WEIGHING INDICATOR

IPC 50

INSTRUCTION MANUAL

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INTRODUCTION

This manual has been created to describe all functional capabilities of the **IPC50 indicator** and assist you during its installation and set up.

The IPC50 can operate in several environments and weighing types. In addition to having all the characteristics of a high precision scale, it offers the user a rechargeable battery, plus the **Peak, Hold, Weight totalizer** and **Counting** functions.

The IPC50 adapts to normal weighing applications in either industrial settings, such as during factory production processes, or that of commerce, such as legal for trade applications, also satisfying the frequently needed ability to transmit and print the data through its two serial ports.

WARNING

Any attempt to repair or alter the unit can expose the user to the danger of electric shock and it will void our warranty. This instrument is covered under warranty provided that **IT HAS NOT BEEN OPENED BY THE USER** for any reason. If any problem with the unit or system has been experienced please notify the manufacturer or the dealer from which the instrument was acquired.

Do not pour liquids on the indicator!
Do not use solvents to clean the indicator!
Do not expose instrument to either direct sun light or any heat sources!
Always mount the indicator and platform in a vibration free setting!
Read carefully and apply what is described on Page 6 !
Do not install in an environment with any risk of explosion!

NOTE FOR THE USER:
Please take note that when the "StEP…. (TECH.MAN.REF.) is mentioned, this refers to the Technical Manual which may be obtained from the Reseller.

MAIN TECHNICAL SPECIFICATIONS

POWER SUPPLY	230Vac +10% ÷ -15%, 50-60Hz with external wall adapter providing 12Vdc/600mA (included) or rechargeable internal 6 Vs – 4 AH battery (optional).
MAXIMUM POWER	5 VA
OPERATING TEMPERATURE	From -10 to +40 °C (14 to 104 °F).
DISPLAYED DIVISIONS	3000e, 2X3000e for legal for trade use expandable to 30.000 for internal factory use.
RESOLUTION IN CALCULATION	30000 points.
DISPLAY	backlit 6 digit LCD, 25 millimeters, or 1 inch, in height (5 digits with symbol).
STATUS INDICATIONS	7 LEDS.
KEYBOARD	water resistant polycarbonate membrane keys with tactile and acoustic feedback. 5 button keyboard standard on IPC50. Extended 17-key numerical keyboard standard on IPC50K.
TARE FUNCTION	Available on entire range, from keyboard or from optional remote control. Subtraction function on all models.
AUTO POWER OFF	After 5 minutes without use - if enabled.
LOW BATTERY WARNING	"Lo Bat " will appear on display when battery is near depletion (max. 40 hours with 1 load cell).
BATTERY RECHARGE TIME	12 hours (maximum).
LOAD CELL POWER SUPPLY	5Vdc ± 5%, 120mA (max 8 cells of 350 Ohms)
LOAD CELL CONNECTIONS	6 wires with Remote Sense
PROTECTIVE CASE	Oven fire painted IP 54 steel case available in column, desk, shelf, or wall mount configurations. Optional Waterproof IP65 Stainless Steel also available.
SERIAL OUTPUTS	1 RS232 input/output configurable for connection to PC/PLC or WEIGHT REPEATER. 1 RS232 output for connection to printer.
OPTIONS	Legal for Trade models (US & European CE-M); High Resolution models also available. Internal rechargeable battery, Backlit display. Version with infrared remote control.

THE PARTS OF THE INSTRUMENT CONTAINING DANGEROUS ELECTRICAL TENSION ARE ISOLATED AND INACCESSIBLE TO THE USER UNLESS IT HAS BEEN DAMAGED, OPENED, OR ALTERED.

SYMBOLS

To call the attention of the user, the following symbols are used both in the manual and on the instrument itself:

Warning! This operation must be performed only by qualified personal.

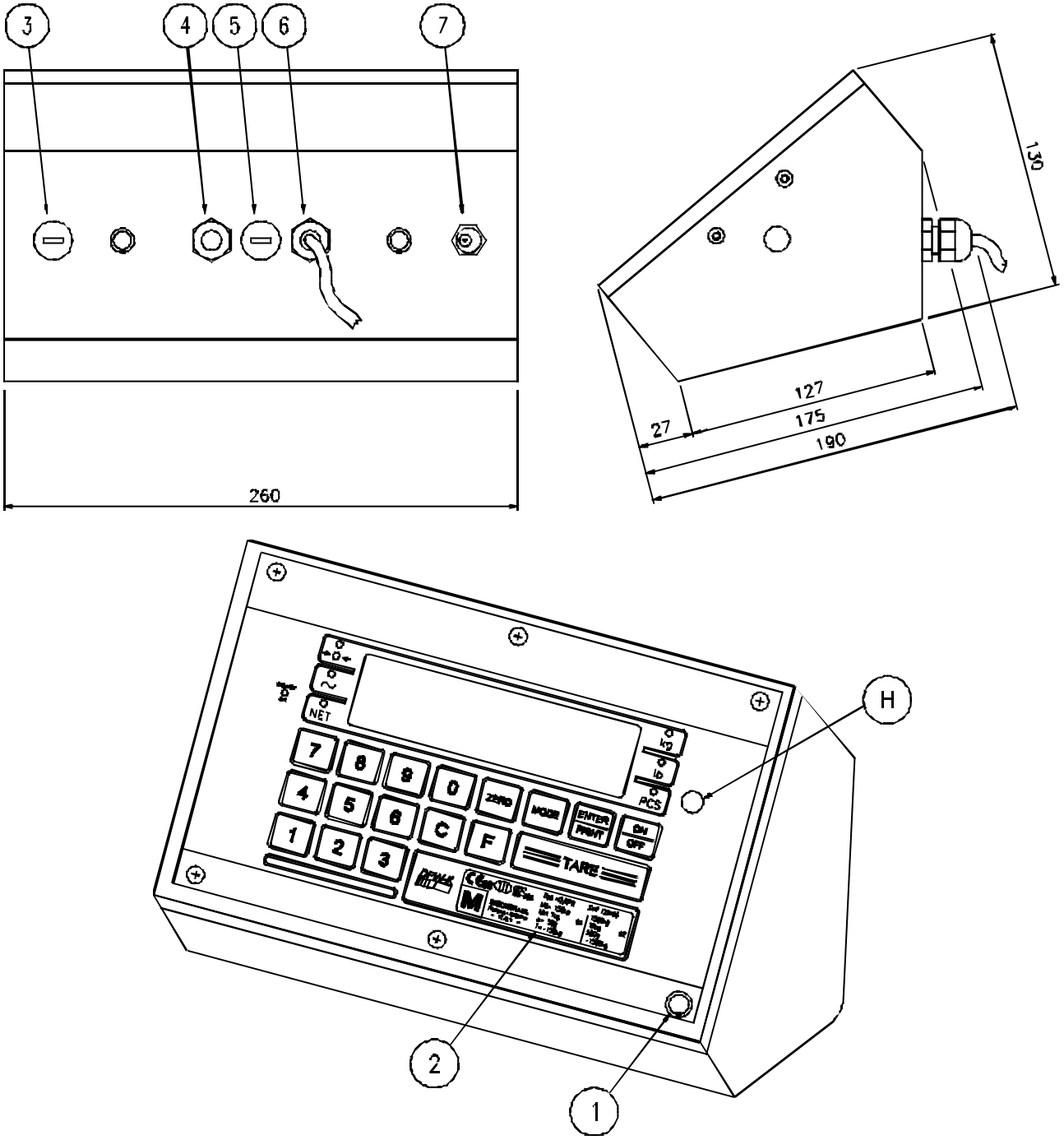
Conforms to the standards of the European Union.

Identifies the Class Of Precision defined by the OIML to represent 3000 divisions

INSTALLATION

Model IPC50 digital weight indicator has an oven fire painted steel case (or stainless steel option), whose external dimensions are represented in FIGURE 1. While it is quite easy to operate on a tabletop, if a fixed support is desired, mounting on a rack, shelf or column is relatively simple.

FIGURE 2 shows the IPC50 version with its case for the panel mounting with another suitable container.

