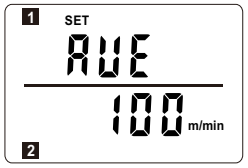
ELEVATOR SPEED LIMITER SPEEDOMETER

DB25-ES900

This Elevator Speedometer is small in size, light in weight, easy to carry. Although complex and advanced, it is convenient to use and operate. Its ruggedness will allow many years of use if proper operating techniques are followed. Please read the following instructions carefully and always keep this manual within easy reach.

* Stored data can be read in the setting mode.

CONTENT



5-3 Measuring Elevator Speed

(1) Basic operation

Select unit 'm/min', press the Circumferential Ring onto a wire rope or a pulley, and measure the rotational speed.

(2) Holding the measurement value

Press the CH1 Key / CH2 Key to hold the measurement value.

Press the RESET Key to clear the held data.

When using the External Hold Signal Cable, the hold state enters when the contact opens (OFF).

(3) Display the maximum value

Press the DISPLAY Key to turn ON the 'MAX' indicator. The maximum value comes out on the lower of display.

Press the RESET Key to clear the maximum value.

* Press the DISPLAY Key to change the value in order of CH2, MAX, and instantaneous value.

(4) Storing the measurement value

Press the SAVE Key to store the hold data (CH1/CH2) and the maximum value (MAX) in the Elevator Speedometer.

When data is stored, the storage number comes out on the upper of display for one second.

* The stored data can be read in setting mode.

5-4 Measuring moving distance of Escalator after emergency stop

(1) Basic operation

Select unit 'mm' and press the Circumferential Ring onto a hand rail of the escalator under measurement. This measurement aims to measure the distance over which the escalator under measurement moves since emergency stop is started until the escalator under measurement actually stops.

When using the Trigger Unit, connect the Elevator Speedometer and the Trigger Unit, and connect the Trigger Unit and the emergency stop terminal of the escalator under measurement.

(2) Starting and stopping measurement

Press the CH1 Key or the switch of Trigger Unit to start measurement.

Pressing the CH2 Key ends measurement.

The distance over which the Circumferential Ring rotates comes out on the lower of display.

(3) Storing measurement value

Press the SAVE Key to store the measurement value in the Elevator Speedometer.

When data is stored, the storage number comes out on the upper of display for one second.

Points to Be Observed before Use

! WARNING

* Never touch the rotating section with your hand.
  There is a risk that your hand is caught resulting in serious personal injury. Bringing gloves such as working gloves or cloth near the rotating section is very dangerous because they may be caught by the rotating section.
* In measurement involving a rotational speed of 1,000 m/min (10,000 r/min) or higher, do not hold the Elevator Speedometer. In this case, fix the Elevator Speedometer.
* To ensure safety, manufacture robust attachment jig according to your operating conditions. Fix the Elevator Speedometer to the attachment jig by using M3 screws.
* The power supply of this instrument must use 14500 3.7v lithium ion battery.
* When the battery indicator comes out, replace the batteries with new ones. Since the function is disabled, using the instrument with the battery indicator may cause incorrect measurement value display.
* Leaving the instrument with the batteries exhausted, the electrolysis liquid may leak causing failure.
* Put the batteries with the correct polarity. Heat generation or leakage may cause fire, personal injury, or environmental contamination.
* Never use new and old batteries or different types of batteries together. Heat generation or leakage may cause fire, personal injury, or environmental contamination.
* Never disassemble or heat the batteries, or never put the batteries in water or fire. Burst of the batteries may cause personal injury or environmental contamination.
* When you will not use the instrument for a prolonged period of time, remove the batteries. Burst of the batteries may cause personal injury or environmental contamination.
* If battery leakage occurs, stop using the instrument. Using the instrument with battery leakage may cause short-circuit resulting in fire or personal injury.
* Do not apply voltage to the External Hold Signal Cable. Since the External Hold Signal Cable is a cable for no-voltage contact signal input, there is a risk of electric shock by applying voltage. It also may cause damage of the Elevator Speedometer.

! CAUTION

* Do not drop the instrument or apply a strong shock to it. This instrument includes high-precision electronic components. Dropping it or applying strong shock to it may cause failure.
* Be sure to turn OFF the power before connecting or disconnecting cable. When the power is ON, doing so may cause measurement failure.
* Wipe dirt off using a dry cloth or a cloth dampened with neutral detergent and squeezed firmly. Do not use volatile oils (thinner, benzine, etc.) or alcohols.

