39 **(E-8)** *is active*



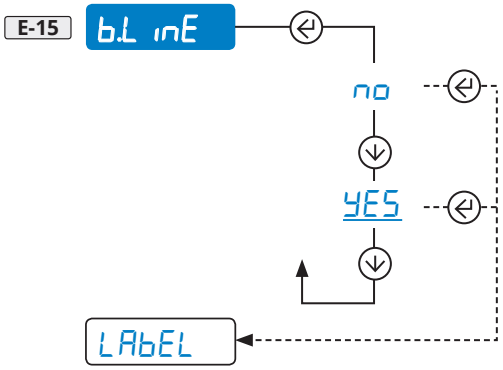
Multi-copy prints



Paper outlet for end of label/receipt



White pre-heating line of the print head (for thermal printer only)



MENU

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  - 4 dAtA
  - 5 HE iGhS
  - 6 t iCKEt
  - 7 CLoCK
  - 8 bArC.39
  - 9 bArC.uP
  - 10 bArC.L
  - 11 bArC.h
  - 12 bArC.dt
  - 13 CoP iES
  - 14 End.t iC
  - 15 b.L inE
  - 16 LAbEL
  - 17 Lb.SAUE
  - 18 tESt
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC

Label configuration

Visible only if nodE (D-2-1) = LAbEL

E-16 LAbEL

- WidtH — 063 — Dimension (w) (0...999)
- HEiGHt — 080 — Dimension (h) (0...999)
- uP.MArG — 010 — Top margin (mm) (0...999)
- L.MArG — 06 — Left margin (mm) (0...99)
- PEEL — YES — Peeler
  - no
- GAP — 3 — Gap between labels (mm) - (0...7)

Lb.SAUE

Saving of labels in the printer memory

Visible only if nodE (D-2-1) = LAbEL

E-17 Lb.SAUE — L.SAUE? — tESt

Saving of labels in the printer memory (for label mode only) and test print of ALL FORMATS

E-18 tESt — LAnG

MENU

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- B O.CAL
- C GrAU
- D SEr iAL
- E LAYout
- F FiLtEr
  - 1 StAnd.0
  - ...
  - 4 StAnd.3
  - 5 h i.rES.0
  - ...
  - 12 h i.rES.7
  - 13 dyn.0
  - ...
  - 16 dyn.3
  - 17 SLoW.0
  - ...
  - 20 SLoW.3
  - 21 doS.0
  - ...
  - 24 doS.3
  - 25 r.AdC 0
  - ...
  - 28 r.AdC 5
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdvAnC

FiLtEr Weighing filters

Edits scale reactivity.
Useful to adjust the scale to your needs.

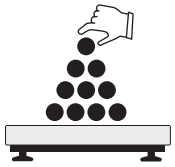
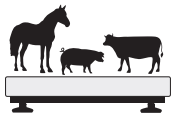
With the approved instrument, you can select only some of the filters listed below (StAnd.0...3, hi.rES.0 - 1, dyn.0 - 1, SLoW.0 - 1).

To weigh live animals, you must also activate the additional filter no iSE in AdvAnC.

Premise:
The "0" represents minor filtering incidence.
Increasing the incidence give the weight more stability.
We recommend weighing several times, changing the incidence until you obtain the best compromise between reactivity and stability.

Table and floor scales and piece counters

F-1 StAnd.0
...
F-4 StAnd.3

High precision scales

F-5 hi.rES.0
...
F-12 hi.rES.7

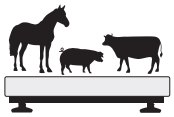
Suspended and oscillating load weighing

F-13 dyn.0
...
F-16 dyn.3

Liquid weighing, weighbridges and weighing with vibrations

F-17 SLoW.0
...
F-20 SLoW.3

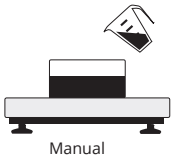


Metering, filling, level check and overloads

F-21 doS.0
...
F-24 doS.3


Automatic


Manual

Filter for specific applications for use by the manufacturer

F-25 r.AdC 0
...
F-28 r.AdC 5

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- D SEr iAL
- E LAYout
- F FiLtEr
- G SCrEEn
  - 1 bAk.Lit
  - 2 br iGht
  - 3 LoCk
  - 4 CoLour
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdVAnC

SCrEEn Adjusting the display

Backlighting

G-1 bAk.Lit
- no
- YES — Always on
- Auto — On when weight is unstable
- br iGht

Brightness

G-2 br iGht
- brGt 1
- ...
- brGt5
- LoCk

Display lock (for use by the manufacturer)

G-3 LoCk
- no
- YES
- CoLour

Backlighting colour

G-4 CoLour
- WhitE
- ...
- GrEEn
- bAk.Lit

Only in version with colour display.

MENU

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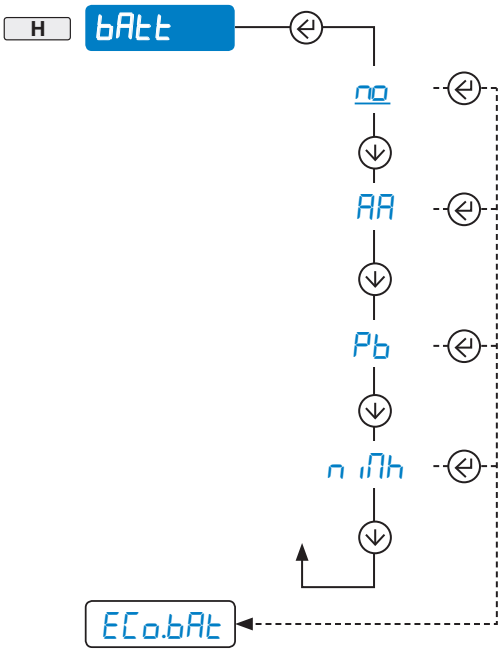
bAtt Power supply via battery



Only for DFWL models.

4 AA Batteries

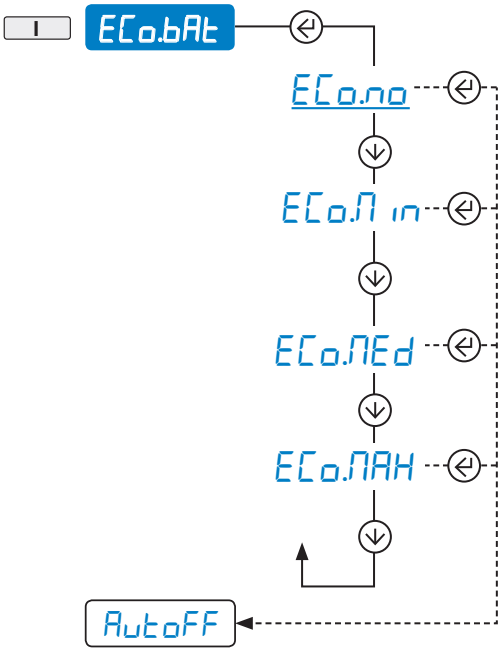
Lead rechargeable battery

niMh rechargeable battery

WARNING:
only use original rechargeable batteries.

ECo.bAt Energy saving for battery operation

Visible only if bAtt **(H)** *is active*



Maximum consumption, maximum reactivity

Reduced reactivity, reduced consumption

Reduced reactivity, reduced consumption

Minimum consumption. Scale in standby and power at the touch of a button and automatic switch-off at the end of weighing.

