



# PRELIMINARY USER MANUAL

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Version : A  
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## SOURCE 300 VRMS PS-600-BS/300V PRELIMINARY USER MANUAL

Référence du document : MU-RC2036-EN-00



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## TABLE OF SPECIFICATIONS

Specifications are identified as [TEXT\_number] and grouped by type:

- ELEC for electrical characteristics,
- LOG for software facilities
- MECA for mechanical characteristics

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## 1. TECHNICAL SPECIFICATIONS

### 1.1 Electrical specifications

#### [ELEC\_100] Output voltage

Rated voltage: 350 Vrms 2 ranges 175 and 350 V  
Current Rating: 2 or 4 amps according to the range  
The voltage wave form is sinusoidal.

Accuracy: + / - 1.75 V due to autocalibration

The resolution is 12 bits is:

- In 175 volt range: 43 mV

- In 350 volt range: 85 mV

Network regulation: <0.1% Vs max or 350 mV

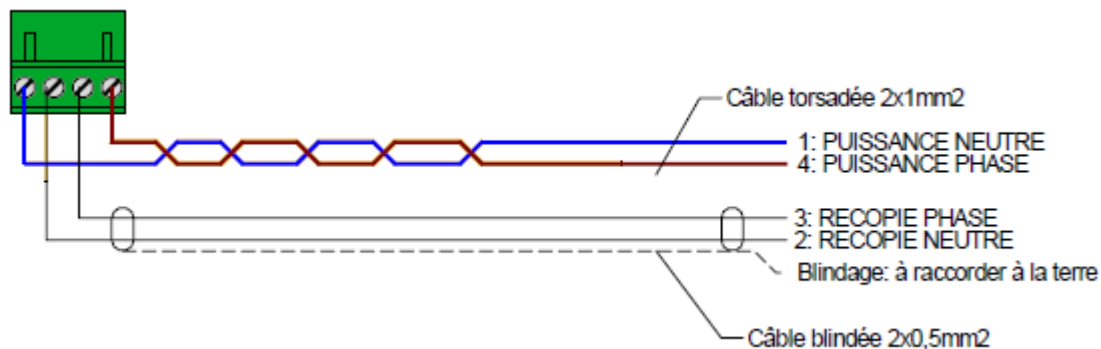
Load regulation (10 to 90% of Imax): <0.5% of V 1.75 max Vs

Signal / noise ratio > 80 dB @ 350Veff report

Rise time (10% 90%): <20 typ  $\mu$ S

Generation time is programmable in a period (20 ms or 16.7 ms).

Remote controller is used to compensate for significant voltage drops at the connections between the load and the power (length of major son). It is therefore necessary to bring recopies the supply to the load.



#### [ELEC\_110] Frequency

The frequency is programmable on 50 Hz or 60 Hz

#### [ELEC\_120] Output current

The source may charge a nominal current of 1 Arms on both ranges.

The source can deliver a inrush current up 5A pk peak for 100 ms.



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## **[ELEC\_140] Current measurement**

The power supply is equipped with a measure of low caliber and high accuracy:

Measuring range: 100 mA rms

Accuracy: + / - 0.5% of range, or 0.5 mA

For currents generated beyond the measuring range, the measurement is saturated and no longer displayed.

## **[ELEC\_150] Voltage measurement**

To ensure the self-calibration function, the power supply is equipped with an accurate voltage measurement system.

Measuring range: 350 Vrms

Accuracy: + / - 1.75 V

## **[ELEC\_160] Mains**

The power supply must be connected to the phase AC 230 Vrms +6 / -10%, 50 Hz

The network connection will be achieved through cable P + N + T.

The supply line must be protected by a GFCI 16A with a 30 mA differential module.

## 1.2 Mechanical specifications

### [MECA\_100] Case size

The source is mounted in a 19 "rack 4U.

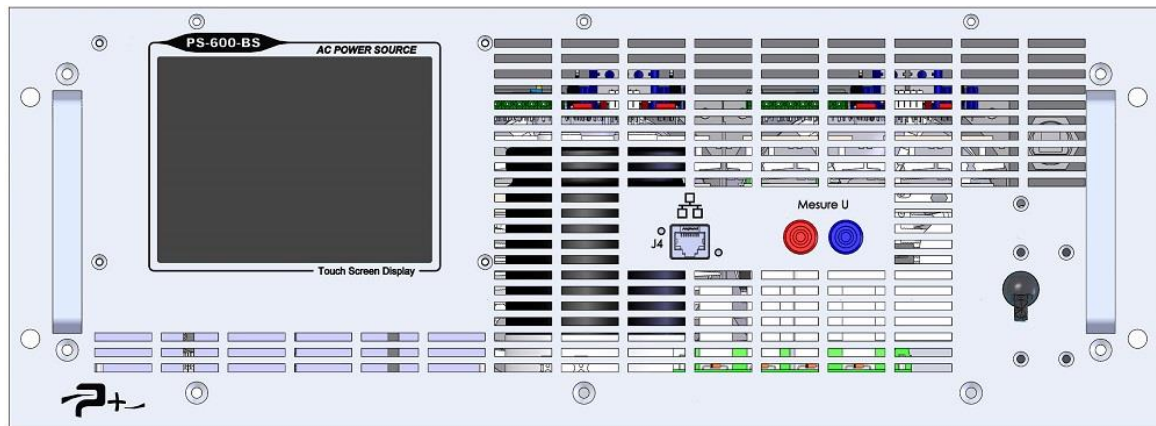
The length of the rack 495 mm outside connectors (from the rear of the front face to the rear of the rear face)



### [MECA\_110] views of panels

The front and rear faces are arranged as follows:

