

USER'S GUIDE



**PROCESS DIGITAL METER
4 ALARMS - RS485 - 96x96**



- accuracy class $\leq 0,1$
- resolution A/D converter 20 bit
- 4 independent alarms or 2 alarms and 2 pulse output
- 8 digits high efficiency 7 segments led displays
- up to 4 values can be displayed in cyclical sequence
- integration / totalization of measured or calculated variable
- RS485 serial interface (Modbus RTU up to 19200 baud)
- insulated analog output
- scratch-proof membrane keyboard - tactile feedback keys
- settings protected with password
- DIN 43700 panel mounting case (96 x 96)

The digital meter **SID98MP-xx** - designed and developed wholly by **ESAM** - is built to comply with all the requirements of measure, control and calculation of analog process variables (10V, 4...20mA) and temperatures.

Adoption of the latest generation microprocessor, of a new measuring circuit (**20 bit A/D**), the careful choice of every component and the calibration with **EAL-SIT** certificated devices, provide the highest precision and reliability in every condition of use.

The use of **SID98MP-xx** together with transducers with analog output allows to obtain several advantages:

- display of instantaneous value with high precision $\leq 0,1\%$
- display of peak and integrated / totalized values with data-storage in case of black-out
- storage of integrated / totalized value in a programmable period (ex. 15 minutes)
- 4 programmable alarms or 2 alarms and 2 pulse outputs for remote totalizations
- insulated analog output proportional to the input value or to a calculated variable
- calculation of mathematical functions on measured variables (square root, square ...)
- 2 digital inputs for reset of integrated / totalized values
- connection to personal computer or PLC through RS485 serial interface (Modbus RTU)

Models	Input 1	Alarms	Pulses	Analog output (option)	
SID98MP - 1	0 ... $\pm 10V$	4	---	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MPT - 1	0 ... $\pm 10V$	2	2	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MP - 3	0 ... $\pm 20 / 4...20mA$	4	---	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MPT - 3	0 ... $\pm 20 / 4...20mA$	2	2	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MP - MV	0 ... $\pm 75mV$	4	---	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MPT - MV	0 ... $\pm 75mV$	2	2	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MP - TC	Thermocouple	4	---	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MP - RTD	Pt100	4	---	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MP - 5	0 ... $1k\Omega$ (3 or 4 wires)	4	---	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MP - P	potentiometer $\geq 1k\Omega$	4	---	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$
SID98MPT - P	potentiometer $\geq 1k\Omega$	2	2	- A: $\pm 10V / \pm 20mA$	- AE: $\pm 10V / \pm 5mA$

