

MATRIX II WEIGHING INDICATOR

GENERAL SPECIFICATIONS FOR WEIGHBRIDGES

- **Alphanumeric weighing indicator** of latest technology with graphic display and **extensive connectivity capabilities, BBDD** for weighbridge and dosing applications.
- **OIML R76 & EN 45501 approved** monorange or multirange, **6000d** at **0,6 μ V/div** and **protected** against electromagnetic **interferences** extended to **10V /m**.

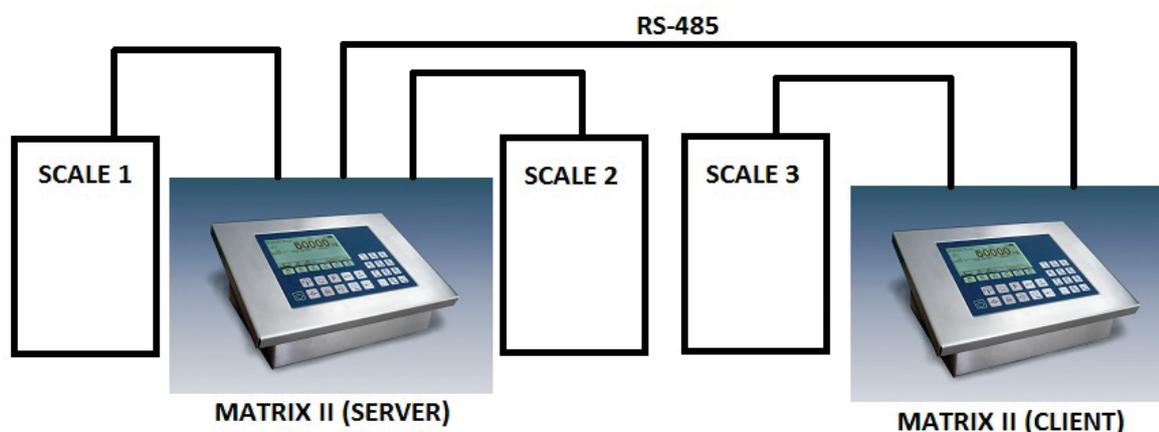


- **Graphic monochrome display of 240x128** pixels with white backlight. The contrast and the backlight levels are configurable from the menu.
- **Alphanumeric keyboard integrated** on front panel with **29 buttons**. There are **6 buttons** that changes his **function** according to the icons in the graphic display.
- **Stainless steel enclosure**, desktop or panel mounting. Optional wall mounting kit.
- **Universal power supply 90-260VAC 50/60Hz and 9.5-28V DC** (power supply or battery). Benefits for EU and USA. The indicator can works without problems in installations with problems in the electrical network.
- Keyboard configuration and adjustment.
- **Analogue and digital load cell versions.**

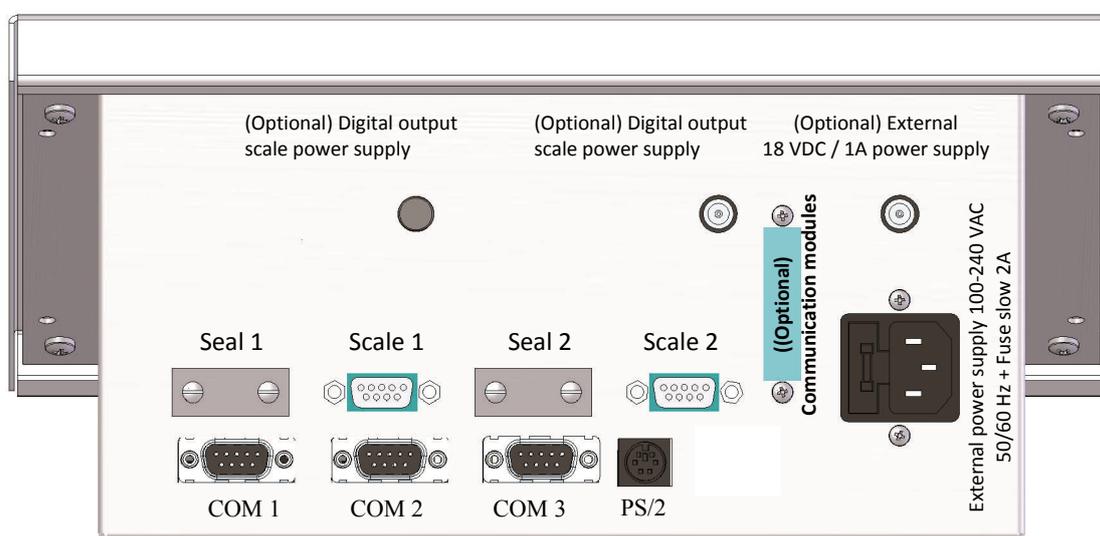
- **Multiple scale inputs: One scale or two scales** (with internal interfaces for analogue and digital load cells), allowing additional third scale through the RS-485.