#### Front panel:



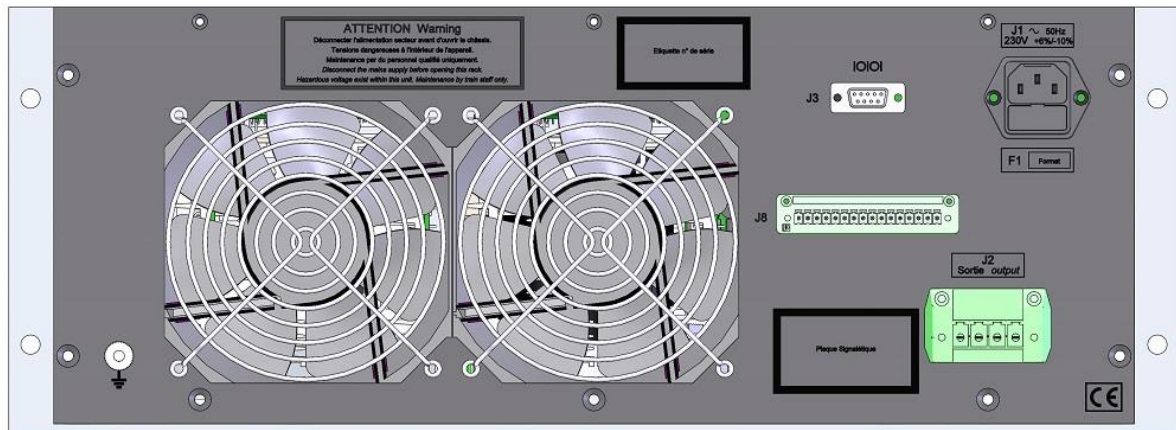
- J4 : RJ45 connector for Ethernet controlling of the supply
- Measure U : Two 4mm banana secure sockets (19 mm spacing), copying the output of the power
- Switch ON/OFF
- Touch screen for all displays and manual controls



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## Rear panel:



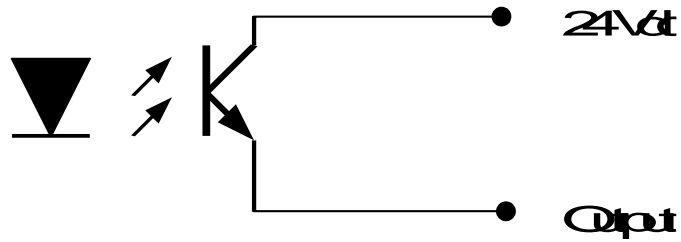
- J1 : IEC socket + 5x20 fuse for 230V 50 Hz equipment , P+N+T
- J2 : socket for power output :
  - Socket Phoenix Contact DKF-PC4/4-GF-7.62
  - Delivered with plug Phoenix Contact PC4/4-STF-7.62
  - Pinout :
    - 1: Power neutral
    - 2: Feedback neutral
    - 3: Feedback phase
    - 4: Power phase
- J3 : SUBD9 female socket for driving RS232 null modem Product
  - 2 : TX equipment
  - 3 : RX equipment
  - 5 : mass
- J8 Digital inputs / outputs 24 Vdc :
  - Socket Phoenix Contact DKF-MC1.5/16-GF-3.81
  - Delivered with plug Phoenix Contact MC1.5/16-STF-3.81
  - Pinout :
    - 1: External power supply +24Vdc
    - 2: External power supply 0Vdc
    - 3: Input START VOLTAGE
    - 4: Input START MEASURE I
    - 5: Input AUTOCALIBRATION
    - 6: Input CONTINUITY TEST
    - 7: Input RESET
    - 8: Input SPARE
    - 11: Output RESULT CONTINUITY (0=no continuity, 1=continuity)
    - 12: Output DEFAULT
    - 13: Output VOLTAGE OUTPUT (1=generation on going)
    - 14: Output MEASURE I
    - 15: Output RESULTAUTOCALIBRATION (0=OK, 1=NOK)
    - 16: Output PRESENCE I



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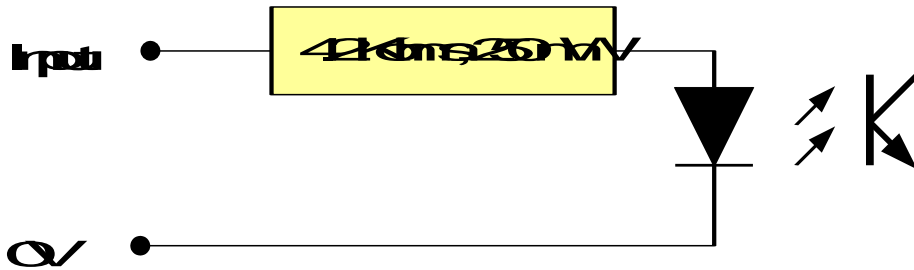
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- Equivalent output circuit diagram:



Etat 0:  $I < 1 \mu\text{A}$   
Etat 1:  $I < 150 \text{ mA}$ ,  $R < 80\text{ohms}$  (4.8 typical)

- Equivalent input circuit diagram:

