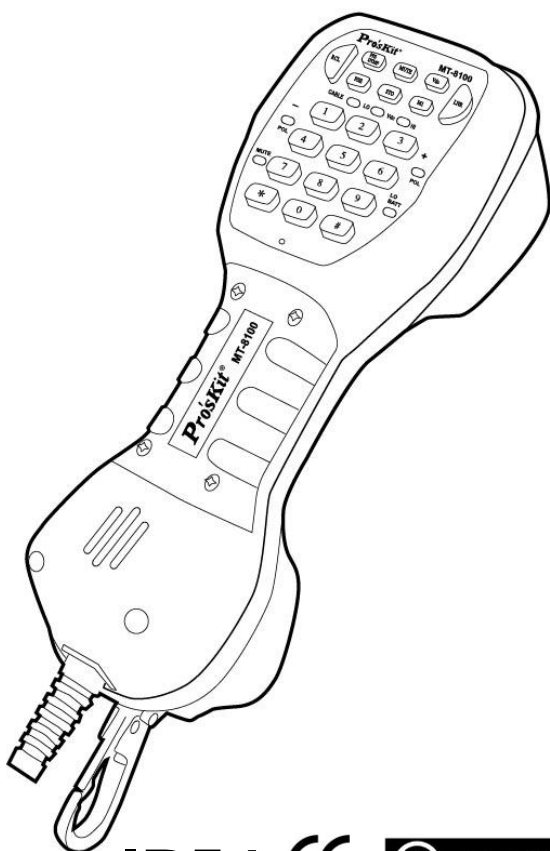


Pro'sKit®

MT-8100 BUTT SET User's Manual



IP54 CE



3rd Edition' 2017

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Thank you for purchasing the MT-8100 BUTT SET. Before using the MT-8100 for the first time, please read the following instructions.

**Warning:**

The MT-8100 Butt Set is a professional telecom tool, especially designed for checking telecom lines. It is not allowed to be used under the power source AC100~125V 50/60Hz or AC200~250V 50/60Hz; otherwise, it may cause the danger of electric shock or product damage. Therefore, we recommend the user before using the MT-8100, and uncertain of the line voltage, set the test set to Vdc mode and verify the line before using.

Packing List

Before you begin installing your unit, please make sure that the following materials have been shipped:

- Butt set tester
- Line cord with Angled Bed of Nails and RJ-11 plug
- User's Manual
- Replacement fuse x 2

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Introduction

Pro'sKit MT-8100 Butt Set comes with all the functions you need to be more productive in the field, It was approved by IEC/EN 60529 IP54 for waterproof and dustproof test, and features the latest improvements to drop protection reliability.

MT-8100 is a smart operation unit used by installer, repair technicians and other authorized personnel to test copper wire voice subscriber lines. It is easy to use, features Line voltage test, continuity test, two-way hands-free amplified speakerphone, speed dialing, low battery indicator and a rugged locking belt clip.

Features

1. Complied with IP54 Dustproof & Waterproof tests
2. Drop Protection
3. CE approved
4. High impedance monitor
5. Outer-lead voltage LED indicators
6. On/off checking feature checks out if telecom line is connected well.
7. Continuous polarity LED indicators.
8. Speakerphone for convenient hands-free two-way conversation
9. Tone and pulse operation
10. Store up to twelve 16-digit numbers in repeat dialer (speed dialing), plus extra number store in M1 button.
11. Last number redial feature.
12. PBX pause button.
13. Mute switch
14. Electronic switch controls the volume of the speakerphone/monitor.
15. Automatic shut-off feature turns off speaker after five minutes of inactivity
16. Battery low-voltage LED indicators
17. Audible electronic ringer
18. Relocatable steel locking belt clip
19. Angled Bed of Nails allows it stab into the cable, and the auxiliary RJ-11 Modular plug can be inserted directly into telecom jack.

