Parsmega
industrial automation

User Manual

Weight Indicator

PM-LD01

Version: 1.1 Release date: 28/01/2023

Note: For models with a version lower than 2.0 (if V2.x is not displayed when the device is turned on), refer to the old guide.

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Contents

1 Introduction

1.1 The purpose of the manual

This manual contains all the information needed to set up, install, wiring and communicate with the PM-LD01 module.

1.2 Technical knowledge required

In order to understand this booklet, a basic acquaintance with electrical topics is required.

1.3 Manual validation

This booklet is valid for this specification.

MODEL	Hardware	Software
PM-LD01 PM-LD01A	V 2.0	V 2.1

1.4 Technical support

To get technical support through the following contact:

- Email: **info@parsmega.com**
- Phone: **+98 21 91009955**
- WhatsApp: **+98 9981122566**

2 Safety tips

- Starting the module by non-experts and ignoring the commands may cause serious damage to the module.
- This module does not directly pose a risk to human life.
- The use of this module is not approved for use in life-threatening devices.

3 Description

3.1 Basic description

PM-LD01 is the load cell Indicator, which can display and control relay outputs are based on different functional modes, methods and different control modes is considered for this purpose.

This module has the ability to connect to a computer and control equipment such as (HMI and PLC).
Due to the special features designed in this module, you can easily set up a simple and accurate packaging system.

3.2 Module Uses

This module is designed according to the needs and requirements of different types of packaging machines,

- Bag filling machines
- Packaging machines

3.3 Technical Specifications

- RS485 isolated serial communication capability with MODBUS protocol support
- RS485 port wide bandwidth range (from 2400 to 230400)
- Two rows of 7Segment display with 6 characters
- Has a status display (LED)
- Programmable keys for different commands (Tare, Reset Tare, Zero,)
- Extensive sampling range
- Weight reading with an accuracy of 1: 100000
- Ability to define 5 load cells and maintain calibration of all load cells
- Automatic calibration without the need for weight calibration
- 5 digital relay outputs
- digital inputs with user-adjustable functions
- Ability to Indicator load cell output voltage (for load cell testing)
- Operating temperature range -30 ~ +50 ° C

4 Installation

4.1 Observe EMC items

This product is designed and manufactured to work in industrial environments. However, for proper operation, you should check and eliminate the issues that cause the module to malfunction.

4.2 Cases that cause system malfunctions

- Electromagnetic field
- Telecommunication cables
- Power circuit cable

4.3 Things to consider

4.3.1 Convenient ground connection

- When installing the module on the panel body, make sure that the panel body is connected to the ground.
- All ineffective metal parts are (firmly) grounded.
- When connecting varnished wires to ground connection, remove the varnish from that part.

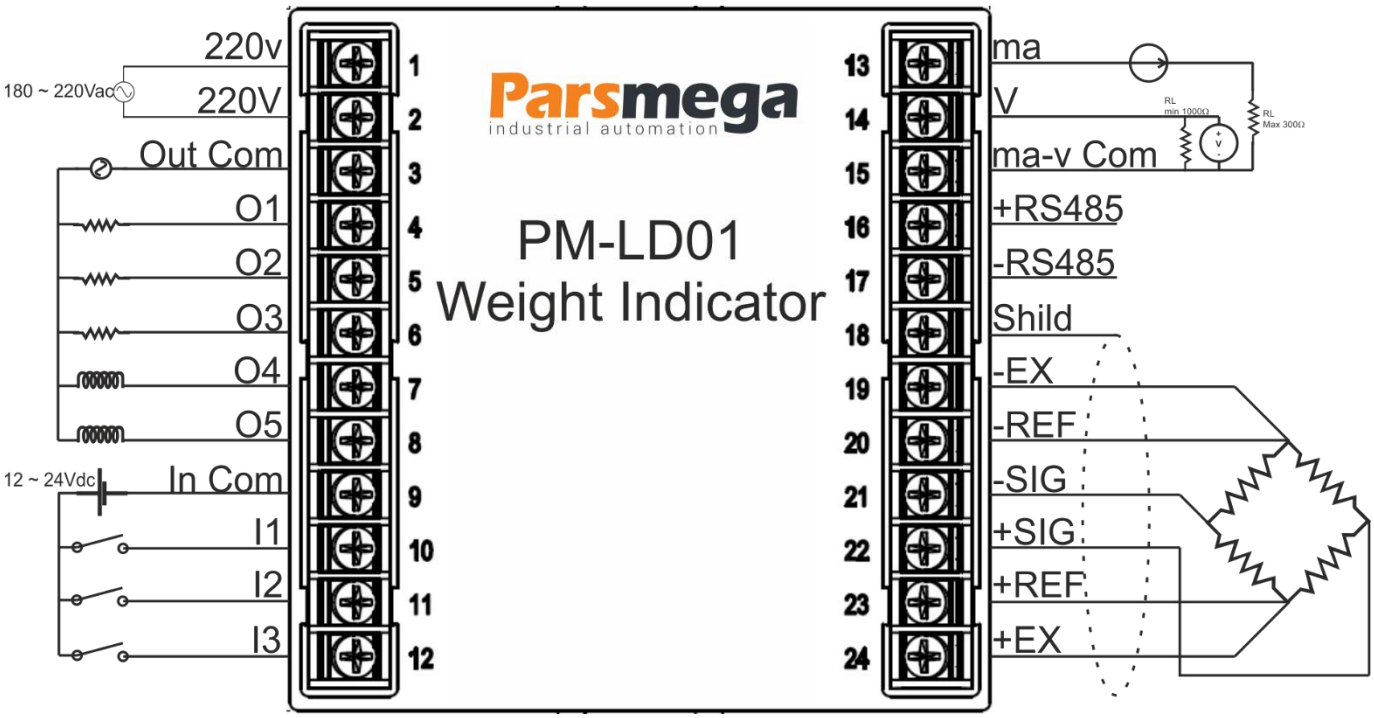
4.3.2 Appropriate wiring method

- Divide your system cables into different groups (high voltage, power supply, and signal, analog).
- Always transfer the power cable from another duct.
- Always place your analog cables close to the body of the panel and rails (which are grounded).

