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**ISF-DF SERIES
DIGITAL FORCE GAGE
OPERATION MANUAL**



Attention

- ◆ Regardless of whether the unit is ON or OFF, Don't exceed the capacity of the gauge. At 110% of the rated capacity, the display flashes to warn. Never exceeds 150% of the rated capacity, or the load cell will be damaged.
- ◆ Measure in line tension and compression forces only. Don't attempt to measure forces at an angle to the measuring shaft, damage to load cell and/or shaft may result.
- ◆ Don't tear, repair and change this gauge by yourself, because these actions may result in permanent fault of apparatus.
- ◆ Please use and store at the range of stated temperature and humidity, or it may result in apparatus failure.

Operating:

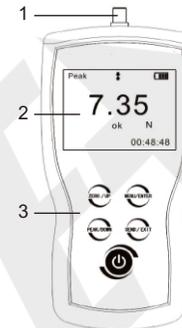
Temperature: -10°C~40°C;
Relative Humidity: 20%~80%.

Storage:

Temperature: -20°C~50°C;
Relative Humidity: 5%~90%.

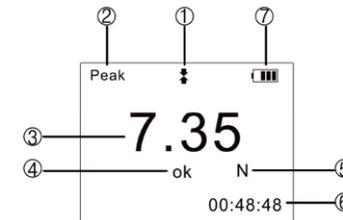
Description

① Structure:



1. Measuring Shaft: Measure tension or compression forces.
2. LCD Screen.
3. Capacitive touch keys.
4. USB Port: Recharge the internal Ni-MH battery or connect to PC.
5. Communication Port for printer.

② LCD screen:



1. Force indicator: ↑ means tension and ↓ means compression.
2. Test mode icon: There are four measure modes: Track, Peak, Auto Peak and First Peak.
3. The current measure value.
4. OK/OV Indicator: ov-: under lower limit; ok: between lower limit and upper limit; ov+: over upper limit.
5. Units Indicator: Displays selected measuring unit (mN, N, gf, kgf, ozf, and lbf selectable).
6. The system time.
7. Battery icon.

3 Key functions:

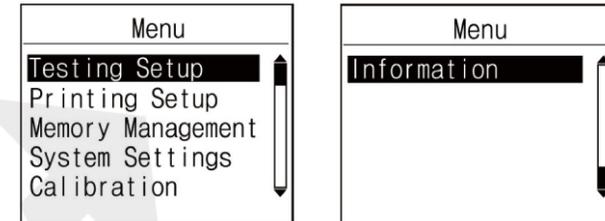
-  ON/OFF: Touch about two seconds the gauge will Power ON or OFF.
- SEND/EXIT Under the measure interface: Print the recent memory data or storage data, depending on the key default settings. Under the menu Interface : Back or quit.
- MENU/ENTER Under the measure interface: Enter the menu interface. Under the menu interface: Enter or confirmation.
- ZERO/UP Under the measure interface: If in the track mode, tares weight of attachment. In other modes resets the peak value. Under the menu interface: Shifted up the selection or adjust the value.
- PEAK/DOWN Under the measure interface: Change the measure mode. Track, Peak, Auto peak or First peak. Under the menu interface: Shifted down the selection or adjust the value.

Menu Operations

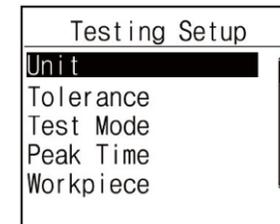
The Force Gage has multi-level menu interface.