Physical Characteristics

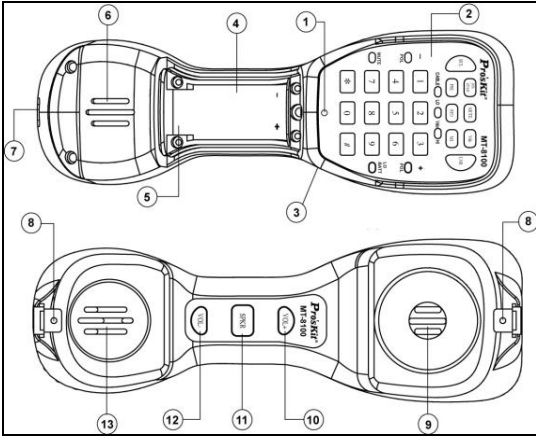


Fig.1 Physical Characteristics

1. Speakerphone microphone
2. Keypad
3. Talk/Vdc/Monitor Switch
4. Battery Compartment (9V battery)
5. Fuse (in battery compartment)
6. Speakerphone/Monitor amplified speaker
7. Line cord strain relief
8. Optional Belt Hook location (2 places)
9. Handset receiver
10. Increase volume button
11. Handset/Speakerphone button
12. Reduce volume button
13. Handset Microphone

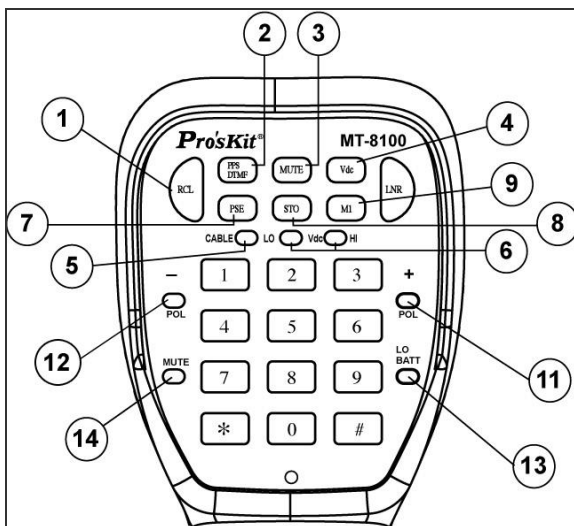


Fig.2 MT-8100 Keypad and Overlay

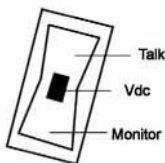
Keypad control and indicators:

- 1. RCL : Recall button
- 2. PPS/DTMF : Tone/Pulse switch.
- 3. MUTE : Mute button, when pressing the mute button, the mute LED will light up red
- 4. Vdc : Vdc button, check if the line is connected well and test, test the voltage of the outer-lead
- 5. CABLE : Telecom line connecting-check LED, if the line is connected well, the LED lights up red
- 6. Vdc(HI/LO) : Voltage level LED indicator (please see the DC voltage-indication list)
- 7. PSE : PBX pause button
- 8. STO : Store button is used for storing speed dialing numbers
- 9. M1 : Speed dialing button when the test set is on without press any other key
- 10. LNR : Last number redial button redials the number most recently dialed
- 11. POL + : Positive polarity LED indicator
- 12. POL - : Negative polarity LED indicator
- 13. LO BATT : Battery low-voltage LED
- 14. MUTE : Mute LED to indicate if the mute function is on or not

Operation



Before Operation



1. Remove the battery case lid and install 9V battery in the battery compartment paying close attention to polarity of battery.
2. Connect the Angled bed of nails (or RJ11 plug) to the telecom line

Talk/Vdc/Monitor switch

The test set has three basic modes of operation: Talk mode, off mode and Monitor mode.

