KINGFISHER INTERNATIONAL

KI2600 Power Meter Training Manual

Revision: 2
Date: 23 Dec 2016

KI2600 Series Power Meters

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Table of Content (TOC)

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1 General Features

- Autotest function
- Calibrated at multiple wavelengths (up to 28 λ)
- Industry standard connector adaptors: interchangeable or screw-on types
- Large, backlit, sunlight readable LCD display
- "Total Uncertainty" specification that covers accuracy over all power levels, temperatures, connector and fiber types.
- Power - Battery or micro USB
- Long battery life (up to 1000 hours)
- Memory – Internal or USB
- Data saved with time-date stamp
- Text ID: Text naming for test data
- Test tone detection
- Ribbon Fiber Test Capability
- Captive Dust Cap functions as tilt bail

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2 KI2600 Series Power Meter Overview & Keypad Layout

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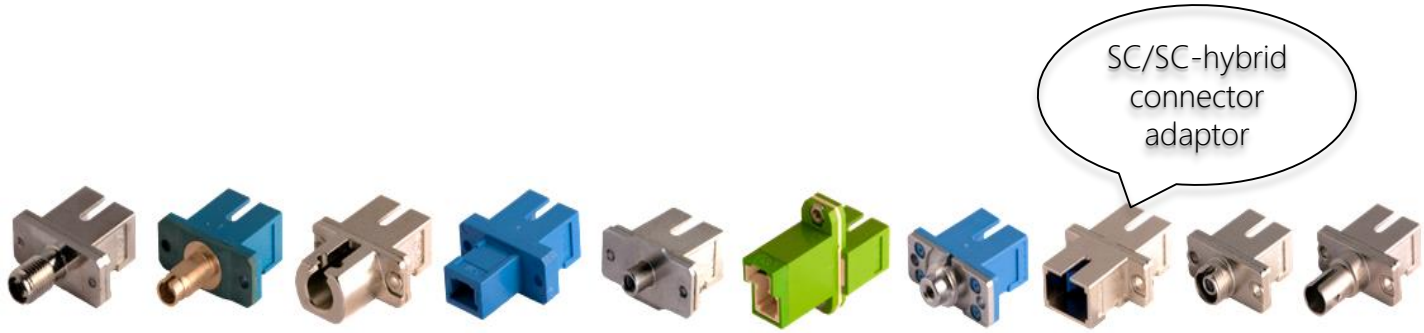
3. Operation

3.1 Select test cord configuration

Identify fibre type required for test cord and configuration required. Instrument supplied with SC connector adaptor as standard.

Standard type:



XL type:

Note: Unlike light sources, power meters accept both PC and APC connectors.

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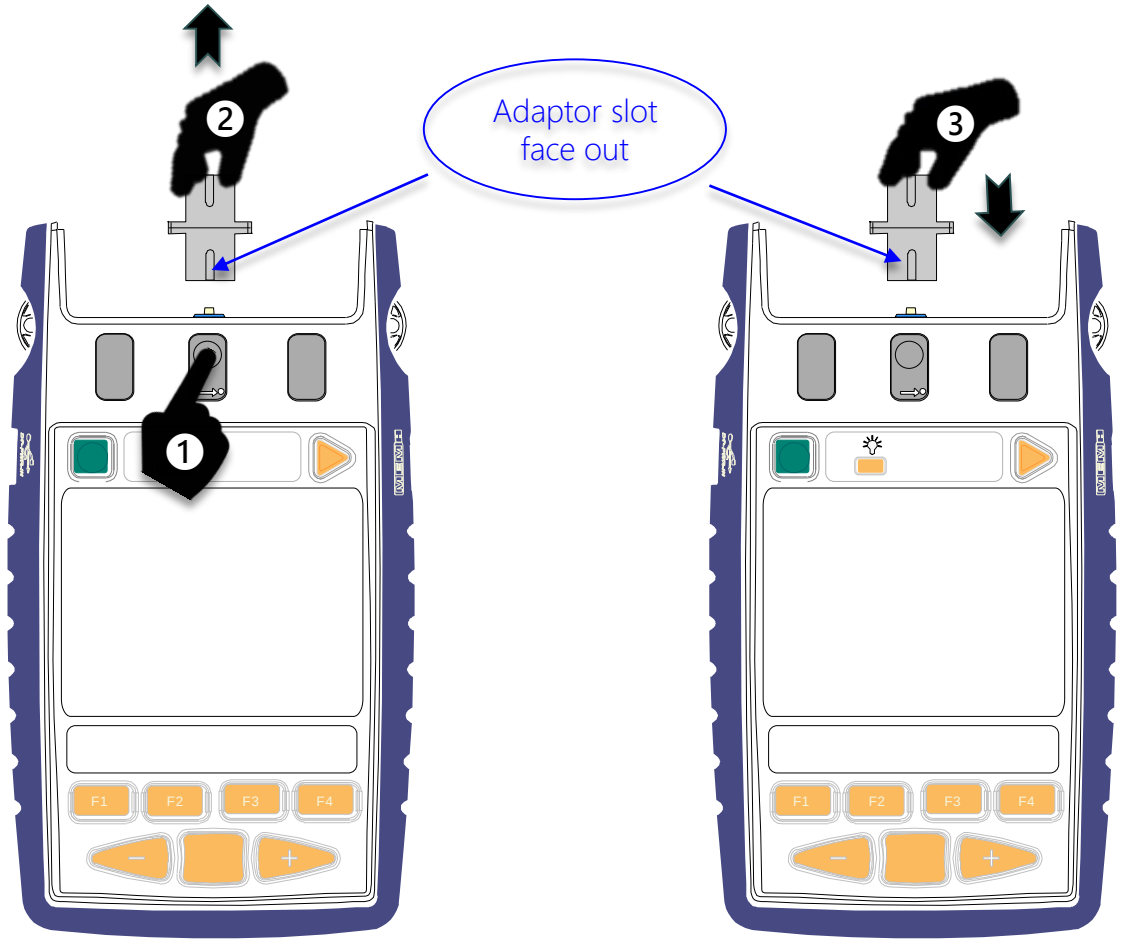
3.2 Install / uninstall Connector Adaptor

1. Lightly press and hold Release Button with one hand.
2. Pull out existing adaptor with the other hand.
3. Push in a new adaptor.



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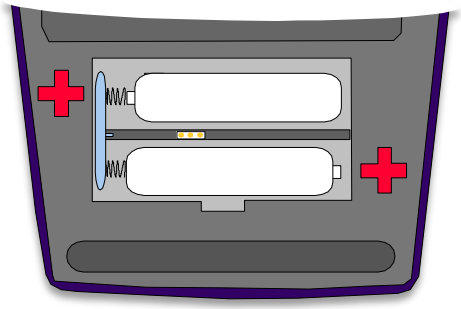
3.3 Install / uninstall Batteries

Caution: Battery charging on instrument must first be disabled when using non-rechargeable batteries. See next page for instructions to disable battery charging.

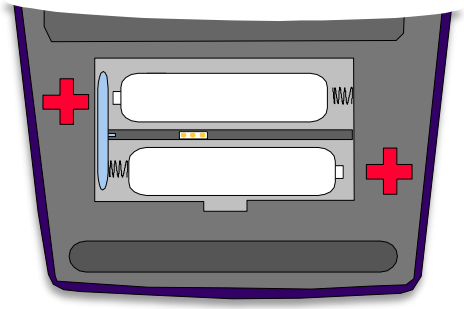
1. Unclip Battery Compartment Cover at rear of instrument.
2. Insert/remove batteries (take note of the battery +Ve terminal spring orientation of different instrument models, see images below).

Note:

- Instrument's date/time setting holds for approx. 7 seconds during batteries change over.
- Use 2x Alkaline / Lithium AA cells or 2 x NiMH AA cells.
- Alkaline battery run time up approx. 1,000 hours.



Earlier Models



Current Models

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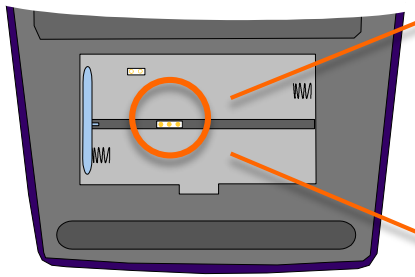
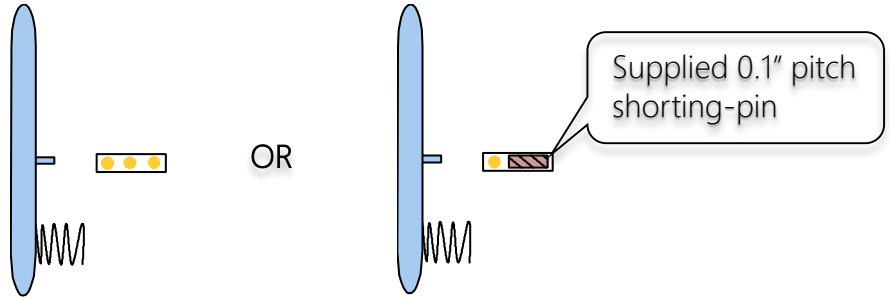
3.4 Enable / Disable Battery Charging

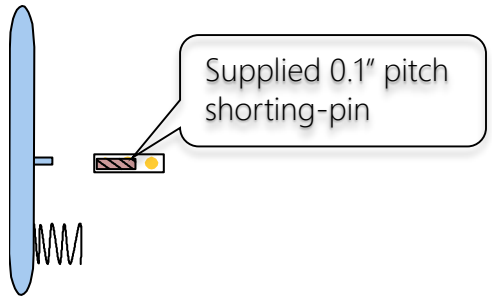
To enable rechargeable batteries to be internally charged, this feature must be enabled by means of the supplied 0.1" pitch shorting-pin.