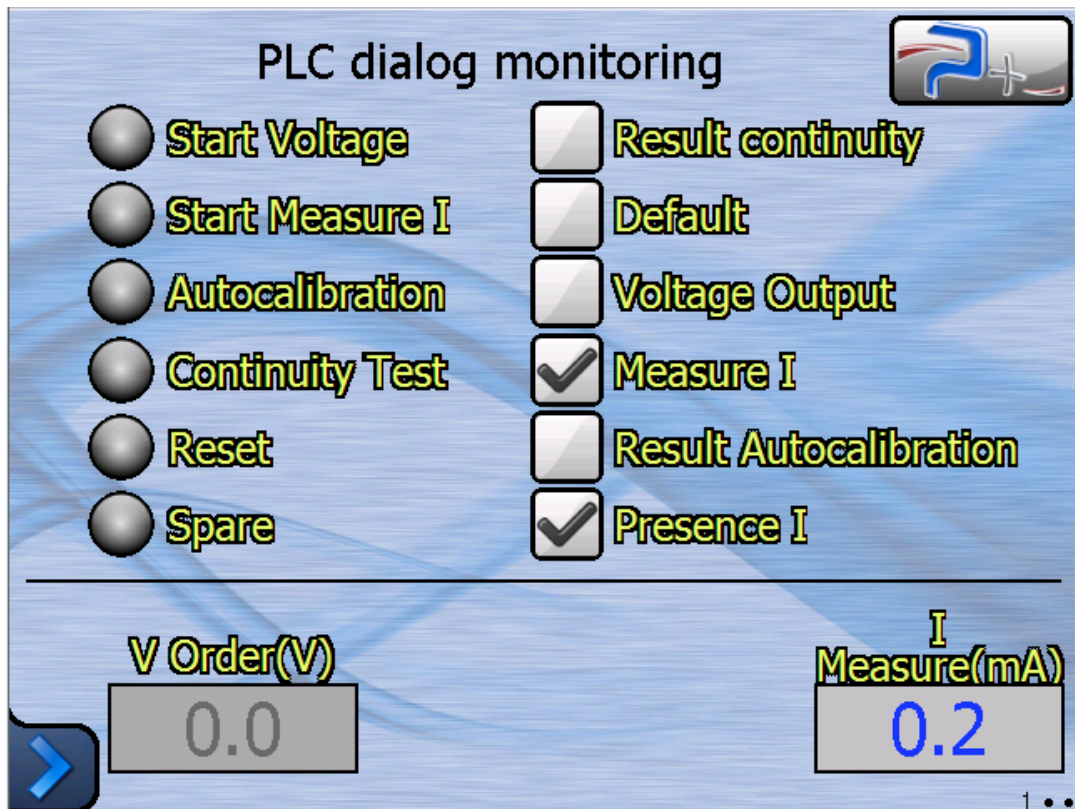


## 1.3 Software specifications

The power is controlled by a PLC via digital inputs / outputs and a RS232 link. The commands available on the RS 232 are also on a RJ45 Ethernet connection / TCPIP, and using the touch screen.

### [LOG\_100] Startup screen

At startup, the source screen displays the following panel :



This panel displays in real time the state of digital input / output communication with the PLC, instructions and results of the last test performed or in progress.

When the MANUAL mode is set (see manual order screen), the digital output can be set manually. When the PLC mode is selected, the digital output are automatically set according to the orders sent by the PLC.



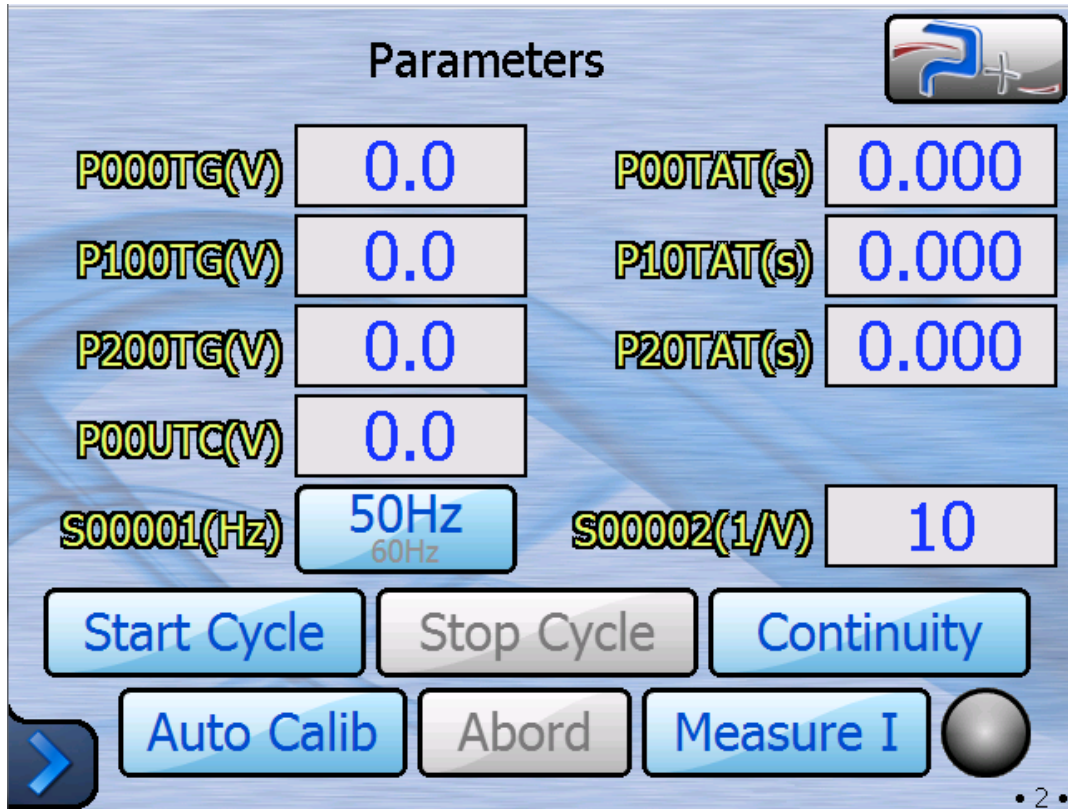


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## [LOG\_110] Setup screen

This screen allows you to control or modify the parameters of the test. As a reminder, the touch screen changes are inhibited by default to power the product.