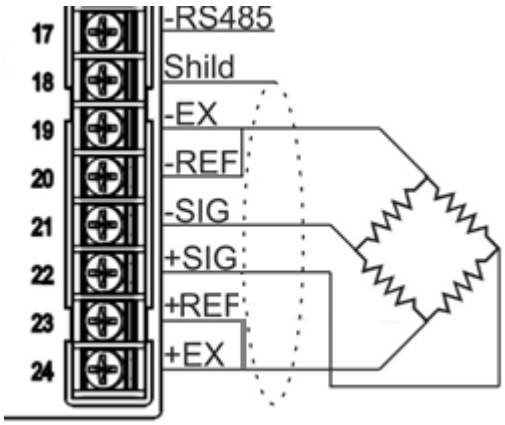
4.3.3 Cable shield connection

- Make sure the shields are properly grounded.
- Try to keep a small part of the cable without a shield.

5 Connections



Note: To connect a 4-wire load cell, the + Ref terminal must be connected to + Ex and the -Ref terminal to -Ex.



5.1 Connections group

The connections of this module include 6 main groups:

- Power
- Digital Inputs
- Digital Outputs
- Serial RS485
- Analog output
- Load cell

5.2 Power supply connection

The proper power supply for this module is 220VAC.

Terminal 1, 2: 220VAC

5.3 Digital input connection

This module has 3 digital inputs

Label	**Application**
I 1	Digital input1
I 2	Digital Input2
I 3	Digital Input3
In COM	Digital Input Common

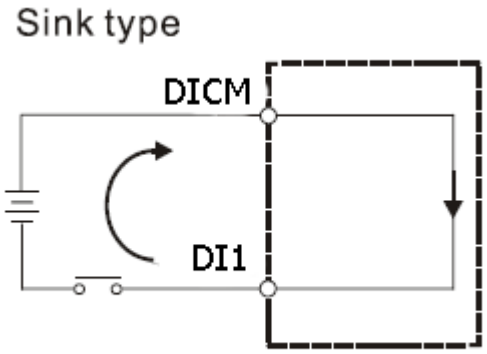
• A voltage level of 12 to 24 volts is required to activate digital inputs.

• For each input, a specific function can be defined, which activates the corresponding function. This issue will be fully covered in the digital input menu.

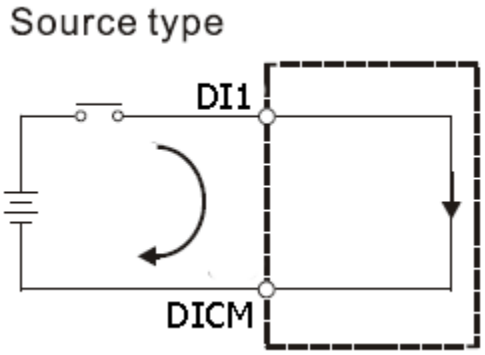
• Entries will be activated on the rising edge.

The wiring is as follows:

❖ State of Sink (Low active)



❖ State of Source (High Active)



5.4 Output connections

This module has 5 digital output relay

Label	**Application**
O1	Digital output1
O 2	Digital output 2
O 3	Digital output3
O 4	Digital output4
O 5	Digital output5
Out COM	Digital Outputs Common

• Activation of outputs depends on setting parameters, which will be addressed in the parameters section.

• The output current of the relays is 3 amps.

5.5 Load cell connection

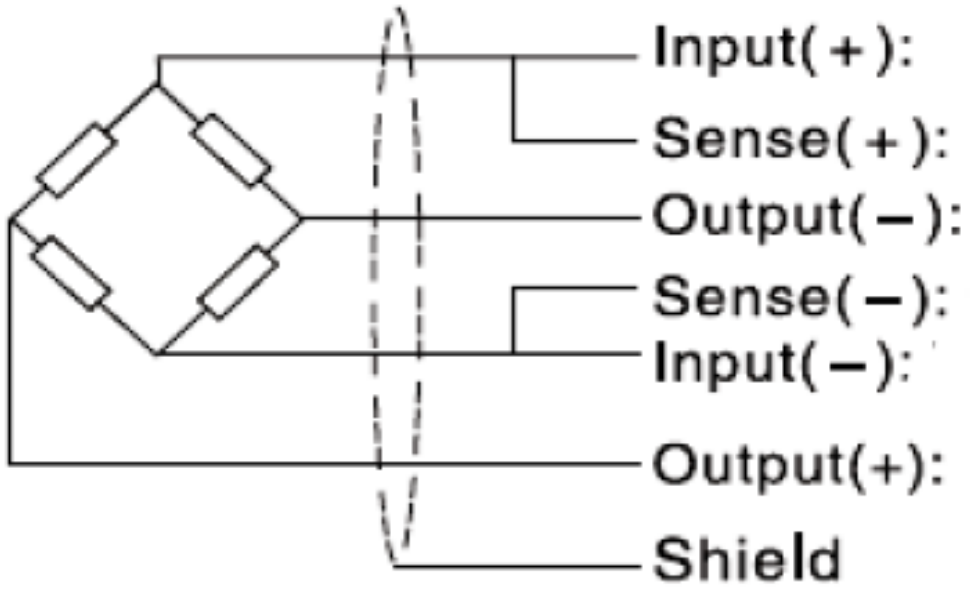
Load cells with the following capabilities can be connected to this module:

- Output voltage (R.O.): 1mV/V ~ 7mV/V
- Accept excitation voltage: 5V

Other name - Indicator	**Function**	**Tag**
Input +	Positive excitation voltage	EXC +
Ref +	Positive excitation voltage return	SEN +
Output +	Positive sensor output voltage	SIG +
Output -	Negative sensor output voltage	SIG -
Ref -	Negative excitation voltage return	SEN -
Input -	Negative excitation voltage	EXC -
	Shield	SH

The figure below is the technical diagram of a load cell

• If using a load cell, connect the 4-wire EXC + connector to SEN + and EXC- toSEN-



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Note that the best way to protect the cable from noise is to properly connect the shield to ground.

