ADN Pesage

MS100 WEIGHING INDICATOR/CONTROLLER

INSTRUCTIONS FOR INSTALLATION

REV 02.xx.02

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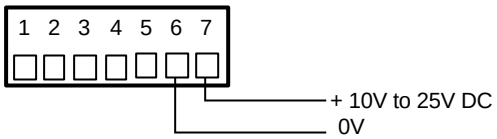
1 POWER SUPPLY

“Low voltage” version

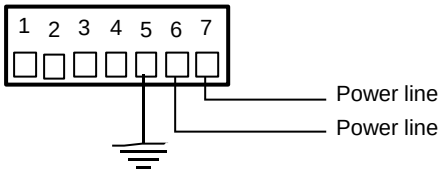
This version of the MS100 should be connected to a 10V to 25V DC power supply. Power consumption is 18W.

Connection is made at plug B1 between terminals 6 and 7



Power grid version

AC supply is 230 V ± 15% at 50Hz or 60Hz. Power consumption is 18W.



1.1 Precautions to take for power grid supply.

Momentary or extended power grid failures or surges often occur in factories through insulation faults, and incidents such as short-circuits in machines that are operating.
Such voltage surges can cause partial destruction of measuring instruments such as the MS100.

To alleviate these problems the best solution is to use a 380V primary/220V secondary insulating transformer with jumper on primary to adjust the secondary voltage.
With the 380V level being constant whatever the state of the power network, the overvoltage risk is eliminated.

PLEASE NOTE:

Transformer manufacturers take nominal power losses into account when specifying the step-down ratio. This means that the secondary voltage risks being too high if the transformer is used for a power consumption less than that for which it was designed.
Because of this, take care to choose a transformer that is designed for a 20W to 40W maximum consumption.

The other solution is to use the MS100 low voltage version.

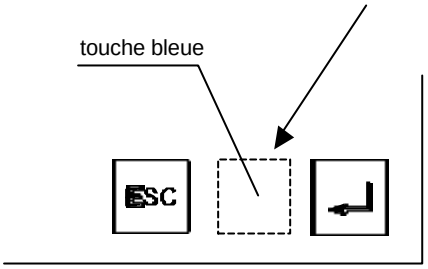
1.2 Fuses

There are no accessible fuses in this equipment.

2 BLUE KEY

This key is not practically visible as it is reserved for the installing technician. Because of this, it was decided to conceal it.

This key is located here:



Insofar as this blue key is against a blue background, it is invisible.

Pressing this key for two seconds allows the installer to key in a password to access to sensitive data such as legal parameters and equipment set-up parameters.

3 OPTION CARDS

The MS100 without option has one single main card and a display card. The only possible option on the main card is a time clock system.

Any other option needs an extension card that itself has four electromechanical relays.

The extension card has two slots for option cards. These two slots are identified as “left slot” and “right slot”.
These cards fit into the connection system and are fixed by a screw.

3.1 Setting up an option card

- take out the detachable terminal boards and connectors,
- remove cover (four corner screws).
- take out cover,
- take out all connector hexagonal fixing screws,
- take out two rear panel BTR fixing screws,
- insert option card into one of the free connector sockets and fix in place with the screw and pin supplied,
- reassemble components in reverse order.

4 SETTING UP

4.1 Panel mounting

1. Make a 140 mm x 68 mm cut-out in the board prepared for installation.

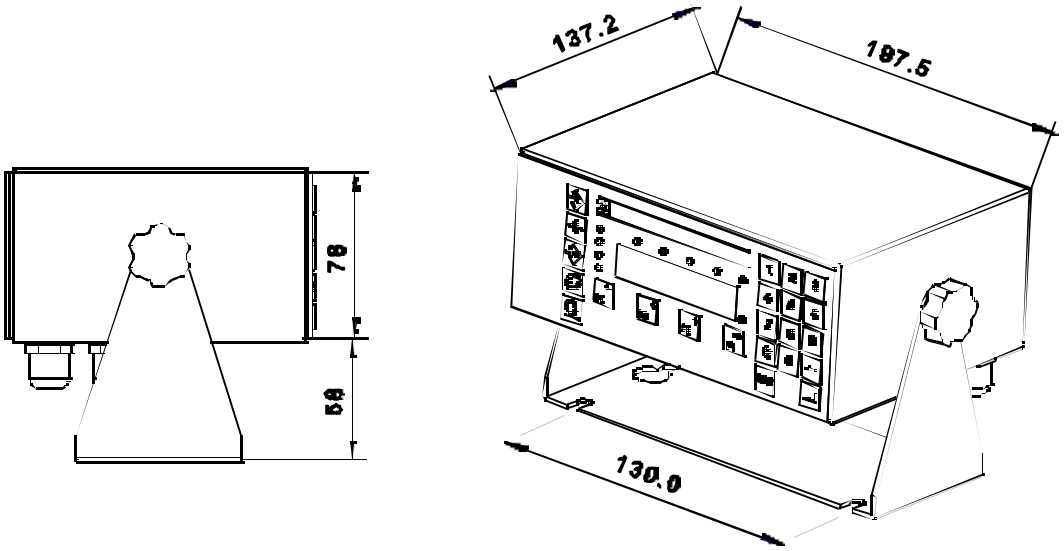
2. Check state of cleanliness of sealing joint around the indicator front panel.

3. Fit the indicator into the prepared cut-out and fit fixing pieces in place in the housing lateral openings.

4. Use a screwdriver to tighten up fixing piece screws so as to settle the MS100 firmly in place against the panel on which it is mounted.

4.2 Wall mounting

Wall mounting is possible only for the IP65 table/wall version.