Instrument supplied in this configuration i.e. battery charging is *Disabled:*



Insert supplied shorting-pin as shown to *Enable* battery recharging:



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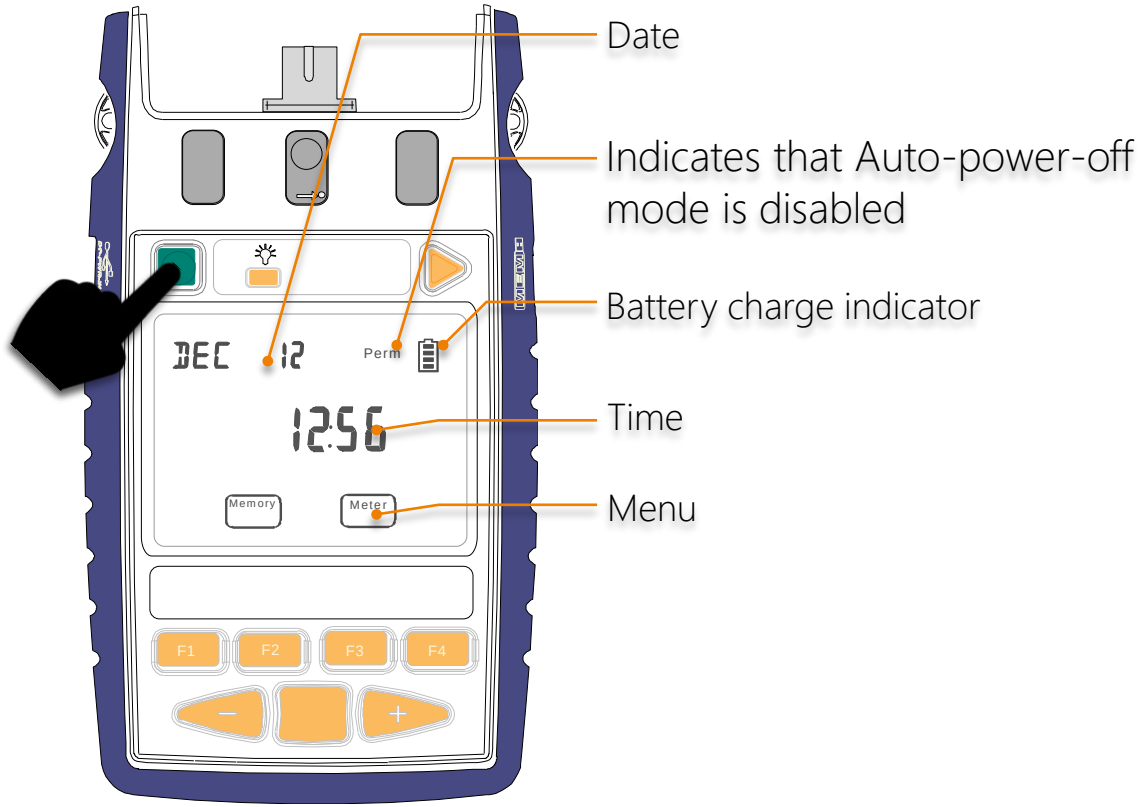
3.5 Switch On/Off Instrument

To switch on:
press the green, [On/Off] button.

To switch off:
press the green, [On/Off] button again.

Note: the instrument will switch off automatically 10 minutes after it was switched on.

To defeat auto switch off mode:
Press [On/Off] & hold for 3 seconds.
Instrument will beep twice.
'Perm' will display on the upper RHS of the LCD.



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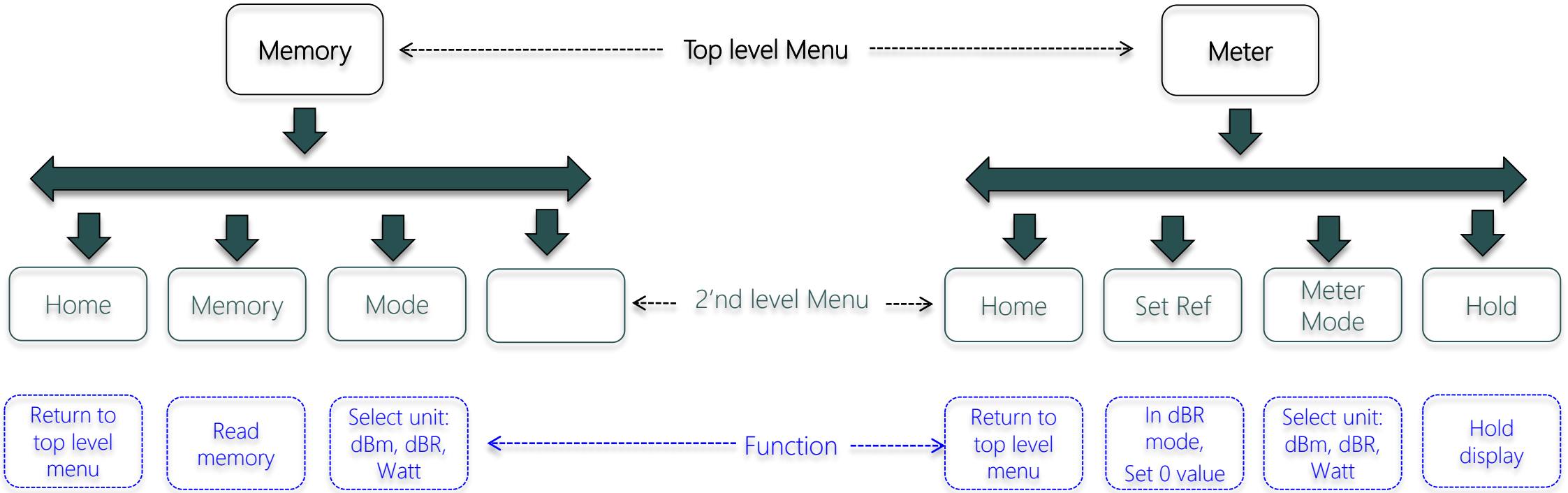
4. Instrument Menu Structure



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5. Modes Of Operation

5.1 Autotest:

- Automatically toggles between all wavelengths.
- Preferred mode for loss testing as testing time is greatly reduced.
- Minimises error as meter always displays correct wavelength.

5.2 Manual:

- Single wavelength operation.
- Preferred mode for level monitoring.

5.3 Test Tone Detection:

- Detect and displays incoming modulation frequency.

5.4 Slow Mode:

- Displays power level in the presence of test tone or low level modulation.

5.5 KITS software:

- Under software control.

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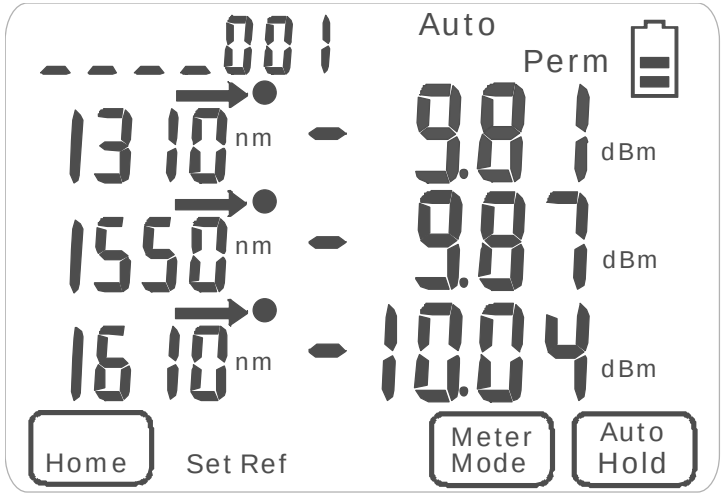
5.1 Autotest Operation Mode:

- Simplest mode for loss testing.
- When receiving light from a compliant source operating in Autotest mode, the meter will auto toggle between wavelengths.
  - Power meter receives data which contains wavelength, source serial number and nominal source output power.
  - If power meter not calibrated at an incoming wavelength it will ignore it but remain in sync with other wavelengths.
  - If incoming power level too low at a particular wavelength it will ignore it but remain in sync with other wavelengths.
- When receiving light from a source operating in Autotest mode:
  - Screen displays up to 3 wavelengths at a time.
  - Screen toggles if more than 3 wavelengths being received.