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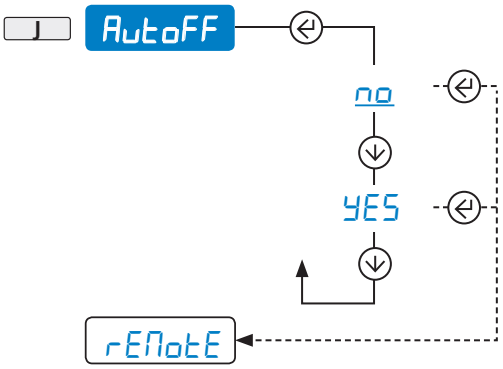
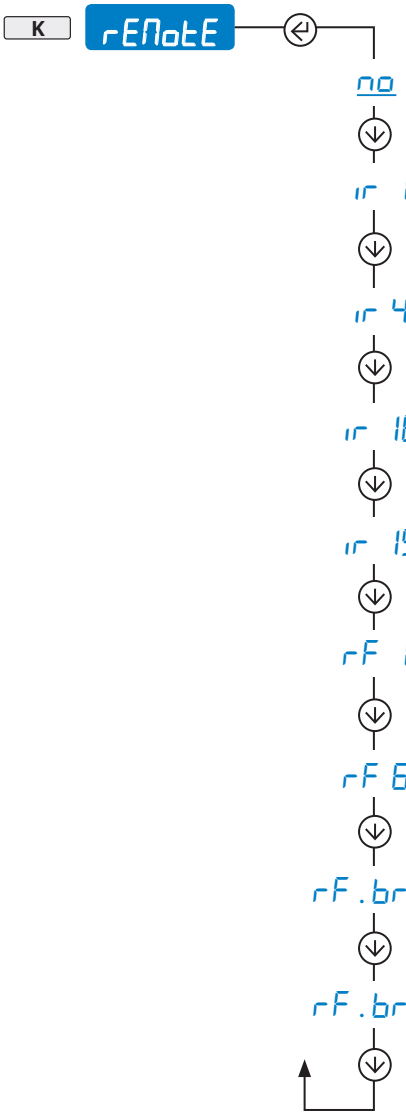
AutoFF Auto off



rEMotE Remote control



Infrared remote control (4, 18, 19 keys). All keys perform the tare.

4-Key infrared remote control. Multi-function mode.

18-Key infrared remote control. Multi-function mode.

19-Key infrared remote control. Multi-function mode.

6-Key radio-frequency remote control. All keys perform the tare.

6-Key radio-frequency remote control. Multi-function mode.

6-Key radio-frequency remote control in broadcast mode. All keys perform the tare.

6-Key radio-frequency remote control in broadcast mode. Multi-function mode.

The broadcast mode allows sending the control to multiple scales simultaneously.

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- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC

L
1. nEt
2. Pnt.und
3. WGt.1
4. Pnt.1
5. WGt.2
6. Pnt.2
7. WGt.3
8. Pnt.3
9. Pnt.oUr

An.out Analog output

Visible only in the presence of optional analog board.

Operation proportional to the net/gross weight

L-1 nEt
- YES → Proportional to net weight
- no → Proportional to gross weight

Pnt.und

L-2 Pnt.und 00000 — Analog value relative to weight in “underload” (0...65535)

L-3 WGt.1 000.000 — First value of linearisation weight (-99999...999999)

L-4 Pnt.1 01300 — Analog value relative to WGt.1 (0...65535)

L-5 WGt.2 000.000 — Second value of linearisation weight (-99999...999999)

L-6 Pnt.2 63250 — Analog value relative to WGt.2 (0...65535)

L-7 WGt.3 000.000 — Third value of linearisation weight *(not mandatory)* (-99999...999999)

L-8 Pnt.3 00000 — Analog value relative to WGt.3 *(not mandatory)* (0...65535)

L-9 Pnt.oUr 65535 — Analog value relative to weight in “overload” (0...65535)

Thanks to the real-time upgrading of the output, using a tester you can check the value entered (see example page 30).

Value to be entered	Output volts	Output mA
1200	~ 0 V	~ 0 mA
11250		~ 4 mA
52200		~ 20 mA
62300	~ 10 V	

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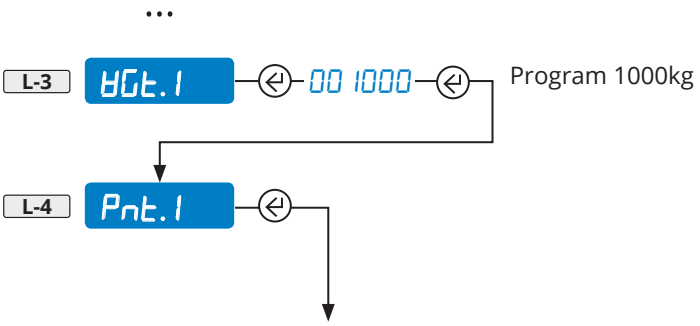
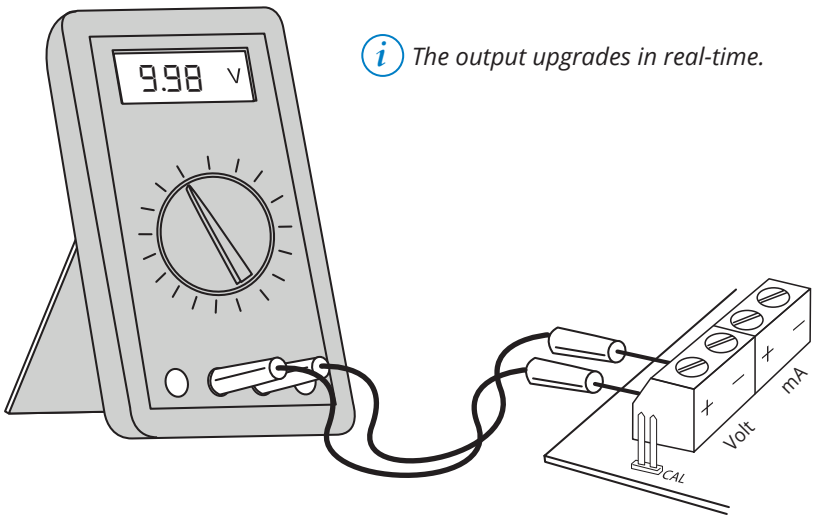
- J AutoFF
- K rEMotE
- L An.out
  - 1 nEt
  - 2 Pnt.und
  - 3 UGt.1
  - 4 Pnt.1
  - 5 UGt.2
  - 6 Pnt.2
  - 7 UGt.3
  - 8 Pnt.3
  - 9 Pnt.oUr
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC

Programming example:

we want to program a linearisation point so that at 1000kg, the analog output supplies 10V.



Enter 62300 (the reference value in the table) and check the analog output using a tester.

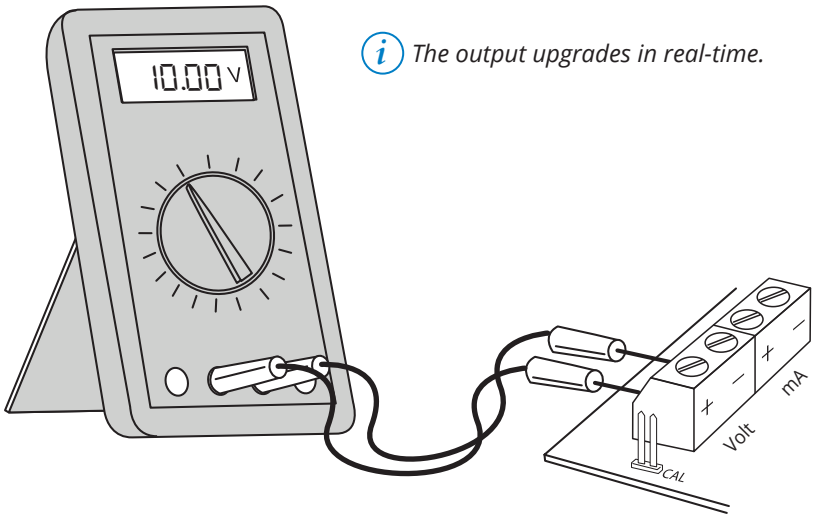


ⓘ *The output upgrades in real-time.*

Adjust the analog output by increasing or decreasing the value.
We recommend minimal changes of at least 10 points, (62310, 62320, 62330, etc.)

How to set the value

↓ ↑ or 0 ... 9



ⓘ *The output upgrades in real-time.*

Once the desired adjustment has been made, confirm the value with ↵.

