CONFIGURATION HANDBOOK

ELL100

LOREME 12, rue des Potiers d'Etain Actipole BORNY - B.P. 35014 - 57071 METZ CEDEX 3
Phone 03.87.76.32.51
Contact : Commercial@Loreme.fr - Technique@Loreme.fr
Download manual at : www.loreme.fr

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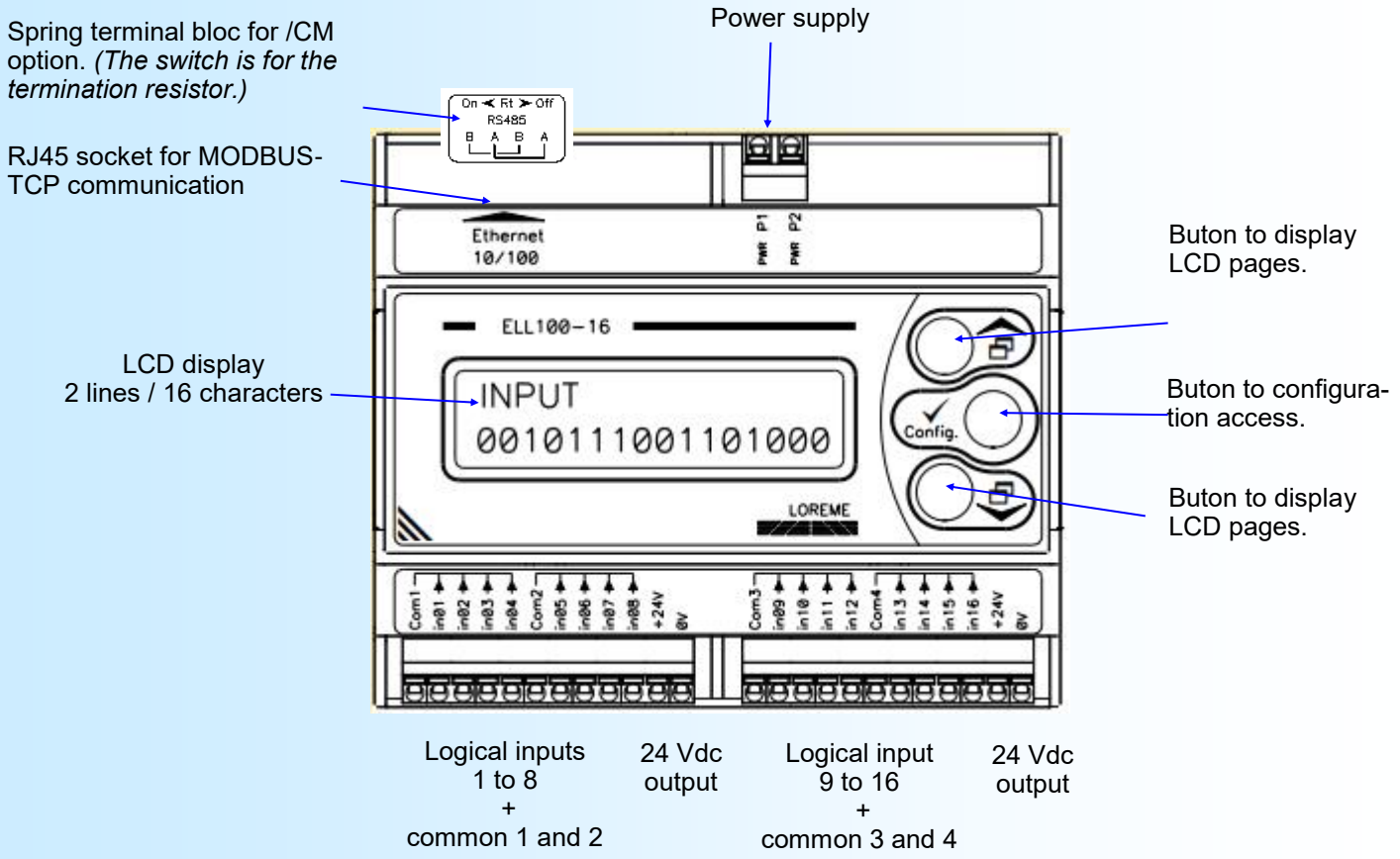
Device presentation



The ELL100 is a module of 16 logical inputs. Divide into 4 groups of 4 inputs. The device can used for a wide possibilities, from simple state monitoring, via energetic or calorific counting, flow measure or control start and stop times.

The LCD display allows a fast visualization of device operating and device parametrization.

The ELL100 can equipped with the following options:
/CMTCP : Ethernet MODBUS TCP link - master module on BUS100 system.
/BUS : Slave module on a Bus100 system.
/CM : RS485 link for MODBUS RTU.

- The /CMTCP option allows measurements to be made available on an Ethernet link (MODBUS TCP protocol). To use the link, simply configure the IP address and mask (via the front panel).
- The /BUS option allows several devices to be concentrated on an Ethernet link, in association with a master device (/CMTCP see chapter "BUS 100"). For use on a bus, the device address must be configured on the bus (via the front panel).
- The /CM option allows the device to be connected to a Modbus network in RS485. The slave address and the communication speed must then be configured.

DESCRIPTION

The ELL100 scans the input status cyclically with a duration of 50 ms between each cycle. This time includes data processing, display and, depending on the configuration, a fixed anti-bounce delay of 25 ms. It also serves as a time base for measuring the active (ON) and inactive (OFF) state durations of the inputs and for measuring the duration between pulses (flow measurement calculation, etc.). A pulse is detected when an input changes from the inactive (OFF) state to the active (ON) state.

