DINI ARGEO
Scales - Weighing systems
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# TECHNICAL MANUAL
# WEIGHT INDICATOR

## DFWATEX2GD, DFWATEX2GDIO, DFWATEX2GDM, DFWATEX2GDMI

# INDEX



For the simplest usage in this manual, the name DFWATEX stands for both DFWATEX2GD, DFWATEX2GDIO, DFWATEX2GDM and DFWATEX2GDMI,
so where "DFWATEX" is used it is understood as "DFWATEX2GD, DFWATEX2GDIO, DFWATEX2GDM and DFWATEX2GDMI".

**NOTE FOR THE TECHNICIAN**

Please take note that when the "StEP….(USER MAN.REF.)is mentioned, this refers to the user manual.

# 1 WARNINGS

**These warnings apply to DFWATEX2GDxxx weight indicators and to the optional ATEX version JB4Q junction box**

**ESSENTIAL PREREQUISITE**
**ALONG WITH THIS TECHNICAL MANUAL ONE SHOULD ALSO READ AND UNDERSTAND THE CORRESPONDING DFWATEX2GD USER MANUAL**
**IN WHICH IMPORTANT WARNINGS ARE INDICATED**

# 2 REQUIREMENTS FOR AN EFFECTIVE INSTALLATION

To obtain the best results it is recommended to install the indicator and the platform (or transducer) in a place with the following conditions:

**A flat and level resting surface**

**Stable and vibration free**

**No dusts and aggressive vapours**

**No draughts**

**Make sure the platform is level or that the loading cells are resting evenly**

# 3 TECHNICAL FEATURES

| | |
|---|---|
| **POWER SUPPLY** | - **with power adapter** PW200XRD:<br>- 230Vac input / 10.5Vdc<br>- 115Vac input / 10.5Vdc<br>- 24Vac input / 10.5Vdc<br>- 24Vdc input / 10.5Vdc<br>- **with rechargeable battery DFWBP76ATEX:** 9,6 Vdc 120mA with a nominal capacity of 7,6 Ah |
| **MAXIMUM RECHARGING TIME OF THE BATTERY** | With the appropriate 12V 2A charger, the complete recharge is made from 15 to 18 hours |
| **MAXIMUM POWER ABSORBED** | Pi = 1,44W |
| **OPERATING TEMPERATURE** | - 20°C ÷ +40°C |
| **DISPLAY DIVISIONS** | 10000e, 3 x 3000e for legal for trade weighing, expandable up to 100.000 for internal use. |
| **COUNTING RESOLUTION** | 150'000 points |
| **DISPLAY** | LCD with 6 digits, 25 mm. high |
| **INDICATIONS** | 25 multifunction symbols on LCD display |
| **KEYBOARD** | Waterproof in polycarbonate with membrane keys having a tactile and acoustic feedback. |
| **LOAD CELL POWER SUPPLY** | 1, 6Vdc / 3,2Vdc<br>(up to 4 cells 350 Ω, with power adapter SG160.x.2 and DFWBP76ATEX battery )<br>(up to 8 cells 350 Ω, with power adapter PW200XRD) |
| **LOAD CELL CONNECTION** | - 6 wires with remote sense on terminal board<br>- 4 wires using the AMP connection on the motherboard |
| **CONTAINER** | Stainless steel metallic case with IP67 protection, suitable for mounting on shelf or column. |

# 4 SETUP ENVIRONMENT

With "SETUP ENVIRONMENT" we intend a specific menu, where it's possible to set all the functioning parameters of the indicator.

**To enter it, turn on the instrument and, while the firmware version is being displayed, press the TARE key for an instant.**
**The indicator shows :**

**1)** **"tECh"** for an instant on the display ⇨ **ACCESS PASSWORD DISABLED** ⇨ **"F.ModE"** on the display ⇨ **COMPLETE SET-UP MENU (technical personnel)**

**or**

**2)** **"uSEr"** for an instant on the display ⇨ **ACCESS PASSWORD ENABLED** ⇨ **"PrG.VEr"** on the display ⇨ **PARTIAL SET-UP MENU (only user)**

**If you are in choice 2) and you want to access the complete set-up menu one should:**

**Press TARE/ZERO** during the visualisation of the **"uSEr"** message on the display ⇨ **ENTER THE PASSWORD SUBSTITUTING THE DISPLAYED VALUE (*)** ⇨ **Press ENTER** ⇨ **"tECh"** for an instant on the display ⇨ **COMPLETE SET-UP MENU (technical personnel)**

**(*) If one has forgotten the password, one should communicate the displayed number to the manufacturer, who will supply a valid password JUST FOR THAT SPECIFIC NUMBER.**

**In the SET-UP environment, the instrument keys take on the following functions:**

| KEY | FUNCTION |
|---|---|
|  | Allows scrolling ahead through the programming steps. |
|  | Allows to scroll backwards through the programming steps. |
|  | Allows to quickly position on the first step of a menu. |

| | |
|---|---|
|   | Allows to enter a step or confirm a parameter inside a step. |
|   | Allows to exit a step without confirming the possibly modified parameter and go to the preceding level.<br>When entering a numeric value it quickly zeros the displayed value. |
|   | Allow to enter numeric values, from right to left. |

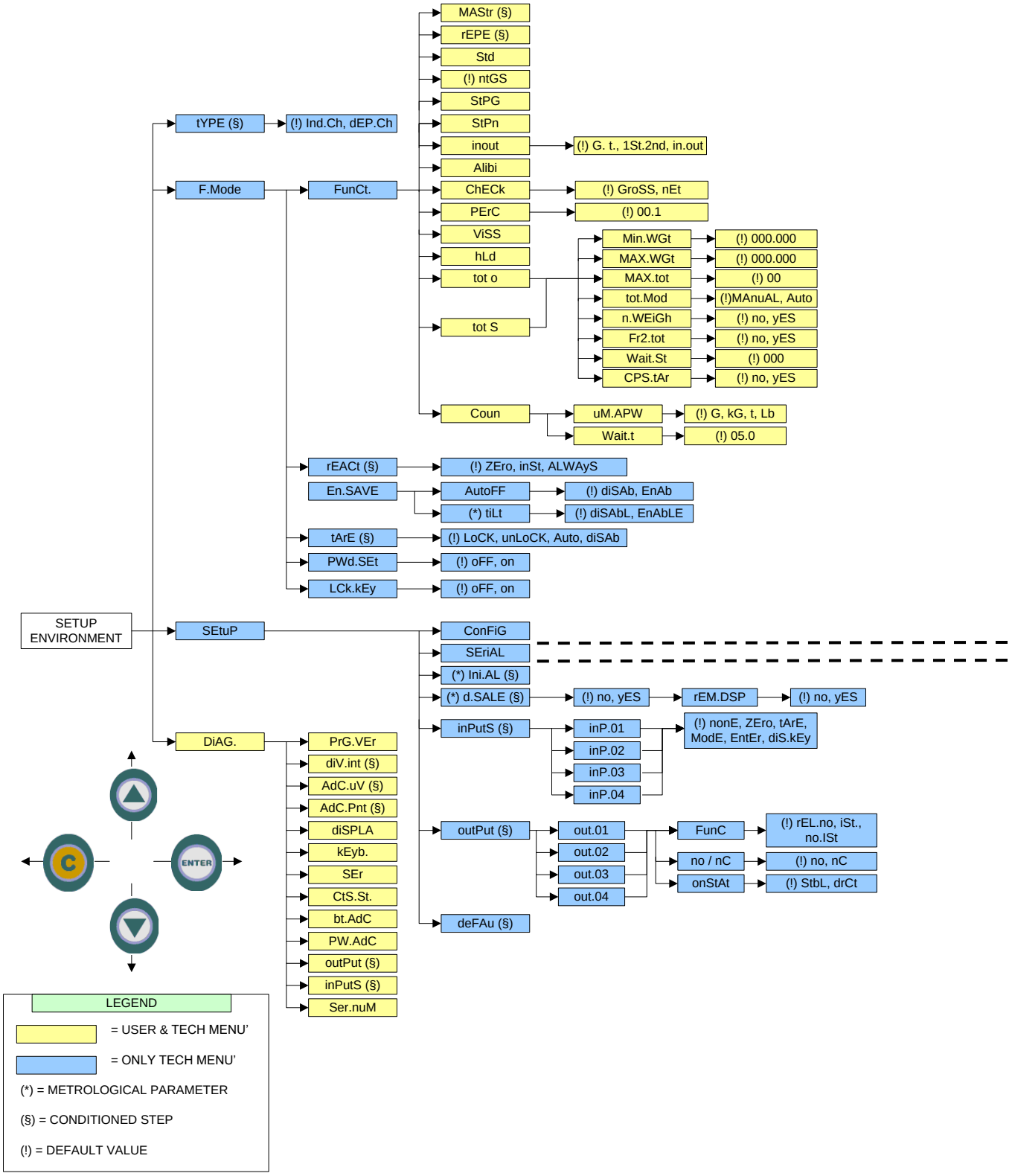
**The display indicates the abbreviation of the step whose meaning is described below.**
In the parameter description and in the block diagram:

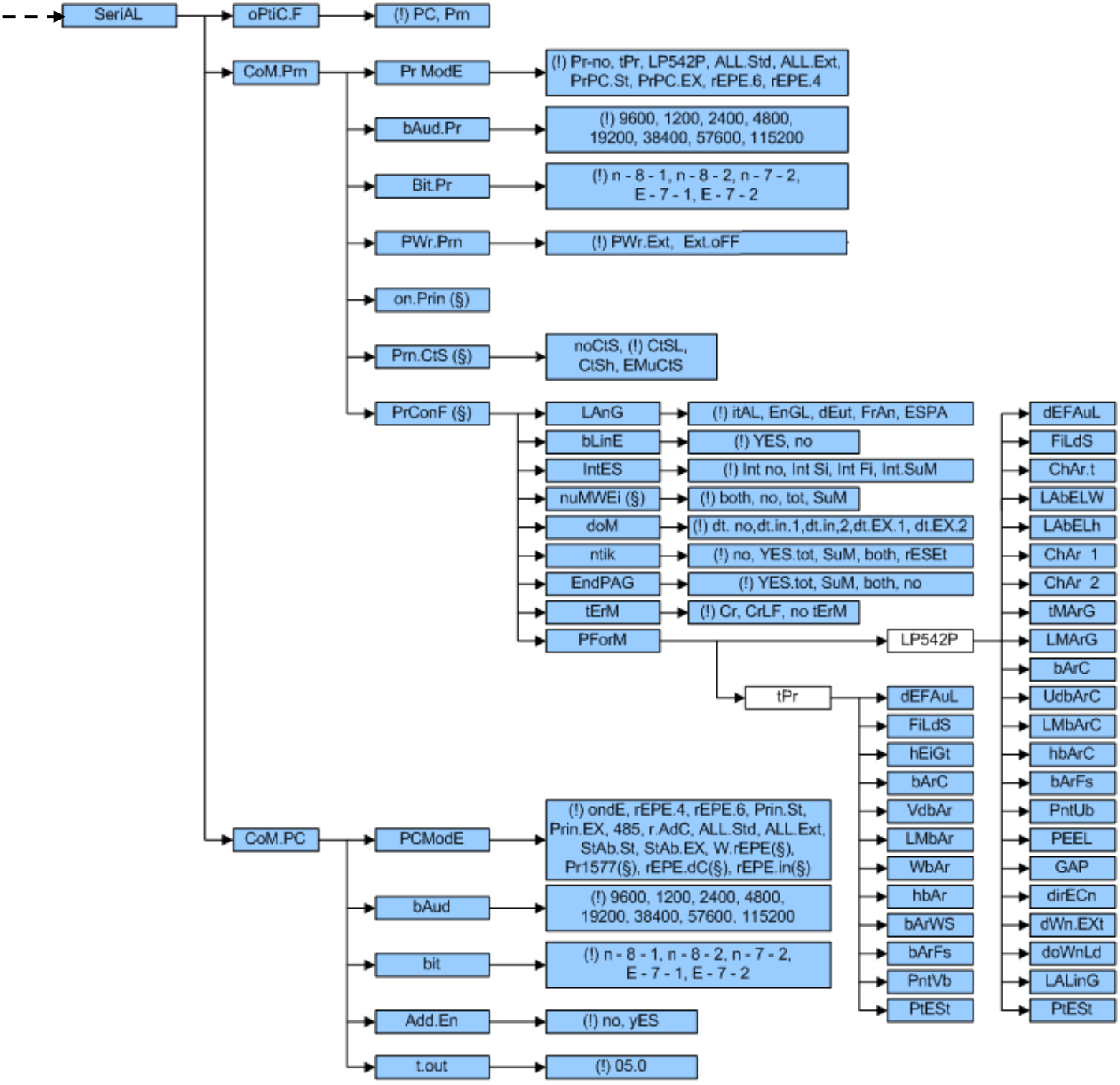
- The **METRIC** parameters are shown with the **(*)** symbol**, and, with approved instrument, these may not be visible or read only. See the explanation of the parameter for the details.**
  **NOTE: The indicator is approved when the J1 jumper (CAL) of the motherboard is open**
- The **CONDITIONAL STEPS** are shown with the **(§)** symbol, **and are not displayed in specific conditions, shown in the step description.**
- The **DEFAULT VALUES** are shown with the **(!)** symbol placed next to the step and at the end of it.

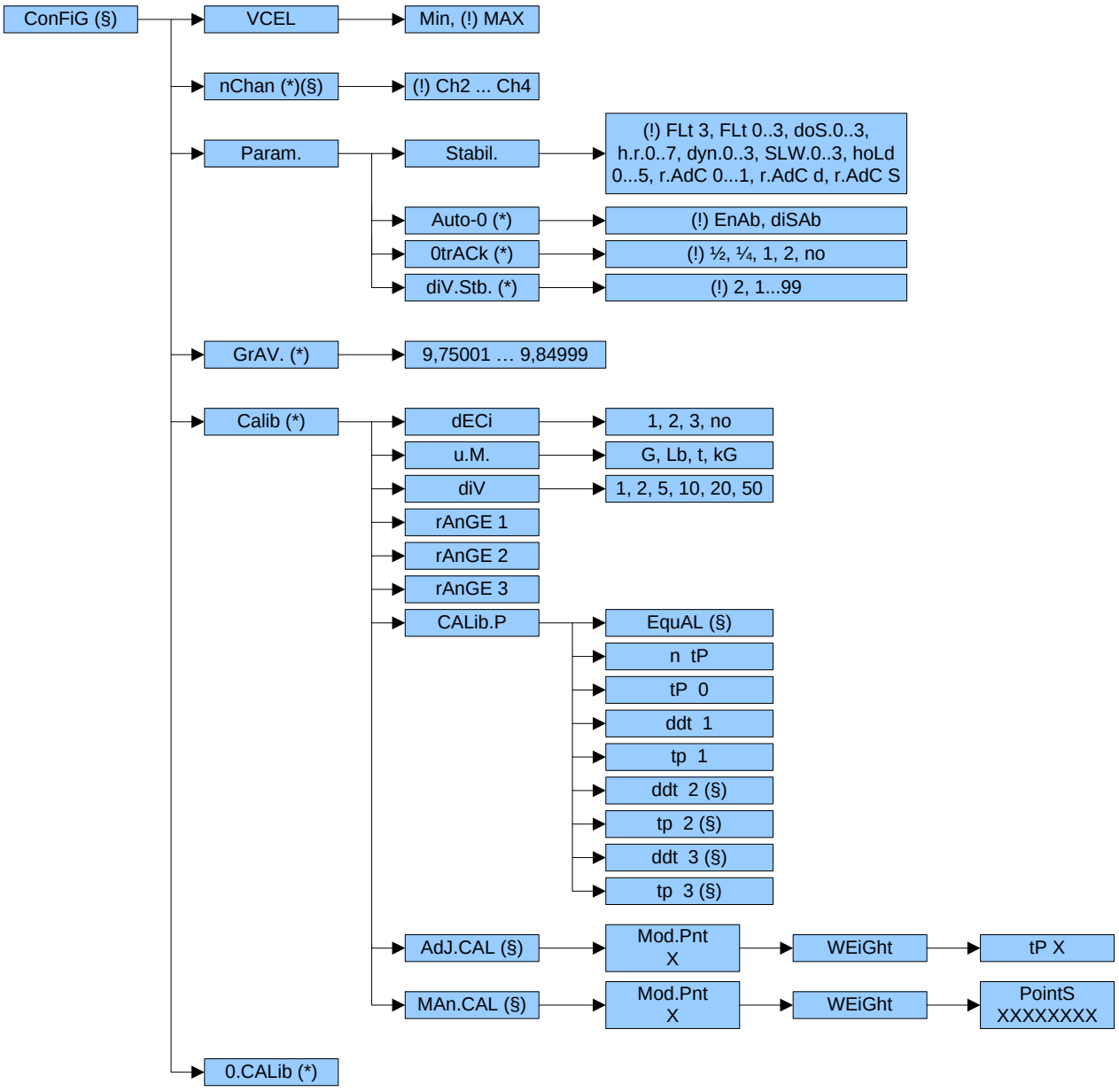
**TO EXIT THE SET-UP ENVIRONMENT, PRESS THE C KEY MANY TIMES UNTIL THE INDICATOR SHOWS "SAVE?" IN THE DISPLAY: CONFIRM WITH ENTER/PRINT TO SAVE ANY CHANGES MADE OR PRESS ANOTHER KEY TO NOT SAVE.**

## 4.1 SET-UP ENVIRONMENT BLOCK DIAGRAM

The following diagram shows the structure of the indicator's set-up environment; each step has been described in detail in the "DESCRIPTION OF THE STEPS" section.