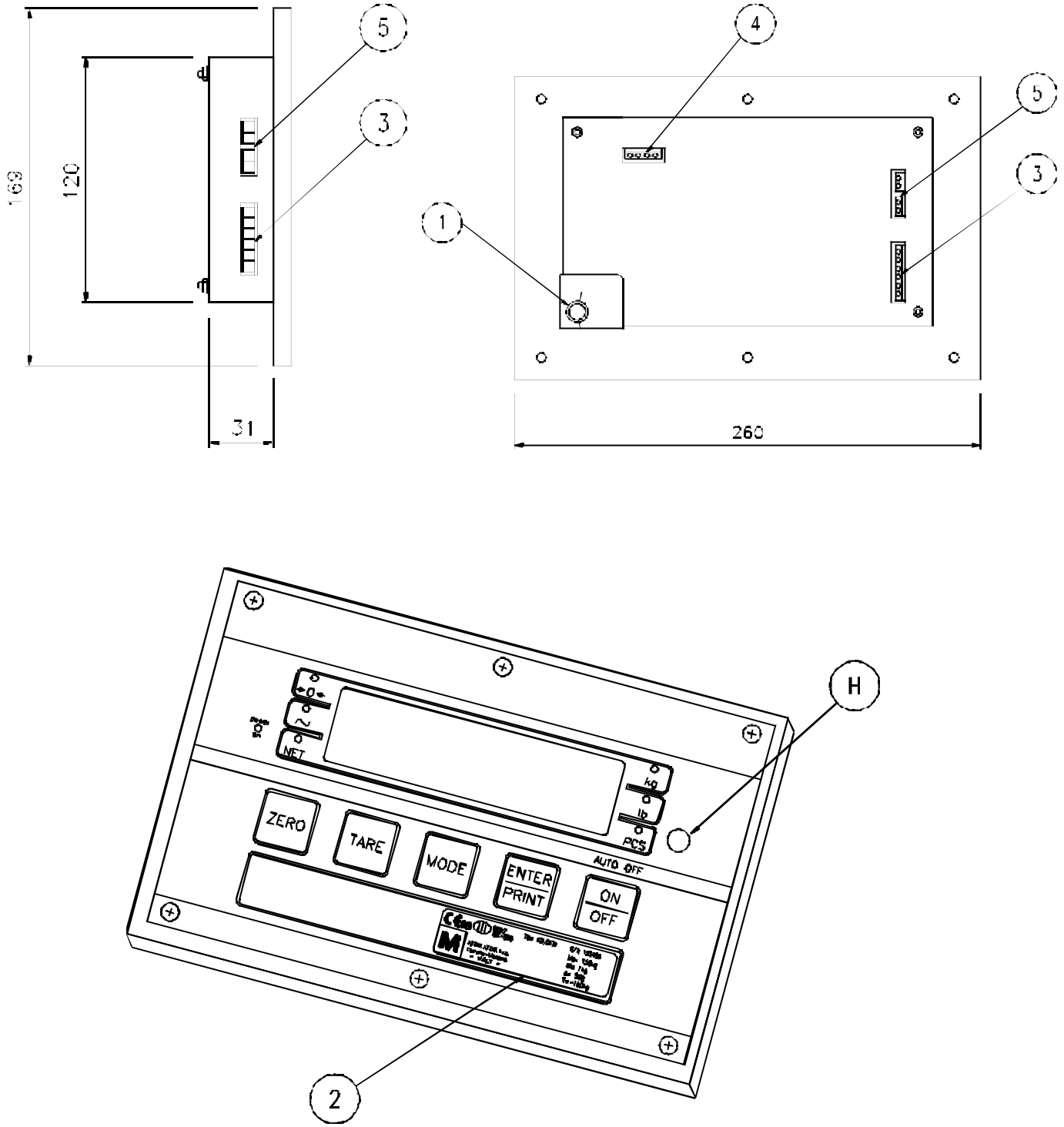


Measurements in mm

FIGURE 1

1) Protection seal (Legal for Trade version only)
2) Identification plate
3) Extra hole for user's options
4) RS232 connection
5) Available
6) Connection to load cell(s)
7) Entry for 12V dc power supply
H) Sensor for infrared remote control (optional)

IPC50P MODEL – FOR PANEL MOUNTING WITH ANOTHER CONTAINER



Measurements in mm

FIGURE 2

1 Protection seal(*)
2 Identification plate
3 Load cell/s input
4 RS232 serial output
5 12 Vdc power supply input

H Sensor for infrared remote control

(*) only in the legal for trade version

POWER SUPPLY & START UP

The IPC50 series of instruments is normally charged with a 12 Vdc tension supplied from an AC/DC external charger (supplied) which should be connected to the 220 Vac mains voltage. Safety norms must be respected for the connection to the mains voltage including the use of a line which has to be free from noise generated by other electronic equipment.

Charging is possible also through a rechargeable built-in or external battery (optional) depending on the instrument model. The battery lifetime is 40 hours (max.) when used with 1 load cell, and 24 hours (max.) if connected to 4 load cells. To completely recharge the battery, connect the AC/DC power adapter for 12 hours (min.)(see "LOW BATTERY WARNING" point in the MAIN FUNCTIONS section).
NOTE: ***With the battery option we RECOMMEND disconnecting the battery if the instrument is not going to be used for more than 30 days.***

BATTERY CHARACTERISTICS

Material	Lead
Power	4,5 Ah
Output	6 V

THE BATTERY MUST ONLY BE REPLACED WITH AN ORIGINAL FROM THE MANUFACTURER.

In order **TO CHARGE** the instrument through the 220Vac mains, one should insert the plug end of the equipped AC/DC power adapter into the socket or terminal board in the back of the instrument – (installation 7 in figure 1 or 5 in figure 2 - and the charger to your 220Vac source.
If the instrument has been charged correctly, on the left side of the display's front panel the **power-on** led turns on.

Do not connect other equipment to the same socket as the one that the adapter is in.
Do not step on or crush the power supply cable

TO TURN ON the instrument Press and continue to hold the ON/OFF key until the 6 status indicator LEDS turn on; then release. In sequence the display shows a number (any), then a –X- YZZ code where the X identifies the type of keyboard: X=O identifies a keyboard configured at 5 keys, X=1 identifies a keyboard configured at 17 keys, and Y ZZ is the software version installed and then sequentially, the capacity and the minimum division programmed, the instrument will carry out a self-testing countdown and a pre-heating. After a few seconds the display will show ZERO. If the platform was correctly connected and installed, the system is ready to weigh.

FRONT PANEL KEYS AND INDICATORS IPC50

The front panel of the IPC50 is designed for quick but simple weighing applications. It consists of an LCD display with 6 easy to read digits, 25 mm in height, 7 LED indicators, and below a 5 key, polycarbonate, water-resistant membrane (see Figure 2, below).

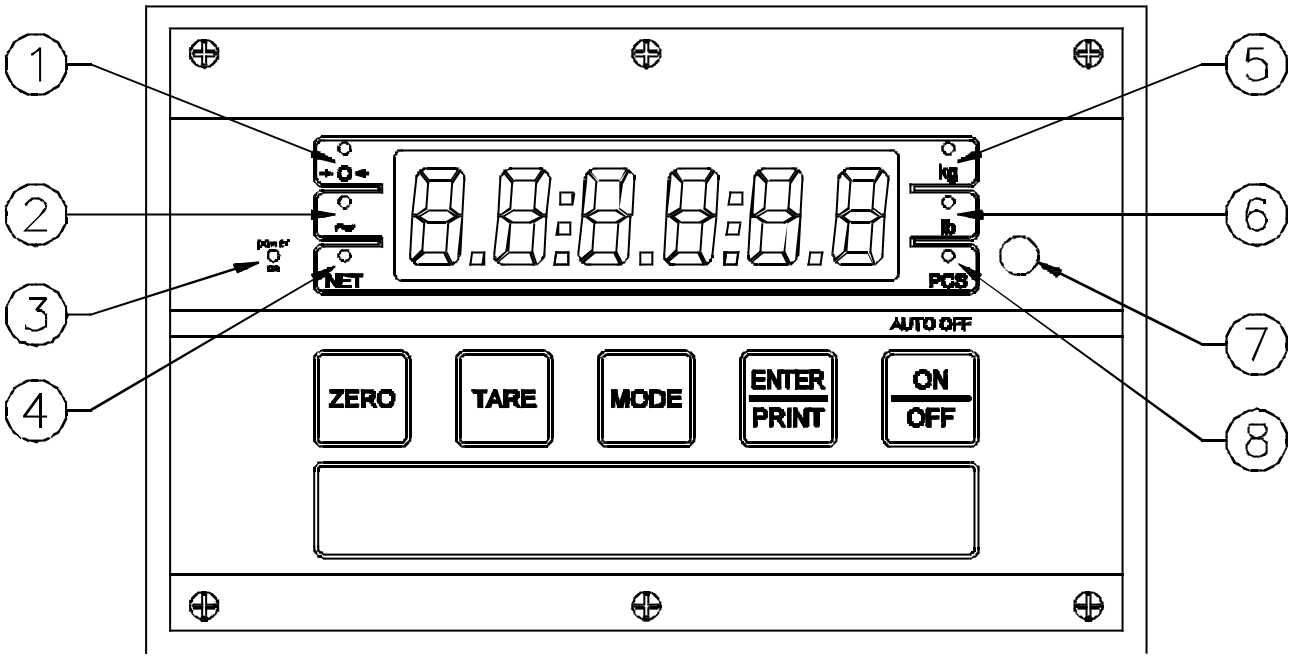


FIGURE 2

1 If turned on, it indicates that the weight detected by the weighing system is close to zero, within ±¼ of the division.

2 If turned off, it indicates that the weight is stable and can be obtained.

3 If turned on, it indicates the presence of external charge supply.

4 If turned on, it indicates that the displayed value is a net weight.

5 If turned on, it indicates the unit of measure in use.

6 If turned on, it indicates the unit of measure in use.

7 Sensor for the reception of the infrared signal (optional).

8 If turned on, it indicates the functional status of the instrument.

Performs an automatic ZERO when the signalled weight is within (+/- 2%) of the total capacity.
Cancels a negative tare value resulting from a previous tare with the load now removed.

LED →**0**← is on

.

The displayed value of the weight present on the scale is stored as TARE and the display shows zero.

NET LED turns on

Enables the operating mode that was selected previously in the USER SET-UP function.
By pressing it for several seconds, it is possible to immediately select a different operating mode.

ENTER: Confirms each choice made in set-up menus.
PRINT: Commands the data transmission of the mono-directional serial port (only if the LED is off).
In the legal for trade scales for use with third parties, in order to be able to print the net weight must be >= of the minimum weight (20 min. divisions).

The "**~**" LED should be off

To turn on the IPC50, press this key until all status LEDs light up. To turn off, press the key quickly.

MAIN FUNCTIONS OF IPC50

SEMI-AUTOMATIC TARE

By pressing the **TARE** key any weight value present on the display is zeroed, the "NET" LED will now turn on. To cancel the stored tare value, press **TARE** or **ZERO** without load. Each subsequent pressing of TARE will replace the previously stored value.

AUTO POWER OFF

A special circuit automatically turns off the scale if it has not been used for 5 minutes. The AUTO POWER OFF function will not activate if a load is on the scale. This function can be disabled from "USER SETUP".

LOW BATTERY WARNING

When the battery voltage goes below 5.7V the display indicates "LObt" about every 10 seconds and when the battery voltage goes below 5.3V the instrument will automatically turn off. This allows the instrument to work correctly.

If you try to print while the battery is very low, the writing "LObt" flashes on the display and three sounds are emitted without printing.

At this point you need to connect the indicator to the main power supply in order to recharge the battery.

