User’s Manual for Versatile-1 (V1)

1. Features:

1. Input Channels - 1
2. Resolution - 5µm/ 1µm/ 0.5µm/ 0.1µm
3. Units - mm , inch
4. Measurement Modes - Current, Min, Max, Differential
5. Functions - A PUSH/PULL
6. Indications - Reject, Ok, Rework
7. Calibration - Auto Calibration
8. Scaling - Auto or Manual
9. User Interface - 1 Line 7 Digit seven segment display
10. PC Interface - RS-232
11. Outputs - 3 open collector outputs
12. Inputs - 1 open collector input
13. Footswitch interface - Available

2. Front Panel

Keypad:

KEYS	FUNCTIONALITY
Setup	To go into the setup menu or calibration mode
Enter	To save edited parameters in setup mode To scroll the screens in setup mode To transmit reading in run mode
Preset	To preset the value in run mode
Esc	To escape from a selected screen in setup mode
+/-	To take numeric entry in preset or setup mode To scroll the screens in setup mode
Decimal Point	To take numeric entry in preset or setup mode To perform footswitch action in run mode
0-9	To take numeric entry in preset or setup mode

Indication LEDs:

KEYS	FUNCTIONALITY
L1	REJECT Indication LED of Channel 1
L2	OK Indication LED of Channel 1
L3	REWORK Indication LED of Channel 1

3. REAR PANEL

3.1. POWER SOCKET:

A three pin Power Socket with built in Fuse (3A) to connect the instrument to 230V AC Single phase electrical power supply.

3.2. FIVE PIN DIN AMPHENOL SOCKET:

5 pin DIN' socket for connecting measuring LVDT probe

3.3. NINE PIN D – CONNECTOR (FEMALE):

For RS-232 output

Hardware Connections:

Pin No	Description
2	Transmit (TX)
3	Receive (RX)
5	GND

Use standard male to female serial cable for communication with PC

Software Settings:

- Baud Rate = 9600
- Data Bits = 8
- Stop Bit = 1
- Parity = None

3.4. FIFTEEN PIN D – CONNECTOR (FEMALE):

Pin No	Description
1	Channel 1 REJECT Relay
2	Channel 1 OK Relay
3	Channel 1 REWORK Relay
7	Channel 1 Opto-isolated External Input + terminal
8	Channel 1 Opto-isolated External Input - terminal
11	External Ground 1
12	External Ground 2
13	NC
14	Internal Ground
15	Internal +5V dc

3.5. THREE PIN MX396 CONNECTOR:

For footswitch connectivity –

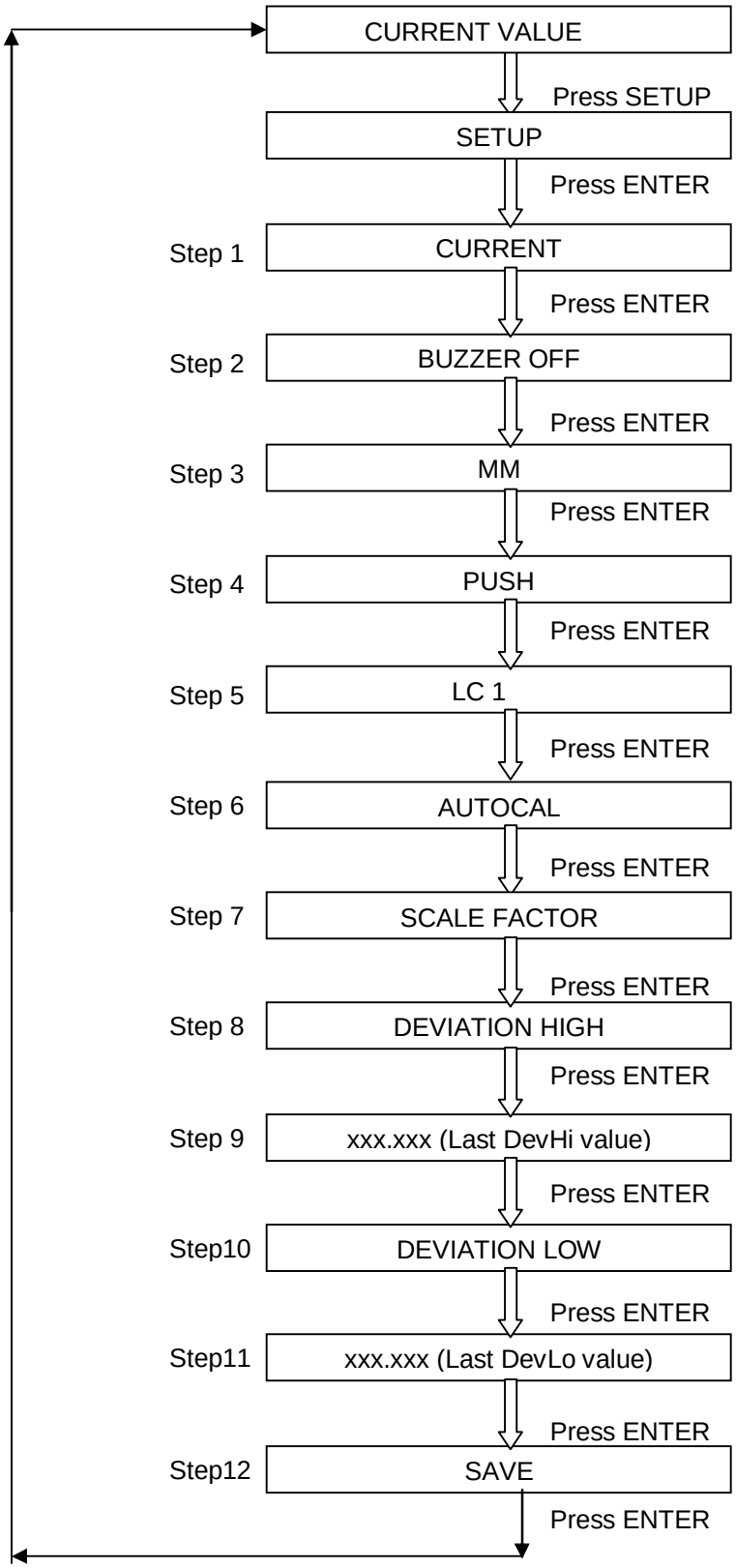
-> To take serial data out in current mode