SerIAL
oPtiC.F
(!) PC, Prn
CoM.Prn
Pr ModE
(!) Pr-no, tPr, LP542P, ALL.Std, ALL.Ext, PrPC.St, PrPC.EX, rEPE.6, rEPE.4
bAud.Pr
(!) 9600, 1200, 2400, 4800, 19200, 38400, 57600, 115200
Bit.Pr
(!) n - 8 - 1, n - 8 - 2, n - 7 - 2, E - 7 - 1, E - 7 - 2
PWr.Prn
(!) PWr.Ext, Ext.oFF
on.Prin (§)
Prn.CtS (§)
noCtS, (!) CtSL, CtSh, EMuCtS
PrConF (§)
LAnG
(!) itAL, EnGL, dEut, FrAn, ESPA
bLinE
(!) YES, no
IntES
(!) Int no, Int Si, Int Fi, Int.SuM
nuMWEi (§)
(!) both, no, tot, SuM
doM
(!) dt. no,dt.in.1,dt.in,2,dt.EX.1, dt.EX.2
ntik
(!) no, YES.tot, SuM, both, rESEt
EndPAG
(!) YES.tot, SuM, both, no
tErM
(!) Cr, CrLF, no tErM
PForM
LP542P
tPr
dEFAuL
FiLdS
hEiGt
bArC
VdbAr
LMbAr
WbAr
hbAr
bArWS
bArFs
PntVb
PtESt
dEFAuL
FiLdS
ChAr.t
LAbELW
LAbELh
ChAr 1
ChAr 2
tMArG
LMArG
bArC
UdbArC
LMbArC
hbArC
bArFs
PntUb
PEEL
GAP
dirECn
dWn.EXt
doWnLd
LALinG
PtESt
CoM.PC
PCModE
(!) ondE, rEPE.4, rEPE.6, Prin.St, Prin.EX, 485, r.AdC, ALL.Std, ALL.Ext, StAb.St, StAb.EX, W.rEPE(§), Pr1577(§), rEPE.dC(§), rEPE.in(§)
bAud
(!) 9600, 1200, 2400, 4800, 19200, 38400, 57600, 115200
bit
(!) n - 8 - 1, n - 8 - 2, n - 7 - 2, E - 7 - 1, E - 7 - 2
Add.En
(!) no, yES
t.out
(!) 05.0




## 4.2 DESCRIPTION OF THE STEPS

### (*) tYPE TYPE OF APPLICATION (§)

Here one selects the type of application: scale with a single channel or scale with dependent channels (eventually digitally equalised).

**ind.Ch.** Instrument connected to 1 single-cell scale, or 1 scale with various cells equalised externally through the junction box.

**dEP.Ch.** Instrument connected to 1 scale with 2, 3 or 4 dependent load cells (eventually equalised digitally through a specific software procedure).

**(!) ind.Ch**

**(*)** In case of approved instrument the parameter is read only.

**(§)**The parameter is not displayed if the firmware is MASTER type.

## F.ModE SCALE FUNCTIONING

### FunCt FUNCTIONING MODE

**MAStr** (M) Multiscale Repeater
**rEPE** (M) Single scale repeater
**Std** (S) Kg / lb conversion.
**ntGS** (S) Net weight / gross weight conversion.
**StPG** (S) Set point on gross weight
**StPn** (S) Set point on net weight
**Inout** (S) Input / output weigh.
**ALibi** (S) Alibi memory.
**ChECk** (S) +/- tolerance check.
**PErC** (S) Sample weight percentile
**ViSS** (S) Sensitivity times ten.
**hLd** (S) Freezing weight.
**tot o** (S) Horizontal totalizer.
**tot S** (S) Vertical totalizer.
**Coun** (S) Counting.
**(!)ntGS** if STANDARD firmware; **(!) MAStr** if MASTER firmware.
**(S)** The parameter is displayed if the firmware is STANDARD type.
**(M)** The parameter is displayed if the firmware is MASTER type.

For the functioning details and the relative parameters to be programmed, refer to section **14** "SELECTABLE OPERATING MODES", **USER MAN.REF.**.
In case of a printer, it is necessary to execute the proper default printout in **SEtuP** >> **SEriAL** >> **CoM.Prn** >> **Pr.ModE**.

## **rEACt** REENABLING OF THE PRINTOUTS AND THE INDICATOR FUNCTIONS **(§)**

While using the indicator, it is possible to incur in the "**no.0.unS**" error shown on the display; this means that the printout or the function which one wants to carry out must be renabled (in order to avoid accidental executions). It is possible to set the reenabling in the following modes: "passage of the net weight by zero", "weigh instability" or "always".

**ZEro** passage of the net weight by zero
**inSt** instability
**ALWAyS** always
**(!) ZEro**

**(§)** The parameter is not displayed if the firmware is MASTER type.

## **En.SAVE** ENERGY SAVING

### **AutoFF** AUTO SWITCH-OFF

It is possible to enable the automatic switch off of the indicator (from 1 to 255 minutes), or disable it; the auto switch-off starts working when, **with an unloaded scale,** the weight has not been moved or a key has been pressed during the set time: the display shows the blinking "- oFF – " message; then the indicator turns off.

**diSAb** auto switch-off disabled
**EnAb** auto switch-off enabled (one will be asked to enter the number of minutes after which the indicator must turn off: enter a number from 1 to 255).
**(!) diSAb**

## **(*) tiLt** TILT DEVICE ENABLING

If the indicator is fitted with the TILT device, in this step it's possible to enable or disable its functioning.

**EnAbLE** enabled device
**diSAbL** disabled device

For further details see section 13.6, **USER MAN.REF.**.
**(!) diSAbL**
**(*)** If the instrument is approved the parameter is read only.

## **tArE** TARE TYPE SELECTION **(§)**

**LoCk** locked tare
**unLoCk** unlocked tare
**diSAb** disabled tare
**Auto** automatic unlocked tare

See the "TARE OPERATIONS" section for further functioning details, **USER MAN. REF.**.
**(!) LoCk**
**(§)**The parameter is not displayed if the firmware is MASTER type.

## **PWd.SEt** SET ACCESS PASSWORD

One selects whether to enable or disable the access password to the technical menu:

**on** password enabled
**oFF** password disabled

By selecting **on**, one can insert a password of up to 5 digits. When finished entering, press **ENTER** to confirm.
**NOTE:** The maximum enterable value is **65534**.
**(!) oFF**

## **LCk.kEy** KEYBOARD UNLOCKED/LOCKED **(§)**

One selects whether to enable or disable the keyboard locking in the weighing phase.

**oFF** keyboard lock disabled
**on** keyboard lock enabled

For further information see the section "KEYBOARD LOCK" **(USER MAN.REF.)**.
**(!) oFF**
**(§)** The parameter is not displayed if the firmware is MASTER type.

# **SEtuP** SCALE CONFIGURATION

## **ConFiG** METRIC CONFIGURATION

### **(*) nChAn** SELECTION OF NR. OF INDICATOR CHANNELS **(§)**

**2÷4** in SCALE WITH DEPENDENT CHANNELS functioning mode ("DEP.CH")
**(!) 2**
**(*)** With approved instrument the parameter is read-only.
**(§)**The parameter is not displayed if the firmware is MASTER type. If the firmware is STANDARD type, the parameter is not displayed in case of DEPENDENT CHANNELS functioning mode, **tyPE** parameter.

### **VCEL** POWER SUPPLY VOLTAGE OF LOAD RECEIVERS

It is possible to select two voltage levels of the load cell power supply:
Min: power supply with voltage equal to 1,6V
Max: power supply with voltage equal to 3,2V
**(!) MAX**

### **PArAM** METRIC PARAMETERS **(§)**

**(§)** The parameter is not displayed if the firmware is MASTER type.

#### **(*) StAbiL** FILTERING INTEGRATION

By pressing ENTER/PRINT one accesses the selection of the type and degree of filter intervention for the stability of the weight indication:

| | |
|---|---|
| **FLt 0 – 3** | filter for simple weighing |
| **doS.0 – 3** | filter for dosage |
| **h.r.0 – 7** | filter for high resolution |
| **dyn.0 – 3** | filter for a moving weight |
| **SLW.0 – 3** | filter for a rather unstable weight |
| **hoLd 0 – 5** | filter for animal weighing |
| **r.AdC 0 – 1** | filter for digital cells with fixed request interval |
| **r.AdC d – S** | filter for digital cells with dynamic (d = fast, S = slow) request interval |

The higher the filter value, and greater is its intervention relative to the type of filter used.
**(!) FLt 3**
**(*)** With approved instrument it is possible to select just the **FLt 0–3, h.r.0, h.r.1, dyn.0, dyn.1, SLW.0, SLW.1** parameters.

#### **(*) Auto-0** AUTOZERO AT THE START UP

By pressing ENTER/PRINT one chooses whether to enable (**EnAb**) or disable (**diSAb**) the automatic acquisition of the gross zero upon start-up. By choosing **EnAb**, if upon start-up a detected weight is within +/- 10% of the capacity, it is zeroed; if the weight is not within this tolerance, the non approved instrument's display will show the present weight after a few instants, while an approved instrument will continuously show "ZEro" on the display, until a weight within tolerance is placed.
**(!) EnAb**
**(*)** With approved instrument the parameter is read-only.

#### **(*) 0.trACk** ZERO TRACKING

This menu allows setting the zero tracking, in other words, the compensation parameter of the scale's thermal drift; the set value corresponds to the number of divisions that is reset in the fixed time of 1 second.

| | |
|---|---|
| **tr. ½** | +/- half division. |
| **tr. ¼** | +/- one fourth of a division |
| **tr. 1** | +/- one division. |
| **tr. 2** | +/- two divisions. |
| **tr. no** | tracking disabled. |

**(!) tr. ½**

**(*)** With approved instrument it is possible to select just the **tr. no**, **tr. ½, tr. ¼** parameters. .

**(*)diV.Stb** DIVISIONS BY STABILITY

In this step one enters the number of divisions by which the instrument detects the weight stability; the higher the number of divisions, less is the sensitivity, and consequently the stability is more easily detected. The possible values are 0 (weight always stable)…99.

**(!) 2**

**(*)** With approved instrument.
the parameter is read-only.

## (*) GrAV. GRAVITY ZONE AND ZONE OF USE (§)

Through this step one selects the acceleration value **of calibration and of use** of the instrument:
Manual entry of the g value: one may manually enter the gravitational acceleration value; **one must modify the 6 decimal digits of the gravitational acceleration.**
In case one enters a wrong g value: the minimum decimal value is suggested (9,75001); a wrong value is any decimal number that is not between 9,75001 and 9,84999 (inclusive).

**(!) g = 9,80655**

**(*)** With approved instrument the parameter is read-only.
**(§)** The parameter is not displayed if the firmware is MASTER type.

## (*) CALib SCALE CALIBRATION (§)

**See the section "SCALE CALIBRATION"**
**(*)** With approved instrument the parameter is read-only.
**(§)**The parameter is not displayed if the firmware is MASTER type

## (*) 0.CALib ZERO CALIBRATION (§)

**See the section "SCALE CALIBRATION".**
**(*)** If the indicator is approved, the step is not displayed.
**(§)**The parameter is not displayed if the firmware is MASTER type.

## SEriAL SERIAL LINES, PRINTOUTS, ETC…

**(TO BE SET ONLY WITH THE EXPANSION BOARD CONNECTED, PRESENT DEPENDING ON THE MODEL)**

**optiC.F** SELECTION OF THE PORT TO BE USED FOR COMMUNICATING WITH THE PC

In this step it's possible to select the use of the fiber optic serial port:

**Pc:** The fiber optics is used for the transmission configured in the pc port, **SEtuP** >> **SEriAL** >> **CoM.Pc** step
**Prn:** The fiber optics is used for the transmission configured in the printer port, **SEtuP** >> **SEriAL** >> **CoM.Prn** step

**(!) Pc**

**CoM.Prn** PRINTER SERIAL LINE

**Pr.ModE** TRANSMISSION ON THE PRINTER SERIAL LINE

| | |
|---|---|
| **Pr- no** | transmission not enabled |
| **tPr** | enables the printing with ASCII printer (for example DP190 or TPR). |
| **LP542P** | enables to print with the LP542S labeller. By confirming the "LP542P" or "tPr" parameter one is asked (through the "dEF.Pr?" message) to set, for the selected printer, the default parameters in the steps of the printer serial port ("bAud.Pr", "bit.Pr", "Prn.CtS") and in the steps of printout configuration (see the description of the "dEFAuL" step in the section "FORMATTING DATA AND LAYOUT"): press ENTER/PRINT to confirm or C to cancel; then the "tESt?" message is displayed: press ENTER/PRINT to execute the printout test or C to cancel (see the description of the "PtESt" step in the section "FORMATTING DATA AND LAYOUT"). |
| **ALL.Std** | continuous transmission with standard string. |
| **ALL.EXt** | continuous transmission with extended string. |

**PrPC.St** transmission of the standard string upon the pressing of the ENTER/PRINT key.
**PrPC.EX** transmission of the extended string upon the pressing of the ENTER/PRINT key.
**NOTE:** The transmission of the standard or extended string upon the pressing of the PRINT key is confirmed by "trAnSM" on the display. If the "TOTALIZER" mode (horizontal or vertical) is active, the transmission through the key is carried out by pressing the MODE key.
**rEPE.4** transmission to 4-digit remote display.
**rEPE.6** transmission to 6-digit remote display.
**MEMorY** if enabled allows to store the weigh list on the EEPROM
**(!) Pr-no**
For the protocol and transmission mode specifications, see the sections "SERIAL PORT TRANSMISSION MODES" and "TRANSMISSION PROTOCOLS".

**bAud.Pr** SET BAUD RATE
By pressing the ENTER/PRINT key one accesses the selection of the data transmission speed (measured in Baud = bit/second). The possible values are: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.
**(!) 9600**

**bit.Pr** SET PARITY, WORD, STOP BIT
By pressing the ENTER/PRINT key one accesses the selection of the available values: n-8-1, n-8-2, n-7-2, E-7-1, E-7-2.
**(!) n-8-1**

**PWr.Prn** PRINTER MANAGEMENT
In this step one programmes the management of a printer (if connected):
**PWr.EXt** with instrument on, printer managed.
**EXt.oFF** printer managed; the start-up characters are sent to the printer, because the printer is considered to be configured in the energy saving mode.
**(!) PWr.EXt**

**on.Prin** ENABLING OF PRINTER IN ENERGY SAVING MODE **(§)**
If in the preceding step the **EXt.oFF** management is set, by entering this step one turns on the printer in the energy saving mode (the "onPri" message is blinking on the display).
To exit this step press any button. The enabling may be carried out quickly also during the weighing, by pressing the ZERO key for a few seconds (except in the REPEATER functioning mode).

