

1.2 Characteristics of Cable Locator NF-826

- ◆Detecting cables, electrical lines, water/gas supply pipelines buried in wall or earth;
- ◆Detecting interruptions and short circuit in cables and electrical lines buried in wall or earth;
- ◆Detecting fuses and assigning current circuits;
- ◆Tracing sockets and distribution sockets having accidentally been covered by plastering;
- ◆Detecting interruptions and short-circuits in floor heating;
- ◆The transmitter is integrated with the function of AC/DC voltmeter, which can measure 12 to 400V AC/DC voltage on a linear basis:
AC: 12 ~ 400V (50 to 60 Hz) $\pm 2.5\%$
DC: 12 ~ 400V $\pm 2.5\%$
- ◆The screen of the transmitter can display preset transmitting power, transmitted codes, its own battery energy, mains voltage detected, AC/DC status of mains voltage detected, and warning symbol for mains voltage.
- ◆The transmitter has the function of self-inspection to detect its own working status and to display it on the LCD screen for user's reference.
- ◆The screen of the receiver can display the transmitting power of the transmitter, transmitted codes, energy of the transmitter's and its own batteries, AC voltage induced signal detected and warning symbol for mains voltage.
- ◆The sensitivity of the receiver can be adjusted either manually or automatically.
- ◆The receiver can sweep frequency automatically.
- ◆Both the transmitter and the receiver can work under mute mode.
- ◆The receiver is available with automatic shutdown (It is powered off automatically over 15 minutes of absence of keystroke).
- ◆The receiver's LCD screen is provided with backlight for application in poor light.
- ◆Both the transmitter and the receiver is provided with flash light function when working in darkness.
- ◆Additional transmitters are available to extend or distinguish several signals.
- ◆Compactness, durability and portability.

1.3 Names and Functions of Parts

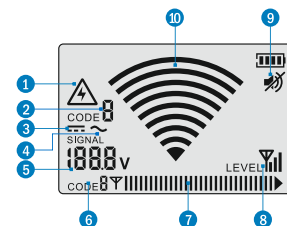
◆1.3.1 Sketch of transmitter

- ① LCD screen.
- ② Power on/off key.
- ③ Up key. When setting power level or code, press it to go up.
- ④ Down key. When setting power level or code, press it to go down.
- ⑤ Key for turning on/off flashlight.
- ⑥ Key for setting/confirming code information to be transmitted. Press this key for 1 second to enter code setting and press it briefly to exit setting
- ⑦ Key for setting/confirming transmitting power level (Level I, II or III)
- ⑧ Key for Mute or Backlight
- ⑨ Key for transmitting or stopping to transmit code information.
- ⑩ Grounding hole. The transmitter is grounded with the test lead through this hole.
- ⑪. "+" hole, input/output hole of the transmitter. The transmitter is connected to external cables with the test lead through this hole to send out signals and receive detected voltage signals.



◆1.3.2 Transmitter display

- ① Symbol to indicate mains voltage.
- ② Transmitting code.
- ③ Mains DC voltage
- ④ Mains AC voltage
- ⑤ Mains voltage value (can be used as an ordinary voltmeter; range: 12~400v DC/AC)
- ⑥ Code being transmitted.
- ⑦ Intensity of signal being transmitted.
- ⑧ Transmitting power level.
- ⑨ Symbol to indicate mute mode.
- ⑩ Transmitting status.



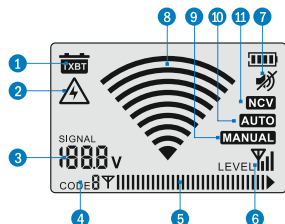
◆ 1.3.3 Sketch of receiver

- ① Flashlight.
- ② Probehead
- ③ LCD screen
- ④ Power on-off key
- ⑤ Key for adjusting sensitivity up under manual mode.
- ⑥ Key for adjusting sensitivity down under manual mode.
- ⑦ Key fo turning on/off the flashlight.
- ⑧ NCV
- ⑨ MANUAL key for switchover between manual and automatic cable locating.
- ⑩ Mute
- ⑪ Backlight

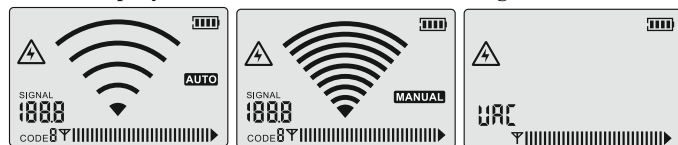


◆ 1.3.4 Receiver display

- ① Symbol to indicate voltage/energy of the receiver's battery.
- ② Symbol to indicate mains voltage.
- ③ Singal value when detecting cable.
- ④ Code received.
- ⑤ Intensity of signals when detecting cable or AC detecting.
- ⑥ Signal inrtensity level received.
- ⑦ Symbol to indicate mute mode.
- ⑧ Received sensitivity under Manual mode.
- ⑨ Manual mode
- ⑩ Automatic mode
- ⑪ NCV



