Hytera

DMR Conventional Radio

Release Notes

Copyright Information

Disclaimer

Contents

Documentation Information

This section describes the conventions and revision history of this document.

Conventions

Icon Conventions

Icon	Description
Tip	Indicates information that can help you make better use of your product.
Note	Indicates references that can further describe the related topics.
Caution	Indicates situations that could cause data loss or equipment damage.
Warning	Indicates situations that could cause minor personal injury.
Danger	Indicates situations that could cause major personal injury or even death.

Notation Conventions

Item	Description
" "	The quotation marks enclose the name of a software interface element. For example, click “OK“.
Bold	The text in boldface denotes the name of a hardware button. For example, press the **PTT** key.
->	The symbol directs you to access a multi-level menu. For example, to select "New" from the "File" menu, we will describe it as follows: File -> New.

Revision History

Version	Release Date	Description
V1.0	October 2016	Initial Release.

1. Product Information

Firmware Version

Radio Model	Version
Portable (PD6XX, PD7XX, PD8XX, PD98X and X1 series) Mobile(MD6XX and MD7XX series)	A8.00.06.007 S8.00.06.007 N8.00.06.007 C8.00.06.007
Repeater	A8.00.09.001 S8.00.09.001 N8.00.09.001 C8.00.09.001

Application Version

Application	Version
Customer Programming Software (CPS)	V8.00.09.005
Debug and Testing Software (Tuner)	V8.00.01.005
Repeater Diagnostics And Control (RDAC)	V8.00.01.005
Record File Manager	V1.00.01.002

Documentation

In this release, the following documents are available:

Document	Description
DMR Conventional Radio_Release Notes_R8.0	Initial release
DMR Conventional Radio_Feature List_R8.0	Updated
DMR Conventional Radio_System Planner_R3.0	Updated
DMR Radio_Voice Tool_Operation Guide_R8.0	Updated

Document	Description
DMR Radio_BT_User Manual_R8.0	Updated
DMR Radio_SFR_Application Notes_R1.0	New
CPS Resource Manager_ Operation Guide_R1.0	New
DMR Record Manager_ Operation Guide_R8.0	Updated
DMR Repeater_ Repeater Backup_Application Notes_R1.0	New
DMR Conventional Radio_SIP Phone_Application Notes_R4.0	Updated
DMR Conventional Radio_GPS_ Application Notes_R1.0	New
DMR Radio_Audio Configuration_Application Notes_R2.0	Updated
DMR Radio_Dial Rules_Application Notes_R2.0	Updated
DMR Multi-Terminal Batch Upgrade Tool_ Operation Guide_R1.0	Initial release
XPT System_Product Description_R2.0	Updated
XPT System_Application Notes_R3.0	Updated
XPT_OTAP Help	Updated
CPS Help	Updated
TUNER Help	Updated

2. What's New in This Release

2.1 Introduction

R8.0 is an upgrade version based on R7.7 and R7.8. This document describes only features added or enhanced in R8.0. R8.0 supports radios with G1.0 and G1.5 platform. Unless otherwise specified, the new and enhanced features described in this document are available to all radios with G1.0 and G1.5 platform.

2.2 Radio

2.2.1 New Features

2.2.1.1 XPT Trunking Features

Priority Interrupt

In XPT trunking system, during a call, the radio user may fail to transmit voice or send data when the channel is occupied.In this case, this feature allows the radio user to apply for the permission to interrupt the talking party. After the channel is available, the radio user can transmit voice or send data.

This feature facilitates the allocation and usage of channel resources.This release supports Button Priority Interrupt, Call Back Priority Interrupt and Emergency Priority Interrupt.

For detailed description and configuration, refer to *Hytera XPT System Application Notes*. For more information, please contact the nearest salesperson or the Company.

To set the related parameters in the CPS, go to:

- XPT Trunking -> Channel -> XPT Personality -> RX/TX Manage -> Priority Interrupt Encode/Priority Interrupt Decode
- XPT Trunking -> Channel -> XPT Personality -> Miscellaneous -> In Call TX Admit -> Priority Interrupt
- XPT Trunking -> General Setting -> Buttons -> Programmable Keys -> Priority Interrupt
- XPT Trunking -> Emergency -> XPT Emergency -> Emergency Priority Interrupt
- XPT Trunking -> XPT Service -> Site Voice List -> Channel List -> Dedicated CH Priority Interrupt

OTAP

In XPT trunking system, frequent configuration changes for both the system and radio are required to meet various application conditions. Given that radio users are widely distributed, this feature offers an

economically feasible way to configure the radio remotely.

You need to use the XPT OTAP programming software to configure the radio. Remote programming is applicable only to the radio that supports this feature.

For detailed description and configuration, refer to *Hytera XPT System Application Notes*. For more information, please contact the nearest salesperson or the Company.

To set the related parameters in the CPS, go to "XPT Trunking -> Digital Common -> Basic -> Decode -> Radio Check Decode".

2.2.1.2 Conventional Features

Single Frequency Repeater (SFR)

With this feature enabled, a radio operating in DMO mode receives voices, data and signaling on one slot, and then forwards them on the other. In this case, the radio serves as a repeater. This is a paid feature, which is only applicable to the PD98X radio operating in DMO mode.

