

Tecom GSM FCT-Trunk Manual

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0. Document Control

0.1 Scope

The document is an installation operation manual of the product, FCT-Trunk. It specifies installation and user operations about FCT-Trunk.

0.2 Abbreviations

CID:	C aller I Dentification
CO:	C entral O ffice (Fixed Line Network)
CR Table:	C O Outgoing-Call R estricted T able
DL Table:	D ialing-Digit L ength T able
FCT:	F ixed C ellular T erminal
IMSI:	I nternational M obile S ubscriber I dentify
IP:	I nternet P rotocol
LCR:	L east C ost R outing
MA Table:	M O Outgoing-Call A llowed T able
MR Table:	M O Outgoing-Call R estricted T able
MCC:	M obile C ountry C ode
MNC:	M obile N etwork C ode
MO:	M O B ile (Mobile Network)
PBX:	P rivate B ranch E xchange
PDP:	P acket D ata P rotocol
PIN:	P ersonal I dentification N umber
PLMN:	P ublic L and M obile N etwork
PSTN:	P ublic S witch T elephone N etwork
SLT:	S ingle L ine T elephone
WLL:	W ireless L ocal L oop
RSSI:	R eceiver S ignal S trength I ndicator

PRODUCT CARE

- Please review the simple guideline below. Failure to comply with the guideline may be dangerous or illegal.
- All radio/wireless equipment may be subject to radio interference, which may affect the performance.
- The product may be installed and repaired by the qualified service personnel only.
- Do not keep the product near with tinder.
- The product might affect the operation of medial equipment in hospital. Please follow the regulations or rules in force.
- Do not expose the product in the environment with water, moisture, or duct.
- Do not expose the product at extreme high or low temperature. Exposing the product at that environment may reduce the life span of electronic material, cause the product damage, or degrade the product performance.
- Do not attempt to disassemble the product. Doing so may cause the damage of electronic material.
- Use the original accessories. Failure to do so may cause in performance degradation, fire, electric shock, or injury. Manufacturer assumes no responsibility with regard to the use of the non-original accessories.

1. INTRODUCTION

Tecom GSM FCT-Trunk is an advanced fixed GSM-cellular terminal. This product may allow fixed line PBX(or SLT) users to make calls or receive calls via GSM mobile network without re-setting the PBX system, changing the dialing behavior, and reducing PBX fixed line ports.

The product provides both GSM MO and fixed line CO ports. With built-in routing feature, it automatically routes the calls to either GSM network, or fixed line network. And it may be easily and cost-effectively deployed, once the route-selection policy is determined via pre-programmed.

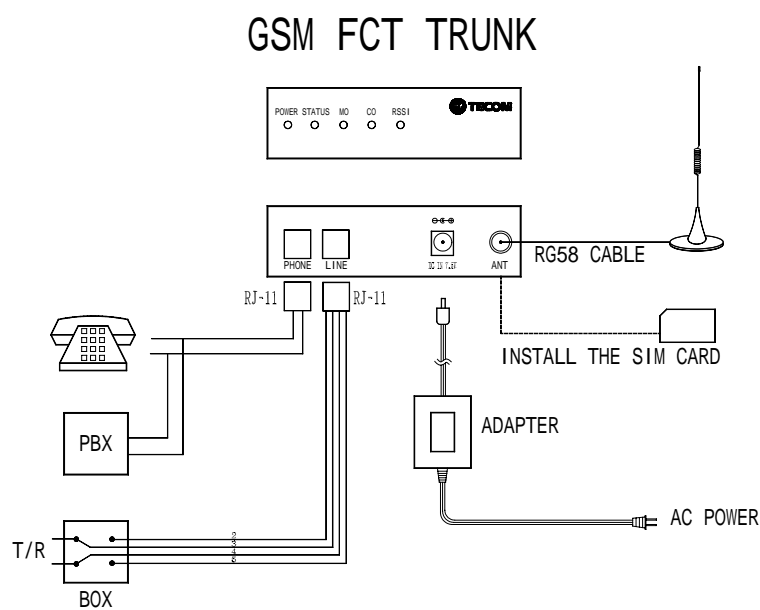
The GPRS is also supported (optional). This multi-function product may be used as a fixed wireless terminal under GSM-based WLL network, or/and can be used as cost saver, or a service provider selector among all GSM network and fixed line networks.

Main features of Tecom GSM FCT-Trunk :

- √ Support dual-mode GSM(900/1800MHz, or 850/1900Mhz), and fixed line service.
- √ Support GPRS (optional).
- √ RJ11 and RS232 interfaces, plug-play installation.
- √ Provide back-up battery contact.
- √ Programmable routing selection and LCR functions.
- √ Customized routing policy.
- √ Provide SIM lock function.
- √ Provide fast dialing function.
- √ MO/CO call waiting.
- √ Provide polarity reversal(PR) signal.
- √ Support DTMF/FSK Caller ID service.
- √ Support DTMF/Pulse dialing.
- √ Fast profile setting for LCR tables and routing prefix tables.
- √ Programming via regular telephone, or PC.
- √ Remote programming capability.