1. APPLICATIONS & FEATURES

This Elevator Speedometer is a compact and lightweight handheld

speedometer, designed for adjustment, maintenance, and inspection of an elevator.
This Elevator is provided with two display units enabling speed display at two different measurement timings.

* Memory function, for storing and reading 20 sets of measurement results. Including CH1 Value, CH2 Value, Maximum Value. Larger amount of memory can be customized.
* Maximum hold function.
* Averaging function, for averaging with desired number of times up to 200 times. The measurement time interval is 10 ms.
* Low battery indicator function.
* Distance measurement function.
* Bluetooth printer function, measurement data can be printed directly.
* Can be connected with computer by USB Cable or Bluetooth Adapter, realizing data transport function.

2. SPECIFICATIONS

2-1 Measurement Section

Measurement method: Contact method

Measurement range: Speed measurement: 0.1~2,000.0m/min
Rotational speed measurement: 1~20,000r/min
Distance measurement: 0~999mm

Note: Measurement is possible for up to 5,000mm. Measurement values of 999mm or larger can not be guaranteed.

Measurement accuracy: ±1 count

Measurement time: 10ms

Measurement unit: m/min, r/min, mm

Auto power-off function: Turns OFF the power in 180 seconds after last operation.

Measurement value hold function: CH1 Value, CH2 Value, MAX Value

Averaging function: Performs averaging desired number of times (1 to 200 times)

Memory function: Stores up to 20 sets of measurement results, larger amount of memory can be customized.

2-2 Detection Section

Number of pulses: 400pulses/rotation, slit reflection method

Light source: Infrared LED

Light-receving element: Photo diode

Allowable: 5kg in radial direction, 5kg in thrust direction

Bearing life: $2x10^7$r/min·h(maximum load within specification)

2-3 Display Section

Display unit: 5-digit backlight LCD (upper and lower display)

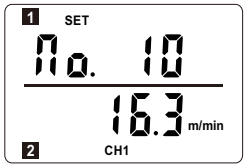
Update time: 100ms

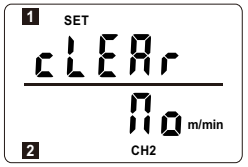
Resolution: 0.1 (m/min: Number of averagings 10 or more)
1 (r/min: Number of averagings 10 or more)
1 (mm)

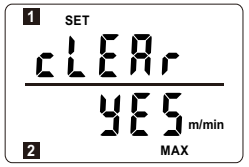
2-4 Analog Output Section

Contents: Instantaneous value (averaging result output)

or ‘MAX’ for the storage number on the lower of display.
Pressing the UP Key and the DOWN Key enables selecting data display for up to ‘No. 01’ to ‘No. 20’.
When ‘clear’ comes out on the upper of display and ‘No’ comes out on the lower of display, pressing the LEFT Key and RIGHT Key changes the lower of display to ‘YES’. Pressing the ENTER Key in this state clears all the stored data.
The storage number is not displayed for data not stored.



