A Powerful PABX of Telephone Exchange
With Digital Recording System

TC-208— 2 to 8 Extensions Programming Telephone Exchange
TC-308— 3 to 8 Extensions Programming Telephone Exchange

INSTRUCTION MANUAL

(Please read this manual in detail before using)
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Brief usage

Dial-up: Directly dial a called number
Switch over: Directly dial one ext. of 81-88
Internal call: press “*” before dialing an ext., interior and outside connections can synchronously talk, and don’t interfere each other; Digital recorder can record username or number into exchanger.

1. Summary

2. Functions

2.1 Dial-up

2.1.1 Dial an outside line directly

When dialing an outside line telephone, you can directly dial an outside line number or press redial key. Therefore a user can’t feel that he is using an extension, also have no use for dialing a certain number in advance (An ordinary telephone exchanger always connects to an outside line by dialing zero or nine previously)

2.1.2 Dial an outside line for other

An extension can talk with an outside line dialed on by another extension. This is especially suitable for a busy manager or factory director, whom can let a secretary call an outside number for him in advance. Hence it was also called secretary telephone.

2.1.3 Called number management

It can limit an extension to call some numbers. It can fully satisfy your outgoing call management with triple outgoing call limit, initial limit of outgoing calls and authorized numbers as well as 30 groups of passwords with 1-4 digits initials.

2.1.4 Password management of outgoing calls

An extension with call limits can dial on by entering a password, and automatically locks
after on-hook. This is very necessary in actual operation.

2.1.5 Call shielding function
When operating some special telecom functions (for example, *54*??#), an extension can avoid inflicting with another ext. by entering password in advance without on hook, and then operate special telecom functions after dialing tone listened.

2.1.6 Time management of outgoing call
Because several outside lines used by several extensions together, it is necessary to manage outgoing speaking time of an extension, so that caller can make a long story short for saving call fee, improving work efficient, and fostering good prudence habits.

2.1.7 Select outside line
Any extension can select an outside line for dialing an outgoing call.

2.1.8. Mandatory exterior line seizure.
81 extension can thrust itself in an outside line at any time, so that a VIP can not only race to control outside connections, but also monitor talks of other extension, especially suitable for manager and factory directory.

2.1.9 Automatic identification of outside lines
Its most advanced foolish PnP design can identify outside lines automatically without preconditions.

2.2 Incoming telephone
2.2.1 Automatic watch
You can enter your name, telephone number and company name into exchanger for prompting outside caller to dial a certain ext. or leave short word, so that automatic communication management would be realized completely.

For example, you can record “how are you! Please dial ext., or 82 for watch and 88 for fax”, if incoming telephone, the exchanger will tell caller the record, so that caller dial certain extension without special watch.

For second example, you can record “how are you! It is quitting time now! Please dial 1392222635 if emergency.” If there is an incoming telephone in quitting time, the exchanger can automatically notify caller to dial another telephone number, so that it will be flexibly used with limitless profits.

After record is over, dialing standby is four seconds if pressing #, otherwise reproducing length isn’t changeable due to time of dialing standby.

2.2.2 Manual watch
If there is an incoming telephone, it can allow any extensions to ring together, it will be specially suitable for non-attended occasions, for example, a house, or villa.

2.2.3 Free disturbance
In mode of manual watch, whether an incoming telephone can allow any extension or not, if you set free disturbance on an extension, it will not ring unless call transfer or interior call, so that it can avoid unnecessary call disturbance, meanwhile important incoming call will not be influenced.

2.2.4 Repetitious switch over, automatic error correction
Even if being transferred in many times, transferred extension is wrong or nobody, an incoming call still can be talked or transferred. If entered number is wrong, the system will
not pay attention to this, you do nothing but enter right number subsequently.

2.2.5 Transfer consulting, awaiting in background music
Before switching over, transferor can consult whether transferee would accept an incoming call; meanwhile the outside caller is waiting behind in background music.

2.2.6 Ring back with no reply
When an incoming call is switched to a certain extension, it allows transferor on hook before transferee off hook, outside line keep connection without interruption, at this moment, outside caller is waiting behind in background music, if transferee extension doesn’t lift telephone within 20 seconds, the telephone will ring back transferor extension, transferor can lift telephone for talking with outside caller or retransfer to another extension.

2.2.7 Receiving telephone for other
When a call incoming or being transferred, non-rung extensions also can lift telephone, and doesn’t have to run over to rung extension. It is more convenient for lifting telephone.

2.3 Internal call
Extensions can communicate each other. Many interior lines can talk synchronously without any interference, internal communications are free, because they don’t access telecom bureau.