Click to go back to Modes Of Operation

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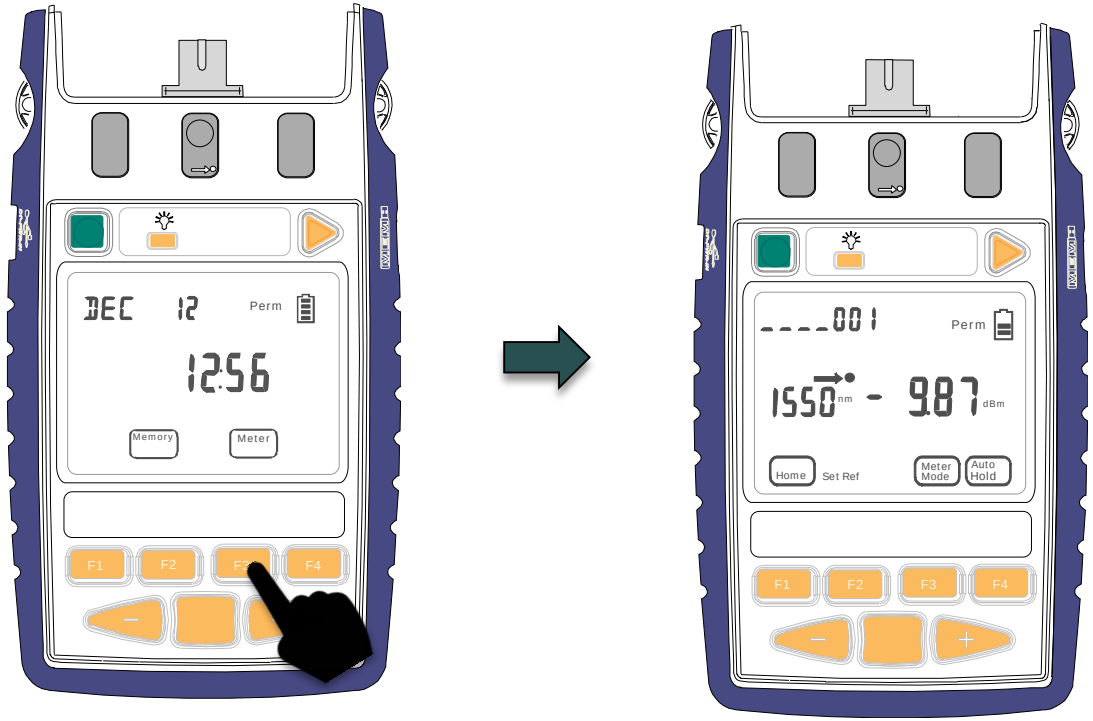
5.2 Manual Operation Mode:

5.2.1 Switch to Meter function

At top level menu, press [F3].



Click to go back to Modes Of Operation

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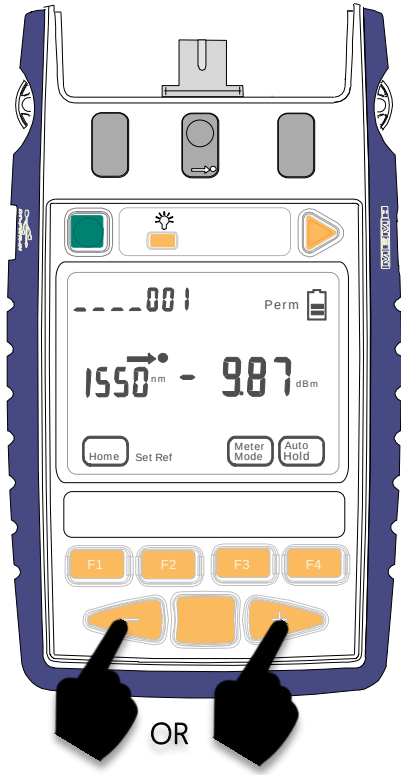
5.2 Manual Operation Mode:

- 5.2.2 Select wavelength

Toggle [-] or [+] to select he desire wavelength.

Note:

- Wavelength toggle is not circular.
- Most meters have the common wavelengths grouped together for speed of access when used in manual mode.
  E.g. 850, 1300, 1310, 1550, 1625 nm are together.



Click to go back to Modes Of Operation

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5.3 Test Tone Detection Operation Mode:

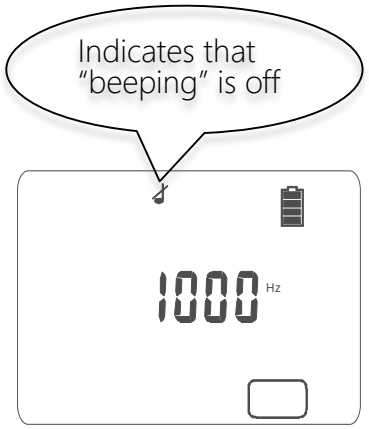
When instrument is operating in Meter mode, and test tone or low level modulation is detected:

- Power meter displays modulated frequency and beeps.
- To measure power in the presence of tone, SlowMode is used.

To defeat beeping:
At turn-On, hold [F2].

Note:
Doing so will turn off beeping of all keypad press too.

Example of a display with 1000 Hz modulation detected:



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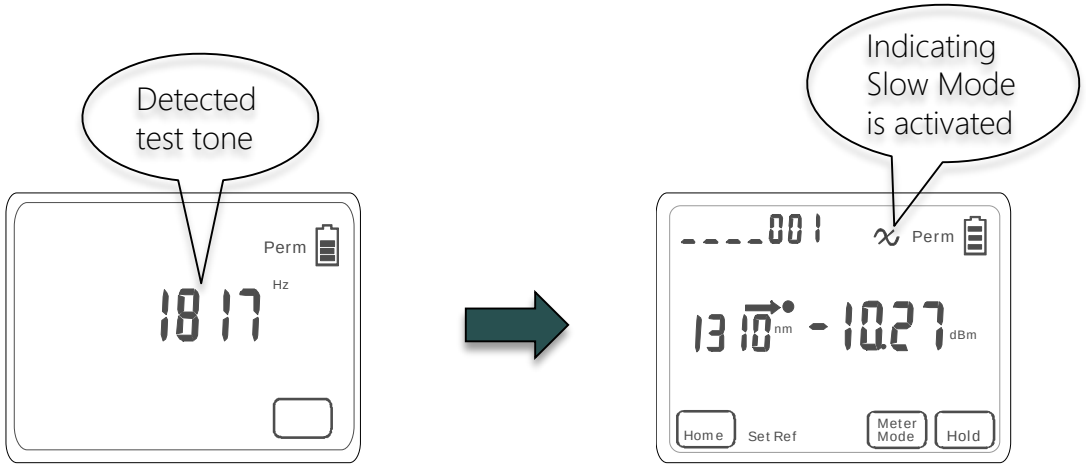
5.4 Slow Operation Mode:

Used when it is necessary to measure power in the presence of test tone or low level modulation e.g. low data rate *SCADA (Supervisory Control And Data Acquisition) transmissions.

- When this mode is active, the meter's sample interval is increased.
- The symbol "∝" is displayed when this mode is active.

In Meter mode, when test tone is present:

- To activate Slow Mode, press [F4].
- To deactivate Slow Mode, press and hold [F3] & then press [F4].



In Meter mode, when no test tone is present:

- To activate Slow Mode, press and hold [F3] & then press [F4].
- To deactivate Slow Mode, press and hold [F3] & then press [F4].