Menu	Testing setup	Unit
		Tolerance
		Test Mode
		Peak Time
		Workpiece
	Printing setup	Print Recent
		Print Selected
	Memory Management	Print All
		Storage Mode
		Browse A to Z
		Browse Z to A
		Browse Selected
		Delete Selected
	System Settings	Delete All
		Display Mode
		Shutdown Time
		Backlight Time
		Key Sound
		Date/Time
		Contrast
		Key Settings
		Default Settings
		Calibration
	Modulus Modify	
	Information	

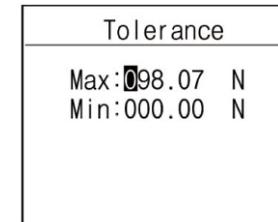
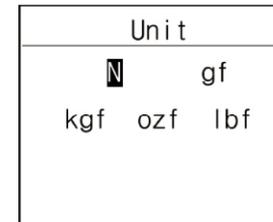
The Force Gage has multi-level menu interface. Under the measure interface, touch "MENU" can enter the main menu interface.



- 1 Testing Setup: This menu item contains five selectable items: Unit, Tolerance, Test mode, Peak Time and Workpiece.

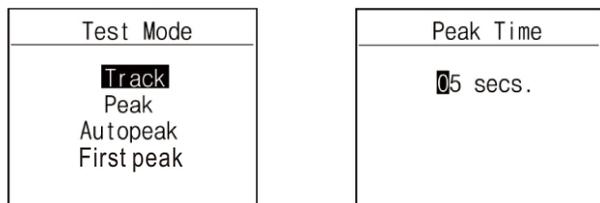


- ◆ Unit: The measuring unit can be selected under this menu. The different models may have different options. Touch "UP" or "DOWN" keys to shift to the next position, touch "EXIT" to abort, and touch "ENTER" to confirm and back.

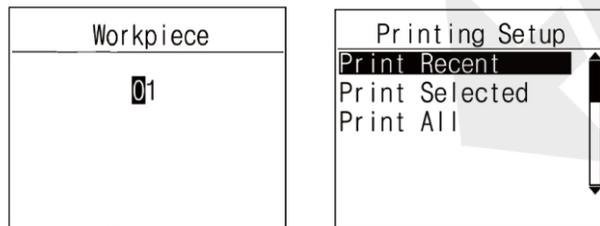


- ◆ Tolerance: Under this menu, program high and low limit value to enable ok/ov testing. The lower limit value cannot be greater than the upper limit value, and neither lower limit value nor upper limit value can be greater than 110% of the rated capacity. Touch "UP" to adjust the value, touch "DOWN" to shift to the next position, touch "EXIT" to abort, and touch "ENTER" to confirm and back.

- ◆ Test Mode: Under this menu, the measuring mode can be selected. There are four kinds of mode: Track, Peak, Auto Peak and First peak.
Track: The real time measuring mode.
Peak: Peak readings will not change until a higher value is measured.
Auto Peak: When the peak keeping time is up, resets the peak value automatically.
First peak: Peak readings will not change after catch the first peak.
Touch "UP" or "DOWN" keys to shift to the next position, touch "EXIT" to abort, and touch "ENTER" to confirm and back.

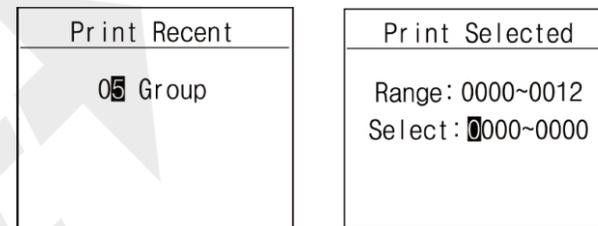


- ◆ Peak Time: Under this menu, the peak keeping time can be set. The range is 1~99 seconds. Touch "UP" to adjust the value, touch "DOWN" to shift to the next position, touch "EXIT" to abort, and touch "ENTER" to confirm and back.
- ◆ Workpiece: When several samples are needs to be measured, the samples can be coded. The range is 01-99. When set to "00" will become "01" automatically. Touch "UP" to adjust the value, touch "DOWN" to shift to the next position, touch "EXIT" to abort, and touch "ENTER" to confirm and back.

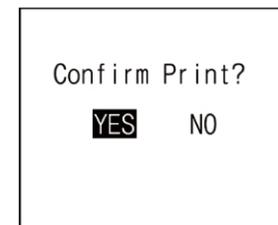


- 2 Printing Setup: This menu item contains three selectable items: Print Recent, Print Selected and Print All. The data saved in memory can be output to printer through the serial port RS232.

