

USER GUIDE

**Book 1.
(User Modes).**

**Sinar Technology CP 7070 Moisture Analyser with
BLE Wireless Data Transmission.
Model CP 7070**



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For use with V1.x software.

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Model CP 7070 Moisture Analyser.

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1.0 Introduction:

Thank you for choosing the SINAR TECHNOLOGY CP 7070.

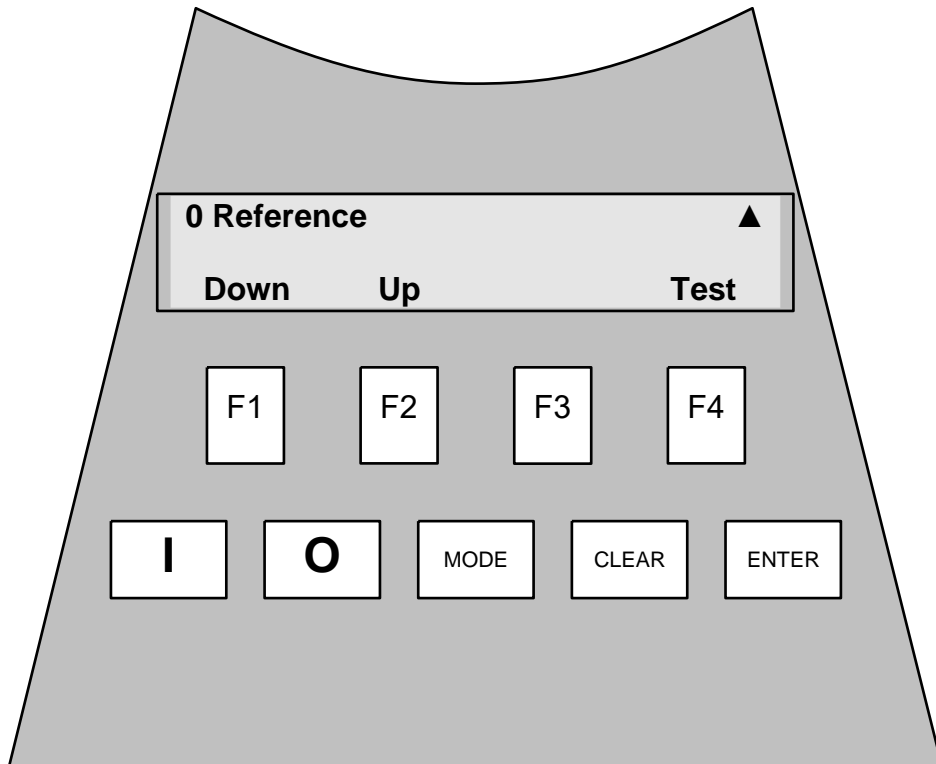
The Sinar™ CP 7070 Moisture Analyser houses the latest moisture measuring technology in a compact, portable package. It has been designed to provide fast moisture results using whole crop samples. In addition to % moisture content, the CP 7070 simultaneously measures and displays the free flow bulk density in grams per litre, kilograms per hectolitre and the sample temperature.

The CP 7070 is a battery powered moisture analyser with only one operator mode making the instrument extremely quick and easy to use.

The CP 7070 can store up to twenty-five different crop calibrations. Contact Sinar Technology or your Sinar agent if your calibration requirements change.

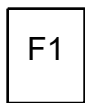
The instrument can transmit data (moisture, temperature and density) using BLE technology. This data can be used to generate your own quality assurance record. To make use of the BLE feature you will require the Sinar MLog Application to be installed on your handset. (Refer to section 10.0 on page 11 for more information)

2.0 CP 7070 Display and Keypad Layout

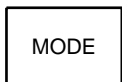


CP 7070 Front Panel layout.

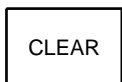
Keypad Functions.



The “F” or function keys action the command shown in the display window above each function key.



The “MODE” key is used to step through the user modes.

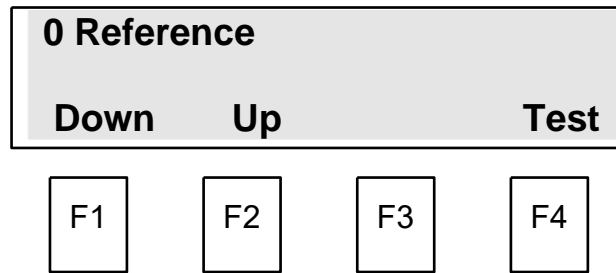


The “CLEAR” key is used to clear wrongly entered numerical data allowing you to start again.