The indicator can be normally used while it is being charged.

DUAL RANGE Operation (for legal for trade use)

The operation of DUAL RANGE, allows the user to maintain the use of 3000 divisions required in legal for trade use, while dividing the scale into two ranges - **W1** for low range (led 5 on) & **W2** (led 6 on**)** for high range. For example if the range of the scale is 6000 kg a user can choose W1 to be from 0-3000 kg. In this range, weighing can be performed with resolutions of 1 kg per increment until the weight on the scale becomes greater than 3000 kgs. After that, objects will weigh in resolutions of 2 kgs per increment.

To set up DUAL RANGE, enter into configuration, **Conf,** and select "**ddMr.**" The function is enabled, when any value other than "00000" is selected - regardless of the decimal's position (note the placement of the decimal point will depend on the choice from two steps prior). Enter the value you wish to use as your scale's threshold point using TARE, MODE, ENTER (or on the IPC50K, the number keys). The last digit you are changing will be flashing when you enter the value.

The DUAL RANGE operation activates in **W1** when the LED (top right) that identifies it, lights up. The scale is similarly being operated in high range, or **W2,** when the chosen threshold is passed. Note that the scale will now remain in dual range mode, even when it drops below this point. To re-enter W1 range, the scale must be brought back to ZERO first.

Note: Using the dual range function in STANDARD operating mode, **Std**, disables the function for changing the unit of measure (kg/lb).

REMOTE CONTROL

If the instrument, IPC50 or IPC50K, has been furnished with this option, it is possible to perform the same functions on each of the function keys on the remote control unit, RC, as on the function keys on the actual instrument (ZERO, TARE, MODE, ENTER/PRINT only, no numeric values are able to be set). The operating mode of the RC is defined in the 9th step of CONFIGURATION, under parameter "In-Ir." If the value of this parameter is "Ir-1," all keys function as TARE. If the value is "Ir-4", each of the 4 keys on the remote control repeat the corresponding key on the main keyboard.

PRINTING

If a printer is connected, to either instrument, pressing the PRINT key will print weight data with the preceding symbols: **G** for GROSS, **T** for TARE, **N** for NET, **No** for step or ingredient #, **TOTAL** for the final step in a series of weighs (see Totalizer under MODE). If the user has previously inserted a manual TARE the printout will indicate **PT** for PRE-SET TARE; if no manual TARE was entered only G, gross weight, will print.
The print can be executed only with a stabilized weight, no ~ or ZERO (® 0 ¬)lit.
Note: If DATE/HOUR is needed, it's necessary that the printer is equipped with the DATE/HOUR option.
It is possible to select the language of the printouts (TECHNICAL SETUP "**Lan9**" **TECH.MAN.REF.**)
N.B. It is not possible to print when the display is set to sensitivity times 5 (see "SELECTABLE OPERATING MODES").

Legal for Trade scale printing.
In order to be able to print with a legal for trade scale the following conditions must exist:

- the weight must be stable;
- the net weight must be >= the minimum weight (minimum of 20 divisions).
- the printing is reactivated depending on how the "rIAT" parameter has been set in the USER SETUP (unloading the platform or weight instability).

Beyond what has been described up until now, every specific operation has specific reports.

TICKET NUMBER

In the printout it is possible to include the TICKET NR. (USER SETUP parameter **ntlk**), a progressive number which increases every time the ENTER/PRINT key is pushed; it may be any number between 1 and 65535 which is kept in memory even when the instrument is turned off.
To zero the TICKET NR. one must go to the "**ntlk**" parameter in USER SETUP and select **rEStl** and push ENTER.
The TICKET NR. is printed before the date/hour, and may be used in all functioning modes and in the totalizer mode it increases only with the resetting of the total.

PRINTING LINE HEADING

If you are using the IPC50 with a 17 key keyboard, please refer to the paragraph "PRINTING LINE HEADING" inside chapter "ADDITIONAL FUNCTIONS FOR IPC50K".
If the IPC50 does not have the 17 key keyboard option, to add headings you need the IPC50 TOOL software that allows you to configure the IPC50 through your PC. The program is divided between metrological and non-metrological parameters, user SET-UP and headings. By following the instruction you can have 4 lines of heading, each with 24 characters and variable height (height 1 or height 2).
In user SET-UP if you select PrON or PrES the display shows "IntES". At this point, by pressing ENTER you can choose the following options:

Int SI	Print heading if total is 0 (in totalizer program)
Int F1	Always print heading
Int nO	Do not print heading

N.B. A IPC50 version does not require an heading introduction (like it happens with a IPC50K version).

USER SETUP "SEt"

By selecting, step by step, from the following parameters, the user can personalise the IPC50(K)'s operation: 1) enable/disable the "auto power off" mode, 2) select from 6 modes of operation, 3) select from 3 statuses of the printer, 4) select if, when, and how to print headings (up to 96 characters total, four lines of 24 each), 5) decide when to print the date/hour, and 6) enabling/disabling the display's backlight mode.
If the user wishes to program any of these specific parameters, he must first enter into USER SETUP by keeping ENTER/PRINT pressed while turning the instrument on (pressing the ON key) until the display indicates "SEt."

The functions of the following keys, under USER SETUP, allow the user to:

ZERO Scan the programming steps.
ENTER "Enter" into the step selected and to store all values previously modified (has 2 functions).
TARE Scan the possible values of the parameters (in modifying)

Step	**Display shows**	**What the symbol indicates**
AUOF	AutO	Auto power off mode enabled
	nOrM	Auto power off mode disabled
Mode	*Note: The following functions are only performed when the MODE key is pressed:*	
	Std	Weight indicator with kg / lb conversion activated
	ntgS	Weight indicator with **N**et **G**ross Conversion MODE.
	UISS	Weight indicator + sensitivity times five function.
	HLd	Weight indicator + HOLD function (holds last measured weight)
	PIC	Weight indicator + PEAK detection function (shows highest weight recorded)
	tot 0	Weight indicator + horizontal "totalizer" function (displays the sum of a series of consecutive weighs, in which scale must return to zero each time, or it will remain at the step and display subtotal if additional weight is added)
	tot S	Weight indicator + vertical totalizer (total weight of several "ingredients" added to a batch of the same recipe, prior ingredients remain on scale – not removed between weighs.) Will print **No, G, T, N, TOTAL**, as in tot 0.
	COUn	Weight indicator + counting function.
PrMO	*Pron*	If the indicator has been furnished with an optional printer, it is always on.
	PrES	The printer turns on only when a report has to be executed. To use only when the printer is equipped with a "BATTERY SWITCH".
	Prno	Printer off.
(*) IntES	**Note:**	*This feature is not available on the IPC50 but is standard on the IPC50K.*
	Int no	No heading will be printed if this option is selected.
	Int SI	Print heading at the beginning of a series of weighs (only when the total value is zero - refer to horizontal or vertical totalizer).
	Int F1	Always prints the total value into the heading (each weighing). *(**Go** to the PRINTING LINE HEADING section to create or edit headings; in all cases one must reconfirm the heading)*
(*) dOM :	dOM 0	Prints date and hour only after the weight TOTAL row.
	dOM 1	Prints date/hour for every single totalizer and in the total weight.

ntlk	tlk 0	Doesn't print the progressive number on the ticket.
	tlk 1	Prints the progressive number on the ticket.
	rEStl	By pressing ENTER the ticket's progressive number is reset.
LAMP	LAM 0	the backlight turns on if the weight changes and it turns off automatically after stability (no change) has been maintained for at least 10 seconds.
	LAM 1	the background light is always on.
rIAT	ZerO	totalization and printing will be reactivated by unloading the platform of net weight (bring the weight value on the scale to zero)
	InSt	totalization and printing will be reactivated with weight instability.

LOAd Only once this step has been reached all the modifications will be saved and stored in memory; after 10 seconds the indicator goes back to the operating mode.
ONLY THIS STEP CAN FINALISE DATA STORAGE AND EXIT THE USER FROM SEt(up).

(*) These parameters will not appear if the Pmo option is selected in step **PrMO**.

FAST OPERATING MODES SELECTION

It is possible to enter into another kind of MODE set-up called FAST OPERATING MODE directly from the operating mode, by holding the MODE key for 3 seconds, or until the display shows "ModE."

By repetitively pressing the MODE key, the user may select the possible functions.

Mode	**Display shows**	**what the symbol indicates**
	Std	weight indicator with conversion kg / lb available
	ntgS	weight indicator with **N**et **G**ross Conversion MODE.
	UISS	weight indicator + sensitivity times five function
	HLd	weight indicator + HOLD function
	PIC	weight indicator + peak detection
	tot 0	weight indicator + horizontal totalizer
	tot S	weight indicator + vertical totalizer
	COUn	weight indicator + counting function

ENTER confirms the selected function, but a mode chosen in the FAST OPERATING MODE is ***temporary.*** When the instrument is turned off, the selection that had previously been activated in the USER SETUP is restored.

SELECTABLE OPERATING MODES

As seen in the USER SET-UP section (-SEt-) the IPC50 is capable of several operations. In addition to the STANDARD weighing mode - with the basic abilities of TARE deduction and transmission of data (to printer, PC, or remote unit), the IPC50 series indicators are available to the user in the previously described operating modes of NET/GROSS, DISPLAY WITH SENSITIVITY TIMES FIVE, HOLD, PEAK, HORIZONTAL TOTALIZER, VERTICAL TOTALIZER, and PIECE COUNTING, ,.
These operating modes can be selected by the user. Refer to “USER SETUP”.

STANDARD (Std)
Normal weighing mode: by pressing "MODE" key the value is converted from kg to lb and vice versa. The measuring unit is displayed by their relative LEDS. Only this mode has the ability to convert from kg to lb and back again. However, the other modes may be chosen in either unit of measure during configuration beforehand.