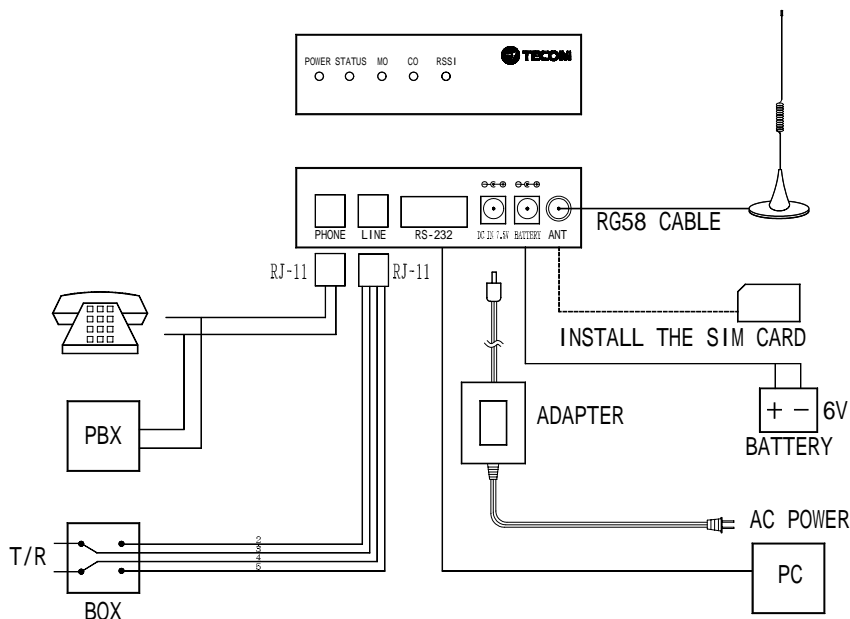
2. INSTALLATION

1. Standard



2. RS232 Option

GSM FCT TRUNK



Specification:

1. Operating temperature 0° C...+55° C
2. Storage temperature -40° C...+ 70° C
3. Operating humidity 20... 70%
4. Storage humidity 5....95%
5. SIM card small
6. Operating frequency 890-960MHz and 1710-1880MHz
7. RF power 2W(900MHz) and 1W(1800MHz)
8. Antenna impedance 50ohm SMA Female
9. DC input 7.5V/1A
10. Power consumption 4W max ;Operation:0.5A,Standby:130mA
11. SLIC
 - Power -48V +/- 5V
 - Loop Current 23mA
 - Ring voltage 45Vrms 20Hz
 - REN: >= 3
 - Polarity reverse /Metering pulse Generator 12KHz/16KHz
 - V23/Bell 202 FSK Generator (CID)
 - DTMF Decoder/ Encoder
12. Line specification meet PSTN
 - DTMF level: LOW= -8dBm,HIGH=-6dBm +/- 2dB
13. Dimension 163x115x40 mm
14. Weight 600g
15. Option Battery backup failure (6V)
16. Option RS-232 for GSM PC fax modem and wireless internet

2.1 SYSTEM INSTALLATION

1. Insert the SIM card first.

☛ **Warning : to avoid the product damaged, please insert SIM card before power-on, and power-off first if it is necessary to take SIM card out of the product.**

2. Install the antenna. Be sure the antenna connector is fixed properly. The guideline to install the antenna is listed below:
 - (1) It's better to place the antenna near to the window that is close to radio base station.
 - (2) Do not put the antenna at some place with obstruction.
 - (3) Do not put the antenna holdfast-disk on high power equipment such as air conditioner, microwave, computer, ..etc.
 - (4) It's better to put the antenna much far way from phone or PBX, to avoid any interference.
3. Connect to PSTN CO line to the "LINE" of GSM FCT-Trunk.
4. Connect to the phone(DTMF type) or PBX to the "PHONE" of GSM FCT-Trunk. The specification of PHONE end(When LINE end is not connected to CO) is:
 - (1) Voltage – $48V \pm 5V$
 - (2) Ringing Voltage $45V_{rms} 20Hz$
 - (3) $REN \geq 3$
 - (4) The supported distance(between GSM FCT-Trunk and phone/PBX): 1Km
5. Connect to the power line of power adapter to "DC IN 7.5V" of GSM FCT-Trunk, and plug the power adapter into power outlet.
6. The operation temperature ranges from $0^{\circ}C \sim 55^{\circ}C$.
7. Once the power is shut down, the system remains the PSTN CO line workable.
8. The external battery will be charged while used. The acid-lead battery of 6V/3-5Ah is recommended.

☛ **Warning : be sure to connect with correct battery polarity.**

2.2 INSTALLATION TEST

1. Make a call
 - (1) Will hear a dial tone after the handset is lifted (may hang up, and lift the handset later when hearing a busy signal).
 - (2) Dial the number. The call will be gotten through after 5-6 seconds (Pressing "#" after the number dialed may speed the dialing process).
2. Receive a call
May answer the call after lifting the handset when hearing a ring.
3. CID display
Need to work with CID enabled SLT or PBX. DTMF or FSK format is supported. The default is set at DTMF.
4. PBX
The operation remains same after the product is installed.
5. For the GPRS application, please refer to section 4.6.

☛ **Note :** During the process of making/receiving a call, the installer

may also tell if the product is installed correctly from the status lamp. Please refer to section 3.

- ☛ Note : Some of PBX will do the polarity detection during installation. If it is found not to be able to make a C.O. call, it may be due to the wrong polarity on the C.O. line. Please revise the polarity of the line to try again.