• Only a few centimeters of the end of the cable is left without a shield and at the same point the shield is connected to the ground connection with a tight clamp...

6 Menu-Indicator

6.1 Keypad

The device has 4 keys that have different functions depending on the position of the menus. Below you can see the specifications of the keys.

Key - indicator	When setting the parameter		Inside the settings menu		Out of the settings menu	
	to keep	push	to keep	push	to keep	push
Menu / Tare	Confirm parameter changes	Cancel parameter change	Enter the selected menu	Return to previous menu	Enter the settings menu	Tare*
◄ / Reset Tare	Shift between parameter digits	Shift between parameter digits	---	---	---	Reset Tare*
▲/ Start	Continuously increase the parameter	Increase the parameter	Go quickly to the upper menu	Go to the menu above	---	Start*
▼/ Stop	Continuous decrease the parameter	Parameter reduction	Go quickly to the lower menu	Go to the bottom of the menu - more	---	Stop*

Holding the key to confirm the function is 3 seconds.

* Defined functions are by default and can be changed by the user. Read the indicator settings section for more information.

6.2 How to work with menus

1- To enter the settings, hold down the Menu / Tare key for 3 seconds. After entering the settings, the phrase CONN is displayed in the top row, which is the first category of settings and related to the communication settings of the device.
2- Now you can select other settings with the ▼ / ▲key.
3- After selecting the settings category, by holding the Menu / Tare key, you can enter the parameters of those settings categories.

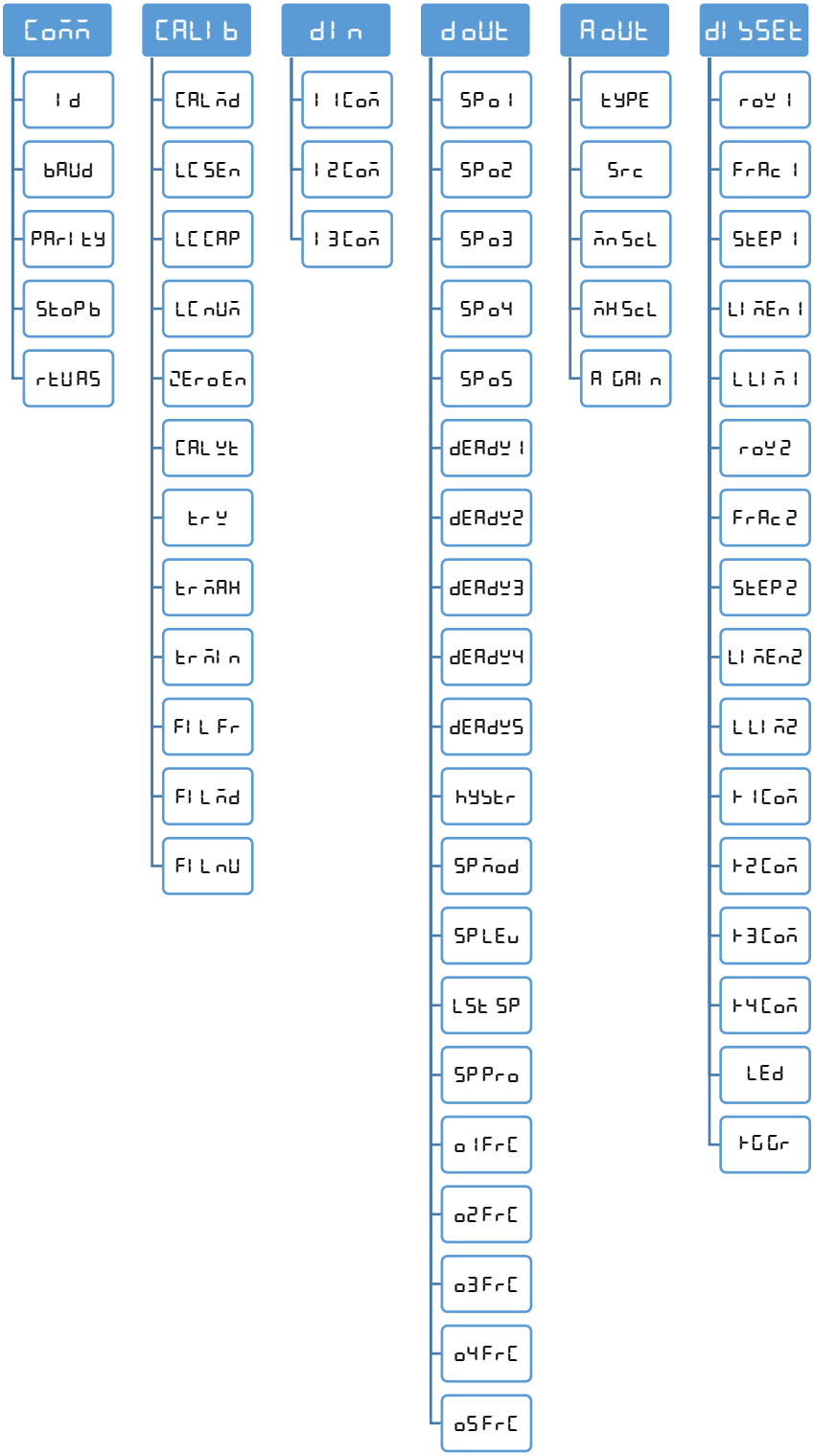
4- Assuming selection and entering the CONN settings category, the phrase ID is displayed in the top row and 1 in the bottom row. Which indicates the value of the device ID parameter of the device.
5- Now you can select other parameters with the ▼ / ▲ key.
6- After selecting the parameter, by holding the Menu / Tare key, you can enter the value of that parameter.
7- Assuming you select and enter the Id parameter edit, the parameter value will start flashing.
8- Now you can change the value of the parameter with ▼ / ▲key and use the ◄key to select the more valuable digits to change.
9- After setting the appropriate value, you can save the parameter by holding down the Menu / Tare key. The phrase SAVED SUCCES is also displayed to confirm the operation.