**(§) The parameter is displayed if "EXt.oFF" has been selected in the *"*PWr.Prn" step.**

**Prn.CtS** RTS/CTS STATUS CONFIGURATION **(§)**
Using the fibre optic transmission, it is possible to manage the CTS signal; device (like a printer) that is slow in processing the data received, can interrupt the transmission by temporarily using this signal.
**noCtS** no signal
**CtSL** CTS active low (for LP542P, TPR, DP24 printers)
**CtSh** CTS active high (for DP190 printers)
**EMuCtS** emulation of the CTS signal: one is asked to enter the number of characters (nChrS), in 3 digits, which will be transmitted to the printer upon each transmission; then one needs to enter the waiting time in milliseconds (tiME), in 4 digits, between a transmission and another.
The TIME OUT of a printout is a minute, in other words, after a minute that the printout is blocked, it is cancelled.
**(!) noCtS**
**(§)** The parameter is not displayed unless "tPr" or "LP542P" has been selected in the "Pr.ModE" step.
**Pr.ConF** CONFIGURATION OF THE PRINTOUTS **(§)**
See the section "PROGRAMMING THE PRINTOUTS" section for the description of all the menu's parameters.
**(§)** The parameter and all its submenus are not displayed unless "tPr" or "LP542P" has been selected in the "Pr.ModE" step.

## **CoM.PC** PC SERIAL LINE

### **PCModE** TRASMISSION ON THE PC SERIAL LINE

**ondE** transmission on external command PC).
**rEPE.4** transmission to 4-digit remote display.
**rEPE.6** transmission to 6-digit remote display.
**Prin.St**. transmission of standard string when the ENTER/PRINT key is pressed.
**Prin.EX** transmission of extended string when the ENTER/PRINT key is pressed.
**NOTE:** The transmission of the standard or extended string upon the pressing of the PRINT key is confirmed by "trAnSM" on the display. If the "TOTALIZER" mode (horizontal or vertical) is active, the transmission through the key is carried out by pressing the MODE key.
***485*** transmission with 485 protocol, by confirming with ENTER/PRINT, one is required to enter the machine code (the message "Ad485" appears for an instant): enter a value between 0 and 98.
**r.AdC** transmission to digital cells **(§)** : by confirming with ENTER/PRINT, one is required to enter the 485 address (the message "Ad485" appears for an instant), then one has to enter the offset address ("Add.oFF" is displayed for an instant); in this transmission mode it is not possible to communicate with the PC (for this purpose one has to set temporarily the 485 mode and the instrument has to be in the setup environment).
**(§)** The parameter is not displayed if the firmware is MASTER type.
**ALL.Std** continuous transmission with standard string.
**ALL.EXt** continuous transmission with extended string.
**StAb.St** transmission with each weigh with standard string.
**StAb.EX** transmission with each weigh with extended string.
**rEPE.dC** transmission protocol. **(§)** The parameter is displayed only if one has selected the "rEPE" functioning mode in the **F.ModE** >> **FunCt** step.
**rEPE.in** transmission protocol **(§)** It allows to manage the received string.
**Pr1577 (§)** reception of the "rEPE.6" string. **(§)** The parameter is displayed only if one has selected the "rEPE" functioning mode in the **F.ModE** >> **FunCt** step.
**W.rEPE (§)** reception of string from remote scale. **(§)** The parameter is displayed only if one has selected the "rEPE" functioning mode in the **F.ModE** >> **FunCt** step.
By confirming with ENTER/PRINT one is requested to set the following parameters for the management of the remote scale:

***tErM*** *REMOTE SCALE TERMINATOR*
In this step one enters the decimal ASCII code (up to 2 digits) of the terminator characters of the weight string (I.E. 13 for CR or 10 for LF or 0 for NULL).
**(!) 10**

***WEi.PoS*** *REMOTE SCALE WEIGHT POSITION*
In this step one sets the position of the first character of the weight value, in the string transmitted by the remote scale, knowing that the first character on the left of the string has the 00 position.
A possible character sign is also part of the weight value.
For example, if the received string is **hh,kk,pppppppp,uu + CR + LF** (see the section "TRANSMISSION PROTOCOLS" for the description of the string),

| Received string | **h** | **h** | **,** | **k** | **k** | **,** | **p** | **p** | **p** | **p** | **p** | **p** | **p** | **p** | **,** | **u** | **u** | **CR** | **LF** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Position of the character | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |

one should set the 06 value.

It is possible to set up to 2 characters (from 0 to 39).
**(!) 05**

***WEi.LEn*** *LENGTH OF THE WEIGHT DATA STRING*
In this step one enters the number of digits (from 1 to 39) which make up the weight value, including the sign and the non significant digits. For example, if the transmitted string is **hh,kk,ppppppppp,uu + CR + LF** (see the section "TRANSMISSION PROTOCOLS" for the description of the string), one should set the 08 value.
**(!) 10**

***Str.LEn*** *LENGTH OF THE COMPLETE STRING*
In this step one enters the number of digits (from 0 to 39) which make up the entire string transmitted by the remote scale, less the terminator character. For example, if the transmitted string is **hh,kk,ppppppppp,uu + CR + LF** (see the section "TRANSMISSION PROTOCOLS" for the description of the string), one should set the value 18.
**(!) 18**

***dECi*** *DECIMALS OF THE REMOTE SCALE*
Enter the number of scale's decimals. The selectable values are 0.0 (a decimal), 0.00 (two decimals), 0.000 (three decimals), 0 (no decimal); confirm with ENTER/PRINT.
**(!) 0.000**

***unit*** *UNIT OF THE REMOTE SCALE*
Set the unit of measure (g, Lb, t, kg) and press ENTER/PRINT.
**(!) kg**

***diV*** *MINIMUM DIVISION OF THE REMOTE SCALE*
Enter the value of the minimum division of the remote scale (selectable values 1, 2, 5, 10, 20, 50, 100, 200); confirm with ENTER/PRINT.
**(!) 0.001**

The two following parameters allow to set the weight stability communicated by the remote scale and allow to manage the stability LED on the indicator:

***StAb*** *NUMBER OF READINGS PER STABILITY*
Enter the number of consecutive readings which the indicator must consider to obtain the stability (2 digits, from 0 to 20).
**(!) 00**

***StA.int*** *WEIGHT DIFFERENCE PER STABILITY*
Enter the maximum value (2 digits, from 0 to 20) of the difference between the weights of the consecutive readings, set in the previous step.
If the weight difference between the readings is equal or less than the set value, the weight is considered to be stable (stability LED off), otherwise the weight is considered to be unstable (stability LED on).
**(!) 02**

***trShLd*** *SETTING MINIMUM AND MAXIMUM THRESHOLD*
This step allows to enter minimum and maximum threshold for repeater mode. With **PRINT** key to enter, the display shows "tr.Lo" message, it indicates one is asked to enter minimum value, after this, "tr.hi" message is display, it indicates one is asked to enter maximum value.
When the weight received from remote scale is less than minimum value, the segment is displayed at the bottom of LED display; when the weight received from remote scale is more than maximum value, the segment is displayed at the top of LED display.
**NOTE:** MAX = 999999; MIN = -99999
**(!) tr.Lo= - 99999; tr.hi = 999999**
**(!) ondE**

For the transmission modes and protocol specifications, see the sections "SERIAL PORT TRANSMISSION MODES" and "TRANSMISSION PROTOCOLS".

**bAud** SET BAUD RATE

By pressing the ENTER/PRINT key one accesses the selection of the data transmission speed (measured in Baud = bit/second). The possible values are: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.

**(!) 9600**

**bit** SET PARITY WORD, STOP BIT

By pressing the ENTER/PRINT key one accesses the selection of the available values: n-8-1, n-8-2, n-7-2, E-7-1, E-7-2.

**(!) n-8-1**

**Add.En** ENABLING AND SELECTING THE 485 SERIAL ADDRESS **(§)**

In the rEPE functioning mode, through the **F.ModE** >> **FunCt** parameter it is possible to enable the 485 protocol and link its own address to the instrument; the indicator will repeat the weight if the address in the received string is the same as the address set here.

- no = 485 protocol disabled.
- YES = 485 protocol enabled.

If one enables the 485 protocol, one is asked to enter the 485 address: on the display the *Adr-XX* message appears in which XX is the 485 address, from 00 to 98 (by pressing the **TARE** or **ZERO** keys one increases the digit, and with **MODE** it's selected; when the chosen values is reached, one confirms with **PRINT**).

**(§)**The parameter is ONLY displayed if the firmware is MASTER type.

**(!) no**

**t.out** SET RECEPTION TIME OUT **(§)**

In the rEPE functioning mode, through this step, it allows to set timeout communication. If the wait time passes out, communication is disconnected yet, a segment is displayed at the center of LCD display, which indicates it fails to set up communication.

If value is set on zero, it means there is no time out.

**NOTE:** MAX=20.0 sec; MIN=00.0 sec

**(!) 05.0 sec**

**(§)**The parameter is ONLY displayed if the firmware is MASTER type.

If the 'rEPE' functioning mode has been set in the **F.ModE** >> **FunCt** step, the default value of the parameter is 05.0 sec.

## (*) ini.AL ALIBI MEMORY INIZIALIZATIONS (§)

The initialisation cancels all the data stored in the Alibi memory; by pressing ENTER/PRINT one is asked to confirm the operation. The display shows "iALib?"; press ENTER/PRINT again to confirm or another key to cancel.

At the end the " AL.OK " message appears if the operation is made with success; otherwise the "AL.ERR" message is displayed.

**(§) The parameter is displayed only if the "Alibi" functioning mode has been selected in the F.ModE >> FunCt step.**

**(*)** The parameter is not displayed with an approved instrument.

The parameter is not displayed if the firmware is MASTER type.

## (*) d.SALE LIMITATION OF THE SCALE FUNCTIONS (§)

**no** limitations disabled

**yES** limitations enabled

**(!) no**

Refer to the user manual for the description of its functioning **(USER MAN.REF.)**.

If the limitations are enabled, the next step shows:

**rEM.dSP: REMOTE DISPLAY**

**no** remote display disabled

**yES** remote display enabled

**(!) no**

**(*)** With approved instrument the parameter is read-only.

**(§)** The parameter is not displayed if the firmware is MASTER type.

## **inPutS** CONFIGURATION OF INPUTS **(§)**

Through this step one sets the function to be linked to each input (optional, up to 4).

**inP.01** INPUT 1 function

| | |
|---|---|
| **nonE** | Disabled |
| **ZEro** | ZERO key |
| **tArE** | TARE key |
| **ModE** | MODE key |
| **EntEr** | ENTER/PRINT key |
| **diS.kEy** | DISABLING KEYBOARD |

**(!) nonE**

**inP.02:** INPUT 2
**inP.03:** INPUT 3
**inP.04:** INPUT 4

The programming of inputs 2, 3 and 4 take place as described for input 1.

**NOTE: If various inputs are enabled simultaneously just the lower number is taken into consideration.**

**(§)** The parameter is not displayed if the firmware is MASTER type.

## **outPut** RELAY CONFIGURATION **(§)**

Through this step one sets the function to be linked to each output (optional, up to 4).

**(§)** The parameter is shown only if the "StPG", "StPn" or "ChECk" parameter has been selected in the "FunCt" step. The parameter is not displayed if the firmware is MASTER type.

**out.01** OUTPUT 1

| **FunC** | FUNCTION **(§)** |
|---|---|
| **rEL.no** | relay not managed. |
| **iSt.** | relay managed with hysteresis. |
| **no.iSt** | relay managed without hysteresis. |

**(!) rEL.no**

**(§) The parameter is not displayed if the "ChECk" functioning mode has been selected in the "FunCt" step.**

| **no/nC** | Status of the output when disabled |
|---|---|
| **no** | low level (0V). |
| **nC** | high level (+5Vdc). |

**(!) no**

| **onStAt** | SWITCHING CONDITION |
|---|---|
| **drCt** | the output is enabled as soon as the weight reaches or surpasses the set threshold (independently from the weight stability). |
| **StbL** | the output is enabled when the weight, after having reached or surpassed the set weight threshold,becomes stable. |

**(!) drCt**

The same configurations are valid for the steps:
**out.02** OUTPUT 2
**out.03** OUTPUT 3
**out.04** OUTPUT 4
See further on in the manual for further information

## **dEFAu** INITIALIZATION OF THE INSTRUMENT **(§)**

Through this step one can initialize the instrument with the subsequent activation of the default parameters. By pressing ENTER/PRINT, a confirmation message (“dFLt?) will appear: confirm again with ENTER/PRINT or exit with any other key.

**NOTE: The initialization of the instrument causes a cancellation of the present calibration and the activation of the default parameters. In any case if one exits the setup environment WITHOUT CONFIRMING the modification made, all the parameters of the last saving made will remain (including the calibration).**

**(§) In case of approved instrument, the default DOES NOT HAVE EFFECT on the metrological parameters (those marked with (*)).**

## diAG DIAGNOSTICS MENU

It is a submenu inside which it is possible to check the software components and the scale hardware.

### PrG.VEr CHECKING THE SOFTWARE VERSION

By pressing ENTER/PRINT the instrument shows the software version in the XX.YY.ZZ format.

### diV.int CALIBRATION INTERNAL DIVISIONS (§)

By pressing ENTER/PRINT the instrument shows the calibration internal divisions.

**(§)** The parameter is not displayed if the firmware is MASTER type.

### AdC.uV MICROVOLTS (§)

By pressing ENTER/PRINT the instrument shows the microvolts relative to the weight on the selected scale.
In the case the load cell is not connected or faulty it is possible that floating values are shown, or the message "Error" appears, if these exceed the underload / overload value of the converter.
With the ZERO and TARE keys it is possible to switch the visualisation of the microvolts for each configured channel of the scale in dependent channels “dEP.Ch.” and in independent channels “ind.Ch.” functioning modes.
**Note:** The maximum voltage that the instrument accepts in input is 30 mV (30000 $\mu V$); the weighing system is powered by the indicator at 1.6 or 3.2 Vdc.
A correct operation will have a value less than 30000 with a full scale capacity weight on the weighing system.
**(§)**The parameter is not displayed if the firmware is MASTER type.

### AdC.Pnt CONVERTER POINTS (§)

By pressing ENTER/PRINT the instrument shows the A/D converter points relative to the weight on the selected scale.
In the case the load cell is not connected or faulty it is possible that the floating values are shown, or the message "Error" appears, if these exceed the underload / overload value of the converter.
With the ZERO and TARE keys it is possible to switch the visualisation of the A/D converter points for each configured channel of the scale in dependent channels “dEP.Ch” and in independent channels “ind.Ch” functioning modes.
**(§)**The parameter is not displayed if the firmware is MASTER type.

### diSPLA DISPLAY TEST

By pressing ENTER/PRINT the instrument turns on all the display segments and symbols. One exits by pressing the C key or the ENTER/PRINT key.

### kEyb. KEYBOARD TEST

By pressing the keys one at a time, the display shows their relative codes. One exits pressing the same key three times.

### SEr

Not managed.

### CtS.St TEST OF THE CTS STATUS

By pressing ENTER/PRINT one views the status/level of the CTS signal of the printer (on) connected to the PRN serial port.

### bt.AdC

Diagnostic check for use of the manufacturer.

### PW.AdC

Diagnostic check for use of the manufacturer.

**outPut** TEST OF THE I/O EXPANSION BOARD RELAYS (OPTIONAL) **(§)**

By pressing ENTER/PRINT the instrument displays “rEL01” and enables relay 1 of the expansion board; press the ZERO or TARE key to enable the other relays of the connected expansion boards.

