FA-2 frequency counter

USER MANUAL

This manual describes how to install and use FA-2 frequency counter.

For assistance,contact:

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Date:2019-08-19

1 Key Features

1. High speed, high precision, up to 11 digit/second@10MHz

2. CH2 input up to 6GHz

3. High precision internal OCXO, supports external 10MHz reference frequency

4. Statistical functions: Display average, max, min, p-p frequency.

5. With USB port, connect to PC, data format compact version of HP53131 mode

6. CH1 power display, dynamic range up to 60dB,

2 Overview

The FA-2 Frequency counter is a high precision, high speed counter, with statistics function and auto ranging input frequency. It is convenient for long-term monitoring of external frequency changes. Channel 2 can measure frequencies up to 6 GHz. It uses a built-in OCXO, or use an external 10MHz standard.

3 Specification

Type: FA-2

CH1 Frequency range：1Hz-200MHz

CH1 Input impedance: 50 OHM/1M OHM

CH1 Input sensitivity：50 OHM: 25mVrms-2Vrms
1MOHM: 25mVrms-10Vrms

CH1 Frequency resolution：0.1s：0.001Hz@10MHz
1s: 0.0001Hz@10MHz
10s: 0.00001Hz@10MHz

CH1 Test speed:12digits/second@100MHz-200MHz
11digits/second@10MHz-99.999999MHz,
10digits/second@1MHz-9.999999MHz
9digits/second@0.1MHz-0.999999MHz
8digits/second@90kHz-99kHz
8digits/second@1Hz-89.999kHz

CH1 Power test range：-50dBm-+20dBm, 1MHz-550MHz@50 OHM

CH1 Power accuacy: 0.5dB@10MHz

CH1 Connector type: BNC

CH2 Frequency range: 30MHz-6GHz

CH2 Input impedance: 50 OHM

CH2 Frequency resolution：0.1s: 1Hz@1GHz
1s: 0.01Hz@1GHz
10s: 0.001Hz@1GHz

CH2 Input power range:-20dBm- +13dBm@0.5-5GHz,

CH2 Connector type: SMA

Gate time：0.1s/1s/10s

Internal frequency standard: 10MHz OCXO

Internal frequency standard ageing: 0.5Hz/year

10MHz Reference frequency output power: 4dBm

External reference frequency input level range: 0dBm to +20dBm

Run mode: CH1 frequency
CH1 statistics
CH2 frequency
CH2 statistics

Front panel: MODE, change mode
GATE: change gate time.
RST: restart test
CH1: channel 1 input
CH2: channel 2 input

Rear panel: 10MHz REF INPUT
10MHz REF OUTPUT
USB connector
STD ADJ: Internal OCXO frequency adjust
Power Switch
DC plug