As shown in the figure of the picture.



Example of connection with a third scale with MATRIX II:


- Clock: **Time and date** with lithium **battery up to 10 years** without power supply.
- **Connectivity:**
 - COM 1 & COM2: **Two RS-232 (Bidirectional)** ports for PC communications, printer, remote display, etc.
 - COM 3: **One RS-485 port.** Networking communications to a PC or repeater up to **1.200m** also can be a part of a communications net up to 32 transmitters.
 - COM 4 (**optional**): **1 additional free port** to extend the indicator to several field buses (RS-232 or RS-485 opto-isolated modules, an optional ETHERNET port, 10Mbit/s with standard connector RJ-45, and future communications modules as Profibus, Device net, Can Open, etc.).
 - Communication with its **optional modules of 8 I/O relay digital, analog outputs (4-20mA, 0-10V, ...)** etc., Using COM 3 or COM 4 up to 15 modules.
 - Digital inputs: Up to 16 digital inputs to assignment of functions by buttons or external signals to tare, clear tare, print, gross/net, change of scale, select scale 1, select scale 2, totalizer, end totalizer and remote.
 - Digital outputs: Up to 16 digital outputs to assignment of alarms, setpoints in gross weight, net, zero status, zero net, stability, weight OK, negative weight, tare, printing, summatory, remote and scale selected.



- **Connection to a remote indicator**, one as a Server (Master) and the other as a Client (Slave).
 - **Speed** transmission up to **115.200 bauds**.
 - Connectors for an external standard PC keyboard (PS/2), accepting Spanish, Portuguese, French, Czech and German keyboard versions.
- **Microprocessor of 32 bits**, the latest generation, fast, modern and powerful, manages the DDBB.
- **Flash memory of 2Mbytes** allows software updating of new applications, versions, via serial port (RS-232). Software to update programs own from Utilcell, without being necessary send the unit to the factory or replace the EPROM memory.
- **RAM memory of 1Mbyte with internal battery. Lithium battery** to keep the DDBB in RAM, up to **10 years duration** with the indicator switched off. **Changing the battery (CR-2032) without soldering**.
- Internal **CPU** connection to **allow approved DSD (Data Storage Device)** memory. In development.
- **Tickets and initial logo totally configurable** by the user with our software for PC.
- **Seals that allow maintenance**: Seal by software, using the internal calibration counter, or mechanical seal, lead or adhesive seal lock switch at the back. Those seals allows changing internal elements of the device (Power supply, displays, keyboard, CPU, drivers RS-232/RS-485) without lose the calibration seal, saving calibrate again the scale. Calibration values are stored in the load cell interface. Where the loads cell connector and the seal is located.
- Configurable languages: Spanish, Portuguese, French, English, Czech and German.
- **Printing** of all the **parameters** of the **device**, by a **printer** or by a **PC**, through hyper terminal.
- **Correction** of the **linearity** with a **parabolic function**, much **more accurate** than the **correction by points**.

SELECTABLE APPLICATIONS:

WEIGHBRIDGE APPLICATION:

- **Software for management of vehicle entrance and exit** in plants, with first and second **weighing control** and **DDBB** that **manages** and **stores** all the **information** (registration numbers, licenses, products, customers/suppliers, entrances/exits, truck pre-fixed tare values, etc.), as well as the **printing** of its corresponding **tickets and listing**.
- **Listings filtered** by **any required field**, date, company, license, first weight, etc.
- **Size of the DDBB**.
Size example of the DDBB:
 - 100 Records for companies
 - 100 Records for products
 - 100 Records for tares & trucks
 - 3008 Records for weights
- **Labels** fully **editable** fields.
- **Sends the DDBB** to a PC through our free software in an **.xls file (Excel sheet)**.
- **Controls** the entrance and exit of the **trucks** with **barriers** and **traffic lights** controlled by the indicator.
- **Filling a truck** at 1 or 2 **speeds** in the control scale with an **automatic in-flight** material **correction**.