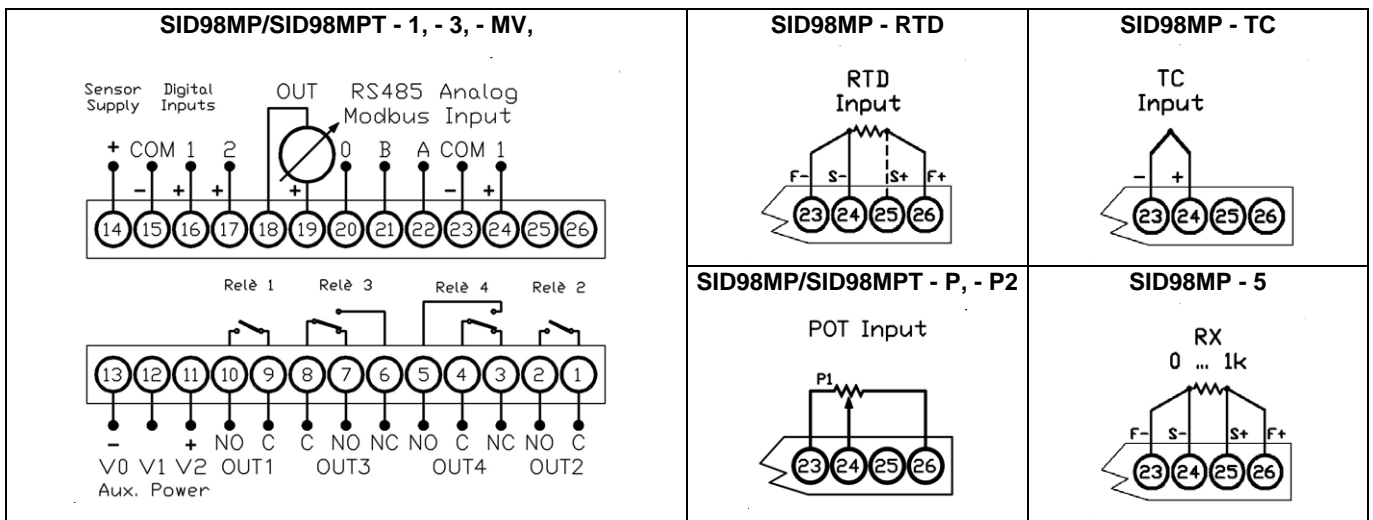
Technical data

- scratch-proof membrane keyboard - tactile feedback keys - 4 led alarms
- password: 4 digits
- 8 digits high efficiency 7 segment led displays, digit height: 10 mm (0,42")
- accuracy class for dc input $\leq 0,1\%$ (resolution A/D converter: 20 bit)
- number of decimal digits: 0 ...6
- selection of the value displayed at start-up (ex. instantaneous or totalized value)
- programmable low range, high range, linear or quadratic
- 2 multifunction opto-insulated digital inputs to be powered (+12 ...24Vdc) - for internal power supply option -AL
- calculation and display of absolute value, square or square root of any measured value
- for 2 inputs models: calculation and display of sum, difference, product, ratio between the two measured values
- reference period for the memorization of integrated value (ex. 15 min.): 1 ... 999 sec.
- data retention in case of lack of power supply: peaks and totalizations 2 months, configuration 10 years
- temperature measurement: RTD Pt100 or thermocouple J, K, N, B, E, R, S, T
- 4 independent relays alarms: 2SPDT + 2SPST (5A, 230V, $\cos\phi=1$) than can be set on all measured or calculated values
- Integrator - Totalizer version: 2 alarm outputs (relays SPDT) + 2 pulse outputs (static relays) with programmable pulse weight (pulse duration programmable from 10 to 250msec).
- each alarm can be configured as minimum or maximum or window alarm
- RS485 serial interface for reading and programming (Modbus RTU up to 19200 baud)
- a.c. auxiliary power (standard): 115 - 230V $\pm 10\%$ 50/60Hz, on request: 24V
- d.c. auxiliary power (on request): 12V or 24V or 48V or 110V or 220V $\pm 10\%$
- self-consumption $\leq 5VA$ a.c., 5W d.c
- connections through screw terminal boards
- DIN 43700 panel mounting case in Noryl self-extinguishing material (UL94 V-0)

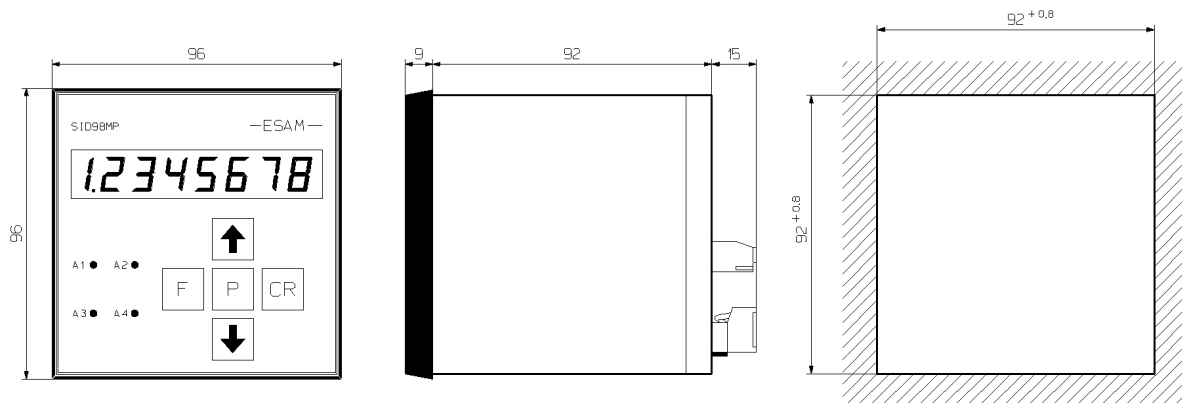
Options

- programmable analog output:
 - “ - A”: 0 ... $\pm 10V$ (load resistance $\geq 50k\Omega$), 0 ... $\pm 10mA$ (load resistance $\leq 1k\Omega$), 0 ... $\pm 20mA$ (load resistance $\leq 0,5k\Omega$)
 - “ - AE”: 0 ... $\pm 10V$ (load resistance $\geq 50k\Omega$), 0 ... $\pm 5mA$ (load resistance $\leq 2k\Omega$), note: the output 0 ... $\pm 20mA$ can be programmed for 4 ... 20mA, 4 ... 12...20mA, ...
 - “ - AL”: sensor insulated auxiliary supply +24V 25mA max
- linearization of custom functions

Wiring diagrams



Overall dimensions



Reference standards

electromagnetic compatibility (EMC): EN 61326 (CEI 65-97)
 safety standards: EN 61010-1 (CEI 66-5, VDE 0411)

Environmental conditions

Operating temperature: -10°C ... +55°C
 Working temperature: +5°C ... +40°C
 Storage temperature: -30°C ... +70°C
 Reference temperature: +20°C
 Temperature coefficient: ±0,01%/°C

Environmental humidity 85% without condensation with 35°C temperature for maximum 60 gg./year; average year humidity must not exceed 65% (DIN40040).