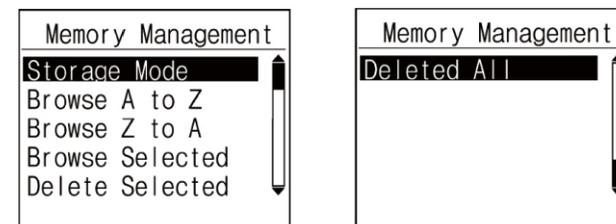
- ◆ Print recent: Print recently stored data, the range is 0~19 groups. Under the measure interface, touch the key "SEND" also can print the recent data if it is the default settings for printing. Touch "UP" to adjust the value, touch "DOWN" to shift to the next position, touch "EXIT" to abort, and touch "ENTER" to confirm.



- ◆ Print Selected: Under this menu, user can choose the data to print. The range of data to be printed should be set under this menu. Touch "UP" to adjust the value, touch "DOWN" to shift to the next position, touch "EXIT" to abort, and touch "ENTER" to confirm.
- ◆ Print All: Print all data saved in memory, a prompt window will be pushed out under this menu. All data will be printed by selection of "YES", and this operation will be aborted by selection of "NO" or touch "EXIT".

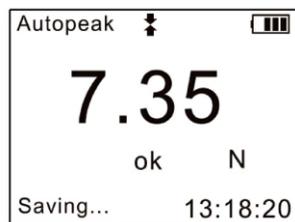
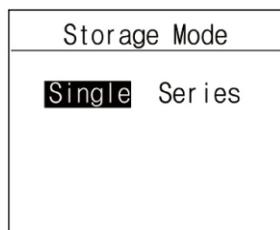


- 3 Memory Management: Under this menu, user can select the mode of data storage, can also browse, delete, or print the data.



- ◆ Storage Mode: There are two storage mode can be selected under this menu, Single and Series. Touch “UP” or “DOWN” keys to shift to the next position, touch “EXIT” to abort, and touch “ENTER” to confirm and back.

Single: Under the measure interface, per touch “SEND” stores the current display value if it is the default settings for storage.
 Series: Continuous storage mode, only in Auto Peak measuring mode is effective. When the peak keeping time is up, stores the current display peak value, and then resets the peak value. Touch “SEND” start, and then touch “SEND” again the end. In other measuring mode like the Single storage mode the same.



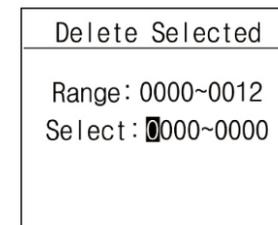
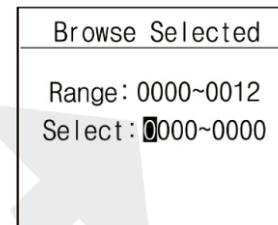
- ◆ Browse A to Z: The first page data will be showed when enter this menu. Touch “UP” or “DOWN” keys to shift to the next position, touch “ENTER” into “Delete or “Print” interface, and touch “EXIT” to back.

①	②	③	④
NO.	N	DIR	ID
⑤ 0001	00.738	↔	01
0002	01.958	↔	01
0003	02.163	↔	01
0004	00.848	↔	01
0005	01.799	↔	01
⑥ 0006	00.916	↔	01

- ① The array number
- ② Data and display unit
- ③ Tension icon
- ④ Workpiece
- ⑤ The earlier data
- ⑥ The later data

- ◆ Browse Z to A: The last page data will be showed when enter this menu, other like Browse A to Z the same.
- ◆ Browse Selected: Under this menu, the user can choose the data to browse. The range of data to be browsed should be set under this menu. Touch “UP” to adjust the value, touch

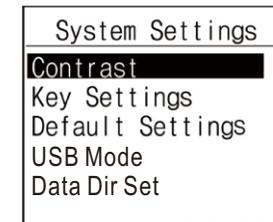
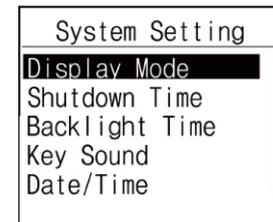
“DOWN” to shift to the next position, touch “EXIT” to abort, and touch “ENTER” to confirm.