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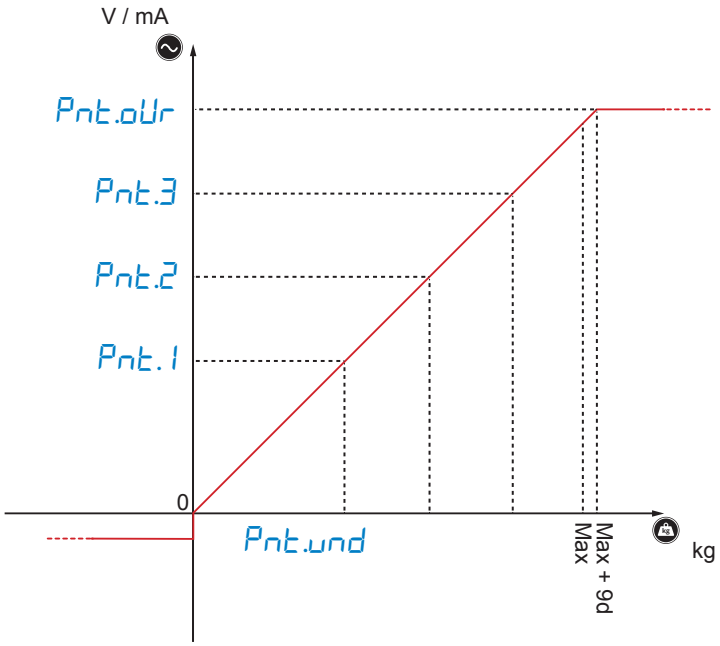
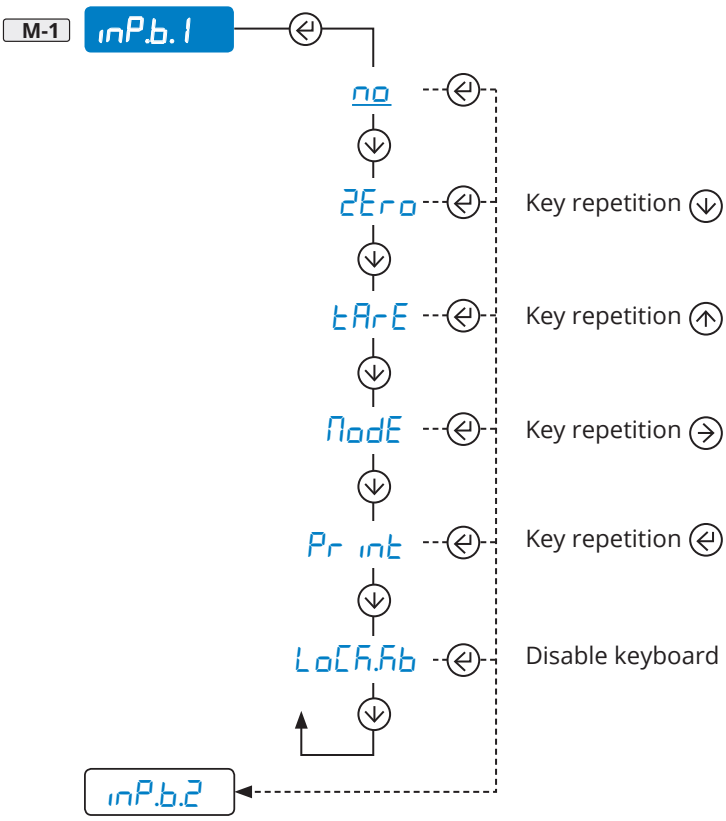
1 inP.b.1
2 inP.b.2
3 inP.b.3
4 inP.b.4



inPutS Digital inputs

Visible only in the presence of optional inputs/outputs electronic board.

Input 1 configuration



Repeat the same operation for inP.b.2, inP.b.3 *e* inP.b.4.

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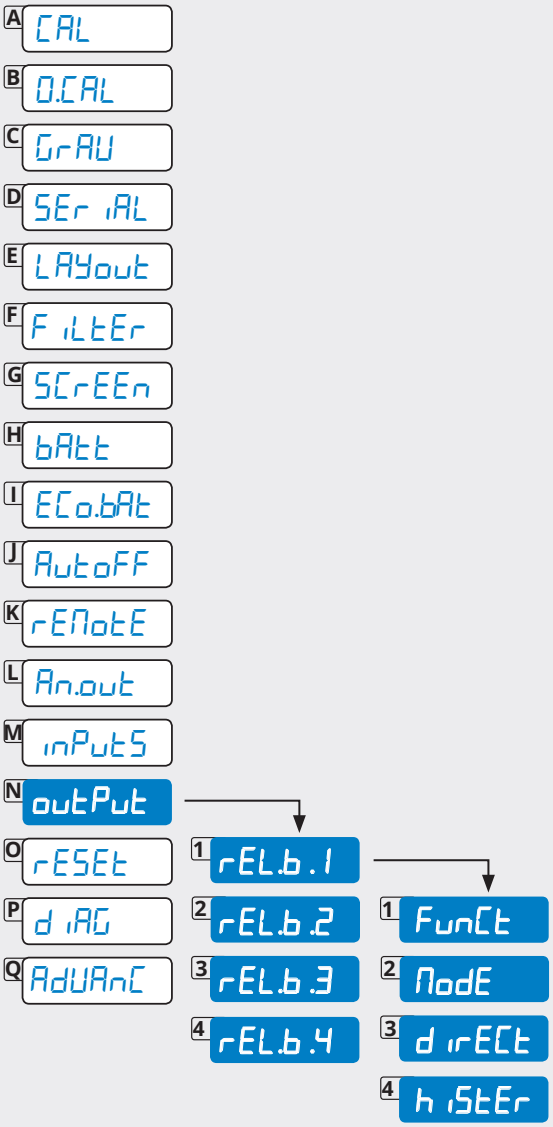
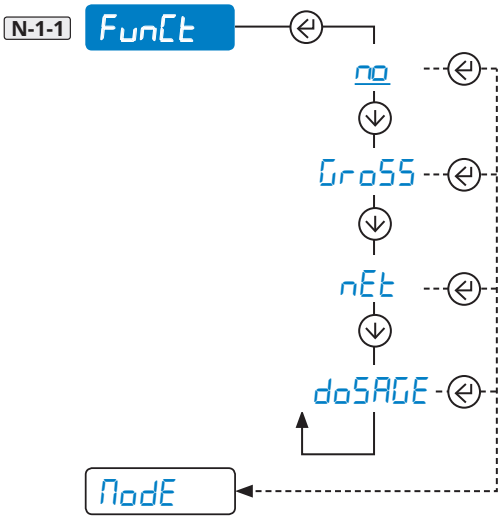


outPut Digital outputs

Visible only in the presence of optional inputs/outputs electronic board.

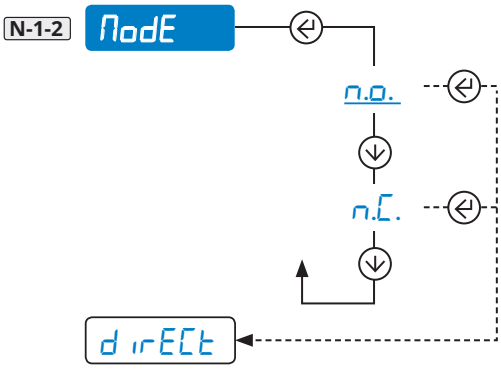
Operation on net weight, gross weight or dosage



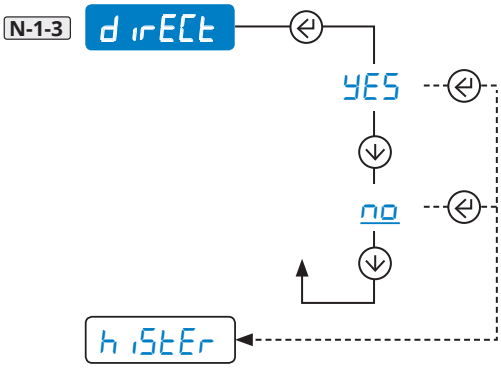
For dosage / filling:
- Start the doSAGE mode
- Set the unLoCA unladen weight.