Galvanic insulation

- Insulation between:
- analog inputs and auxiliary power 2kV/60 sec. 50Hz
 - digital inputs and auxiliary power 2kV/60 sec. 50Hz
 - serial output and auxiliary power 2kV/60 sec. 50Hz
 - digital inputs and analog inputs 1kV/60 sec. 50Hz
 - analog output and auxiliary power 1kV/60 sec. 50Hz
 - serial output and analog output 1kV/60 sec. 50Hz
 - serial output and inputs (digitals and analogs) 1kV/60 sec. 50Hz
 - analog output and inputs (digitals and analogs) 1kV/60 sec. 50Hz

Table 1 MEASURED and DISPLAYED VALUES

LABEL	DESCRIPTION
MEAS	Instantaneous measured value
IntGP	Positive integrated value
IntGn	Negative integrated value
IntG	Integrated value
AUGP	Average positive value
AUGn	Average negative value
AUG	Average
PcHi1	Positive peak value 1
PcLo1	Negative peak value 1
PcHi2	positive peak value 2
PcLo2	Negative peak value 2

FUNCTION OF THE BUTTONS DURING CONFIGURATION

↓	CHOOSE THE PARAMETER TO CHANGE / DECREMENT THE BLINKING DIGIT
↑	CHOOSE THE PARAMETER TO CHANGE / INCREMENT THE BLINKING DIGIT
CR	SELECT NEXT DIGIT (see "GENERAL SETTING OF A NUMBER")
P	EDIT THE DISPLAYED VALUE / SAVE THE MODIFICATIONS
F	EXIT PROGRAMMING

FUNCTION OF THE BUTTONS DURING NORMAL OPERATION

↓	CHANGE THE DISPLAYED VALUE (see MEASURED AND DISPLAYED VALUES)
↑	CHANGE THE DISPLAYED VALUE (see MEASURED AND DISPLAYED VALUES)
CR	KEY WITH PROGRAMMABLE FUNCTION
P	ENTER CONFIGURATION MENU (parameters unprotected with password)
F + P	ENTER ADVANCED CONFIGURATION MENU (parameters protected with password)

NOTE 1: THE VALUE SELECTED WITH "↑ ↓" KEYS WILL BE DISPLAYED FOR 60 SECONDS, AFTER THIS TIME THE MEASURED VALUE WILL BE DISPLAYED AGAIN.

NOTE 2: THE ALARMS STATE IS DISPLAYED BY THE 4 FRONTAL LEDS (A1, A2, A3, A4)

GENERAL SETTING OF A NUMBER

To modify any value, no matter its length, it is possible to use the following command sequence:

The blinking cursor can be moved right with "CR" key. The number indicated by the cursor can be incremented with "↑" key or decremented with "↓" key.

In case of numbers with sign, The positive is indicated by "P" letter, the negative by "-" sign.

To modify the sign press "↑" or "↓" keys.

Set the first digit then move the cursor right to the next digit with "CR" key; repeat until all digits have been set.

To modify non numerical value press "↑" or "↓" keys and choose among the proposed choices

At the end of the setting press "P" key to confirm the modification.

Key "F" allows to come back to normal measuring at any time and from any sub menu

If you set a number greater than the maximum number allowed, the label "tooHi" will be displayed for a few seconds and the number replaced with the maximum valid value.

If you set a number lower than the minimum number allowed, the label "tooLo" will be displayed for a few seconds and the number replaced with the minimum valid value.

FUNCTION OF THE LEDS ON THE FRONT PANEL

A1	ON INDICATES ALARM 1 ON OFF INDICATES ALARM 1 OFF BLINKING DURING TIME tdEL AL1
A2	ON INDICATES ALARM 2 ON OFF INDICATES ALARM 2 OFF BLINKING DURING TIME tdEL AL2
A3	ON INDICATES ALARM 3 ON OFF INDICATES ALARM 3 OFF BLINKING DURING TIME tdEL AL3
A4	ON INDICATES ALARM 4 ON OFF INDICATES ALARM 4 OFF BLINKING DURING TIME tdEL AL4

SWITCHING ON THE DEVICE

At power on, the following message will be displayed for 2 seconds:

SID98MP.... x.x

The label **SID98MP...** indicates the model and the options (if present), the number **x.x** indicates software version.

CONFIGURATION MENU

To enter configuration menu press “P” key for 2 seconds.


