

# MT-350 Mobile Trunk

## Operation Manual



PORTech Communications Inc.

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## **1. Preface**

Congratulations! You have selected the remarkable product “MT-350 Mobile Trunk” by your sharp and intellectual judgment. “MT-350” will provide you the best wire and wireless communication services. Before using this product, you have to read over this Operation Manual, letting this product serve you with its full functions, to satisfy your ideal desire and enjoy yourself in the wire and wireless communication applied in daily lives. The “MT-350” product is under our delicate design, which has fulfilled the ideal way of communications expressed on the slogan of “making wireless to wire” versus “making wire to wireless”. It can save your communication expense and bring you an unpredictable effort using this product.

## **2. Function Interpretation**

### **(1) Conversion of wire & wireless communication**

We can use MT-350 Mobile Trunk to apply conventional telephone set replacing cell phone to perform sending and receiving phone calls.

### **(2) Auto-select economic route**

From various settings, MT-350 will determine the calls connected through local PSTN Line or GSM on accordance of call numbers dialed therein, which can save phone-call fee as a favorable benefit.

### **(3) Through the connection towards local PSTN line, the phone calls will proceed with code-transfer dialing process. For example, when you dial “002”, MT-350 will transfer it to “006” and transmit the calls through the other fixed communication network systems.**

### **(4) Vocal volume modulating system**

In order to cooperate with different application environment, the Wizard is capable to modulate the vocal voice of phone.

### **(5) MVPN Function**

Provide MVPN routing according to the prefix of MVPN number for GSM carrier.

### 3. Parts Names

After opening the package, please check whether all parts attached to MT-350 Wizard are provided in the package. If there is any missing, please query the sales agent promptly to supplement for the insufficient parts. The parts on the list are specified below:

- (1) "MT-350" primary machine
- (2) Transformer AC-DC (110V AC – 12V DC) or (220V AC – 12V DC)
- (3) Phone connecting box
- (4) Antenna
- (5) This Operation Manual



(1)



(2)



(3)

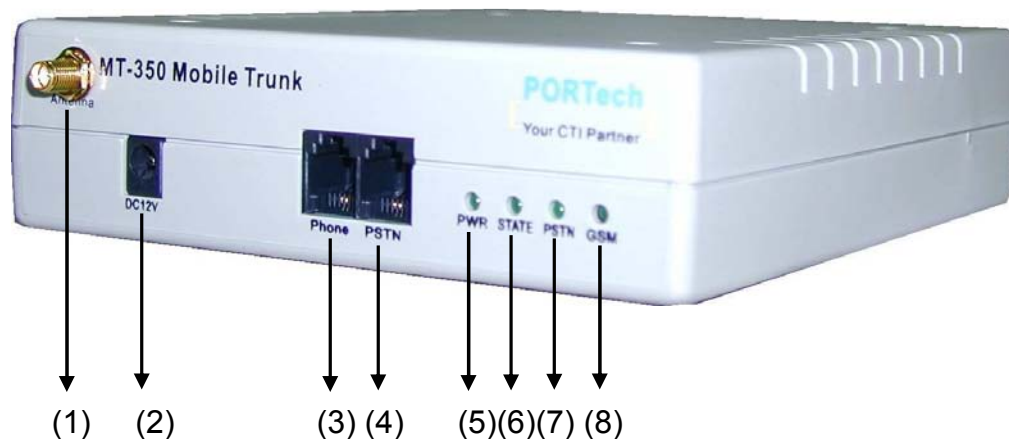


(4)

### 4. Dimension Drawing



## 5. Demonstration on Double Sides of Equipment



(1) Connecting seat of externally connected antenna.

(2) DC 12V: power input.

(3) PHONE: Telephone/switchboard connector; with standard RJ-11 USA type plug, connected to the Telephone Office loop of phone set or switchboard.

(4) PSTN phone jack : Central office line interface, standard RJ11 phone jack.