2.4 System function
2.4.1 Ring protection
The exchanger will switch on when extension ringing, and no hum tone of coo—, so that protect telephone from damaged by ringing current especially the one with LCD display.

2.4.2 Automatically identify whether outside line available, if there is busy tone, outside line doesn’t connected.
The exchanger can automatically identify whether outside connections is available. Lift extension to dial outside line directly if outside line available. You will hear dialing tone of interior line if not available, at this time you can enter ext. to communicate internally.

2.4.3 Suitable for any terminals
Any extension might be one of telephone, fax, gramophone or computer, etc.

2.4.4 User data against power break
If power cut, the system will protect any user’s data including digital recorder from loss

2.4.5 Direct connection to extension 81-84 if power cut.
If power cut, extension 81-84 will directly connect to outside line (extensions available as much as outside connections), although communication will not interrupt, extension 85-88 will not work temporarily.

2.4.6 Perfect signaling system
The exchanger provides many signal tones such as dialing, ringing back, hang-up prompting, error, busy, validation, music, etc.

2.4.7 No barrage, and more junctors
Many junctors of the exchanger allow many extensions to be normally used without any disturbance. An extension can normally dial on or receive outside connections when another extension is communicating internally. When an incoming call is switched to an extension communicated internally, the system will give transferee hang up prompting tone for on hook ASAP. Soon after the extension rings, you can lift telephone to speak.

2.4.8 Batch processing of function setting
The system provides facile methods for batch processing of function setting
2.4.9 Remote terminal maintenance performance
Duolutong exchanger supports service of remote terminal maintenance, even if it is far away, the manufacturer still able to have the exchanger programed, detected and maintained by telephone line in a long distance, so that user can acquire good and effective service in time.

2.4.10 Opening function of special number
Any extension without exterior line lockout can momentarily dial emergency telephones such as 119, 110, 120, 122, 112, etc.

3. Configuration, installation and connection
A wall or platform used to fix Duolutong exchanger should be dry, ventilated and firm. It is as much as possible that routing apart from electromagnetic interference sources such as motor, transformer, ballast, etc. Routing doesn’t parallel with power supply line for avoiding noise induction. For lightning protection, it is strictly prohibited to make routing in rain and open air. Good extension phone and routing with good contact can eliminate questions such as bad tone, killed line, even unusable, etc. Please refer to the following chart for connecting. If there is no outside line, please leave LINE port unused.

**Wiring Diagram**
1. Outside line lamp
2. Ext. indicator LED
3. Power indicator light
4. Outside line
5. Telephone
6. Computer
7. Fax machine
8. Power supply

4. Usage
*Note: 1. All functions must be set on extension 81
   2. Dialing mode of extensions must be dual audios.
   3. When setting functions, you will hear one second of validation toot tone if command correct, otherwise it will be busy tone of toot.
   4. If outside line idle, power indicator line should flash continuously, otherwise the system is failure, please cut power to examine.

4.1 Dial-up
4.1.1 Dial on outside line, choose outgoing outside line
You can directly dial a called number while lifting telephone and hearing dialing tone from telephone office. If all outside lines is not in-use, occupation priority is as follow: No.1 outside line is first, No.2 outside line is second, and No.3 outside line is third, therefore the frequently called number of outside line should be place on No.3 outside line or No.2 outside line lest occupied by interphones. If you want choose an outside line to dial on, please enter *91 or *92 or *93* to dial exterior number directly when hearing dialing tone.

4.1.2 Dial outside line for others
If an extension dialing on an outside line wants to inform another extension for speaking,
only by entering “#*ext.” (The extension numbers are 81-88).
For example, a manager let secretary dial on 02036329207, ext. of manager is 81, and ext. of secretary is 82. Secretary dials on 02036329207 on extension 82 in advance, and then enter #*81 to make 81 extension ringing. Meanwhile the exterior line is listening background music until manager lift telephone.

4.1.3 Outgoing call limit

4.1.3.A. Limit local call
Format is *#4n 10. (here n denotes for last digit of ext. For example, n=1 represents extension 81, n+2 represents 82 extension, the rest may be deduced by analogy.)
For an instance, the extension 87 limiting local call can but internally communicate and pick up the telephone
Procedures: Extension 81 is off-hook to enter *#4710, on-hook until hearing validation tone
Extension with local call limit only has dialing tone once off hook of interior line. It can call other extensions by entering relative ext. It can ask other extension help to dial outside line by others.
Please refer to item 4.1.2 for further information.