1. Unscrew the two lateral hand wheel nuts to release the instrument fixing bracket.

2. Use two flat-head screws for the two bracket holes 130 mm apart.

3. Use the two flat-head screws to attach bracket firmly to the wall or work surface.

3. Refit instrument to bracket and refit the two lateral handouts.

4. Set up the working angle for the instrument and tighten up the two handouts.

4.3 Cable entry

The MS100 is delivered with four cable entry points for diameters between 6 mm and 10 mm dia. Three plugs are fitted to those entry points not being use for cable entry. The cable entry points are designed for use by:

- grid power supply cabling,
- cabling from relay contacts,
- cabling from weighing cell,
- cabling to on-off + serial port.

5 CONNECTIONS

Detachable boards and CANON sockets form the connection system. The exception is that the Ethernet card uses an RJ45 connector.

5.1 Connections to main card

The following elements connect to the main card:

- power supply: 7-point terminal board,
- output relay contacts: 7-point terminal board,
- on-off optocouple inputs: 15-point CANON socket,
- RS485/RS232: serial port: 15-point CANON socket,
- cabling from load cell 9-point CANON socket.

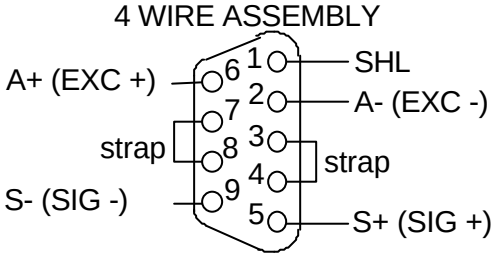
5.2 Connecting up load cell

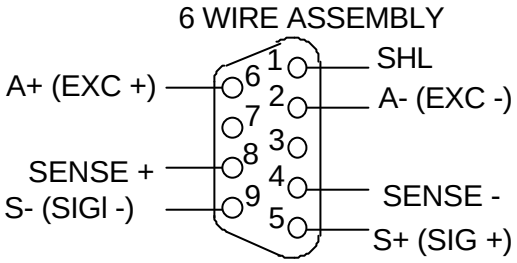
The MS100 has been designed to supply up to eight 350-Ohm standard impedance load cells.

Four-wire, six-wire cabling:

Suitable cabling is cut to link sensors to the electronic instrument. When cabling is short, voltage drop is negligible and measurement integrity is maintained whether the cabling is four-wire or six-wire.

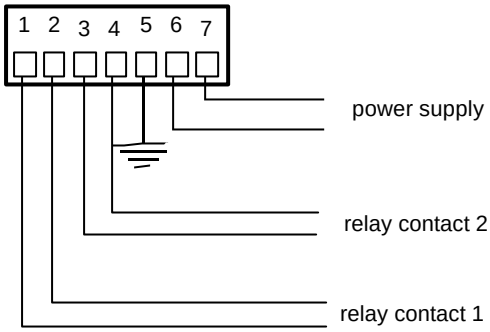
On the other hand if the cabling is long there is a voltage drop in the cable that varies as a function of the temperature, and this effects the weight reading.
This fault will not appear if precautions are taken to use six-wire cabling.



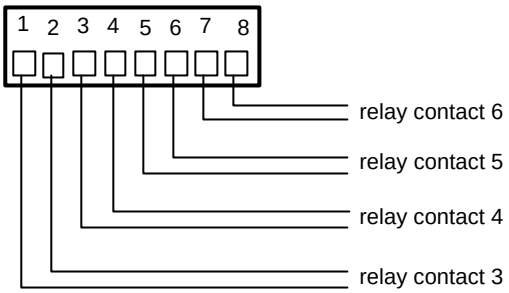


5.3 Connecting up relay outputs

Basic 7-point card terminal board



8-point extension card for options terminal board



Relay shut-down power is 1A/220V under resistive loading. It is essential to use appropriate switched-load terminal devices to protect relay contacts.

Basic 7-point card terminal board

1 2	Threshold 1 or small speed (PV) if dosing-configured in installer parameter menu.	
3 4	Threshold 2 or high speed (GV) if dosing-configured in installer parameter menu.	
5	Earth	
6 7	0V * supply +10V to +30V DC supply	90V à260V * grid power supply

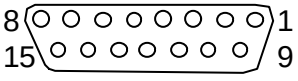
* in ATEX:
- 11 V to 28 V DC
- 100 V to 250V AC from grid

8-point extension card for options terminal board

1 2	Threshold 3
3 4	Threshold 4 or dose cycle running if configured in the installer parameter menu.
5 6	Threshold 5 or dose ready if in dosing configuration
7 8	Threshold 6 or executed function of configured in installer parameter menu.

Access to installer parameter men by 3 seconds on blue key + “INSTALL”

5.4 Connections into 15-point socket



This connector has:
- 4 remote control inputs,
- input for downloading,
- tx and rx and CTS of basic serial link in RS232,
- rxa, rxb, txa, txb of basic serial link of RS485.

5.4.1 Remote control connections

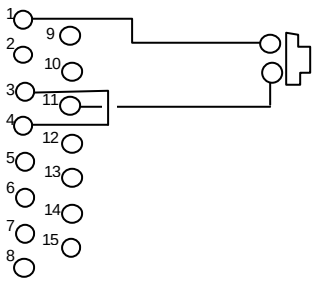
4	0V supply output
11	12V supply output
8	Input for downloading
1	Input n° 1 (active with 9 V to 24V)
2	Input n° 2 (active with 9 V to 24V)
3	Input common lead
9	Input n° 3 (active with 9 V to 24V)
10	Input n° 4 (active with 9 V to 24V)

Each input is programmable and independent. Allocation of remote control inputs done through installer parameter menu. 3 seconds on blue button + “INSTALL” (see 6.1).