3. STATUS LAMP

The led lamps of GSM FCT-Trunk may show the operation status:

LED Lamp	Status	Event
POWER	steady on	Power is on and normal.
	slow flash	Battery strength is low (when external battery is provided).
	off	Power is off or abnormal. Please check the power.
STATUS	steady on	GSM MO network is not linked. Or SIN card is not detected. Please re-set the power, if SIM card is inserted and the lamp is steady on. If it remains after the product is re-powered, the GSM FCT-Trunk might be defective.
	slow flash	GSM MO network is linked normally.
MO	steady on	GSM MO line is engaged.
	slow flash	GSM MO network is at standby.
	fast flash	Incoming MO call is ringing.
	high-speed flash	PIN code of SIM is failed.
	off	GSM transceiver is failed. Failed to connect to GSM MO network.
CO	steady on	PSTN CO line is engaged.
	slow flash	PSTN CO line network is at standby.
	fast flash	PSTN CO call is ringing.
	off	Relay Switch is set at GSM MO mode.
RSSI	steady on	RSSI (-75dbm ~ -51dbm): good
	Slow flash	RSSI (-87dbm ~ -77dbm): average
	fast flash	RSSI (-99dbm ~ -89dbm): poor
	off	RSSI (-113dbm ~ -101dbm): bad

4. OPERATION

4.1 *STANDBY*

When the system is at normal standby, the led lamps will show:

- ✓ POWER steady on: Power is normal.
- ✓ STATUS slow flash: GSM network is linked normally.
- ✓ MO slow flash: GSM MO network is at standby.
- ✓ CO slow flash: PSTN CO network is at standby.
- ✓ RSSI steady on : Good GSM network

4.2 *RECEIVE A CALL*

Lift the handset to answer the call when hearing a ring.

4.2.1 RECEIVE A CO CALL

When an incoming CO call is ringing(CO lamp will change the status from slow flash to fast flash), called party may lift handset to answer the phone(CO lamp will change the status from fast flash to steady on).

4.2.2 RECEIVE A MO CALL

When an incoming MO call is ringing(MO lamp will change the status from slow flash to fast flash), called party may lift handset to answer the phone(MO lamp will change the status from fast flash to steady on).

4.3 *MAKE A CALL*

Be sure the product is at normal standby before make a call. There are two ways to complete the call dialed out:

1. Detection dialing: The product will automatically send out the number after detecting the complete dialing which caller makes.
2. Speed dialing: The product will send out the number immediately once caller party press “#” to end the phone number dialed(Note: The “#” will not be sent out from the product in the case).

☛ **Warning :** The speed dialing key “#” will take effect only for caller party to press “#” after a minimum of three dialed-out digits.

4.3.1 MAKE A CO CALL

When caller makes a dial after lifting the handset and hearing the dial tone, it will be making a CO call if CO lamp changes the status to steady on. To end the call, just hang up.

4.3.2 MAKE A MO CALL

When caller makes a dial after lifting the handset and hearing the dial tone, it will be making a MO call if MO lamp changes the status to steady on. To end the call, just

hang up.

☛ **Warning : For an outgoing call routed to GSM MO network, caller will hear a Di Di alert tone.**

4.4 CALL WAITING

The call waiting is disabled at default. To enable this function, please see section 5.2.2.4 about the setting.

4.4.1 CALL WAITING FOR A MO CALL

When user is engaged in a CO call(CO lamp shows steady on), if an incoming MO call is in(MO lamp shows fast flash), user will hear Do Do alert tone(for each 10 seconds). In the case, user may place the CO call on hold, and answer the incoming MO call via pressing "FLASH"(a hook-switch signal). And user may switch back to answer the CO call, and place the MO call on hold via pressing "FLASH" again.