◆ 1.3.5 Display of receiver under cable locating mode



(1) Automatic mode

(2) Manual mode

(3) Mains voltage identification mode

2. CARRYING OUT MEASUREMENT

2.1 Measurement Precautions



WARNING

1. As the connection of the transmitter with the mains supply may generate circuit current of milliampere level, in live condition the Grounding hole of the transmitter can be only connected with a neutral conductor. If transmitter connection is realized from the phase towards the protective conductor, the functional safety of the protective conductor must be tested first, in compliance with DIN VDE 0100.
The reason is that when connecting the transmitter from phase towards ground, all parts being connected to the earth may be live in the event of an error (if the earth resistance does not comply with the prescriptions).
2. When the transmitter is connected with live mains, if the Grounding hole of the transmitter is connected with protective ground phase, the current leakage (if any) in the power supply line may join the circuit current of the transmitter, leading to tripping of the leakage circuit breaker, i.e. tripping of FI/RCD.

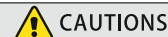


HINTS

1. When use the transmitter as a voltage tester to test the mains voltage, it will have weak spark at the moment the probes touch the mains voltage, this is normal phenomenon.
2. If any one of the "Start/Stop" key, the "Code Set" key and the "Level Set" key is effective, the other two are ineffective.

2.2 Functional principle

This Cable Locator consists of a transmitter, a receiver and some accessories. The transmitter sends to the target cable (or metal pipes) an AC voltage modulated by digital signals, which generates an alternating electric field (see Fig. 2-1); Put the probe of the receiver close to this electric field, and the sensor will generate induced voltage. This instrument can magnify this weak voltage signal by hundreds of times and then display it via LCD screen after digital processing, so that the position of the buried cables or pipes, as well as their faults, can be detected based on the change of the signal.



CAUTIONS

1. For any application, the connections of the transmitter should ensure a closed circuit.
2. This Cable Locator can only detect or locate lines correctly connected pursuant to the physical principle described.

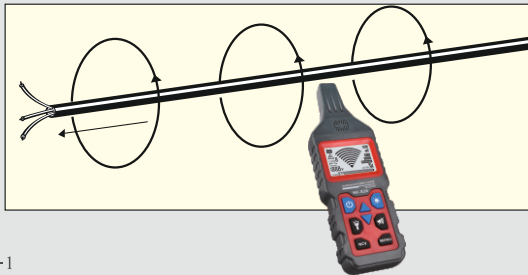


Fig 2-1

⚠ HINTS

Optional connections of this Cable Locator

1. One-pole application: Connect the transmitter to only one conductor. Due to the high-frequency signal generated by the transmitter, only one single conductor can be located and traced. The second conductor is the ground.

This arrangement causes a high frequency current to flow through the conductor and to be transmitted to the ground, similar to a radio or a receiver.

2. Double-pole application: The transmitter is connected to the conductor by two test leads. This application includes live mains and dead mains.

◆ The transmitter is connected to live mains:

Connect the "+" hole of the transmitter to the phase line of mains and the Grounding hole of the transmitter to the neutral line of the mains. Under this circumstance, if there is no load in the mains, the modulated current from the transmitter will go to the neutral line via coupling through the distributed capacitance in the mains and then return to the transmitter.

◆ The transmitter is connected to dead mains:

Connect the hole of the transmitter to a terminal of a line in the mains, connect the Grounding hole to the terminal of another parallel line in the mains, and then connect the other two terminals in the mains with each other. Under such circumstance, the modulated current will directly return to the transmitter through the mains. Optionally, the two test leads of the transmitter can be respectively connected to the two ends of the conductor.

Besides, the "+" hole of the transmitter can be connected to a terminal in the mains while the Grounding hole of the transmitter can be connected to the protective grounding terminal of the mains.

2.3 Examples of Typical Application

In this example, please take a piece of a shielded cable with a cross sectional area of 1.5mm² Provisionally install 5m of this cable along the wall with nail clips at eye level as surface mounting. Make sure that the wall is accessible from both sides. Create an artificial interruption at a distance of 1.5m before the line terminal. The line terminals must be open. Strip the interrupted lead at the beginning of the light shielded cable and connect it via the test leads (provided) with hole ⑩ of the transmitter. Connect terminal ⑪ of the transmitter to a suitable ground. All other cable leads must also be connected to the transmitter and the same ground (See Fig. 2-2).