- **Possibility of printing any ticket** done before has to be in the DDBB.
- Possibility of **do a simple weight without** being stored in the **DDBB**.
- Standard first and second weight ticket with possibility of customizes programmable tickets.

Examples of standard tickets:

AGRICAMPO, S. A CALLE RAMON Y CAJAL, 7 57730, EL BURGO DE EBRO ZARAGOZA 976. XXX. XXX W. W. W. AGRICAMPO. ES	AGRICAMPO, S. A CALLE RAMON Y CAJAL, 7 57730, EL BURGO DE EBRO ZARAGOZA 976. XXX. XXX W. W. W. AGRICAMPO. ES
----- LICENSE: 5726-BSH TRAILER: COMPANY: X SCALES PRODUCT: CEREAL OPERATOR: JOHN TYPE: SECOND REMARKS: ----- 22/09/09 16:34 1st Weight 11200 kg ----- In order: ----- GRACIAS POR SU VISITA	----- TICKET NUM: 13 LICENSE: 5726-BSH TRAILER: COMPANY: X SCALES PRODUCT: CEREAL OPERATOR: JOHN TYPE: SECOND REMARKS: ----- 22/09/09 16:35 GROSS 47570 kg 22/09/09 16:34 TARE 11200 kg NET OUTPUT 36370 kg ----- In order: ----- GRACIAS POR SU VISITA

First weight ticket

First and second weight ticket

INDUSTRIAL APPLICATION:

- Weight-Tare (gross-net).
- **Piece counting by weight or per unit.**
- **Gross/tare/net and totalizer tickets programmable.**
- **Totalizations** (accumulation of weights with partial and final printing).
- Up to **20 programmable pre-fixed tares**, list, editing and erasing from the DDBB.

DOSING INSIDE THE INDUSTRIAL APPLICATION:

- **Charge, discharge, charge+discharge, charge/discharge, basic charge and basic discharge.**
- **1 product at 1 or 2 speeds** (coarse + fine), with possibility to program **up to 99 cycles**.
- For dosing by charge, control of the in-flight material by an internal algorithm that evolves at every dosing.
- Possibility of initial and final function, for a cycle or process.
- Automated application, frees the PLC, DCS, etc, of the control of the dosing, the indicator can send a digital signal to indicate the end of the process.
- Possibility of dosing by weight or pieces.

- Possibility to configure a wait time between stability signal and end of dosing. That time is used in dosing with high density material, which once the dosing valve is closed, still some material in-flight.

MATRIX II for Analogue Load Cells

- A/D **converter** delta-sigma of **24 bits** (16 millions internal counts).
- **100.000** external **divisions**: 50 readings/sec.
- Sense input to compensate the losses introduced by the resistance of the cable.
- Power up to 8 load cells 350Ω or up to **16 load cells** 700Ω per scale.
- Load cells excitation of 6 VDC.
- Approved for 6000 divisions, 0,6microV/div.
- Possibility to introduce the cero and span coefficient manually.
- Lightning and surge protection.



- **Milivolt pre-calibration**: Allows start-up **without mass calibration** by entering the load cell nominal capacity and nominal sensitivity in mV/V.

MATRIX II for Digital Load Cells

- Independent **power supply** for digital load cells of **18VDC**.
- **Galvanic Isolation** between device and scale to avoid ground and lightning problems.
- **Power up** to **16 digital load cells**.
- **Distance** between the indicator and the scale **up to 1.200m**.
- **Digital pre-calibration**: Allows start-up without mass calibration thanks to the pre-calibration of digital load cells in factory.
- **Automatic** or manual **corner adjustment**. The automatic adjustment **has an assistant to guide the user** through all the process, also makes an **automatic calculation** of the **span**. The manual adjustment allows the user to introduce the span value manually.
- **Protection against short-circuits** in the supply of the load cells.

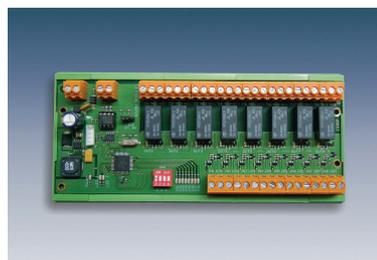


- Lightning and surge protection.
- **Individual diagnosis** for **load cell** and for the **interface**.
- **Tester** to **check** que **individual status** of any load cell.