NET/GROSS (ntgS)
Simple display mode, however with the MODE key having a net/gross switch. If there is a pre-set tare, by pressing the MODE key, for a 3 second interval, the gross weight is displayed, the net LEDS are turned off and the pre-set measuring units flash.
TAKE NOTE: While the gross weight is being viewed it is not possible to print.

DISPLAY WITH SENSITIVITY TIMES 5 – UISS- (TO BE USED IN TESTING DURING THE CALIBRATION)
In this simple display mode with the MODE key it is possible to switch between the weight displaying 5 times its sensitivity and the standard sensitivity. This specific function is possible only when the minimum division of the scale if 5, 10, 20, or 50; if other divisions are selected, when MODE is pressed “Err” will appear on the display and the instrument will emit an acoustic signal: at this point one can press any key to return to standard displaying and to stop the acoustic signal.
Up to the capacity of 20000, a digit is added and the decimal point is moved one position to the left; with the capacity of 25000 and over, no digit is added but the sensitivity of the last digit on the right is multiplied by five. Since with this instrument it is not possible to place the decimal point in the position 0.0000, when it is in the position 0.000 and MODE is pressed, it will not appear on the display.
TAKE NOTE: In case the instrument is LEGAL FOR TRADE, when “MODE” is pressed, the sensitivity times 5 is displayed for five seconds (with the unit of measure LED flashing) after which the instrument returns to standard weight displaying. Furthermore, this displaying is possible only with capacities over 100 kg (220 lb).
N.B. It is not possible to print when the display is showing sensitivity times 5.

HOLD (HLd)
Operating mode similar to standard mode, but when MODE is pressed, the value of the weight is held on the display, the 3rd LED on right (designated Hold) turns on, and the display shows HoLd alternately with the weight held value (every 5 sec). To release the weight value on the display, press MODE key again.

PEAK (PIC)
Operating mode similar to standard mode, but when MODE is pressed, the value of the maximum measured weight is held on the display, the 3rd LED on right turns on, and the display shows "-PIc-" (PEAK) alternating with the held weight value (every 5 sec).

This feature is well suited for "breaking load" testing. Press MODE to enable the peak capturing function: the LED PEAK will turn on and the display will show the maximum detected weight, alternated with the writing PIC. To stop the test and return to standard operation press MODE key again. The weight value will be the maximum, before a fast decrease of the weight (i.e. measurement of the breaking strength). It's possible to set up the minimum time of the detectable weight peak. To program this threshold time press the ENTER/PRINT key for 5 sec. "- tP-" will appear on the display and a number corresponding to the minimum peak time in 0,01 seconds units. By pressing the TARE key the user can scroll time values 2, 5, 10, 20, 50,100, and 200. Press ENTER in order to confirm the selected value. The default value is 2 (fastest capture).

HORIZONTAL TOTALIZER (tot 0)
In this operating mode it is possible to sum sequential weighs; when MODE is pressed, the displayed weight accumulates onto a total weight in the indicator's memory. In order to avoid repeating a particular Nº the MODE key activates only once (weighing an ingredient more than once could conceivably happen by pressing the MODE key twice or more). To "rearm itself" it is necessary to either unload the platform (bringing the weight value on the scale to zero). If a printer is connected, MODE commands the printing of the weight value. After initiating a Horizontal Totalizer, pressing MODE also allows the user to temporarily view the executed weighing steps and the accumulated TOTAL weight at the moment (SUbtotal). If the length of the numeric value (of the accumulated total weight) is more than 5 digits the displayed weight value will occur in two steps.
To cancel the accumulated TOTAL press ENTER/PRINT: If a printer is connected the total NET weight (or subtotal) will print after and along with the **Nº** of weighings, **G**ross weight, and **T**are weight. When the display shows "ZERO", the MODE key is not able to take the total (TOTALIZE) for this step; It will simply flash a "subtotal" and return to 0.0. The Mode function will display the accumulated total only and if nothing has accumulated it reads 0.0.

VERTICAL TOTALIZER (tot S)
This mode prepares a sum for "recipe-batching." Similar to the previous horizontal totalizer, this totalizer proceeds by allowing the weight to accumulate on the scale without unloading the previous "ingredient". When MODE is pressed, the indicated weight is added to the subtotal, and the displayed weight returns to a value of zero. Pressing the mode key again with the same weight on it, will cause the scale to display the subtotal again and then return to zero, allowing the user to verify the weight if the printer is unavailable for instance. This previous value goes into the new tare weight which is also accumulated. Pressing the ENTER key will end this particular Totalizer session and cause the **Total** of the net weights to be displayed and printed.

MEMORY REGISTERS USED FOR HORIZONTAL TOTALIZER (IPC50K model only)
In the **IPC50K** version it is possible to have 10 different total values stored in memory - indicated as numbers between 0 and 9). The user saves these different values in order to keep track of several weighing operations. With a weight on the scale platform, press the keys **F + 5** in sequence ***before*** pressing MODE. The display will indicate *" rn n "* waiting for user to input the desired register N°. Press a numeric key 0-9 (ex. 2), and then MODE, the weight will be totaled in register N° 2. The TOTAL WEIGHT stored in each register can be recalled or reset, the register identification number must be recalled before pressing MODE or PRINT.
NOTE: A selected register remains active for all subsequent totalizer operations until it is replaced by another one. The IPC50K is set automatically on register No. 0 when switched on. Register No. 0 is the basic register where weights are automatically accumulated, user will not see a register # when in this default setting.

PRINTING IN EITHER TOTALIZER MODE (for use with printer only).
If a printer is connected, each pressing of MODE prints the *progressive* ***N°*** *of the weighing*, the **G**ROSS weight, the **T**ARE weight, & the **N**ET weight (which is the difference between the two) and the time and date if selected.
TAKE NOTE: the totalizations are not carried out when the printing modes "PrIN=ALL" and "PrIN=PrPc" are selected (the MODE key does not have any function).
The **N°** of steps for weighing the ingredients can continue in this way until 9999 or until scale reaches its load limit. Between steps, the user just has to wait for zero to show on the display (vertical totalizer only - for horizontal totalizer this means removing the previously weighed ingredient to return to zero). When the user has finished with weighing the ingredients and is ready to print the **Total** Weight, he presses print. Each pressing of PRINT causes the printing of the *progressive* ***N°,*** Total **N°** of weighings, **TOTAL** NET weight, *CODE 1 and CODE 2*, ticket number (if enabled in the ntlk step of USER SETUP) and the time and date.
TAKE NOTE: if the "PrIN=ALL" mode **(TECH.MAN.REF.)** is selected the "PRINT" key does not work.

N.B.: the data in italics are printed only in the IPC50K version

CAUTION: the totalizer values are reset when the instrument is turned off.

PCS COUNTING (COUn)
Similar to standard mode, has the ability to count pieces placed on the scale, or in a container on the scale, by measuring only a small sample of the total, thus saving the user a good deal of time.

1) Place the empty container on the scale and press TARE to zero the displayed weight.
2) Check that the zero is on the display and press the MODE button: The counting function activates and the display asks the user for the quantity of pieces in the SAMPLE (reference value) from. In this step all LEDs are off except for the NET LED and the display will flash the following possible options: 5, 10, 20, 50,100, 200 in the 2-3 digit spaces on the right.
3) Press MODE the number of times needed to reach the desired sample size. Record it by pressing enter.
4) Put the quantity of pieces chosen for the SAMPLE on the scale and press ENTER to record it. The display will indicate SAMP and the IPC50 will calculate the **P**ieces' **M**edian **U**nitary (**PMU**). The PCS LED will light and indicate the quantity selected put on the platform.
5) Then, add the rest of the items to count in the container: The total or PCS value will appear on the display.
6) Unload the scale, the PMU will remain stored in memory for the next counting of like pieces (no new SAMPLE operation is required). In this case, check the 0 PCS indication on display (and press the TARE key if it isn't zero).

NOTE: After the PCS counting step has been completed, and a value of PMU stored in memory, by pressing MODE one time the WEIGHT of the pieces will be displayed. Pressing MODE a second time will display "**PMU=**." To see the value of PMU that the instrument has recorded, press ENTER two times. The first time ENTER is pressed the first 6 digits of the unit weight value will be displayed: only the digits before the decimal place (00000.00000). The second pressing will display the digits of the unit weight values after the decimal place(00000.00000). To re-enter into counting press MODE again, the display will indicate: "- S – CP." Press ENTER to confirm (the PMU will still be the previously calculated value).
By pressing MODE, at anytime, it is possible to set up a new reference quantity: if a previous PMU is already active, the display will indicate: "- S - CP": press MODE to acquire a new reference like to what described in point 2). During the REFERENCE calculation, ZERO key assumes escape function, to return in WEIGHT mode.

PCS COUNTING UNLOAD METHOD

1) Place a FULL container on the SCALE, zero the weight with TARE, and press MODE to select the desired Sample size.
2) Take off the same quantity of pieces as selected for the SAMPLE value and press ENTER to confirm. The display will indicate SAMP while the IPC50(K) calculates the median unit weight (PMU). The PCS LED will turn off and the display will indicate the negative selected quantity.
3) Continue removing pieces, and the quantity taken off will appear on the display.

MINIMUM WEIGHT OF THE SAMPLE

In order to achieve high accuracy in the PMU's calculation, the Reference quantity's weight can not be less than a value determined by the instrument's software. In such a case, after pressing ENTER, the display will indicate: " *CP - L* " and the quantity will not be accepted. Press ZERO to cancel this alarm status and repeat the procedure with a sufficient quantity.

VARIABLE SAMPLE SIZE (REFERENCE QUANTITY)

In the **IPC50K** which has the extended keyboard it is possible to insert directly by keyboard any reference quantity (not only the quantities proposed by the MODE key). With the value 0 displayed or after any tare operation, press "**F**"+ "**5**"; the display will indicate *"FU n - n S"* (N° of PCS in SAMPLE) and then *"00000"* or a quantity already stored. Accept the current value or insert the correct size of your sample using the numeric keys, then load the quantity of pieces selected in your SAMPLE onto the scale, and press ENTER as described in point 4 of PCS COUNTING section.