The “ENTER” key is used to enter all numerical data.

3.0 User Mode - Display Description.



User Mode screen.

0 Reference.

Denotes that the 0 Reference curve is currently selected. This curve is used when a Code 0 reading is required for calibration purposes. Press F2 to select the required crop.

Down/Up (F1 & F2).

Used to step through the crop calibrations (curves) installed in the CP 7070.

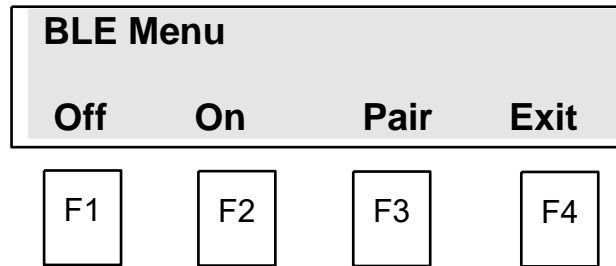
(F3)

Turns the display back light on and off (battery power save feature).

Test. (F4).

Used to take a reading.

4.0 BLE Menu - Display Description.



BLE Menu screen.

BLE Menu

Denotes BLE Menu is selected.

Off (F1)

Turns BLE Off

On (F2)

Turns BLE On

Pair (F3)

Pairs the device (Optional)

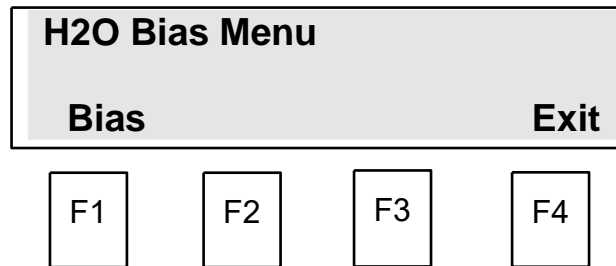
Exit (F4)

Used to exist the BLE Menu and return to User Mode.

Note.

You must have the Sinar MLog App installed on your handset to use this feature.
(See Page 11).

5.0 H2O Bias Menu - Display Description.



H2O Bias Menu screen.

Bias Menu.

Denotes Bias mode has been selected.

Bias (F1).

Used to alter the displayed moisture reading for a specific crop calibration.

Exit. (F4).

Used to save the entered data and exit to User Mode.

Using your CP 7070 Moisture Analyser.

6.0 System Power Up.

Your first power up.

Press the “I” key. The CP 7070 powers up in mode 0 showing “**0 Reference**” in the display. Use the “Up” (F2) key to step through the crop calibrations.

Ongoing power up’s

The CP 7070 remembers the last selected crop calibration. On power up, the CP 7070 returns to the previously selected calibration.

Always check the correct crop is selected before carrying out a test.

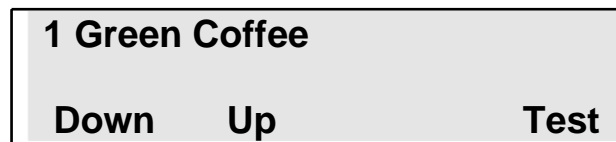
To extend battery life the CP 7070 will turn itself off if a key is not pressed within 3 minutes.



User Mode screen.

7.0 Selecting a Crop Calibration.

Using the **Down (F1)** or **Up (F2)** key, step through the crop calibrations until the required calibration is displayed. One press on the key indexes one crop position.



User Mode screen.

The display shows the Green Coffee calibration has been selected and its curve number is 1.

8.0 Loading the sample.

The CP 7070 is supplied with –

- 1off Beaker
- 1off Strike Off Blade
- 1off Cell Cleaning Brush
- 1off Sample Tray
- Calibration Sample

We strongly recommend the use of all the above items to achieve the maximum accuracy from your machine.

Method:

Over fill the beaker with sample.

Strike off flush using the stainless-steel wiper provided.

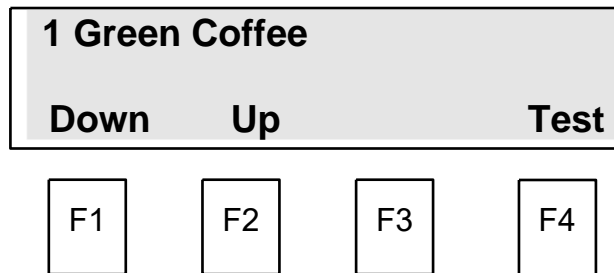


Pour the sample into the Measuring Cell evenly.