- **Guided installation** for a **new scale**, for **change** a damage **load cell** and to **change** the **indicator**. Those menus allows the user to make a repair or an installation in an easy and simply way.

ADDITIONAL ACCESORIES:

- PC keyboard
- Matrix-Printer Cable
- Matrix-PC Cable
- **Ampliation 2nd. scale for analogue load cells**
- **Ampliation 2nd. scale for digital load cells**
- Wall mounting kit
- **RS-232 opto-isolated expansion port**
- **RS-485 opto-isolated expansion port**
- **Digital 8 Inputs/Outputs module**
- **Analogue output module: 0-5V, 0-10V or 0-20mA and 4-20mA.** Possibility to adjust the analogue output.



PC COMMUNICATION PROGRAMS

- **BootLoader MATRIX II** –Program to **update** the **software** device.
- **BD_Matrix II_PC**- Program to import the **DDBB** from the Matrix II to a PC in .xls files (**Excel Sheet**).

Example of an importation of the DDBB:

Pos.	DATE 1 st WEIGHT	DATE 2 nd WEIGHT	1 st WEIGHT	SCALE	2 nd WEIGHT	SCALE	LICENSE	PRODUCT	COMPANY
1	10/09/2009 15:08	10/09/2009 15:08	1440	1	30580	2	5437-DGM	CEMENT	X SCALES
2	10/09/2009 15:09	10/09/2009 15:09	6480	1	53500	2	6984-COK	SAND	P SCALES
3	10/09/2009 15:10	10/09/2009 15:10	5280	1	51040	2	0863-APM	PLASTIC	Z SCALES

- **Logo Writer MATRIX II**- Program to **design** and **customize** your own start logo
- Example of an start logo:



- **Ticket MATRIX II**- Program to **customize** your **tickets**: Gross/tare/net, first weight, complete weight (first and second) and simple weight.

TECHNICAL SPECIFICATIONS OF MATRIX II

Analogue load cell connection

Maximum input signal	± 3.0 mV/V
Input impedance	200 M Ω (typical)
Internal resolution	24 bit A/D converter; 16,700,000 accounts ($\pm 8.350.000$)
Measurement rate	50 measurements per second
Linearity error	≤ 0.01 % of measurement range
Zero stability	150 nV/ $^{\circ}$ C max.
Span stability	3.5 ppm/ $^{\circ}$ C max.
Excitation voltage	6 ± 0.3 VDC
Minimum resistance of transducer	43 Ω (8 cellsx350 Ω , 16 cellsx700 Ω)
Maximum resistance of transducer	1000 k Ω
Cable length	400 m/mm ² max. (6 wires) 30 m/mm ² max. (4 wires)
Maximum input voltage	± 6.8 V

Digital load cell connection

Load cell type	740D model or compatible
Load cell power supply	18 V DC / 1.5 A (external adaptor)
Load cell communication	Bus RS-485 full duplex, 38400 bauds
Maximum number of load cells	16

Operator's interface

Display	Graphic LCD (240x128) with backlighting
Keyboard	29 key membrane keyboard
External keyboard (optional)	Standard PC, PS/2 connector

Serial communication

Port Tx/Rx: (Channel 1)	RS-232C bidirectional
Port Tx/Rx: (Channel 2)	RS-232C bidirectional
Port Tx/Rx: (Channel 3)	RS-485 half duplex
Transmission speed	115200, 57600, 38400, 19200, 9600 and 4800 bauds
Number of bits and parity	7 and 8 bits, both with no parity, with even parity or with odd parity

Ethernet

Technology	10BaseT
Speed	10Mbps
Type of cabling	Twisted pair
Maximum distance	100 m
Topology	Star (hub or switch)

Power Supply

Power supply connection	90-260 VAC, 50-60 Hz, 18 W max.
DC Power Supply	18 VDC external fuse 1A
Fuse	250 V, 2 A, 5x20mm, slow fusion

Operating conditions and mechanical data

Operating temperature range	-10°C to 40°C
Temperature limit	-25°C to 70°C
Size	292 x 205 x 141 mm
Weight	3 kg
Mounting	Desktop, support or panel