Statistics mode data type: Average, max, min,p-p

Power : DC11.7-12.5V, startup: less than 0.4A, stabilized: less than 0.2A

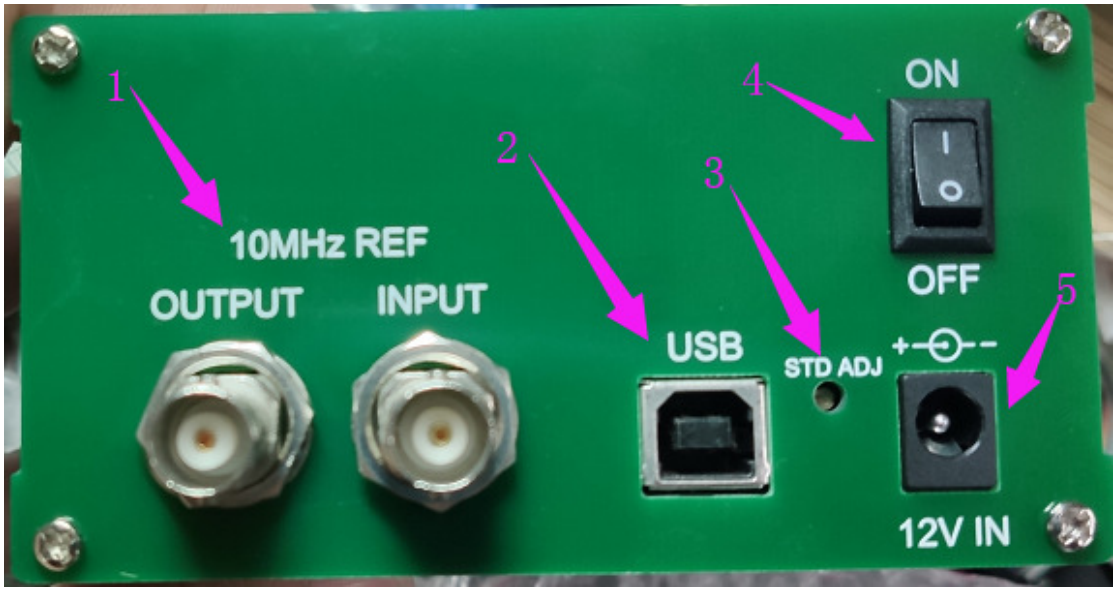
Size: L*H*D = 106*55*105mm

Weight: 350g

Accessory: DC12V adapter 1pcs

4 Quick Start

4.1 Rear Panel



rear panel

1: 10MHz Frequency standard input and output

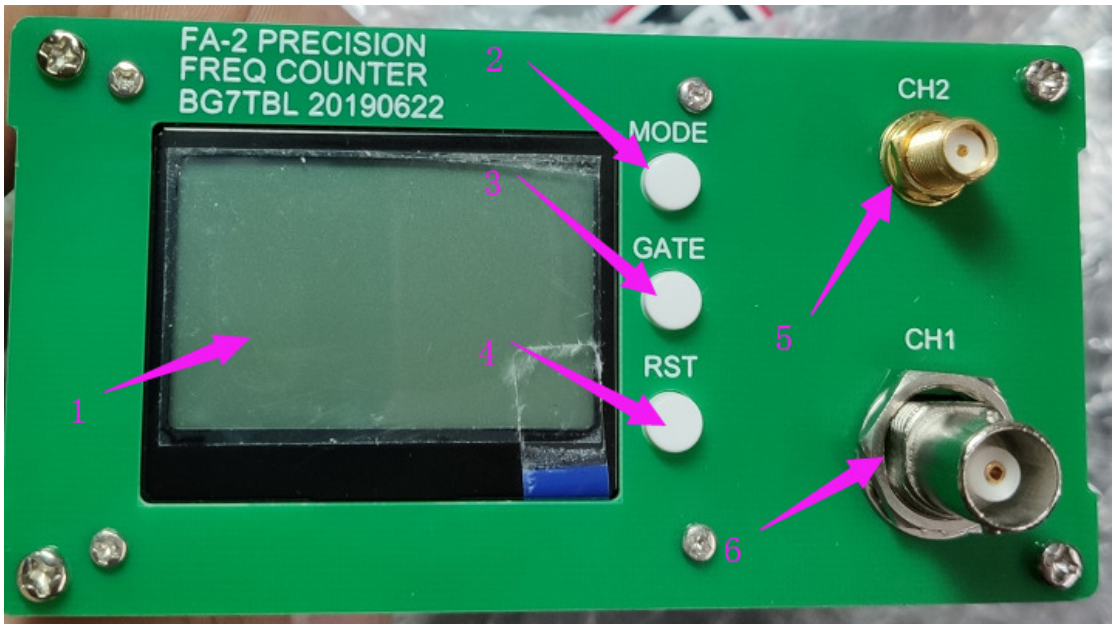
2: USB port, chip is FT232RL, USB driver is available from the FTDI web site