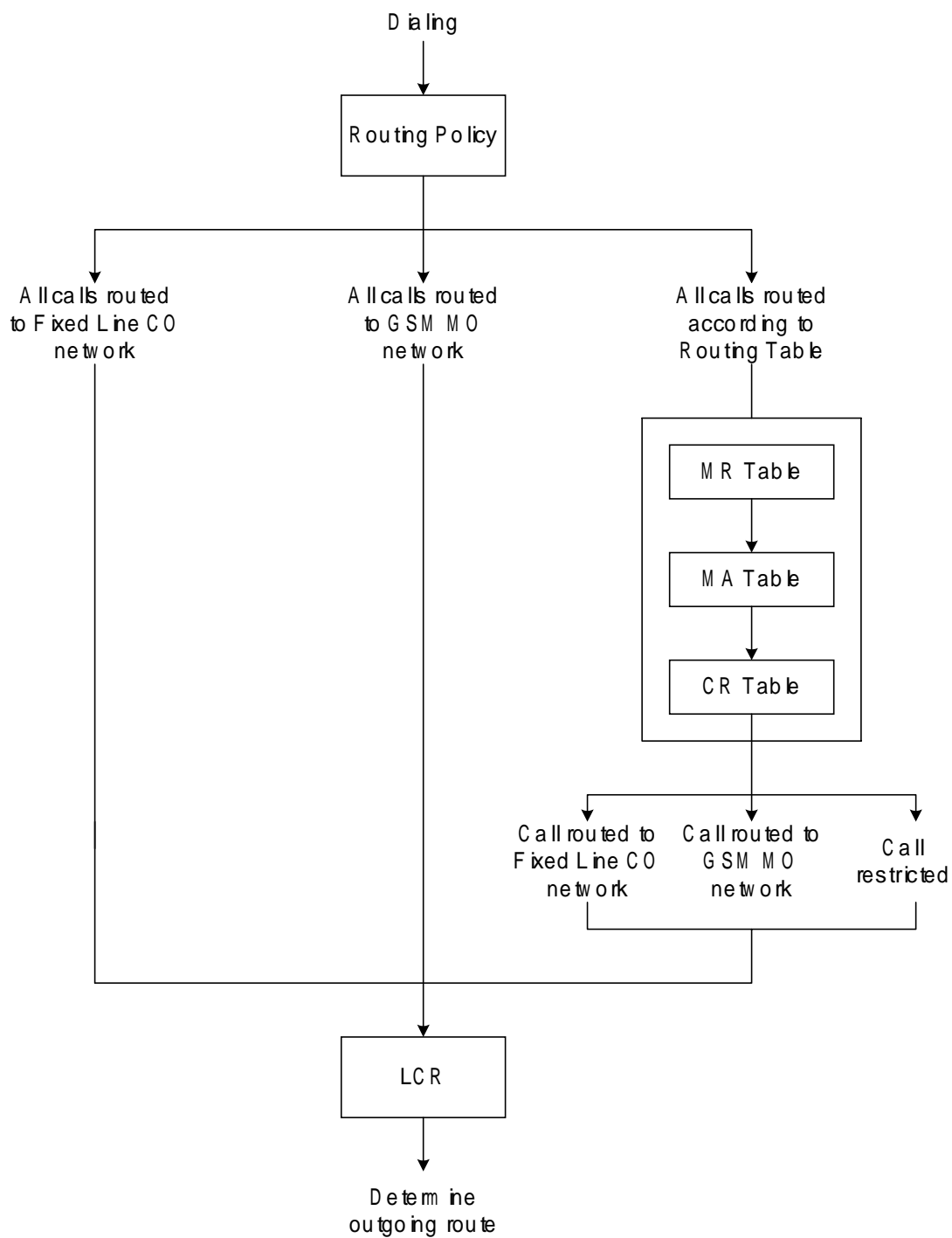
4.4.2 CALL WAITING FOR A CO CALL

When user is engaged in a MO call(MO lamp shows steady on), if an incoming CO call is in(CO lamp shows fast flash), user will hear Do Do alert tone(for each 10 seconds). In the case, user may place the MO call on hold, and answer the incoming CO call via pressing "FLASH". And user may switch back to answer the MO call, and place the CO call on hold via pressing "FLASH" again.

4.5 ROUTING POLICY AND LCR(LEAST COST ROUTING)

When caller make an outgoing call, FCT-Trunk will route the call to either fixed line CO network, or GSM MO network. User does not need to change the dialing behavior. The outgoing route is determined by FCT-Trunk with pre-programmed routing mechanism.

The flow chart below shows the routing mechanism of FCT-Trunk:



4.5.1 ROUTING POLICY

Routing Policy will determine one of three main routes: all calls routed to fixed line CO network, all calls routed to GSM MO network, and all calls routed according to Routing Table. The default is set to Routing Table. If all calls routed to GSM MO networks is set, all the calls no matter what users place will be routed to GSM MO network. If all calls routed to fixed line CO networks is set, all the calls no matter what users place will be routed to fixed line CO network.

4.5.2 ROUTING TABLE

Routing Table consists of MO outgoing-call Restricted Table(MR Table), MO outgoing-call Allowed Table(MA Table), and CO outgoing-call Restricted Table(CR Table). The restricted, or/and allowed prefixes of phone numbers are defined in the tables. Once user make a call, FCT-Trunk will check the prefix of phone number dialed, in MR Table first, MA Table, then CR Table, to determine a route for a outgoing call. The following table shows the routing rule according to Routing Table:

MR Table	MA Table	CR Table	Route dialed out
Yes	X	Yes	Restricted
	X	No	Fixed Line CO
No	Yes	X	GSM MO
	No	Yes	GSM MO
		No	Fixed Line CO

"X" : Discarded

4.5.3 LCR(LEAST COST ROUTING)

After the route is determined upon the Routing Policy, FCT-Trunk may change the prefix according to next LCR Table to select one of GSM MO networks or fixed line CO networks service providers.

The table below is an example to show the setting for LCR Table:

Prefix Range		Delete Digit (Length)	Transfer
From	To		
00	00	3	006
04	08	0	**1807
1806	1809	4	1806
022	028	0	1806

FCT-Trunk will check the prefix of phone number dialed, then delete the digits and add the transfer digits according to its Prefix Range in LCR Table. Afterward, the modified phone number will be sent out via the previous determined route(either GSM MO network or fixed line CO network).

LCR operation rule:

(1) Prefix From/To check rule:

The prefix dialed is checked according to From/To Prefix Range digit by digit from the beginning digit. The value of each digit of "To Prefix" should not be set smaller than that of each digit of "From Prefix" digit by digit. If a prefix range of "047" ~ "052" needs to be set, it can be done via setting From/To Prefix of both 047/049(Prefix Range: 047, 048, 049) and 050/052(Prefix Range: 050, 051, 052). The numbering from small to large is 0 , 1 , 2 , 3 , \ , \ , \ , 9 , * , #.

- (2) After checking the prefix range, FCT-Trunk will delete a certain digit(s), according to associated "delete digit length", of dialed number from the beginning digit.
- (3) Then, FCT-Trunk will insert "Transfer Digit" at the beginning of number to be sent out, If Transfer is set starting with "*", "Transfer" will be inserted after the first digit. If Transfer is set starting with "**", "Transfer" will be inserted after the second digit.....and so on.