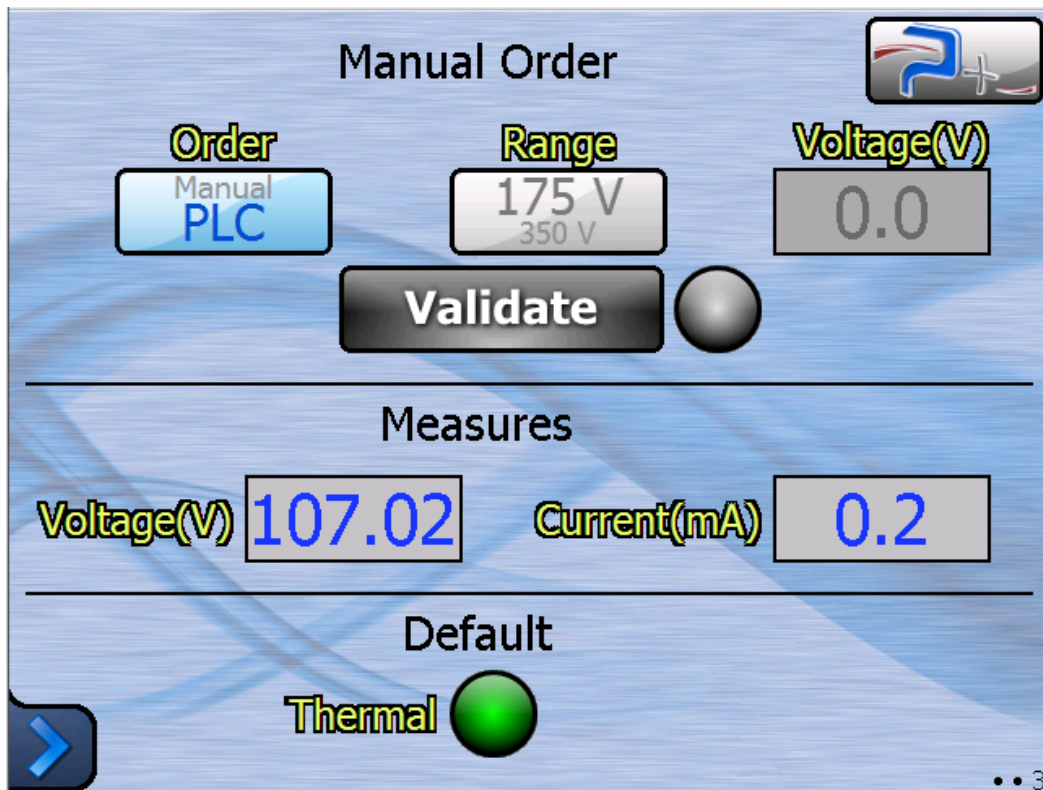


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## [LOG\_120] Screen manual order

This screen allows you to control take over the product for purposes of development or calibration.



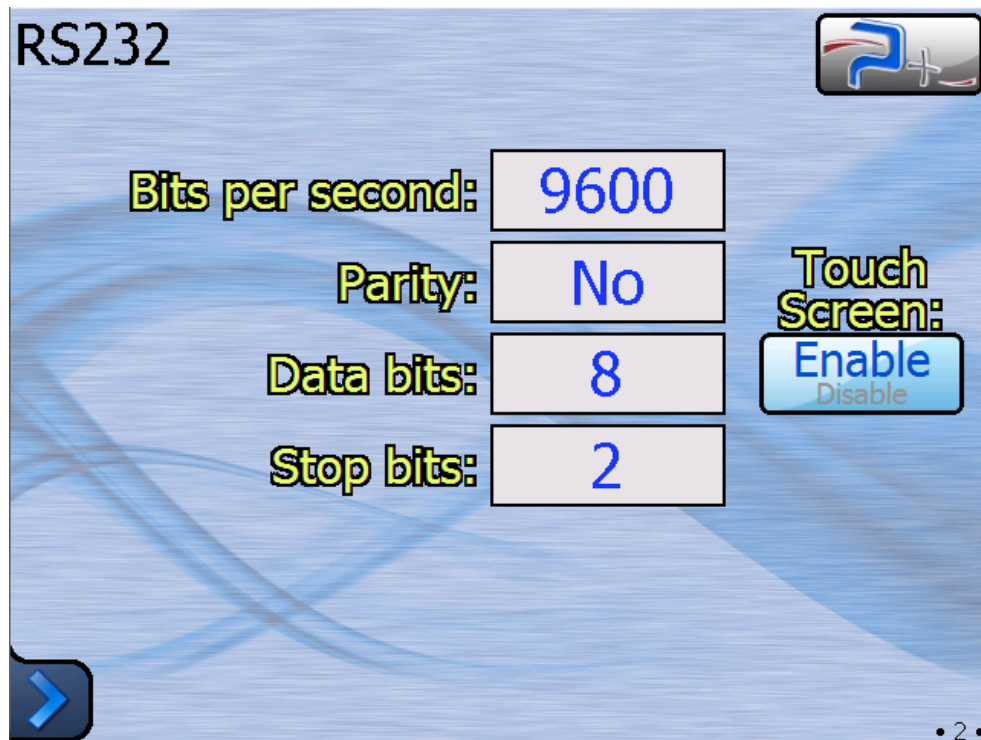


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## [LOG\_130] Setup serial link

The panel «Serial Port» displays the parameters of the RS232:



Taking into account changes is immediate and does not require a restart of the source. The selected configuration is saved and will be effective even after turning off the power

The button "Touch screen" of panel below shows the operating mode, LOCAL (Touchscreen active) or REMOTE (Touchscreen inactive). The source is in REMOTE mode power, and upon receiving a command frame or valid replay. In REMOTE mode, the displays remain visible but no command can be entered (a sign "No entry" recalls). Press this button to return to LOCAL mode (active tactile tile).



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## [LOG\_140] Ethernet Setup

The panel « Connectivity » displays the parameters of the Ethernet:

Ethernet connectivity

Touch Screen: Enable  
Disable

Obtain IP address automatically: YES  
NO

IP Address: 192.168.0.198

Subnet mask: 255.255.255.0

Port: 5025

1 ●●

**These parameters should only be changed in accordance with your network administrator.**

The button “Touch Screen” is identical to the one present in the Setup serial link screen.



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## [LOG\_200] Programmable parameters

Parameters are of four types:

- Parameters set values (current, voltage, duration ...)
- Requests return the measured values
- The commands cause the action of the supply
- System commands define the behavior at plug on of the supply power.