The output is activated only after having set the unladen weight of the container (by key or via external button) and is turned off once the set target (setpoint) has been achieved. To perform fills at two speeds, you must programme two outputs in doSAGE mode.

Normally open (n.o.) or closed (n.C.) operation



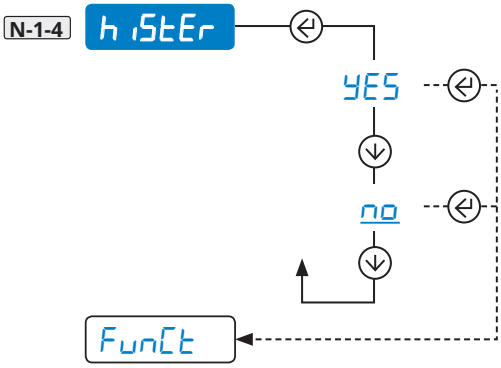
Output activation mode



Direct, when weight is table or unstable

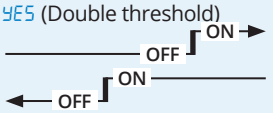
Only when weight is stable

Double threshold operation
(activation weight threshold ≠ from output deactivation weight threshold)

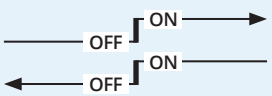


Operation:

YES (Double threshold)



no (Single threshold)



Repeat the same operation for rEL.b.2, rEL.b.3 and rEL.b.4.

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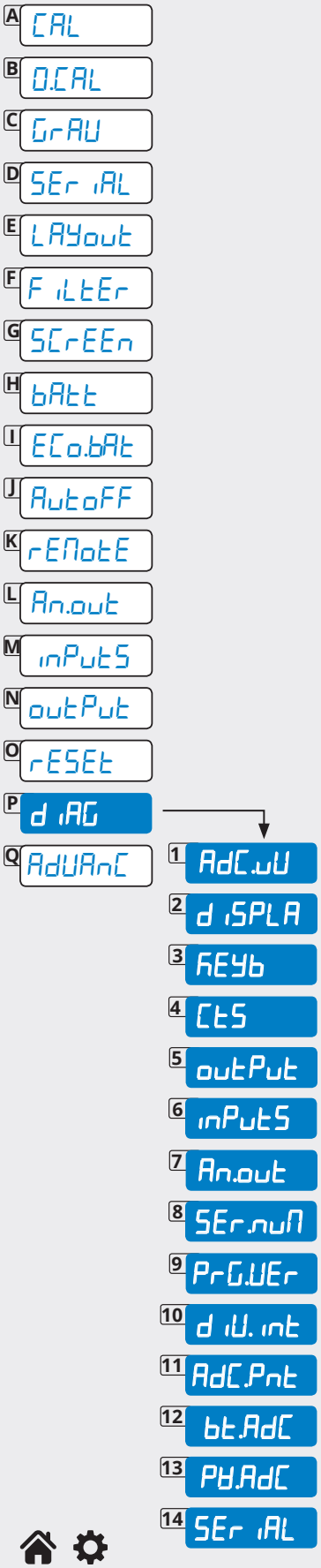
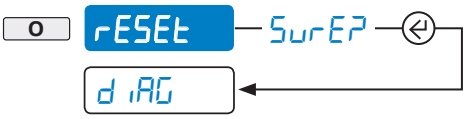


rESEt Factory configuration reset



Function resetting the factory configurations while maintaining the calibration in the memory unchanged.

d iAG Diagnostics

P-1 AdC.uU — Converter. Check of input signal in µV. In case of more equalised channels, press ↓ or ↑ to examine all the selected channels.

P-2 d iSPLA — Display. Integrity check of all segments and icons.

P-3 KEYb — Keyboard. Press any key to verify its correct operation, with beep and code on display.

P-4 CtS — CTS. Check of status of the control signal from the printer.

P-5 outPut — Optional digital outputs. Check the activation and deactivation of each contact.

Example: *out 1 activates output 1. Press ↓ to select the next output.*

WARNING: before entering the outPut pitch, verify that the activation of the output does not cause dangerous conditions for people, animals or property.

P-6 inPutS — Optional digital inputs. Check the activation and deactivation of each input.

Example: *ib 1-0 input not active*
Example: *ib 1- 1 input active*
Press ↓ to select the next input.

P-7 An.out — Analog output. Enter the digital value andusing a tester check the response of the analog output.

P-8 SEr.nuM — Serial number of the scale.

P-9 PrG.UEr — Hardware revision (e.g. rEU 5) followed by software version (e.g. 04.00.00).

P-10 d iU. int — For use by the manufacturer.

P-11 AdC.Prt — For use by the manufacturer.

P-12 bt.AdC — For use by the manufacturer.

P-13 PY.AdC — For use by the manufacturer.

P-14 SEr iAL — For use by the manufacturer.

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- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q **AdUAnC**
  - 1 CAL.PAr
    - 1 dEC iM
    - 2 d iU
    - 3 u.M.
    - 4 rAnGE 1
    - 5 rAnGE 2
    - 6 rAnGE 3
    - 7 EQuAL
    - 8 n.ChAn
  - 2 EQuAL.P
  - 3 CAL.AdU
  - 4 no iSE
  - 5 MEtroL
  - 6 KEYb
  - 7 t iLt
  - 8 rEACt
  - 9 LoCA.Ab
  - 10 AL ib i.r
  - 11 P in.tEC
  - 12 P in.uSE
  - 13 dFLt.t

AdUAnC Advanced

CAL.PAr Calibration parameters

Configuration of the decimal point (0...3)

Q-1-1 dEC iM → 0 → 0.0 → 0.00 → 0.000 → d iU

Reading division

Q-1-2 d iU → 1 → 2 → ... → 200 → u.M.

Unit of measure

Q-1-3 u.M. → G → KG → t → Lb → CAPAC

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- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdUAnC
  - 1 CAL.PAr
    - 1 dEC iN
    - 2 d iU
    - 3 u.M.
    - 4 rAnGE 1
    - 5 rAnGE 2
    - 6 rAnGE 3
    - 7 EqUAL
    - 8 n.ChAn
  - 2 EqUAL.P
  - 3 CAL.AdU
  - 4 no iSE
  - 5 MEtroL
  - 6 KEYb
  - 7 t iLt
  - 8 rEACt
  - 9 LoCA.Ab
  - 10 AL ib i.r
  - 11 P in.tEC
  - 12 P in.uSE
  - 13 dFLt.t

Scale capacity. Set Max or Range 1 (Max range = 800.000)

Q-1-4 rAnGE 1 → 003.000 → rAnGE 2

How to set the value

↓ ↑ → or 0 ... 9

Range 2

For multirange scales, set the second weighing range.

Q-1-5 rAnGE 2 → 000.000 → rAnGE 3

How to set the value

↓ ↑ → or 0 ... 9

Range 3

For multirange scales, set the third weighing range.

Q-1-6 rAnGE 3 → 000.000 → rAnGE 1

How to set the value

↓ ↑ → or 0 ... 9

Example of multirange configuration at 1500/3000 kg, division 0.5/1 kg.

Set:
- dEC i = 0.0
- d iU = 5
- rAnGE 1 = 1500.0
- rAnGE 2 = 3000.0

Equalisation function

Q-1-7 EqUAL → no / YES → n.ChAn

Connection diagram on page 7.
Equalisation procedure on page 36.