**(§)** The parameter is not displayed if the firmware is MASTER type.

**inPutS** TEST OF THE I/O EXPANSION BOARD INPUTS (PRESENT DEPENDING ON THE MODEL) **(§)**

By pressing ENTER/PRINT the instrument displays “ i.bx-y” in which x, y indicate:

x is the input which is controlling 1, 2, 3, 4; to change the input which one wants to control press the ZERO or TARE keys.

y is the input status:

**0** Disabled input

**1** Enabled input

**-** communication error with I/O expansion board or board not present.

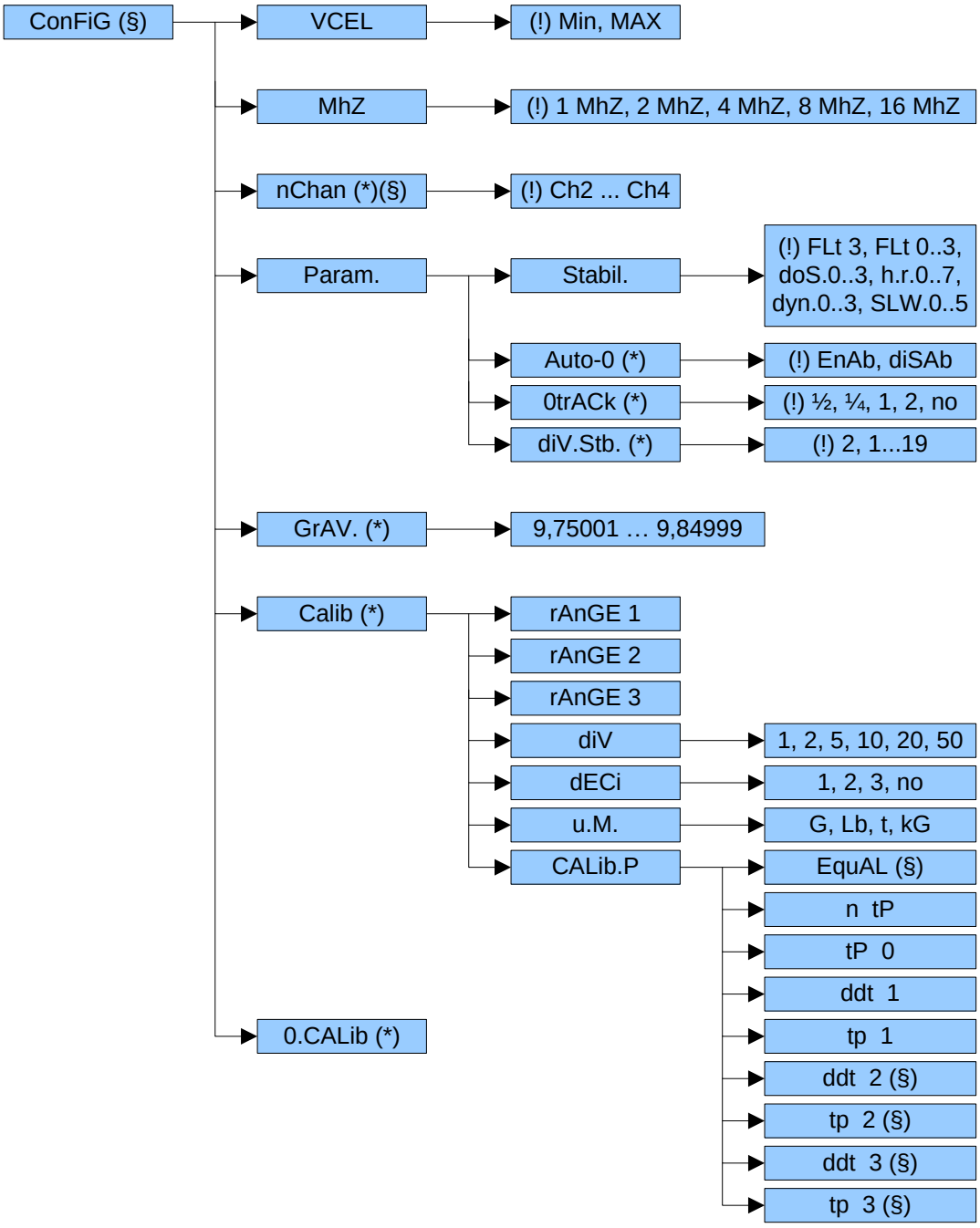
**(§)** The parameter is not displayed if the firmware is MASTER type.

**SEr.nuM**

Diagnostic check for use of the manufacturer.

# 5 CALIBRATION

There are two possible types of calibration, depending on the type of application chosen for the instrument: the “IND.CH.” type (independent channels) and the “DEP.CH.” type (dependent channels, which can eventually be digitally equalized).




**IMPORTANT: with Approved Instrument,** the following parameters:

**- are read only:** “GrAV.”, “rAnGE 1”, “rAnGE 2”, “rAnGE 3”, “diV”, “dECi”, “u.M.”, “ntP”, “ddt1”, “ddt 2”, ddt 3”.

**- are not displayed:** “0.CALib”, “tP0”, “tP1”, “tP2”, “tP3”.

## 5.1 SCALE CONNECTED TO A SINGLE CHANNEL

**Premise:** this procedure is to be followed if one needs to calibrate a single-cell scale, or a scale with various cells equalized externally using a junction box; the scale is connected to a single channel on the board.

1) Enter the SET-UP environment of the scale (when turned on, press the TARE key for an instant while the firmware version is displayed).
2) Select the **SEtuP** >> **ConFiG** >> **CALib** step and press ENTER/PRINT.
3) Select the "dECi" step and press ENTER/PRINT.
   The selectable values are 0.0 (a decimal), 0.00 (two decimals), 0.000 (three decimals), 0 (no decimal); confirm with ENTER/PRINT.
   **(!) 0.000**
4) Select the "u.M." step and press ENTER/PRINT.
   Set the unit of measure (g, Lb, t, kg) and press ENTER/PRINT.
   **(!) kg**
5) Select the "diV" step and press ENTER/PRINT.
   Set the scale's minimum division or the first range in case of n ranges and press ENTER/PRINT (selectable values: 1, 2, 5, 10, 20, 50, 100, 200).
   **(!) 1**
6) Select the "rAnGE1" step and press ENTER/PRINT.
   Set the total capacity of the scale or the first range in case of multirange functioning:
   **NUMERICAL KEYS** Allow to enter the numerical value, from right to left.
   **C** Quickly zeros the displayed value.
   Confirm with the ENTER/PRINT key.
7) Select the "rAnGE2" (only in the case of a dual range scale) and press ENTER/PRINT; Set the capacity of the second range and press ENTER/PRINT.
8) Select the "rAnGE3" (only in the case of a triple range scale) and press ENTER/PRINT; Set the capacity of the triple range and press ENTER/PRINT.
9) Select the "CALib.P" step and press ENTER/PRINT.
10) Select the "ntP" step and press ENTER/PRINT.
11) With the ZERO or TARE keys set the number of points with which one wants to calibrate (from 1 to 3, with 1 one does the zero point and one weight point) and press ENTER/PRINT.
12) Select the "tP0" (scale zero point) step: unload the scale and wait a few seconds, then press ENTER/PRINT.
13) Select the "ddt1" (setting first sample weight) step; press ENTER/PRINT, enter the weight value and confirm with ENTER/PRINT.
14) Select the "tP1" (acquisition of first sample weight) step: put the weight on the scale, wait a few seconds and press ENTER/PRINT.
    **NOTE:** The number of converter points will be shown alternating with the weight acquisition message. If the weight is sufficiently stable, the weight acquisition is made, otherwise the display shows "ErMot" and "StorE?". With ENTER the acquisition is made anyway, with C the display shows "rEtry?". In this last case with ENTER one can repeat the weight acquisition, with C one can exit from the step.
15) **If a calibration point has been set**, once the weight acquisition has been made, the display shows for an instant the value of the internal divisions and then the "ntP" step.
    **If there are various calibration points, repeat the operations for the "ddt2", "tP2", "ddt3", "tP3" points.**
16) Once the calibration has been made for all the necessary points, press the C key various times until the indicator shows "SAVE?" in the display: confirm with ENTER/PRINT to memorize and return to weighing.

**N.B.:** the calibration points must be increasing (point 1 < point 2 < point 3).

## 5.2 SCALE WITH NON INDEPENDENT CHANNELS (could eventually be digitally equalised)

**Premise:** this procedure is to be followed if one needs to calibrate a scale with various cells (up to 4) and if one wants to equalize these directly from the indicator without using external junction boxes.
In this case one should connect each cell to one of the channels on the board.

**Note:** it is always better to carry out the ***equalization procedure*** (steps from 4 to 9), but it isn't compulsory (in some applications, it can not be done); if one wants to avoid it, "EquAL" appears; press the "**ZERO**" key once to supersede this step and continue with the calibration.

1) Enter in the SET-UP ENVIRONMENT of the indicator (when turned on, press for an instant the **TARE** key while the firmware version is displayed).
2) ***Nr. of connected Cells***
   Select the number of cells (in other words, the number of channels, from 2 to 4) connected to the indicator **SEtuP >> ConFiG >> nChan >> 2, 3, 4** and press **PRINT**.
3) Repeat the points from 3) to 9) previously described in the "SCALE MODE CONNECTED TO A SINGLE CHANNEL".
4) Select the "EquAL" step and press ENTER/PRINT: one proceeds to the **equalisation of the 4 cells.**
5) Select the "Eq 0" step (equalisation of zero): unload the weighing system and press the ENTER/PRINT key;.
6) Select the "Eq 1" step (equalisation of the first cell): position a calibration weight on the cell connected to input 1 of the indicator and press the ENTER/PRINT key.
7) Select the "Eq 2" step (equalisation of the second cell): position **the same calibration weight** on cell connected to input 2 of the indicator and press the ENTER/PRINT key.
8) **If nChAn > 2:** Select the "Eq 3" step (equalisation of the third cell): position **the same calibration weight** on cell connected to input 3 of the indicator and press the ENTER/PRINT key.
9) **If nChAn > 3:** Select the "Eq 4" step (equalisation of the fourth cell): position **the same calibration weight** on cell connected to input 4 of the indicator and press the ENTER/PRINT key.
   **NOTES**:
   - The number of point of converter points will be shown alternately with the equalization message. If the weight is sufficiently stable, the weight acquisition is made, otherwise the display shows "ErMot" and "StorE?". With ENTER the acquisition is made anyway, with C the display shows "rEtry?". In this last case with ENTER one can repeat the weight acquisition, with C one can exit from the step.
   - If the cell that is being equalised is not the one with the greater weight, the display shows "Error" and then the step for the equalisation of the next cell. One can, in any case, repeat the weight acquisition for the cell that has not been equalised.

   Once the equalisation is finished the 'EQ OK' message appears; the instrument emits an acoustic signal and exits the equalisation submenu.
   **Note:** if it was not possible to perform the equalisation, the display shows "Eq.Err"; one should repeat the equalization procedure.
10) Select the "ntP" step and press ENTER/PRINT.
11) With the ZERO or TARE keys set the number of points with which one wants to calibrate (from 1 to 3, with 1 one does the zero point and one weight point) and press ENTER/PRINT.
12) Select the "tP0" (scale zero point) step: unload the scale and wait a few seconds, then press ENTER/PRINT: if the equalisation of the channels has not been made the 'no Eq?' message appears and the instrument emits an acoustic signal; press the ENTER/PRINT key to proceed anyways with the acquisition of the weight or the C key to exit the step.
13) Repeat the points from 13) to 16) previously described in the "SCALE MODE CONNECTED TO A SINGLE CHANNEL".

**Note:** once the equalisation is made, it will be necessary to recalibrate the instrument.

## 5.3 IF THE ZONE OF USE IS DIFFERENT THAN THE CALIBRATION ZONE ONE SHOULD:

1) Enter in the SET-UP environment of the scale (when turned on, press for an instant the TARE key while the firmware version is displayed).
2) Enter in the **SEtuP** >> **ConFiG** >> **GrAV.** step and set the gravity acceleration value for the CALIBRATION ZONE
3) Carry out the calibration as previously described.
4) Save and exit from the SET-UP environment (press many times the C key until the indicator shows "SAVE? in the display and confirm with ENTER/PRINT.
5) Enter the SET-UP environment of the scale and enter the **SEtuP** >> **ConFiG** >> **GrAV.** step and set the gravity acceleration value for the ZONE OF USER.
6) Save and exit the SET-UP environment.
7) The weight error caused by the error of a different gravitational attraction value between the calibration zone and the zone of use is corrected automatically.

With an APPROVED instrument, when turned on, the value of the zone of use or the gravitational acceleration value is displayed.

## 5.4 QUICK CALIBRATION OF ZERO

It is useful to calibrate just the point of ZERO when a permanent tare weight is put onto the platform (for example a roller unit).

1) Enter in the SET-UP environment of the scale (when turned on, press for an instant the TARE key while the firmware version is displayed).
2) Enter in the **Set-up** >> **ConFiG** >> **0.CALib** step and press ENTER/PRINT key (the display shows "CAL.0?").
3) Put the tare on the scale and press ENTER/PRINT key to confirm the operation.
4) Once the zero calibration is made, press many times the C key until the indicator shows "SAVE? in the display: confirm with ENTER/PRINT to store and return to weighing.

## 5.5 QUICK CALIBRATION OF A DEFINED WEIGHT

It is useful to recalibrate the point of a defined weight except 0 weight when the user wants to recalibrate the scale.

1) Enter in the SET-UP environment of the scale (when turned on, press for an instant the TARE key while the firmware version is displayed).
2) Enter in the **SEtuP** >> **ConFiG** >> **CALib** >> **AdJ.CAL (§)** step and press ENTER/PRINT key (the display shows "Mod.Pnt").
3) Enter the number of the sample weight to be recalibrated (between 0 and 3) and press ENTER/PRINT key to confirm the value; the "WEiGht" message is displayed for an instant, then enter the weight value of the selected sample and confirm by pressing ENTER/PRINT.
4) The display shows "tP" followed by the number of the sample weight to be recalibrated; put the weight on the scale, wait a few seconds and press ENTER/PRINT.
5) Once the reacquisition of the sample weight has been made, the display shows for an instant the value of the internal divisions and then the indicator exits from the "AdJ.CAL" step; then press many times the C key until the display shows "SAVE?": confirm with ENTER/PRINT to store and return to weighing.

**(§)** The step is displayed only if the number of points of calibration has been entered.

## 5.6 MANUAL CALIBRATION OF A DEFINED WEIGHT

It is useful to manually recalibrate the point of a defined weight except 0 weight when the user knows the number of points of the converter and wants to recalibrate the scale.

1) Enter in the SET-UP environment of the scale (when turned on, press for an instant the TARE key while the firmware version is displayed).
2) Enter in the **SEtuP** >> **ConFiG** >> **CALib** >> **MAn.CAL (§)** step and press ENTER/PRINT key (the display shows "Mod.Pnt").
3) Enter the number of the sample weight to be manually recalibrated (between 0 and 3) and press ENTER/PRINT key to confirm the value; the "WEiGht" message is displayed for an instant, then enter the weight value of the selected sample weight and confirm by pressing ENTER/PRINT.
4) The display shows "PointS" for an instant, then enter the number of converter points and confirm by pressing ENTER/PRINT. Once this value has been acquired, the indicator exits from the "MAn.CAL" step; then press many times the C key until the display shows "SAVE?": confirm with ENTER/PRINT to store and return to weighing.