The data treatment include:
- a count of ON time and OFF time in minute and in 32bits integer format,

- A count of pulse in 32bits integer format,
- A calculation of total pulse in floating number egal to Nb of pulse x Pulse weight,
- A calculation of instantaneous measure (flow, power, ...) in float number with a reference time of one hour or one minute. Measure = (pulse weight x coefficient) / delay between 2 pulses.

To avoid a loss of counter in case of supply loss, the ELL100 make a backup of all counters (ON time, OFF time and total pulse count) every 5 minutes in non volatile memory.
A reset function of counters is available. It can be activated by front face or by communication.

Notes:
- The 50 ms cycle time imposes a minimum active and inactive state duration of 75ms with debounce and 51ms whitout. A shorter duration results in random detection of input state.
- Due to internal calculations, pulse total counters are limited to 16 millions.

Operating

1) Visualization

The ELL100 can display 33 measurement pages. The buttons ⮝ , ⮟ allow to move from one page to another.
⮝ : in order page 32->page 31->…->0 . ⮟ : in order page 0->page 1->…->32.

Page 0 (Information display at power on)

```
ENTREE
0101000100010001
```

State of input IN01 to IN16.
« 0 » = OFF (inactive), « 1 » = ON (active).

IN01 IN16

Page 1 (ON time and OFF time)

```
E1  TON :   0H02
E1  TOFF:   0H04
```

Display of ON time for input IN01 (Hours, minutes up to 9999H59).
Display of OFF timer for input IN01 (Hours, minutes up to 9999H59).

Page 2 (Measurement page)

```
E1  MES: 135m3/h
TOT:    1212m3
```

Display of instantaneous measure of flow with a measure time of one hours.
Display of total of pulse. (Number of pulse x pulse weight)

…..

Page 31 (ON time and OFF time)

```
E16 TON :9125H58
E16 TOFF: 25550H
```

Display of ON time for input IN16 (Hours, minutes up to 9999H59).
Display of OFF time for input IN16 (hours >= 10000h).

Page 32 (Measurement page)

```
E16 MES: 135W
TOT:     369Wh
```

Display of power measure with a measure time of one hours.
Display of total of pulse (Number of pulse x pulse weight)

2) Configuration

The ELL100 is fully configurable via the front face. A press on “config” button access to menus.
The configuration process depends on the page displayed.
In **page 0**, the user can setting general parameters and the input parameters common to all channels if they are identical (see paragraph **2.1** page 6)
In **page 1 to 32**, the user can setting only the parameters for the channel who’s displayed. (see paragraph **2.3** page 7)

Configurable parameters are :

- activation /deactivation of debounce delay (25 ms).
- Unit,
- Number of decimal,
- pulse weight,
- measurement time,
- time-out.

The debounce delay is use to filter the inputs pulses.

The Unit is use to interpret the physical quantity counted (l, m^3, kg, Wh). It is limited to 4 characters.

The number of decimal is the number of digit displays behind the decimal point. This number is limited to 3.

The pulse weight is use to weight the impulse counting.

The measurement time is use to calculate the instantaneous measure (flow, …) or the count derivative compared to time. 2 choices are possible:

- A measurement time of one hour,
- A measurement time of one minute,

In the case of one hour, the device display automatically a unit in the form ‘unit**/h**’ (m3/h for example). In the case of minute, the device display automatically a unit in the form ’unit**/M**’.

Remarks:
In the case of energy counting (Wh, VARh, Vah) and a measurement time of hour, the ELL100 display automatically a power unit (W, VAR, VA) for the instantaneous measure.

The time-out is the delay without pulse beyond which the instantaneous measurement (flow,…) is reset to zero. It is adjustable from 1 to 60 minutes.

2.1) Configuration for page 0

`CONFIGURATION` `REVx.y`	A temporary message is display to show the device revision (Revision Hard.Soft).
`LANGUAGE?` `<FR> ENG`	Choice of message language FR: french, ENG: English. Choose with ⮟, ⮝ , validate with 'Config'.
`MEASURE CONFIG.?` `(Y-N)`	Access to common measure parameter (for all inputs). Button ⮟ (NO) to skip to next rubric. Button ⮝ (YES) to access parameters setting.
`ALL INPUTS?` `(Y-N)`	Confirmation for access to all inputs configuration. Button ⮟ (NO) to skip to next rubric. Button ⮝ (YES) to access To parameters setting.
`DEBOUNCE DELAY?` `YES < NO>`	Activation / Deactivation of 25ms debounce delay. Choose with ⮝ , ⮟ , validate with 'Config'.
`UNIT?` `m3`	Setting of counting unit. Type 4 alphanumeric characters. Choose a character with ⮝ and ⮟ . Validate with 'Config' and pass to the next.
`NBR OF DECIMAL?` `0`	Setting of number of decimal. Choose with ⮝ or ⮟ value from 0 to 3. Validate with 'Config'.
`COUNTING WEIGHT?` `1m3`	Setting of pulse weight. Change the value with ⮝ or ⮟ . Validate with 'Config' .
`MEASURE TIME?` `<HOUR> MINUTE`	Setting of derivative time for the instantaneous measure. Choose with ⮝ , ⮟ , validate with 'Config'.
`TIMEOUT?` `5Mnt`	Setting of timeout delay. Change the value with ⮝ or ⮟ . Validate with 'Config' .