(5) PWR LED (Power Indicator)

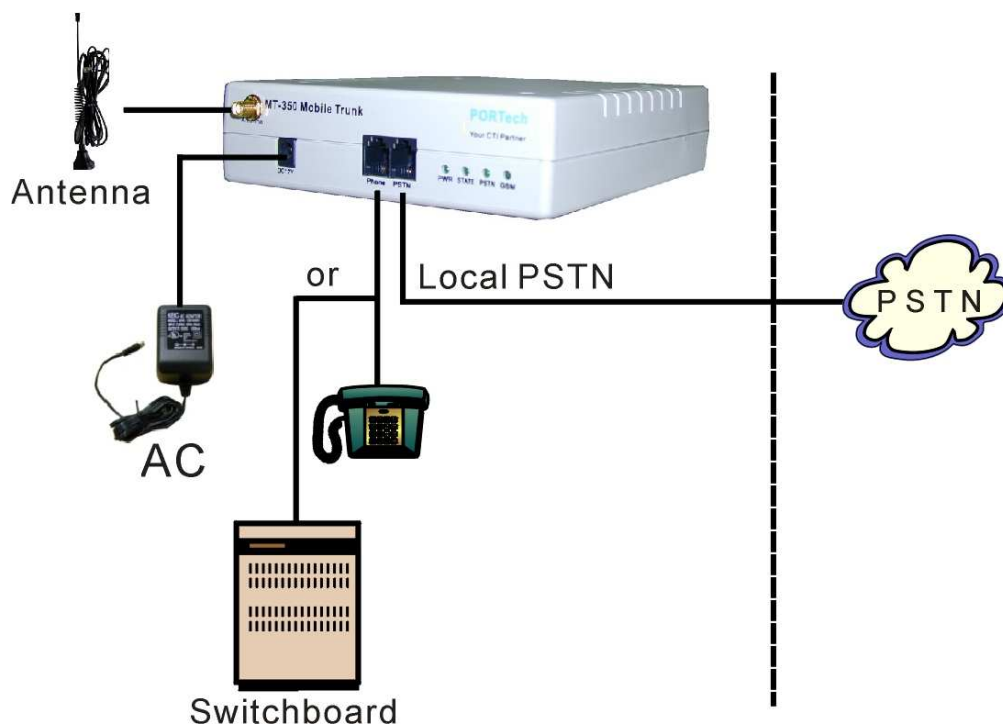
(6) STATE LED : Slow flashing during the initialization stage, light up when the phone set is picked up. Fast flashing during the GSM line in use. Flash timing indicates the RSSI(received signal strength indicator), 5 times per second for the strongest receiving, 1 time per second for the poorest receiving.

(7) PSTN LED : Flashing during the PSTN line in use.

(8) GSM LED : Fast flashing when the GSM channel is available, otherwise, slow flashing.

\*\* Insert the SIM card from the back (take off the slide first)

## 6. Install Line Connections



Wiring Diagram

- (1) Take apart your local PSTN connecting line from the phone or switchboard, and connect it to the LINE connecting slot of MT-350. If you use MT-350 to send and receive calls only, then you don't need to connect the local PSTN line.
- (2) Connect PHONE connecting slot to the inlet side (Telephone Office) of phone or switchboard.
- (3) Put in transformer power. The DC end connects to DC 12V of MT-350, and then the PW lamp on the front side of MT-350 should light up.
- (4) MT-350 will proceed with system detection after booting. Please connect the Line and Phone correctly before energizing it. If problem is found during the system operation, please take power source off first and process wiring task next.



## 7. Set the Allow-to-Dial Code

(1) Hold the phone and dial numbers following the order illustrated below:

**\*\*\*#nnnn#**: n means the code that allows sending calls out from GSM. Hang up the phone and the setting is thus completed. When the coding number is altered, follow the above steps to set up again.

**※ when nnnn is set to \* \*, it will close the calls-sending function from GSM.**

Format: **\*\*\*#** [waiting for confirming voice] (turn setting function on)

nnnn# [waiting for echo voice in responding]

nnnn# [waiting for echo voice in responding]

Where nnnn means the allow-to-dial code, which as **\*\*\*#0937**, **#0948#** are on behave of 0937- and 0948-; the code is dialed out from GSM.

Default setting =0, all call number starting with code "0" means allow-to-dial code.