**(§)** The step is displayed only if the number of points of calibration has been entered.

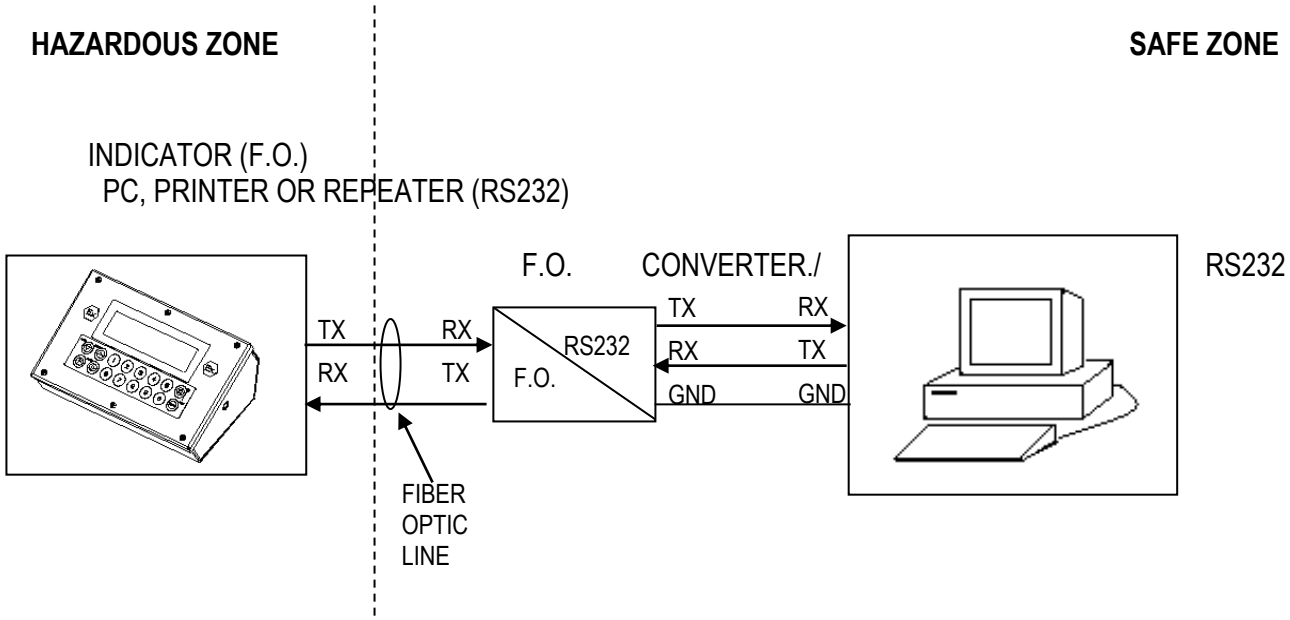
# 6 DISPLAY OF THE GRAVITY ACCELERATION AND CORRECTION OF THE WEIGHING ERROR due to the different gravity acceleration between calibration zone and utilisation zone.

This instrument conforms to the laws currently in force regarding non-automatic weighing instruments.
Such g-sensitive instruments are influenced by the gravitational acceleration value "**g**" value of the utilization zone, hence it is compulsory to indicate, with a label or on the display, the value of "**g**" of the utilisation zone where the weighing machine can be used. Therefore a special programme has been created to compensate for any differences in the gravitational attraction between the place where the weighing machine is calibrated and the place of utilization, eliminating in this way the error entered on the weight.
During configuration the "**g**" values relative to the utilization zone and to the zone of calibration are entered at a certain programming step which eliminates the weight error introduced by the different gravitational attraction value.
When turned on, by pressing the **ZERO** key, the instrument displays, after the name and the installed software version, the "g" value relative to the gravitational zone of use for a few seconds.

# 7 SERIAL OUTPUT

7If the indicator is fitted with the expansion board (depending on the model) it is possible to use a bidirectional port for the fibre optic communication.
The fibre optic line allows to communicate with a PC, PLC, or remote displays and manage the majority of the printers.

## 7.1 FIBER OPTIC PORT




## 7.2 SERIAL PORT TRANSMISSION MODES

### 7.2.1 PC PORT

Please find below the various selectable serial weight transmission modes of the PC serial port through the corresponding "PCModE" StEP of the SET-UP environment.

- **TRANSMISSION REQUESTED FROM AN EXTERNAL DEVICE** "ondE" parameter)
  In this case the indicator waits for a command before transmitting (see the section "FORMAT OF THE SERIAL COMMANDS").
  With Baud rate at 9600, through the READ command, it is possible to make up to 10-11 requests per second, while

with the Baud rate at 57600 one can arrive at 16.
The transmission works with weight <, =, > 0 with approved or unapproved instrument.
**NOTE**: This protocol is active also in the other functioning modes, only on the PC serial output.

- **4 – 6 DIGIT REMOTE DISPLAY TRANSMISSION** ("rEPE.4" and "rEPE.6" parameter)
  The weight displaying takes place both in the indicator as well as in a weight repeater of 4 or 6 digits, (normally the capacity will be properly set up for a correct displaying).
  **NOTE:** Independently from the set transmission speed it's possible to obtain up to 6 transmissions per second.

- **TRANSMISSION WHEN THE PRINT KEY IS PRESSED** ("Prin.St", "Prin.EX" parameter)
  The instrument communicates the weight data through the serial port when the ENTER/PRINT key is pressed (except for in the TOTALIZER mode in wich one should press the MODE key).
  For non approved instruments:
  - The transmission takes place if the weight is stable and the net weight is > 0, otherwise the display shows the "LOW" message
  - Reenabling the transmission depends on how the "rEACt" step has been set in the SET-UP environment (passing by zero of the NET weight, weight instability or always).

  For approved instruments:
  - The transmission takes place if the weight is stable and the net weight is > 20 divisions, otherwise the display shows the "LOW" message.
  - Reenabling the transmission depends on how the "rEACt" step has been set in the SET-UP environment (passing by zero of the NET weight, weight instability or always).

  The data is transmitted using the standard string (Prin.St) or the extended string (Prin.EX); see the "TRANSMISSION PROTOCOLS" section for the description of the two strings.

  **Notes:**
  - The transmission is confirmed by the "trAnSM" message on the display.
  - With an unstable weight the display shows the "unStAb" message.
  - If the transmission has not been reenabled the display shows the "no.0.unS" message.
  - In any case it's possible to receive the data through the transmission commands upon request.

- **TRANSMISSION IN RS 485 SERIAL MODE** ("485" parameter)
  The protocol is the same as the transmission upon request (ondE parameter), except that the instrument responds only if its machine code is the one requested (before the request the machine code must be put, I.E. 00READ<CRLF>).
  If a broadcast address command (99) is received no answer is given. If the command is correct it is executed anyways.

- **TRANSMISSION IN R.ADC MODE** ("r.AdC" parameter)
  The protocol can be used for the communication with digital cells.

- **CONTINUOUS TRANSMISSION** ("ALL.Std" and "ALL.EXt" parameter)
  This mode is used for interfacing to the PC, remote displays and other devices which request a constant updating of the data independently from the weight stability.
  The instrument transmits the data in relation to the set transmission speed:
  - With Baud rate at 9600 one can obtain up to 10 transmissions per second.
  - With Baud rate at 4800 one can obtain up to 8 transmissions per second.

  The transmission works with weight <, =, > 0 with approved or unapproved instrument.
  The data is transmitted using the standard string (ALL.Std) or the extended string (ALL.EXt); see the "TRANSMISSION PROTOCOLS" section for the description of the two strings.

- **TRANSMISSION UPON STABILITY** ("StAb.St" and "StAb.EX" parameter)
  Each time a weight on the scale becomes stable, a communication string is transmitted on the PC serial port.
  For non approved instruments:
  - The transmission takes place if the weight is stable and the net weight is > 10 divisions.

- Reenabling the transmission depends on how the “rEACt” step has been set in the SET-UP environment (passage by zero of the NET weight or instability of the NET weight of 10 divisions; by choosing “always” it works upon instability).

For approved instruments:

- The transmission takes place if the weight is stable and the net weight is > 20 divisions.
- Reenabling the transmission depends on how the “rEACt” step has been set in the SET-UP environment (passage by zero of the NET weight or instability of the NET weight of 20 divisions; by choosing “always” it works upon instability).

The data is transmitted using the standard string (StAb.St) or the extended string (StAb.EX); see the section “TRANSMISSION PROTOCOLS”for the description of the two strings.

### 7.2.2 PRN PORT

Please find below the various selectable serial weight transmission modes of the PRN serial port through the corresponding "Pr.ModE" step of the SET-UP environment.

- **TRANSMISSION TO PRINTER** ("tPr" and "LP542P" parameters): requests the use of the print key on the indicator (prints upon request of the operator). The print command is inhibited if the weight is in motion and in all other circumstances in which the data is not valid (see the section "PRINTING (only with optional board)", **USER MAN.REF.**).

- **CONTINUOUS TRANSMISSION** ("ALL.Std" and "ALL.EXt" parameter): see the "ALL.Std" and "ALL.EXt" modes of the PC port.

- **TRANSMISSION OF THE PC STRING UPON PRESSURE OF THE PRINT KEY** ("PrPC.St" and "PrPC.EX" parameter): see the "Prin.St" or "Prin.EX" mode of the PC port

- **TRANSMISSION TO 4 – 6 DIGIT REMOTE DISPLAY** ("rEPE.4" or "rEPE.6" parameter): see the "rEPE.4" or "rEPE.6" mode of the PC port.

**NOTE:** In the MASTER/SLAVE functioning mode (see section "MULTISCALE REPEATER (MAStr)", **USER MAN.REF.**) only the transmission modes to the printer and the "rEPE.6" transmission mode are enabled for the printer port.

**THE CONNECTION AND THE SOFTWARE CONFIGURATION OF THE SERIAL OUTPUTS MUST BE CARRIED OUT BY TECHNICAL PERSONNEL WHO KNOW THE PROCEDURES ON THE BASIS OF THE NEEDS OF THE USER.**

## 7.3 FORMAT OF THE SERIAL COMMANDS

**Version reading command**
[CC]VER<CR LF>
Instrument response: [CC]VER,vvv,DFWATX<CR LF>
In which: vvv is the firmware version

**Extended weight read command**
[CC]REXT<CR LF>
Instrument response: EXTENDED STRING (see 7.4 section).

**Compatibility command**
[CC]GR10E<CR LF>
enables the compatibility of the REXT command with the old version 04.05.
If the compatibility is enabled, in the answer, the weights are formatted on 8 digits instead of on 10 digits (as in new version).
(see the section "TRANSMISSION PROTOCOLS")

[CC]GR10D<CR LF>
disable the compatibility of the REXT command with the old version 04.05 (default).
(see the section "TRANSMISSION PROTOCOLS")

**Weight read command**
[CC]READ<CR LF>
Instrument response: STANDARD STRING (see 7.4 section).

**Weight reading command with sensitivity times 10**
[CC]GR10<CR LF>
Instrument response: STANDARD STRING (see 7.4 section).

**Reading command of microvolts relative to the weight**

[CC]MVOL<CR LF>
Instrument response: STANDARD STRING (see 7.4 section).

**Reading command of converter points relative to the weight**
[CC]RAZF<CR LF>
Instrument response in "IND.CH." mode: STANDARD STRING (see 7.4 section).
Instrument response in "DEP.CH." mode: see the response of the RAZM command.

**Tare command**
[CC]TARE<CR LF> or [CC]T<CR LF> (short command).
Instrument response: [CC]OK<CR LF> if the command has been RECEIVED; the instrument's response does not mean necessarily that the instrument executes the tare.

**Zero command**
[CC]ZERO<CR LF> or [CC]Z<CR LF> (short command)
Instrument response: [CC]OK<CR LF> if the command has been RECEIVED; the instrument's response does not mean necessarily that the instrument executes the zero.

**Clear command**
[CC]CLEAR<CR LF> or C<CR LF> (short command)
Instrument response: [CC]OK<CR LF> if the command has been RECEIVED; the instrument's response does not mean necessarily that the instrument executes the command.
The command works also within the SET-UP environment.

**Test Command**
[CC]ECHO<CR LF>
Instrument response: [CC]ECHO<CR LF>.

**Reading command of power supply status**
[CC]ALIM<CR LF>
Instrument response: [CC]PW: p BT: b
In which:
p: instrument's type of power supply: 0 if powered by battery
1 if powered by the mains
b: battery level (from 0 to 9).

[CC]ALIMN<CR LF>
Response of the instrument: [CC]PW:**b**ppppp**b**BT:**b**vvvv
in which: **b** space character, ascii decimal 32 character.
ppppp: power supply level of the instrument
vvvv: battery level expressed in mV.

**Command for reading converter points relative to the weight of all the channels**
[CC]RAZM<CR LF>
Response of the instrument in in "DEP.CH": mode.
The string varies depending upon the configured channels:

| Chan. | Transmitted string |
|---|---|
| 1 | **[CC]hh,ppppppppp,uu <CR LF>** |
| 2 | **[CC]hh,ppppppppp,ppppppppp,uu <CR LF>** |
| 3 | **[CC]hh,ppppppppp,ppppppppp,ppppppppp,uu <CR LF>** |
| 4 | **[CC]hh,ppppppppp,ppppppppp,ppppppppp,ppppppppp,uu <CR LF>** |

in which:

**[CC]** = INSTRUMENT CODE IN THE FORMAT OF TWO ASCII DECIMAL DIGITS
ONLY IF THE 485 PROTOCOL HAS BEEN SELECTED (FOR EXAMPLE 00)

For each set channel:

**hh** RZ Value in converter points relative to the weight

**,** Comma character

**ppppppppp** 10 digits which identify the converter points relative to the channel.

**,** Comma character

**uu** Unit of measure "vv" (converter points)

**<CR LF>** Carriage Return + Line Feed (ascii decimal character 13 and 10).

**LEGEND:**
**b** space character, 32 decimal ascii character.

**Setpoint command**

[CC]STPTntxxxxxxtyyyyyy<CR LF>
in which: n indicates the SETPOINT number (1, 2, 3, 4)
t → **F** if the following weight value indicates the DISABLING of the relays (OFF).
t → **O** if the following weight value indicates the ENABLING of the relays (ON). xxxxxx and yyyyyy take on the setpoint value of disabling or enabling: the digits must be entered WITHOUT the decimal point, omitting the NON significant zeros.

Instrument responses: [CC]OK<CR LF> in case of syntax and correct values.
[CC]NO<CR LF> in case of correct syntax but wrong values.

**Example of instrument with capacity 10,000 kg and division 1 g:**
Command: **STPT1F5000O6500** (Disabling first relay at 5 kg and enabling at 6,5 kg)
Response: **OK**

**NOTE:** The negative response of the instrument (NO), happens in the following cases:
- one of the two entered values is greater than the capacity.
- one of the two entered values has a minimum division that is inconsistent in comparison to the one set in the instrument.
- the disabling value is greater than that of enabling.

Furthermore, the transmitted values are valid until the indicator is turned off. To permanently save these on the instrument one should use the saving command (CMDSAVE) described later on. If one wants to save various set points one should set all of them and at the end transmit the saving command.

**Command for setting the activation, target and tolerance (Tolerance Check mode):**

[CC]TATO,XXXXXX,YYYYYY,ZZZZZZ,KKKKKK<CR LF>

in which
XXXXXX is the activation threshold without decimal point
YYYYYY is the target weight without decimal point
ZZZZZZ is the lower tolerance without the decimal point
KKKKKK is the upper tolerance without the decimal point

Response: [CC]OK<CR LF>

**Notes**
– The transmitted values are valid until the indicator is turned off. To permanently save these on the instrument one

should use the saving command (CMDSAVE).
- If the “KKKKKK” tolerance is not transmitted, the “ZZZZZZ” tolerance is considered as both the lower one as well as the upper one.

**Print Command**
[CC]PRNT<CR LF> or [CC]P <CR LF> (short command).
Instrument response: [CC]OK<CR LF> if the command has been RECEIVED; the instrument’s response does not mean necessarily that the instrument executes the printout.

**Tare insertion command**
[CC]TMANVVVVVV<CR LF> or [CC]WVVVVVV <CR LF> (short command)
in which: VVVVVV: manual tare value with the decimal point, from 1 to 6 characters; the non significant zeros can be omitted.
Instrument response: [CC]OK<CR LF> if the command has been RECEIVED; the instrument’s response does not mean necessarily that the instrument executes the tare.

**Command for viewing temporally the message on the display**
[CC]DISPNNVVVVVV <CR LF>
in which:
NN: is the indicator display number, standard 00 (ascii hex)
V is the message:
- if present it is shown on the NN display.
- if not present, it interrupts the visualisation activated through a previous DISP command.

**NOTES**
In the case in which the display shown in the command is of the numeric type (for example the standard display 00), and if in the transmitted message there are two consecutive points the message is stopped after the first of the two points. When the display is showing a message transmitted serially through the DISP command, the indicator does not display those messages usually shown in the scale status (ZERO, TARE, HOLD, ...).
Instrument response: [CC]OK<CR LF>
The message remains for the time set through the DINT command:
The ASCII characters having the decimal code greater than 31 are accepted.
**With approved instrument:**
One needs to wait for the end of the current visualisation before being able to view the next one.