Remark:
The timeout delay is define by defect to 5 minutes if measurement time is <HOUR> or 1 minute if the measurement time is <MINUTE>.

Device with communication option

`COMMUNICATION?` `(Y N)`	Button ⮝ to access to parameters, ⮟ to skip to next rubric.

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Device with /CMTCP option

IP ADDRESS? 192.168.000.253	Change the field value with buttons ▲ and ▼. 'Config' to validate and go to the next field.
IP MASK? 255.255.255.000	Change the field value with buttons ▲ and ▼. 'Config' to validate and go to the next field.

The factory configuration is 192.168.0.253 for the ip address and 255.255.255.0 for the mask.

Device with /BUS option

BUS ADDRESS? 1	Change the value with buttons ▲ and ▼. Validate with button 'Config'.

The factory configuration is bus address = 1.

Device with /CM option

SLAVE ADDRESS? 1	Change the value with buttons ▲ and ▼. Validate with button 'Config'.
BAUDRATE (Kbds)? <9.6> 19.2	Choose with buttons ▲ and ▼. Validate with button 'Config'.
STOP BIT? <1> 2	Choose with buttons ▲ and ▼. Validate with button 'Config'.

The factory configuration is : address:1, 9600 bauds, 1 stop bit.

2.2) End of configuration. Storage of parameters:

MEMORIZING *****	This message is display only for the /CMTCP option and if the user enter to COMMUNICATION menu.
OK	This message indicate the end of configuration and indicate too that modifications is saved.

2.3) Configuration for page 1 to 32

MEASURE CONFIG.? (Y-N)	Access to parameters setting for the input display. Button ▼ (NO) to skip to next rubric. Button ▲ (YES) to access To parameter setting (see previous page).
UNIT? m3	The parameters are : unit, number of decimal, pulse weight, measurement time, timeout.
NBR OF DECIMAL? 0	Setting of number of decimal. Choose with ▲ or ▼ value from 0 to 3. Validate with 'Config'.
COUNTING WEIGHT? 1m3	Setting of pulse weight. Change the value with ▲ or ▼ . Validate with 'Config' .
MEASURE TIME? <HOUR> MINUTE	Setting of derivative time for the instantaneous measure. Choose with ▲ , ▼ , validate with 'Config'.

TIMEOUT?	Setting of timeout delay.
5Mnt	Change the value with ▲ or ▼ . Validate with 'Config' .
OK	End of configuration. The modifications are saved.

Note:
The factory setting are:
- *Language French, debounce delay activate, no unit, no decimal, pulse weight = 1, Measurement time = HOUR, timeout = 5 minutes.*

Note:
If no action are made within 90secondes delay, the module exit configuration mode and discard any modifications.

RESET COUNTERS VIA FRONT FACE

The ELL100 has a function to reset to zero the counters TON and TOFF, total pulse counter, and instantaneous measure for all inputs or for selected input. The choice is function of displayed page on LCD.
If it is page 0 (inputs state), the user can reset to zero counters for all inputs.
If a page with TON and TOFF counters is display (page 1,3,5,…,31), only TON and TOFF counters for the channel displayed are reset to zero. If it is a measure page (page 2,4,6,…,32), only the instantaneous measure and the total counters are reset to zero.

To access to the funcvtion, the user should press simultaneously the buttons during 5 seconds.
The confirmation message is display:

RESET Y/N?	For reset to zero, press button ▲ or button ▼ to ignore function.

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EMC Considerations

1) Introduction

To meet its policy concerning EMC, based on the Community directives **2014/30/EU** & **2014/35/EU**, the LOREME company takes into account the standards relative to this directives from the very start of the conception of each product.
The set of tests performed on the devices, designed to work in an industrial environment, are made in accordance with **IEC 61000-6-4** and **IEC 61000-6-2** standards in order to establish the EU declaration of conformity. The devices being in certain typical configurations during the tests, it is impossible to guarantee the results in every possible configurations. To ensure optimum operation of each device, it would be judicious to comply with several recommendations of use.

2) Recommendations of use

2.1) General remarks

- Comply with the recommendations of assembly indicated in the technical sheet (direction of assembly, spacing between the devices, ...).
- Comply with the recommendations of use indicated in the technical sheet (temperature range, protection index).
- Avoid dust and excessive humidity, corrosive gas, considerable sources of heat.
- Avoid disturbed environments and disruptive phenomena or elements.
- If possible, group together the instrumentation devices in a zone separated from the power and relay circuits.
- Avoid the direct proximity with considerable power distance switches, contactors, relays, thyristor power groups, ...
- Do not get closer within fifty centimetres of a device with a transmitter (walkie-talkie) of a power of 5 W, because the latter can create a field with an intensity higher than 10 V/m for a distance fewer than 50 cm.

2.2) Power supply

- Comply with the features indicated in the technical sheet (power supply voltage, frequency, allowance of the values, stability, variations ...).
- It is better that the power supply should come from a system with section switches equipped with fuses for the instrumentation element and that the power supply line be the most direct possible from the section switch.
- Avoid using this power supply for the control of relays, of contactors, of electrogates, ...
- If the switching of thyristor statical groups, of engines, of speed variator, ... causes strong interferences on the power supply circuit, it would be necessary to put an insulation transformer especially intended for instrumentation linking the screen to earth.
- It is also important that the installation should have a good earth system and it is better that the voltage in relation to the neutral should not exceed 1V, and the resistance be inferior to 6 ohms.
- If the installation is near high frequency generators or installations of arc welding, it is better to put suitable section filters.