## 8. Code Conversion Setting

Format: **####\*** [Waiting for confirming voice] (turn setting function on)

aaaa# [Waiting for echo voice in responding]

bbbb# [Waiting for echo voice in responding]

Where aaaa means original code, bbbb means converted code; the **####\*002#006#** means converting head codes 002- to 006- automatically.

We have defined this code dialing mechanism outputting through Telephone Office line system of PSTN. If we want to output through GSM, we can set the first code to **"\*"**, such as **####\*002#\*006#**, which means that MT-350 will auto-convert head codes 002- to 006- and dial out through GSM.

## 9. Cancel Code-Conversion

Format: **####\*** [Waiting for confirming voice] (turn setting function on)

**\*\*#** [Waiting for echo voice in responding]

is to cancel code conversion function.

---

## 10. Set Parameter

### (1) Set GSM dial-out code amount

Format: **\*#\*\*** [Waiting for confirming voice]

**71aabb#**

aa means dial-out code amount, bb have to be inputted in exactly identical to aa.

**Example:** **\*#\*\*711010#**, which means setting dial-out codes amount = 10. If correct, the MT-350 then will beep up once in response. If not correct, the MT-350 will beep up four times consecutively instead.

Default setting = 10

### (2) Polarity reversing function

Format: **\*#\*\*** [Waiting for confirming voice]

**510101#** is to turn the reversing function off,

**510202#** is to turn it on (default).

Default setting = 02

### (3) Definition of DTMF reversing signal

Format: **\*#\*\*** [Waiting for confirming voice]

**52aabb#**

In some regions or systems, DTMF reversing signals vary and can be defined by this function:

aa= 11 (\* TONE), 12(# TONE), 13(A TONE), 14(B TONE), 15(C TONE),  
00(D TONE)

bb needs conforming to aa.

Default setting = 15 (C TONE)

### (4) Limit of communicating time

Format: **\*#\*\*** [Waiting for confirming voice]

**61aabb#**

aa means the communicating time in the unit of min. ( 00-99), and will show alerting sound 30 sec ahead of hang-up. bb should be identical to aa by input. If setting to "00", it then means unrestricted.

**Example:** **\*#\*\*610505#**, which means that system will send out alert sound at the

communicating time of 4:30, and hang up it at about 4:55. If correct, the MT-350 will beep up once in response. If not correct, the MT-350 then will beep up four times consecutively instead.

Default setting = 00

(5)GSM function of dialing out the prompt voice

Format: \*#\*\* [Waiting for confirming voice]

530101# turn off prompt voice.

530202# turn on prompt voice (default).

Default setting = 02, turn on this function.

(6)When not connecting to Telephone Office line, GSM will provide the forced dial-out function

Format: \*#\*\* [Waiting for confirming voice]

550101# turn off function of forced dial-out.

550202# turn on function of forced dial-out (default)

Default setting =02, to turn on this function.

(7)Set up GSM extra dialing local code

When both GSM and PSTN dial local code, the difference between them is that GSM has to extra dial up local code whereas PSTN needs not. This function applies to the condition that when PSTN has been cut and user dials local phone No., system thus will add in local code automatically and dial out from GSM.

Format: \*#\*\* [Waiting for confirming voice]

63aabb#

aa means code limit. There are still certain restrictions when auto-adding local code, such as that the service or emergent phone calls need not to add extra code dialing action. This setting is that when the total phone number length inputted is shorter to the setting value, then MT-350 won't extra dial local code. bb means local code (2~8 digitals), it isn't contained in the original code while dialing out through GSM, and MT-350 will auto-add it in advance.

**Example:** \*#\*\*630604#, if the head code isn't "0" (04), and total code number isn't less than 6, then when dialing out form GSM it will dial "04" ahead

of the other code numbers. If correct, the MT-350 will beep up once in response. If not, the MT-350 then will beep up four times consecutively instead.

Default setting =00, to turn off this function.

**Note: If it isn't connecting to PSTN, then the phone won't dial out through GSM, in case not setting up this function and not passing through the checking number of allow-to-dial code.**

### (8) Sound volume modulation

21 aabb#

aa means vocal volume, which varies from 00-04, 00 is the bottom value and 04 is the peak one. bb should be externally inputted identical to aa.