Input points can be used to carry out the following functions:
- zeroing *,
- semi-automatic taring *,
- tare cancel,
- weight saved *,
- sub-total print-out with zeroing,
- sub-total print-out without zeroing,
- total print-out with zeroing,
- total print-out without zeroing,
- *start,*
- *stop,*
- *quit,*
- *dosing authorisation.*

** functions subject to stability criterion expressed in quarter-step multiples and modifiable in ESC menu 3 seconds followed by X/WEiGh/StAbiL push.*

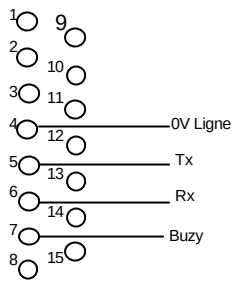
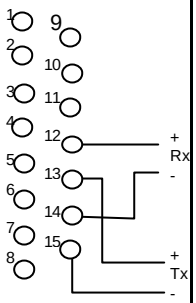
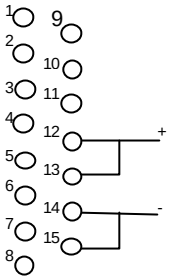
5.4.2 Example of setting up a control push button



The external push button allows application at input 1, terminal 1, supply positive pole.
Do not forget to connect placed optocouplers common connector terminal 3 to supply 0V.

5.4.3 Serial-linked connections to 15-point connector.

The serial link can be used in 4-wire or 2-wire RS232 or RS485 connectors. The RS232 link has a “Busy” input for the purpose of managing a printer signal. When this input is set at low, the indicator considers that the printer is busy and ceases to send characters to the serial link. When nothing is connected to this input, the input condition is high (non-occupied).

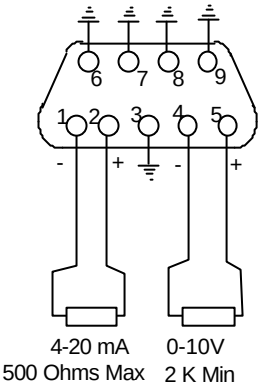
RS232	RS422 4-wire	RS 485 2-wire
		

5	Tx		RS232
6	Rx		
7	Busy		
12	Rx-a	Rx	RS485 4-wire
14	Rx-b		
13	Tx-a	Tx 4	
15	Tx-b		

5.5 Connecting an “Analog Output" option card

The analog output is active whether it is in current loop or in 0-10V. The MS100 supplies the voltage or the output current.

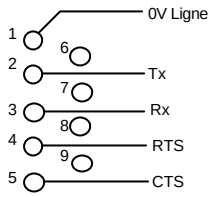
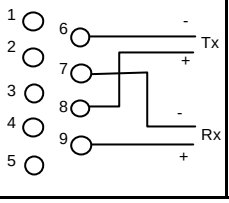
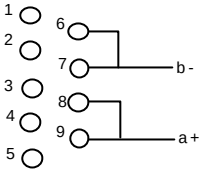
PLEASE NOTE:
Between 4-20mA and 0-10V, one single output can be set up and used. Two analog output option cards need to be installed to use a 0-10V output and a 4-20 mA output simultaneously.



5.5.1 Automatic card detection

The menu allowing keying in of parameters appears in the INSTAL/oPt r or oPt L menu tree depending on the socket where the card is installed.

5.6 Connecting a “serial link" option card

RS232	RS422 4-wire	RS485 2-wire
		

5.6.1 Automatic card detection

The menu allowing keying in of card parameters appears in the INSTAL/oPt r or oPt L menu tree depending on the connector where the card is installed.

5.7 Connecting an “Ethernet” card

Use Ethernet network cables with RJ45 connector
Use a standard straight cable for a connection to a wall network socket connected to a local network.
Use a Cross-Over cable to make a direct link with a computer.

5.7.1 Automatic card detection

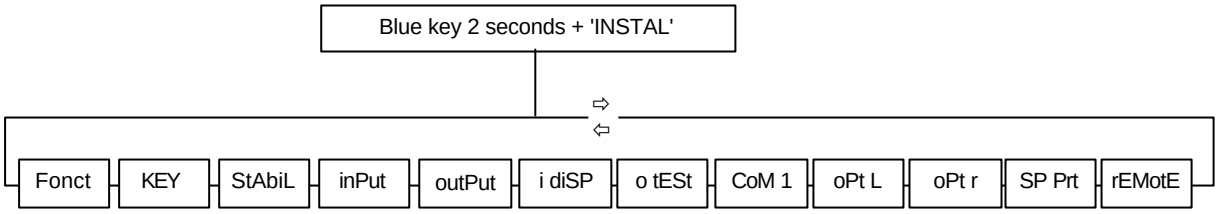
The menu allowing keying in of connection parameters appears in the INSTAL/oPt r or oPt L menu tree depending on the connector where the card is installed.

6 SETTING UP AND CONFIGURING THE MS100

There are two special menus dedicated to the installer. In fact the instrument is widely configurable to adapt to final user needs whilst facilitating instrument use for the user.

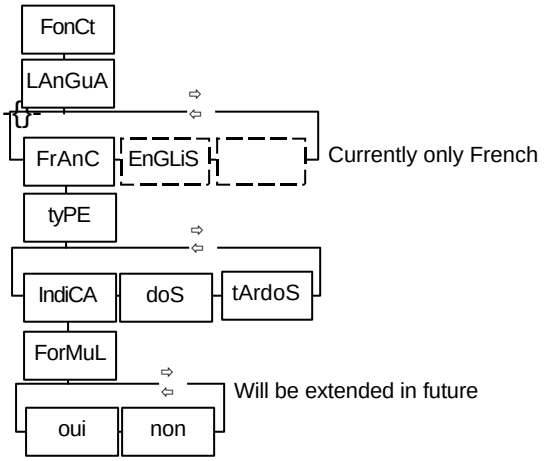
6.1 "INSTAL" configuration menu

To open menu: Press blue key for two seconds, then, when display shows dashes, enter " INSTAL" and confirm keying. Display should show ‘FonCt’
Menu shows 12 items corresponding to 12 main sub-menus.