-> To get current displacement in min/max mode

Warning & Instructions

- **Keep the instrument at a clean and dry place.**
- **Keep enough space in the front and at the back of the instrument.**
- **Do not keep any other object on the instrument.**
- **Do not operate this instrument in an explosive atmosphere.**
- **This unit is designed to provide adequate protection against electric shocks.**
- **Access to power terminals should be restricted to skilled engineers only.**
- **This instrument contains no user repairable parts. Do not open the covers.**
- **If any service is needed, the equipment should be returned to the manufacturer only.**
- **Any attempt to dismantle the equipment or to open the cover will invalidate the warranty.**
- **Ensure that proper `ground' is given to the equipment through the mains cord provided with it.**
- **Loss of proper ground may create possibility of an electric shock.**
- **To avoid accidents & failures, use proper Fuse type, voltage and current ratings as specified.**
- **To replace the fuse open the fuse cover on the mains switch socket located at the backside of the equipment. Ensure that the fuse is of same voltage and type.**

Setup Operational Flow Chart:



Description of Single channel DRO Functions

At `Power ON' the display will show current position of the probe. If the probe is not connected the equipment will show some random value.

There are different set-up options available for user to select.

Display: Display function has four options to select between:

- Current
- Maximum
- Minimum
- Differential

Buzzer On/Off allows setting the buzzer on /off for the out-of-tolerance value.

mm/Inch: Used to select between metric / Inch scale.

Push / Pull: to select the positive direction of the probe.

LC- Least count: available options are:

5 microns
1 micron
0.5 micron
0.1 micron

Auto Calibration Through Set Up key

Calibration is storing the transducer maximum and minimum values into the equipment. **Ref 1 and Ref 2** are the two points to be stored.

Scaling factor: It is the multiplying factor usually computed by the software internally.

Deviation high: higher limit of the tolerable zone or OK value.

Deviation Low: lower limit of the tolerable zone or OK value.

Save: The set up entered for a specific job is save in the memory of the equipment till it is over written.

SETTING DIFFERENT OPTIONS

Refer to the flow chart while using the set-up.

Display

- Go to step 1 in the flow chart.
- Display shows previously selected mode.
- Use +/- key to select between **Current, max, min of diff mode**.
- Press `ENT' to confirm the entry. Display shows next menu: **BUZZER**.
- Press `ESC' to skip setting.

Buzzer

- Go to step 2.
- Display shows previously selected buzzer condition.
- Use +/- key to select between **Buzzer ON / OFF**.
- Press `ENT' to confirm the entry. Display shows next menu: **mm/inch**.
- Press `ESC' to skip setting.

mm/INCH

- Go to step 3.
- Display shows previously selected unit.
- Use +/- key to select between **mm/INCH**.
- Press `ENT' to confirm the entry. Display shows next menu: **PUSH/PULL**.
- Press `ESC' to skip setting.

PUSH/PULL

- Go to step 4.
- Display shows previously selected probe direction.
- Use +/- key to select between **PUSH/PULL**.
- Press `ENT' to confirm the entry. Display shows next menu: **LC**.
- Press `ESC' to skip setting.

LC- Least Count

- Go to step 5.
- Display shows previously selected least count.
- Use +/- key to select between LC- Least Count: **5micron, 1micron, 0.5micron and 0.5** micron.
- Press `ENT' to confirm the entry. Display shows next menu: **AUTO CALIBRATION**.
- Press `ESC' to skip setting.