2.3) Inputs / Outputs

- In harsh conditions, it is advisable to use sheathed and twisted cables whose ground braid will be linked to the earth at a single point.
- It is advisable to separate the input / output lines from the power supply lines in order to avoid the coupling phenomena.
- It is also advisable to limit the lengths of data cables as much as possible.

RS232 link setting

The device can be configured or updated in terminal mode via an RS232 link.

Step 1: Driver installation for USB / RS232 adapter

- download driver at www.loreme.fr:
  http://www.loreme.fr/aff_produits.asp?rubid=53&langue=fr

- Click on executable file to install the driver,
- Plug the cable on a USB port, Windows install a new serial communication port **COMx** (x >= 4).

Note :
The use of the cable on another USB port don't generates a new communication port. Use of another adapter generates another communication port number (COMx) and requires the reconfiguration of the hyperterminal.

Step 2: Setting of terminal emulation software (PC with windows).

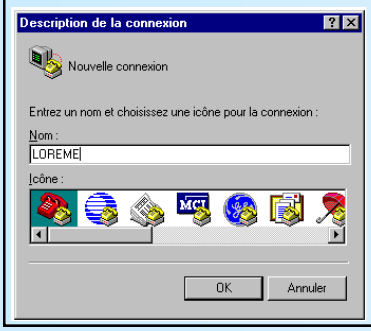
1 The terminal software for PC « HyperTerminal » can be downloaded (compatible w10, w11 32 and 64bits) :

www.loreme.fr in download part (http://www.loreme.fr/HyperTerm/htpe63.exe)

=> Run the downloaded software to install it.

2 Start a "hyper Terminal" connection :
- Go to **"All programs \ HyperTerminal Private Edition"**
- Click on **"HyperTerminal Private Edition"**

3 Enter name for the new connection



4 Choose the communication port related to the adapter.

5 Choose:
- 9600 bauds
- 8 DATA bits
- no parity
- 1 stop bit
- **XON/XOFF**

6 The PC is now in terminal mode, connect it to the device by plugging the RS232 cable. The measure is now displayed on the terminal. To access configuration, press '**C**' key.

7 When leaving Hyper terminal, the following window will appear. By saving, the terminal session will start with the same configuration.

Thus, the shortcut will permit to communicate with all LOREME devices.

Note: To modify the parameters of terminal session whereas this one is connected, it is necessary to disconnect it, modify the parameters and then to reconnect it.

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FIRMWARE update

To access to the firmware update function, you must first open an HyperTerminal session on a PC, connect the device to the PC with the RS232 link cable and then power on the device.

The following character is send to the terminal:

> <——————— The device sends this character then it waits the « F » key during 0.5 s.

If the user has pressed the « F » key in the allowed time, the following message is displayed in the HyperTerminal windows:

FIRMWARE LOADER Rev3
READY TO TRANSFER...

The device is now in the firmware load mode and is waiting for the firmware file. This file is provide by LOREME and contain the firmware code in Intel HEX format.

Select the « Transfer », « Send a text file ... » in the HyperTerminal menu.
Select the directory and open the file. The HyperTerminal program begins to send the file to the device.

FIRMWARE LOADER Rev3
READY TO TRANSFER
********** <——————— The star characters appears to show the progress of the uploading.

At the end, the message « **PROGRAMMING OK !** » is display if no errors occurs. Otherwise, these following message could be displayed:

- **SERIAL COM ERROR !** Error during receipt.
- **SERIAL TIMEOUT !** Waiting time of receipt elapsed (60 s).
- **PROGRAMMING FAILED !** Programming error in the internal flash memory.

Attention
If an error occurs during the programming process, it is necessary to start again the whole procedure.
A bad programming leads to an inoperative device.

RS485 MODBUS communication

1) Features

Protocol:	MODBUS RTU
Link:	RS485
Baud rate:	9600 or 19200 bauds (9600bds by defect)
Address:	1
Stop bit:	1 or 2 stop bit
Connector:	Spriont terminal block
Read request:	Function code 03,04
Write request:	Function code 06,16 (reset counters TON,TOFF, total, instantaneous measure).
Data available:	Input state, counter TON, TOFF in minute, total pulse counter, input measurement, unit.

2) Response time

The ELL100/CM have a response time to a request of 15ms to 50ms.

3) Data description

The format and the location are identical to the MODBUS TCP.
The data is available from address register 0 to 160 (0x00A0 in hexa). 161 registers

Note:
The device have a total of 161 registers for reading. The maximum registers who can be read in one request is limited to 125. Therefore at least 2 request are required for reading all registers.