6.1.1 FonCt sub-menu

This menu allows choice of the type of instrument operation (for example DOSING), language, and whether to use formulae or not.

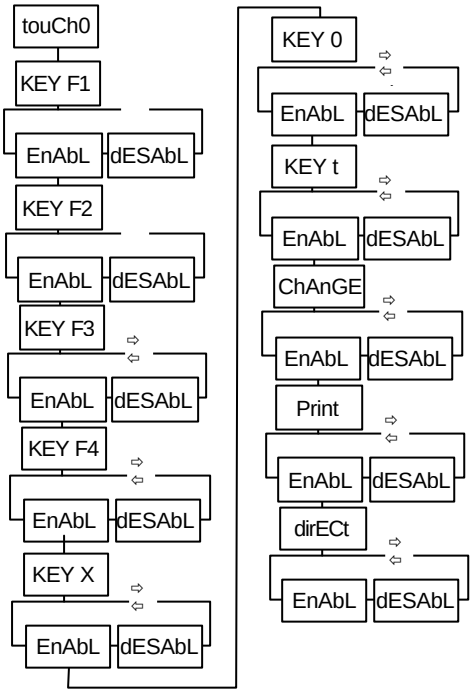


Glossary:

FonCt	=	Function
LAnGuA	=	Language
tyPE	=	Type of application
ForMuL	=	Formulae, use of
indiCA	=	NAWI indicator
doS	=	Dosing without taring
tArdoS	=	Dosing with taring action

6.1.2 KEY sub-menu

Allows key-by-key keyboard activation/de-activation so as to deny or give access to certain instrument functions.



Glossary:

KEY F1 = 

KEY F2 = 

KEY F3 = 

KEY F4 = 

KEY X = 

KEY 0 = 

KEY t = 

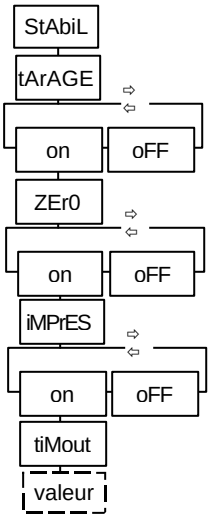
ChAnGE = 

Print = 

dirECt = Digital key to key in setting directly

6.1.3 StAbiL sub-menu

Permits submitting certain functions relative to regulated use to a stability criterion, or not.



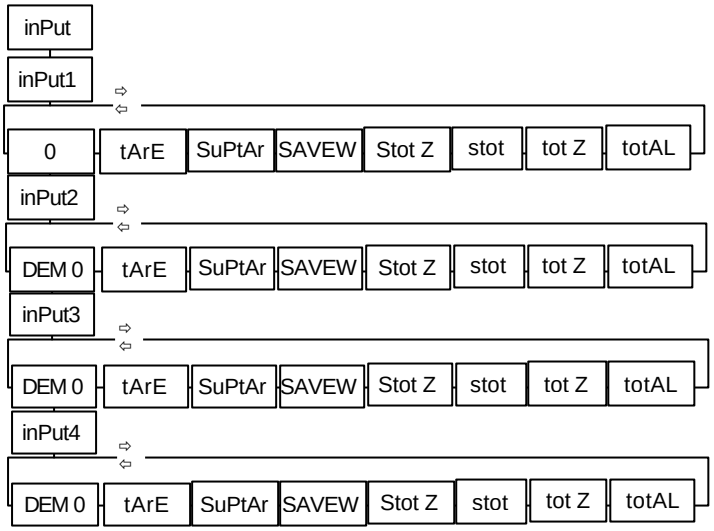
Glossary:

StAbiL = Stability (functions submitted to check)
tArAGE = Semi-automatic calibration
ZEro = Semi-automatic zero
iMPreS = Print-out (with recorded weight)
tiMout = Time Out (time before function request abandoned)

Example: If the tare key was programmed “oFF” (meaning without stability) then semi-automatic taring will systematically operate even if weight is unstable.

6.1.4 inPut sub-menu in “indicator” mode

Assign a function here to choose four remote control inputs out of eight.

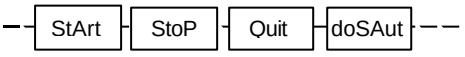


Glossary:

0	=	Zero request.
SuPtAr	=	Elimination of tare
tArE	=	Tare allowance
SAVE W	=	Weight saved with print-out
Stot Z	=	Sub-total print-out and zeroing
Stot	=	Sub-total printout without zeroing
tot Z	=	Total print-out with zeroing.
totAL	=	Total print-out without zeroing.

6.1.5 inPut sub-menu in “dosing” mode

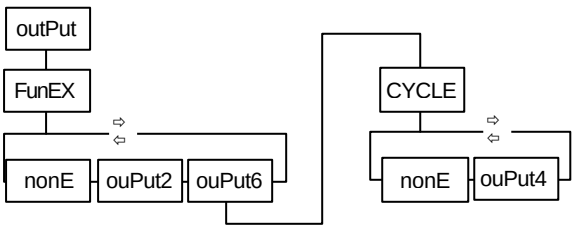
Find the four following proposals for each input out of more than 8 items proposed:



StArt	=	Cycle-start
StoP	=	stop with possibility of continuing cycle with start
Quit	=	Emergency stop. Permanent exit from current cycle.
doSAut	=	Dosing authorisation. Authorise or disallow cycle start.

6.1.6 ouPut sub-menu

Function Executed (FUNEX) output goes up when remote control responds to a request.
Decision here on which output signal will be present.

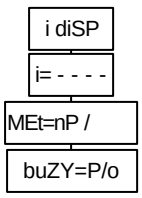


Glossary:

FunEX	=	Function executed
CYCLE	=	Dosing in process
nonE	=	Function not present on output
ouPut2	=	Output n° 2
ouPut4	=	Output n° 4
ouPut6	=	Output n° 6

6.1.7 i diSP (Input display) sub-menu.