Equalised analog channels

Visible only if EqUAL **(Q-1-7)=** YES

Q-1-8 n.ChAn → Ch 2 / Ch 3 / Ch 4 → dEC iN

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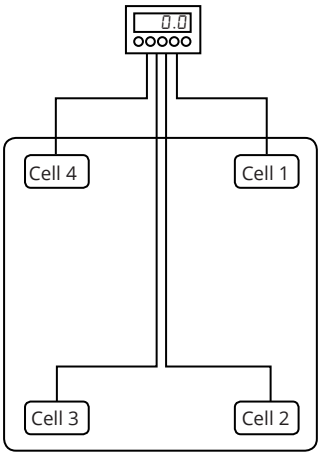
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdUAnC
  - 1 CAL.PAr
  - 2 E9uAL.P
    - 1 E9.0
    - 2 E9.1
    - 3 E9.2
    - 4 E9.3
    - 5 E9.4
  - 3 CAL.AdU
  - 4 no iSE
  - 5 MEtroL
  - 6 AEYb
  - 7 t iLt
  - 8 rEACt
  - 9 LoCA.Ab
  - 10 AL ib i.r
  - 11 P in.tEC
  - 12 P in.uSE
  - 13 dFLt.t

E9uAL.P Equalisation

E9uAL.P is only visible if the function E9uAL **(Q-1-7)** is activated in the menu CAL.PAr **(Q-1)**.

The equalisation wizard asks to acquire the zero point with scale unloaded and to later place a weight of about 1/8 of the maximum capacity (Max) on each individual cell, in the required order. After the procedure the message E9.oA will appear.

Proceed with the calibration.



Q-2-1 E9.0 → E9.1 → -oA-

Q-2-2 E9.1 → E9.2 → -oA- (kg)

kg = 1/8 Max (kg)

Q-2-3 E9.2 → E9.3 → -oA- (kg)

Q-2-4 E9.3 → E9.4 → -oA- (kg)

Q-2-5 E9.4 → C CAL → -oA- (kg)

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- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdUAnC
  - 1 CAL.PAr
  - 2 EQuAL.P
  - 3 CAL.AdU
    - 1 ZEro
  - 4 no iSE
  - 5 MEtroL
  - 6 KEYb
  - 7 t iLt
  - 8 rEACt
  - 9 LoCA.Ab
  - 10 AL ib i.r
  - 11 P inCEC
  - 12 P in.uSE
  - 13 dFLt.t

CAL.AdU Complete calibration

Before calibrating, configure the decimals (dEC i - **Q-1-1**), the division (d iU - **Q-1-2**) and the capacity (rAnGE - **Q-1-4,5,6**).

Start of the calibration procedure:

Q-3-1 ZEro ↵

Unload the plate, press ↵ and wait for the message -oA-.

-oA-

CAL.Pnt ↵

Now acquire the calibration points (up to 3):

n 1 ↵

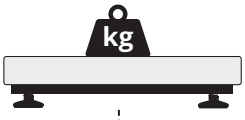
I. Set the calibration points (1...3)

How to set the value

000.000 ↵

II. Enter the calibration weight

How to set the value



III. Load the weight and wait

-oA-

000.000 ↵

Repeat the steps from II. for the next points

...

CAL.oA

CAL.Pnt

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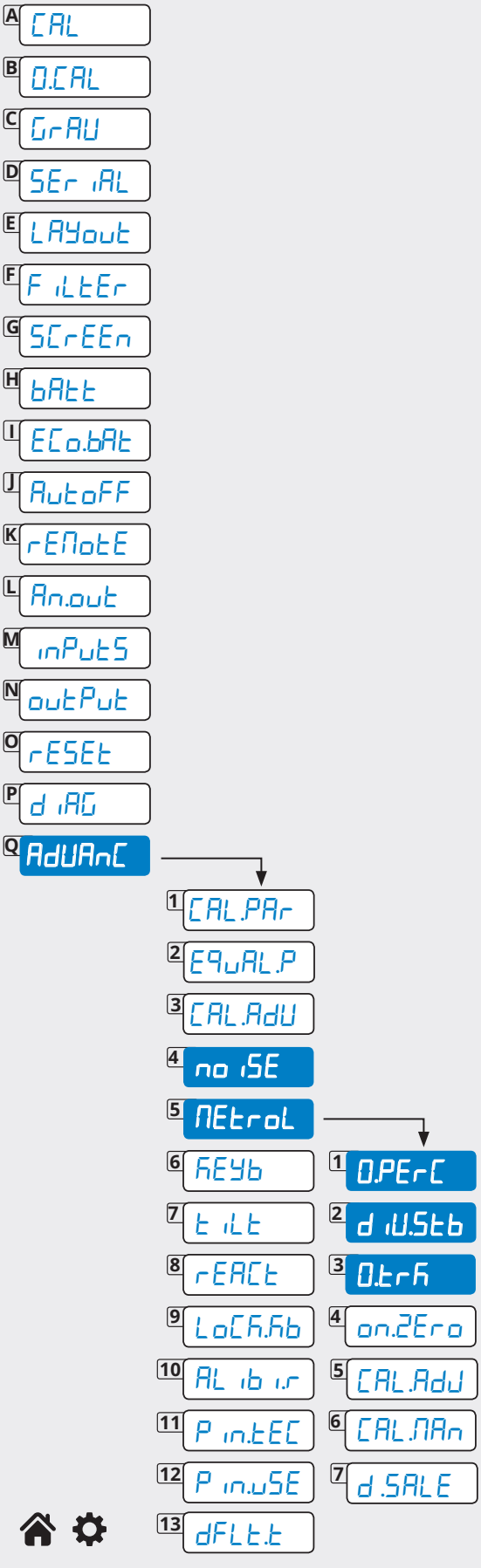
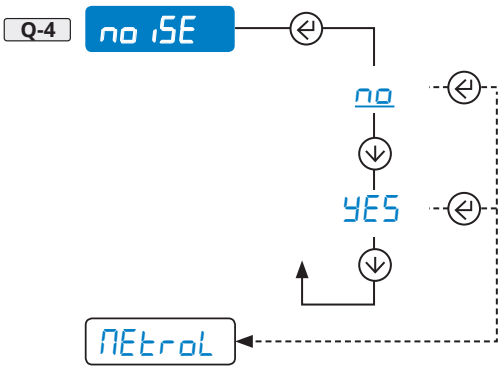


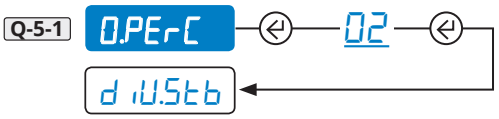
Additional filter for weighing in the presence of vibrations and for weighing live animals.



To weigh live animals, we recommend the combination with filter StAnd **(F-1,2,3,4)** *or* SLoW **(F-17,18,19,20)**. *(See page 25)*

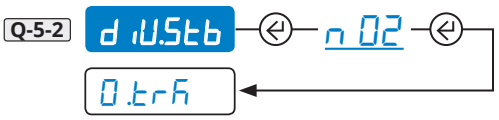
NEtroL Metrological parameter

Reset percentage via key



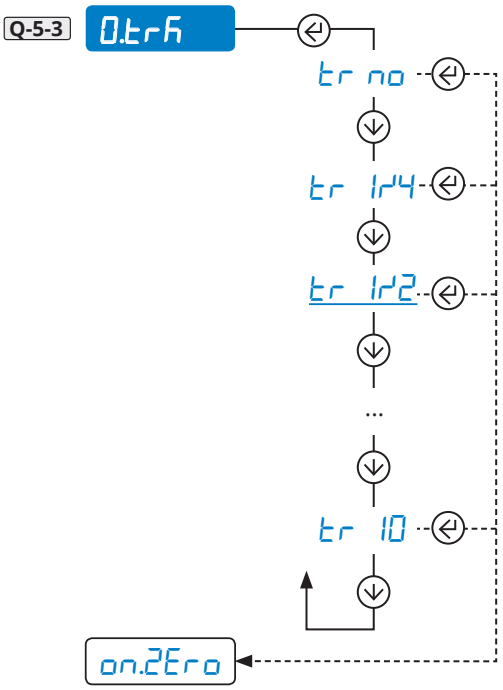
With approved scale (0...2)
With non-approved scale (0...50)

Sensitivity of the weight stability control



(0...20)

Zero hold function (tracking)



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- E LAYout
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P d iAG
- Q AdUAnC
  - 1 CAL.PAr
  - 2 EQuAL.P
  - 3 CAL.AdJ
  - 4 no iSE
  - 5 MEtroL
    - 1 O.PErC
    - 2 d iU.Stb
    - 3 O.trA
    - 4 on.2Ero
    - 5 CAL.AdJ
    - 6 CAL.MAn
    - 7 d.SALE
  - 6 KEYb
  - 7 t iLt
  - 8 rEACt
  - 9 LoCA.Ab
  - 10 AL ib ir
  - 11 P inEC
  - 12 P inUSE
  - 13 dFLt.t

Reset at power and reset percentage

Q-5-4 on.2Ero

- no
- YES
  - C.PErC ---- 10
- CAL.AdJ

Re-acquisition / change of the calibration points in memory.