Notice:
- In each step, by pressing the Menu / Tare key, you can return to the previous step, exit the settings menu or cancel saving the parameter value.

- Parameter values have a predefined limit, for example the value of the CONN->Id parameter can be selected between 1 and 247

6.3 Device settings menu

The device menu has different categories for settings, which we will explain in the following and their parameters. Below we see the general structure of the menus.


Conn
Id
bAUd
PArItY
StoPb
rtUAS
CALIb
CALnd
LCSEn
LCCAP
LCnUn
ZEroEn
CALYt
trY
trnAH
trnIn
FILFr
FILnd
FILnU
dIn
1 ICon
12Con
13Con
doUt
SPo1
SPo2
SPo3
SPo4
SPo5
dERdY1
dERdY2
dERdY3
dERdY4
dERdY5
hYStr
SPnod
SPLEu
LSt SP
SPPro
o1FrC
o2FrC
o3FrC
o4FrC
o5FrC
AoUt
tYPE
Src
nnScL
nHScL
A GAIn
dIbSEt
roY1
FrAc1
StEP1
LInEn1
LLIn1
roY2
FrAc2
StEP2
LInEn2
LLIn2
H ICon
H2Con
H3Con
H4Con
LEd
HGGr

CoMM (Communication settings)

Refer to the connection parameters table for more information.

• ID (Device ID): Each device connected to the RS485 network must have a unique ID.
• Baud (Baud Rate): RS485 serial communication data transmission speed
• Parity (Parity Bit): RS485 serial communication balance bit
• Stop b (Stop Bit): RS485 serial communication bit
• RTU AS (RTU / ASCII): Select RTU or ASCII or display mode for secondary serial communication

CALI b (Calibration settings)

Refer to the Calibration Parameters table for more information.

CAL Md (Calibration Mode): There are two ways to calibrate for each load cell:
1- Automatic calibration using load cell calibration sheet values
2- Weight calibration using reference weight
Set the CAL Md to 0 for automatic calibration and 1 for weight calibration.
For automatic calibration, two parameters LC SEn and LC CAP must be entered.
For weight calibration, the CAL Wt parameter must be entered according to the calibration instructions.
LC SEn (Load Cell Sensitivity): The amount of voltage that the load cell puts into its output at its maximum capacity per excitation volt, which is mV / V. Which is entered in the load cell calibration sheet.
LC CAP (Load Cell Capacity): is the maximum load cell capacity, which is listed in the load cell calibration sheet.
ZEro En (Zero Enable): By entering this parameter and saving it, the zeroing operation will be performed. It should be noted that the value of the parameter can't be changed and just saving it is enough to perform the operation of zeroing.
CAL Wt (Calibration Weight): For calibration, you must enter and confirm the reference weight whose exact mass you know in the Calibration Weight parameter.
Note: The calibration guide section explains how to calibrate both methods.
tr Y (Tare Weight): In this parameter it is possible to view and edit the amount of Tare weight.
tr MAH (Tare Max Limit): This parameter is to limit the weight of the Tare, if the displayed weight is more than this parameter, the Tare operation will not be performed.

tr Mi n (Tare min Limit): This parameter is to limit the weight of Tare, if the displayed weight is less than this parameter, the Tare operation will not be performed.
FI LFr (Filter Frequency): This parameter is the sampling frequency of the analog signal. Note that a higher value of this number increases the sampling speed and decreases its accuracy. It is necessary to choose the optimal value for different uses.
FI LnU (Filter Number): This parameter is used to determine the sample size of each filter. Note that a higher value of this number reduces the speed of weight changes and increases its accuracy. It is necessary to choose the optimal value for different uses.

dI n (Digital input settings)

See the Digital Input Parameters table for more information.

I 1con (Digital Input Function 1): The function attributed to Digital Input 1.
I 2con (Digital Input Function 2): The function attributed to Digital Input 2.
I 3con (Digital Input Function 3): The function attributed to Digital Input 3.

A specific function can be defined for each digital input. There is a parameter assigned to each input that can be set. For each function you intend to perform, give the code of that instruction to this parameter. For example, if you want to perform the Tare operation by activating the first input, first obtain the Tare command code from the command table (in this case the code is 4). It is enough to set the number 4 decimal in the parameter related to the first input, then after this input is activated, Tare operation is performed.

Note that the performance of the inputs is uphill, and staying active at the input level does not mean doing it permanently.

dout (Digital output settings)

Refer to the Digital Output Parameters table for more information.

- SPo 1 (SETpoint Output 1): The value in this parameter is compared to the net weight and the comparison result is applied to digital output 1.

• SP o2 (SETpoint output 2): The value in this parameter is compared to the net weight and the comparison result is applied to digital output 2.