**Example:** \*#\*210404#, it means that the vocal volume is set to the maximum value. If correct, the MT-350 will beep up once in response. And if not, the MT-350 then will beep up four times consecutively instead.

Default setting =04, it means that the maximum vocal volume is set up.

### (9) Restore default setting

Format: \*#\* [Waiting for confirming voice]

990909#,

the only act needed to follow is to reboot machine.

### (10) Set up extra dialing local-code to PSTN

Format: \*#\* [Waiting for confirming voice]

11aaaaa#

aaaaa means the digitals dialed out with extra codes can extend to 12 digitals.

**Example:** \*#\*111805#, it means that if the phone number is dialed out with two heading digitals of 02-08 through PSTN, it will automatically dial out 1805 in advance. If correct, the MT-350 will beep up once in response. If not correct, the MT-350 then will beep up four times consecutively instead.

Default setting: None.

### (11) GSM simulated echo-bell-sound function

Format: \*#\* [Waiting for confirming voice]

### 57aabb

It's the function of dialing out phone call from GSM and generates echo-bell-sound before starting to talk in the phone.

aa means echo-bell-sound time in a unit of 0.1 sec. ( 00-98).

bb needs to be inputted identical to aa. This function will disable if setting up to "00".

If setting up to "99", it won't have time limit on it.

**Notice:** that this echo function will be halt if there is actual echo sound, reply or vocal response occurred therein.

Default setting =00 (turn off this function).

### (12)GSM isn't ready, call will be forced to dial out from PSTN

Format: \*#\*\* [Waiting for confirming voice]

### 59aabb

While GSM isn't ready, the function will let the phone forcedly dial out from PSTN.

If aa is set to "01", it means that the call is not to dial out through PSTN and presented by the vocal signal of busy line.

If aa is set to "02", it means that the phone call is forced to dial out through PSTN.

bb needs to be inputted identical to aa.

**Notice:** that this echo function will be halt if there is actual echo sound, reply or vocal response occurred therein.

Default setting = 02 (forced to dial out through PSTN).

### (13)Supervisor Password Setting

Once the supervisor's password has been set, any one who wants to do function setting must pass the password verification. To set the supervisor's password :

Format : \*#\*\* (wait for confirming voice)

### 76aaaabbbb#

aaaa is the supervisor password range from 0000 ~ 9999

bbbb : should be the same as aaaa

after that, anyone who wants to do function setting must pass the authentication first.

\*#\*\*77aaaa# while aaaa is the supervisor's password.

And when the phone hangs up, the function setting is forbidden again.

To reset the supervisor's password and allow the function setting for anyone, press **\*#\*\*76\*\*#**

### (14) Input for PIN Code Request

If the PIN Code Request of the SIM card is ON, there are 4 short dial tone prompt when the operator picks up the phone. To enter the PIN Code, press **\*\*nnnn#** while nnnn is the PIN Code.

If the operator hears 8 short dial tone when picks up the phone, then the SIM card is locked.

## 11. Setting of Specific Call-Transfer **\*Dual band Only**

### (1) PSTN TO GSM

The MT-350 can receive calls from PSTN and send them out through GSM.

Format: **\*#\*\*** [Waiting for confirming voice]

**80nnnn#** [Waiting for echo voice in responding]

Where 80 are function codes, nnnn means the call number is to be dialed out.

To cancel this function, press **\*#\*\*80\*\*#**.

**Example:** **\*#\*\*800423210287#**, represents that PSTN send-in call can be dialed out to 0423210287.

### (2) GSM TO PSTN

#### (2.1) Setup GSM-to-PSTN assigned mode

This machine can receive calls from GSM and dial them out through PSTN.

Format : **\*#\*\*** (Waiting for confirming voice)

**81nnnn#** [Waiting for echo voice in responding]

Where 81 are function codes, nnnn means the call number is to be dialed out.

To cancel this function, press **\*#\*\*81\*\*#**.