4.1.3.B. Release limit to outgoing local call
Format is *#4n 00, in which n has same meanings as idem.
For example, release limit to outgoing local call of extension 85
Procedures: Extension 81 is off-hook to enter *#4500, on-hook until hearing validation tone
Note: 1. Extension with limit to outgoing local call can’t dial long distance telephone, extension with limit to outgoing international toll can dial an outgoing domestic toll, extension with limit to outgoing domestic toll can dial local call. Doing so is congruous with coincident logic and actual demand.
2. Operating *#4 n00 command once to release the local call limit to corresponding extension.

4.1.3.C. Prohibited initial (two digits)
4.1.3.C.1 Prohibited 1-digit initial
Format is *#5 n m # , in which n has the same meanings as idem, mm represents digits of 0-9.
For example, *#583# prohibits extension 88 from dialing number with initial 3.
*#545# prohibits extension 84 from dialing number with initial 5. Each extension can have ten prohibited initials.

4.1.3.C.2 Prohibited 2-digit initial
Format is *#5 n Mm, in which n has the same meanings as idem, mm represents first two initials.
For example, *#5700 prohibits extension 87 from dialing number with initial 00.

4.1.3.D Release prohibited initial
Format is *#5 n # #, in which n has same meanings as idem.
Note: Operating this command once can release all prohibited initials of relative extension, which includes two digits’ initials.

4.1.3.E All extensions locking 1-4 digits initials up to 30 group
Format are as follows:

*#5*ABCD  *#5*ABC#
*#5*AB # #  *#5*A # # #
For example, *#5*968# limits all extensions unable to dial 968 information desk.

4.1.3.F. Release 30 group locks
Format is *#5900

4.2 Password management
4.2.1 setting password format
*#8yYYYY (y represents digits of 0-9)
After password being set, every extension can dial prohibited numbers. This is necessary in actual operation.

4.2.2 Dial prohibited numbers
Release limit format is *#9yyyy (y represents digits of 0-9)
Enter password on off-hook extension to dial limited number, password will automatically lock once on-hook.

4.2.3 time limit to outgoing call
Format is *#6nab, in which n has same meanings as idem, ab represents 1-99 minutes.
For example, *#6205 limits that extension 82’s maximum speaking time is five minutes.
*#6325 limits that extension 83’s maximum speaking time is twenty-five minutes.
Note: The speaking time of extensions can be chosen between 1 and 99 minutes. Factory setting is no time termination. If change needed, please enter new time termination. If you want to cancel time termination of n extension, please enter *#6n00.

4.2.4 Authorized numbers
Authorization format are as follows: *#nABCD authorizes 4-digit initial of ABCD.
*#nABC# authorizes 3-digit initial of ABC.
*#nAB# # authorizes 2-digit initial of AB.
Authorized number opens prohibited initial of telephone number to some extensions with locked initials, so that it can dial special number.
Example 1: You want open 1392222635 of manager and factory director to extension 83 with initial lock of 1, please authorize 4-digit of 1390, the extension can’t dial out the number with initial 1, but all the number like 1390xxx. Operation command is *#731390.
Example 2, Because factory has business in Shanghai, for convenient business, numbers with initial 021 still needs to be opened on extension 84 with long distance lock. Operating command is *#74021#. Therefore except tolls to Shanghai, extension 84 can’t dial other tolls.

4.2.5 Mandatory seizure of exterior line
If extension 81 encounters other extension using outside line for incoming or outgoing call, please lift telephone and enter *91 or *92 or *93 to seizure any outside for monitor or talk, so that finding out talk contents of other extension, or telling other extension terminate talk ASAP. The function is specially designed for manager and factory director, therefore extension 81 should be for manager and factory director, otherwise, his conservation will be heard by anyone using extension 81.

4.3 Record and monitor
Record and monitor must be on extension 81, excellent phone with sensitive handset can improve definition. Please lift handset to enter*#2200, speak towards microphone once hearing indicator tone of toot, but please control time interval within 10 seconds, the record less than 10 seconds press # to terminate record, another indicator tone of toot means record over. Enter *#2300 for monitoring. Quality and volume of monitored tone is only for your
reference, you can record again if unsatisfactory. Actual effect of tone should be judged with an incoming call. The record will be stored forever, and doesn’t lose even if power cut. Enter *#2400 to monitor graceful music, this function also can check quality of your telephone set. Please don’t record under handfree condition, otherwise record must be small voice with great noise.

4.4 Incoming call
4.4.1 Setting manual watch mode
The format is *#2000.
After manual watch set, extensions without free disturbance ring while there is an incoming call, you can lift handset for speaking or transferring. Factory setting of the exchanger is in manual watch mode, 81-88 extensions are in ring mode. Some extensions don’t ring by setting free disturbance. Please refer to item 4.4.3 for further information.