ENTERING A KNOWN PIECE'S MEDIAN UNITARY WEIGHT (IPC50K version only)

It is possible, if the value is already known, to insert the Piece's Median Unit weight using the keyboard. This ability can significantly speed up the reference operations. With the displayed value 0 and after any tare operation, press "**F**" + "**6**"**,** the display will indicate *"FU n + PMU "* and will then flash *"00000"* or a previously entered value. If the viewing is over the maximum number of pieces (199999), an overload will be signalled on the display (¯ ¯ ¯ ¯ ¯).The units of measures can be in g, kg, t, or lb depending on the units chosen in Configuration.

NOTE: In accordance to the capacity of the scale, only some digits may be flashing. The number of flashing digits corresponds to the number of digits **after** the decimal point depending on the measuring unit is set at. Therefore, the median unit weight must be inserted in fractions, replacing the flashing digits with the corresponding digits. It is also critically important that the user knows what unit of weight the scale is configured in first, and enters the PMU in the same kind of units.

EXAMPLES:

A) UNIT OF MEASURE OF THE SCALE is kg
If you see "***00000***" (5 zeros *flashing*), it means: 0.00000 kg; thus to insert a PMU of .95g or .00095 kg type **9, 5, & ENTER.** ***00095*** = .95 g = 1 PMU

B) UNIT OF MEASURE OF THE SCALE is kg:
If you see "00***000***" (3 zeros *flashing*), it means: 0.000 kg; thus to insert a PMU of 1g or .001 kg, type **1 & ENTER.** 00***001*** = 1 *g* = 1 PMU

Press ENTER to confirm and load the pieces to count as described in section PCS COUNTING point 5.

VIEWING THE PMU (**P**ieces' **M**edian **U**nit)
After carrying out the reference operation it is possible to view on the display the calculated PMU or the one inserted manually (only on IPC50K model). While the scale shows the number of pieces, if one presses MODE, the display shows the WEIGHT on the weighing system; when one presses MODE again the PMU= is displayed. At this point by pressing ENTER once, the digits before the decimal place are shown, while pressing ENTER a second time the digits after the decimal place are shown.
For example, if the unit of measure of the scale is kg, after carrying out the reference operation, by pressing MODE twice the display shows PMU=; if one now presses ENTER the digits of the PMU before the decimal place are shown, 0 for example; by pressing ENTER again, the digits after the decimal place are shown, which could be 60000 for example; in this case the PMU, or the weight of each piece is 0.60000 kg. To return to the counting function, press MODE (or ENTER) again: the display will show "- S – CP"; now press ENTER to confirm and return to the counting function with the same PMU previously calculated.

PRINTING UNDER COUNTING MODE
If a printer is present, pressing the ENTER/PRINT key will print the values of **G**ROSS weight, **T**ARE weight, **N**ET weight on the scale, the Quantity of PIECES (**PCS**) on the scale, plus the **PMU** (calculated or user entered) in kg, g, t, or Lb.
On the IPC50K version, COD.1 and COD.2, and the ticket number are also printed (if enabled in the ntlk step of the USER SETUP)

NOTE: If ENTER/PRINT is pressed with the scale in weight mode (for instance by pressing MODE to exit counting mode), only the values of **G**ROSS weight, **T**ARE weight, **N**ET weight on the scale will print.

USING THE DP190 PRINTER WITH THE IPC50'S OPTIONAL BATTERY

When the IPC50 is connected to a DP190 printer that has a "BATTERY SWITCH" both are battery powered. For power saving reasons the printer is in STAND-BY and powered only when in use. When printing is finished the DP190 returns to STAND-BY automatically.

In order to replace the paper or perform other printer maintenance you must deactivate the power saving feature in one of two ways:
The first way is to simply press the Zero key for 5 seconds or until the message "St on " appears on the display; this forces the printer to stay on and allows the feeding of paper, the changing of the date and time (on the IPC50K only), or other maintenance. Simply press any key to return the normal STAND-BY state.
The second way to deactivate a printer (on a IPC50 or IPC50K with the DP190 printer attached) is to utilise the Printer Setup, or "PrMO", section of the USER SETUP. During the USER SETUP procedure (described in more detail on page 14) the user selects the PrMO step, step 3 , with the ZERO key then presses ENTER. This puts the user in printer setup mode. Using the TARE key, scroll until "Pron" is seen on the display, then press ENTER. This leaves the printer on always, when the indicator is. The operations of maintenance can now be performed. To exit this state, the user must repeat the operation and select "PrES" with the TARE key, then ENTER.

EXAMPLES OF IPC50 PRINTING WITH DP190 PRINTER

WEIGHING NR.	0001
GROSS	0,742 kg
WEIGHING NR.	0002
GROSS	3,442 kg
TARE	1,322 kg
NET	2,120 kg
WEIGHING NR.	0002
TOTAL NET	2,862 kg
TICKET NR.	00002
10:30 08-01-02	

Totalizer Mode
(tot o, tot s)

GROSS (HOLD)	3,326 kg
TARE(HOLD)	1,364 kg
NET(HOLD)	1,926 kg
11:24 08-01-02	

Hold Mode
(HLd)

GROSS	5,454 kg
TARE	1,364 kg
NET	4,090 kg
TICKET NR.	00001
10:16 08-01-02	

Standard Weight Indicator Mode
(UISS, Std, ntgS)

GROSS	1,480 kg
TARE	0,846 kg
NET	0,634 kg
PCS	221
PMU	0,00287 kg
11:42 08-01-02	

Piece Counting Mode
(COUn)

GROSS (PEAK)	1,708 kg
11:42 08-01-02	

Peak Mode
(PIC)

Calibration indicator / load cells

INDEX

REQUIREMENTS FOR AN EFFECTIVE INSTALLATION

This instrument conforms to IP 54 standards; in order to obtain the best results it is recommended to install the indicator and the platform (or other load receiving device) in a room under the following conditions:

Flat, level, stable support surface isolated from vibrations, dust, and corrosive vapors.

Moderate temperature and humidity (15-30°C and 40-70%). No large air draughts.

Main power supply restricted to within + 10% ÷ - 15% of the rated voltage.

CONNECTION TO TRANSDUCER(S)

After installing the platform or load receiving device, its load cell cable must be wired to the circuit board of the weight indicator (6 fig. 1 Installation section). **Qualified personnel must perform this** (see section on connections of IPC50 and IPC50K terminal boards)**. The IPC50 is typically sold with a platform connected to it, so it is ready for use (without this step**). If the weight indicator is a Legal for Trade version for table mounting, the access to the connection will be bound by seal of legalisation, 1 figure1 (Installation section). If the connection is not sealed, like in the case of the IPC50P model for panel mounting, the load receiving device will have an identification label that shows the indicator it is connected to.

After having carried out the installation and set-up of the platform (or the transducer(s)) - following their related instructions - the cable, which is screened from electromagnetic interference, connects the platform (load cells) to the weight indicator through the rear entry marked 6 on figure1.

Technical Note: on the external power cable, on the battery cable (near the terminal on the CPU card), and on the connection cable to the load receiving device (near the cable entrance of the instrument) some ferrite rings are installed or, at times, supplied together with the instrument to reduce possible radio frequency disturbances.
All cables must be wound at least once around the ferrite ring before being connected to the terminal board; the cable screen must be left outside of the ferrite and should be connected to the relevant ground pin.

Authorized Personnel Only

TECHNICAL CONFIGURATION (SETUP ENVIRONMENT)

Entering the CONFIGURATION or "ConF" mode of the IPC50 allows to browse through a menu where it is possible to select all of the instrument's operating parameters or functions. It is composed of several steps. To enter into CONFIGURATION keep the ZERO key pressed while turning on the instrument with the ON/OFF key: Release ON/OFF when the display shows "on." Release ZERO when the display shows "ConF." Then press the ZERO key and the DKW(K) will display a 5 digit number, representing the version and release of the EPROM firmware. Press the ZERO key again to pass to the first parameter on the menu (a number that might vary with the load on the scale).

NOTE: During the "ConF" mode the METROLOGICAL FUNCTIONS ARE normally NOT ENABLED. To enable them, open the instrument and activate the special microswitch (see IPC50 CONNECTIONS), and then turn it on. If the instrument is LEGAL FOR TRADE one must first remove the legal seal on the front panel (see INSTALLATION section -1 fig.1-).

In the following description, the steps with METROLOGICAL FUNCTION are indicated by an asterisk **(*)**

In the Set-Up condition, the instrument keys allow the user to perform the following functions:

ZERO	Scrolls the programming steps in sequence.
ENTER PRINT	Dual function: 1) "Enters" into the editing of the parameter selected with ZERO. 2) Stores the modifications just performed during the current step and passes on to the next step.
TARE	Dual function: TARE is used to scroll the configurable values while in the current step, and is used to increase a numerical value of a digit selected with MODE key
MODE	Allows to select a numerical value which one wants to change (blinking digit). Use TARE to increase the value.

Function of each step (!) Indicates the default value

99999

Displays the converter's points. It is useful for checking that the connection to transducer(s) is operating correctly. A correct operation will have a value greater than 0 with no load applied, and less than 65535 with the weight at full scale (scale's capacity). Press the "ZERO" key to pass to the following parameter.

WARNING: THE FOLLOWING OPERATIONS ARE TO BE CARRIED OUT ONLY DURING THE INITIAL CALIBRATION OF THE WEIGHING SYSTEM (otherwise the weighing system must be recalibrated).