AUTO CALIBRATION

- Go to step 6.
- Use +/- key, display shows **REF1**.
- Set probe to minimum value. Wait for 3 secs. Press enter to accept the value. Display shows **REF2.**
- Set probe to maximum value. Wait for 3 secs. Press enter to accept the value. Display shows **Nominal Value**.
- Use numeric keys to enter the value.
- Press `ENT' to confirm the entry.
- For wrong entry press `ESC' to clear display. Make new entry and press **`ENT'**.

SCALING FACTOR

- In normal operation the processor will calculate the scaling factor automatically with the REF1 and REF2 values.
- Set nominal value. Press `ENT'. Display shows **SC FACT**.
- Press `ENT' to check the calculated Scaling Factor. Press ENT to select the same.
- Press + /- to change the value.
- Use numeric keys to change the value.

Deviation High

- Use numeric keys and set the value.
- Press ENT to confirm the entry.

Deviation Low

- Use numeric keys and set the value.
- Press ENT to confirm the entry.

SAVE

- Press ENT if the set options are to be saved.

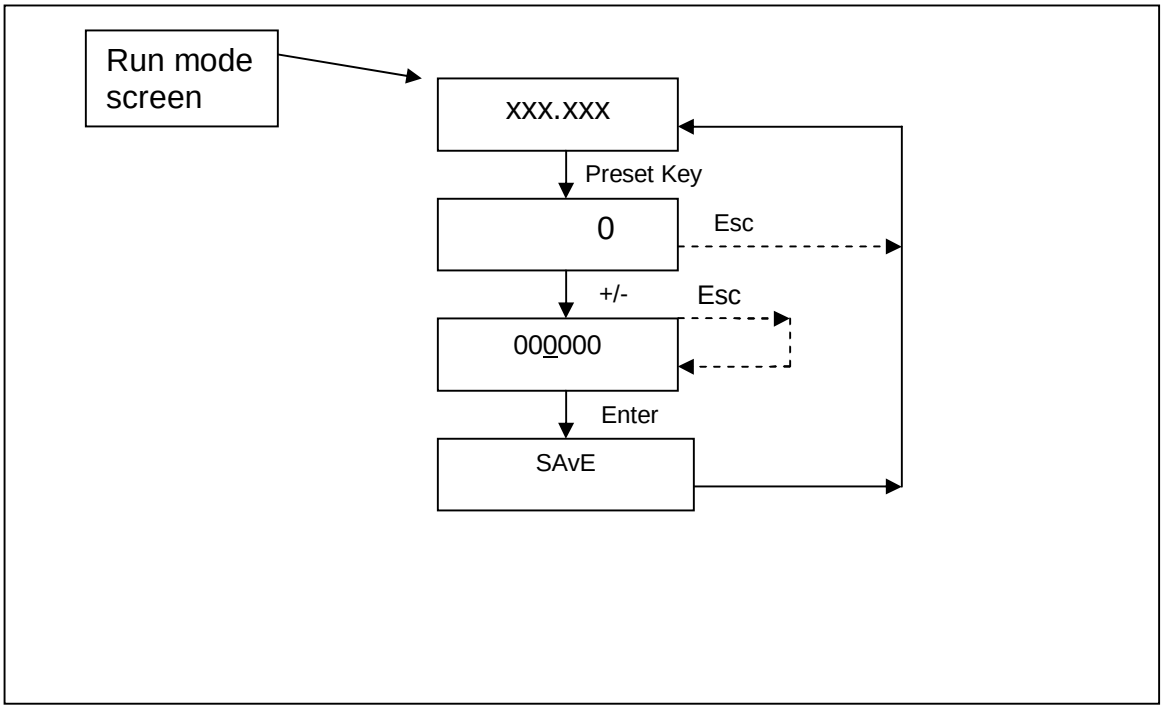
PRESET MODE:

In default run mode, if user wants to measure distance from particular offset value then use this mode.

Presetting Procedure:

1. In default run mode, press 'PRESET' key to go inside preset mode. Here, 1st display line will show '0' value
2. Press +/- key to start editing. Here display line will reset to '000000' & depending on selected least count, middle digit will start blinking. Now use numeric keys to edit it.
3. Press ENT key for confirmation of edited preset value.
4. Here 'SAvE' message will be displayed
5. Press ENT to save preset value. Here user will go into default run mode screen

Operational Flow Chart for Presetting:



Run Mode:

This is default mode. On power up user goes into this mode.

Here display line 1 shows displacement value of output 'A'. This value depends on selected operating mode i.e. current/min/max/diff & preset value of channel 'A'.

Channel 1's OK/REJ/RWK relays are functional.

PC communication:

Press ENT key for transferring the displayed value to PC

Foot switch action:

In current mode, on foot switch press; displayed data will be transferred to PC
In min/max mode, on foot switch press; display will show current displacement value.
In diff mode, display will reset to zero.