3: Internal OCXO frequency adjust

4: Power on/off

5: DC12V input

4.2 Front Panel



Front panel

1: 2864 LCD

2: MODE key， change run mode

3: GATE key, change gate time

4: RST key, restart test,

RST+GATE, open/closed ch1 LPF,

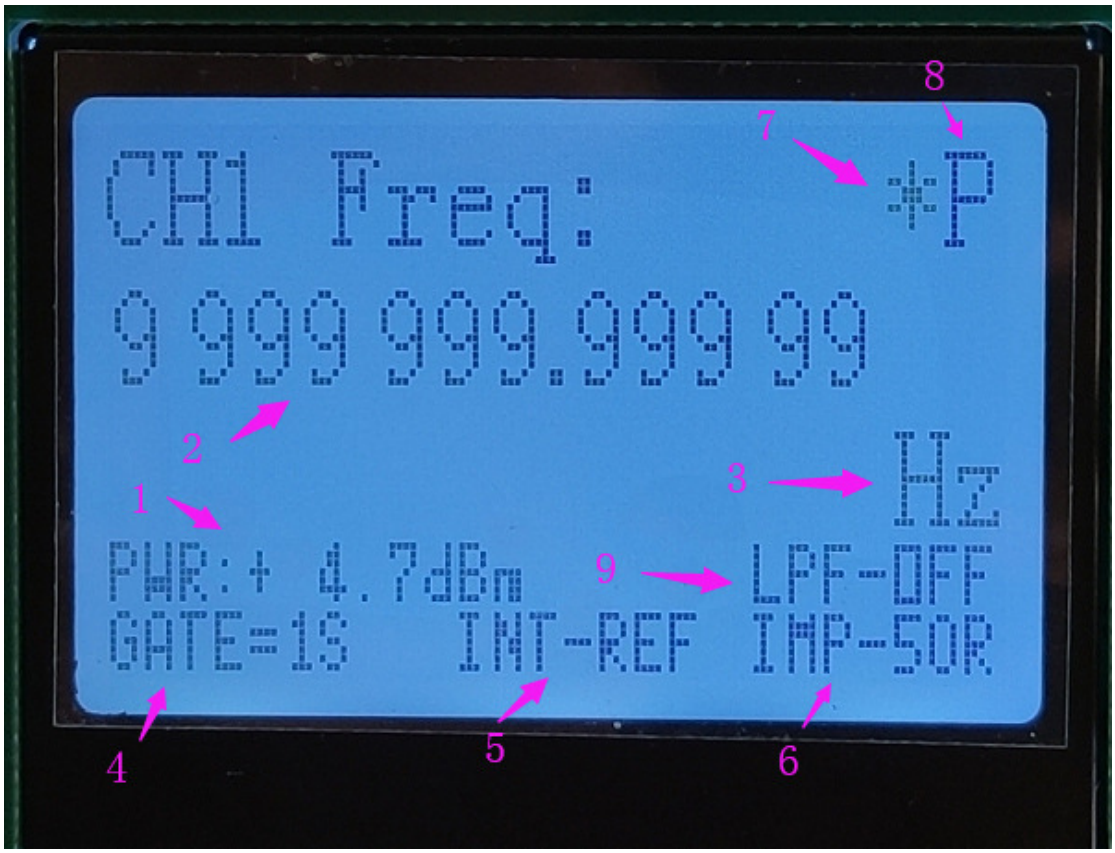
RST+MODE, CH1 select 50R/1MOHM

5: Channel 2 input

6: Channel 1 input

4.3 LCD display data

CH1 FREQ



1: CH1 input power

2: Frequency display area

3: Units

4: Gate time，0.1s, 1s, 10s

5: Internal/external frequency standard