• SP o3 (SETpoint Output 3): The value in this parameter is compared to the net weight and the comparison result is applied to the digital output 3.

• SP o4 (SETpoint Output 4): The value placed in this parameter is compared to the net weight and the comparison result is applied to the digital output 4.

• SP o5 (SETpoint output 5): The value in this parameter is compared to the net weight and the comparison result is applied to digital output 5.

dEAdY 1 (Deadpoint SETpoint 1): Deadweight associated with Setpoint 1

dEAdY2 (Deadpoint SETpoint 2): Deadweight associated with Setpoint 2

dEAdY3 (Deadpoint SETpoint 3): Deadweight associated with Setpoint 3

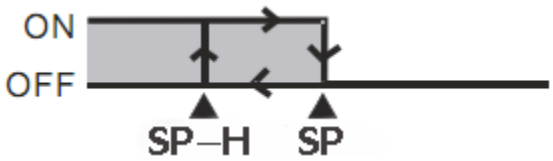
dEAdY4 (Deadpoint SETpoint 4): Deadweight associated with Setpoint 4

dEAdY5 (Deadpoint SETpoint 5): Deadweight associated with Setpoint 5

In some cases, there is an air gap between the main source and the weighing system in weighing systems (such as the hopper air gap to the weighing chamber).

In order to eliminate the effect of this weight (so-called dead weight), a parameter with the same name is embedded in the module, which has an independent value for each Set Point.

hYbtr (Hysteresis): This parameter is considered a Hysteresis to prevent output fluctuations. The operation is that when the output is activated, the set point weight is subtracted from the Hysteresis value and the comparison is performed.



You can set this value to 0.

SP Fnod (SETpoint function mode):

There are four modes for comparing set points and net weight.

First mode: Independent

In this case, each output is independent of the other set points and is compared only with the corresponding set point. If the net weight is less than the set point weight, the corresponding output is activated and otherwise deactivated.

Net Weight <Set Point X -> Outx On

Net Weight> Set Pont X -> Outx Off

Example:

Out 1	Set Point 1	Net Weight
on	12	11
off	12	13

Second case: In between

In this case, the weight is compared with the next and previous set point values.

Comparison	Out 1	Out 2	Out 3	Out 4	Out 5
Net Weight <S.P1	On	Off	Off	Off	Off
S.P1 <Net Weight <S.P2	Off	On	Off	Off	Off
S.P2 <Net Weight <S.P3	Off	Off	On	Off	Off
S.P3 < Net Weight <S.P4	Off	Off	Off	On	Off
Net Weight <SP 5	Off	Off	Off	Off	O n

Third mode (conditional independent):

This mode is the same as the first mode, except that to activate the relays requires a start command, this command can be sent via buttons on the panel or digital inputs or modbus connection.

Fourth case (conditional comparison):

This mode is the same as the second mode, except that to activate the relays requires a start command, this command can be sent via buttons on the panel or digital inputs or Modbus connection.

Note 1: The relays turn off after activating the last relay (specified in the LSt SP variable) or receiving the stop command.

Note 2: By default, ▼ button is defined as start and ▲ button is defined as stop.

Note 3: By default, input 1 is defined as start and input 2 as step.

LSt SP (last relay used): Using this parameter, you can specify after which relay the weighing operation is completed and wait for the restart command.

SPLEv: You can reverse the output state by setting this parameter (Setpoint Level).

SPPro (SETpoint profiles):
Another feature of this module is the profile definition for set points
Imagine you give four setpoints to the module and use it, but you want to set a few more setpoints and only call them when needed.
For example, a packing machine is working. Set points are given to the module and its output is used. Now, when the product changes, you need to change the set points. For this purpose, only the value of the Setpoint Profile parameter is enough select to replace the new set point values.
Up to 10 profiles are currently definable (0 ~ 9).

o1Frc (output1 Force): This parameter can be used to test digital output 1, by changing this parameter, the output can be turned on or off regardless of the load cell weight.

o2Frc (output2 Force): This parameter can be used to test digital output 1, by changing this parameter, the output can be turned on or off regardless of the load cell weight.

o3Frc (output3 Force): This parameter can be used to test digital output 1, by changing this parameter, the output can be turned on or off regardless of the load cell weight.

o4Frc (output4 Force): This parameter can be used to test digital output 1, by changing this parameter, the output can be turned on or off regardless of the weight of the load cell.

o5Frc (output5 Force): This parameter can be used to test digital output 1, by changing this parameter, the output can be turned on or off regardless of the load cell weight.

AoUt (analog output settings)

Refer to the analog output parameters table for more information.

tYPE (Analog Out Type): This parameter is used to select the analog output type. Usable output modes are 0 ~ 5V, 0 ~ 10V, 0 ~ 20ma, 4 ~ 20ma.

Src (Analog Out Source): With this parameter, the analog output source is selected. This source can be net weight, total weight or modified register.

AI nSCL (Minimum Scale): This parameter specifies the weight value for which the output analog will be at its lowest value. This value can be positive, negative or greater than the Maximum Scale.

AAHSCL (Maximum Scale): This parameter specifies the weight for which the output analog will be at its maximum. This value can be positive, negative or less than the Minimum Scale.

AGAI n (Analog Gain): For cases that require the exact amount of analog output can be achieved by changing this parameter to achieve the desired accuracy.

dI bbEt (indicator settings)

See the indicator parameters table for more information.

roY 1: With this parameter you can select the variable that should be displayed in the first row. For example, you can select net weight, gross weight, etc.

FrAc 1 (Fraction 1): This parameter specifies the number of decimal places in the first row. For example, if the read weight is 123.456, if 0 is selected for this parameter, 123 will be displayed, and if 2 is selected for this parameter, 123.45 will be displayed.