1) In case the point value is equal to zero, carry out the calibration of zero through step tP 0 and check again the converter value with the unloaded scale.
2) In case the point value is equal to 65535 (at full scale capacity) go to step "Gain", choose a lower gain than what has been set; then go back to the step and check that the point value of the full scale capacity is under 65535. If isn't, repeat the operation.

ddFS (*) SCALE CAPACITY

This sets the capacity of the scale. Press ENTER and the display will indicate the stored value **(NOTE: the decimal point position will depend on the following step)**. Press TARE or MODE to scroll through the available choices ("*1000, 1500, 2000, 2500, 3000, 3200, 4000, 5000, 6000, 6500, 8000, 10000, 12000, 15000, 20000, 25000, 30000, 35000, 40000, 50000, 60000, 100000, 120000, 150000")*, pause on the value you wish to select, then key ENTER to select, confirm, and move to the next step. Units of measure chosen later.

dECI (*) DECIMAL POINT POSITION

This step moves the position of the decimal point in the Scale Capacity value chosen from the previous step. (For example, the Scale Capacity value "150000" would become 15000.0, 1500.00, 150.000, or 150000 depending on which of the values: "*100000, 1.0, 1.00, or 1.000"* was selected respectively). The zeros shown after the decimal point indicate the number of digits after the decimal point. The value "*100000"* selects "no decimal point". Press TARE or MODE to scroll through these available choices. Press ENTER to select and move to the next step.

ddES (*) DIVISION SIZE

This step sets the numerical "gap" between two consecutive values of displayed weight. The actual value of the Division Size will depend on which decimal point setting was selected. E can be *1, 2, 5, 10, 20,* or *50 and* the Division Size will be in the format: "E", ".E," ".0E," or ".00E" (corresponding to the order of the decimal point chosen in the previous section). For example, if the Decimal Point Position is 1.000 and E is 50, then the value of the Division Size will be ".050." This is surely sensitive enough for a 1500.00 kg scale, but on a 15.0000 kg scale it may not be. Therefore, be careful in selecting a value that gives enough sensitivity but results in a value of 30000 or less when divided into the value of the full scale. Select the desired value from the list above using the TARE key and confirm it with ENTER. The units of measure will be the same as those in the Scale Capacity Section and will depend on what is chosen in the "UnIt" step following in a few steps.
NOTE: THE MINIMUM SCALE DIVISION SETTING WILL DEPEND ON THE PREVIOUS TWO STEPS. Ignore the position of the decimal point during this step. However, if:

(Scale Capacity with decimal point inserted) ¸ (Division Size) ^{3} **30000** then,

the desired Division Size will not be available resulting in an error in the Scale Capacity step of "ConF" and it is not possible to proceed with the configuration of the following steps. At this point the instrument will automatically change the division size so that the resulting value is ≥ 30000 and will position itself on the division size digit in case one wants to change the one chosen automatically.

ddMr (*)DUAL RANGE FUNCTION

A user can program the scale to have a threshold, defined as a value of GROSS weight beyond which, the scale adjusts in increments of the next higher division than it did at first. Below this level the scale is in "W1 range". When the load on the scale goes above this threshold, it is said to be in the "W2 range". In dual range mode the system switches automatically between the two scales when the threshold is exceeded. To return to the smaller division, unload the scale which brings the weight value of the scale to Zero. **(!)** The default value is "00000" and indicates that this function is disabled. To enable this function change the value on the display from "00000" to the desired level.

Example - Set a scale with Scale Capacities of 15 kg 5 g and with a threshold of 6 kg :

ddFS = 15.000 *ddES* = 2 *ddMr* = 6.000

0n-0 (*) AUTOZERO AT SWITCH ON

Enables (*AUtO*) or disables (*FrEE*) the ability of the instrument to acquire a gross zero automatically when the instrument is first switched on. When enabled the "*AUtO*" zero will perform its "Zeroing" if the weight value on the scale is less than +/- 10% of the maximum capacity. **(!)** The default value is *AutO.*

tIM0 (*) ZERO TRACKING TIME

The instrument periodically recalculates the zero when its variation does not exceed half the minimum scale division. This step sets the length of time after which a new zero can be automatically taken. It is possible to select values between 0 and 256 in increments of a tenth of a second. **(!)** The default value is 10.

In – Ir (*) TILT DETECTOR ENABLING AND INFRARED REMOTE CONTROL

The functioning of this parameter varies depending on the version of hardware of the indicator. If the inclination surveying device is connected, the tilt detector function can be enabled. In this case weighing is only possible if the scale stays within 2% of horizontal (the maximum inclination from level as defined law). This parameter is also used to enable the infrared remote control, if an infrared sensor is present.

NonE : No selected functions **(!)** Default value.
Inc 1: Tilt detector enabled (only used in cases where the contact of the tilt detector is normally open).
Inc 2: Tilt detector enabled (only used in cases where the contact of the tilt detector is normally closed).
Ir 4: Remote Control enabled allowing the four RC buttons to control the ZERO, TARE, MODE, ENTER/PRINT keys on the keyboard.
Ir 1: The Remote Control has the ability to repeat the TARE key only.

GAin (*) AMPLIFIER GAIN SELECTION

Sometimes it may be necessary to change the amplifier gain. **(!)** Although the default value is "1.0," the user can also select "0.5" or "1.5", "1.7" and "2".

GrAV (*) SELECTION OF THE GRAVITATIONAL ZONE OF USE

The gravitation coefficient varies from location to location throughout the earth's surface; therefore, its value is not a "constant". Because it varies between 9.75 & 9.85m/s², the user has the ability to enter the five digits after the decimal point by first selecting ZONE 06 from the list of 6 available zones. For example if the gravitational value is 9.80123 one digits 80123. (The other 5 Zones on this step of the instruments configuration are only valid for their corresponding locations within Italy - when selected, they automatically correct for variances in weight values due to differences in gravitational attraction). Because the values of these Zones are very unlikely to represent actual values in your location we suggest you obtain and enter the one for your area or an average of 9.8 m/s². In the IPC50K the data is entered through the numerical keys, while in the IPC50 one needs to press the MODE key to select the digit to be modified and the TARE key to change the flashing digit. In the IPC50K by pressing C once the value displayed is zeroed, while pressing C again one exits the step without modifying the gravitational value.
On legal for trade instruments this value can not be modified only read.
(!) The default value is "Zo 01".

n tP (*) CALIBRATION POINT SELECTION

Number of calibration points: 1 or 2 to make the weighing system linear, if necessary. This allows the user to optimise the performance of a weighing system with a slight case of non-linearity.

tP 0 (*) (flashing) ZERO CALIBRATION

While the balance is without loads, press ENTER to perform the balance ZERO calibration. This function is useful in new calibrations or when a new weighing module is connected.

ddtI (*) 1ST CALIBRATION POINT SETTING

This step allows the user to enter the actual value of the reference weight that will be used for the 1st calibration point. Use the MODE and TARE keys to select and confirm with ENTER.

tP I (*)(flashing) 1ST POINT CALIBRATION

Place a reference weight on the platform of the same value as the one programmed in the previous step "ddtI." Wait for stabilisation of scale, then confirm the calibration with ENTER.

ddt2 (*) 2ND CALIBRATION POINT SETTING (if *ntP =2*)

This step allows the user to enter the actual value of the reference weight that will be used for the 2nd calibration point. Use the MODE and TARE keys to select and confirm with ENTER

tP 2 **(*)** (flashing) **2ND POINT CALIBRATION**

Place a reference weight on the platform with a value equal to the one programmed in the previous “ddt2” step. Wait for stabilisation, then confirm the calibration with ENTER.

NOTE: If only one calibration point was set, steps "*ddt2*" and "*tP 2*" will not be available. If 2 calibration points were set, the second one must be greater than the first one. For more reliable operation, calibrate the scale with a weight of at least 50% of the scale’s maximum capacity.

CAUTION: The steps of converter data acquisition (tP 0, tP 1, tP2 and CAL 0) require a few seconds to achieve stability on the scale; wait until the next step appears on the display before proceeding.

CAL-0 **(*)** (flashing) **ZERO CALIBRATION**

This step is useful only for recalibrating the ZERO point when a permanent weight-tare is added to the platform (such as a roller way). Position the new fixed tare and press ENTER.

UnIt **(*) MEASURE UNIT SELECTION**

Allows user to select which unit of measure will be used with the scale so that the correct inserts can be added to the keyboard and so that the displayed weight and the code match the weight value printed: *g / kg / t / Lb.* **(!)** *kg*

M0dE **FILTERING – DISPLAYING MODE**

The 9 possible programmable values are the following:

HI-**1** HI-**2** HI-**3** = maximum immunity to vibrations, the display changes slower, but with longer gaps.

HS-**1** HS-**2** HS-**3** = middle filter, continuous variations of the weight. **(!)** *HS-2* is the default value.

L0-**1** L0-**2** L0-**3** = light filter the displayed value changes continuously - not recommended in weighing systems with over 3000 divisions of resolution.

The numbers **1, 2, 3** after the filter type indicate its effectiveness from weakest (1) to most effective (3).

DInA **DYNAMOMETER MODE**

Applications such as crane scales, have particular requirements for obtaining stability and countering the tendency to change the value of weight displayed.

“DInA 0”: Dynamometer operating mode disabled. **(!)** This is the default value.

“DinA 1”: Dynamometer operation mode enabled.

PrIn **PRINTER SETUP**

This feature enables or disables the printer

ALL = continuous transmission of the weight on the one-way serial output in the standard format of the transmission protocol (useful for connecting IPC50(K) to PC when bi-directional serial output is already in use).

Pr-PC = transmission when the Print key is pressed of the weight data on the one-way serial output in the standard format of the transmission protocol.

LP542 = enables to print with labelling machine LP542 (label size 58 x 53 mm). Prints normal data and characters size can be change only for the heading.
When this option is selected steps ‘PMCO’, ‘bAUd’ and ‘blt’ are not available because they are automatically set for LP542. The LP542, labelling machine, needs to be plugged-in to the Serial Output 1, a bi-directional connection (refer to SERIAL OUTPUTS chapter).

Pr - n0 = disables printer. **(!)** Default value is “Pr-no”.

Pr - LtI = enables printer to use normal height characters.

Pr – Lt2 = enables printer to print date/time and normal height characters.