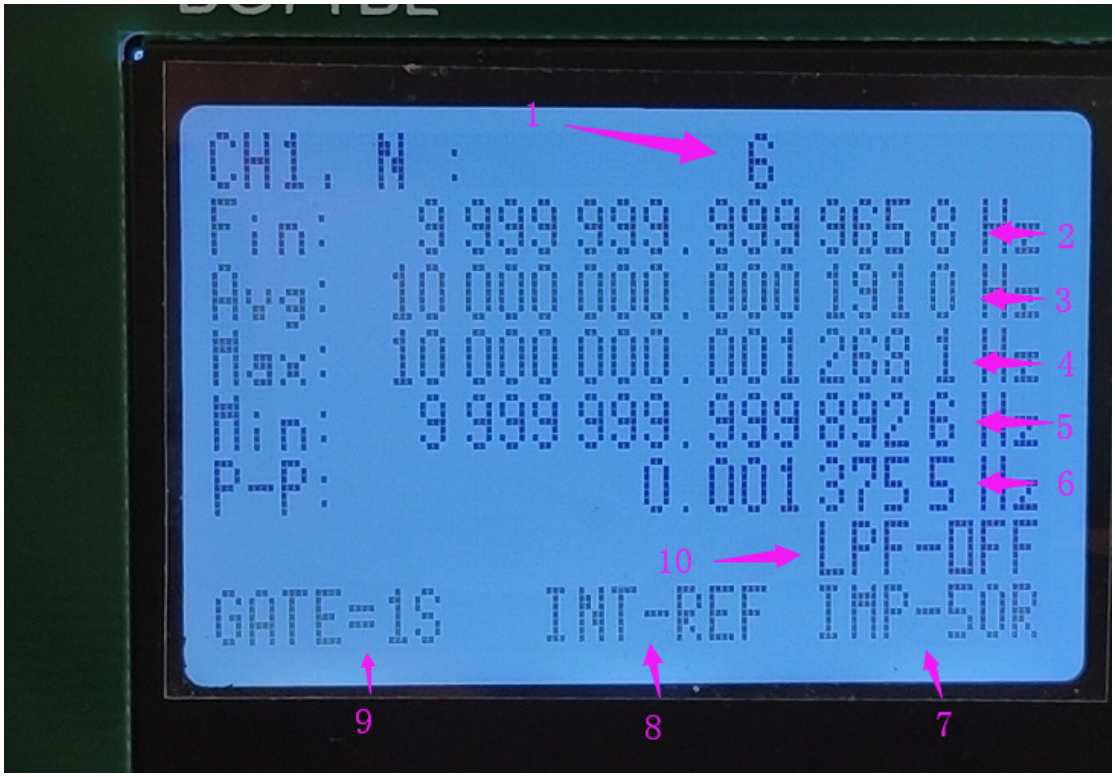
6: CH1 input impedance, 1MOHM/50R

7: Gate state, display * means gate is open, else gate closed

8: Display P means high precision mode

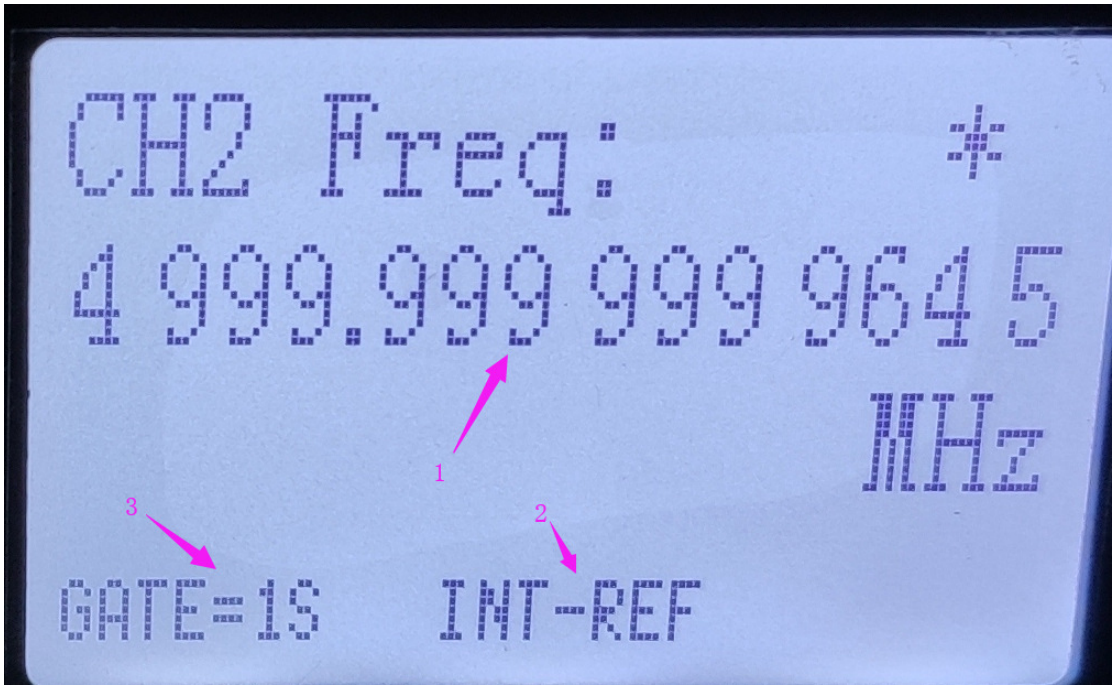
9 : 150kHz LPF

Channel statistics mode



1) 1-4000000000， statistical points.
2) Latest measured frequency
3) Average value
4) Max value
5) Min value
6) Peak-peak value
7) Input impedance, 50OHM OR 1MOHM
8) Std internal or extern
9) Gate times
10) LPF select