Q-5-5 CAL.AdJ

- 2Ero
- Po int.1
- Po int.2
- Po int.3

Change of first calibration point

000000

I. Enter the calibration weight (0...999999)

LoAd

II. Load the weight on the scale and wait

cAL.oK

Po int.2

Repeat the same operation for Po int 1, Po int 2 e Po int 3

Q-5-6 CAL.MAn — For use by the manufacturer.

Q-5-7 d.SALE — For use by the manufacturer.

Type of keyboard

Q-6 KEYb — *Visible depending on model*

- norM — ↓ ↑ → ↵ C
- EHt — ↓ ↑ → ↵ C 1 2 3 4 5 6 7 8 9 F1 0 F2
- FunCt

Inclinometer (for use by the manufacturer)

Q-7 t iLt

- n.o. — Normally open
- n.C. — Normally closed
- rEACt

MENU

How to enter	How to browse	How to save and exit
1. Off 2. On 3. ↑	↑ = ↑ ↓ = ↓ → = ↵ ← = C	Page 8

Page 8

- A CAL
- B O.CAL
- C GrAU
- D SEr iAL
- E LAYout
- F FiLtEr
- G SCrEEn
- H bAtt
- I ECo.bAt
- J AutoFF
- K rEMotE
- L An.out
- M inPutS
- N outPut
- O rESEt
- P diAG
- Q AdUAnC
  - 1 CAL.PAr
  - 2 EQuAL.P
  - 3 CAL.AdU
  - 4 no iSE
  - 5 NEtroL
  - 6 KEYb
  - 7 t iLt
  - 8 rEACt
  - 9 LoCK.Kb
  - 10 AL ib i.r
  - 11 P in.tEC
  - 12 P in.uSE
  - 13 dFLt.t

Reactivation of the totalisation or print function

Q-8 rEACt
- 2Ero — After unloading the plate
- inSt — When weight is unstable
- ALWAYS — Function always active

LoCK.Kb

Permanent keyboard lock (excluding key C)

Q-9 LoCK.Kb
- no
- YES

rEACt

Reset of fiscal memory (alibi memory, optional)

Q-10 AL ib i.r → SurE? → P in

Visible only if the alibi memory option is present

Reset is not possible if the instrument is approved

Access PIN to programming menu

Q-11 P in.tEC
- no
- YES → 123456

P in.uSE

Enter the access PIN

How to set the value

↓ ↑ → or 0 ... 9

Access PIN to user menus

Q-12 P in.uSE — View P in.tEC

Total reset of memory and of calibration, with reset of the factory settings.

Q-13 dFLt.t → SurE? → no iSE

6. COMMUNICATION STRINGS

Short string

01ST,GS, 0.0,kg<CR><LF>

where

01	Code 485 of the instrument (2 characters), only if communication mode 485 is enabled
ST	Scale status (2 characters): US - Weight unstable ST - Weight stable OL - Weight overload (out of range) UL - Weight underload (out of range) TL - Scale not level (inclinometer active)
,	ASCII 044 character
GS	Type of weight data (2 characters)
,	ASCII 044 character
0.0	Weight (8 characters including the decimal point)
,	ASCII 044 character
kg	Unit of measurement (2 characters)
<CR><LF>	Transmission terminator, characters ASCII 013 and ASCII 010

Extended string

01ST,1, 0.0,PT 20.8, 0,kg<CR><LF>

where

01	Code 485 of the instrument (2 characters), only if communication mode 485 is enabled
ST	Scale status (2 characters): US - Weight unstable ST - Weight stable OL - Weight overload (out of range) UL - Weight underload (out of range) TL - Scale not level (inclinometer active)
,	ASCII 044 character
1	ASCII 049 character
,	ASCII 044 character
0.0	Net weight (10 characters including the decimal point)
,	ASCII 044 character
PT	Indication of pre-set manual tare (2 characters)
20.8	Tare weight (10 characters including the decimal point)
,	ASCII 044 character
0	Number of pieces (10 characters)
,	ASCII 044 character
kg	Unit of measurement (2 characters)
<CR><LF>	Transmission terminator, characters ASCII 013 and ASCII 010

7. COMMUNICATION CONTROLS

Premise:

in the serial controls and in the relative responses

nn	Address 485 of the instrument (2 characters) (only if communication mode 485 is activated
<CR>	Terminator character ASCII 13 (0D) (1 character)
<LF>	Terminator character ASCII 10 (0A) (1 character)

Reading of simple weight

Control **nnREAD<CR><LF>**
Response Short string *(see page 41)*

Reading of complete weight

Control **nnREXT<CR><LF>**
Response Extended string *(see page 41)*

Execution of a semi-automatic tare

Control **nnTARE<CR><LF>**

Response **OK<CR><LF>** indicates that the control was received correctly

Setting of the tare value (PT)

Control **nnTMANtttttttt<CR><LF>**
Where **t...t** is the tare, with decimal points, max 8 characters.

Response **OK<CR><LF>** indicates that the control was received correctly

Examples **TMAN1,56<CR><LF>**
set a tare of 1.56
TMAN100<CR><LF>
set a tare of 100

Deleting the tare in memory

Control **nnCLEAR<CR><LF>**

Response **OK<CR><LF>** indicates that the control was received correctly

Scale reset (function of the ZERO key)

Control **nnZERO<CR><LF>**
Response **OK<CR><LF>** indicates that the control was received correctly

SPECIFIC CONTROLS FOR ALIBI MEMORY (OPTIONAL)

Storage requests

Control **nnPID<CR><LF>** request to store the weight

Response recording successful
nnPIDss,c,wwwwwwwwwwuu,pptttttttttuu,xxxxx-yyyyyy<CR><LF>

no recording
nnPIDss,c,wwwwwwwwwwuu,pptttttttttuu,NO<CR><LF>

where:

ss status of weight (2 characters)
- **TL** Error of condition of tILt (NO RECORDING)
- **OL** Condition of oUErLoAd (NO RECORDING)
- **UL** Condition of UndErLoAd (NO RECORDING)
- **ST** Weight stable
- **US** Weight unstable (NO RECORDING)

c Scale number (1 character)

w...w Gross weight (10 characters)

uu Unit of measurement (2 characters)

pp Type of tare: double space " " if semi-automatic, "PT" if pre-set (2 characters)

t...t Tare value (10 characters)

xxxxx Number of rewriting (5 characters)

yyyyyy Progressive weighted (6 characters)

Examples
PIDST,1, 1500,0kg,PT 2,8kg,00000-000158<CR><LF>
PIDUS,1, 1500,0kg,PT 2,8kg,NO<CR><LF>

Reading of a weighing in memory

Control **nnALRDxxxxx-yyyyyy<CR><LF>**
Where **xxxxx** is the rewriting number, **yyyyyy** is the progressive weighted.