<b>Request</b>	Data	
<b>Parameters:</b>		
P000TG	xxxxxx	Generator voltage (unit: see S00002)
P00TAT	xxxxxx	Voltage application time (unit: 1 ms)
P00UTC	xxxxxx	Voltage for the continuity test (unit: see S00002)
P100TG	xxxxxx	Voltage generator sequence 1 (unit: see S00002)
P200TG	xxxxxx	Voltage generator sequence 2 (unit: see S00002)
P10TAT	xxxxxx	Voltage application time sequence 1 (unit: 1 ms)
P20TAT	xxxxxx	Voltage application time sequence 2 (unit: 1 ms)
<b>Requests:</b>		
C000LI		Request read current (unit : 0.1 mA)
C00LER		Request read error BAD_PARAMETER = 0x100100; BAD_FORMAT_OR_COMMAND = 0x200200; BAD_VALUE = 0x400400;
<b>Order:</b>		
C000MI		Start current measurement
C000ST		Start output voltage
C000AT		Stop output voltage
C000TC		Start continuity test
CAUOC		Start Auto calibration U
<b>System:</b>		
S00001	xxxxxx	Frequency (50 or 60) 50Hz default
S00002	xxxxxx	Setpoint resolution (1=V 10=1/10V 100=1/100V) en 1/10default
For parameter TG, value 000000 is allowed		



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## [LOG\_210] Communication Protocol

The power supply can interact through the Ethernet or RS232 connection using the communication protocol described below. When an Ethernet control, orders will be encapsulated in a TCP / IP frame.

A transmitted frame is encoded in ASCII, and contains the following characters:

Nb characters	Contents	Comments
1	<STX>	Start of TeXt (code = h02)
1	"0" ou "1"	"0" : Checksum uncalculated verified "1": Checksum="dd"
4	"dddd"	Frame length on 4 digits Number of bytes requests + data
6	Request	Request name (voir table above)
6 ou 0	Data	Transmitted value when application requires
2	"dd"	Valeur du Checksum en hexadécimal, suivant algorithme décrit plus bas. En cas d'absence de checksum, "00" ou autre valeur
1	<CR>	Carriage return (code = h0d)

It is possible to send multiple data sets + Request to follow in the same frame.

Examples of frame transmitted by the PLC

:

<STX> 0 0006 C000TC 00 <CR>

<STX> 0 0048 P100TG 0123456 P10TAT 0123456 P200TG 0123456 P20TAT 0123456 00 <CR>

The power of each frame corresponds to the controller following the same format :

- OKxx : frame understood
- MISDAT : difference between FrameLength and number of bytes Request+data
- CHKSUM : checksum error
- UNKNOWN : unknown parameter
- Other error: the frame received is returned

### Checksum algorithm :

The checksum is the sum of all bytes of the query part + data truncated to a byte. The checksum is written in hexadecimal encoded on two ASCII characters.

## [LOG\_300] Generation test

This sequence is triggered on occurrence of a rising edge on the digital input "Start Voltage" or the command C000ST.

The generated sequence depends on the last received parameter Px00TG :

- Last parameter = P000TG : generation of 1 value of voltage
- Last parameter = P100TG ou P200TG : generation of a sequence of two voltages

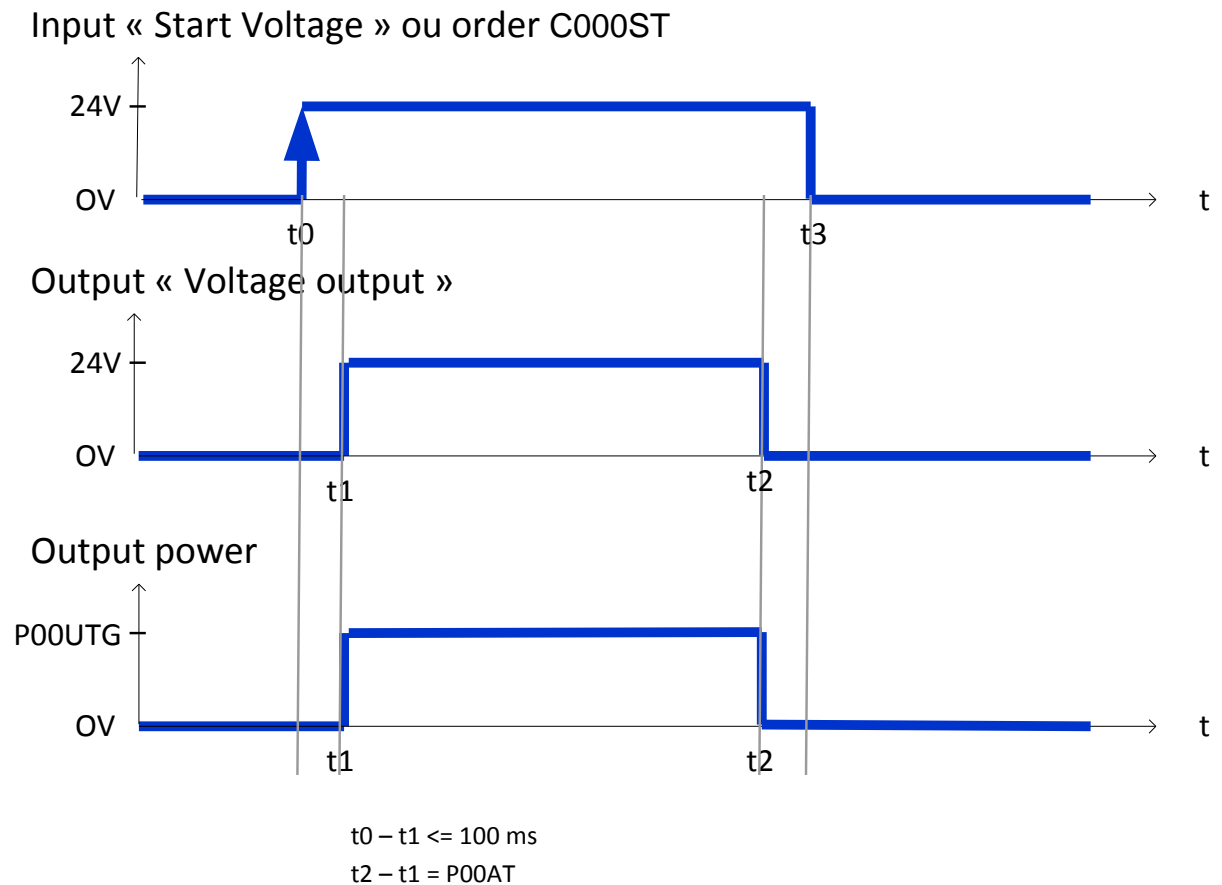
Example:

➔ <STX> 0 0024 P000TG 000230 P00TAT 000100 00 <CR>

⬅ <STX> 0 0004 OKxx 00 <CR>

During generation, the transition to 0 "Start voltage" or order C000AT during the generation stops the sequence (jump to the last step of the sequence), with a maximum response time of 100 ms

Generation of 1 value of voltage:



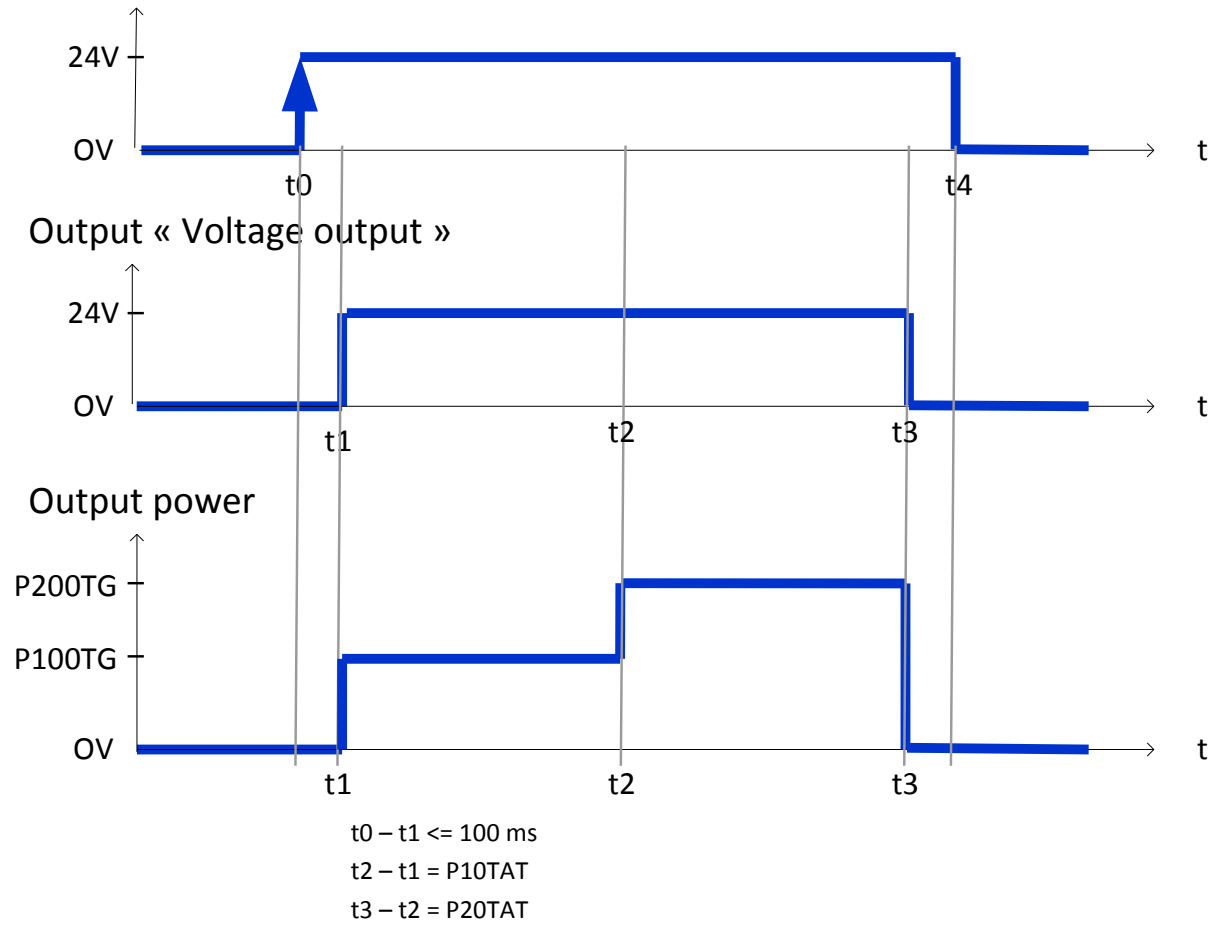


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Generation of a sequence of two voltages :

Input « Start Voltage » ou order C000ST





## [LOG\_310] Continuity test

This sequence is triggered on occurrence of a rising edge on the digital input "Continuity Test" or the C000TC order.

The power supply generates the voltage P00UTC during P00TAT. The range is selected automatically according to the programmed voltage.