Channel 2 frequency mode



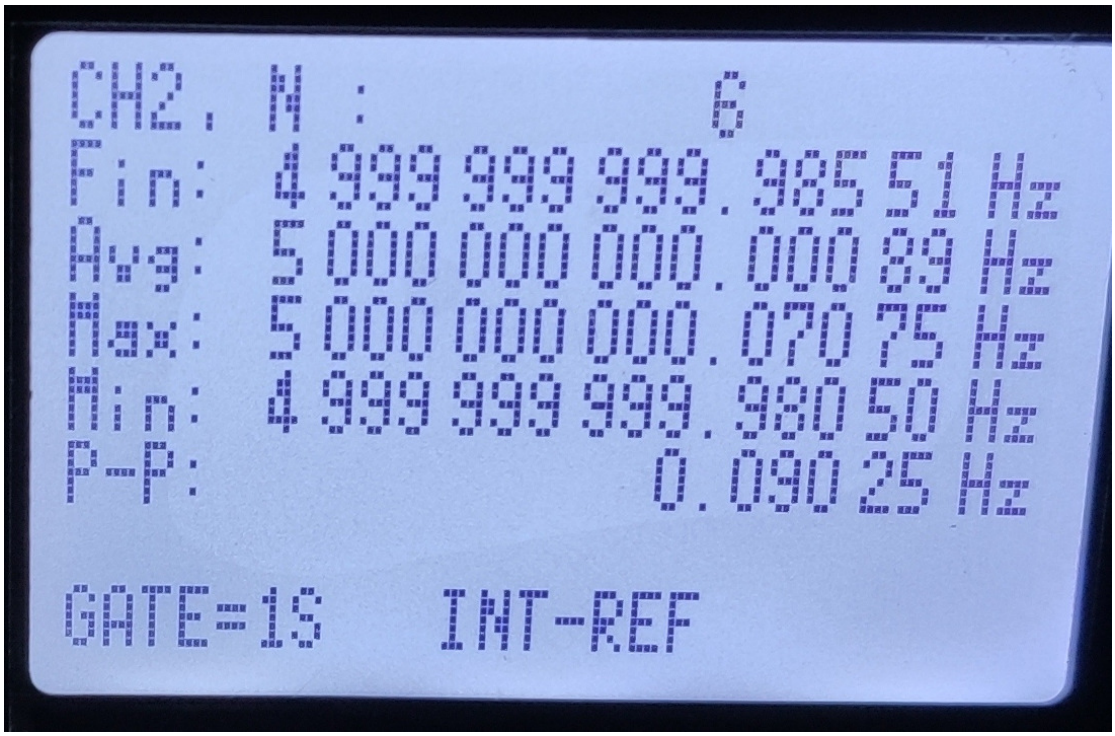
1) Latest measured frequency

2) Std selected

3) Gate time

*P reference is only for CH1 FREQ mode

Channel 2 statistics mode



Channel 2 statistics mode

4.4 Connection to PC

USB Port: Connect to PC，USB chip is FT232RL.

4.5 Config command

Default baud rate is 9600bps, ascii encoding

$R* Press RST key, return KEY RST ROK<CR><LF>

$M* Press MODE key, return KEY MODE MOK<CR><LF>

$G* Press GATE key, return KEY GATE GOK<CR><LF>

$CXX* XX:0-63, setting LCD contrast, save in EEPROM,
return SET LCD CONTCOK<CR><LF>

$BXXXXX* setting baudrate, XXXXX 00480, 00960, 01920, 03840, 05760, 11520, Power off without save,
return BOK<CR><LF>

$S* Read statistics data

The following instructions are powered off and saved:

$E2020* Power up select CH1 frequency mode

$E2121* Power up select CH1 frequency statistics mode

$E2222* Power up select CH2 frequency mode

$E2323* Power up select CH2 frequency statistics mode

$E3030* CH1 select 50R

$E3131* CH1 select 1MOHM

$E3232* BEEP ON.

$E3333* BEEP OFF

$E3434* Open high precision mode

$E3535* Close high precision mode, all input frequency is 8 digits/second

$E3636* Open CH1 LPF

$E3737* Close CH1 LPF

$E4040* Select CH1=50R,input 10MHz, 0dBm,calibration of power meter, used with $E4141* command

$E4141* Select CH1=50R,input 10MHz, -20dBm, calibration of power meter

4.6 User notes

Keep instrument away from high temperature, away from interference, power input must be less than DC12.5V

5 Block diagram

(Missing)

6 FAQ

Q : How can I know the machine is good.

A : Connect front panel 10MHz to rear panel CH1, if LCD will display 10MHz counter is good.

Q: When measuring low frequencies, display is not accurate/unstable

A: Enable LPF