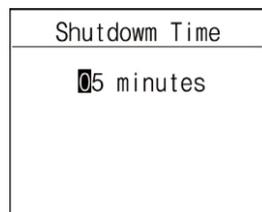
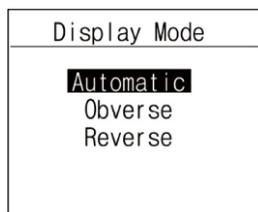
- ◆ Delete Selected: The range of data to be deleted should be set under this menu. Touch “UP” to adjust the value, touch “DOWN” to shift to the next position, touch “EXIT” to abort, and touch “ENTER” to confirm.
- ◆ Delete All: A prompt window will be pushed out under this menu. All data will be deleted by selection of “YES”, and this operation will be aborted by selection of “NO” or touch “EXIT”.



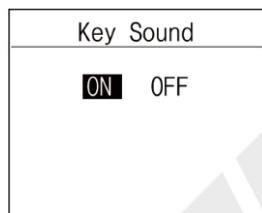
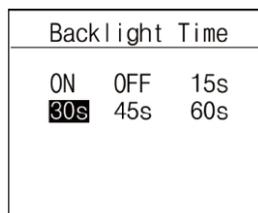
- ④ System Settings: Under system settings menu, the display mode, automatic shutdown time, backlight time and so on can be set.



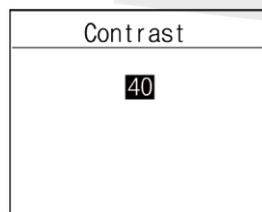
- ◆ Display Mode: Under this menu, user can select the mode of LCD display, Automatic, Obverse and Reverse can be selected. Touch “UP” or “DOWN” keys to shift to the next position, touch “EXIT” to abort, and touch “ENTER” to confirm and back.



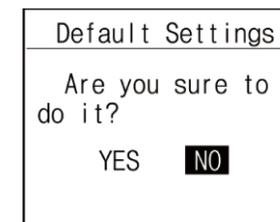
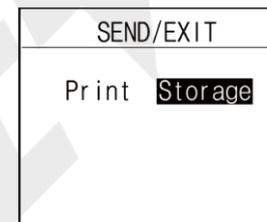
- ◆ **Shutdown Time:** To maximize the life of the battery, power is off after a while of non-use. The time can be set under this menu. The range is 01-99 minutes. When set to “99” the system will always on. Touch “UP” to adjust the value, touch “DOWN” to shift to the next position, touch “EXIT” to abort, and touch “ENTER” to confirm and back.
- ◆ **Backlight Time:** Under this menu, the continued lighting time of the backlight can be set. Touch “UP” or “DOWN” keys to shift to the next position, touch “EXIT” to abort, and touch “ENTER” to confirm and back.



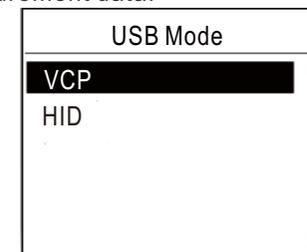
- ◆ **Key Sound:** The key sound can be turn on or off by this setting. Touch “UP” or “DOWN” keys to shift to the next position, touch “EXIT” to abort, and touch “ENTER” to confirm and back.
- ◆ **Date/Time:** If necessary, the system time can be set under this menu. Touch “UP” to adjust the value, touch “DOWN” to shift to the next position, touch “EXIT” to abort, and touch “ENTER” to confirm and back.