To choose the parameters press “↓” or “↑”; pressing “P” it's possible modify a parameter. Key “F” allows to come back to normal measuring at any time and from any sub menu.


In case of inactivity longer than 1 minute, the meter exits configuration.

Press in sequence “F” and “P” keys to enter the advanced configuration menu (password protected).

The default password is 0000, which disables password requests.

If any other password value has been previously set (see in the following how to do it), the message **ConFig Enter Password** will be displayed: enter the correct one and press “P” key to confirm.

All the parameters marked with  are accessible in the configuration menu

All the parameters marked with  are accessible only in the advanced configuration menu

- **Only for SID98MP-RTD and SID98MP-TC SETTING OF TEMPERATURE UNIT**



dEG

Possible choices: = °C (Celsius) , = °F (Fahrenheit), = ABS (Kelvin).

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING THE NUMBER OF DECIMAL DIGITS OF DISPLAYED MEASURE**



ndEc

Valid values: 0 ... 6

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **Only for SID98MP-RTD SETTING OF RTD TYPE**



rtd tyPE

Possible choices: = Pt rtd, = ni rtd

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **Only for SID98MP-TC SETTING OF THERMOCOUPLE TYPE**



tC tyPE

Possible choices: = tC cA, = tC n, = tC b, = tC E, = tC r, = tC S, = tC t, = tC J

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **Only for SID98MP-RTD SETTING OF RTD RESISTANCE AT 0°C**



rtd r0

Default value 100.0 Ω

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING THE LOW LIMIT OF THE MEASURING RANGE**



irnGL

To set the beginning of the measuring range.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF THE HIGH LIMIT OF THE MEASURING RANGE**



irnGH

To set the end the measuring range.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING DISPLAYED RANGE LOW LIMIT**



rnGL

To set the DISPLAYED value corresponding to a measured value equal to the beginning of the measuring range

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING DISPLAYED RANGE HIGH LIMIT**



rnGH

To set the DISPLAYED value corresponding to a measured value equal to the end of the measuring range.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF INPUT FUNCTION TYPE**



Lin

To linearize a non-linear input.

= **nonE** linear (default)

= **nEG** invert the function. Ex. with input 0 ... 20mA the displayed range will be -20 ... 0 (instead of 0 ... 20)

= **AbS** absolute value. Ex. with input -20mA ... 0 ... +20mA the display range will be always 0 ... 20

= **SquAre** quadratic input. Ex. with input 0 ... 20mA the display range will be 0 ... 400

= **Sqrt** square root of input Ex. with input 0 ... 20mA the display range will be 0 ... 4.472, with negative input display → zero

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF VARIABLE TO BE INTEGRATED**



CH Int

To enable the integration and to set the variable to be integrated.
Note: The variables can change in according to meter version.

= **nonE** integration disabled

= **MEAS** integration enabled on measured value.

The positive and negative integration values after the value 99999999 restarts from 0.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF INTEGRATION TIME UNIT**



Ut Int

The integration time can be calculated in seconds, minutes, hours.
Possible choices: = **SEC**, = **Min**, = **hour**.

Ex. Input 0...20mA, display range 0...50 lt/min. Setting **Ut Int** = **min** e **GF Int** = 1, after 5 hours with a constant input value of 10 mA the integrated value will be 25 lt/min x 300 minutes x 1 = 7500 liters.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF INTEGRAL GAIN**



GF Int

The variable to be integrated is multiplied by this constant before integration.

Ex. Input 0 ... 20mA, display range 0 ... 3000W. Setting **Ut Int** = **hour** e **GF Int** = 0,001, after 5 hours with a constant input value of 10 mA the integrated value will be 1500 W x 5 hours x 0,001 = 7,5kWh.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE NUMBER OF DECIMAL DIGITS OF INTEGRATED VALUE**

**nd Int**

Valid values: 0 ... 6.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE TIME INTERVAL FOR AVERAGING**

**tb AUG**

Default value: 900 seconds (15 minutes). Valid values: 001 ... 999.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF VARIABLE FOR AVERAGING**

**CH AUG**

To enable the averaging and to select the averaged variable.
Note: The variables can change in according to meter version.

= **nonE** averaging disabled

= **MEAS** averaging enabled on measured value.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE NUMBER OF DECIMAL DIGITS OF AVERAGED VALUE**

**nd AUG**

Valid values: 0 ... 6.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF VARIABLE FOR PEAK 1**

**CH PC1**

To set the variable to monitor for storing min and max peak 1 values.

Possible choices: = **MEAS** , = **IntGP** , = **IntGn** , = **IntG** , **AUGP** , = **AUGn** , = **AUG**
(see Table 1 "MEASURED and DISPLAYED VALUES")

Default choice: **MEAS**.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF VARIABLE FOR PEAK 2**

**CH PC2**

To set the variable to monitor for storing min and max peak 2 values.