Possible to visualise here condition of instrument on-off inputs. There are four remote control inputs, the input controlled by metrological data protection switch, and flow management input from serial channel input.

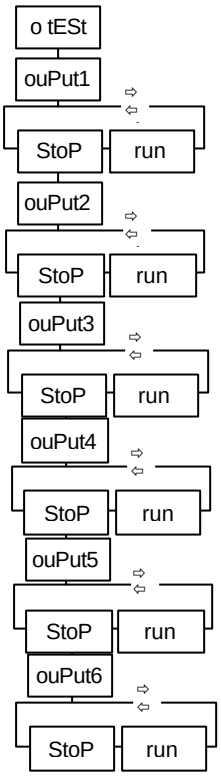


Glossary:

i=- - - -	=	From left to right, input 1 to 4 displays an o if input is at 1
MEt=nP	=	“Not protected” position of switch
or Pr	=	“protected" position of switch
buSy=P	=	Busy = "Ready"
busy	=	Busy = "Busy"

6.1.8 o tESt sub-menu

Force on-off outputs to 1 or 0 condition.

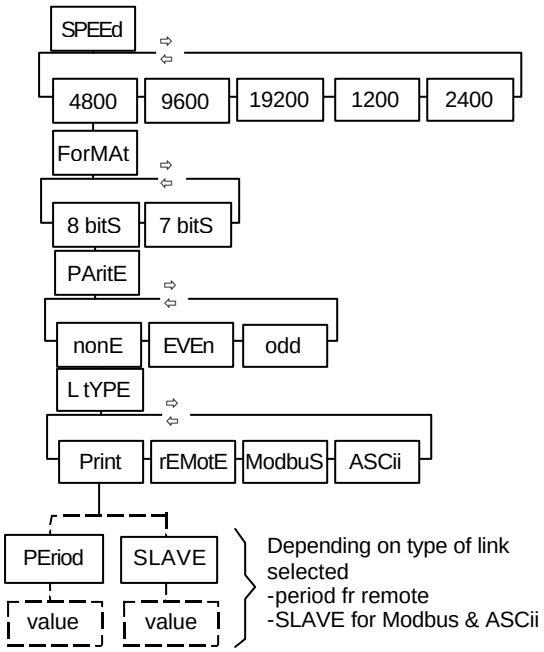


Glossary:

ouPut1	=	Output 1
ouPut2	=	Output 2
ouPut3	=	Output 3
ouPut4	=	Output 4
ouPut5	=	Output 5
ouPut6	=	Output 6
StoP	=	Stop
run	=	Go

6.1.9 CoM1 sub-menu

This menu used to set base serial port speed and parity. Its use is also specified here.
It is possible to add two “serial link” cards to left and right connectors. The configuration menu then opens under menu headings Opt L and Opt r.
The two last menu elements will open or not depending on the choice of link type.



Glossary:

SPEEd	=	Character transmission speed
ForMAt	=	Character format
PAritE	=	Parity
L tYPE	=	Link type
Print	=	Printer
rEMotE	=	Remote (ex: remote display)
ModbuS	=	MODBUS Protocol
ASCii	=	ASCII Protocol
PEriod	=	Periodicity in hundredths of a second for sending weight figure to one or another remote display.
SLAVE	=	Slave number for serial communication protocols.

NOTE: **Use ASCII protocol to configure a serial port in order to request weight or DSD contents through this port.**

6.1.10 oPt L & oPt r sub-menus

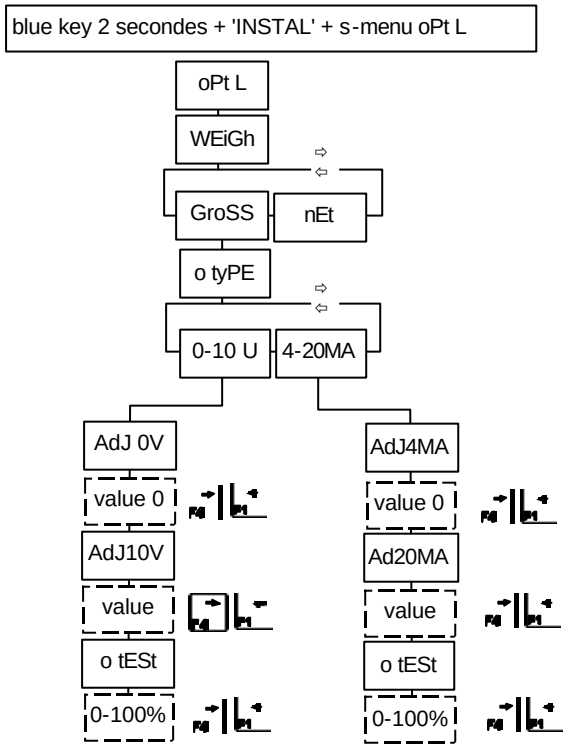
These menus open only when an option card is installed in one of the two connectors planned for that on the extension card. The contents of the menu that opens then depend on the type of card physically installed in the connector being considered.

6.1.11 Sub-menu for a “serial link” card

This is the same menu as that for COM 1. (See COM 1 sub-menu).

6.1.12 Sub-menu for an “analog output” card

The following example shows access to settings for an analog-type card installed in the extension card left slot. If this card is installed in the right slot, this menu will open with oPt r. If two cards are installed, both menus will open.



Glossary:

oPt L	=	Left option
WEiGh	=	“Weighing” mode (not “dosing” mode)
o tyPE	=	Type of output used
GroSS	=	Gross weight
nEt	=	Net weight
AdJ 0V	=	to adjust 0V on analog output
AdJ10V	=	to adjust 10V on analog output
o tESt	=	Output test in 10% stepsto check adjustment
AdJ4MA	=	to adjust 4mA on analog output
Ad20MA	=	to adjust 20 mA on analog outpu

6.1.13 Setting analog output

Sensor(s) measuring value is not used for these settings. Thus it is not important. The analog output has very high precision (16-bit).