The T (talk) position gives an off hook condition for dialing and talking as a common battery telephone. The Vdc position inspects the rings when it has incoming call and measured voltage level (your test set is set at the "VDC" position before your first use)

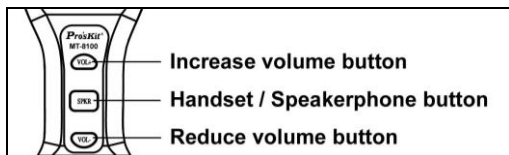
The M (monitor) position removes the transmitter from the circuit. It provides a high impedance coupling to allow line monitoring without disrupting conversations or signaling.



There is no complete power off mode with this butt set. The major function of "Vdc" mode is for AC/DC power testing. The Mute LED will light up if the mute button is touched in the Vdc mode and the battery will supply power to operate the LED until it is drained. Please make sure the Mute button is off before storing the unit to avoid unnecessary battery drain.

Speaker and Speakerphone Microphone

The speaker and speakerphone microphone are located on the keypad side of the test set. The speaker draws more current than any other circuit in the test set. The battery lasts longer if the speaker is used in moderation



Audio Controls Keys

The control keys (VOL + / SPKR/ VOL -) are located on the inside handle of the test set between the handset receiver and the handset microphone. These controls let the operator switch between the handset and speakerphone. The SPKR button turns the test set speaker on and off. When the SPKR turns on the Speakerphone, this mode is intended for two-way, hands-free conversation. The VOL+ and VOL- keys control the active receiver's sound level.

Tone/Pulse button

The PPS/DTMF button works as a Tone/Pulse switch. The PPS/DTMF button enables different dial modes. Pressing this button toggles between Pulse and Tone modes. It is convenience to use in different areas by different dialing. For example: when it is in tone dialing, press the PPS/DTMF key change the dialing mode to pulse dialing. Pressing the key again will switch back to tone dialing.

Speed Dialing Numbers Storing

The STO button is used to store numbers in memory. There are 12 memory locations (keys 0 through 9, * and #), with each capable of storing up to 16 digits.

To store a number:

1. Set the function button to "T" position.
2. Dial the number to be stored
3. Press STO button
4. Press the key for the desired memory location.

The number will be stored at the appointed location after the upper four steps.

Dialing using Recall key

The RCL key is used to recall a number stored in memory. After receiving a dial tone, press RCL and the key for the memory location. The number will be automatically dialed.

To dial the stored number

1. Set the function button to "T" position
2. Press RCL button
3. Press the key for the memory location (keys 0 through 9, *and #)

Additional M1 key store the number in same process but can be speed dialing by press M1 only when the butt set tester is on, then the number will be automatically dialed

Last Number Redial

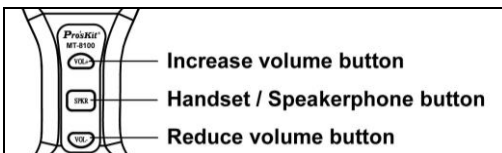
The LNR key redials the number most recently dialed. When redials the last number but the line is busy, switch the Talk mode to off position first as hands up then switch back to Talk mode again, then press the LNR key, it will automatically redials the last number dialed.

Pause

There are some cases where it may be necessary to insert a pause between digits of a stored number, such as when accessing a trunk through a PBX that requires a 9 to get out. To store a number with a pause, simply press the PSE button at the point where the pause is required. For example to store 9-555-1212. The PSE button inserts a 4 second pause.

Operating the Test Set in Monitor Mode

Set the function switch to "M" position and then press the SPKR button to open the monitor function. If there is any signal the amplified speaker will make a signal sound and if there is not any signal the amplified will make a slight circuit noise. During monitor please ensure the circuit connect test is shut off, otherwise, it will bring some telecom line crosstalk and cause low sound. To control the volume level, press VOL+ to increase volume and press VOL- for volume reduced.



Mute function

The mute button turns the handset microphone and speakerphone microphone off for privacy in Talk mode.