Pr - Htl = enables printer to print double height characters.
Pr - Ht2 = enables printer to print date/time and double height characters.

PcMO DATA TRANSMISSION MODE

This step is used to select the data transmission mode on the BI-DIRECTIONAL serial port.

OndE = *transmission on external command.* **(!)** Default value.
rIPE4 = *transmission to 4 digit remote display.*
rIPE6 = *transmission to 6 digit remote display*.
Prin = *transmission when the print key is pressed.*
ALL = *continuous transmission.*
StAb = *transmission at each weighing operation..*

bAud SET BAUD RATE

Use this step to select one of the following Baud rates for the BI-DIRECTIONAL serial port:
150/300/600/1200/2400/4800/9600 Baud. **(!)** *9600* is the default value.

bIt STOP DATA BIT

This is used to select one of the following communication protocols:
N-8-I / N-8-2 / N-7-2 / E-7-I / E-7-2. **(!)** *N-8-1* is the default value.

LAn9LANGUAGE OF PRINTINGS

Use this StEP to select the language of printings: *ItAL* = italian, or *En9L = english*
(!) *ItAL*

rEMK REMOTE KEY ACTIVATION

By selecting *KYES* the remote key function is activated; with an optional card it is possible to remotely activate the following keys: ZERO, TARE, MODE and ENTER/PRINT. **(!)** *KnO*

L0Ad (flashing) DATA STORAGE AND CONFIGURATION MENU EXIT

Once all the configuration operations have been set or modified, in order to save these, one needs to select this step and press ENTER. This is the only way to save the data changed and to return to normal work mode.

CALIBRATION WITH REFERENCE WEIGHT

If in a IPC50 it is necessary only to calibrate the instrument, follow this procedure:

- Enter in CONFIGURATION in the same way as described above.
- Press the ZERO key until indicator's display shows the "***n tP***" *step.*
- Set the steps: ***n tP, tP 0, ddtI, tP I, ddt2***, ***tP 2*** as described above***.***
- Press ZERO key until "**LOAd**" is displayed then push ENTER to save the changed data and to return to normal operating mode.

ZERO CALIBRATION

If in a IPC50 it is necessary to perform **only** ZERO calibration, follow the procedure below:

- Enter into CONFIGURATION (in the same manner as above).
- Press the ZERO key until the the indicator's display shows **CAL-0.**
- Set the step **CAL-0.**

Press ZERO key until "**LOAd**" is displayed then push ENTER to save the changed data and to return to normal work mode.

INDICATION AND VISUALIZATION FOR THE GEOGRAPHICAL ZONES OF USE -"g" VALUES -(COMPULSORY for legal for trade instruments used in Europe)

Since scales are g-sensitive instruments they are required to be coded (indicated by a special label) with a "Zone of use" denoting a relevant "g" value (coefficient for gravitational acceleration) for that specific geographical location. When the European legal for trade versions of the IPC50 is turned on, it displays the firmware version, the capacity, the graduations, then **the codified zone of gravity** (for 5 sec). It is also possible to recall the zone, by the following procedure:

1. While holding "ZERO" turn the IPC50 ON until "ConF" appears on the display.
2. Press "ENTER": the codified denomination of the zone of use will be displayed.
3. To exit from this visualization of the zone, and to return to standard scale mode, press "ZERO" more times to display " LOAd ": then press " ENTER".

Because the weight values measured by these instruments are affected by the coefficient of "g" for gravitational acceleration of the zone of use, the IPC50 comes with a feature that allows the user to compensate for the differences of gravitational attraction between the calibration place and the place of use. During calibration the values for the calibration zone are programmed in a specific step. If the instrument has to work in a different geographic zone, than it's original one, it's necessary to modify it, by configuring the relative parameter. This avoids error in weight values from different forces of gravitational attraction.

NOTE: TABLE 1 below contains the correspondence between the zones of gravity, their associated values of "g" and the maximum number of divisions in case the instrument has already been configured and the user wishes to know which value of "g" the instrument has. This information is supplied for reference purposes only. In actual practice instruments will be calibrated prior to delivery to the end user with a value of g relevant to their geographic location. This was done by choosing "Zon 6" in Configuration and entering the specific value of g to 5 decimal places. See GrAV in of Configuration.
When the legal for trade version is turned on, after the type of software, capacity and minimum division, the gravitational zone of use is viewed for 5 sec.

TABLE 1 – Zone codes with associated g value (European Legal for Trade Scales)

code on the IPC50	g associated	divisions (max) III
Zo 01	9,80655 m/s²	**3000**
Zo 02	9,80237 m/s²	
Zo 03	9,80129 m/s²	
Zo 04	9,79819 m/s²	
Zo 05	9,80375 m/s²	
Zo 06	Manually enter "g" value	

SERIAL OUTPUTS

Serial outputs 1 and 2 are both in ASCII code, compatible with a wide range of printers, remote displays, PCs and other devices.

SERIAL OUTPUT 1: RS232 bi-directional (full-duplex) for connections to computers. Available Baud rates are: 150, 300, 600, 1200, 2400, 4800, 9600.

CONNECTIONS FROM PC TO INDICATOR

	PC 9pin (male)	**PC** 25pin (male)	**IPC50** Serial line	**CABLE** STANDARD
RX	2	3	1 TX	Pink
TX	3	2	2 RX	Yellow
GND	5	7	4 GND	Grey

CONNECTION FROM LP542 TO IPC50

	LP542 9pin (female)	**IPC50** Serial line	**CABLE** STANDARD
RX	3	1 TX	Pink
CTS	8	NO CONNECTED	Brown
GND	5	4 GND	Grey

The data transmission can be configured in 6 various modes:

TRANSMISSION WITH EACH WEIGHING: The value of the weight is automatically transmitted, even without pressing ENTER/PRINT key, every time that weight reaches a stable state (LED " ~ " goes off).

TRANSMISSION UPON EXTERNAL COMMAND: Indicator sends data upon request from PC, PLC, or other instruments (see technical section). The transmission may be requested anytime without limits.

CONTINUOUS TRANSMISSION: This mode, used with computers, remote displays and other devices, provides a continuous monitoring of weight data, with or without weight stability.

4 OR 6 DIGIT REMOTE DISPLAY TRANSMISSION: The weight data transmitted on serial line is received by a weight repeater in 4 or 6 digits.

TRANSMISSION WHEN THE PRINT KEY IS PRESSED: The transmission of the communication string (see transmission Protocol) takes place when the “PRINT” key is pressed. The printing takes place depending on how the “rlAt” parameter is set in the USER SET-UP (unloading the platform by bringing the weight value on the scale to zero or through weight instability).

SERIAL OUTPUT 2: (DATA OUTPUT ONLY FOR TTL / RS232 PRINTERS)

Transmission is activated by pressing the print key on the indicator (print requested by user). The print command is disabled if the weight is unstable and in other conditions of invalid data. It is possible to program the continuous weight transmission of data by the step PrIn (Printing enable) in the CONFIGURATION for PC or PLC connections. The transmission protocol is 1200 rate Baud, n-8-1.

CONNECTIONS FROM DP190 PRINTER TO INDICATOR

DP190 Terminal Board	**IPC50** Serial line	**CABLE** STANDARD
GND	4 GND	Grey
RX	3 RX PRINTER	Pink

CONNECTION OF SERIAL OUTPUTS AND CONFIGURATION REQUIRES INFORMATION ABOUT PROCEDURES AND USER'S REQUIREMENTS.

TRANSMISSION MODES

SERIAL PORT 1
Data can be transmitted from the serial port 1 in **6** ways, depending on Configuration during the *PcMO* step.

Continuous weight transmission (*"ALL" option*)
The instrument transmits data with each converter read operation:
With Baud rate at 9600 one can obtain up to 11 transmissions per second.
With Baud rate at 4800 one can obtain up to 9 transmissiosi per second.

Weight transmission at each weighing operation (*"StAb" option*)
Each time a weight on the scale becomes stable, a communication string is transmitted on the serial port 1 (see TRANSMISSION MODES)
For non legal for trade instruments:

The transmission takes place when the weight is stable and the net is > 0.

For more transmissions one must unload the platform by bringing the weight value on the scale to zero

For legal for trade instruments.

The transmission takes place when the weight is stable and the net is > the Min (20 divisions).

For more transmissions the net must go under the Min.

Weight transmission requested from an external device (*"OndE" option*)
In this case the IPC50 must receive one of the three following commands from an external device before transmitting:

Read command:	"READ" + CR + LF
Tare command:	"TARE" + CR + LF
Zero command:	"ZERO" + CR + LF

The Read command transmits the weight, while the Tare and Zero commands are the same as those available on the keyboard.
With Baud rate at 9600 one can carry out up to 9 requests per second.
With Baud rate at 4800 one can carry out up to 8 requests per second.

4 – 6 digit remote display transmission (*rlPE4 – rlPE6*)
The weight displaying takes place both normally in the IPC50(K) as well as in a weight repeater of 4 or 6 digits, (normally the capacity will be properly set up for a correct displaying).
N.B. When either transmission mode is selected, the serial port is automatically set to 4800, N – 8 – 1.

Transmission when the print key is pressed (*Prin*)
The instrument communicates the weight data through the serial port 1 when the "PRINT" key is pressed. This command is rearmed depending on how the "rlAt" parameter is set in the USER SET-UP (unloading the platform by bringing the weight value on the scale to zero or through weight instability).