Setting 0 point from 0-10V output:
Connect millivoltmeter on output, then use and to adjust the zero value indicated by the millivoltmeter.

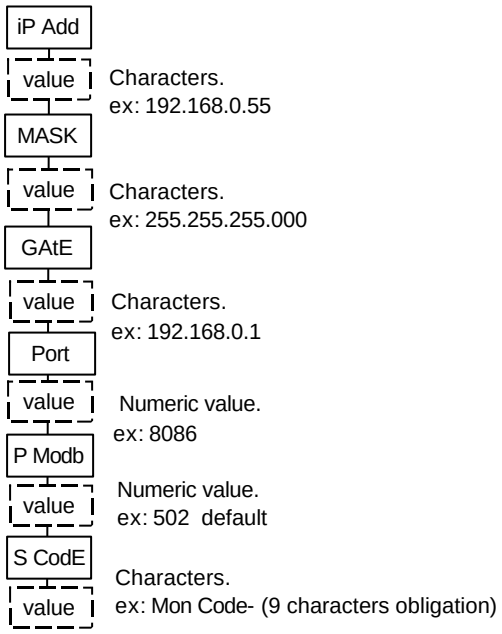
Setting 10V point
Use same keys to set 10V output

Setting 4 mA point for 0-20 mA:
Connect milliampmeter across output, then use and to set the 4 mA value indicated by the milliampmeter.

Setting 20 mA point
Use same keyss to set 20 mA on output

6.1.14 Sub-menu for an "ETHERNET" card

One single network card may be installed in one of the two card connectors.
The IP address is the local network address. It should be unique.
The gateway address in principle is the router local address.
The port number should correspond to a new service specifically open through the company network administrator. It should be unique within the local network. This number gives access to MS100 servers connected to the local network from outside (the global network).
If several MS100 indicators are connected to the company ETHERNET network, each of those should have an IP address and a unique port number. In the contrary case, malfunctions in the network have to be expected.



Glossary:

iP Add	=	IP address
MASK	=	Sub-network mask
GAtE	=	Gateway address
Port	=	Port number
P Modb	=	MODBUS port number
S CodE	=	Installer pages access secret code for server

6.1.15 SP Prt sub-menu (special prints)

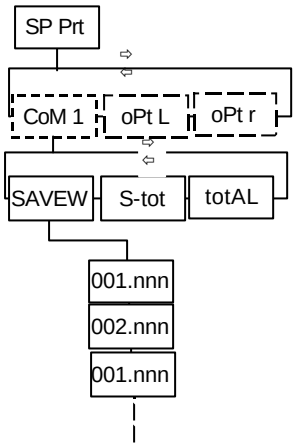
This menu allows modification of print-out descriptors.

Each installed series port is associated with a special descriptor that is used only in the case when the usual ticket cannot be used.

The descriptor is made up of a sequence of installer-editable characters. When a print-out is requested, the programme interprets the descriptor and generates a suitable ticket.

These descriptors are normally de-activated. Keying in a 0 (zero) figure as the first character de-activates a descriptor. When the interpreter “sees” zero in the first descriptor space, it allows the standard print-out system to take over.

If the number of configured ports in print-out is greater than 1, the menu below adds an element requesting a serial port that can be calibrated. If no “serial link” card is installed, this menu element does not appear for the print-out will necessarely go to the basic COM1 serial port.



Depending on installed serial ports in print-out port.

Three descriptors for three ticket per installed print-out port.

To left of decimal point: character number,
to the right: its ASCII value

Glossary:

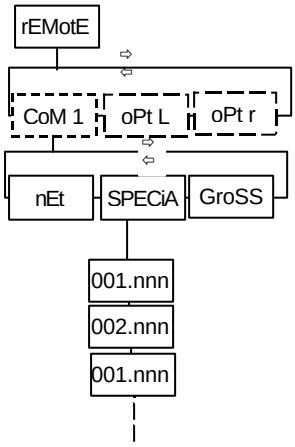
Enr P = Weight logging
S-tot = Sub-Total
totAL = Total

(See special ticket print-out chapter).

PLEASE NOTE:
Menu does not open. What has happened?

Example for MS100 basic version:
In the COM1 menu, L tyPE was programmed into rEMotE or ModbuS or ASCII. The SP Prt menu cannot be opened in this case.
It is essential that any installed port must be configured for print-out in order to print.

6.1.16 rEMotE sub-menu (remote display)



Depending where remote display is connected.

Three descriptors for three possible repeaters.
Use descriptor if message to be sent is not a gross or net value.

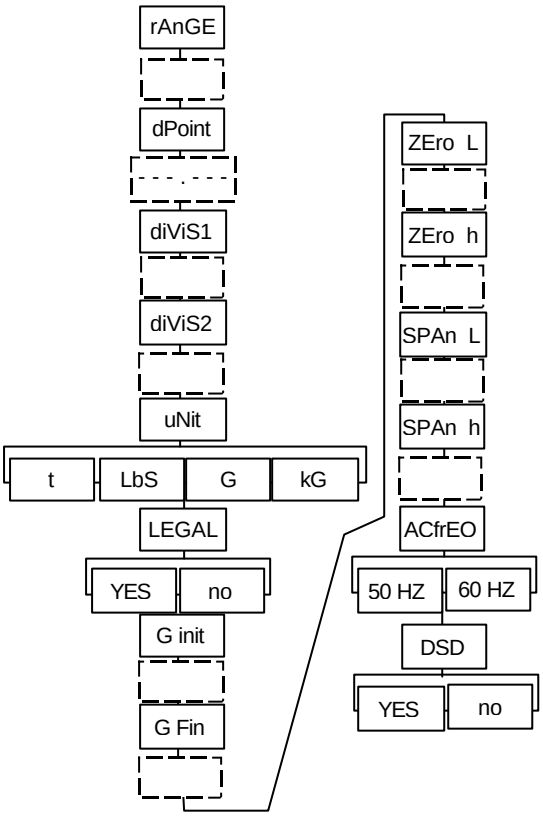
To left of decimal point: character number,
to the right: its ASCII value

Programming message descriptor is done in the same way as for ticket descriptor. (See special ticket print-out chapter).