Polarity Identification

The polarity LEDs automatically illuminate to show line polarity. For example, the right red POL+ LED will light when you connect the red test lead to ring (positive) side of the line and the black test lead is connected to the tip (negative) side of the line. The left red POL- LED will light if the test leads are reversed.

Telecom Line Continuity test

Checking the telecom line

If you want to know if the telecom line is connected well, you can do the following:

1. Connect the two sides of the telecom line to the angled bed of nails
2. Set the function switch to "M" position.
3. Press Vdc button.

If the CABLE LED lights, it means this telecom line is OK. If the CABLE LED does not light that means the telecom line is not OK.

Battery

Battery low-voltage LED indication

If the LO BATT LED lights, that means the user needs to change the battery for fear of losing the data or form an error estimate.

Line voltage test

Outer-lead high voltage LED indication

1. Set the function switch to "Vdc" position.
2. Connect the two outer-leads to the angled bed of nails.
3. Press Vdc button to measure the voltage and indicate the LO/HI voltage level by different color of lights.

If both LED not lights up, it means the tested voltage under DC24V.

Please see the following list:

Range of the voltage test

DC voltage-indication list		
LED(LO)	green	Higher than 24V
	Red and green two color	Higher than 100V
LED(HI)	green	Higher than 150V
	Red and green two color	Higher than 200V



Caution:

1. The range of the voltage test must be lower than 250V and the function switch must be set to "Vdc" position; otherwise the fuse may be damaged.
2. AC line voltage can be converted into DC simulated voltage by inside transformer.
3. To extend battery life, the speaker will automatically shut off after approximately five minutes if there has not been a signal greater than -30 dB in that period. Any signal greater than -30 dB resets the timer and keeps the speaker turned on.

Butt Set Trouble Shooting

- 1.If there is any crosstalk in application, generally it is the interference from the telecom line, please press the VOL - to reduce the interference; or check if the angled bed of nail clips well connected to the telecom line.
- 2.If any abnormal situation is found while you are using the Prokit's Butt Set, Please test the other telecom line in the different area to identify the possible defective situation referring to the trouble shooting list below. (Attention! Please never have the angled bed of nail clips connected to the power source for safety reason.)
- 3.If the Butt Set still doesn't work after the first step of fix-up, please send back to Prokit's distributor for repairing

Defect Situation	Possible Problem	Solution
Dead, Doesn't work	Blown fuse	Change new fuse
No tone	Angled bed of nails are not well connected	Check if Angled bed of nails are well connected to telecom line
Speakerphone doesn't work	MUTE button was pressed and MUTE LED indicator lights up	Press the MUTE button and check if the MUTE LED is off
Short rings only	<ol style="list-style-type: none"> 1. Low battery 2. the angled bed of nails are connected to the power source 	<ol style="list-style-type: none"> 1. Change new battery 2. Confirm if the angled bed of nails connected to the right telecom line
Can not hear the conversations on the Monitor status	<ol style="list-style-type: none"> 1. The switch did not set to "M" position 2. The SPKR button is off 3. Low battery 	<ol style="list-style-type: none"> 1. Set the switch to "M" position 2. Press the VOL+ button to increase volume 3. Change a new battery
Crosstalk	<ol style="list-style-type: none"> 1. Angled bed of nails are not connected firmly 2. The interference from the telecom line 	<ol style="list-style-type: none"> 1. Check if the Angled bed of nails are well connected 2. Press the VOL-button to reduce the interference
Memory of storing numbers doesn't work	Low battery	Change new battery
Polarity LED doesn't work	Low battery	Change new battery
CABLE LED doesn't work	Low battery	Change new battery
LO HI(LED) doesn't work	Low battery	Change new battery
BATT(LED) doesn't work	Low battery	Change new battery