Click to go back to Modes Of Operation

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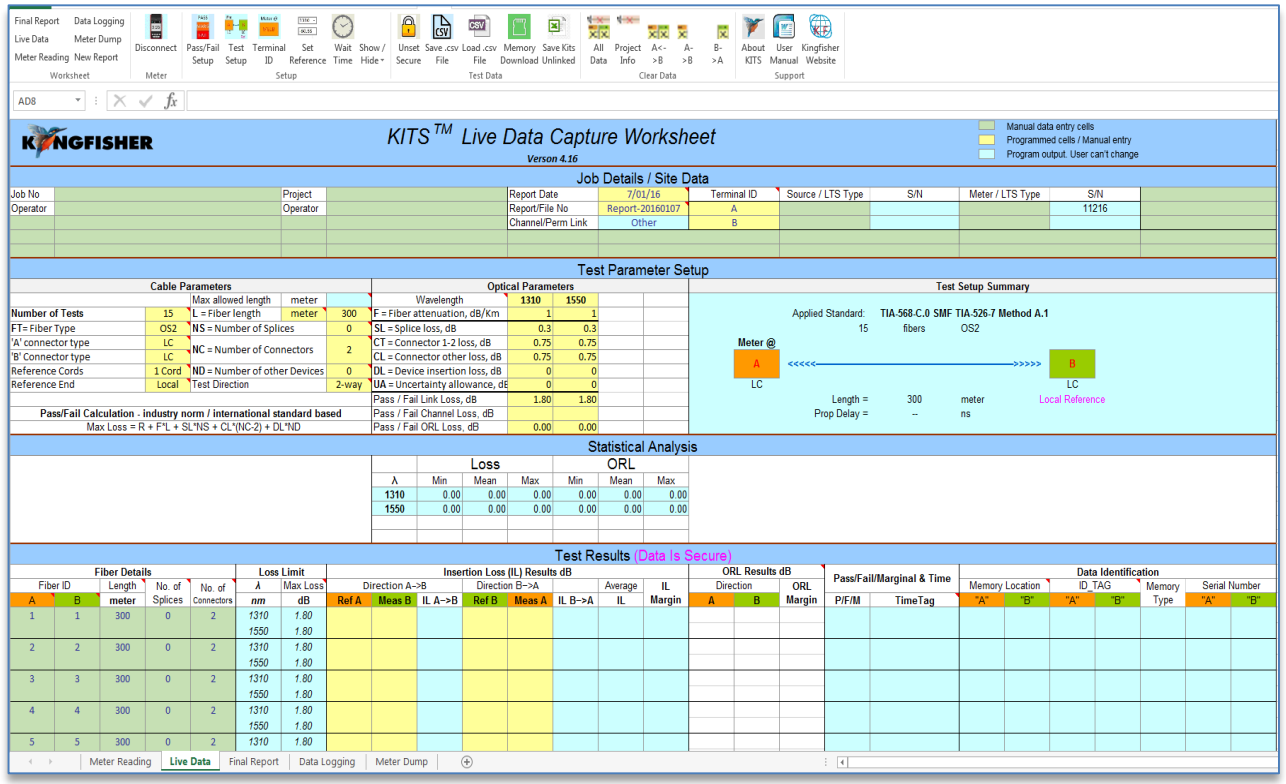
5.5 KITS™ Control Mode:

Direct Interface to KITS™ Testing & Reporting software, Instrument under computer control.



- Click results directly into workbook
- Standards based & user definable analysis
- Data Logging
- Equipment memory extract to KITS™ or CSV file
- Familiar Excel™ User Interface
- Inbuilt multi language support
- Customisable reports

See Kingfisher website for KITS™ user manual.

Click to go back to Modes Of Operation

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6. Measurement Display Mode:

There are 3 modes for measurement unit display i.e. Absolute dBm / Relative dBR mode / Linear (W) mode.

- **Absolute Mode:**
  Measure actual power level at a particular location in decibels (dBm).

- **Relative Mode:**
  Measure power level 'relative' to a particular location in decibels (dBR).
  (This modes requires setting of references, see section 6.2)

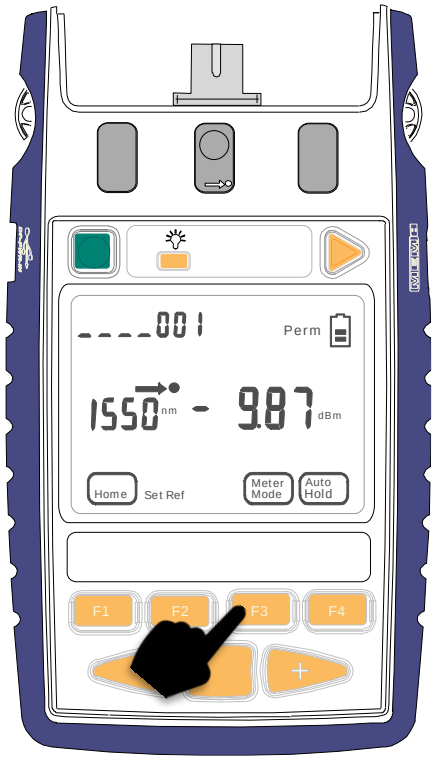
- **Linear Mode:**
  Measure power level at a particular location in watts (W).

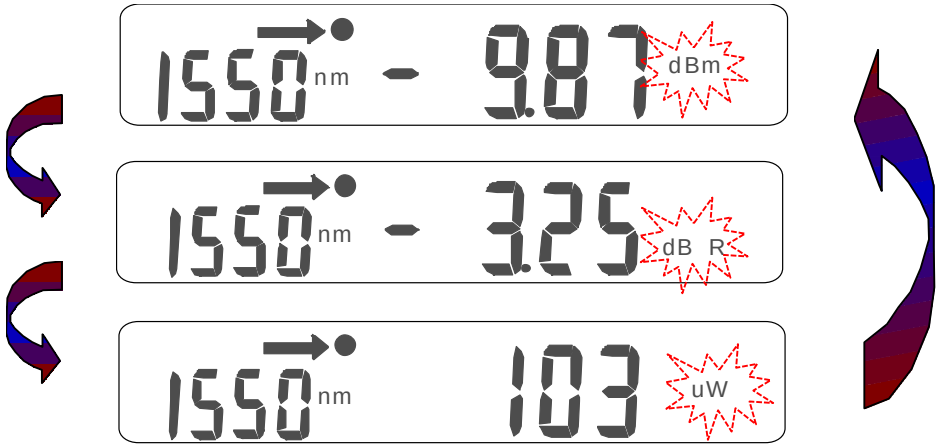
6.1 Selecting Display Mode

6.2 Setting Reference (in dBR mode)

6.1 Selecting Display Mode:

In Meter mode, press [F3] repeatedly toggles through Absolute(dBm), Relative(dBR) and Linear(W) modes.





Click to go back to Measurement Display Mode

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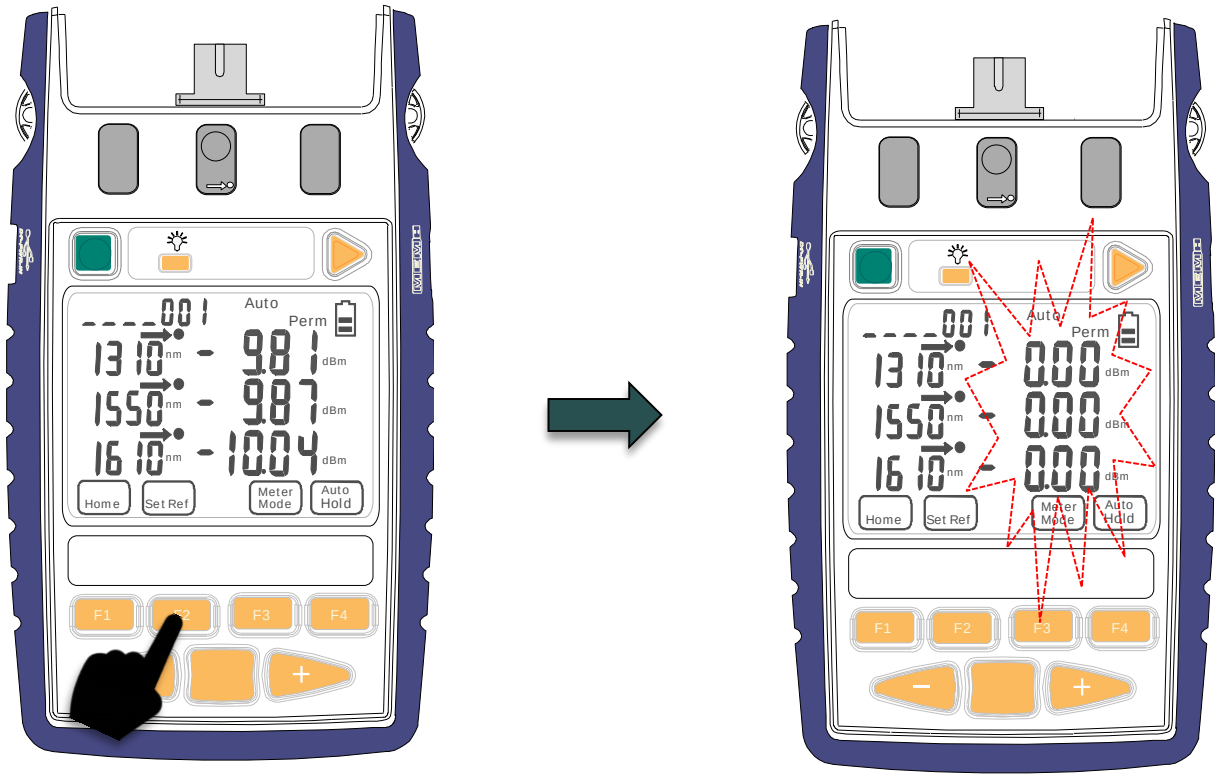
6.2 Setting Reference (in dBR mode):

In dBR display mode:

- Press and hold [F2] for approx. 2 seconds.
- Meter will beep 4 times and the display values become “zero”.