Switch on the transmitter via key [ON], when the LCD screen of the transmitter will display the initial screen and the buzzer will buzz. Press key [MODE] of the transmitter to enter the screen for setting transmitting level and then press key [▲] or down key [▼] to select transmitting power level (Level I, II or III). After this level is set, press key [EXIT] to exit. If you want to change the transmitting code, press key [CODE] of the transmitter for about 1 second and then press key [▲] or down key [▼] to select transmitting code (A,C,E,F,H or L, with default A). Press key [EXIT] to exit. Then, press key [INFO] to send information. At this moment, the concentric circles ⑫ on the LCD display will be gradually spread, and symbol ⑬ will display the transmitting code received by the transmitter itself, and symbol ⑭ will display the signal intensity. Press key [RECEIVER] of the receiver to power on the receiver, when the LCD screen of the receiver will display the initial screen, the buzzer will buzz, and the receiver will enter the default "Automatic Mode". Move the probe of the receiver slowly along the cable to the interruption position, when symbol ⑮ of the receiver will display transmitting power level, ⑯ will display the code transmitted by the transmitter, ▲ will display the dynamic signal intensity, and the loudspeaker will change tone with the change in signal intensity. When the probe of the receiver passes the interruption position, the signal intensity as displayed by ⑰ will have an obvious drop it completely disappears. At this moment, press MANUAL key [MANUAL] of the receiver to switch it to manual mode and then use key ▲ and ▼ to reduce the sensitivity as much as possible while ensuring that the receiver's screen can display the code transmitted by the transmitter. Then, this area is where the interruption located.

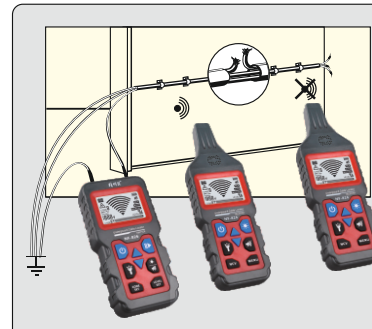


Fig 2-2

⚠ HINTS

1. Full grounding should be ensured.
2. Adjust the transmitting power level of the transmitter to adapt it to different detection radiuses.
3. The best practice for testing is to mark the interruption position on the other side of the wall. Press MANUAL key of the receiver to switch it to manual mode. Press key ▲ and ▼ to reduce the sensitivity to make sure that the signal is just receivable. Trace the signal in front of the wall with the receiver till it is no longer indicated. The interruption position can be further localized through such adjustment.

3. DETAILS OF APPLICATION

3.1 In open circuit

- ※ Detecting line interruptions in wall or floor;
- ※ Finding and tracing lines, sockets, junction boxes, switches, etc. for house installations;
- ※ Finding bottlenecks, kinking and buckling and obstructions in installation pipes by means of a metal wire.



CAUTIONS

When using this application, please ensure the good functioning of the protective ground wire.



HINTS

1. Application in open circuit is suitable for finding sockets and switches in dead equipment
2. The tracing depth is depending on the medium and application. A typical tracing depth is 0 ~1m.
3. The protective terminal of an electrical outlet can be used as the grounding connection of the transmitter.

3.1.1 Locating of line interruptions

Preconditions:

- ※ The circuit must be dead.
- ※ All lines which are not required must be connected to the auxiliary ground in accordance with Fig. 3-1-1.
- ※ Connect the transmitter to one lead and to an auxiliary ground according to Fig.3-1-1.

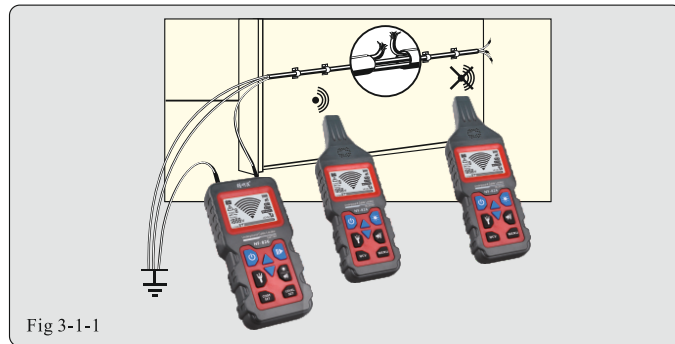


Fig 3-1-1



CAUTIONS

1. Full grounding should be ensured.
2. The transition resistance of a line interruption must be higher than 100k Ohm.
3. When tracing line interruptions in multi-core cables, note that all remaining leads in the shielded cable or conductor must be grounded in accordance with the regulations. This is required to avoid cross-coupling of the fed signals (by a capacitive effect to the source terminals). The tracing depth for shielded cables and conductors are different, as the individual leads in the shielded cables are twisted around themselves.