**Example:** **\*#\*\*810423210287#**, represents that GSM send-in call can be dialed out to 0423210287.

At some circumstances it needs to add **"#"** in the last digital of PSTN number.

To input it, press **"#"**, and **"\*"** to certify the input.

**Example:** \*#\*810423210287\*#, it means dialing out phone call to 0423210287#

#### (2.2)GSM call-Transfer setting time to PSTN auto response

When GSM phone call is dialed out through PSTN, it doesn't have the responding signal in some practical applications and requires to use this function to auto-respond a few seconds later.

Format: \*#\* [Waiting for confirming voice]

82aabb#[Waiting for echo voice in responding]

Where 82 are function codes, aa represents time delay to auto- respond in the unit of 0.5 sec.

bb should be identical to aa.

**Example:** \*#\*821010#, it means that machine will auto-respond after 5 seconds.

**Example:** \*#\*820000#, it means that after call is dialed out, it can receive responding signal only when the other side of call makes corresponding signal.

Default value: 10 sec later to auto-respond it.

#### (2.3)DTMF definition of reversed signal

Format: \*#\* [Waiting for confirming voice]

52aabb#

In some zones or systems, various DTMF reversed signals can be defined by this function.

aa=11 (\* TONE), 12(# TONE), 13(A TONE), 14(B TONE),15(C TONE),  
00(D TONE)

bb should be identical to aa.

Default setting =15 (C TONE)

#### (3)GSM free transfer setup

##### (3.1)Setup GSM-to-PSTN free mode

Format : \*#\* (Waiting for confirming voice)

81\*\*\*\*#[ Waiting for prompt voice]

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Once the GSM-to-PSTN free mode has been set, all the incoming calls from GSM will be answered and prompt to enter password. If the password is correct, the calling party can hear the Bi tone, then he/she can dial out using the PSTN line.

To cancel this function, press **\*##\*81\*\*#**.

### (3.2)GSM-to-PSTN free mode password setup

Format : **\*##\*** (Waiting for confirming voice)

**83aaaabbbb#[** Waiting for prompt voice]

83 is the function code, aaaa is the password, bbbb should be the same as aaaa.

**Example:** **\*##\*8312341234#** means the calling party needs to enter 1234 for password authentication. Entering password has to be done in 30 seconds. If no password is required, press **\*##\*83\*\*#**

Default password : no password

### (3.3)Password prompt tone setup

Format : **\*##\*** (Waiting for confirming voice)

**84aabb#**

84 is the function code, bb should be the same as aa

aa=11 (\* TONE) , 12(# TONE), 13(A TONE) , 14(B TONE) , 5(C TONE) ,  
00(D TONE) , 16 No tone

Default value : 15 (C Tone)

## Remarks

Interpretation of echo-sound

[Command confirmed]: two beeps

[Setting is correct]: single beep

[Setting is error]: four consecutive beeps.

## 12. Short Code Setting

Allow to setup 100 sets of short code. Once the short code has been set (see

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function 31 below), user may press 00# ~ 99# for fast dialing. (\*0# ~ \*9# are also accepted and regards as \*00# ~ \*09#). The routing function applies to the setup number rather than the short code itself.

To enable/disable the short code function :

Format : \*#\*\* (wait for confirming voice)

30aabb#

aa : 01 for disable short code function

02 for enable short code function

99 clear all the numbers associated with the short codes

bb : should be the same as aa

To set the number for short code :

Format : \*#\*\* (wait for confirming voice)

31aabbbbb#

aa should be 2 digits ranges from 00 to 99 as the short code

bbbbbb : the number to be associated with the short code, max. 15 digits

**Notice!** : the function cod 99 (reset to factory setting) doesn't affect the short code number setting.

### 13. Call-Transfer Restriction Setting

Allow to setup 10 sets of number which are allowed to do call-transfer from mobile to PSTN. All calls from other numbers will transfer to phone set.

Restrict function setting

Format : \*#\*\* (wait for confirming voice)

36aabb#

aa : 01 means no restriction. All calls from mobile will be transferd to PSTN

02 restrict the numbers set by function 37(see as below)

99 clear all the restriction numbers

bb : should be the same as aa

Default setting : 01, all calls will be transferred.