Click to go back to Measurement Display Mode

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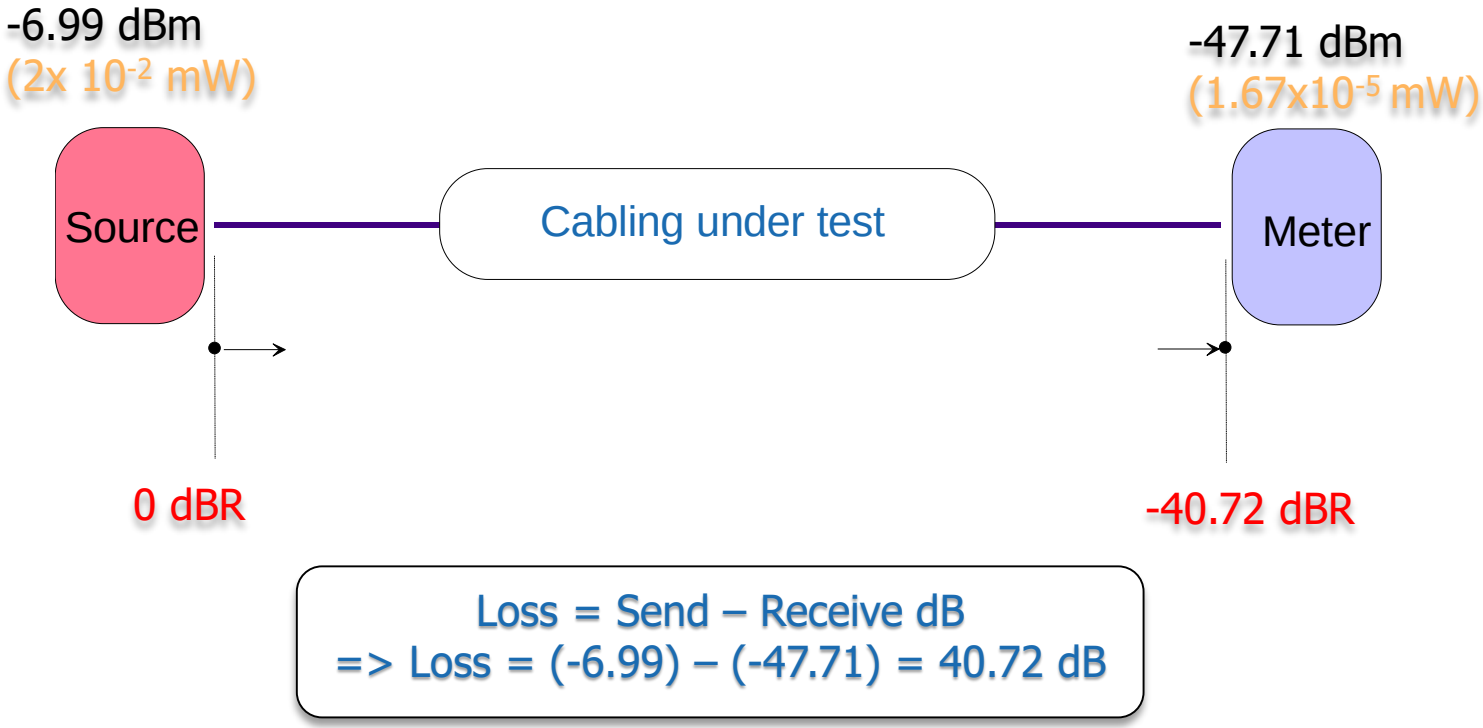
6.2 Setting Reference (in dBR mode) - *continue*

Example of loss measurement in dBR (Reference mode):



Click to go back to Measurement Display Mode

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7. Memory Operations

7.1 Internal Memory Clear

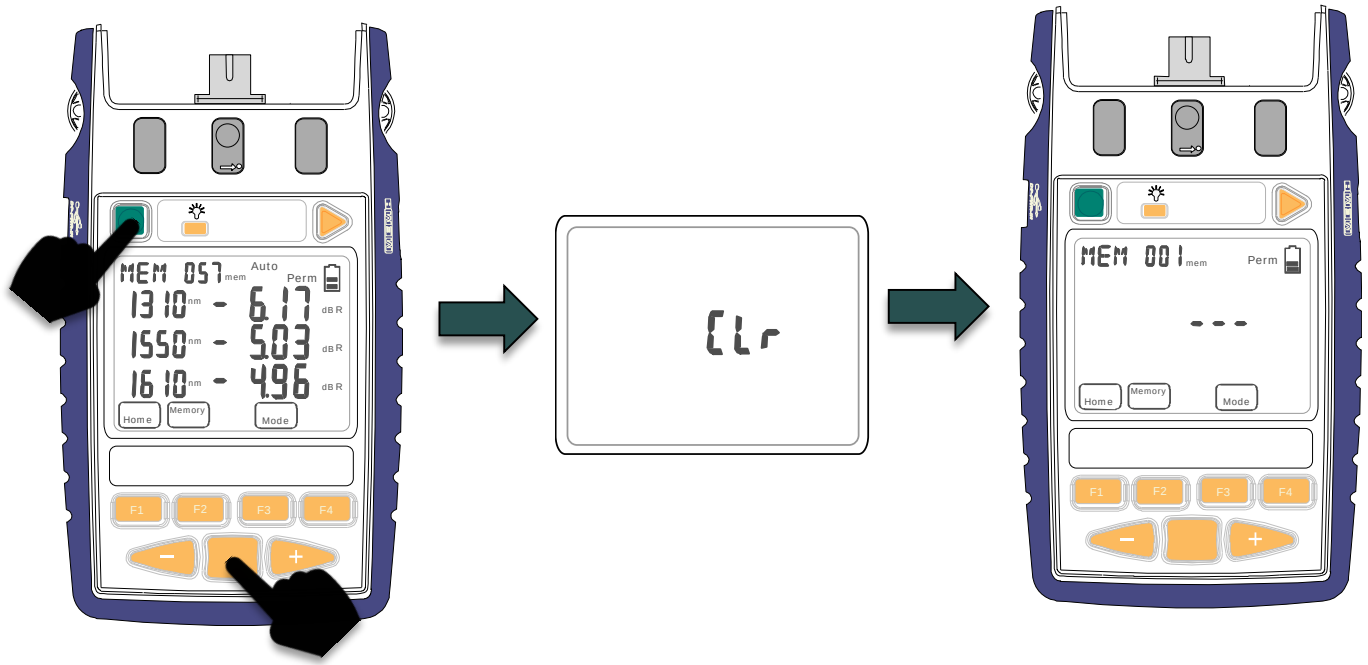
To enter Memory mode:

At top level menu, press [F2].

To clear memory (all):

- Press and hold [Toggle Centre] then press [On/Off]
- 'CLr' will be displayed for a few seconds

Note: Stored Text ID tags are not cleared by this procedure.



Click to go back to memory Operations

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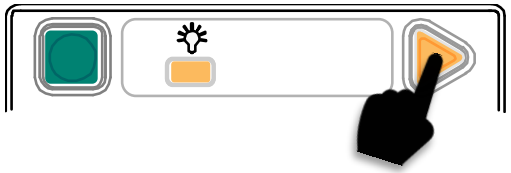
7.2 Internal Memory Store

In Meter or Autotest mode:

Press [▶].

Note:

- Data will be stored in the current memory location displayed & instrument will beep once.
- The displayed memory location will increment.

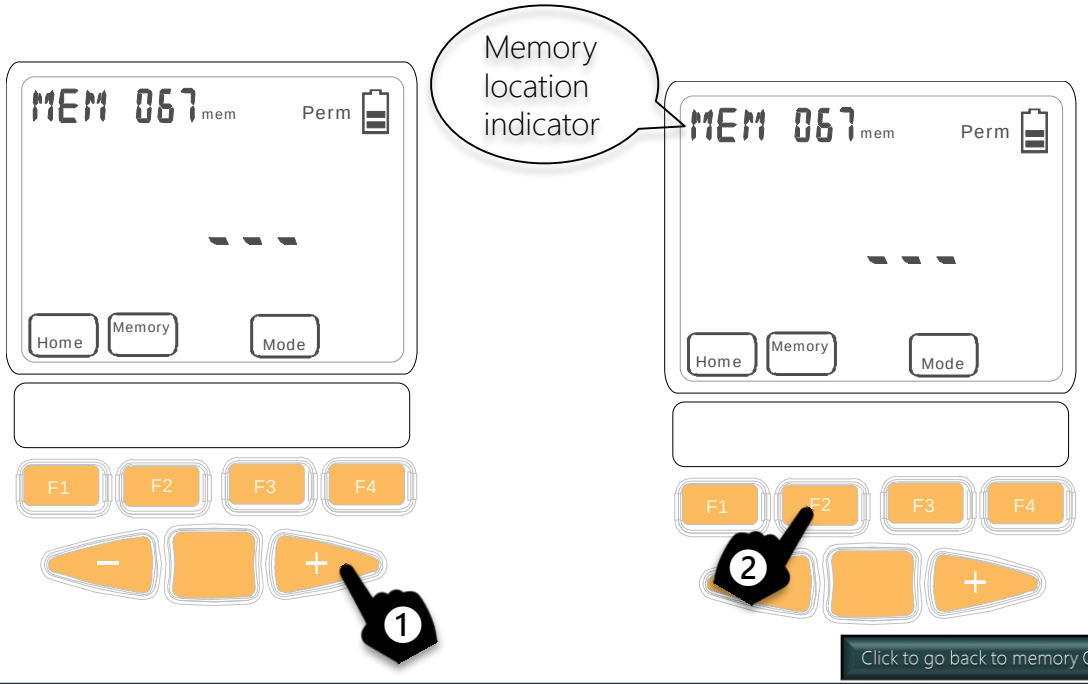


To save data to a specific memory location:

In Memory mode,

1. Toggle [-] or [+] to desired memory location.
2. Press and hold [F2], Memory for 3 seconds.

Instrument will beep and new location is set. Future Memory saves (a press on [▶]) continue from this location.