Example:

From Prefix: 04
To Prefix: 08
Delete Digit: 0
Transfer: **1807

If caller dials "0412345678" , the "04180712345678" will be sent out from GSM FCT-Trunk after adjusted via LCR.

4.6 GPRS(optional)

FCT-Trunk may support GPRS service provided by GSM MO operator.

【Operation】

Step 1: Connect FCT TRUNK(RS232 data port) to Windows-based PC.

Step 2: Refer to Section 5.2.2.1 to set **GSM RS232 Switch** at 1.

Step 3: Set GSM FCT-Trunk Configuration by using a terminal program such as Hyperterminal in PC:

(1) Select PC baud rate at 9600 bps

(2) Enter PDP(Packet Data Protocol) command:

at+cgdcont=1,"IP","Access Point Name"

Note: Access Point Name, provided by GPRS service operator, is a string parameter used to select the gateway GPRS Support Node.

(3) Enter the command for the minimum quality of service:

at+cggreq=1,0,0,3,0,0

(4) Set GSM FCT-Trunk baud rate at 115200 bps:

at+ipr=115200

(5) Close the terminal program.

Step 4: Add new Modem, FCT-Trunk, in PC:

Start/Settings/Control Panel/Modem/Add

Note: Click Standard 19200 bps Modem if the manufacturer/model of new modem is requested while in setting.

Step 5: Set-up a Dial-Up Networking Connection, in PC:

Start/Programs/Accessories/Communications/Dial-Up Network/Make New Connection

Note: Select the Standard 19200 bps Modem, set the baud rate at

115200 bps, and the telephone number at *99***1#.

Step 6: Click the created Dial-UP Networking Connection to connect the GPRS network.

Note: Once FCT-Trunk is added in the modem list, and a Dial-Up Network Connection is built at first time, user may skip above Step 4 and 5 while using GPRS again.

5. PROGRAMMING

5.1 ENTER PROGRAMMING MODE

To program the product is possible via following three methods:

1. Local Single Line Telephone

User may program the setting via phone connected to RJ11 phone port of FCT-Trunk. Be sure to connect the PSTN CO line to Line port of GSM FCT-Trunk prior to programming.

【Operation】

Step 1: Lift the handset.

Step 2: Press “* # * * * 8326 #”.

(It is successful to enter programming mode if a Di Di alert tone is heard.)

Step 3: Press the programming command and parameters.

(For the detailed programming, please refer to Section 5.2.)

【Note】

8326 is a password to enter programming mode at default.

2. Remote Programming

User may program the setting from a remote telephone terminal phone via GSM MO network.

【Operation】

Step 1: Dial out to FCT-Trunk

Step 2: Press “* # * * * 8326 #” when called party picks up the call at FCT-Trunk

(It is successful to enter programming mode if a Di Di alert tone is heard.)

Step 3: Press the programming command and parameters

(For the detailed programming, please refer to Section 5.2.)

【Note】

Called party may hang up the phone during the programming period after the programming mode is entered.

3. PC

User may also program the setting from a local PC via a serial RS232 cable. The programming jig and PC programming software are required for this PC setting. Please refer to the manual of FCT-Trunk PC program for the details if necessary.

5.2 PROGRAMMING DESCRIPTION

【Setting Format】

* # CC # P1 * P2 * P3 * P4 * P5 * #

【Definition】

* : It is used to separate the parameter.

: it is used to end the setting.

CC : The command item is programmed to two digits.

P1、 P2、P5 : Those are the parameters to be inputted.

☛ **Warning :** A Di confirmation tone will be heard if the setting is successfully programmed; otherwise, a Di Di error tone will be heard.

5.2.1 DIALING PROCESS SETTING

This section describes Table Setting and General Setting listed below:

Table Setting:

- Routing Table (MR Table, MA Table and CR Table)
- DL Table
- LCR Table

General Setting:

- Routing Policy
- Least Digits
- MO Failure to CO

5.2.1.1 MO OUTGOING-CALL RESTRICTED TABLE(MR TABLE)

MR Table is used to set the prefix restricted to dial-out via GSM MO network.

【Operation】

Add the prefix entry: Press * # 41 # 1 * **Prefix**(1~6 digits) #

Delete prefix entry: Press * # 41 # 0 * **Prefix** #

Delete all entries: Press * # 41 # 99 #

【Note】

1. If set via PC, the prefix may contain the * and # , and the number of 0~9.
2. Up to 28 prefix entries may be set in MR Table.

5.2.1.2 MO OUTGOING-CALL ALLOWED TABLE(MA TABLE)

MA Table is used to set the prefix allowed to dial-out via GSM MO network.

【Operation】

Add the prefix entry: Press * # 40 # 1 * **Prefix**(1~6 digits) #

Delete prefix entry: Press * # 40 # 0 * **Prefix** #

Delete all entries: Press * # 40 # 99 #

【Note】

1. Appendix C is MA Table at default.
2. If set via PC, the prefix may contain the * and #, and the number of 0~9.
3. Up to 28 prefix entries may be set in MR Table.

5.2.1.3 CO OUTGOING-CALL RESTRICTED TABLE(CR TABLE)

CR Table is used to set the prefix restricted to dial-out via fixed line CO network.