HINTS

1. The ground connected to the transmitter can be an auxiliary ground, earth from an earthed socket or a water pipe which is properly earthed.
2. During tracing along the line, the position at which the signal received by the receiver has an abrupt decline is the position of the interruption.
3. Adjust the transmitting power level of the transmitter to adapt it to different detection radiuses.
4. The target position can be precisely located by your setting of the manual mode of the receiver and selecting of the proper sensitivity.

3.1.2 Locating and tracing of lines and sockets

Preconditions:

- ※ The circuit must be dead.
- ※ Neutral line and protective ground wire must be connected and fully operational.
- ※ Connect transmitter to phase line and protective ground wire according to Fig.3-1-2.

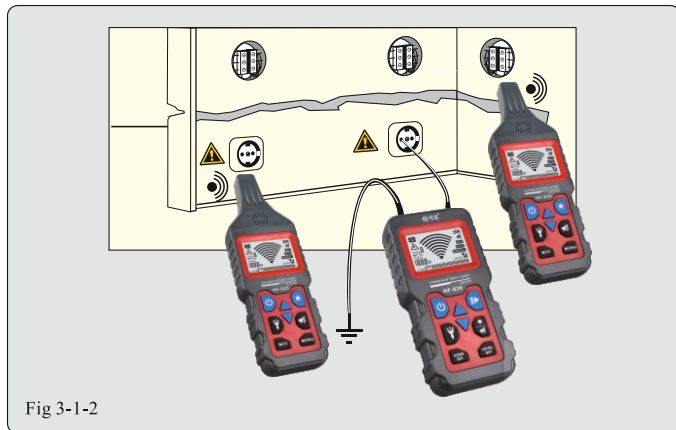


Fig 3-1-2

! HINTS

1. Full grounding should be ensured.
2. With the one-pole indication, also lateral circuit branches can be traced (The fuse must be removed in this example).
3. If the supply cable fed with the signals via the transmitter is located, e.g. directly in parallel to other conductors (e.g. cable groove or duct), or if these conductors are crossed, the signals are also input into the other conductors.
4. During locating and tracing, the stronger the signal displayed, the closer the locator is to the lines to be traced.
5. Adjust the transmitting power level of the transmitter to adapt it to different detection radiuses.
6. The target position can be precisely located by your setting of the manual mode of the receiver and selecting of proper sensitivity.

3.1.3 Detect the narrow (blocked) part of the laid non-metallic pipeline

Preconditions:

- ※ The pipeline must be made of non-conductive materials (such as plastic);
- ※ The pipeline must not be charged;
- ※ The transmitter is connected to a metal helical tube (metal tube or flexible conduit) and an auxiliary ground wire, as shown in Fig.3-1-3;
- ※ The measuring method is the same as that used in the example.

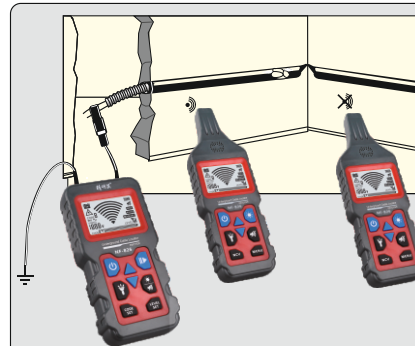


Fig 3-1-3

! CAUTIONS

1. If there is current in the pipeline, cut off the power, and correctly earth it when the pipeline is not charged.
2. The grounding end should be properly grounded, and the grounding end of the transmitter should be a certain distance away from the pipeline to be measured. If the said distance is too short, the signal and the circuit cannot be precisely located.

! HINTS

1. If you only have one helical tube that is made of non-conductive material (such as made of fiberglass), we suggest that you insert a metal wire with the section area of about 1.5mm² into the non-conductive helical tube, and then push it into the narrow part.
2. In the process of detecting the pipeline, the stronger the signals displayed on the Nixie tube of the detector, the closer the pipeline detected by the detector.
3. In the process of detecting along the pipeline, if the signals received by the receiver is suddenly attenuated, the detected position is where the blockage locates.
4. Adjust the transmitting power of the transmitter to adapt to different radiuses of detection.