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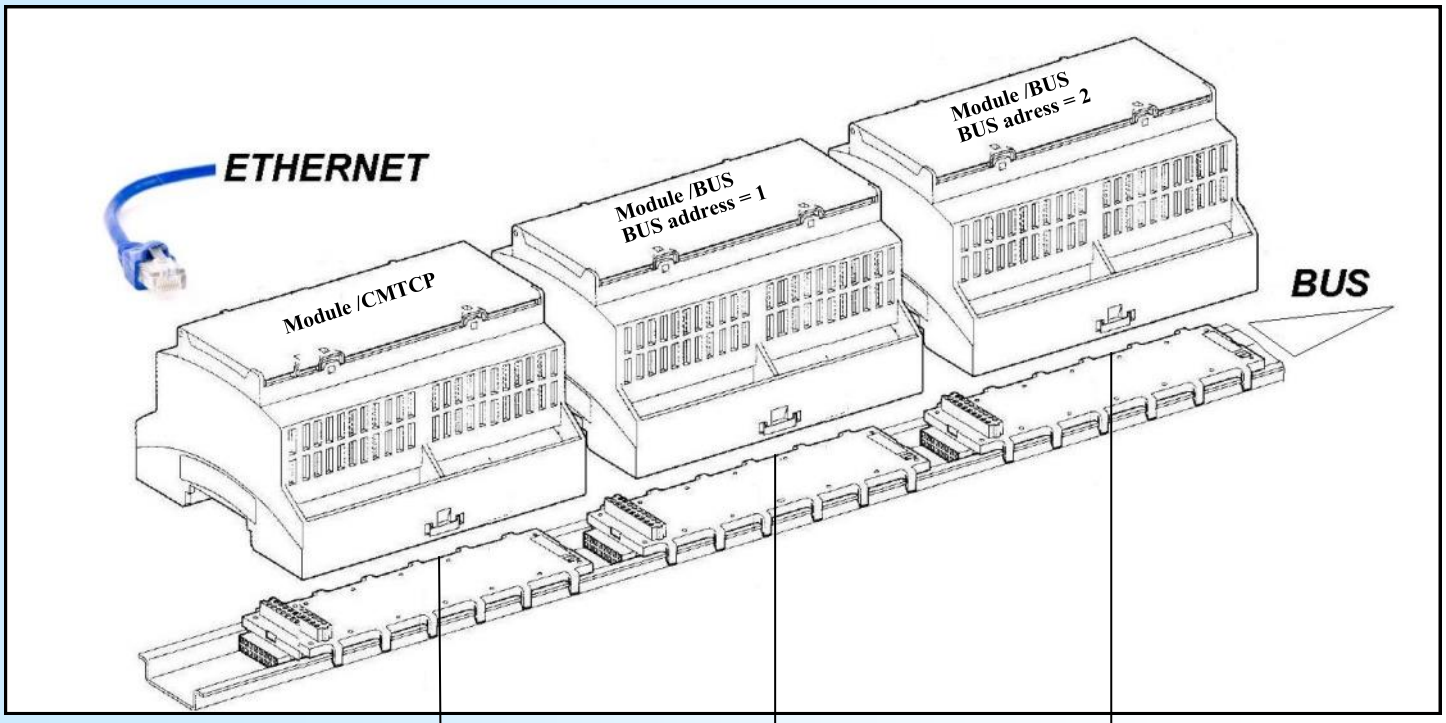
BUS100 System

The BUS100 is a modular system composed of one master (/CMTCP module. Module with Ethernet link) and slaves modules (/BUS model without Ethernet link). All modules are reachable by the Ethernet link. Each module is accessible via its own address range. The master module is always accessible in the address range of 0 to 999. The slaves module (/BUS module) are reachable in an address range equal to **1000 x BUS address**. The address parameter is configurable by the front face of device and should be different for each BUS module connected as shown below.

Example of a BUS system



	Possible address range
from	0000
	Range of measure registers
	(The length of this range depends on the type of device)….
	….
	Reserved address for the configuration
	….
to	0999 Reserved address for a device identification code

	Possible address range
from	1000
	Range of measure registers
	(The length of this range depends on the type of device)….
	….
	Address reserved for the configuration
	….
to	1999 Reserved address for a device identification code

	Possible address range
from	2000
	Range of measure registers
	(The length of this range depends on the type of device)….
	….
	Address reserved for the configuration
	….
to	2999 Reserved address for a device identification code

Reserved address for later use.

MODBUS TCP COMMUNICATION

1) Features

Protocol:	MODBUS TCP
Link:	Ethernet
Baud rate:	10/ 100 base T
IP Address:	192.168.0.253 (factory address)
Port:	502
Connector:	RJ45
Read request:	Function code 03,04
Write request:	Function code 06,16 (reset counters TON,TOFF, total, instantaneous measure).
Data available:	Input state, counter TON, TOFF in minute, total pulse counter, input measurement, unit.
Response time:	The response time for a read request is <50ms. For a write request it is around 500ms.

Note: The ELL100 can manage up to 6 MODBUS TCP connections simultaneously. It also integrates a WEB server that allows the visualization of inputs, counters, measurements.

2) Read function

The ELL100 have a total of 161 registers. The maximum register can be read at time is limited to 125. So, 2 reading request are necessary to read the totality of the registers.

3) Data description

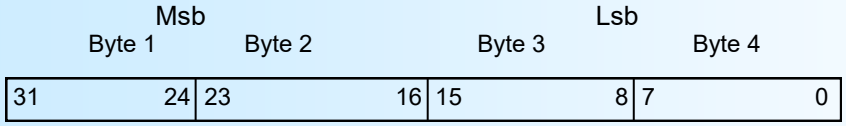
3.1) Data available

All measures are available for reading. The data are in different format :

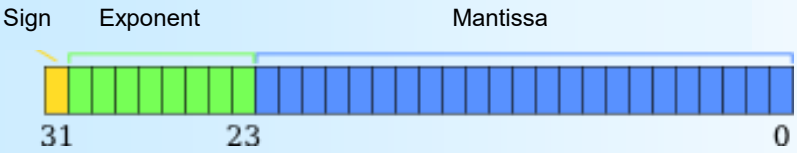
- 1 word either 2 bytes for inputs state,
- 2 words either 4 bytes for counter TON, TOFF and pulse in 32bits integer format,
- 2 words either 4 bytes for instantaneous measure in 32bits IEEE float format,
- 2 word either 4 bytes for unit (4 ASCII characters),

3.2) Data format

- Data in 32bits integer (counters).
Data send Msb first, 2 words : 4 bytes.