Note: If it is not possible to indicator the selected number of decimal places, the number of decimal places will be corrected automatically. For example, if the value of parameter 3 in the above example is displayed as 123.456, but if the weight changes to 1234.567, the number is displayed as 1234.56.

StEP 1 (Step 1): This parameter specifies the steps for indicator changes. For example, if the weight is in kilograms, and this parameter is equal to 0.005, the increase or decrease in weight will be in steps of 5 grams. In other words, changes less than 5 grams will not affect the indicator.

LI nEn 1 (Limit Enable 1): This parameter is to enable or disable the effect of the LLI n 1 parameter.

LLI n 1 (Low Limit 1): With this parameter, the weights below the specified value can be displayed as zero.

For example, if the value of this parameter is 0.200 and the read weight is 0.158, the weight will be displayed on the indicator 0.000 and if the read weight is 0.202, the weight will be displayed on the indicator 0.202.

Note 1: In the example above, weights of -0.158 are also displayed as zero.

Note 2: This parameter will be effective if the LI nEn 1 parameter is equal to 1.

roY 2: With this parameter you can select the variable that should be displayed in the second row. For example, you can select net weight, gross weight, etc.

FrAc 2 (Fraction2): This parameter specifies the number of decimal places in the second row. For example, if the read weight is 123.456, if 0 is selected for this parameter, 123 will be displayed, and if 2 is selected for this parameter, 123.45 will be displayed.

Note: If it is not possible to indicator the selected number of decimal places, the number of decimal places will be corrected automatically. For example, if the value of parameter 3 in the above example is displayed as 123.456, but if the weight changes to 1234.567, the number is displayed as 1234.56.

StEP2 (Step 2): This parameter specifies the steps for indicator changes. For example, if the weight is in kilograms, and this parameter is equal to 0.005, the increase or decrease in weight will be in steps of 5 grams. In other words, changes less than 5 grams will not affect the indicator.

LI nEn2 (Limit Enable 2): This parameter is to enable or disable the effect of the LLI n2 parameter.

LLI n2 (Low Limit 2): With this parameter, the weights below the specified value can be displayed as zero.

For example, if the value of this parameter is 0.200 and the read weight is 0.158, the weight will be displayed on the indicator 0.000 and if the read weight is 0.202, the weight will be displayed on the indicator 0.202.

Note 1: In the example above, weights of -0.158 are also displayed as zero.

Note 2: This parameter will be effective if the LI nEn2 parameter is equal to 1.

F1Con (Key1 Command): This parameter specifies the function of the first key (Menu / Tare) when out of menus. This value is set to Tare by default.

F2Con (Key2 Command): This parameter specifies the function of the second key (◄ / Reset Tare) in off-menu mode. This value is set to Tare Reset by default.

F3Con (Key3 Command): This parameter specifies the function of the third key (▼) in off-menu mode. This value is set to Start by default.

F4Con (Key4 Command): This parameter specifies the function of the fourth key (▲) in off-menu mode. This value is set to Stop by default.

LEdMd (LED Mode): This parameter specifies the function of the indicator LEDs, if the default values are 0, if the input status is 1 and if the output status is 2.

FGGr (Kg / Gr LED Select): This parameter is for selecting the display unit indicator LED. If it is 0 kg and if it is 1 gram, it is selected. This parameter does not change the indicator number.

7 Parameters

7.1 Readable parameters

Title	Variable type	length	Address			Read / write	Default	Description
			Dec	Hex				
Model	Unsigned int	1	0	0	40001	R	---	Product model
FW Version	Float	2	1	1	40002	R	---	Software version
HW Version	Float	2	3	3	40004	R	---	Hardware version
Serial Number	Unsigned long	2	5	5	40006	R	---	Product ID
Status	Unsigned int	1	7	7	40008	R	---	Status
Gross Weight	Float	2	16	10	40017	R	---	Gross weight
Net Weight	float	2	18	12	40019	R	---	net weight
ADC Unfiltered	Unsigned long	2	20	14	40021	R	---	ADC Unfiltered
ADC Filtered	Unsigned long	2	22	16	40023	R	---	ADC filtered
Analog In	Float	2	24	18	40025	R	---	Analog input voltage
Net Weight (Int)	Signed int	2	26	1A	40027	R	---	Net weight as non Float
Analog Out	Unsigned int	1	28	1C	40029	R	---	Analog output value
Max Weight	Float	2	52	34	40053	R	---	Maximum weight
Min Weight	Float	2	54	36	40055	R	---	Minimum weight
Capture Weight	Float	2	56	38	40057	R	---	Recorded weight
Digital Input	Unsigned int	1	64	40	40065	R	---	Digital input status
Digital Output	Unsigned int	1	65	41	40066	R	---	Digital output status

7.2 Relationship parameters Modbus

Description in the communication menu

Title	Variable type	the length	Modbus address			Read / write	Default	Description
			Dec	Hex				
Device ID	Unsigned int	1	256	100	40 257	R / W	1	ID Adapted device 1 ~ 247
Baud Rate	Unsigned int	1	257	101	40258	R / W	2	Information transfer speed 0 ~ 10 0 = 2400 bps 1 = 4800 bps 2 = 9600 bps 3 = 14400 bps 4 = 19200 bps 5 = 28800 bps 6 = 38400 bps 7 = 56700 bps 8 = 76800 bps 9 = 115200 bps 10 = 230400 bps
Parity	Unsigned int	1	258	102	40259	R / W	2	0 ~ 2 0 = None 1 = Odd 2 = Even
Stop Bit	Unsigned int	1	259	103	40260	R / W	0	0, 1 0 = 1 bit 1 = 2 bits
RTU / Ascii	Unsigned int	1	260	104	40261	R / W	0	0 ~ 3 0 = RTU 1 = Ascii (8bit) 2 = Ascii (7bit) 3 = Polling (Remote Display)