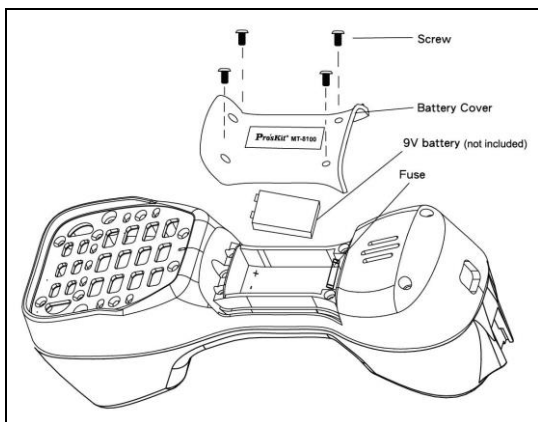


Fig.3 Fuse and battery replacement

Replacing the Battery

If the test set fails to operate properly, or stops working, replace the battery and retest. A 9V alkaline battery must be installed for the test set to operate. Do not use rechargeable batteries.

To replace the 9V battery:

1. Disconnect the test set from the line and place on a flat work surface with the battery cover up.
2. Use a Phillips screwdriver to remove the four screws from the battery compartment.
3. Remove the battery cover
4. Remove the old battery and properly discard.
5. Insert a new 9V battery into the test set and observe the proper polarity.
6. Place the battery cover back and fasten the four screws securely.



Caution

After the battery is removed, the memory of storing numbers will last for 10 second only. If the memory is disappeared, please follow the previous process as mentioned in this manual to store a number.

Fuse replacement

If the test set still stops working after a new battery replaced, it may be caused by a blown fuse.

To replace the fuse:

1. Use a Phillips screwdriver to remove the four screws from the battery compartment.
2. Remove the battery cover
3. Remove the battery
4. Remove the old fuse
5. Insert a same specification ($\varnothing 5 \times L 20 \text{mm}$, 250mA/250V) of fuse
6. Place the battery and battery cover back, then fasten the four screws securely.



Caution:

After the battery is removed, the memory of storing numbers will last for 10 seconds only.

Maintenance

1. Disconnect clips from any metallic connections before performing any maintenance.
2. If the test set fails to operate properly, first replace the battery and retest before sending the test set in for repair. (see Battery Replacement).
3. Do not use chlorinated solvents on the test set.

Specification

ELECTRICAL	
Loop limit	2 K Ω maximum at 48 Vdc (nominal 20 mA minimum loop current)
DC resistance	
Talk Mode	300 Ω typical
Monitor impedance	39k Ω nominal at 1 KHz
Rotary dial output	
Pulsing rate	10pps+0.8pps
Percent break	61% \pm 2%
Interdigit interval	1000 ms typical
Leakage during Break	>50 K Ω
DTMF output	
Tone frequency error	\pm 1.2% maximum
Tone level	-8 \pm 2dBm combined (typical)
High versus low tone Difference	4 dB maximum
Memory dialing	
Memory capacity	13 memories including M1, last number redialing
Digit capacity	16 digits per memory
PBX pause duration	4 seconds
Line Voltage Test	5 Phase AC/DC voltage indication (under 24 V · 24~100V · 101~150V · 151~200V · more than 200V)
Monitor amplifier power source	9V transistor; provides 25 hours continuous use, typical
Automatic power shut off	After 5 min. of no audio signal
Speaker phone levels	Electronic adjustable
Power source	battery (9V) 6F22 (not included)
PHYSICAL	
Measurement	230 x 82 x 89mm (9-1/16" x 3-15/64" x 3-1/2")
Weight	635g typical
Water Resistance	Complied with IEC/EN 60529 IP54 Dustproof & Waterproof tests
Cord Sets	Angled bed of nails and RJ11 plug
ENVIRONMENTAL	
Temperature	Operating : 0 to 50°C / Storage : -10 to 60°C
Altitude	To 10,000 feet (3,000M) max
Relative humidity	5 To 95%
CERTIFICATE	
	IP54, CE approved