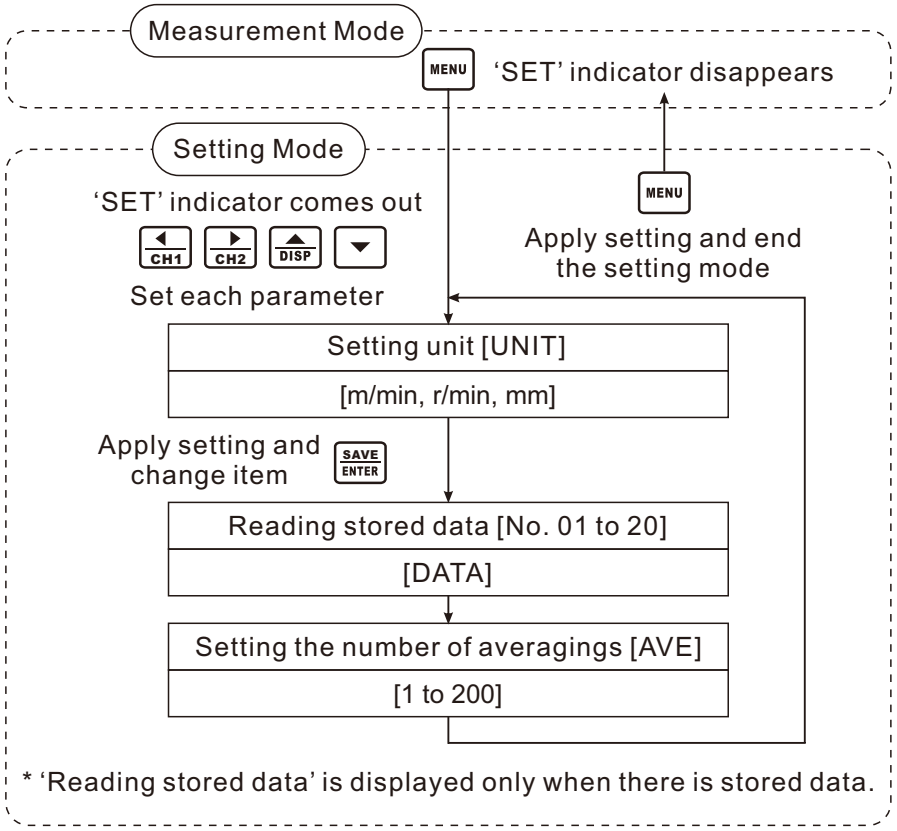




(3) Bluetooth printer function
When the Bluetooth printer is elected, turn ON the Elevator Speedometer and the Bluetooth printer, the device will be automatically connected.
Make sure that there is enough print paper in the Bluetooth printer. If it is not enough, replace the paper in time.
In the measurement mode, each time the SAVE Key is pressed, the printer prints the current stored data, including the CH1 value, the CH2 value, and the maximum value.
In settings mode, when pressing the ENTER Key to enter the reading stored data state, the printer automatically prints out all saved data, including CH1 value, CH2 value and the maximum value.

(4) Computer connection function by the USB cable / Bluetooth adapter
When the USB line or the Bluetooth adapter is selected, data transmission from the Elevator Speedometer to the computer can be realized. For the detailed operation method, please refer to the operation instructions in the supplied CD.

(5) Setting the number of averagings
‘AVE’ comes out on the upper of display, and the number of averagings comes out on the lower of display. The most significant digits blinks.
Press the LEFT Key and the RIGHT Key to move the blinking digit, and press the UP Key and the DOWN Key to select the number at each digit.
Note: To ensure a resolution of 0.1 m/min (1 r/min), it is necessary to set the number of averagings to 10 or more.

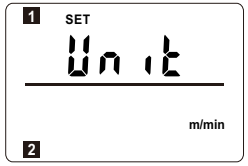


(1) Setting unit

When 'UNIT' comes out on the upper of display, press the UP Key, DOWN Key, LEFT Key, RIGHT Key to change the unit.

Select a unit to be used and then press the ENTER Key. The unit is applied and the next setting item is selected.

Also for the following setting items, the setting is applied when you press the ENTER Key to change item or press the MENU Key to return to the measurement mode.



(2) Reading stored data

Only when there is stored data, the stored number comes out on the upper of display and the stored data comes out on the lower of display.

Pressing the LEFT Key and the RIGHT Key enables selecting 'CH1', 'CH2',

Voltage range: 0 to F.S. / 0 to 1V
Conversion method: 10 bits D/A conversion
Linearity: ±1% F.S.
Output update time: 10ms
Output connector: Φ2.5 pin jack

