

User Manual

CE-317

Manual SunPhotometer

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INTRODUCTION

The CE 317 sunphotometer is a portable instrument equipped with up to 6 interference filters between 300 and 1100 nm. It can be mounted on a tripod and directed by hand towards the sky or the sun. The data are stored in a memory and can be easily transferred in a ASCII file on a PC.

The application of the CE 317 sunphotometer are: turbidity and optical thickness measurement, aerosols properties study, sky radiance, ozone concentration and atmospheric corrections for satellite.

STARTING UP THE PHOTOMETER

At the first use, strike any key until this message appears on the screen:

**** STANDBY ****
awake : red key

The instrument is in standby. Release the red key and strike it again to get to the main menu:

31 / 12 / 93 23 : 59
PW MAN SCN VIEW

Abbreviations: [G] for the green key.
 [W] for the white key.
 [Y] for the yellow key.
 [R] for the red key.

PW [G] **Password introduction:**
- Time setting.
- Initialisation.
- Constants and parameters setting.

MAN [W] **Access to the manual sequences:**
- SUN: the sun gains are applied.
- SKY: the sky gains are applied.

SCN [Y] **Access to the programmed scenarios.**

VIEW [R] **Access to the visualisation parameters:**
- Of the recorded results.
- Of the battery voltage.

NOTE: After a minute without the keyboard being used, the screen automatically dies away.
 Striking any key makes the main menu appear on the screen.

PASSWORD INTRODUCTION

PW [G]

Introduce the password: PW = 1
[R] to increase.
[Y] to decrease.

23 : 59 : 59	PW	0
Pass	Word	- +

A pressure on [W] permits to return to the main menu

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PW MAN SCN VIEW	

Otherwise valid with [G], then the PW menu appears:

23 : 59 : 59
RTN INI DAT PAR

RTN [G] Return to the main menu.
INI [W] Memory initialisation.
DAT [Y] Date and time setting.
PAR [R] Photometer parameters.

NOTE: The introduction of constants and parameters, and the update of magnitudes are carried out by modifying - increasing or decreasing - the current value.

TIME SETTING

PW / **DAT** [Y]

PW / DAT / - [Y]

Decreases the values.

PW / DAT / + [R]

Increases the values.

PW / DAT / **X** [W]

Presents the following magnitude.

Enter the year.

Year	:		93
OK	X	-	+

Enter the month.

Month	:		12
OK	X	-	+

Enter the day.

Day	:		31
OK	X	-	+

Enter the hour.

Hour	:		23
OK	X	-	+

Enter the minute, one unit ahead, as compared to the reference clock.

Minute	:		59
OK	X	-	+

PW / DAT / **OK** [G]

Validation and return to the PW menu.

23 : 59 : 59
RTN INI DAT PAR

NOTE: The seconds are implicitly set at zero, this operation must be done exactly when the minutes appear at the reference clock.
Each entrance in the DAT menu, even without any modification, sets the seconds at zero.

PARAMETER SETTING

PW / **PAR** [R]

Reading EPROM ...

Identification of the photometer by its country code.

Country (from 0 to 255)
OK X - +

PW / PAR / - [Y]

Decreases the parameter value.

PW / PAR / + [R]

Increases the parameter value.

PW / PAR / **X** [W]

Goes to the following parameter.

Identification of the photometer by its district code.

District (from 0 to 9999)
OK X - +

Identification of the photometer by its assigned number.

Number (from 0 to 15)
OK X - +

Selection of the measurement registered in SKY:

Sky/max	NO
OK X - +	

* YES : highest value on 8 measurements done.

* NO : last current value.

Set the time interval between two measurements.

Periode s	15 à 120
OK X - +	

Compensation of the zero offset of the temperature detector (from -0.8°C to +0.7°C).

T Offset	+0.0
OK X - +	

This parameter is set in the factory.

Origin of the first filter with regard to the starting plot on the filter holder wheel (from 1 to 255 steps). Permits a precise placing of the filters.

Org.offset	48
OK X - +	

This parameter is set in the factory.

Sensitivity multiplying factor to be applied to the SUN measurements with filter 1 (1 - 30).

FSun1				10
OK	X	-		+

Idem to FSun1 for the other filters.

FSun6				10
OK	X	-		+

Sensitivity multiplying factor to be applied to the SKY measurements with filter 1 (1 - 30).

FSky1				10
OK	X	-		+

Idem to FSky1 for the other filters.

FSky6				10
OK	X	-		+

Calibration constant for SUN measurements for filter 1.
This parameter is set in the factory.