Possible choices: = **MEAS** , = **IntGP** , = **IntGn** , = **IntG** , **AUGP** , = **AUGn** , = **AUG**
(see Table 1 "MEASURED and DISPLAYED VALUES")

Default choice: **MEAS**.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING PAGE 1 DISPLAYED VALUE**

**PAGE 1**

Up to 4 values can be displayed in cyclical sequence.
Select here the value to be displayed at power on.

For choice see Table 1 "MEASURED and DISPLAYED VALUES".

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING PAGE 2 DISPLAYED VALUE**

**PAGE 2**

Select here the second value to be displayed in sequence.

If the value of this parameter is different from "nonE", the meter will display in sequence the value on PAGE 1, the value on this page then the values on PAGE 3 and PAGE 4 (if these values are different from "nonE").

For available choices see Table 1 "MEASURED and DISPLAYED VALUES".

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING PAGE 3 DISPLAYED VALUE**



PAGE 3

Select here the third value to be displayed in sequence.

If the value of this parameter is different from "nonE", the meter will display in sequence the value on PAGE 1, then the value on PAGE 2, the value on this page and then the value on PAGE 4 (if the values of PAGE 2 and PAGE 4 are different from "nonE"). For available choices see Table 1 "MEASURED and DISPLAYED VALUES".

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING PAGE 4 DISPLAYED VALUE**



PAGE 4

Select here the fourth value to be displayed in sequence

If the value of this parameter is different from "nonE", the meter will display in sequence the value on PAGE 1, the values on PAGE 2 and PAGE 3 (if these values are different from "nonE") and then this value.

For available choices see Table 1 "MEASURED and DISPLAYED VALUES".

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF PAGE PERSISTENCE TIME**



PAG tIME

To set the persistence time in seconds for each page.

If PAG tIME = 0 page cycling is disable, press "↓" or "↑" keys to change the page

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING OF MEASURE FILTER**



FiLteR

This setting allows to stabilize the reading.

Valid values: from 1 to 20 (1 ≅ 100msec, 20 ≅ 2 sec).

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING ALARM DISABLE TIME AT POWER ON**



tOFF

Sets how many seconds the alarms are disabled after power on.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **PASSWORD SETTING**



PASS

To change the password required to enter advanced configuration menu

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE FUNCTION OF "CR" KEY**



Cr Func

To assign the function of reset to "CR" key.

Possible choices: = **nonE** disable key, = **res AL** reset all alarms, = **res PC** reset all peaks, = **res Int** reset all integrated values, = **res AUG** reset all averaged values.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE FUNCTION OF DIGITAL INPUT 1**



di1 Func

To associate a function of reset to digital input 1.

Possible choices: = **nonE** disable key, = **res AL** reset all alarms, = **res PC** reset all peaks, = **res Int** reset all integrated values, = **res AUG** reset all averaged values.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE ACTIVE LEVEL OF DIGITAL INPUT 1**



di1 ActL

To set the active level of reset: = **Lo** active low, = **HI** active high.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE FUNCTION OF DIGITAL INPUT 2**


di2 Func

To associate a function of reset to digital input 2

Possible choices: = **nonE** disable key, = **res AL** reset all alarms, = **res PC** reset all peaks, = **res Int** reset all integrated values, = **res AUG** reset all averaged values.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING THE ACTIVE LEVEL OF DIGITAL INPUT 2**


di2 ActL

 To set the active level of reset: = **Lo** active low, = **HI** active high..

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING OF OUTPUT 1**


SEL Out1

 To select a function for output 1. Possible choices: **ALArM** (alarm output) **PULSE** (pulse output - if present) and **nonE** (output disabled).

If the choice is **ALArM** the following steps of the program menu allow the detailed configuration of the alarm function: = **tyPE AL1**, = **Ch AL1**, = **HySt AL1**, = **tdEL AL1**, = **trES AL1**, = **tHr AL1**.

If the choice is **PULSE** the following steps of the program menu allow the detailed configuration of the **PULSE** function: **Ch Pu1**, **ton Pu1**, **UAL Pu1**.

If the choice is **nonE** the detailed configuration of output 1 is skipped; the next step of the program menu is the setting of **OUT2**. To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

The following steps **Ch Pu1**, **ton Pu1**, **UAL Pu1** are included in program menu only if **SEL Out1 = PULSE**

- **SETTING MEASURE FOR PULSE OUTPUT 1**


CH Pu1

Selection of the measurement to be converted

 Possible choices: = **IntGP** positive integrated value, = **Int Gn** negative integrated value

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING PULSE DURATION FOR OUTPUT 1**


ton Pu1

This value should be less than 50% of the time interval between pulses. Overlapping pulse cannot be generated. Valid values: 10 ... 250msec.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING PULSE WEIGHT FOR OUTPUT 1**


UAL Pu1

A pulse is generated whenever the selected measurement increases by this amount. To switch off the output channel 1, set 0.