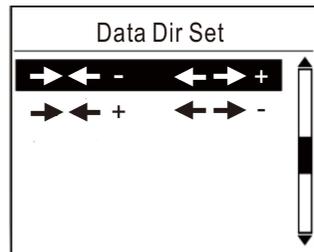
- ◆ **Contrast:** Due to the use of different ambient temperatures and light conditions, it requires to adjust the contrast of LCD in order to making for observing and reading data. Touch “UP” or “DOWN” keys to adjust the value, touch “EXIT” to abort, and touch “ENTER” to confirm and back.
- ◆ **Key Settings:** Under this menu, It is only to set the default function of the key “SEND/EXIT” under the measure interface. Print the recent data or stores the current display value can be selected.



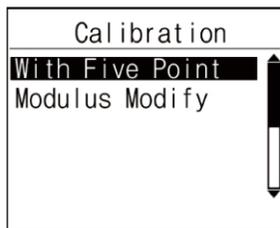
- ◆ **Default Settings:** When the artificial error, and do not know how to restore, the gauge can be restored to factory settings. Carefully use this function!
- ◆ **USB Mode:** There are two communication modes to choose from in this setting, namely VCP mode and HID mode. Select the desired USB communication mode and press ok. (After selecting the corresponding USB Settings, the USB cable should be plugged and unplugged again.) VCP is the general communication mode. HID is the keyboard output mode. In the first peak mode, after locking the first peak, the lock value is automatically sent to Excel. You can also change the setting option in system settings to print option. Press “SEND/EXIT” on the main measurement interface to manually send a measurement data.



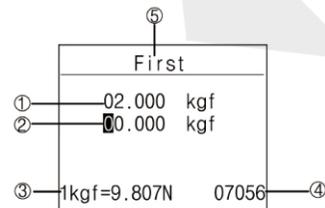
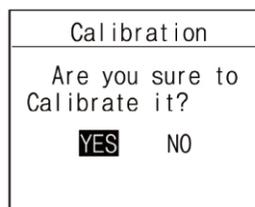
- ◆ Data Dir Set: In HID mode, you can choose the direction of data transmission by yourself. Set the pull is positive, the push is negative or the pull is negative, the push is positive.



- 5 Calibration: If necessary, user can self calibrating the gage under this menu. There are two ways of calibration, With Five Point or Modulus Modify.



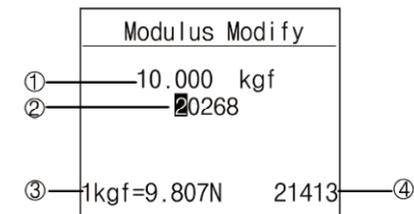
- ◆ With Five Point: A prompt window will be pushed out under This menu. Calibration will be executed by selection of "YES", and this operation will be aborted by selection of "NO" or touch "EXIT". 20%, 40%, 60%, 80%, 100% of the rated capacity should be recommended. All of the five points can be same.



- ①The current measured value
- ②The actual value (should be input)
- ③The conversion relation
- ④Internal ADC value(do not care)
- ⑤The current calibrate point

- ◆ Modulus Modify: The modulus affects the measure value, when modulus is bigger, the measure value will be smaller. Touch "Up" to adjust the value, touch "DOWN" to shift to the next position, touch "EXIT" to abort and touch "ENTER" to confirm and back.

- ①The current measured value
- ②Modulus
- ③The conversion relation
- ④Internal ADC value(do not care)



- 6 Information: Information includes the logo, model, version of the software and the serial number.

Charging

The Digital Force Gage is supplied with a set of 3 Nickel Metal Hydride AAA rechargeable batteries, which are supplied fully charged to allow use straight in the internal. Users need to recharge batteries when a low battery icon appears in the display and flash.

Users should connect the gauge and the charger use the USB cable, and then connect the charger with AC socket to start charging. Users can also use other USB device (e.g. Laptop) to charge the gauge. A fully charged battery pack will provide approximately 20 hours constant use between charges. Rechargeable battery pack:

- Type: Ni-MH 3.6VDC 800mAH rechargeable batteries;
- Charging time: approx. 3~4 hours;
- Battery life: approx. charge and discharge 500 times.