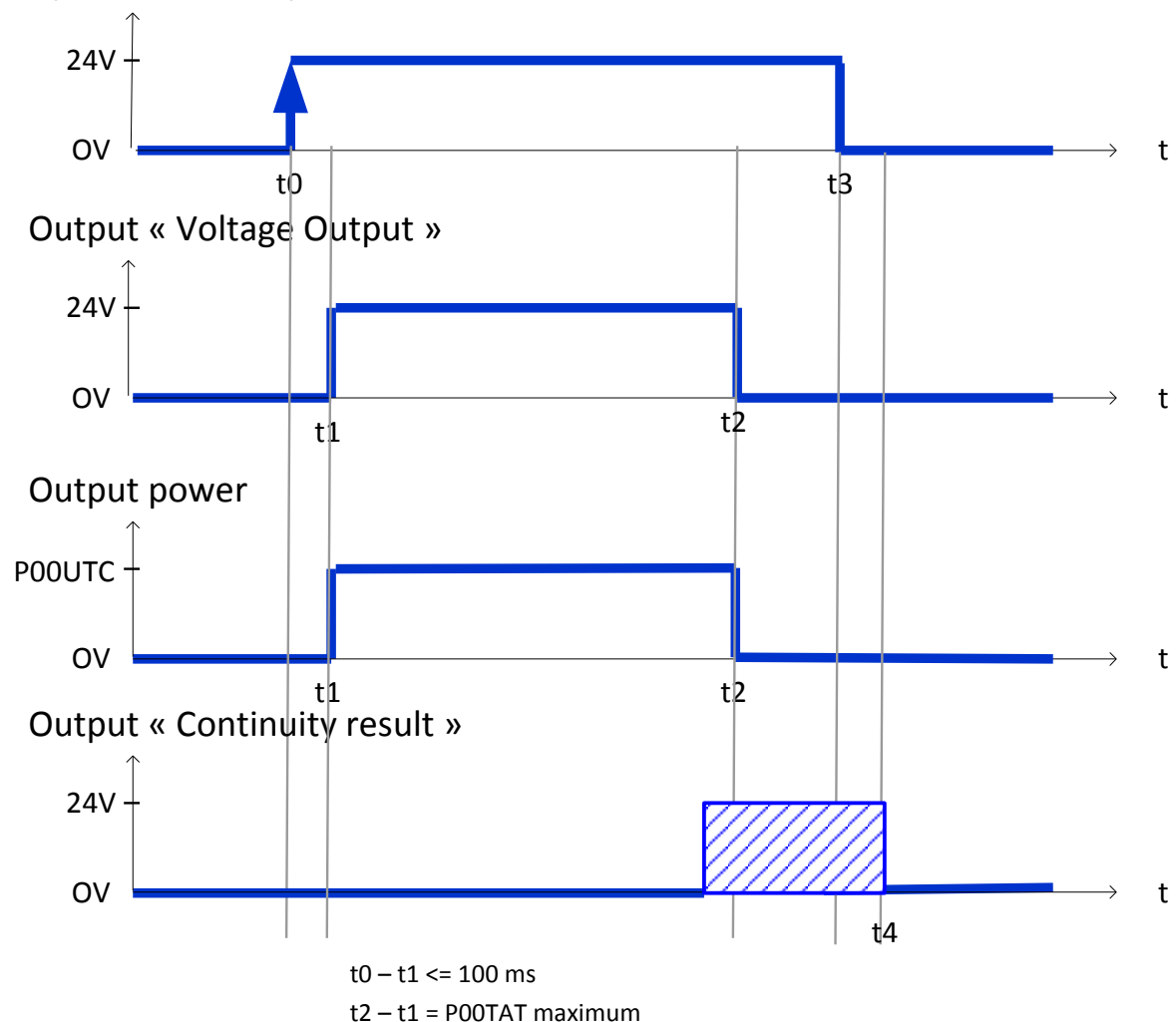
Example:

➔ <STX> 0 0024 P00UTC 000050 P00TAT 001000 00 <CR>

⬅ <STX> 0 0004 OKxx 00 <CR>

If a current is measured greater than the detection limit of 1.8 mA during the generation, the logic output "Result continuity" is set to 1 and the test is terminated immediately.

Input « Continuity test » or order C000TC



The test lasts P00TAT, and can be shortened if a current is detected during the voltage generation.

« Continuity Result » = 0V=no continuity, 24Vdc=continuity). This result is also available on the parameter C000TC.