Ex. Input 0...20mA, display range 0...3000W. Setting **Ut Int = hour** and **GF Int = 0,001**, after 5 hours with a constant input value of 10 mA the integration value will be 1500 W x 5 hours x 0,001 = 7,5kWh.

Setting **CH Pul 1 = IntGP**, **ton Pul 1 = 100 msec.** and **UAL Pul 1 = 00001.000** a pulse is generated every 1 Wh.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

The following steps **tyPE AL1**, **Ch AL1**, **HySt AL1**, **tdEL AL1**, **TrES AL1**, **tHr AL1** are included in program menu only if **SEL Out1 = ALArM**

- **SETTING ALARM 1 TYPE**


tyPE AL1

This function defines the type of limit value to be used.

= **Lo Ar** minimum limit (minimum alarm)
 = **Hi Ar** maximum limit (maximum alarm)
 = **LoHi Ar** window alarm
 = **Lo Nr** latch-in minimum limit (require manual reset)
 = **Hi Nr** latch-in maximum limit (require manual reset)
 = **LoHi Nr** latch-in window alarm (require manual reset)

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

• SETTING VARIABLE FOR ALARM 1



CH AL1

To set the variable to be monitored for alarm 1
Note: The variables can change in according to meter version.

Possible choices: = **MEAS**, = **IntGP**, = **IntGn**, = **IntG**, = **AUGP**, = **AUGn**, = **AUG**
(see Table 1 "MEASURED and DISPLAYED VALUES")

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING ALARM 1 HYSTERESIS



HySt AL1

To set alarm hysteresis or the window width for window alarm.
Set 0 to exclude hysteresis

The measure unit is the same of the alarm threshold tHr AL1 and of the chosen variable.

Ex.: Threshold = 10V, hysteresis = 1V. If alarm tyPE is **Lo Ar** (minimum alarm) alarm is triggered when the voltage falls below 10V and is reset when it raises over 11V (10 + 1). If alarm tyPE is **Hi Ar** (maximum alarm) alarm is triggered when the voltage goes over 10V and is reset when it gets back below 9V (10-1). If ALArM tyPE is **LoHi Ar** (window alarm) hysteresis defines the window width: alarm is triggered when voltage is outside the window 9 ... 11V (10 ± 1).

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING ALARM 1 DELAY



tdEL AL1

If his parameter has a non-zero value, when the monitored variable exceeds the given limits the alarm output is generated after a tdEL AL1 delay. Valid values: 0 ... 99 sec.

This feature can be used to prevent false alarms: an alarm condition lasting less then tdEL AL1 will not generate an alarm output. To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING ALARM 1 SELF-RESETTING TIME



trES AL1

The alarm output is kept active for a trES AL1 time interval after recovering from an alarm condition. Set 0 to exclude it. Valid values: 0 ... 999 sec.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING ALARM 1 THRESHOLD



tHr AL1

Threshold value for low and high alarms, centre of the window for windows alarm.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING OF OUTPUT 2



SEL Out2

To select a function for output 2. Possible choices: = **ALArM** (alarm output)
= **PULSE** (pulse output - if present) and = **nonE** (output disabled).

If the choice is ALArM the following steps of the program menu allow the detailed configuration of the alarm function:

= **tyPE AL2**, = **Ch AL2**, = **HySt AL2**, = **tdEL AL2**, = **TrES AL2**, = **tHr AL2** (see explanation about output 1 starting at page 9)..

If the choice is PULSE the following steps of the program menu allow the detailed configuration of the PULSE function:

= **Ch Pu2**, = **ton Pu2**, = **UAL Pu2** (see explanation about output 1 starting at page 9).

If the choice is nonE the detailed configuration of output 2 is skipped; the next step of the program menu is the setting of **OUT3**.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING OF OUTPUT 3



SEL Out3

To select a function for output 3. Possible choices:
= **ALArM** (alarm output) and = **nonE** (output disabled).

If the choice is ALArM the following steps of the program menu allow the detailed configuration of the alarm function:

= **tyPE AL3**, = **Ch AL3**, = **HySt AL3**, = **tdEL AL3**, = **TrES AL3**, = **tHr AL3** (see explanation about output 1 starting at page 9)..

If the choice is nonE the detailed configuration of output 3 is skipped; the next step of the program menu is the setting of **OUT4**.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING OF OUTPUT 4



SEL Out4

To select a function for output 4. Possible choices:
= **ALArM** (alarm output) and = **nonE** (output disabled).