【Operation】

Add the prefix entry: Press * # 42 # 1 * **Prefix**(1~6 digits) #

Delete prefix entry: Press * # 42 # 0 * **Prefix** #

Delete all entries: Press * # 42 # 99 #

【Note】

1. If set via PC, the prefix may contain the * and #, and the number of 0~9.
2. Up to 12 prefix entries may be set in CR Table.

5.2.1.4 DIALING-DIGIT LENGTH TABLE(DL TABLE)

This DL Table is used to set the length of dialing-digit according to the prefix. FCT-Trunk will send out the number right after it detects the number dialed is complete according to DL Table. Take the following DL Table for example:

Entry	Prefix		Length
	From	To	
1	02	02	10
2	03	03	9
3	042	043	10

Once caller dials 035775141, FCT TRUNK will check the prefix, 03, to know the length of complete digits is 9, and will send out the phone number, 035775141, immediately when it detects the ninth digit, 1, is dialed.

【Operation】

Add prefix entry: Press * # 43 # 1 * **Prefix From**(1~4 digits) * **Prefix To**(1~4 digits) * **Length**(1~99) #

Delete prefix entry: Press * # 43 # 0 * **Prefix From** * **Prefix To** #

Delete all entries: Press * # 43 # 99 #

【Note】

1. If set via PC, the prefix may contain the * and #, and the number of 0~9.
2. Up to 14 prefix From/To entries may be set in DL Table.

5.2.1.5 LCR TABLE

LCR Table is used to set the digits(Transfer) which be added on(or inserted into) the number dialed. GSM FCT-Trunk may change the prefix to select a service provider for a least cost routing according to the pre-programmed LCR Table.

Example:

Prefix (From)	Prefix (To)	Delete Digit (Length)	Transfer	Number dialed (example)	Number adjusted
02	03	0	1807	035775141	1807035775141
04	08	0	**1807	041234678	04180712345678
002	002	3	005	002861065032280	005861065032280

【Operation】

Add prefix entry: Press * # 44 # 1 * **Prefix From**(1~6 digits) * **Prefix To**(1~6 digits) * **Delete Digit**(Length 0~10) * **Transfer**(0~10 digits) #

Delete prefix entry: Press * # 44 # 0 * **Prefix From** * **Prefix To** #

Delete all entries: Press * # 44 # 99 #

【Operation】

1. If set via PC, the prefix From/To or/and Transfer may contain the * and #, and the number of 0~9.
2. After deleting a certain digit(s), the digits of Transfer will be added on at the beginning of the number to be sent out. If Transfer is set starting with "*", Transfer will be inserted after the first digit. If Transfer is set starting with "**", Transfer will be inserted after the second digit.....and so on.
3. Up to 12 prefix From/To entries may be set in LCR Table.

5.2.1.6 ROUTING POLICY

It is to set the policy for an outgoing-call route from FCT-Trunk.

【Operation】

Press * # 45 # **Routing Policy**(0~2) #

【Note】

Routing Policy:

- 0: The route is determined according to Routing Table(MR, MA, and CR Tables).
The Routing Policy is set at default, 0.
- 1: All the calls are routed to GSM MO network.
- 2: All the calls are routed to fixed line CO network.

5.2.1.7 LEAST DIALING-DIGIT LENGTH SETTING (LEAST DIGITS)

This is to set the least length of dialing digits. If caller dial a number less than "Least Digits", the number will not be sent out from GSM FCT-Trunk.

【Operation】

Press * # 46 # Least Digits(0~6) #

【Note】

1. The Least Digits, 3, is set at default.
2. There is no length limit if a 0 is set at Least Digits.

5.2.1.8 MO FAILURE TO CO

This is to set the outgoing call to be automatically routed to fixed line CO network if GSM MO network is failed. The setting is activated only the Routing Policy is set at Routing Table.

【Operation】

Press * # 25 # **MO FAILURE TO CO**(0/1) #

【Note】

0: disable at default 1: enable

5.2.2 CALL HANDLING SETTING

5.2.2.1 GSM RS232 Switch

This is to set the RS232 loop of FCT-Trunk, while at standby, to either internal device(host), or external DTE device(such as PC). GSM RS232 Switch must be set at 0 in all cases except set at 1 for GPRS. Once the system is set for GPRS, FCT-Trunk is unable to make GSM voice call.

【Operation】

Press * # 47 # **GSM RS232 Switch**(0/1) #

【Note】

- 0: RS232 loop is connected to internal device of FCT-Trunk(host). The default is set at 0.
- 1: RS232 loop is connected to external DTE device(such as PC).

5.2.2.2 RELAY SWITCH

This Relay Switch mechanism is used to set the operation under the modes of either MO network or MO/CO networks. The Relay Switch must be set to MO network, if there is no CO line connected to FCT-Trunk, or not workable for some troubles.

【Operation】

Press * # 48 # **Relay Switch**(0/1) #

【Note】

1. 0: set to CO/MO network at default, 1: set to MO

5.2.2.3 MO RECEIVING VOLUME

This is to set the receiving volume from GSM MO network.

【Operation】

Press * # 49 # **MO Receiving Volume**(0~7) #

【Note】

4 is the default. 0 is the lowest. And 7 is the highest.

5.2.2.4 MO TRANSMITTING VOLUME

This is to set the transmitting volume to GSM MO network.