2-5 Pulse Output Section

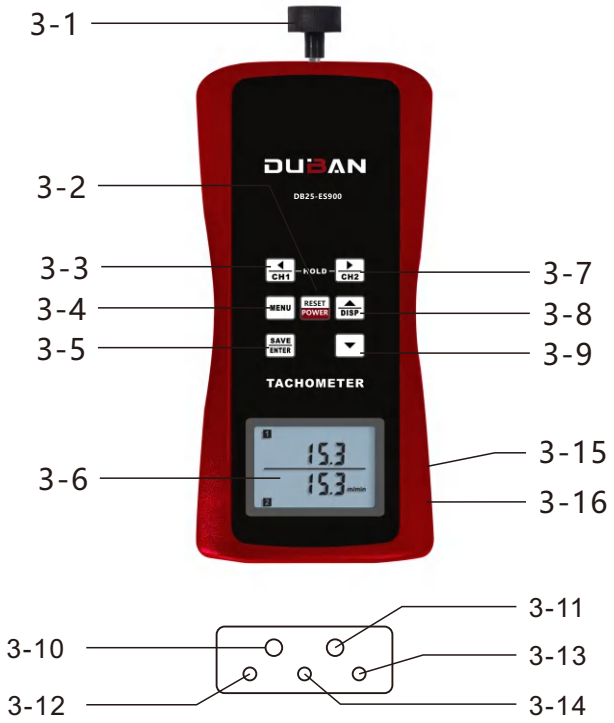
Output method: Transistor output (open collector)
Withstand voltage: 14V
Number of pulses: 800/rotation
Logic: Negative logic
Pulse width: Approx 0.5 to 1.2μs
Output connector: Φ2.5 pin jack

2-6 General Specifications

Power supply: 2x3.7v 14500 lithium ion battery
Operating temperature: 0~45˚C
Storage temperature: -10~60˚C
Operating humidity: 35~85%RH
Storage humidity: 35~85%RH
Dimensions: 199*76*37mm
Standard Accessaries:
- Main Unit
- 3.7v 14500 Lithium Ion Battery x 2
- Power Adapter
- Circumferential Ring
- Screwdriver
- External Hold Signal Cable x 2
- Instruction Manual
- Carrying Case

Optional Accessaries:
- Lengthening Rod for Rotating Contact Tip
- Trigger Unit
- Bluetooth Printer
- USB Cable & Software
- Bluetooth Adapter & Software

3. PANEL DESCRIPTION



3-1 Circumferential Ring
3-2 RESET/POWER Key
3-3 LEFT/CH1 Key
3-4 MENU Key
3-5 SAVE/ENTER Key
3-6 Display
3-7 Right/CH2 Key
3-8 UP/DISPLAY Key
3-9 DOWN Key
3-10 CH1
3-11 CH2
3-12 External Encoder
3-13 Data Cable Interface
3-14 Signal Output
3-15 Charging Indicator
3-16 Power Adapter Interface

4. BEFORE USE

4-1 Power Supply

Install two 14500 lithium ion batteries before use.

(1) Open the battery cover on the back.

(2) Put batteries properly in the battery compartment with the correct polarity (+/-). Note that putting batteries with the incorrect polarity may cause failure.

(3) Replace the battery cover.

When the battery voltage is too low and the battery symbol appears on the display, please use the power adapter to charge. When the charging indicator light is red, it indicates that it is charging. When the indicator light is green, it indicates that the battery is fully charged. When fully charged, please pull off the adapter plug.

4-2 Attaching Circumferential Ring and Rotating Contact Tip

When attaching the Circumferential Ring, firmly insert the shaft into each measuring element all the way until it stops and reliably fix it with Screw Driver.

Fixing each measuring element to a wrong position or loosely attaching it may cause detachment during measurement possibly resulting in an accident.

4-3 Notes on Measurement

Press the Circumferential Ring and Rotating Contact Tip onto the object under measurement with a pressing load not exceeding 5kg.

Being careful of the contact angle to the object under measurement, firmly hold each measuring element.

4-4 Note on Measurement Range

In measurement involving a rotational speed of 1,000 m/min (10,000 r/min) or higher, do not hold the Elevator Speedometer .

In this case, fix the Elevator Speedometer.

5. OPERATIONS

5-1 Power Switch

(1) Press the POWER Key to turn ON the power of the Elevator Speedometer.

(2) When no button operation is performed or no signal is input, the power is automatically turned OFF to prevent useless battery power consumption.

(3) When the power is turned ON, the settings of last operating state will be displayed.

(4) Press and hold the POWER Key for 3 seconds to turn OFF the gauge. Note: The hold value of CH1/CH2 and the maximum value are stored until the time of power OFF. Reset the values by the RESET Key when you start the other measurement.

5-2 Setting Mode

In the measurement mode, press the MENU Key, the ‘SET’ indicator comes out on the display and the parameter setting mode is entered.

Then, set parameters by using the UP Key, DOWN Key, LEFT Key, RIGHT Key. The current setting is applied when you press the ENTER Key to change item or press the MENU Key to return to the measurement mode.