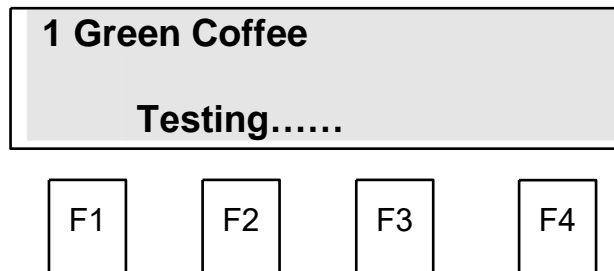
9.0 Taking a measurement. (User Mode, F4).

With the sample loaded press and release the **Test (F4)** key.

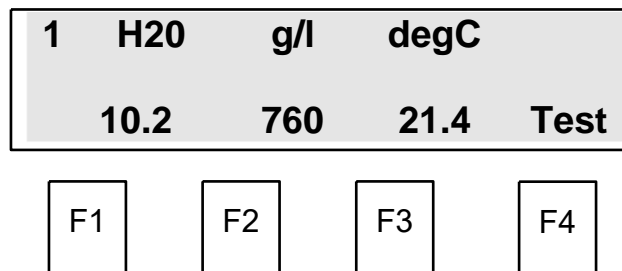


User Mode screen.

The display will change showing the selected crop on the top line and **Testing....** on the bottom.



After approximately 3 seconds the results will be displayed.



To continue testing empty the sample into the sample tray.

Refill with sample, see Section 8.

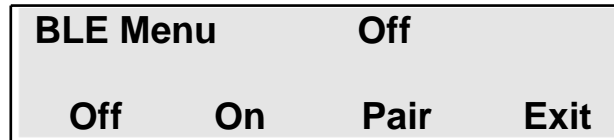
Press and release the **Test (F4)** key.



Use the brush provided to remove any dust or grain trapped in the measuring cell.

10.0 Activating BLE in CP 7070

BLE is configured and controlled via the BLE Menu shown below. A new instrument will be supplied with the following default config i.e. BLE turned Off.



If the BLE feature is required, press and release F2 to turn BLE **On**.



The BLE module automatically starts broadcasting as soon as BLE is powered on. The symbol in the top right hand corner which is now visible and flashing, indicates the unit is in pairing mode.

Once the CP 7070 has paired with the Sinar MLog Application the symbol will stop flashing and become solid.

The symbol is displayed in both the User Mode and the BLE Menu so the operator is always aware of the BLE status.

Once BLE is switched **On (F2)** it will remain on until manually switched **Off (F1)**.

Download and install the Sinar MLog Application using the applicable QR Code



Pair the Instrument with the App

The example below shows the symbol sequence each time the instrument is powered On with BLE having been previously activated.

Turn instrument - On.

BLE module powers up.
Symbol flashing (pairing mode).

0 Reference			▼
Down	Up	Test	

Successful BLE Connection.

Momentary symbol change to signify successful connection (equivalent to TXM Green LED).

0 Reference			*
Down	Up	Test	

Paired.

Symbol changes and is now solid to signify the Instrument is paired.

0 Reference			▼
Down	Up	Test	

Transmitting data

When a reading is successfully transmitted and received by the paired handset the following acknowledgement event occurs in the instrument.

Successful transmission of data.

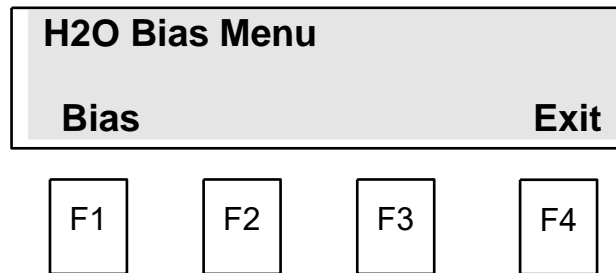
Momentary symbol change to signify successful transmission and receipt of the data (equivalent to TXM Green LED).

0 Reference			*
Down	Up	Test	

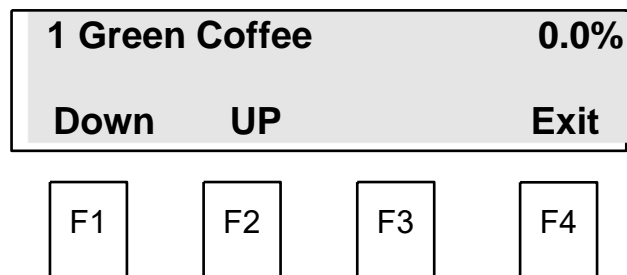
11.0 H2O Bias Menu.