**Command for setting display visualisation interval**
[CC]DINTNNNN<CR LF>
in which: NNNN is the visualisation interval (in milliseconds), expressed in ascii hex character; for example, in order to set a visualisation time of 2 seconds (2000 milliseconds, which converted into hex it becomes 07D0), the command becomes DINT07D0<CR><LF>.
By setting a time equal to zero, the message transmitted with the DISP command remains permanently shown on the display.
Instrument response: [CC]OK<CR LF>
**With approved instrument:**
The minimum settable time is 1 millisecond (0001HEX), and maximum settable time is 5 seconds (5000 milliseconds, 1388 HEX).

**PC confirmation command**
[CC]PCOK<CR LF>
The indicator shows on the display the "-PCOK-" message for about 2 seconds.
Instrument response: [CC]OK<CR LF>.

**Serial command for setting the apw (only for the conuting operating mode)**
[CC]SPMUvvvvvvvv <CR LF> or [CC]Xvvvvvvvv<CR LF> (short command).
in which: vvvvvvvv is the apw (up to 8 characters with decimal point); maximum value: 9999.999

System response: [CC]OK<CR LF>.
For example, to set a APW of 1.55 g, the command is the SPMU1.55<CR LF> or SPMU0001.550 <CR LF> and all the various combinations adding zeros to the right or to the left but taking into consideration that the maximum length of the APW field is 8 characters.
**NOTES:**
- the APW are not accepted in the SPMU.12<CRLF> format; these must be in the SPMU0.12<CRLF> format.
- the APW are not accepted equal to zero.

**Serial command which supplies the indicator status**
[CC]STAT<CR LF>
Instrument response:
[CC]STATXX<CR LF>
in which XX is a decimal value which supplies the status of the indicator; the possible values are:

| XX | indicator status |
|---|---|
| 00 | normal scale status |
| 01 | normal scale status in input |
| 02 | instrument in technical set-up |
| 03 | in boot phase |
| 04 | in rx/tx set-up phase |
| 05 | in test phase of the serial ports |
| 06 | in print test |
| 07 | in firmware update phase |
| 08 | in stand-by |
| 09 | in automatic zero phase |
| 11 | in optoisolated inputs test phase |

**Key pressure simulation command**
[CC]KEYPXX<CR LF>
in which XX is the code of the pressed key:
00: MODE key;
01: F key.
02: ENTER/PRINT key;
03: TARE key;
04: scale ZERO key;
05: numeric 0 key;
06: numeric 1 key;
07: numeric 2 key;
08: numeric 3 key;
09: numeric 4 key;
0A: numeric 5 key;
0B: numeric 6 key;
0C: numeric 7 key;
0D: numeric 8 key;
0E: numeric 9 key;
0F: INFO key;
10: C key;

Instrument response: OK<CR LF>: accepted command.
In case the simulated key has two linked functions (key briefly pressed or at length, like the TARE key), if the KEYP command is followed by the release command of the (KEYR) key within a maximum time of 1,5 seconds, the simple function will be executed (key briefly pressed); otherwise the second function will be made (key pressed at length).

**Key simulation command**
[CC]KEYR<CR LF>
Response: [CC]OK<CR LF>

**Key disabling command**
[CC]KEYEt<CR LF>
t → E to enable the keys
t → D to disable the keys
Response:
[CC]OK<CR LF>

**Status command of the keys**
[CC]KEYE<CR LF>
Response:
[CC]KEYEE<CR LF> if the keyboard is enabled
[CC]KEYED<CR LF> if the keyboard is disabled

**Scale information reading:** [CC]RALL<CR LF>
Instrument answer:

SS,B,NNNNNNNUM,LLLLLLLUM,YYTTTTTTTTUM,XXXXXXXUM,SSS,AAA,CCC,TTT,XXXXX-YYYYYY<CR LF>.

in which:

| | | |
|---|---|---|
| SS | UL | Underload |
| | OL | Overload |
| | ST | Stability of the display |
| | US | Unstability of the display |
| | TL | Active inclination input |
| B | Number of platform on which the totalisation has been made. | |
| NNNNNNNUM | Net weight with unit of measure. | |
| LLLLLLLUM | Gross weight with unit of measure. | |
| XXXXXXXUM | Last net weight totalized with unit of measure | |
| SSS | Scale status: | 000 weighing |
| | | 001 numeric value input |
| | | 002 set-up menu |
| AAA | Counter of pressed keys. | |
| CCC | Code of last key pressed. | |
| TTT | Counter of totalisations. | |
| XXXXX | Last rewriting number stored in the Alibi memory. | |
| YYYYYY | Last weigh number stored in the Alibi memory. | |

**Tare block command**
[CC]TLCKt<CR LF>
t → E to lock the tare
t → D to unlock the tare
Response:
[CC]OK<CR LF>

**Tare status command**
[CC]TLCK<CR LF>
Response:
[CC]TLCKE<CR LF> if the tare is locked.
[CC]TLCKD<CR LF> if the tare is unlocked.

**Reading of instrument's serial number**: **[CC]SN<CRLF>**
Instrument's answer: [CC]SN: XXXXXXX<CRLF>
In which:
XXXXXX serial number (can have more than 6 digits)

**Reading of the board information**: **[CC]BOARD<CRLF>**
Instrument's answer:
[CC]LOADER: aaa, BOARD ID: bbb, BOARD REV: ccc, HWCFG: ddd, SN: xxx, BOARD NAME: nnn<CRLF>

| In which: | | |
|---|---|---|
| | aaa | loader version in hex form (e.i. 203 for loader 2.03) |
| | bbb | board ID (numeric value) |
| | ccc | board revision (numeric value) |
| | ddd | hardware config. (numeric value) |
| | xxx | serial number |
| | nnn | board name (up to 8 characters) |

**NOTE:** The instrument does not transmit the OK answer to the following short commands: P, Q, T, W, X, Z.

**LEGEND**
**[CC]**= instrument code, e.g.. 00 (only with RS485 protocol).
**<CR LF>**= Carriage Return + Line Feed (ASCII characters 13 and 10).

**SERIAL ERRORS**
Upon each serial command received the instrument transmits a response which may be a response to a command (see the command description) or the indication of the command error:

| ERROR | DESCRIPTION |
|---|---|
| ERR01 | A correct command has been transmitted from the PC to the indicator, but it is followed by letters inserted involuntarily. |
| ERR02 | A correct command has been transmitted from the PC to the indicator, but it contains wrong data. |
| ERR03 | A non allowed command has been transmitted. It may be a command not used in the selected functioning mode or the command reaches the indicator in the instant in which the keyboard buffer is already occupied by another command. |
| ERR04 | An inexistent command has been transmitted. |
| ERR05 | There has been an error in the response of the indicator. |
| ERR06 | There has been an error in the checksum. |

## 7.4 TRANSMISSION PROTOCOLS
The weight data transmission on the PC and PRT serial ports may take place in two formats:

### 7.4.1 STANDARD STRING

**[CC]hh,kk,pppppppp,uu<CR LF>**
in which:

| | | |
|---|---|---|
| **[CC]** | INSTRUMENT CODE IN THE FORMAT OF TWO ASCII DECIMAL DIGITS<br>ONLY IN THE CASE THAT THE 485 PROTOCOL IS SELECTED (FOR EXAMPLE 00). | |
| **hh** | UL | Underload |
| | OL | Overload |
| | ST | Stability of the display |
| | US | Instability of the display |
| | TL | Active inclination input |
| **,** | Comma character | |
| **kk** | NT | Net Weight |

| | | |
|---|---|---|
| | GS | Gross Weight |
| | GX | Gross weight with sensitivity times 10 |
| | VL | Value in microvolts relative to the weight |
| | RZ | Value in converter points relative to the weight |
| **,** | Comma character | |
| **pppppppp** | 8 digits (including any sign and decimal point) which identify the weight. The insignificant digits are filled with spaces. Through the MVOL and RAZF command the indicator transmits the relative value on 10 digits instead of 8. | |
| **uu** | Unit of measurement "kg" "**b**g" "**b**t" "lb" "mv" (microvolts) "vv" (converter points) | |
| **<CR LF>** | Carriage Return + Line Feed (ascii decimal characters 13 and 10). | |

The transmitted weight is the GROSS weight (GS) if no TARE WEIGHT has been entered; otherwise, the NET WEIGHT (NT) will be transmitted.

### 7.4.2 EXTENDED STRING

**[CC]B,hh,NNNNNNNNNN,YYTTTTTTTTTT,PPPPPPPPPP,uu<CR LF>**

in which:

| | | |
|---|---|---|
| **[CC]** | INSTRUMENT CODE IN THE FORMAT OF TWO ASCII DECIMAL DIGITS JUST IN CASE THE 485 PROTOCOL IS SELECTED (FOR EXAMPLE 00) | |
| **B** | scale number (always 1). | |
| **,** | Comma character | |
| **hh** | UL | Underload |
| | OL | Overload |
| | ST | Stability of display |
| | US | Instability of display |
| | TL | Active inclination input |
| **,** | Comma character | |
| **NNNNNNNNNN** | net weight on 10 characters including possible sign and decimal point | |
| **,** | Comma character | |
| **YY** | "PT" if the tare is manual, otherwise YY = "  " (two empty spaces) if the tare is semiautomatic. | |
| **TTTTTTTTTT** | tare weight on 10 characters including possible sign and decimal point. | |
| **,** | Comma character | |
| **PPPPPPPPPP** | number of pieces on 10 characters, equal to 0 if the indicator is in a functioning mode other than the counting mode. | |
| **,** | Comma character | |
| **uu** | Unit of measure "Kg" "**b**g" "**b**t" "lb | |
| **<CR LF>** | Carriage Return + Line Feed (ascii decimal characters 13 and 10) | |

The insignificant digits of the net, tare, gross tare weights and the pieces of the various channels will be filled with spaces (space character, 32 decimal ascii code character)

**LEGEND:**

**b** space character, 32 decimal ascii character.

### 7.4.3 MASTER MODE STRINGS

**STANDARD STRING**
Standard string transmitted on the print port when PR.MODE= ALL.STD or PRPC.ST:
**SS,KK,WWWWWWWW,UU<CR LF>**
in which: **SS**: status: NV: non valid weight (the following data is not valid)
in SUM mode this happens when: one or more slaves are not connected
one or more slaves are in under/over load condition
in single slave mode this happens when the slave is not connected
ST: stable data
US: unstable data
UL: underload (only in single slave mode)
OL: overload (only in single slave mode)
**KK**: NT: Net Weight
GS: Gross Weight
**WWWWWWWW**: weight
**UU**: unit of measure
**<CR LF>** Carriage Return + Line Feed (ascii decimal character 13 and 10).

**EXTENDED STRING**
Extended string transmitted on the print port when PR.MODE=ALL.EXT or PCPR.EX:
**SS,KK,C,WWWWWWWW,UU<CR LF>**
in which: **SS**: status (see standard string)
**KK**: NT: Net Weight
GS: Gross Weight
**C**: slave or sum: S, if the sum is sent
slave number, if 1 slave weight is sent
**WWWWWWWW**: weight
**UU**: unit of measure
**<CR LF>** Carriage Return + Line Feed (ascii decimal character 13 and 10).

**NOTE:** in rEPE mode when rEPE.6 is selected the weight value is always zero.

# 8 PROGRAMMING THE PRINTOUTS

If in the set-up environment the presence of the printer has been configured correctly, the indicator carries out the print functions; each functioning mode foresees a specific printout.
With the possibility of defining some printing fields, the size of the characters, a heading and other options depending on the printer and the predefined functioning mode.

In the "Pr.ModE" step of the set-up environment it is possible to select whether to print on the DP190 / TPR printer or the LP542S labeller; see the following steps for all the printing options.

1) Enter the SET-UP environment of the scale (when turned on, press for an instant the ZERO or TARE key during the countdown).
2) Select the **SEtuP** >> **SEriAL** >> **Com.Prn** >> **Pr.ModE** step and press ENTER/PRINT.
3) Select the desired printer ("tPr" or "LP542P) and press ENTER/PRINT.
If the system consists of one or more SLAVES connected to the MASTER, the printer has to be selected in the appropriate indicators (see the paragraph "Execution of the printouts" in the section 11.6 – "SINGLE-MULTISCALE REPEATER (MAStr)", **USER MAN.REF.**).
4) In the "SET-UP ENVIRONMENT" see the descriptions of the "baud.Pr", "Bit.Pr", "PWr.Prn", "on.Prin" and "Prn.CtS" steps for configuring the baud rate, the number of transmission bits, the printer's power supply and the CTS signal.
If the system consists of one or more SLAVES connected to the MASTER, the parameters "bAud.Pr", "bit.Pr", "PWr.Prn" and "Prn.Cts" have to be programmed only in the indicator to which the printer is connected.

Select the "**Pr.ConF**" step and press ENTER/PRINT: one enters the **PROGRAMMING MENU OF THE PRINTOUTS.**
If the system consists of two or more SLAVES connected to the MASTER and there is a LP542S labeller on the MASTER, the printout format must be the same for all the SLAVES.
Below is the description of the steps.

5) Once the settings have been made, press the C key various times until the indicator shows "SAVE?" In the display: confirm with ENTER/PRINT to memorize and return to weighing.

**Pr.ConF** *CONFIGURATION OF THE PRINTOUTS* **(§)**
In this step one enters the submenu for the programming of the printout foreseen from the selected functioning mode.
**(§) The parameter and all its submenus are displayed only if the "tPr" o "LP542P" parameter has been selected in the "Pr.ModE" step.**

**LAnG** *PRINTING LANGUAGE*
One selects the language in which the printouts are carried out:
**itAL** italian.
**EnGL** english.
**dEut** german.
**FrAn** french.
**ESPA** spanish.
**(!) EnGL**

**b.LinE** *EMPTY LINE AT THE BEGINNING OF THE PRINTOUT (§)*
When using the TPR printer, a blank line can be printed at the beginning of each printout, in order to preheat the thermal printer head.
**yES** at the beginning of each printout an empty line is inserted.
**no** no empty line.
**(!) yES**
**(§)** The parameter is displayed only if the **"tPr"** parameter has been selected in the **"Pr.ModE"** step.

**IntES** *PRINTING OF HEADING (§)*
***(§) If STANDARD type firmware***
**Int no** no heading.
**Int Si** prints the heading; in the totalizer mode it is printed only upon the first totalisation (in other words if the partial total is zero).
**Int Fi** prints the heading; in the totalizer mode it is printed in all the totalisations.
**Int.SuM** prints the heading; in the totalizer mode it is printed in all the totalisations and in the partial total.
**(!) Int no**

***(§) If MASTER type firmware***
**h. no** no headers
**h. 1.SL** prints the heading if the first slave printout is executed
**h. SLVS** prints the heading if the slaves printouts are executed
**h. SuM** prints the heading if the sum is printed
**ALWAyS** prints the heading always
**(!) h. no**

**nuMWEi** *PRINTING OF NUMBER OF WEIGHS (ONLY FOR TOTALIZER MODE)* ***(§)***

**no** does not print the number of weighs.
**tot** prints the number of weighs only in the single totalisation.
**Sum** prints the number of weighs only in the partial total.
**both** prints the number of weighs in the totalisations as well as in the partial total.
**(!) both**
**(§) The parameter is displayed only if the "totalizer" functioning mode has been selected.**

**doM** *PRINTS DATE AND TIME*

Not used in this application.

**ntik** *PRINTS TICKET NUMBER* ***(§)***

The ticket number is a sequence number which increases upon each printing made, this number, between 1 and 65535, is kept in memory also when the instrument is turned off.