If the choice is ALArM the following steps of the program menu allow the detailed configuration of the alarm function:

= **tyPE AL4**, = **Ch AL4**, = **HySt AL4**, = **tdEL AL4**, = **TrES AL4**, = **tHr AL4** (see explanation about output 1 starting at page 9)..

If the choice is nonE the detailed configuration of output 4 is skipped and the next step of the program menu is the setting of Analog output (if analog output option -A or -AE is present)

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

NOTE: The follow parameters apply to model with analog output option only (SID98MP-xx -A and SID98MP-xx -AE)

• SETTING VARIABLE TO ASSOCIATE TO ANALOG OUTPUT



Ao Ch

To set the variable to be monitored for analog output
Note: The variables can change in according to meter version.

Possible choices: = **nonE**, = **MEAS**, = **IntGP**, = **IntGn**, = **IntG**, = **AUGP**, = **AUGn**, = **AUG**
(see Table 1 "MEASURED and DISPLAYED VALUES")

The following choices are also included for test purposes: **Out 100**, **Out 75**, **Out 50**, **Out 25**, **Out 0**.

Ex. Setting **Ao tyPE 0-20 MA** with **Out 100** the analog output will be 20 mA, with **Out 75** the analog output will be 15 mA, with **Out 50** → 10 mA, with **Out 25** → 5 mA and with **Out 0** → 0mA

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

The following steps **Ao tyPE**, **Ao FunC**, **Ao rnGL**, **Ao rnGH** are included in config menu only if **Ao Ch** is enabled.

Enabling analog output it's necessary to set the other parameters that follow AO CH selection.

• Only for SID98MP ... -A SETTING ANALOG OUTPUT TYPE



Ao tyPE

To set the analog output

Possible choices: = **0-20 MA** from 0 to 20 mA, = **4-20 MA** from 4 a 20 mA, = **PM 20MA** -20 mA ...0 ... +20 mA,
= **0-10 V** from 0 to 10 V, = **2-10 V** from 2 to 10 V, = **PM 10 V** -10 ... 0 ... +10 V, = **0-10 MA** from 0 to 10m A,
= **2-10 MA**, from 2 to 10 mA, = **PM 10MA**. -10 ... 0 ... +10 mA.

Ex. To set an analog output of 4 - 20mA ≡ 0 - 3000kW: choose **4-20 MA**

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• Only for SID98MP ... -AE SETTING ANALOG OUTPUT TYPE



Ao tyPE

To set the analog output

Possible choices: = **0-5 MA** from 0 to 5 mA, = **1-5 MA** from 1 to 5 mA, = **PM 5MA** -5 mA ...0 ... +5 mA,
= **0-10 V** from 0 to 10 V, = **2-10 V** from 2 to 10 V, = **PM 10 V** -10 ... 0 ... +10 V,

Ex. To set an analog output of 4 - 20mA ≡ 0 - 3000kW: choose **0-5 MA**

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING ANALOG OUTPUT FUNCTION



Ao FunC

To invert the analog output. Possible choices: = **norMAL** or = **InVert**.

= **norMAL** display range 0 ... 3000 kW, analog output 0 ... 20mA, = **InVert** display range 0 ... 3000 kW, analog output 20 ... 0mA,

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING ANALOG OUTPUT RANGE LOW LIMIT



Ao rnGL

To set the measured value corresponding to the beginning of the analog output range

Ex. Input: 0 ... 100 C° setting AO tyPE 0-20mA and AO rnGL = 0.0 the beginning of analog output will be 0mA (with 0 C°).

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• SETTING ANALOG OUTPUT RANGE HIGH LIMIT



Ao rnGH

To set the measured value corresponding to the end of the analog output range

Ex. Input: 0 ... 100 C° setting AO tyPE 0-20mA and AO rnGH = 100.0 the end of analog output will be 20mA (with 100 C°).

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING STATION ADDRESS**

**SER adr**

To assign the SID98MP-xx an identification number from 1 to 255

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING COMMUNICATION RATE**

**SER baud**

The following rates can be selected: 1200, 2400, 4800, 9600, 19200

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING MIN. DELAY BEFORE REPLY**

**SER dEL**

This is the minimum delay between query and reply for serial communication. The default value is 5 msec and is normally adequate. Valid values: 0 ... 255 msec.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING FLOATING POINT FORMAT**

**FP FMT**

A floating point value is 32 bits long and is sent by Modbus as 2 words (16 bits each).

There is no standard agreement about which word has to be sent first, so set this parameters to have them sent in order that your master Modbus equipment understands. (for more details see **SID98 Modbus RTU_1M** user's guide).