The H2O Bias function is used if the moisture reading needs to be adjusted in line with the reference method or another piece of equipment. The bias should only be used if the readings are too high or too low by a constant amount over a varying moisture range.

The H2O Bias menu enables you to independently enter a bias or offset to each selected crop calibration.



By pressing **Bias (F1)** the display changes to:-



The display shows that calibration number 1, Green Coffee has been selected for adjustment. This calibration selection is made in User Mode. See Section 7, Selecting a calibration.

All bias values will be factory set to zero on shipment.

By pressing the **F1** or **F2** keys the required +ve or -ve bias value can be displayed. A positive value will increase the displayed moisture value, a negative value to reduce it. Each press of the key increases or decreases the value by 0.1%.

When the correct bias value is displayed, press the **Exit (F4)** key to save and return to User Mode.

Your bias value for the selected crop has now been stored.

12.0 Protected Modes.

When in H2O Bias Menu by pressing the MODE key again the display will change to.

**Password Required for
Higher Modes**

Followed by:

Select value: 000
◀ ▶ - +

The modes beyond this point are protected by a password.
Please speak with your supervisor to gain access.

If the wrong password is entered the display changes to:

Sorry, wrong!

and then return to the User Mode screen.

0 Reference
Down Up Test

F1	F2	F3	F4
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APPENDIX 1**BATTERY REPLACEMENT****Battery Low indicator**

Should the battery warning signal be displayed at start up, replace the batteries.

***** WARNING! *****
Battery Low!!!

To replace the batteries:

Remove the battery box cover from the underside of the instrument by simultaneously releasing the two catches (as shown below).



- Remove the old batteries and replace with four standard 1.5V alkaline batteries (Size C, MN 1400 or equivalent).

BE SURE TO INSERT BATTERIES THE CORRECT WAY AROUND - AS MARKED IN BATTERY BOX - replace the battery box cover.

Important!

Always use alkaline batteries.

If you are not going to use the moisture analyzer for some time remove the batteries from the instrument. Store the instrument and the batteries in a warm dry environment.

APPENDIX 2**Technical Specification**

Accuracy:	±0.5%. Typically, 0.3 STD for %H2O (dependant on application).
Repeatability:	0.04-0.15 STD for H2O (dependant on application).
Screen Resolution:	0.1 for H2O, Bulk density and Temperature
Measurement Range:	3-30% H2O (dependant on application).
Commodity Calibrations	25
Units of Bulk Density:	g/l, kg/hl, lb/bu, lb/cf Customer configurable.
Temperature:	°C or °F Customer configurable.
Processor:	MSP430 Ultra Low Power 16-bit Microcontroller
Output BLE TX Device:	BLE653 V5.1 2MBPS. TX wavelength 2.4 - 2.48 GHz
BLE Range:	10 Meters line of sight.
BLE Output Data:	%H2O, Bulk Density, Temperature
BLE Receiver:	Sinar Technology App. See QR code.
Operating Environment:	0 to 40°C
Storage Environment:	-10 to 70°C none condensing
Instrument Dimensions:	(H)11.5cm x (W)16cm x (D)28cm
Instrument Weight:	1.3Kg including batteries
Instrument Power Supply:	4 Alkaline Type "C" Size 1.5V Batteries
Battery Life:	Estimated battery life: 50,000 readings dependant on battery quality and ambient temperature.
Sample Cell - Fixed:	290ml Volume or 50-240g
Cell Construction:	Aluminium Alloy Polyester Powder Coated.
Case Material:	Flame retardant acrylonitrile butadiene styrene (ABS)
Weight Balance:	Measures and corrects for weight between 100-240 grams
Temperature Correction:	Thermistor sensor. Correction is software programmable.
Instrument USB connector:	USB TYPE B

APPENDIX 3**ERROR CODE SUMMARY**

Error Code	Description	Recommended Action
Err.0	Sample weight too low	Use larger sample (greater than 100g)
Err.1	Break in connection between cell and the processor PCB	Contact your distributor
Err.2	Capacitance reading is too high (over 100)	Check hardware. If necessary, scale down capacitance by changing byte 28.
Err.3	Capacitance reading is too high at low moisture	Check hardware. If necessary, scale down capacitance by changing byte 28.
Err.4	High moisture reading at low capacitance	Contact your distributor
Err.5	Capacitance reading is too low for the calibration curve.	Check hardware. Check calibration curve.
Err. 6	Comms error with PC	Check USB cable connections