4.4.2 Setting computer telephonist mode
Format is *#2100.
After computer telephonist being set, all extensions don’t ring when there is an incoming call. Outside caller enters one ext. of 8-88 after hearing digital cue record, relative extension will ring, please lift handset for speaking. If outside caller dials zero or doesn’t enter ext. within 10 seconds, the incoming call will automatically switch to extension 82, the default watch extension will ring.

4.4.3 Free disturbance
4.4.3.A Setting no disturbance
Format is *#3 n 10.
Note: default watch extension 82 can’t be set free disturbance.

4.4.3.B Cancel free disturbance
Format is *#3 n 00, in which n has the same meaning as idem.
Although free disturbance makes an extension not ring when there is an incoming call, but the extension can transfer it or speak for others, so that normal function of incoming call can be realized and avoid pointless interference.
For example, when there is an incoming call, all extensions don’t ring except extension 82.
Procedures: lift handset of extension 81----*#3110 and validation tone heard----#3310 and validation tone heard----#34109 and validation tone heard----#3610 and validation tone heard----#3710 and validation tone heard----#3810 and validation tone heard, extension 81 on hook.
For example, to change extension 82 ring only to extension 81 and 82 ring together.
Command is *#3100, and then no disturbance setting of extension 81 canceled.

4.4.4 Call switch over
If an incoming call is received and required switch over to another one, transferor can enter one ext. of 81-88, the transferee will ring, lift handset for speaking, or continuously switch over to other extension as above-mentioned method. If wrong number entered, you can continue to enter correct number.
Call switch has following conditions:
1. Switch from extension A to extension B, A isn’t on-hook and B isn’t off-hook.
   Here A hears ring back tone, B ring and outside caller listens background music. If B doesn’t lift handset, A will recover connection with exterior line automatically.
2. Switch from extension A to extension B, A isn’t on-hook and B lifts handset after ringing.

Here A can talk with B and outside caller listens background music, B lifts handset to speak with outside caller. If B doesn’t lift handset within 20 seconds, A rings and can lift handset for talking or switching. If A isn’t off-hook within 30 seconds, outside connection will break automatically.

4.4.5 Receive telephone for others

An extension without ring can enter *7 to receive or switch an incoming call.

4.4.6 Mandatory seizure

Please refer to item 4.2.3 for further information

4.5 Internal communication

If the exchanger doesn’t connect with exterior lines, you can directly enter one ext. of 81-88 to call another extension.

If the exchanger connects with exterior lines, calling another extension needs pressing * in advance, enter one ext. of 81-88 until hearing dialing tone of interior line, which sounds more clear and melodious. If you hear busy tone, it shows that called extension isn’t on hook.

Recover factory settings

4.6 Recover factory settings

After a period of use or dealer’s test running, users might forget which uncomfortable settings have been done with the exchanger. They can use a command to make factory status of the exchanger recovery and reset comfortable settings.

Format is *#1000.

Factory setting schedule of TC series telephone exchanger

Watch mode………………………………………………………………. manual mode
Free disturbance…………………………………………….all 81-88 extensions without free disturbance setting
Outgoing call limit………………………………………………………all 81-88 extensions without limit
Conversation time…………………………………………………all 81-88 extensions without limit

5. Technical parameters

5.1 Switch regime…………………………………………………………Ana log idle extension
5.2 Terminal qualification

5.2.1 Phone type………………………………………………………………………Dual audios
5.3 Communicating junctors…………………………………………five junctors Eight junctors
5.4 Signaling tone

5.4.1 Exterior line tone source……………………………………Telecom office tone source
5.4.2 Dialing tone of interior line……………………………………450Hz, square wave, continuous
5.4.3 Ring back tone of interior line……………………………450Hz, square wave, connection within one second, break within 4 seconds
5.4.4 Busy tone and error tone of interior line…………………450Hz, square wave, connection within 0.35 second, break within 0.35 seconds
5.4.5 validation tone of interior line………………………………450Hz, square wave, connection
within one second

5.5 Feeding
  5.5.1 Feeding voltage……………………………………………………………………24 volt
  5.5.2 Feeding current………………………………………………………………20-30mA

5.6 Line qualification
  5.6.1 User loop line resistance including phone less than 1000 Ohms.
  5.6.2 allowable trunk line resistance ………………………………Less than 2000 Ohms.