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **PEAK VALUES RESET**

**rES PCr**

Reset all peak values. Press "P", then "CR" to confirm. Press any other keys to exit

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **LATCH-IN ALARM RESET**

**rES AL**

Reset all latch-in alarms. Press "P", then "CR" to confirm. Press any other keys to exit

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **RESET AVERAGE VALUES**

**rES AUG**

Reset all average values. Press "P", then "CR" to confirm. Press any other keys to exit

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **RESET INTEGRATED VALUES**

**rES IntG**

Reset all integrated values. Press "P", then "CR" to confirm. Press any other keys to exit

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **LOADING OF DEFAULT PARAMETERS**

**LoAd dEF**

Load default factory values for all parameters (see Table 2 "DEFAULT VALUES"). Press "P", then "CR" to confirm. Press any other keys to exit

WARNING: This command resets all accumulated values, that is energies, peaks, averages.

Table 2 **DEFAULT VALUES**

Parameters	Description	Default values
ndec	measure, number of decimals	3
irnGL	beginning of measuring range	0
irnGH	end of measuring range	100
rnGL	low scale displayed value	0
rnGH	high scale displayed value	100
Lin	function of input variable	nonE
CH int	variable to be integrated	nonE
Ut Int	integration time unit	sec
GF Int	gain of integral	1
nd Int	integrated values, number of decimals	3
tb AUG	time interval for averaging (sec)	900
CH AUG	variable for averaging	nonE
nd AUG	averaged values, number of decimals	3
CH PC1	peak 1: variable to be monitored	MEAS
CH PC2	peak 2: variable to be monitored	MEAS
PAGE 1	page 1: variable to be displayed	MEAS
PAGE 2	page 2: variable to be displayed	nonE
PAGE 3	page 3: variable to be displayed	nonE
PAGE 4	page 4: variable to be displayed	nonE
PAGE tIME	page persistence time (sec)	04
FILtEr	filter for measured value	3
tOFF	alarm disable time at power on	1
PASS	password setting	0000
Cr Func	"CR" key function	nonE
di1 Func	digital input 1 function	nonE
di1 ActL	active level of digital input 1	low
di2 Func	digital input 2 function	nonE
di2 ActL	active level of digital input 1	low
SEL Out1	setting of output 1	nonE
CH Pu1	variable for pulse output 1	MEAS
ton Pu1	pulse duration for output 1 (msec)	100
UAL Pu1	pulse weight for output 1	1
tyPE AL1	alarm 1 type	HI Ar
Ch AL1	variable for alarm 1	MEAS
HySt AL1	alarm 1 hysteresis	0
tdEL AL1	alarm 1 delay	0
trES AL1	alarm 1 self-resetting time	0
tHr AL1	alarm 1 threshold	0
SEL Out2	setting of output 2	nonE
CH Pul 2	variable for pulse output 2	MEAS
ton Pul 2	pulse duration for output 2 (msec)	100
UAL Pul 2	pulse weight for output 2	1
tyPE AL2	alarm 2 type	HI Ar
Ch AL2	variable for alarm 2	MEAS
HySt AL2	alarm 2 hysteresis	0
tdEL AL2	alarm 2 delay	0
trES AL2	alarm 2 self-resetting time	0
tHr AL2	alarm 2 threshold	0

Parameters	Description	Default values
SEL Out3	setting of output 3	nonE
tyPE AL3	alarm 3 type	HI Ar
Ch AL3	variable for alarm 3	MEAS
HySt AL3	alarm 3 hysteresis	0
tdEL AL3	alarm 3 delay	0
trES AL3	alarm 3 self-resetting time	0
tHr AL3	alarm 3 threshold	0
SEL Out4	setting of output 4	nonE
tyPE AL4	alarm 4 type	HI Ar
Ch AL4	variable for alarm 4	MEAS
HySt AL4	alarm 4 hysteresis	0
tdEL AL4	alarm 4 delay	0
trES AL4	alarm 4 self-resetting time	0
tHr AL4	alarm 4 threshold	0
Ao Ch	variable for analog output	nonE
Ao tytPE	analog output type (mA)	0 ... 20
Ao FUnC	direct or reverse analog output	
Ao rnGL	analog output low limit	0
Ao rnGH	analog output high limit	20
SER adr	station address	001
SER baud	communication rate (baud)	9600
SER dEL	minimum delay before reply (msec)	005
FP FMT	floating point: swap word A and B order	normal
	Only for SID98MP-RTD	
dEG	temperature unit	°C
rtd tyPE	rtd type	Pt RTD
rtd r0	rtd resistance at 0° C (Ω)	100
	Only for SID98MP-TC	
tC M1	thermocouples type	tC J

NOTE:

For any information related to the serial interface please require the specific manual