【Operation】

Press * # 78 # **MO Transmitting Volume**(0~7) #

【Note】

3 is the default. 6 is the lowest, and 5 is the highest. (6->7->0->1->2->3->4>5).

5.2.2.5 CALL WAITING

This function is to set the on/off of Caller Waiting between MO call and CO calls.

【Operation】

Press * # 50 # **Call Waiting**(0/1) #

【Note】

1. 0: disable(default), 1: enable
2. If the function is disabled, user can not receive the MO(or CO) call while user is engaged in a CO(or MO) call. And the caller placing the MO(or CO) will hear the busy tone.

5.2.2.6 CALLER ID TYPE

This is to set the type of caller ID which phone(or PBX) may receive for a MO incoming call.

【Operation】

Press * # 51 # **Caller ID Type** #

【Note】

0: disable
1: DTMF(default)
2 * 0: FSK Bell 202
2 * 1: FSK V23

5.2.2.7 DIALING TYPE

This function is to set the dialing type of a CO call sent out from FCT-Trunk.

【Operation】

Press * # 52 # Dialing Type(0/1) #

【Note】

0: DTMF(default)
1: Pulse

5.2.2.8 Polarity Reversal(PR)

For a MO outgoing-call, FCT-Trunk may send the polarity reversal signal to the phone(or PBX), connected to FCT-Trunk, once called party hangs off to answer the call or hangs up to end the call.

【Operation】

press * # 54 # PR(0/1) #。

【Note】

0:disable(default), 1: enable

5.2.2.9 RINGER

This function is to set the frequency, and on/off time of FCT-Trunk ringer to work with the connected phone(or PBX) for a MO incoming-call.

【Operation】

Press * # 55 # **Frequency * On Time * Off Time** * #

【Note】

1. Frequency(Hz): It could be 10, 20, 25, 50, or 100. The default is 20.
2. On Time(second): The period can be set from 1 to 4. The default is 1.
3. Off Time(second): The period can be set from 1 to 4. The default is 4.

5.2.2.10 MO OUTGOING-CALL PROMPT

This function is to set FCT-Trunk to provide the prompt, DiDi, for a MO outgoing call.

【Operation】

Press * # 56 # **MO Prompt**(0/1) #

【Note】

- 0: disable
- 1: enable(default)

5.2.2.11 CO FLASH ACTIVE

This is used to disable or enable the flash function for CO network.

【Operation】

Press * # 57 # **CO Flash Active**(0/1) #

【Note】

- 1. 0: disable(default), 1: enable
- 2. No matter what is set, CO Flash Active will be enabled when Call Waiting function of FCT-Trunk is enabled.

5.2.2.12 PULSE DETECTION

This function is set the pulse detection for FCT-Trunk to accept the pulse dialing from the phone(or PBX) connected to. If it's enabled, FCT-Trunk may accept pulse dialing beside of DTMF dialing. If it's disabled, FCT-Trunk will accept DTMF dialing only.

【Operation】

Press * # 59 # **Pulse Detection**(0/1) #

【Note】

- 0: disable(default)
- 1: enable

5.2.2.13 METERING PULSE (optional)

This is to set the frequency of metering pulse at either 12KHz or 16KHz.

【Operation】

Press * # 53 # **Metering Pulse**(0~2) #

【Note】

- 0: disable(default)
- 1: enable at 12KHz metering pulse
- 2: enable at 16KHz metering pulse

5.2.3 TIME SETTING

5.2.3.1 INTER-DIGIT TIME

The Inter-Digit Time is a waiting time limit for FCT-Trunk to receive each digit from the phone(or PBX). If FCT-Trunk does not receive the further digit within this time limit, it will end the receiving, and immediately send out the number received

already.

【Operation】

Press * # 60 # **Inter-Digit Time**(2~30) #

【Note】

The default is 5 seconds. The interval(second) can be set from 2 to 30.

5.2.3.2 FLASH DETECTION TIME

FCT-Trunk will detect the Flash via this time interval mechanism including lower bound interval and upper bound interval. If the Flash-on time interval is less than lower bound time interval, FCT-Trunk will accept the Flash. If the Flash-on time interval is longer than upper bound time interval, FCT-Trunk will end the call.

【Operation】

Press * # 61 # **Lower Bound Time**(10~140) * **Upper Bound Time**(20~150) #

【Note】

1. Unit: 10 milliseconds
2. The default Lower Bound Time is set at 20(20x10 = 200ms).
3. The default Upper Bound Time is set at 80(80x10 = 800ms).
4. The Lower Bound Time should be less than Upper Bound Time.

5.2.3.3 TALK WARNING TIME

FCT-Trunk will invoke a warning Du tone when an outgoing-call lasts over the time limit. And afterwards, a warning Du tone will be invoked for every 30 seconds if outgoing-call lasts.

【Operation】

Press * # 62 # **Talk Warning Time**(0~60) #

【Note】

The time limit range is between 1 and 60 (minutes), and it could be set at 0 for without warning tone. The default is set at 0.

5.2.3.4 TALK TIME

This function is to set the time limit to end the outgoing-call. FCT-Trunk will invoke an alert tone at 10 seconds before the time limit, and will end the outgoing-call at talk time limit.

【Operation】

Press * # 63 # **Talk Time**(0~255) #

【Note】

The Talk Time limit can be set at any between 1 to 255 (minutes), and it could be set

at 0 for without time limit. 0 is set at default.