The descriptor is practical when the repeater requires a particular set of characters to function.

6.2 "PESAGE" calibration menu

To access to this menu, make sure the settings protection screw is unscrewed by at least three turns.
Push on blue key for at least 3 seconds and tab “PESAGE”.



Glossary:

rAnGE	=	Range (or extent of measurement)
dPoint	=	Comma (or decimal point)
diViS1	=	Division 1 value first interval (at beginning)
diViS2	=	Division2 value second interval(at end)
unit	=	Unit of weight
LEGAL	=	Operating in legal measuring units (yes/no)
G init	=	initial gravity
G Fin	=	final gravity (gravity of destination)
ZEro_L	=	Value of low weight incremental zero
ZEro_H	=	Value of high weight incremental zero
SPAn_L	=	Value of low weight incremental zero
SPAn_H	=	Value of high weight incremental zero
ACfrEQ	=	Grid supply AC frequency
50 HZ	=	50 Hertz
60 HZ	=	60 Hertz
DSD	=	Alibi memory (data storage device)
t	=	tonne
LbS	=	pound weight
G	=	gram
kG	=	kg

Decimal comma position is set by a point that can be moved using arrows and .
The incremental values allow replacing of an indicator by recopying these values into the new space.
The AC grid supply frequency allows optimising of wave beat rejection. This is only useful when the measurement division is less than 1 µV.

6.2.1 Range and divisions

The MS100 is an instrument with a unique range and two intervals (diViS1 & diViS2). When in legal use, controlled weighing involves a maximum 6000-divisions scale and 1 µV per division.
The number of divisions on the instrument is given by the formula: range / diVis2. This number should not exceed 6000 for legal use.
The point of passing from one division to another is given by (range / diVis2) x diViS1.

Example:
range = 60,000kg, diViS2 = 0,010kg and diViS1 = 0,002kg

Calculating number of given points: 60,000 / 0,010 = 6000 points.

The change to the division will be: 0,002 x 6000 = 12,000kg.

Measuring by 2g divisions between 0 and 12kg and by 10g divisions between 12kg and 60kg.

This can happen only on condition that the load cell test certificate allow it.

6.2.2 Adjusting dead load (Initial zero)

NOTE: Before doing anything else unscrew the (metrological) legal protection screw several turns.

Check that the load holder is clean and stable.

Press on blue button or ESC for 3 seconds, then press on  .

The message "ZEro ?" is displayed.

Confirm by pressing  .

If the operation is successful, “0” displays.

PLEASE NOTE: If the measurement from the load cells is negative, then initial zero cannot be done.

6.2.3 Adjusting span

NOTE: Before doing anything else unscrew the (metrological) legal protection screw several turns.

Press on blue button or ESC for 3 seconds, then press on  .

The message "SPAn ?" is displayed.

Confirm by pressing  .
The message "rEF" displays for a short period. Key in the reference weight value to be used.
PLEASE NOTE: this value should be a multiple of the division.

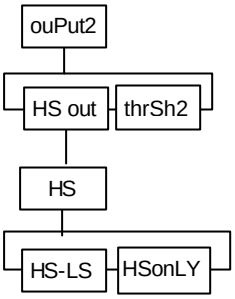
If the operation is successful, the keyed-in value remains on display without flashing. If not, the tabulated value disappears and the initial value re-displays.

NOTE: Do not forget to screw in the setting protection pin and particularly do this without using a wrench or spanner so as to avoid any deterioration of the equipment.

6.3 “DOSAGE” menu

Push on blue key for at least 3 seconds and tab “DOSAGE”.

The "ouPut2" setting appears only if the extension card is not installed.



Glossary:

ouPut2	=	Output 2
HS out	=	High Speed Dosage on output 2
thrSh2	=	Threshold 2 on output 2
HS	=	High Speed Dosing
HS-LS	=	High Speed and Low Speed together
HSonLY	=	High Speed only (output 2)

When there is no extension card installed, there are only two outputs.

The ouPut2 setting enables choosing the way the output 2 will operate:
- in two speed dosing, LS on Output 1 and HS on output 2
- in one speed dosing, LS on Output 1 and output 2 operating in threshold 2.

The default mode is HS out (HS on output 2).

The LS + Threshold 2 configuration is used, for example, to carry out in-tank extractions. The PV output allows dosage by initiating emptying whilst Threshold 2 allows filling shut-down when Threshold 2 is reached.

When LS+ Threshold 2 mode is selected, the HS setting does not appear and the menu accessed by key X is modified to give access to Threshold 2.

The HS setting allows choosing of the activated outputs during high speed dosage.
- Output 1 (Low Speed) and Output 2 (High Speed) together
- Output 2 (High Speed) only.

The default mode is HS – LS (outputs 1 and 2 together).

6.4 “RAZ” menu

This menu allows reinitialising the indicator RAM memory with default values, those that were in place at delivery.

The metrological parameters are not affected by this manipulation.

To carry out resetting to zero:

- Press blue key for a long time
- tabulate R,A,Z, 
Scrolling message “RESET MEMORY” displays,

Press  to cancel
Press  to confirm parameters reset

6.5 “RAZMET” menu

This menu allows reinitialising (metrological) legal parameters that are stored in FRAM.