7.3 Calibration parameters

Description in the Calibration menu

Title	Variable type	the length	Address			Read / write	Default	Description
			Dec	Hex				
Calibration Mode	Unsigned int	1	513	201	40514	R / W	0	Select the calibration type 0 ~ 1 0 = Automatic Mode 1 = Weight Mode
Load Cell Sensitivity	Float	2	514	202	40515	R / W	2.0 mv / v	Sensor output sensitivity
Load Cell Capacity	Float	2	516	204	40517	R / W	50.0 Kg	Load cell capacity
Calibration Weight	Float	2	519	207	40520	R / W	5 0.0 Kg	Calibrated reference weight
Tare Weight	Float	2	523	20B	40524	R / W	0.0 Kg	The amount of weight Tare
Tare Max Limit	Float	2	525	20D	40526	R / W	20.0 Kg	The maximum allowable Tare
Tare min Limit	Float	2	527	20F	40528	R / W	-10.0 Kg	The minimum allowable Tare
Frequency Filter	Unsigned int	1	529	211	40530	R / W	5	Filter sampling frequency 0 ~ 20 0 = 4.7 Hz 1 = 10 Hz 2 = 20 Hz 3 = 30 Hz 4 = 40 Hz 5 = 50 Hz 6 = 60 Hz 7 = 96 Hz 8 = 120 Hz 9 = 150 Hz 10 = 200 Hz 11 = 240 Hz 12 = 300 Hz 13 = 400 Hz 14 = 600 Hz 15 = 800 Hz 16 = 960 Hz 17 = 1200 Hz 18 = 1600 Hz 19 = 2400 Hz 20 = 4800 Hz
Filter Number	Unsigned int	1	531	213	40532	R / W	10	Filter sampling number 1 ~ 70

7.4 Digital input parameters

Title	Variable type	the length	Address			Description	Default	Read / write
			Dec	Hex				
DI1 Command	Unsigned int	1	768	300	40769	**Input command of** 0 ~ 12 0 = None 1 = Zero 2 = Calibration 3 = Reserved 4 = Tare 5 = Tare Reset 6 = Reset to Factory 7 = Calibration Restore 8 = Max / Min Reset 9 = Capture Trig 10 = Start 11 = Tare & Start 12 = Stop	10	R / W
DI2 Command	Unsigned int	1	769	301	40770		12	R / W
DI3 Command	Unsigned int	1	770	302	40771		4	R / W

Description in the digital input menu

7.5 Digital output parameters

Description in the digital output menu

Title	Variable type	the length	Address			Read / write	Default	Description
			Dec	Hex				
Profile Number	Unsigned int	1	1024	400	41025	R / W	0	Select output profiles 0 ~ 5
DO Mode	Unsigned int	1	1025	401	41026	R / W	0	Select the output mode 0 ~ 3 0 = Independent 1 = In Between 2 = Conditional Independent 3 = Conditional In Between
Active Level	Unsigned int	2	1026	402	41027	R / W	2.0 mv / v	Select output state 0 ~ 1 0 = Hi Active 1 = Low Active
Set Points Value 1	Float	2	1027	403	41028	R / W	0.0	Defined weight for output 1
Set Points Value 2	Float	2	1029	405	41030	R / W	1.0	Defined weight for output 2
Set Points Value 3	Float	2	1031	407	41032	R / W	2.0	Defined weight for output 3
Set Points Value 4	Float	2	1033	409	41034	R / W	3.0	Defined weight for output 4
Set Points Value 5	Float	2	1035	40B	41036	R / W	4.0	Defined weight for output 5
Dead Weight 1	Float	2	1037	40D	41038	R / W	0.0	Dead weight output 1
Dead Weight 2	Float	2	1039	40F	41040	R / W	0.0	Dead weight output 2
Dead Weight 3	Float	2	1041	411	41042	R / W	0.0	Dead weight output 3
Dead Weight 4	Float	2	1043	413	41044	R / W	0.0	Dead weight output 4
Dead Weight 5	Float	2	1045	415	41046	R / W	0.0	Dead weight output 5
Hysteresis	Float	2	1047	417	41048	R / W	0.0	Hysteresis of outputs
Output Force 1	Unsigned int	1	1049	419	41050	R / W	0	Direct output stimulation 1
Output Force 2	Unsigned int	1	1050	41A	41051	R / W	0	Direct output stimulation 2
Output Force 3	Unsigned int	1	1051	41B	41052	R / W	0	Direct output stimulation 3
Output Force 4	Unsigned int	1	1052	41C	41053	R / W	0	Direct output stimulation 4
Output Force 5	Unsigned int	1	1053	41D	41054	R / W	0	Direct output stimulation 5

7.6 Analog output parameters

Description in the analog output menu

Title	Variable type	the length	Address			Description	Default	Read / write
			Dec	Hex				
Analog Out Type	Unsigned int	1	1280	500	41281	**Analog output type** 0 ~ 3 0 = 0 ~ 5v 1 = 0 ~ 10v 2 = 4 ~ 20ma 3 = 0 ~ 20ma	2	R / W
Analog Out Source	Unsigned int	1	1281	501	41282	**Analog output source** 0 ~ 2 0 = Net Weight 1 = Gross Weight 2 = Modbus	0	R / W
Analog Out my Scale	Float	2	1282	502	41283	**Minimum** Scale	0.0	R / W
Analog Out Max Scale	Float	2	1284	504	41285	**Maximum** Scale	0.0	R / W
Analog Out Reg	Unsigned int	1	1286	506	41287	**Analog output register** 0 ~ 65535	0	R / W
Analog Out Gain	Float	2	1287	507	41288	**Analog output gain** 0.5 ~ 1.5	1.0	R / W