Transmission protocol: The weight data is in the format:
"hh,kk,ppppppppp,uu" + CR + LF

where:	hh =	UL	Underload (exceeds negative weight limit)
		OL	Overload (exceeds weight limit)
		ST	Stability (weight stable)
		US	Instability (weight not stable)
	kk =	NT	Net Weight
		GS	Gross Weight
	ppppppppp =	8 ASCII digits (including any sign and decimal point) which identify the weight	
	uu =	Unit of measurement "kg" "g" "t" "lb"	
	CR =	Carriage Return	
	LF =	Line Feed	

If a TARE WEIGHT has been entered, the weight transmitted is the NET WEIGHT; while if not, the GROSS WEIGHT is transmitted. The instrument displays OVERLOAD (¯ ¯ ¯ ¯) when the gross weight is over the full scale capacity + 9 divisions (9e). For example a scale with a capacity of 6000 kg and a division of 1 g, the weight is in OVERLOAD when the gross weight is over 6.009 kg (6.000 + 0.009). The scale displays UNDERLOAD(_ _ _ _) when there is a negative gross weight on the scale.

In the CONTINUOUS transmission mode through EXTERNAL COMMAND or WITH EVERY WEIGHING, the string transmitted from the indicator is relative to the weight displayed:

GROSS WEIGHT DISPLAYED	**TRANSMITTED STRING**
UNDERLOAD	UL, GS,-0000000,uu+CR+LF where 0000000 are 7 zeros or 6 zeros + the decimal point of the scale.
NEGATIVE WEIGHT	hh,GS,-ppppppp,uu+CR+LF
WEIGHT ≥ ZERO AND < OVERLOAD	hh,GS,ppppppppp,uu+CR+LF
OVERLOAD	OL,GS,00000000,uu+CR+LF where 000000 are 8 or 7 zeros + the decimal point of the scale.

NET WEIGHT DISPLAYED	**TRANSMITTED STRING**
UNDERLOAD	UL, NT,-0000000,uu+CR+LF where 0000000 are 7 zeros or 6 zeros + the decimal point of the scale.
NEGATIVE WEIGHT	hh,NT,-ppppppp,uu+CR+LF
WEIGHT ≥ ZERO AND < OVERLOAD	hh,NT,ppppppppp,uu+CR+LF
OVERLOAD	OL,NT,00000000,uu+CR+LF where 0000000 are 8 or 7 zeros + the decimal point of the scale.

SERIAL PORT 2 This port is only available in RS232 output.
The transmission protocol is fixed at: 1200 rate Baud, n-8-1

IPC50 BATTERY INSTALLATION

Necessary materials:

- 6v 4Ah lead storage battery.
- Bracket for the battery with relative washers and nuts
- 7mm socket driver or adjustable wrench
- cable to connect the battery to the IPC50.

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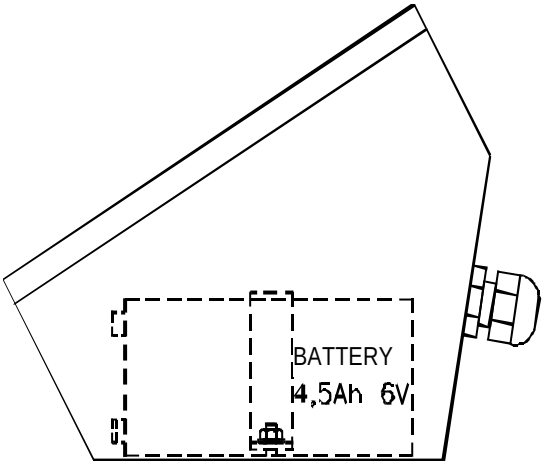
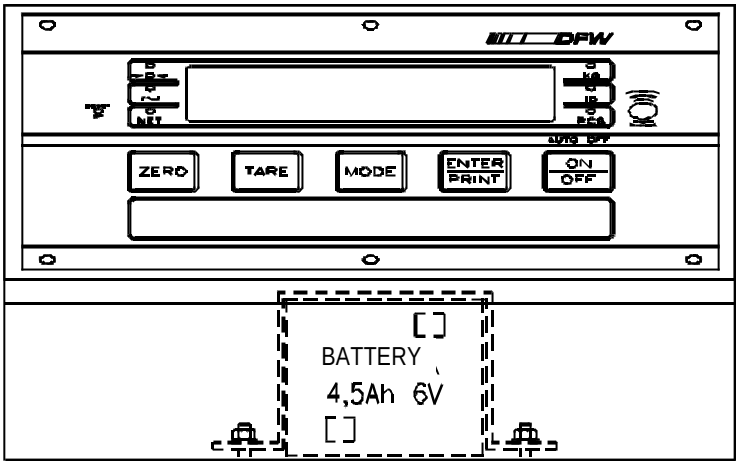




Do not remove the front panel with weight indicator connected to power supply. Position the battery between the two studs on the floor of the indicator's case, cover with metal strap and clamp battery by tightening the 7mm bolts as shown in the above figure. If the indicator is to be used on moving structures, apply some ribbon adhesive between the case and the battery for added safety. Connect the power supply cable to the battery and the terminal marked VB (for Voltage from Battery) on the IPC50's electronic circuit board (see IPC50 – IPC50K CONNECTIONS), maintain the polarity (red wire goes to the +, black to the -). Pass the cable through the ferrite ring (the same one used for the external power supply) making 1 or 2 turns before connecting to the battery through the special fast connecting insulated clips to the battery terminals. The battery charges when the external power supply is inserted and it automatically powers the unit when the power supply cord is removed.

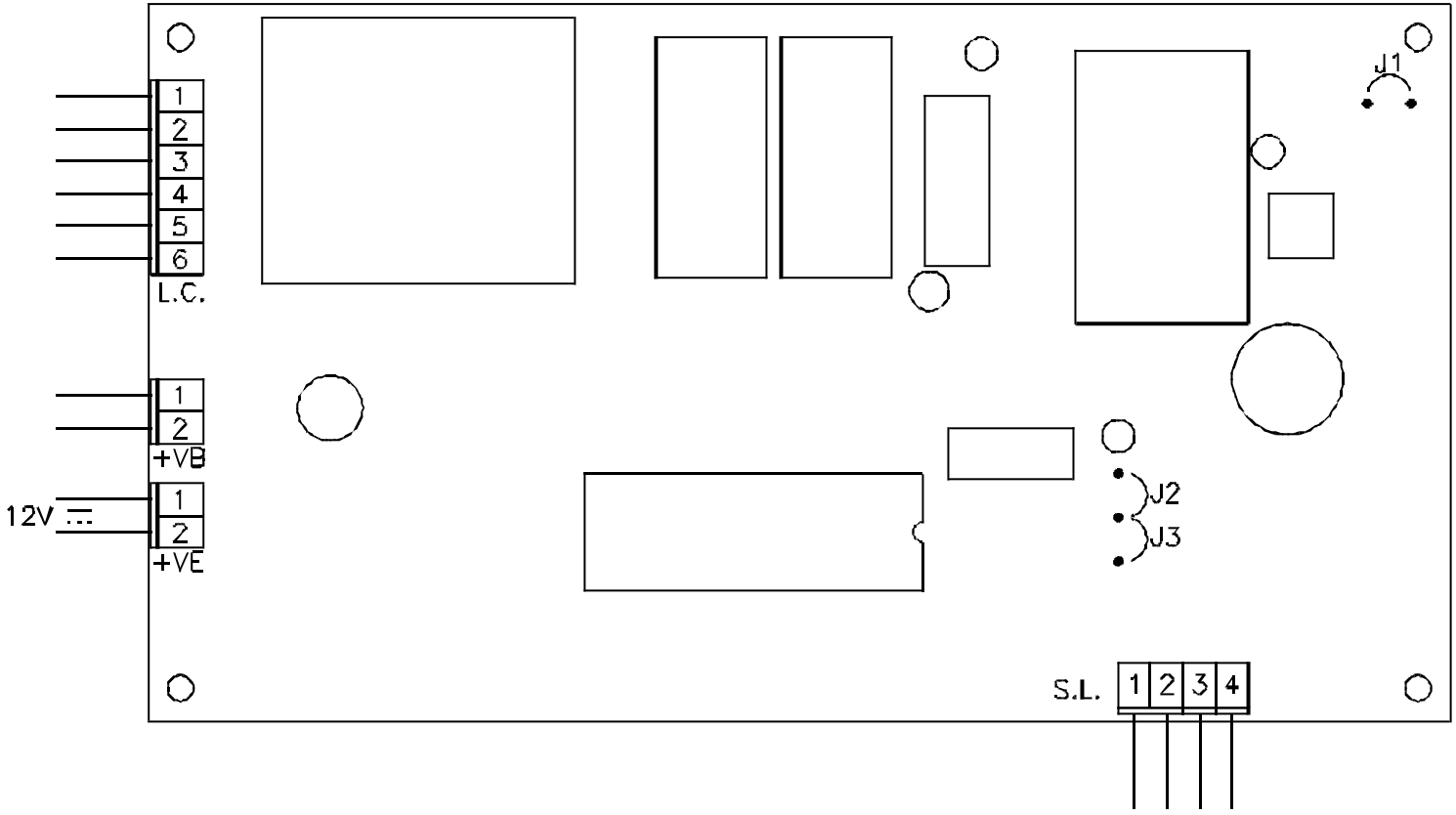
IPC50 TERMINAL BOARD CONNECTIONS

VE POWER 12V ⎓
1 0V
2 +12V

VB POWER BATTERY
1 BATT –
2 BATT +

LOAD CELL
1 SIGNAL +
2 SIGNAL –
3 SENSE +
4 SENSE –
5 EXCITATION +
6 EXCITATION –

SERIAL LINES
1 TX RS232
2 RX RS232
3 RX PRINTER
4 GND



NU-IPC50-E-1203

J1 = WHEN CLOSED, IT ENABLES ACCESS TO METROLOGICAL CALIBRATION OF INSTRUMENT DURING CONFIGURATION.
J2 = SELECTS TTL PRINTER PROTOCOL WHEN CLOSED.
J3 = SELECTS RS232 PRINTER PROTOCOL WHEN CLOSED.

ATTENTION:. +SENSE and +EXCITATION
-SENSE and --EXCITATION
NORMALLY CLOSED DIRECTLY ON THE BOARD FOR USE WITH LOAD CELLS WITH FOUR WIRES

P\831F13 23/03/98