Response **s , w w w w w w w w w w u u , p p t t t t t t t t t t u u<CR><LF>**

where:

s Number of scales (always 1)

w...w Gross weight (10 characters)

uu Unit of measurement ("g", "kg", " t", "lb")

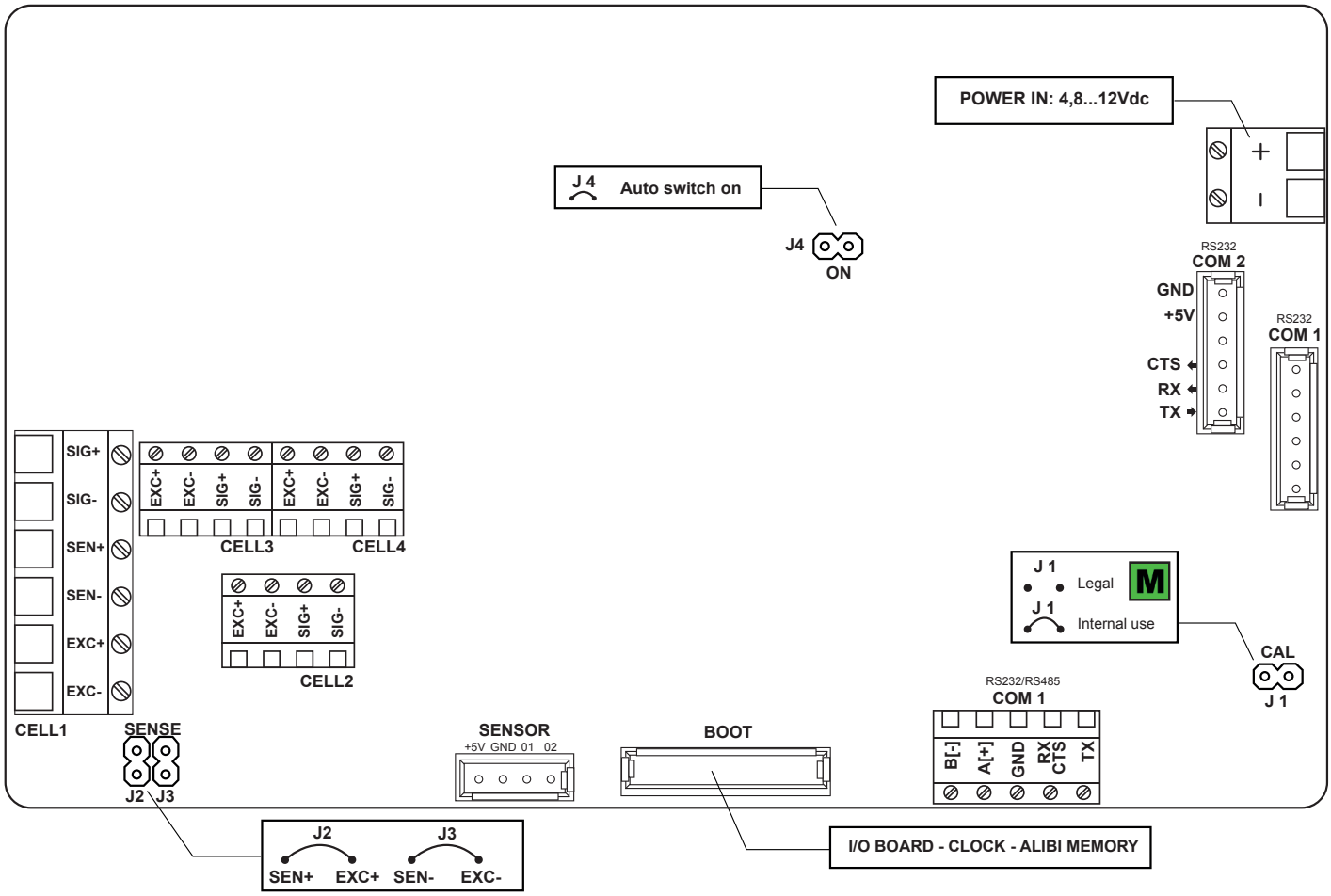
pp Type of tare: double space " " if semi-automatic, "PT" if pre-set (2 characters)

t...t Tare value (10 characters)

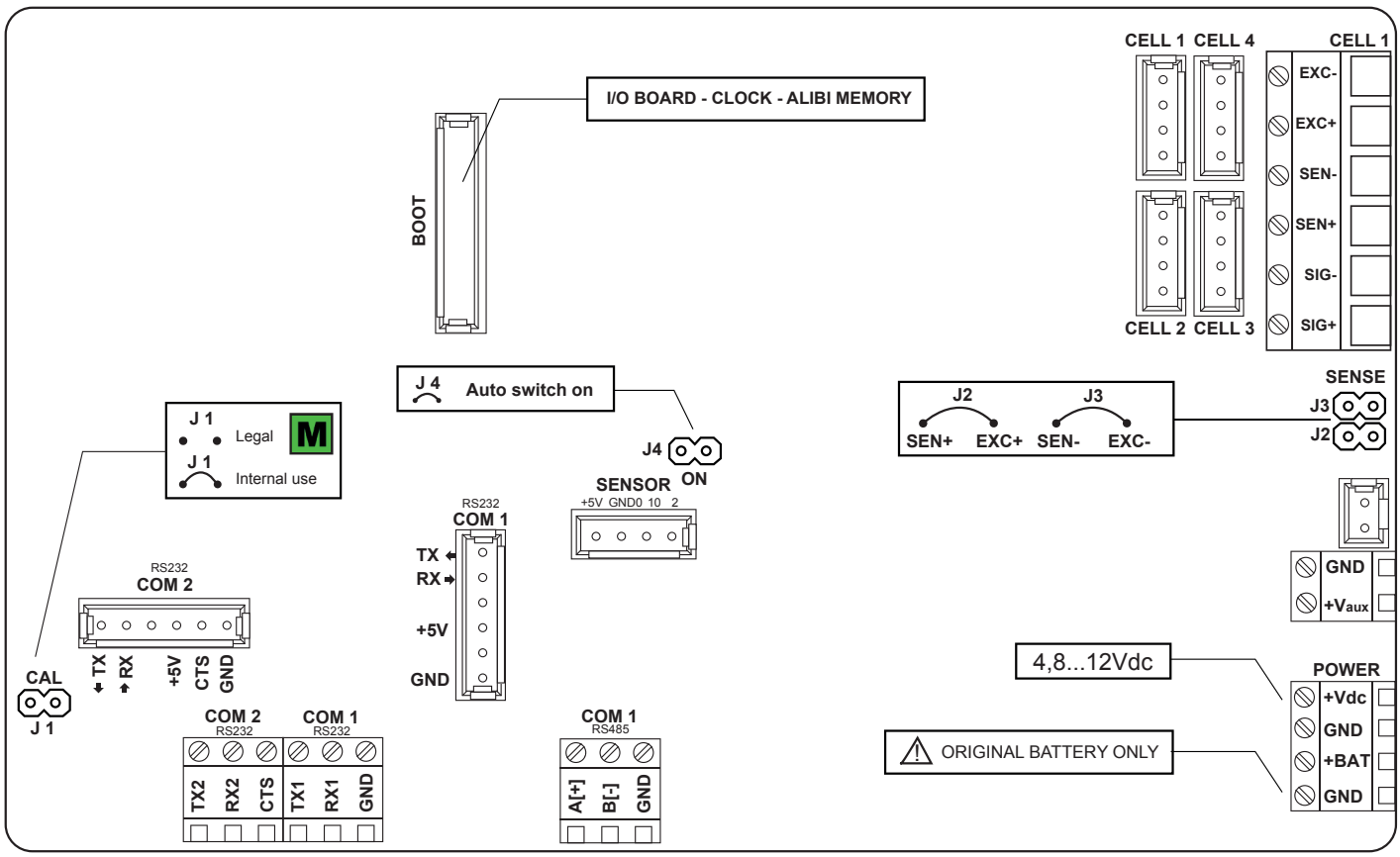
Examples
ALRD00000-000158<CR><LF>
1, 1500,0kg, 2,8kg<CR><LF>