Click to go back to memory Operations

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7.3 Internal Memory Recall

Enter Memory mode:

At top level menu, press [F2].

Note:
Content of last stored memory location will be displayed.

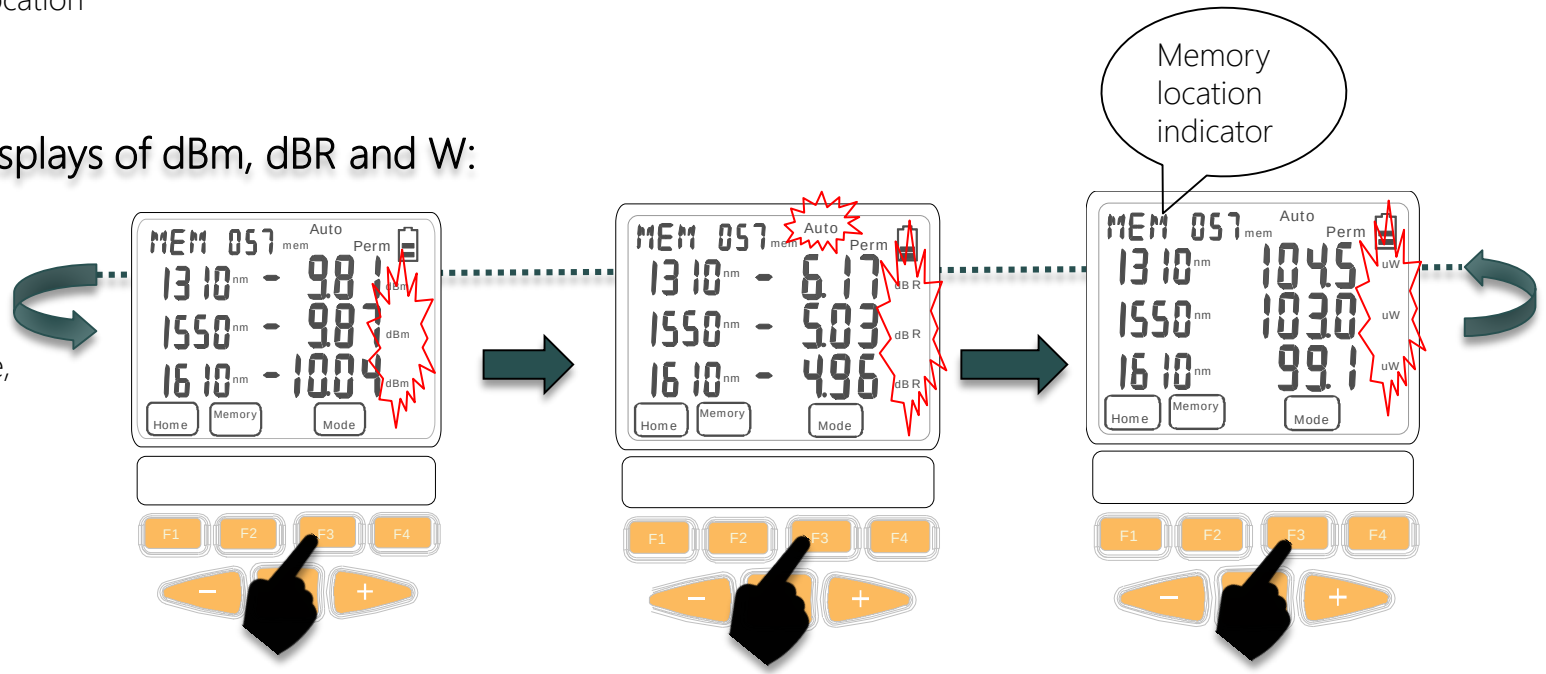
To display content stored in a specific memory locations:

Press [-] or [+].

To toggle between unit displays of dBm, dBR and W:

Press [F3] continuously.

Note:
For data stored in Autotest mode, 'auto' is displayed.



To exit Memory mode:

Press [F1].

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7.4 Dump To USB Memory

Instrument must be in Memory Mode to detect inserted USB memory stick

❶ Enter Memory mode:

At top level menu, press [F2].

❷ Insert USB memory stick into instrument's USB-A port.

Note:
'USB' will be shown on the LCD.

❸ Press [▶] to start Memory dump.

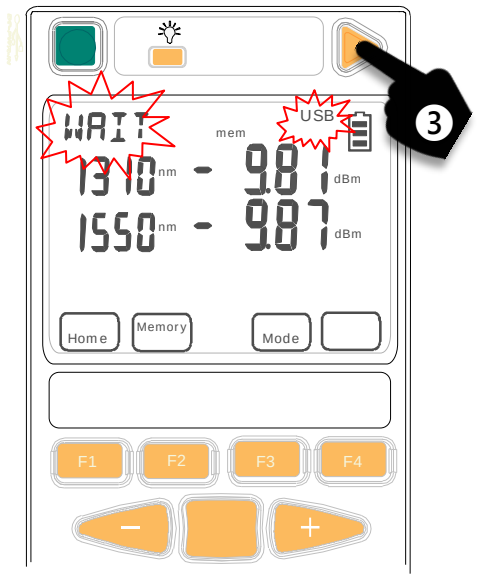
Note:

- 'WAIT' will display whilst USB memory is being configured.
- A buzzer will sound during memory dump.
- Do not remove USB stick until 'USB' has stopped flashing

Sample data dumped from instrument to USB:

Memory Image from KI2X00 SN: 202 Time in 24h format. Wavelengths in nm. Optical Power values in dBm.

Mem	Date	Time	Type	ID_Tag	RemSN	Wl1	Pwr1	Ref1	Nom1	Wl2	Pwr2	Ref2	Nom2
1	7/02/32	11:57	Meter	AAAA022	0	1610	-19.36	-19.36					
2	7/02/32	12:44	2WlAuto	AAAA023	11216	1310	-18.88	0.3	-7	1550	-19.33	0.4	-7
3	7/02/32	12:44	2WlAuto	AAAA024	11216	1310	-18.88	0.3	-7	1550	-19.33	0.4	-7
4	7/02/32	12:44	2WlAuto	AAAA025	11216	1310	-18.88	0.3	-7	1550	-19.33	0.4	-7



Click to go back to memory Operations

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8 Other features

8.1 Instrument Date / Time Setting

❶ Enter Date/time setting mode:

When instrument is OFF, press and hold [On/Off] & [Toggle Centre] at the same time.
Release the keypads as soon as the date/time setting display comes on.

❷ Select date/time item for setting:

Press [Toggle Centre] or [F3], the selected item will be blinking.

The order of Date Time setting:
Hour -> Minute ->Month -> Date -> Year

To modify the selected time/date:

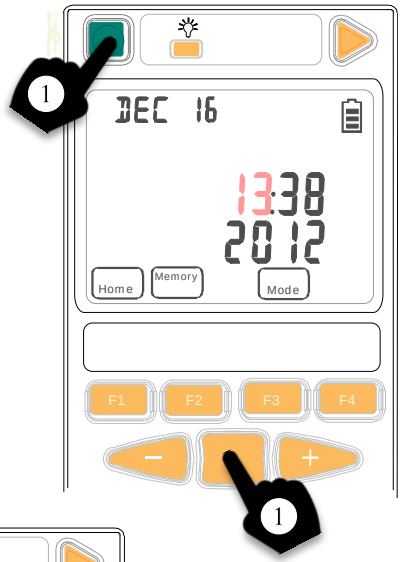
Press [-] or [+].

To save settings & exit Memory mode:

Press [F2].

To exit without saving:

Press [F1].



Note on loss of power: If batteries are removed for longer than about 20 seconds, Date/Time settings are lost.