CSUN1				10000
OK	X	-		+

Calibration constant for SUN measurements for the other filters.
This parameter is set in the factory.

CSUN6				10000
OK	X	-		+

Calibration constant for SKY measurements for filter 1.
This parameter is set in the factory.

CSKY1				10000
OK	X	-		+

Calibration constant for SKY measurements for the other filters.
This parameter is set in the factory.

CSKY6				10000
OK	X	-		+

PW / PAR / **OK** [G]

Validation of the values of the different parameters.

Valid ?				
NO				YES

PW / PAR / OK / **NO** [G]

Return to PW menu.

23 : 59 : 59
RTN INI DAT PAR

PW / PAR / OK / **YES** [R]

Save the parameters in non volatile memory.

Writing EEPROM

Return to PW menu.

23 : 59 : 59
RTN INI DAT PAR

BUFFER INITIALISATION

PW / **INI** [W]

purge memory ?
NO YES SBY

PW / INI / **NO** [G]

Return to PW menu:

23 : 59 : 59
RTN INI DAT PAR

PW / INI / **YES** [Y]

Purge the memory.

purge success
RTN

Strike [W], [Y] or [R] to return to
PW menu.

23 : 59 : 59
RTN INI DAT PAR

Strike RTN [G] to return to the main
menu.

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PW MAN SCN VIEW

PW / INI / **SBY** [R]

Standby position: then screen becomes blank.
To wake it up, see page 3.

** STANDBY **
awake : red key

PW / **RTN** [G]

Return to the main menu.

31 / 12 / 93 23 : 59
PW MAN SCN VIEW

SCENARIO MODE

SCN [Y]

Access to the different scenarios.

RTN GO - + Name

Name : name of the scenario.

Next scenario, press [R]. Previous scenario, press [Y].

To start a scenario, press GO [W].

RTN GO - + OFF

Stop the current scenario.

RTN GO - + MesAut

Automatic measurement.

When the scenario MesAut is started, it waits the next full minute to make the first measurements. The data are automatically taken with the sun gains on each filter. When the measurements are made on each filter, the time remaining to the next measurement is displayed: t = nn. The total time is the time entered in the parameter Periode.

RTN GO - + PC

Transmission of the data to a compatible PC.

RADIANCE AND IRRADIANCE MEASUREMENT

MAN [W]

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 RTN SVK7 SUN SKY

MAN / SUN [Y]

Measurement sequence with SUN gains.

or **MAN / SKY** [R]

Measurement sequence with SKY gains.

Search the starting plot : reference position of the filter holder wheel.

Searching
 starting plot ...

* If the starting plot is not found (connection problem), the screen displays:

error at
 starting plot

Strike any key to return to the MAN menu:

31 / 12 / 93 23 : 59
 RTN SVK7 SUN SKY

* If the starting plot is found, the first filter is ready for the measurement.

nnc = xxxx yyyy
 ABO < > RUN NEXT

nn: measurement number (1 to 7).

cc: S if sun measurement,
 k if sky measurement and Sky/max = NO,
 K if sky measurement and Sky/max = YES.

xxxx: in SUN, maximal value of the measurements.

xxxx: in SKY, maximal value of the measurements if Sky/max = YES or current value if Sky/max = NO.

yyyy: current value.

MAN / SUN / ABO [G]

Abortion of the sequence.

or **MAN / SKY / ABO** [G]

Abortion of the sequence.

Returns to the MAN menu and places the filter wheel at its origin position.

31 / 12 / 93 23 : 59
 RTN SVK7 SUN SKY

MAN / SUN / NEXT [R]

Selection of the next filter.

or **MAN / SKY / NEXT** [R]

Selection of the next filter.

Turns to the next filter.

```
nccc =      xxxx  yyyy  
ABO < > RUN NEXT
```

MAN / SUN / RUN [Y]

Launch an automatic measurement cycle (all the filters).

or **MAN / SKY / RUN** [Y]

Launch an automatic measurement cycle (all the filters).

Keeps the data from filters already turned (if any) and records the data defiling the filters until the last filter.

```
nccc =      xxxx  yyyy  
ABORT      autorecord
```

* A strike on **ABORT** [G] stops the data collection and returns to the **MAN** menu.

```
31 / 12 / 93      23 : 59  
RTN SVK7 SUN SKY
```

* A strike on [Y] stops the automatic measurement and displays the measurement where it stopped.
xxxx is always the value recorded.

```
nccc =      xxxx  yyyy  
ABO < > RUN NEXT
```

When the measurements are over, this screen appears:

xxx: identification of the set of measurement (0 to 127).

nn: number of measurements including identification number.

tt.t: temperature value.

```
I = xxx /nnT1 = tt.t  
RTN ID      Store
```

RTN: returns without saving the data.