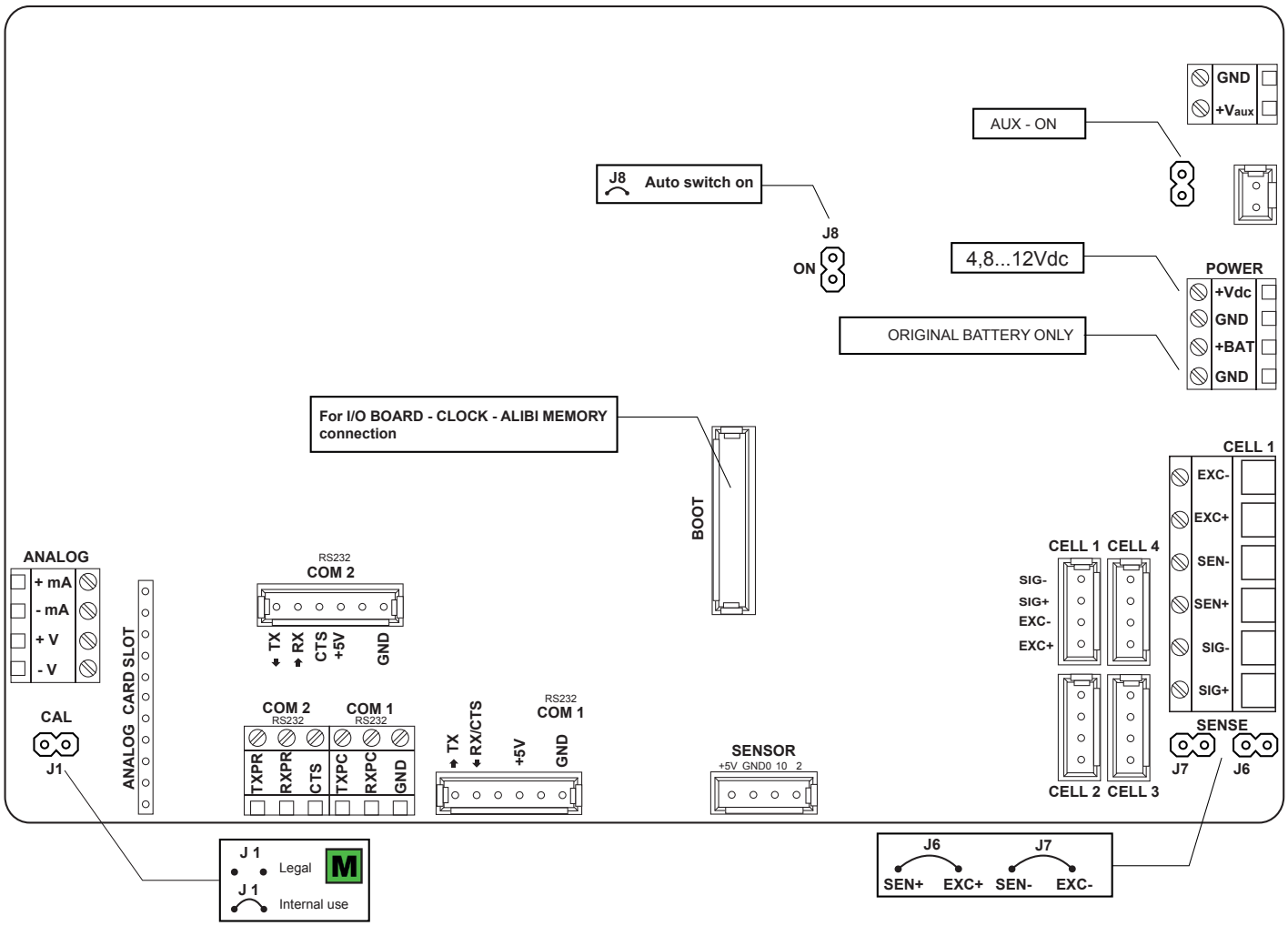
8. WIRING SCHEMES

DFWLxxx, WLB, TPWNxxx, TPWLxxx, MCWNxxx.



DFWLIDxxx




GND
+Vaux
AUX - ON
J8 Auto switch on
J8
ON
4,8...12Vdc
POWER
+Vdc
GND
+BAT
GND
ORIGINAL BATTERY ONLY
For I/O BOARD - CLOCK - ALIBI MEMORY connection
BOOT
CELL 1
EXC-
EXC+
SEN-
SEN+
SIG-
SIG+
CELL 1 CELL 4
SIG-
SIG+
EXC-
EXC+
CELL 2 CELL 3
ANALOG
+ mA
- mA
+ V
- V
ANALOG CARD SLOT
RS232
COM 2
TX
RX
CTS
+5V
GND
CAL
J1
COM 2
RS232
COM 1
RS232
TXPR
RXPR
CTS
TXPC
RXPC
GND
RS232
COM 1
TX
RX/CTS
+5V
GND
SENSOR
+5V GND0 10 2
SENSE
J7
J6
J 1
Legal
J 1
Internal use
M
J6
J7
SEN+
EXC+
SEN-
EXC-

9. PROGRAMMING ERRORS

MESSAGE	DESCRIPTION	SOLUTION
AL.Err	Board “alibi memory” (optional) not detected.	Check the presence of the board inside the indicator. If present, check it is not damaged and is installed correctly.
Er.I.b.H	Board “inputs/outputs” (optional) not detected.	Check the presence of the board inside the indicator. If absent, deactivate any inputs or outputs (parameter “ inPutS” or “outPut”, *see page 31-32).* If present, check it is not damaged and is installed correctly.
Er.r.b.H		
E9.Err	Impossible to perform equalisation.	Check the cells are connected properly. Check the signal of each cell in the diagnostic menu (menu d iAG, parameter AdC.bU, *see page 33).*
PrEC.	Calibration error.	First calibrate the zero point, then proceed with the next points.
Err.Pnt	Calibration error.	Check the connection of the load cell. Check that the cell signal is stable, valid and greater than that of the previously acquired point.
Er 11	Calibration error.	Increase the calibration weight.
Er 12	Calibration error.	Check that the signal coming from the cell increases upon the increasing of the weight loaded on the scale. When acquiring the calibration points, use the increasing calibration weights.
Er 37	Calibration error.	Repeat the calibration, checking that the capacity and division have been correctly set.
Er 39	Instrument not configured.	Reset the factory configurations (menu AdUAnC, parameter dFLt.t, *see page 40*).
Er 85	Instrument configured but not calibrated.	Perform calibration.
C.Er.36	Calibration error.	Check that the signal coming from the load cell is not negative.
Err.Not	Weight unstable.	Check in menu d iAG, parameter AdC.bU *(see page 33)* that the signal is stable and re-try. If the connection of the cells is with 4 wires, check that the sense jumpers are inserted.

10. FAQ - FREQUENTLY ASKED QUESTIONS

Calibration

Can I change the maximum capacity without recalibrating?
Yes, you must change the parameters rAnGE 1.2.3 **(Q-1-4,5,6)**. *(See page 35)*

Can I change the division without recalibrating?
Yes, you must change the parameter d iU **(Q-1-2)**. *(See page 35)*

Can I change the position of the decimal point without recalibrating?
Yes, you must change the parameter dEC iN **(Q-1-1)** and the value of the calibration points via the pitch CAL.nAn **(Q-5-6)**.
(See page 35 and 39)

Can I calibrate the instrument in "multi-division" mode?
Yes, through advanced configuration from PC with Dinitools program.

Communication

Scale doesn't answer
- Check the good condition of the cable and that there are no failures (using a multimeter).
- Check that the PC communication port or of the device used is not compromised. If necessary, try with another device/PC
- Make sure to have connected the cable on the correct serial port.
- Check the configuration of the pitches bAud and b it. *(See page 13)*
- Temporarily activate the continuous communication and retry receiving the string. If the string has been received correctly, carefully check the syntax of the control sent, the communication time-outs and the presence of the terminator.

Generic

The scale does not switch on
- Check that the input voltage level to the mother board is correct.
- Try the forced power by inserting the "ON BOOT" jumper present on the mother board. If the indicator lights up, check the correct operation of the keyboard, using the diagnostic menu diAG. *(See page 33)*
- Possible failure of the internal rechargeable battery (if present).

11. SUMMARY OF THE PARAMETERS

NOTES

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