- Data in 32 bits IEEE floating point format (measures)
Data are transmitted Most Significant Byte first, 4 bytes or 2 words long.



- Data in 16bits integer format for inputs state or inputs to reset.
1 bit = 1 input. => Bit b0 = IN01, bit b1 = IN02,..., bit b15 = IN16

3.3) reset of counters:

To reset counters for one or several inputs, the user should write a word of 16bits in address 300.

Note:
For the /BUS module, the registers address are shifting by [1000 x bus address].
For example, a module with bus address=1, have its input state register at address 1000 ($3E8). The address mapping is 1000 (0x3E8) to 1160 ($488) and the reset register is at address 1300 ($514).
For a module with bus address 5, data are from address 5000 ($1388) to 5160 ($1428) and 5300 ($14B4) for the reset register.

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4) Table of data registers

4.1) Table for input state

Register address in decimal(in Hexadecimal)	Designation	Total Words
0000 ($0000)	State of input IN1 to IN16	1
	(bit15: IN16 ... bit0: IN01)	

4.2) Table of TON counters in minute

Register address in decimal(in Hexadecimal)	Designation	Total Words
0001 ($0001)	counter IN01 32 bits integer *(Msb)*	1
	(Lsb)	2
0003 ($0003)	counter IN02 32 bits integer	3
		4
0005 ($0005)	counter IN03 32 bits integer	5
		6
….	….	….
0029 ($001D)	counter IN15 32 bits integer	29
		30
0031 ($001F)	counter IN16 32 bits integer	31
		32

4.3) Table of TOFF counters in minute

Register address in decimal(in Hexadecimal)	Designation	Total Words
0033 ($0021)	counter IN01 32 bits integer *(Msb)*	1
	(Lsb)	2
0035 ($0023)	counter IN02 32 bits integer	3
		4
0037 ($0025)	counter IN03 32 bits integer	5
		6
….	….	….
0061 ($003D)	counter IN15 32 bits integer	29
		30
0063 ($003F)	counter IN16 32 bits integer	31
		32

4.4) Table of weighted total pulse counter

Counter value = Nb of pulse x pulse weight

Register address in decimal(in Hexadecimal)	Designation		Total Words
0065 ($0041)	counter IN01 32 bits integer	*(Msb)*	1
		(Lsb)	2
0067 ($0043)	counter IN02 32 bits integer		3
			4
0069 ($0045)	counter IN03 32 bits integer		5
			6
….	….		….
0093 ($005D)	counter IN15 32 bits integer		29
			30
0095 ($005F)	counter IN16 32 bits integer		31
			32

4.5) Table of measure in floating number format

Register address in decimal(in Hexadecimal)	Designation		Total Words
0097 ($0061)	Measure IN01	*(Msb)*	1
	IEEE 32 bits float number	*(Lsb)*	2
0099 ($0063)	Measure IN02	*(Msb)*	3
	IEEE 32 bits float number	*(Lsb)*	4
0101 ($0065)	Measure IN03	*(Msb)*	5
	IEEE 32 bits float number	*(Lsb)*	6
….	….		….
0125 ($007D)	Measure IN15	*(Msb)*	29
	IEEE 32 bits float number	*(Lsb)*	30
0127 ($007F)	Measure IN16	*(Msb)*	31
	IEEE 32 bits float number	*(Lsb)*	32

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4.6) Tableau des units

(Unit is a suite of 4 ASCII characters either 2 words or 4 bytes)

Register address in decimal(in Hexadecimal)	Designation		Total Words
0129 ($0081)	Unit IN01	Character 1 and 2	1
0130 ($0082)		Character 3 and 4	2
0131 ($0083)	Unit IN02	Character 1 and 2	3
0132 ($0084)		Character 3 and 4	4
0133 ($0085)	Unit IN03	Character 1 and 2	5
0134 ($0086)		Character 3 and 4	6
0135 ($0087)	Unit IN04	Character 1 and 2	7
0136 ($0088)		Character 3 and 4	8
0137 ($0089)	Unit IN05	Character 1 and 2	9
0138 ($008A)		Character 3 and 4	10
0139 ($008B)	Unit IN06	Character 1 and 2	11
0140 ($008C)		Character 3 and 4	12
….		….	….
0157 ($009D)	Unit IN15	Character 1 and 2	29
0158 ($009E)		Character 3 and 4	30
0159 ($009F)	Unit IN16	Character 1 and 2	31
0160 ($00A0)		Character 3 and 4	32