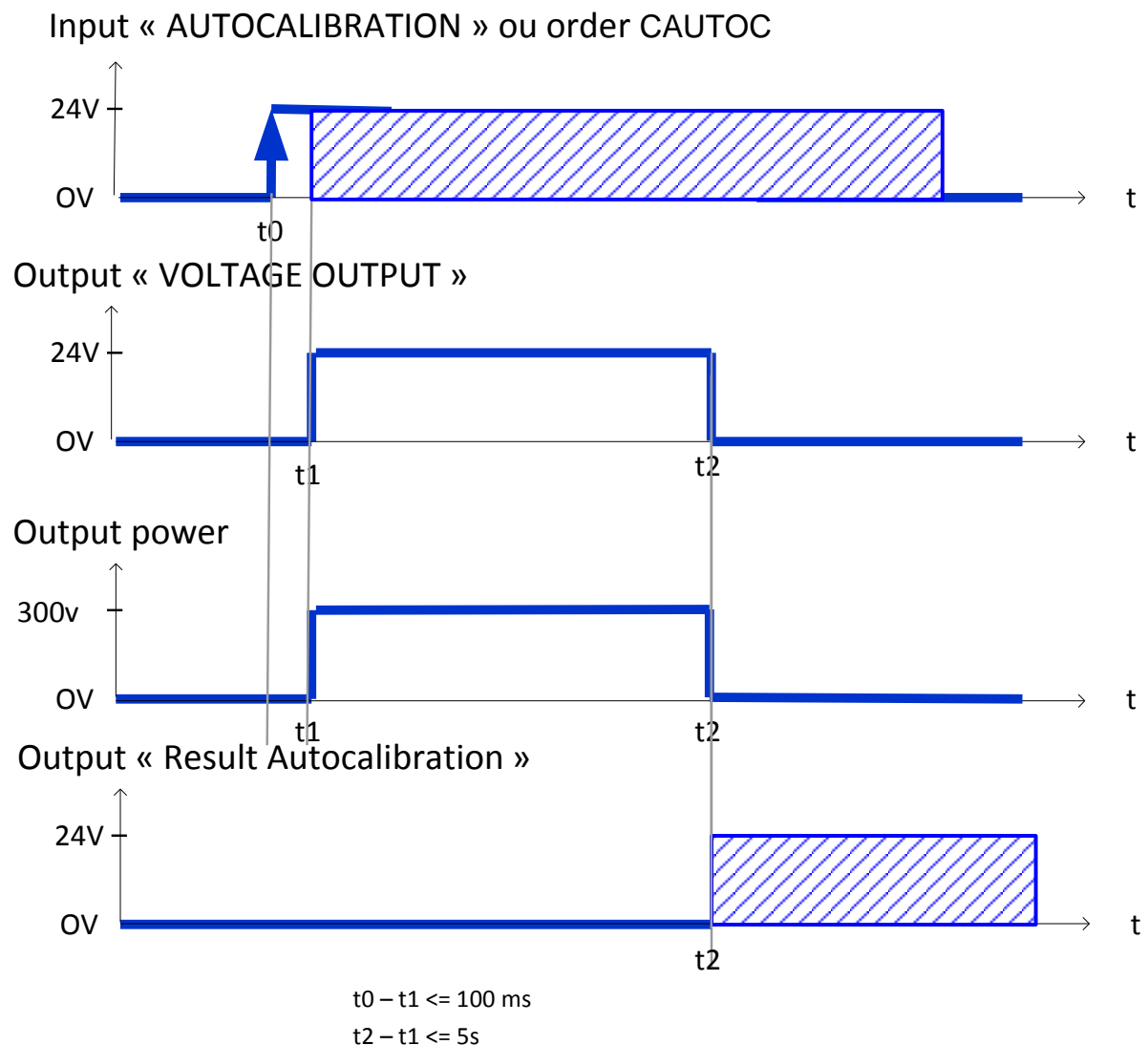
## [LOG\_320] Autocalibration

This sequence is triggered on occurrence of a rising edge on the digital input "Autocalibration", or by CAUTOOC order.

The power may not be connected to a product during the test.

Power generates 300 V for 1s and verifies the consistency with the measurement. If deviation exceeds 0.TBC%, the software changes the gain correction and the operation is repeated up to 5 times.

End of the test, the output "RESULT AUTOCALIBRATION " is set to 1 if the precision 0.TBC% is not reached, or if the correction factor deviates by more than 5% of the nominal value.



## [LOG\_330] Current measurement

The current measurement request can occur at any moment.

The PLC sends a request using the line "START MEASURE I".

The output "PRESENCE I" is raised to indicate that the request is taken into account.  
The previous value of the current measurement is reset.  
The measurement is started.

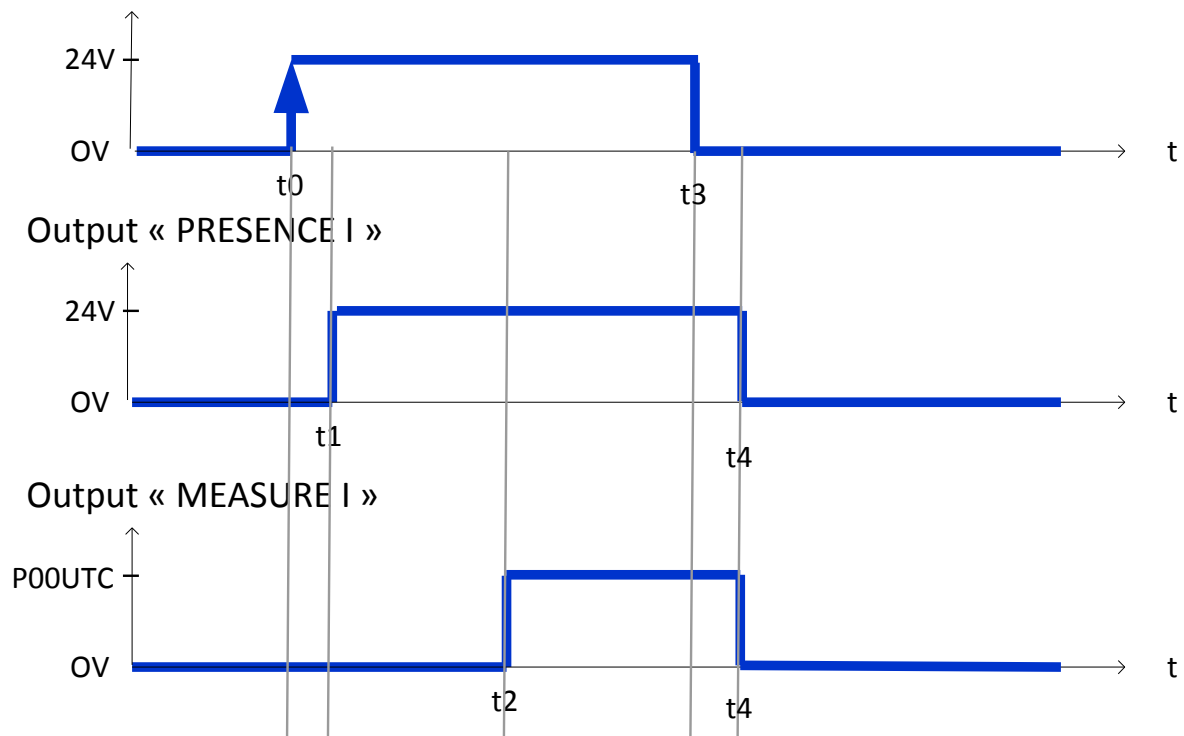
At the end of the measurement, the output "MEASURE I" is raised to indicate that the measure is available. It can be read using the request C000LI, until the next rising edge on the signal "START MEASURE I".

Example:

➔ <STX> 0 0006 C000LI 00 <CR>

⬅ <STX> 0 0012 C000LI 123456 00 <CR>

Input « START MEASURE I » or order C000MI



$$t_0 - t_1 \leq 100 \text{ ms}$$

$$t_2 - t_1 \leq 200 \text{ ms}$$

$$t_4 - t_3 \leq 100 \text{ ms}$$

The measurement is done between t1 and t2

The measure can be read after t2 using the request "C000LI"



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## [LOG\_340] Error reset

In case of default, (see list in [LOG 120]), the output “DEFAULT” is rised.

The PLC rises the input “RESET”.

The power supply status is reset and the “DEFAULT” output is updated, taking into account the remaining default. This operation lasts less than 1 second.