7.7 Specific parameters

Specific parameters

Title	Variable type	the length	Address			Description	Default	Read / write
			Dec	Hex				
Command Register	Unsigned int	1	1536	600	41 537	0 ~ 12 0 = None 1 = Zero 2 = Calibration 3 = Reserved 4 = Tare 5 = Tare Reset 6 = Reset to Factory 7 = Calibration Restore 8 = Max / Min Reset 9 = Capture Trig 10 = Start 11 = Tare & Start 12 = Stop	0	W
Fraction	Unsigned int	1	1 537	6 01	41 538	0 ~ 5	3	R / W
Delta t	Unsigned int	1	1 538	6 02	4 1539		0.0	R / W

7.8 Indicator parameters

Description in the Indicator Settings menu

Title	Variable type	the length	Address			Description	Default	Read / write
			Dec	Hex				
Row 1	-	-	-	-	-	**Variable selection** 0 ~ 10 0 = Net Weight 1 = Gross Weight 2 = Digital Input 3 = Digital Output 4 = Setpoint 1 5 = Setpoint 2 6 = Setpoint 3 7 = Setpoint 4 8 = Setpoint 5 9 = Max Weight 10 = Min Weight 11 = Capture Weight	0	R / W
Fraction 1	-	-	-	-	-	**Select the number of decimal places in the indicator** 0 ~ 3	3	R / W
Step 1	-	-	-	-	-	**Show increase / decrease steps** 0.001 ~ 1000	0.0 01	R / W
Limit En 1	-	-	-	-	-	**Enable / disable indicator restrictions** 0, 1	0	R / W
Low Limit 1	-	-	-	-	-	**Indicator limit value** 0.001 ~ 1000	0.001	
Row 2	-	-	-	-	-	**Variable selection** 0 ~ 10 0 = Net Weight 1 = Gross Weight 2 = Digital Input 3 = Digital Output 4 = Setpoint 1 5 = Setpoint 2 6 = Setpoint 3 7 = Setpoint 4 8 = Setpoint 5 9 = Max Weight 10 = Min Weight 11 = Capture Weight	1	R / W
Fraction 2	-	-	-	-	-	**Select the number of decimal places in the indicator** 0 ~ 3	3	R / W
Step 2	-	-	-	-	-	**Show increase / decrease steps** 0.001 ~ 1000	0.001	R / W
Limit En 2	-	-	-	-	-	**Enable / disable indicator restrictions** 0, 1	0	R / W
Low Limit 2	-	-	-	-	-	**Indicator limit value** 0.001 ~ 1000	0.001	R / W

K1 Command	-	-	-	-	-	0 ~ 9 0 = None 1 = Zero 2 = Calibration 1 3 = Calibration 2 4 = Tare 5 = Tare Reset 6 = Reset to Factory 7 = Calibration Restore 8 = Max / Min Reset 9 = Capture Trig	4	R / W
K2 Command	-	-	-	-	-		5	R / W
K3 Command	-	-	-	-	-		9	R / W
K4 Command	-	-	-	-	-		8	R / W
LED Mode	-	-	-	-	-	0 ~ 2 0 = Default 1 = Indicator Inputs 2 = Indicator Outputs	0	R / W
Kg-Gr	-	-	-	-	-	0 ~ 1 0 = Kg 1 = Gr	0	R / W

8 Appendix

8.1 Calibration guide

Calibration of Pars Mega load cell indicator can be done in two ways:

1 Automatic calibration method

2 weight calibration methods

First specify your calibration method using the CAL Ad menu.

For automatic calibration CAL Ad =0

and for weight calibration CAL Ad = 1

8.2 Automatic calibration method

Before performing this calibration, you need to have access to the load cell calibration sheet provided by the manufacturer of the load cell. This sheet is unique for each load cell and usually has a serial number corresponding to the load cell serial.

This calibration method can be done using LC SEn and LC CAP parameters. These values should be adjusted according to the values entered in the calibration sheet.

LC SEn is also referred to by other names such as Full Scale Output or R.O and its unit is mV / V. The number listed on the sheet must be entered exactly in this parameter.

LC CAP is also the amount of load cell capacity. Which is usually referred to as Capacity on the calibration sheet.

Note: If the number of load cells connected to the indicator is one, the automatic calibration steps will be performed as mentioned, but if the number of load cells is more, you must set the LC Sen parameter equal to the average of the load cells and the LC Cap equal to the total capacity of the load cells. This indicator has the capacity to parallel 6 load cells.

Example: We have two 50 kg load cell numbers that we have networked through the junction box or directly, the Full Scale Output number in their calibration sheet is 2.02 mV / V and 2.01 mV / V.

Now:

$$\frac{2.01(mV/V) + 2.02(mV/V)}{2} = 2.015\ (mV/V)$$

And

$$50\ \mathrm{Kg} + 50\ Kg = 100\ Kg$$

So:

LC SEn = 2.015

LC CAP = 100

Calibration will be performed by placing the above items.

8.3 Weight calibration method

Before performing this calibration method, you need to have a sample weight with a specified weight and more than 25% of the load cell capacity (or the maximum weight to be measured).

This means that if your load cell is 100 kg, you must have a weight of more than 25 kg that you know the exact weight of.

In the following example, we want to calibrate a 100 kg load cell with a sample weight of 25 kg.

Calibration step:

1 - First, zero the indicator without a weight on the load cell. To do this, set the ZEro parameter to edit in the calibration menu (the second row number is flashing), and hold down the Enter key for 3 seconds until the save SUCSES statement appears.

2 - Put the sample weight on the weighing plate, enter the calibration menu and set the CAL Yt parameter equal to 25.000 and hold the Enter key for 3 seconds to save the changes.

Calibration is performed after saving.