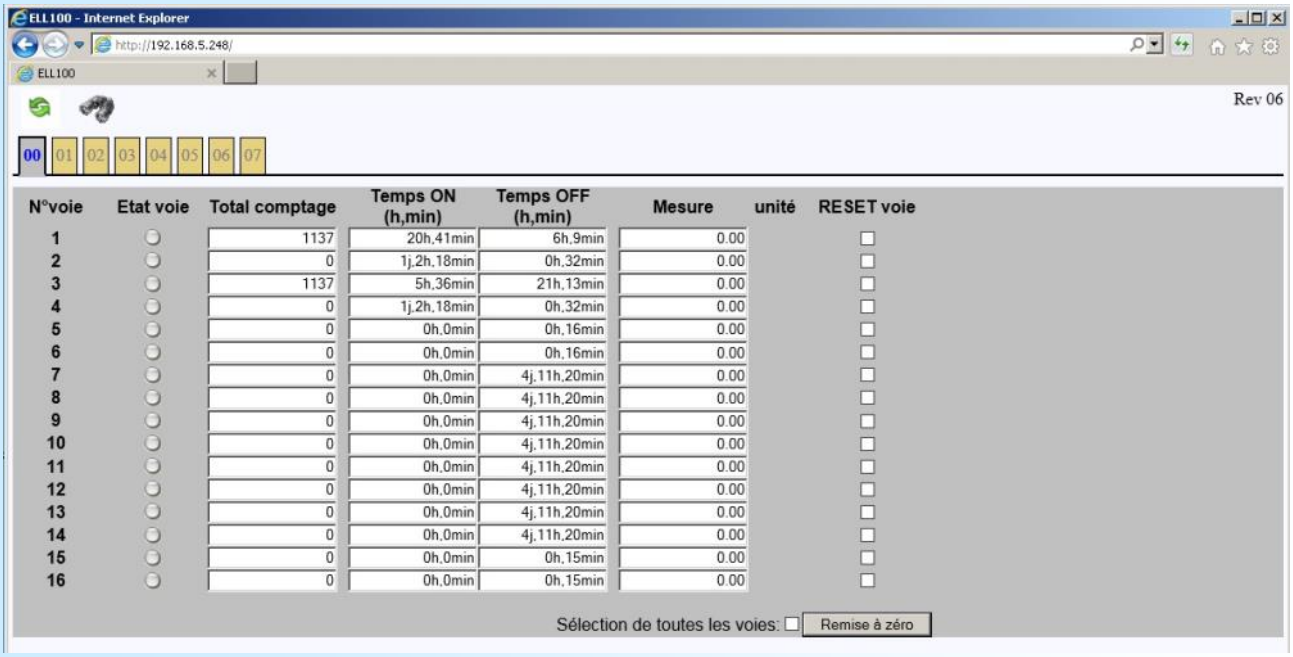
4.7) Command word for reset counters

Register address in decimal(in Hexadecimal)	Designation	Total Words
0300 ($012C)	Reset counter command	1
	(bit15: IN16 ... bit0: IN01)	

To reset a counter for a specific input, the corresponding bit in command register should be set to “1”.

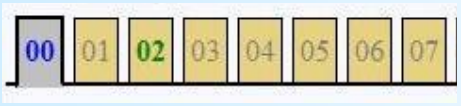
WEB server

The ELL100 embedded a WEB server that allows the user to see all counters via the WEB browser. Simply point to the device's IP address to access the measurement page which looks like this :



This page provides a view of all the measurements available in the device. When an input is active, the corresponding "channel status" indicator is green. The TON and TOFF counter are indicated in Day, hour, minute

Tabs:
The modules present on bus are show with a green writing. The tab in grey show the measurement page of this specific module.



Refresh : Click on this icon to refresh the measures on the page.

Scan: click on this icon to make a bus discover. For this procedure, the master module (address 0) questions all bus address (from 1 to 7). If a slave module is present, the master receive a response and validate the presence of a module at this address.

Reset of counters:
To reset counters, select one or several channel (colum "RESET voie") and press the button "Remise à zero". A confirmation window is display. After confirmation, data are send to device. The measurement page is automatically refresh after 3sec.

Measure page of a module
After select the tabs corresponding to module, the measure page is refresh once.
Click on icon to refresh measure.

Bus discovering (Scan)
At the power ON, the ELL100/CMTCP scan the bus to determine the slave modules present on bus.
It's possible to rescan the bus by clicking on the icon. (useful if the bus constitution is change)
A hourglass icon is display when the scan is in progress.

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Important note for the BUS scan function

After a scan, ensure that all slave module present on bus are detected by the master module. If not, start the scan function again.
It is important to understand that all modules not present on bus, will also be absent on MODBUS TCP communication!

=> This case may append if for example, a module is in configuration mode during the scan.

It is essential to rescan bus if the constitution of bus is changed (add or remove a module).

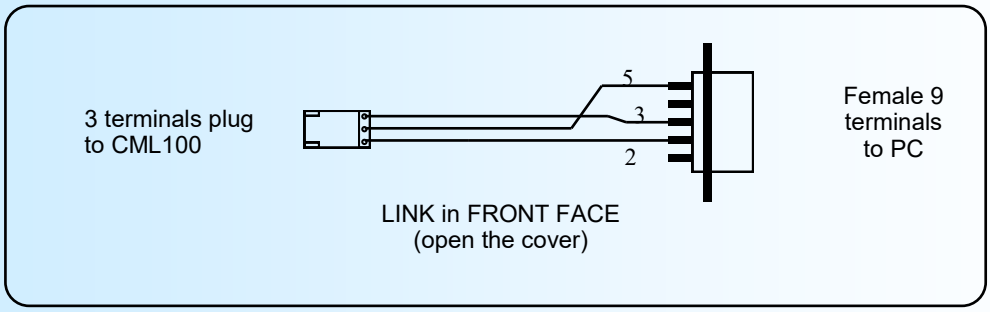
Changing the BUS composition
It is best to power off the rail when a module is added or removed.