5.2.3.5 BUSY TONE TIME

This is to set the time interval of busy tone. FCT-Trunk will invoke a busy tone for the designated interval if user lifts the handset without dialing any digits within Inter-Digit Time, or user dials the phone number which is restricted.

【Operation】

Press * # 64 # **Busy Tone Time**(0~180) #

【Note】

The time interval can be set at any between 1 and 180 (second), and it could be set at 0 for disable. 30 is set at default.

5.2.3.6 SIREN TONE TIME

This is to set the time interval of siren tone which will be invoked while in any wrong conditions.

【Operation】

press * # 65 # **Siren Tone Time**(0~180) #

【Note】

The time interval can be set at any between 0 and 180 (second). 30 is set at the default.

5.2.3.7 RING ABANDON TIME

This is to set the time interval of ring-off for detection. GSM FCT-Trunk will detect the ring-off for an incoming call, and abandon the incoming call if the ring-off lasts longer than this time interval.

【Operation】

Press * # 66 # **Ring Abandon Time**(5~10) #

【Note】

The time interval can be set at any between 5 and 10 (second). The default is set at 6.

5.2.3.8 CO CALL FLASH TIME

This is to set the flash timing, flash duration and call delay for CO call flash. FCT-Trunk will, before dialing out a CO call, make a flash and delay to avoid the disconnection from CO network if user does not complete the dialing. Take following setting for example:

The setting, * # 67 # 13 * 100 * 40 #, means that if users do not complete a CO call within 13 seconds, FCT-Trunk will make 1 second flash to avoid the disconnection

from CO network, then dialing out the CO call after a 400 milliseconds of delay.

【Operation】

Press * # 67 # **Flash Timing** * **Flash Duration** * **Call Delay** #

【Note】

1. Flash Timing(second): It could be set at 0 to disable, 1 to always make a flash before dialing out, and 8~25 for 8 seconds~25 seconds
The default is set at 13.
2. Flash Duration(10 milliseconds): It could be set at 0, 60, 100, 150, 200, 250, or 300. The default is set at 100 (1 second).
3. Call Delay(10 milliseconds): It could be set at 20, 20, 40, 50, 60, 70, 80, 90, 100, 120 or 150. The default is set at 40 (40 milliseconds).

5.2.4 SYSTEM SETTING

5.2.4.1 PLMN POLICY(SIM LOCK)

This function is used to enable/disable the lock for a designated MO network service provider. This function is optional and must be customized for GSM FCT-trunk to check both MCC and MNC of IMSI code in SIM. Please contact manufacturer for the PLMN Policy if it's necessary.

【Operation】

Press * # 30 # **PLMN Policy**(0/1) * **Locking Password** #

【Note】

1. PLMN Policy: 0: disable the lock
1: enable the lock
2. Locking Password: It's provided by manufacturer.

5.2.4.2 SIM PIN

This is to set PIN code of SIM card for GSM FCT-Trunk.

【Operation】

Press * # 91 # **PIN**(0000~9999) #

【Note】

3. The default is set at 0000.
4. FCT-Trunk will not check PIN, if PIN lock is disabled in SIM card.

5.2.4.3 WARM START

This function allows GSM FCT-Trunk to invoke a warn start.

【Operation】

Press * # 94 #

5.2.4.4 PROGRAMMING PASSWORD

This function allows user to change the programming password for setting. It's not allowed to enter the programming mode if the programming password is missed.

【Operation】

Press * # 95 # **Programming Password**(0000~9999) #

【Note】

The default is set at 8326.

5.2.4.5 Routing Profile

This function of Routing Profile provides a quick way for user to set the Routing Table(MA/MR/CR Table) and LCR Table via selecting the designated tables which are pre-programmed at factory.

【Operation】

Press * # 96 # **T1 T2 T3 T4** #

【Note】

1. T1 is the MA Table index(from 0 to 9). Please refer to the appendix C for the list of pre-programmed MA Tables.
2. T2 is the MR Table index(from 0 to 9). Please refer to the appendix D for the list of pre-programmed MR Tables.
3. T3 is the CR Table index(from 0 to 9). Please refer to the appendix E for the list of pre-programmed CR Tables.
4. T4 is the LCR Table index(from 0 to 9). Please refer to the appendix F for the list of pre-programmed LCR Tables.
5. The default is set at 0000.

5.2.4.6 Factory Default

This function allows user to re-set FCT TRUNK at factory default.

【Operation】

Press * # 99 #

【Note】

This function will not take effect for following settings:

1. MA Table
2. MR Table
3. CR Table
4. LCR Table
5. SIM PIN

5.2.4.7 MO Network Selection (GSM Operator Lock)

GSM Operator code, a 5 or 6-digit codes, consists of MCC and MNC. FCT-Trunk will be forced to register to the dedicated GSM MO Network if the setting of MO Network Selection is set. This function is optional and must be customized for GSM FCT-trunk. Please contact manufacturer for the MO Network Selection if it's necessary.

【Operation】

Press * # 31 # **MO Network Selection #**

【Note】

MO Network Selection is the code containing MCC plus MNC.

5.2.4.8 MO Incoming-Call End/Reject Selection

This is to set a suitable selection to allow GSM MO network operator to provide a busy tone for a GSM MO incoming-call while a fixed line CO network of GSM FCT-Trunk is engaged.

【Operation】

Press * # 32 # **MO Incoming-Call End/Reject Selection #**

【Note】

- 0: End (at default)
- 1: Reject