***(§) If STANDARD type firmware***

**no** does not print the ticket number.
**yES.tot** prints the ticket number; in the totalizer functioning mode it is printed only in the single totalisations.
**SuM** prints the ticket number; in the totalizer functioning mode it is printed just in the partial total.
**both** prints the ticket number; in the totalizer functioning mode it is printed in the totalisations as well as in the partial total.
**rESEt** reset the ticket nr., sets it to 1 and leaves the "ntik" step unchanged.
**(!) no**

***(§) If MASTER type firmware***

**no** no ticket nr. is printed
**SLAVES** ticket nr. is printed when the slaves' printouts are executed
**SuM** ticket nr. is printed when the sum is printed
**ALWAyS** ticket nr. always printed
**rESEt** resets the ticket nr., sets it to 1 and leaves the "ntik" step unchanged
**(!) no**

**NOTE**: The ticket number, if programmed, is printed after the weight data.

**EndPAG** *SELECTION OF PAGE END PRINTING* ***(§)***

This step allows to print 2 empty lines at the end of each printout (if "tPr" is selected in the "Pr.ModE" step) or an end label (if "LP542P" is selected in the "Pr.ModE" step).

***(§) If STANDARD type firmware***

**no** does not print the page end
**yES.tot** prints the end page; in the totalizer functioning mode it is printed just in the single totalisations.
**SuM** prints the end page; in the totalizer functioning mode it is printed just in the partial total.
**both** prints the end page; in the totalizer functioning mode it is printed in the totalisations as well as in the partial total.
**(!) both**

***(§) If MASTER type firmware***

**no** no end page is printed
**SLAVES** end page is printed when the slaves printouts are executed
**SuM** end page is printed when the sum is printed
**ALWAyS** end page is always printed
**(!) SuM**

**tErM** *SETTING TERMINATOR*

When connecting a printer it is often necessary to transmit one of the following protocols in order to define the end of the print line.

**Cr** CR (for DP190, TPR)
**CrLF** CR LF (for EPSON LX300, TMU295, LP542PLUS, LP542S).
**(!) Cr**

**PForM** *PRINT FORMATTING*

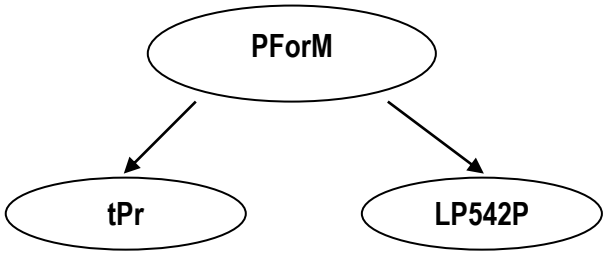
In this step one enters a submenu for selecting the weight data which one wants to print and the print layout.
Depending on the type of printer selected in the PrModE step (LP542P or tPr), the parameters which are suggested, change:

**nr.CoP** *NUMBER OF TICKET COPIES*

Through this step one sets the number of ticket copies which will be printed, valid for any type of printout and functioning mode.
The possible values are 1…3.
**(!) 1**

## 8.1 FORMATTING DATA AND LAYOUT

Depending on the type of printer selected in the "Pr.ModE" step (LP542P or tPr), the parameters which are suggested, change:




********** tPr **********

**dEFAuL** *PRINTOUT DEFAULT*

Through this step one enables the default printing relative to the selected functioning mode.
The default sets, in each of the following steps, the value marked with the **(!)** symbol.

**FiLdS** *PRINTING FIELDS **(§)***

Through this step it is possible to select which fields to be printed among those available:
G; n; t; G n; G t; n G; n t; t G, t n; G n t; G t n; n G t; n t G; t G n, t n G (in which G is the gross weight, n the net weight and t the tare weight).
**(!) G t n**
**(§)** The parameter is not displayed if the firmware is MASTER type.

**hEiGt** *FONT HEIGHT SELECTION FOR PRINTING THE WEIGHT DATA, DATE AND TIME, PROGRESSIVE NUMBERS AND ID'S **(§)***

**h.LoW** normal height

**h.hiGh** double height
**(!) h.LoW**
**(§)** The parameter is not displayed if the firmware is MASTER type.

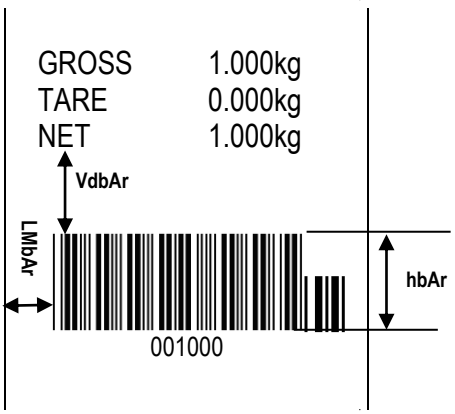
**bArC** *PRINTS THE BAR CODE (§)*
In this step one programmes the printing of the 39 CODE (if "tPr" has been selected in the "Pr.ModE" step), which will be printed before the printing of the date and time:
**no** does not print the bar code.
**yES.tot** prints the bar code; in the totalizer functioning mode it is printed just in the single totalisations.
**SuM** prints the bar code; in the totalizer functioning mode it is printed just in the partial total.
**both** prints the bar code; in the totalizer functioning mode it is printed in the totalizations as well as in the partial total.
**(!) no**
**(§)** The parameter is not displayed if the firmware is MASTER type.

**NOTES:**
- the weight values are expressed in 6 digits without decimal point and with the possible non signficant zeros present.
- a space is inserted between a weight value and the following one.
- the bar code is printed as the last data, after the weight values, possible numeric codes and ticket number, but before the date and time (with DP190 or TPR printer).

**THE FOLLOWING PARAMETERS ARE VISIBLE ONLY IF IN THE PREVIOUS STEP A PARAMETER DIFFERENT FROM "no" HAS BEEN SET.**

**VdbAr** *SELECTING THE BAR CODE'S VERTICAL DISTANCE OF THE PRECEDING TEXTS (§)*
In lines with normal height font, programmable value: 0…9.
**(!) 0**
**(§)** The parameter is not displayed if the firmware is MASTER type.

**LMbAr** *SELECTION OF LEFT MARGIN (§)*
Expressed in 1/8 of a mm (from 0 to 99).
**(!) 00**
**(§)** The parameter is not displayed if the firmware is MASTER type.




**WbAr** *SELECTION OF BAR CODE FONT WIDTH (§)*
Programmable value: W1…W3
**(!) W1**
**(§)** The parameter is not displayed if the firmware is MASTER type.

**hbAr** *SELECTION OF BAR CODE FONT HEIGHT (§)*
Expressed in 1/8 di mm (from 0 to 255)
**(!) 000**
**(§)** The parameter is not displayed if the firmware is MASTER type.

**bArFS** *SELECTION OF PRINT FIELDS IN THE BAR CODE (§)*
Programmable value:G; n; t.
In which G is gross weight, n is net weight and t is tare weighing.
**NOTE:** In the INPUT/OUTPUT functioning mode, G is the greater weight, t is the lesser weight, n is the difference between G and t.
**(!) G**
**(§)** The parameter is not displayed if the firmware is MASTER type.

**PntVb** *PRINTING OF THE BAR CODE'S NUMERIC FIELD (§)*
This step allows to select the printing of the bar code's numeric field:
**no** the numeric field is not printed.

**undEr** under the bar code
**AboVE** above the bar code
**Ab/un** both above as well as below the bar code.
**(!) AboVE**
**(§)** The parameters are not displayed if "no" has been selected in the **SEtuP** >> **SEriAL** >> **CoM.Prn** >> **Pr.ConF** >> **PForM** >> **bArC** step.

**PtESt** *PRINTING TEST*
By pressing ENTER/PRINT, a test label is printed of previously selected fields, **but with fixed weight values.** The print test depends on the selected functioning mode:

- **Std mode**: the first time the fields with the kg unit of measure are printed, the second time the fields with the lb unit of measure are printed, and so on.
- **ntGS, StP G, StP n, ViSS, ALibi, ChECk, PErC, inout modes**: simple printing.
- **MAStr mode**: simple printing.
- **hLd mode**: the first time the fields without the "HOLD" message are printed, the second time the ones with the "HOLD" message are printed, and so on.
- **tot o and tot s mode**: when the ENTER/PRINT is pressed a selection menu appears with the following items:
  " TOT.1.0": simulates the printing of the first totalisation relative to the zero registry.
  " TOT.2.0": simulates the printing of a further totalisation relative to the zero registry.
  " SUM 0": simulates the printing of the partial total relative to the zero registry.
  " TOT.1.1": simulates the printing of the first totalisation relative to the one registry.
  " TOT.2.1": simulates the printin of a futher totalisation relative to the one registry.
  " SUM 1": simulates thr printing of the partial total relative to the one registry.
  " G.totAL": simulates the printing of the general total.
- **Coun mode**: the first time the fields with the pieces number and apw are printed, the second time the ones without the pieces number and apw are printed.

- SUM mode: prints the weight of the each slave, tare weight and sum weight with the unit of measure.

**PREMISE: the purpose is to create the label directly onto the indicator, by configuring the parameters described below.**
**Once the programming is done, one will need to download the label onto the printer (doWnLd step) and then save it in its permanent memory; carefully read section 8.1.**

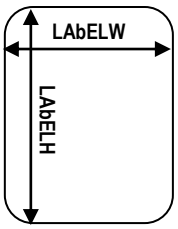
**dEFAuL:** *PRINTOUT DEFALUT*
In this step one enables the default printout relative to the selected functioning mode.
The default sets, in each of the following steps, the value marked by the **(!)** symbol.

**FiLdS:** *PRINT FIELDS **(§)***
In this step it is possible to select which of the available fields are to be printed:
G; n; t; G n; G t; n G; n t; t G, t n; G n t; G t n; n G t; n t G; t G n, t n G (in which G is the gross weight, n is the net weight and t is the tare weight).
**(!) G t n**
**(§)** The parameter is not displayed if the firmware is MASTER type.

**ChAr.t:** *FONT TYPE WITH WHICH THE WEIGHT DATA, DATE AND TIME, PROGRESSIVE NUMBERS AND ID'S ARE PRINTED.*
ChAr.1: the data is printed by using the font which will be programmed in the **ChAr 1** step.
ChAr.2: the data is printed by using the font which will be programmed in the **ChAr 2** step.
SEE **EXAMPLE 1.**
**(!) ChAr 1**

**LAbELW:** *LABEL WIDTH (IN MM)*
Enter a value with 3 digits, expressed in mm.
**(!) 63**

**LAbELh:** *LABEL HEIGHT*
Enter a value with 3 digits, expressed in mm.
**(!) 80**




**ChAr 1:** *SELECTING THE FONT WITH WHICH THE DATA LINKED TO THIS CHARACTER WILL BE PRINTED*
**(!) Font 3d**

**ChAr 2:** *SELECTING THE FONT WITH WHICH THE DATA LINKED TO THIS CHARACTER WILL BE PRINTED.*
**(!) Font 3d**

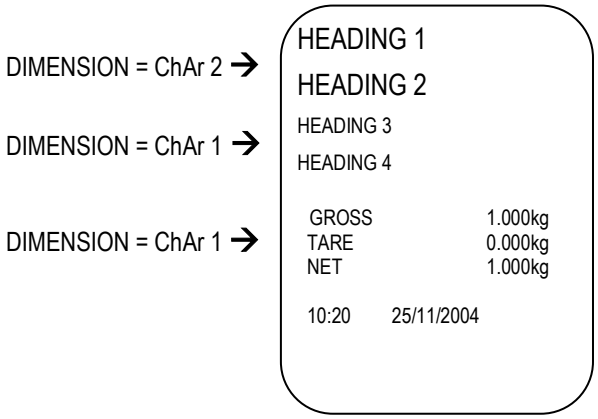
It is possible to select one of the following fonts for each letter:

| PARAMETER | TYPE OF FONT (WIDTH X HEIGHT) |
|---|---|
| **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 |

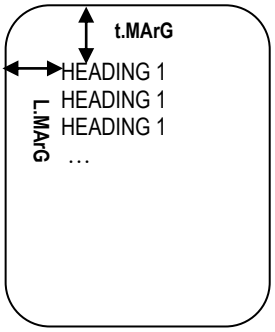
**EXAMPLE 1:** one wants to print 4 heading lines, of which the first two are double the height in respect to the second two, GROSS, TARE, NET, DATE and TIME.

**One will programme:**
**in the heading, LinE 1 and LinE 2 = ChAr 2**
**LinE 3 and LinE 4 = ChAr 1**
**ChAr.t =** ChAr 1
**ChAr 1 =** P.F. 3
**ChAr 2 =** P.F. 3d

**Result:**




**t.MArG:** *DISTANCE OF THE DATA PRINTED FROM THE LABEL'S UPPER MARGIN*




Enter a value with 3 digits, expressed in mm
**(!) 10**

**L.MArG:** *DISTANCE OF THE DATA PRINTED FROM THE LABEL'S LEFT MARGIN*
Enter a value with 3 digits, expressed in mm
**(!) 6**

**bArC:** *PRINTING THE BAR CODE (ONLY CODE 39 TYPE)* ***(§)***
**no** does not print the bar code.
**yES.tot** prints the bar code; in the totalizer functioning mode it is printed just in the single totalisation.
**SuM** prints the bar code; in the totalizer functioning mode it is printed just in the partial total.
**both** prints the bar code; in the totalizer functioning mode it is printed both in the totalisations as well as in the partial total.
**(!) no**
**(§)** The parameter is not displayed if the firmware is MASTER type.

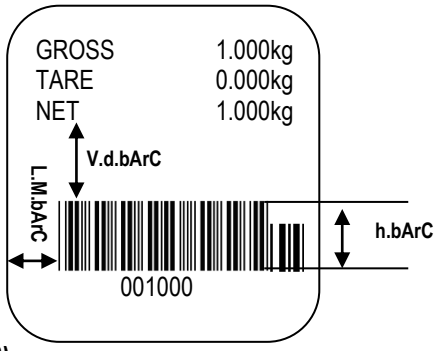
**NOTES:**
- the weight values are expressed with 6 digits without decimal point and possibly with non significant zeros.
- a space is inserted between a weight value and the following one.
- the bar code is printed as the last data, after the weight values, numeric codes and ticket number, but before the time and date.

**THE FOLLOWING PARAMETERS ARE VISIBLE ONLY IF IN THE PREVIOUS STEP A PARAMETER DIFFERENT FROM "no" HAS BEEN SET.**

**V.d.bArC:** *SELECTING THE VERTICAL DISTANCE OF THE BAR CODE FROM THE PREVIOUS TEXTS (§)*
Enter a value with 3 digits, expressed in mm.
**(!) 5**

**L.M.bArC:** *SELECTING THE LEFT MARGIN (§)*
Enter a value with 2 digits, expressed in mm.
**(!) 15**

**h.bArC:** *SELECTING BAR CODE HEIGHT (§)*
Enter a value with 2 digits, expressed in mm
**(!) 10**




**bArFS:** *SELECTING THE PRINT FIELDS IN THE BAR CODE (§)*
Selectable fields: G; n; t; G n;G t; n G; n t; t G; t n; G n t; G t n; n G t; n t G; t G n; t n G.
In which G is the gross weight, n is the net weight and t is the tare weight.
**(!) n**

**PntVb:** *PRINTING THE NUMERIC FIELD OF THE BAR CODE (§)*
**no:** the numeric field is not printed.
**yES:** the numeric field is printed under the bar code
**(!) yES**

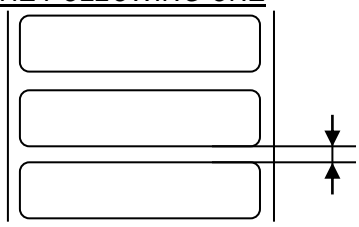
**(§)** The parameters are not displayed if "no" has been selected in the **SEtuP** >> **SEriAL** >> **CoM.Prn** >> **Pr.ConF** >> **PForM** >> **bArC** step.

**PEEL:** *CONFIGURATION OF THE SENSOR WHICH PEELS OFF THE LABEL*
**on:** sensor active
**oFF:** sensor not active
**(!) oFF**

**GAP** *SETTING THE VERTICAL DISTANCE BETWEEN A LABEL AND THE FOLLOWING ONE*

Enter the value in mm.