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8.2 Min-Max Value Display

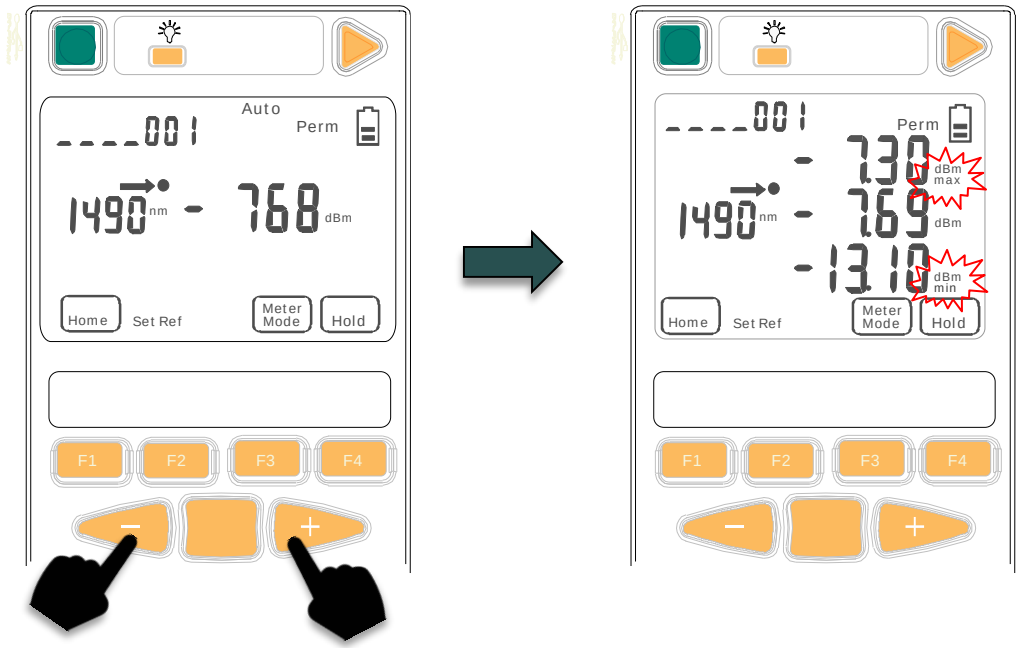
Maximum & Minimum power readings are continuously recorded & displayed.
(This function is disabled during Autotest).

To display Min-Max values:

Press [-] and [+] simultaneously.

To hide Min-Max values:

Press [-] and [+] simultaneously again.



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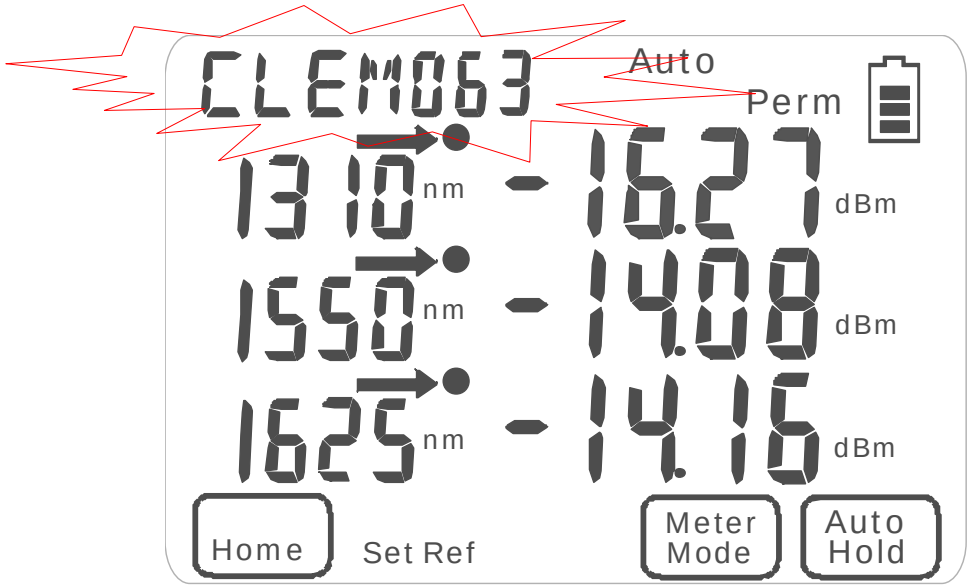
8.3 Text ID

This feature is used in conjunction with instrument memory-save to identify a location or a cable.

- Max 20 individual text ID tags can be created in instrument.
- Format is 4 letters, followed by 3 digits.
- The last 3 digits auto increment.
- e.g. CLEM062, CLEM063 etc.



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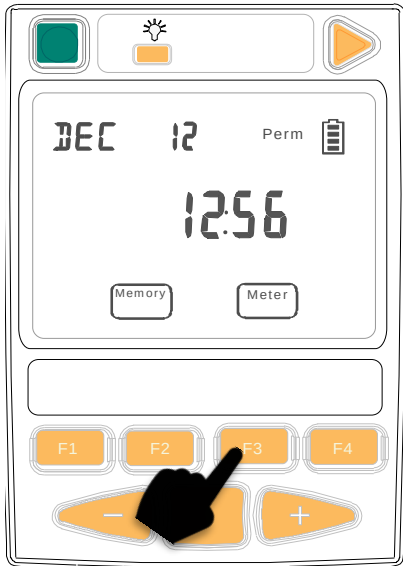
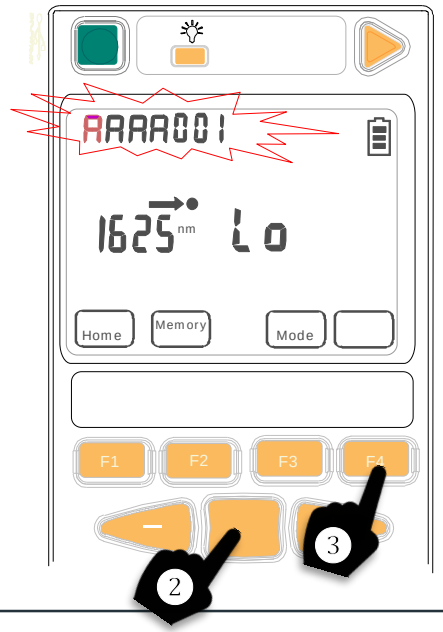
8.3.1 Creating A New Text ID Tag

1 At top level menu, press [F3]:
To enter Meter mode.



2 Press [Toggle centre]:
The existing ID tag in used will be displayed.

3 Press [F4]:
The displayed ID tag will be reset to the default, AAAA 001 for new ID creation.



4 Press [Toggle centre]:
To select the position of the ID tag for editing. The selected position of the ID tag will be blinking.

5 Toggle [-] and [+]:
To edit the ID tag.

6 Press [F2]:
To Save & Exit.

Note:
The newly created ID tag will be defaulted as the current ID tag being used.

OR

6 Press [F1]:
To exit without saving.

Click to go back to Text ID

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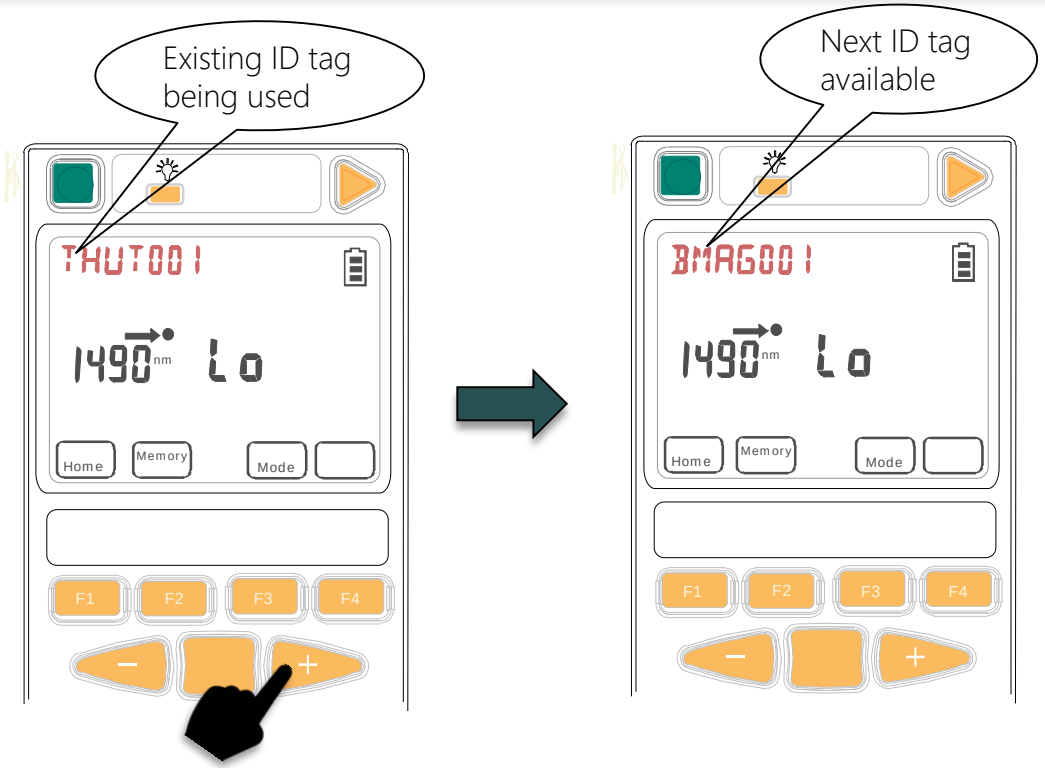
8.3.2 Selecting/using The Created Text ID Tag

❶ At top level menu, press [F3] to enter Meter mode.