Troubleshooting:

Symptoms	Actions
No response to Modbus TCP request	- Check if /CMTCP module answer to a “PING” command. - No response: check the IP address configuration. - Open the WEB measurement page, check the tabs “0” is in green.
No module present on BUS	- Shut off power, remove all slave module. Keep only the /CMTCP module. - Power ON and check on the WEB page if the module at address 0 is detected. - If the module is not detected even after several scan : The /CMTCP module is faulty. - The module “0” is detected : add module slave one by one. Scan the bus after each insertion to ensure that the module and the other are detected.
Impossible to access to measure for a specific module	- The module is added on the bus : Rescan the bus to detected new module. - The BUS constitution is not changed : The module is faulty, or disconnected or in configuration mode.
After a BUS modification, some module have inconsistent measure.	- One or several module have the same BUS address. Check for each module on BUS is configured with an unique address.

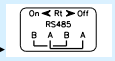
Wiring

PC - DEVICE LINK



DIAGRAMS OF CONNECTIONS

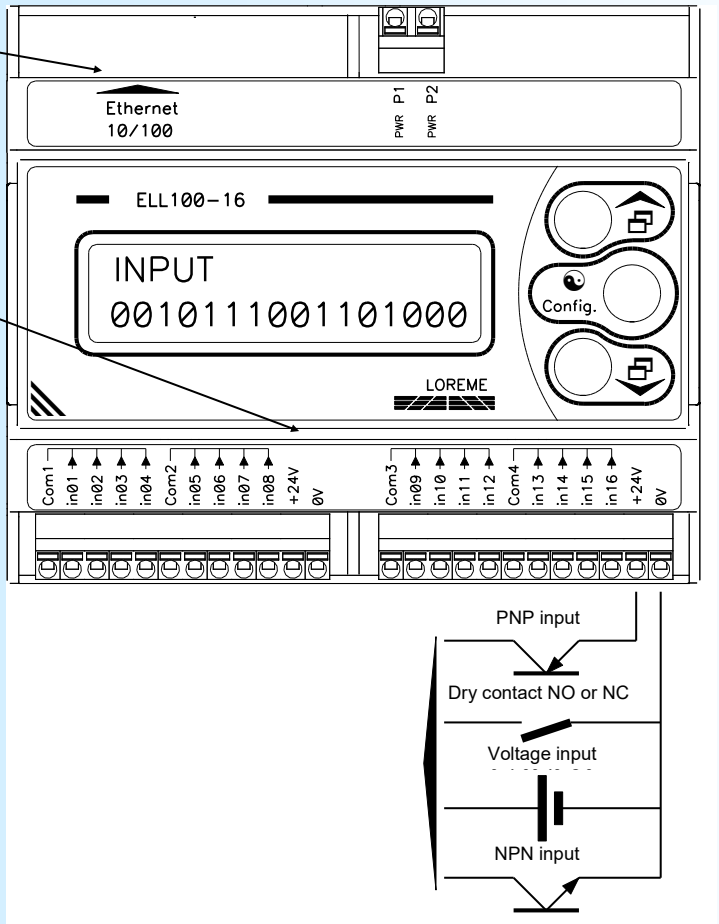
Option /CM
With switch for the termination resistor (Rt)



P1, P2: power supply

Option /CMTCP

COVER
(lift this way)



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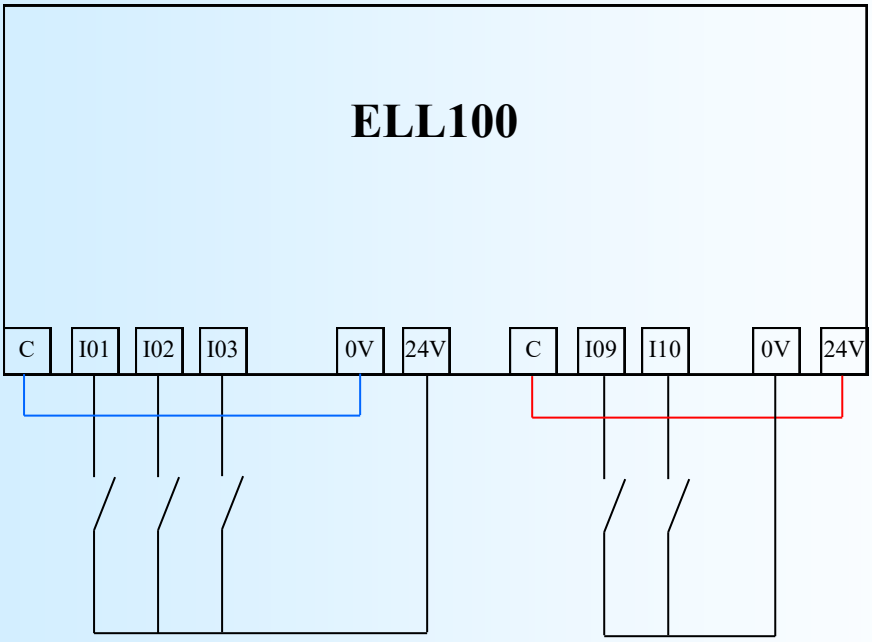
Wiring example

Example with dry contact polarised with ELL100 24V output



Montage avec le 0V commun

Montage avec le 24V commun

Example with individual voltage source for each input