**NOTE:** if one uses a continuous form, set the value 00.



**dirECn:** *SETTING THE PRINT DIRECTION*

**dirECt:** direct printing
**rEvErS:** upside down printing
**(!) dirECt**


**dWn.EXt:** *SETTING OF THE TYPE OF FORMAT*
**F.dFW:** format created through the indicator
**F.EXtn:** format created with the programme or tool on PC
**(!) F.dFW**

**doWnLd:** *TRANSMISSION & TEMPORARY SAVING OF THE LABEL PROGRAMMED IN THE LABELLER*
This step temporarily saves the label in the labeller memory; by turning it off it causes the loss of the saved data.
**Carefully read section 8.1.**

**L.ALiGn:** *ALIGNMENT OF THE LABEL IN THE PRINTER*

**PtESt** *PRINTING TEST*
By pressing ENTER/PRINT, a test label is printed of previously selected fields, **but with fixed weight values.**
The print test depends on the selected functioning mode:

- **Std mode**: the first time the fields with the kg unit of measure are printed, the second time the fields with the lb unit of measure are printed, and so on.
- **ntGS, StP G, StP n, ViSS, ALibi, ChECk, PErC, inout modes**: simple printing.
- **MAStr mode**: simple printing.
- **hLd mode**: the first time the fields without the "HOLD" message are printed, the second time the ones with the "HOLD" message are printed, and so on.
- **tot o and tot s mode**: when the ENTER/PRINT is pressed a selection menu appears with the following items:
  " TOT.1.0": simulates the printing of the first totalisation relative to the zero registry.
  " TOT.2.0": simulates the printing of a further totalisation relative to the zero registry.
  " SUM 0": simulates the printing of the partial total relative to the zero registry.
  " TOT.1.1": simulates the printing of the first totalisation relative to the one registry.
  " TOT.2.1": simulates the printin of a futher totalisation relative to the one registry.
  " SUM 1": simulates thr printing of the partial total relative to the one registry.
  " GtotAL": simulates the printing of the general total.
- COUN mode: the first time the fields with the pieces number and apw are printed, the second time the ones without the pieces number and apw are printed.
- SUM mode: prints the weight of the each slave, tare weight and sum weight with the unit of measure.

**!! IMPORTANT !!**

## 8.2 SAVING THE LABEL IN THE LABELLER'S PERMANENT MEMORY

Once the programming of the label has been made, one should:

1. Download the label created in the labeller → press ENTER when the display shows the **"doWnLd"** step.
2. Press the C key; the display shows the message **"L.SAVE?":** press the ENTER key to save the label created in the labeller's permanent memory.

When saving the data on the labeller, the led blinks; while this happens do not do anything with the indicator or the labeller.
The saving of the label ends when this led does not blink any more.

The labeller has the label saved and is ready to print it; turning off the labeller does not cause the loss of the saved data.

**REPEAT THESE SAVING OPERATIONS EACH TIME THAT ONE MODIFIES THE LABEL OR THE DATA IN IT OR IF IT IS NECESSARY TO CHANGE THE FUNCTIONING MODE AFTER HAVING PROGRAMMED THE LABEL.**

### 8.2.1 SAVING THE LABEL IN THE LABELLER'S PERMANENT MEMORY IN MASTER/SLAVE SYSTEMS

To save the label for the sum of the weights programmed in the MASTER, one should follow the procedure described in the paragraph "SAVING THE LABEL IN THE LABELLER'S PERMANENT MEMORY".

To save the label programmed in one or more SLAVES one should:

1. On each SLAVE, exchange the selected PC serial port (**SEtuP** >> **SEriAL** >> **PC.SEL** step) with the other available port, to allow the transmission of the label format to the MASTER.
2. On the MASTER, enter in the **diAG** >> **SEr** step and press ENTER (the display shows "S 00"), then press again ENTER (the display shows "COM1-2"): the MASTER can send to the PRN serial port the data received on the PC serial port.

3. For each SLAVE, follow the procedure described in the paragraph “SAVING THE LABEL IN THE LABELLER’S PERMANENT MEMORY” and then set the **PC.SEL** step at the original value.

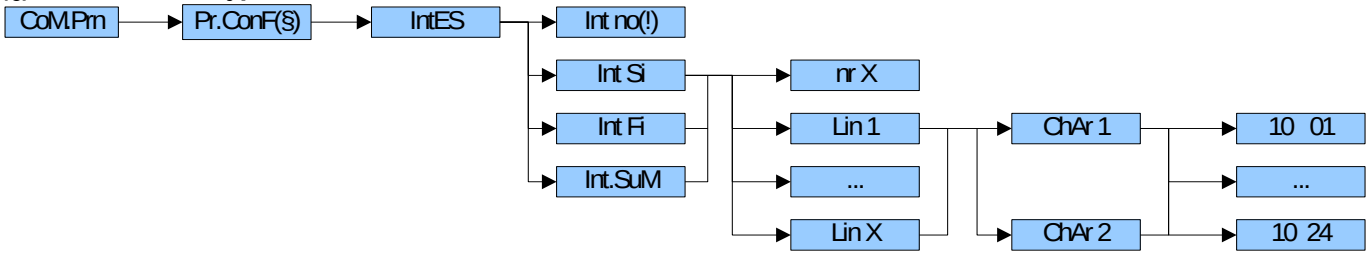
# 9 PRINTING THE HEADING

It is possible to programme from the indicator or from PC the 4 alphanumeric heading lines of 24 characters each, which will be printed in the manner which has been programmed until these are cancelled or substituted.

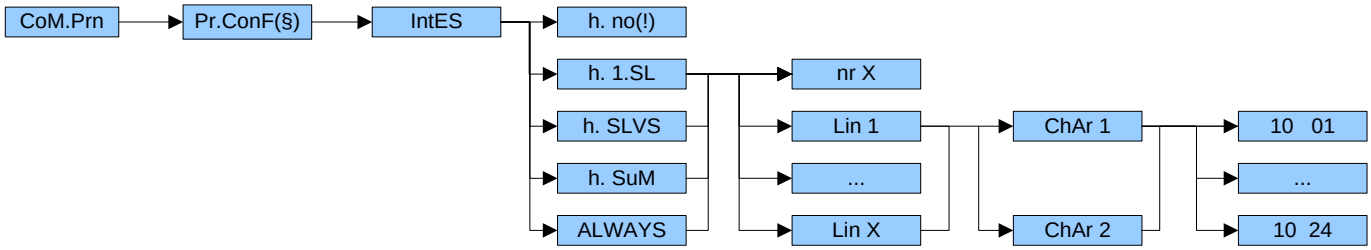
One can configure the heading on the PC by using the DINI TOOLS software, by following the instructions of the relative manual.
In order to configure the heading on the indicator one should follow the procedure below:

Enter in the TECHNICAL SET-UP >> **SEtuP** >> **SEriAL** >> **CoM.Prn**

***(§) If STANDARD type firmware***




***(§) If MASTER type firmware***




1. Enter in the step: CoM.Prn
2. Enter in the step: Pr.ConF(§)
3. Enter in the step: IntES
4. Select the desired heading printing mode:
   **int no** = does not print the heading
   **int Si** = prints the heading (only with the first totalisation if a totalizer mode has been selected)
   **int Fi** = if a totalizer mode is selected, it prints the heading in all the totalisations
   **int.SuM** = if a totalizer mode is selected, it prints the heading in all the totalisations in the total.
   By selecting a mode different than the **int no**, one will be asked to enter the number of heading lines; the display shows nr x, in which x is the number of set lines (from 0 to 4).
5. Select the number of lines, using the ZERO key and press ENTER to confirm.
6. The Lin 1 message appears on the display for a few seconds indicating which line one is programming (in this case it’s line 1).
7. Then the instrument asks to select the height of the print character:
   **ChAr 1** = prints line at a normal height (for tpr) or character 1 (for LP542S).
   **ChAr 2** = prints line at double the height (for tpr) or character 2 (for LP542S).

**(see section 8 for further information)**

Use the ZERO key to select the character height, then press ENTER to confirm

8. The instrument is ready to programme the first heading line, which consists in entering a sequence of two numeric digit codes, corresponding to the fonts (see **Table 3**). A line can have up to 24 characters (including the empty spaces).

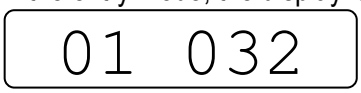
**LIST OF THE CODES AND CORRESPONDING PRINTED CHARACTERS**

| CODE | CHARACTER | CODE | CHARACTER | CODE | CHARACTER |
|---|---|---|---|---|---|
| **32** | | **66** | B | **100** | d |
| **33** | ! | **67** | C | **101** | e |
| **34** | “ | **68** | D | **102** | f |
| **35** | # | **69** | E | **103** | g |
| **36** | $ | **70** | F | **104** | h |
| **37** | % | **71** | G | **105** | i |
| **38** | & | **72** | H | **106** | j |
| **39** | ‘ | **73** | I | **107** | k |
| **40** | ( | **74** | J | **108** | l |
| **41** | ) | **75** | K | **109** | m |
| **42** | * | **76** | L | **110** | n |
| **43** | + | **77** | M | **111** | o |
| **44** | , | **78** | N | **112** | p |
| **45** | - | **79** | O | **113** | q |
| **46** | . | **80** | P | **114** | r |
| **47** | / | **81** | Q | **115** | s |
| **48** | 0 | **82** | R | **116** | t |
| **49** | 1 | **83** | S | **117** | u |
| **50** | 2 | **84** | T | **118** | v |
| **51** | 3 | **85** | U | **119** | w |
| **52** | 4 | **86** | V | **120** | x |
| **53** | 5 | **87** | W | **121** | y |
| **54** | 6 | **88** | X | **122** | z |
| **55** | 7 | **89** | Y | **123** | { |
| **56** | 8 | **90** | Z | **124** | \| |
| **57** | 9 | **91** | [ | **125** | } |
| **58** | : | **92** | \ | **126** | ~ |
| **59** | ; | **93** | ] | **127** | ⌂ |
| **60** | < | **94** | ^ | | |
| **61** | = | **95** | _ | | |
| **62** | > | **96** | ` | | |
| **63** | ? | **97** | a | | |
| **64** | @ | **98** | b | | |
| **65** | A | **99** | c | | |

**Table 3**

**NOTE**: the characters from 128 to 255 depend on the printer.

In the entry mode, the display is managed in the following way:




on the right one enters the character (032 is the default character), while the number on the left indicates the position of this character on the line.

To modify the character, press ENTER and then use ZERO and TARE keys or the numeric keyboard (if present) to enter the values of the digits. By pressing MODE one can select the next digit.

For example:

To write "**ROSSI GIUSEPPE S.R.L.**", one should set the following codes:

**82 / 79 / 83 / 83 / 73 / 32 / 71 / 73 / 85 / 83 / 69 / 80 / 80 / 69 / 32 / 83 / 46 / 82 / 46 / 76 / 46 / 32 / 32 / 32**

9. when one has finished programming the heading line, the instrument automatically passes to the programming of the following line
10. repeat the operations from point 6 for all the set lines.
11. once the programming of the heading is done, the instrument automatically passes to the following step nuMMEi (§).
12. to save the entered heading, press the C key various times until the display shows the message "SAVE?": press ENTER to save.

When displaying the code and position, there are available functions if the user presses the corresponding keys:

**TARE:** **cursor forwards:** while one is programming a print line, it allows to scroll the set characters and modify them.

**ZERO:** **cursor backwards:** while one is programming a print line, it allows to scroll the set characters and modify them.

**C:** once the programming or the modification of a print line has been made, by carrying out this function **the new programming is memorised**.

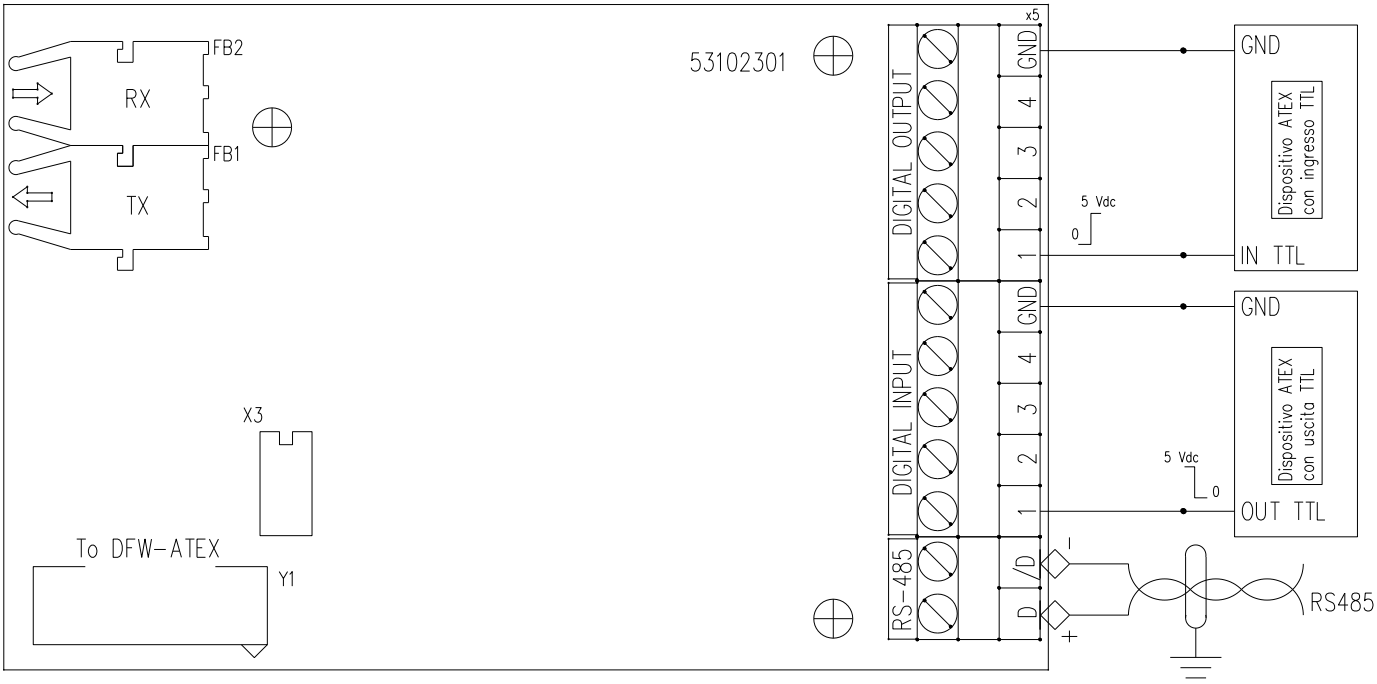
**MODE:** **function menu:** a menu which three functions appears
**" HELP ":** summarizes the codes of the alphanumeric codes and the list of the other functions

**"DEL.LIN":** while one is programming a print line, it carries out this command; **all the codes of this line are cancelled.**

**"PRINT.L":** while one is programming a print line, by carrying out this command, **the test printing of the line is carried out.**

# 10 CONNECTION SCHEMES

## 10.1 EXPLANATION OF EXPANSION BOARDS (PRESENT DEPENDING ON THE MODEL)




**INPUT/OUTPUT SECTION**
With the expansion board, it is possible to manage 4 digital inputs and 4 outputs, with TTL features.

In order to interface an Ex device with the input/output lines, the Ex device must have the following features:

**- digital inputs/outputs having TTL features**

**- theoretic input and output features which are provided by the norm:**

**DIGITAL OUTPUT**

**Features:**

| | |
|---|---|
| **Uo** | 5,9 V |
| **Io** | 52 mA |
| **Po** | 76 mW |
| **Co** | 40µF |
| **Lo** | 10 mH |

**DIGITAL INPUT**

**Features:**

| | |
|---|---|
| **Uo** | 5,9 V |
| **Io** | 6 mA |
| **Po** | 10 mW |
| **Co** | 40µF |
| **Lo** | 250 mH |

**- electronic input and output features which are provided by the board:**

**DIGITAL OUTPUT**

**Features:**

| | |
|---|---|
| **Uo** | 5 Vdc |
| **Io** | < 1 mA |

**DIGITAL INPUT**

**Features:**

| | |
|---|---|
| **Ui** | 5 Vdc |
| **Ii** | ±0,1 mA |

**Note**: see **RS485 port Atex parameter** in the "Plate parameters" section in the user manual **(USER MAN.REF.)**.