To carry out resetting metrological parameters to zero:

- Press blue key for a long time
- tabulate R,A,Z, M, E, T, 
Scrolling message “RESET LEGAL” displays,

Press  to cancel
Press  to confirm parameters reset

7 PROGRAMMING DESCRIPTORS

When the standard method described in the user manual is not enough to carry out a ticket or control a repeater, it is possible to access descriptors that are editable and modifiable.

The descriptor is interpreted and the result is sent to the prepared serial port.

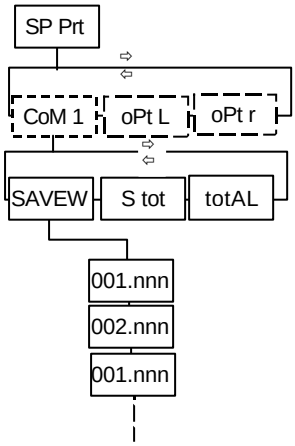
There is a descriptor for:
- weight recording ticket,
- total ticket,
- sub-total ticket.

In ASCII code form the descriptors contain the following:
- text,
- control characters (line feed, carriage return, etc.),
- variable descriptors.

The following concerns printed ticket descriptors but also descriptors for repeaters

7.1 Access to descriptors

Access descriptors through the INSTAL menu sub-menu



Depending on installed serial ports in print-out port.

Three descriptors for three ticket per installed print-out port.

To left of decimal point:
character number,
to the right: its ASCII value

Glossary:

SAVEW	=	Weight logging
S tot	=	Sub-Total
totAL	=	Total

Choose ticket to be modified by selecting it by using F1 and F4.
If more than one print-out port is installed and is requested, an element in this menu appears that allows choosing the port by its name (CoM 1, oPt L or oPt r).
Press ↓ to enter into descriptor editing mode
The descriptor is a sequence of characters that ends with the “Nul” character, the value of which is 0.

The three figures to the left of the point gives the order number of the character to be modified. The three figures to the right of the point represent the ASCII value of the character expressed in decimal terms.

Press F1 and F4 to go to the left part (character number) and to the right part (character ASCII value).

Use ↓ and ↑ to move from one character to another in the descriptor.

In order to produce a ticket, do the following:
- have at hand the character table with the ASCII value for each,
- have the descriptor name for the variables available (gross weight, net weight, etc.),
- have patience.

7.2 Available printable variables

List of variables with their descriptors:

VARIABLE	DESCRIPTOR	VARIABLE	DESCRIPTOR
gross weight	@X0%7k	total no of weighings	@S0,12,0%9lu
net weight	@X1%7k	sub-total no of weighings	@S0,4,0%9lu
tare	@W0%7kn	heading 1	@T1%s
day	@U3%02u	heading 2	@T2%s
month	@U4%02u	reference 1	@T4%s
year	@U0%02u	reference 2	@T5%s
weighing number	@U5%5u	reference 3	@T6%s
minute	@U1%02u	reference 4	@T7%s
hour	@U2%02u	unit of weight	@T3%s
total weight	@S0,8,0%10k	registration number	@W1%6lu
weight sub-total	@S0,0,0%10k		

This list contains the main variables available to the installer. This list may develop with the product and its applications.

7.3 Descriptor example

STE DUJARDI

Poids brut: 457kg

Le 10/04/08

Descriptor

N°	ascii	character
001	032	SP (space)
002	032	SP (space)
003	032	SP (space)
004	083	S
005	084	T
006	069	E
007	032	SP (space)
008	068	D
009	085	U
010	074	J
011	065	A
012	082	R
013	068	D
014	073	I
015	013	CR (carriage rtn)
016	013	CR (carriage rtn)
017	080	P
018	111	o
019	105	i
020	100	d
021	115	s
022	032	SP (space)
023	098	b
024	114	r
025	117	u
026	116	t
027	058	:
028	064	@
029	088	X
030	049	0
031	037	%
032	055	7
033	107	k
034	103	g
035	013	CR (carriage rtn)
036	013	CR (carriage rtn)
037	076	L
038	101	e
039	032	SP (space)
040	064	@
041	085	U
042	051	3
043	037	%
044	048	0
045	050	2
046	117	u
047	047	/
048	064	@
049	085	U
050	052	4
051	085	%
052	048	0
053	050	2
054	117	u
055	047	/
056	064	@
057	085	U
058	048	0
059	037	%
060	048	0
061	050	2
062	117	u
063	013	CR (carriage rtn)
064	013	CR (carriage rtn)
065	000	END

7.4 ASCII CHARACTER SET

00	NIL	32	SP	64	@	96	`
01	SOH	33	!	65	A	97	a
02	STX	34	"	66	B	98	b
03	ETX	35	#	67	C	99	c
04	EOT	36	$	68	D	100	d
05	ENQ	37	%	69	E	101	e
06	ACK	38	&	70	FR	102	f
07	BEL	39	'	71	G	103	g
08	BS	40	(	72	H	104	h
09	HT	41	)	73	I	105	i
10	LF	42	*	74	J	106	j
11	VT	43	+	75	K	107	k
12	FF	44	,	76	L	108	l
13	CR	45	-	77	M	109	m
14	SO	46	.	78	N	110	n
15	SI	47	/	79	O	111	o
16	DLE	48	0	80	P	112	p
17	DC1	49	1	81	Q	113	q
18	DC2	50	2	82	R	114	r
19	DC3	51	3	83	S	115	s
20	DC4	52	4	84	T	116	t
21	NAK	53	5	85	U	117	u
22	SYN	54	6	86	V	118	v
23	ETB	55	7	87	W	119	w
24	CAN	56	8	88	X	120	x
25	EM	57	9	89	Y	121	y
26	SUB	58	:	90	Z	122	z
27	ESC	59	;	91	[	123	{
28	FS	60	<	92	\	124	|
29	GS	61	=	93	]	125	}
30	RS	62	>	94	^	126	~
31	VS	63	?	95	_	127	DEL