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Restrict number setting

Format : \*#\*\* (wait for confirming voice)

37aabbbbb#

aa should be 2 digits ranges from 00 to 09 as restrict code

bbbbbb : the number to be associated with the restrict code, max. 15 digits

!!Note : the function cod 99 (reset to factory setting) doesn't affect the restrict code number setting

### 14. Echo Cancel Function

\*#\*\*20NNNN#

NNNN= 0101

Echo Cancel Enable

NNNN= 0202

Echo Cancel Disable

Default: 0202

### 15. Q&A

Q1: "PWR" lamp doesn't light up after power on ?

A : No power transmitted to power plug, or the transformer is mal-functioned.

Q2: No further vocal sound heard after picking up the phone ?

A : Phone line is disconnected or wrong wire connected.

Q3: Why the "Busy Tone" is heard directly while picking up phone ? (Not linked to PSTN)

A : GSM isn't ready yet, it might occur from the reasons of disconnecting antenna, not able to receive signals or equipment mal-functioned.

Q4: How to set up allow-to-dial number ?

A : Step I: connect a call receiver at phone.

Step II: lift up phone.

Step III: dial \* \* \* # , and set up all-to-dial code after hearing “beep” sound, then press # again to confirm.

If we need to set up more than one allow-to-dial codes, use # to separate them off.

Ex: \* \* \* # 0910 # beep 0920 # beep

It means that the allow-to-dial number is set to 0910 and 0920.

Step IV: hang up phone speaker and the setting process is over.

Q5: How to clear up the former setting of allow-to-dial ?

A : Each new setting will auto-cover over the former two settings.

Q6: How to quick-sending out codes ?

A : Press # after dialing out phone call, it will be sent out immediately.

Q7: how many allow-to-dial codes can this machine memorize ?

A : 50 sets.

Q8: Can we use MT-350 to fax or make data preparation ?

A : Negative, only can perform voice function exclusively.

Q9: After setting up allow-to-dial code, why we can't select the allow-to-dial route?

A : (1) Check if line (PSTN) is connected properly.

(2) The allow-to-dial function hasn't been set up yet, i.e., not to follow the correct setup procedure processing setup.

(3) This machine derives the line malfunction inspecting ability. If the line is out of order, it will connect to GSM route in a forced way (have to set up local code in advance).

Q10: If the MT-350 has no power on it, and its line connects to PSTN, can it dial out?

A : Yes, it could, yet is confined to dial out by PSTN only.

Q11: Can the phone make inspection on the echo signal of polarity reversal?

A : Yes, it could. When call is dialed out through GSM, the phone will make linear polarity reversal when it's called for echo response.

Q12: Does the machine deserve CLID function?

A : Yes, it does. When GSM sends in call signal, it will send the CLID out from phone by DTMF signal.

Q13: How to compulsorily dial out any number through GSM (VPN)?

A : We can press '\*' before dialing out, and dial phone number next to it. Finally, press '#' to finish this task.

## 16 Specification

- (1) Phone impedance: under DC 1k $\Omega$ , AC 600 $\Omega$  (exclude wire impedance).
- (2) Phone signal receiving level: -3dbm~-24dbm.
- (3) Phone signal time: 50~100ms.
- (4) Phone frequency error:  $\pm 1\%$ .
- (5) Feed voltage: 48V.
- (6) Power converter: Input:230VAC 50Hz 200mA , Output:12VDC,1000mA
- (7) GSM specification:
  - (7.1)GSM Frequency bands: Dual Band EGSM 900 and GSM 1800(GSM Phase 2+)
  - (7.2)GSM class: Small MS
  - (7.3)Transmit power:
    - Class 4(2W) for EGSM 900
    - Class 1(1W) for GSM 1800
  - (7.4)SIM card reader: External – connected via interface connector
  - (7.5)Antenna: 50 $\Omega$ antenna coaxial connector
  - (7.6)Temperature range:

Normal operation: -20°C to +55°C

Restricted operation: -25°C to -20°C and +55°C to 70°C

Storage: -40°C to +85°C