❷ Press [Toggle centre]:
The existing ID tag being used will be displayed and blinking.

❸ Press [-] or [+]:
To display/select the desired ID tag from those created earlier (if available).



❹ Press [F2]:
To save the newly selected ID tag for use & Exit.

OR

❹ Press [F1]:
To exit without saving.

Click to go back to Text ID

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8.3.3 Deleting The Created Text ID Tag

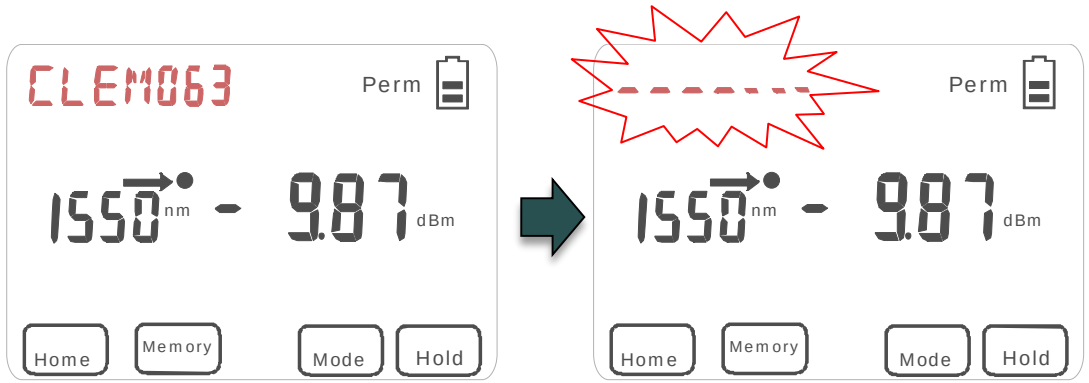
1. At top level menu, press [F3] to enter Meter mode.

2. Press [Toggle Centre]:
   The existing ID tag being used will be displayed and blinking.

3. Press [-] or [+]:
   To display/select the desired ID tag from those created earlier (if available) for deletion.

4. Press [F3]:
   To confirm the selection of ID tag
   Note: The 1'st alphabet of the selected ID tag will be blinking.

5. Press [F4]:
   To proceed with the deletion.
   Note: The selected ID tag will be replaced by a row of flashing dots/dashes.



6. Press [F2]:
   To confirm deletion.

OR

6. Press [F1]:
   To exit without changing.

Click to go back to Text ID

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9. Instrument Firmware

The KI2000 series Firmware can be end-user upgraded.

To update Firmware:

- Instrument Firmware must be r0.12 or higher.
- KI2000 USB device driver software must be installed.

9.1 Checking Firmware Version

9.2 Firmware Upgrading Procedure

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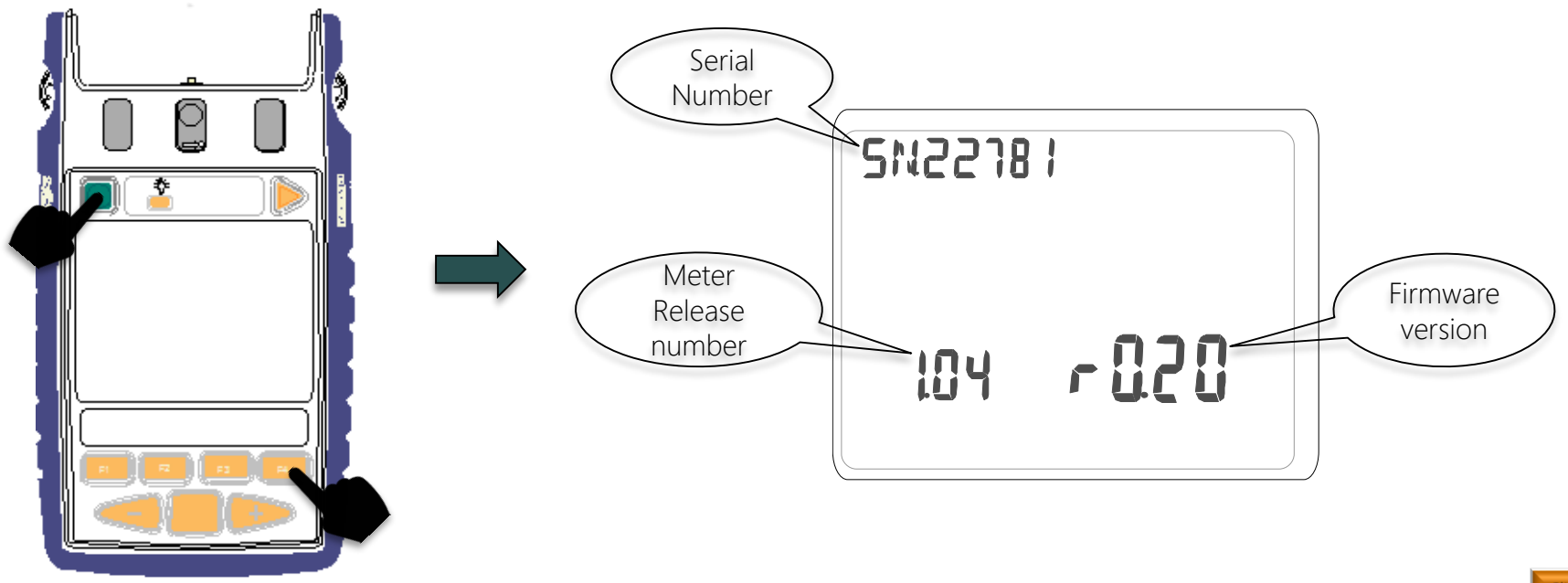
9.1 Checking Firmware Version

The instrument Firmware version can be checked during instrument switch-on.

When instrument if off, hold down [F4] and [On/Off]:

The instrument will switch on, and serial number and firmware version is displayed whilst [F4] is held.



Click to go back to Instrument Firmware

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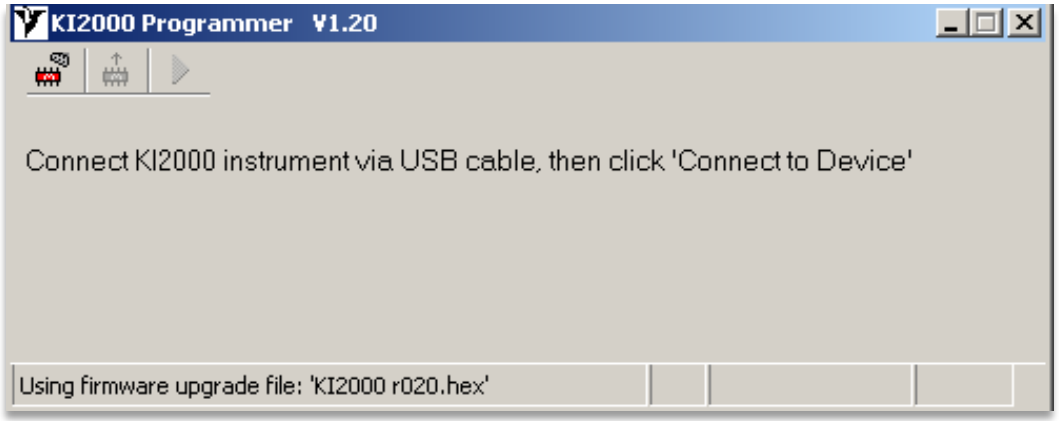
9.2 Firmware Upgrade Procedure

1. Download and extract the Firmware Update program from Kingfisher web site.
2. Connect instrument to computer.
3. Run Firmware Update program (*KI2000 programmer vx.xx.exe) downloadable free from* Kingfisher website.
4. Follow procedures as detailed in the Firmware Update instruction in PDF (*KI2000 Programming Instructions).*



Click to go back to Instrument Firmware

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10 Instrument Care

- Keep the instrument in a carry case during storage and transport
- Use only high quality batteries.
- For prolonged storage remove batteries.
- The instrument is resistant to normal dust and moisture, however it is not waterproof.
- If moisture gets into the instrument, remove batteries & dry it out carefully before using it again.
- Where possible, keep instrument away from strong sunlight.
- Clean the instrument case using Isopropyl-alcohol (IPA) or other non solvent cleaning agents.
- DO NOT use Acetone or other active solvents.

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Application Notes

Comprehensive selection available at

https://www.kingfisherfiber.com/Application-Notes.aspx

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Questions and Comments

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Thank you for your attention

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Date prepared:22 Dec 2016

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