5.7 Transmission features
  5.7.1 Extension--extension…………………………………………………………not more than 1.5 dB
  5.7.2 Extension--trunking…………………………………………………………not more than 1.0 dB
  5.7.3 Distortion degree……………………………………………………………not more than 7%

5.8 Ring current………………………………………………………AC90V+/-15V, zero load

5.9 Proof pressure……………………………………………………….50Hz/1000V RMS/1minute

5.10 Insulation………………………………………………Power supply line against enclosure or ground more than 10 million Ohms

5.11 Power supply…………………………………………………….AC220V +/-10%

5.12 Power waste…………………………………………………………not more than 10VA

5.13 Operating environment…………………………………………………-10~40°C relative humidity less than 95%

6. Troubleshooting

With stable performances, Duolutong exchanger has few or none troubles. Due to improper settings or operations, user might regard some functions as troubles. Therefore when questions emerged, first of all, please consider whether there are improper settings or operations. Please read the instruction book carefully or refer to the following zoom table for searching causes. If you can’t solve it assuredly, please contact with dealer or our manufacturer, we will give you a satisfying answer.

6.1 Phenomenon: Unable to call in or out, tone off.
  Cause: Exterior line might be inexistence or bad contact; Power supply cut or extension with bad contact.

6.2 Phenomenon: Extension can receive calls, but can’t dial out.
  Cause: The extension isn’t dual audios or set with outgoing call limit.

6.3 Phenomenon: Break after a period of communication time.
  Cause: The extension is set with time limit or bad contact.

6.4 Phenomenon: Jar or noise
Cause: Due to interfered line, or bad contact, or power voltage less than 160 volts, or unqualified phone.

6.5 Phenomenon: Voice distortion
Cause: Bad phone or the wire of extension is too long and thin

6.6 Phenomenon: Others
Cause: For others, please consult dealer or our factory.

**Function and operation zoom table of 208 and 308**

*All the following settings are operated on extension 81.*

<table>
<thead>
<tr>
<th>Setting</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recover factory settings</td>
<td>*#1000</td>
</tr>
<tr>
<td>Help other dial exterior line</td>
<td>** ext.</td>
</tr>
<tr>
<td>Receiving telephone for other</td>
<td>*7</td>
</tr>
<tr>
<td>Line selection and seizure (monitor)</td>
<td>*91 or *92, *93</td>
</tr>
<tr>
<td>Setting free disturbance</td>
<td>*#3 n 10</td>
</tr>
<tr>
<td>Cancel free disturbance</td>
<td>*#3 n 00</td>
</tr>
<tr>
<td>Internal communication</td>
<td>*#4 n 00</td>
</tr>
<tr>
<td>Limit to local call</td>
<td>*#5 n m #</td>
</tr>
<tr>
<td>Release limit to outgoing local call</td>
<td>*#5 n m m</td>
</tr>
<tr>
<td>1-digit initial lock to limit dial out</td>
<td>*#5 n # #</td>
</tr>
<tr>
<td>2-digit initial lock to limit dial out</td>
<td>*# 8 y y y y y</td>
</tr>
<tr>
<td>Release initial lock to limit dial out</td>
<td>*# 9 y y y y y</td>
</tr>
<tr>
<td>Setting unlock password</td>
<td>*# 6 n a b</td>
</tr>
<tr>
<td>Dial restricted number</td>
<td>*# 6 n 00</td>
</tr>
<tr>
<td>Restrict to outgoing period</td>
<td>*# 7 n AB # #</td>
</tr>
<tr>
<td>Release outgoing restrict</td>
<td>*#7ABC # n</td>
</tr>
<tr>
<td>Authorize 2-digit initial</td>
<td>*#7 n ABCD</td>
</tr>
<tr>
<td>Authorize 3-digit initial</td>
<td>*#7 n ABC#</td>
</tr>
<tr>
<td>Authorize 4-digit initial</td>
<td>*#7 n ABCD</td>
</tr>
<tr>
<td>All extensions lock 1-4 digit initial (thirty groups)</td>
<td>*#5A ### # 5AB # #</td>
</tr>
<tr>
<td>Release 30 group locks</td>
<td>*#5900</td>
</tr>
<tr>
<td>setting manual watch mode</td>
<td>*#2000</td>
</tr>
<tr>
<td>setting computer teleponist mode</td>
<td>*#2100</td>
</tr>
<tr>
<td>Record</td>
<td>*#2200</td>
</tr>
<tr>
<td>Monitor record</td>
<td>*#2300</td>
</tr>
<tr>
<td>Monitor music</td>
<td>*#2400</td>
</tr>
</tbody>
</table>

Note: n represents last digit of ext., n=1 for extension 81, n=2 for extension 81, m represents initial of 0-9, mm represents 2-digit initial, y represents numbers of 0-9, ab represents 01-99 minutes, ABCD represents initial. The ext. is one of 81-88.