ID: modifies the identification number.
The identification number is useful to identify different field trip campaign.

```
ID = xxx  
OK      -      +
```

Store: saves the data.

```
23 : 59 : 59  
Storing  data  ...
```

MAN / SVK7 [W]

Saves on a cartridge the data in memory.

If the cartridge is on, the data are saved after each measurement. Otherwise, at the end of a measurement, a cartridge can be inserted and the recording of the data can be made with **SVK7**.

If the cartridge is being loaded, you will see this additional screen that blinks

```
23 : 59 : 59  
don't touch cart
```

Return to the MAN menu.

31 / 12 / 93
RTN SVK7 SUN SKY

CONSULTATION

VIEW [R]

31 / 12 / 93	23 : 59
RTN	BAT CART MEM

VIEW / BAT [W]

Consultation of different parameters.

Instantaneous value of the internal battery's voltage. The voltage should always be greater than 5.10 V.

23 : 59 : 59	Ba	5.20
--------------	----	------

Press [R] to go to the next parameter.

Press [Y] to go to the previous parameter.

Instantaneous value of the photometer's detectors' temperature.

23 : 59 : 59	T	22.0
--------------	---	------

Humidity value. Meaningless on photometers CE-317.

23 : 59 : 59	HH	0
--------------	----	---

Instantaneous value of the sky measurement. Should indicate 0 when no filter is in the front.

23 : 59 : 59	SK	xxx
--------------	----	-----

Instantaneous value of the sun measurement. Should indicate 0 when no filter is in the front.

23 : 59 : 59	SN	xxx
--------------	----	-----

A strike on [G] permits a return to the main menu

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PW	MAN SCN VIEW

The measurements are stored in a buffer before being transferred to the cartridge. When ten blocks are in memory, or at midnight, even if the measurements in the buffer occupy less than ten blocks (a data block = 256 bytes), the data are transferred to the cartridge.

VIEW / MEM [R]

Consultation of the measurements saved in the buffer.

* XX: scenario or sequence code:

95 for sun measurements,
98 for sky measurements (Sky/max = NO),
99 for sky measurements (Sky/max = YES).
INI when the buffer is empty.

XX	Y	31 ->	12	23 : 59
NN/MM		cc		yyyy

* Y: defines the mode:

- M: measurement saved in memory in automatic mode.
- m: measurement saved in memory in manual mode.

* NN/MM: measurement number / number total of measurements.

* cc: code of the filter on which the measurement has been done (S, k, K, T, Id and No).

* yyyy: value of the measurement.

- [Y] permits the consultation of the previous measurement.
- [R] permits the consultation of the following measurement.
- [W] permits the scrolling of the data bloc.
- [G] permits to return to the main menu.

31 / 12 / 93	23 : 59
PW	MAN SCN VIEW

VIEW / CART [Y]

Consultation of the measurements saved in the cartridge.

Reading of the cartridge.

reading cart ...

If the cartridge is not connected, the screen displays:

cart : none

Then strike any key to get back to the VIEW menu.

31 / 12 / 93	23 : 59
RTN	BAT CART MEM

Otherwise:

- If the cartridge is empty the screen will display:

cart : fresh

- If the cartridge has some measurements in memory, xxx represents the number of blank pages left.

cart : xxx/127

Striking any key permits to consult the measurements saved on cartridge.
The same screen as for VIEW / MEM is displayed.

The only difference is that Y will be whether K, or k :

- K: measurement saved on cartridge effected in automatic mode.

- k: measurement saved on cartridge effected in manual mode.

VIEW / RTN [G]

Return to the main menu.

31 / 12 / 93	23 : 59
PW MAN SCN VIEW	

PC TRANSFER AND DATA PROCESSING

ASTPWin

Acquisition software for sunphotometers, radiometers, BRDF et radiancemeters. Scenario visualization, suppression of bad measurements. Export K7 and ASCII files. Instruments parameters visualization, edition and printing. Data transfert on PC serial port or standard MODEM. Transmission's history and statistics about the communications, automatic data transfert. Compatible with Windows 95/98 & WinNT and Win2K. Compatible with ASTP for DOS. ASTPWin plug-ins management.

For more information about ASTPWin, consult its documentation or check the CIMEL Web Site (<http://www.cimel.fr>).