This feature expands the coverage in DMO mode. In case that Radio A and Radio B cannot communicate with each other. However, Radio C can communicate with both Radio A and B. In this case, Radio A and Radio B can communicate with each other through Radio C with this feature.For detailed operation and description, refer to *DMR Radio Same Frequency Repeater Application Guide*.

Caution

Voices, data and signaling can only be forwarded for once. For the same frequency, only one radio is allowed to enable this feature.

To set the related parameters in the CPS, go to:

- Conventional -> Channel -> Digital Channel -> SFR
- Conventional -> Channel -> Digital Channel -> Auto Open SFR
- Conventional -> General Setting -> Menu -> Common Menu ->Settings -> Radio Settings -> SFR
- Conventional -> General Setting -> Buttons -> Programmable Keys -> SFR

Over the Air Encrypt

With this feature enabled, only the signaling frame transmitted over the air is encrypted. The receiving radio cannot receive signaling further if it fails to decrypt the signaling frame correctly. In the repeater mode, if the transmitting radio fails to satisfy the encryption requirements, signaling transmitted by it will not be forwarded by the repeater, and the radio cannot receive the signaling or data forwarded by the

repeater.

This feature is developed to prevent unauthorized access to the system, to ensure the security of the system.

To set related parameters in the CPS, go to:

- Conventional -> Digital Common -> Encrypt -> Over the Air Encrypt
- Conventional -> Channel -> Digital Channel -> Over the Air Encrypt Type
- Conventional -> Channel -> Digital Channel -> Only Receive Encrypt Air
- Conventional -> Channel -> Digital Channel -> Over the Air Encrypt Key

Power Auto Adjust

With this feature enabled, the radio automatically adjusts the transmit power based on the strength of signals received from the repeater. When the radio is near the repeater and receives strong signals, it decreases the transmit power; otherwise, it increases the transmit power. This minimizes the impact of repeater distance on transmission and reduces power assumption of the radio.The switching from higher transmit power to lower transmit power is applicable only to portable radio.

To set the related parameters in the CPS, go to "Conventional -> Digital Common -> Basic -> Power Auto Adjust".

2.2.1.3 Common Features

TF Application-Record Manager

This release provides the TF Application, which consists of the Record feature of the radio and the record manager. This application is a paid feature and is available only to PD98X.

The Record feature of the radio helps record the voice data for future query.This release provides two types of recorder: live recorder, which records surrounding voice, and call recorder, which records the call information.

Note that the storage capacity of a TF card (or Miscro SD card) ranges from 1 G to 32 G.For reliable performance, it is recommended that you use the standard TF card (or Miscro SD card) provided by us or other industrial grade TF card (or Miscro SD card) for recording purpose exclusively.

To set the related parameters in the CPS, go to：

- Conventional -> General Setting -> Menu -> Common Menu -> TF Application -> Recorder
- Conventional -> -> General Setting -> Menu -> Common Menu -> TF Application -> TF Information

Three Band Equalize

Based on the equalizer principle, this feature adjusts gains of high, mid, and low frequency signals, compensating for speaker and sound field defects. This optimizes voice quality and meets requirements in different scenarios.

In the CPS, you can enable this feature and then set "Low Frequency Gain", "Mid Frequency Gain", and "High Frequency Gain".

The mid and low frequency is 150 to 500 Hz. The mid frequency is 500 to 1,250 Hz. The mid and high frequency is 1,250 to 3,400 Hz.

This following table lists recommended values of the three parameters in some scenarios.

Scenario	Low Frequency Gain (dB)	Mid Frequency Gain (dB)	High Frequency Gain (dB)	Note
Square	0	3	5	/
Indoor	3.5	1.5	-1.5	/
Downtown	2	2	8	/

Note

- This release replaces the Digital Rx Gain and Analog Rx Gain features with the Three Band Equalize feature, which provides higher voice quality.
- The Three Band Equalize feature is not applicable to X1 series, which apply the Digital Rx Gain and Analog Rx Gain features.

To set the related parameters in the CPS, go to:

- Common > UI Setting > Volume > Three Band Equalize
- Common -> UI Setting -> Volume -> Low Frequency Gain
- Common -> UI Setting -> Volume -> Mid Frequency Gain
- Common -> UI Setting -> Volume -> High Frequency Gain
- General Setting -> Menu -> Common Menu-> Settings -> Audio Settings -> Voice Frequency Optimization -> Three Band Equalize

Day/Night Mode

This release provides better visual experience with regard to the Day/Night Mode feature. The radio user can switch between Day mode and Night mode through the radio menu or by pressing the preprogrammed key.

Note

For mobile radio, relevant upgrade is conducted only to the display on home screen and during a call.

To set the related parameters in the CPS, go to:

- General Setting -> Menu -> Common Menu -> Settings -> Radio Settings -> Day/Night Mode
- General Setting -> Buttons -> Day/Night Mode

Send Talker Alias

This feature allows the radio alias to be sent with voice during transmission. The receiving radio can identify the talking party by the alias even if the ID of talking party is not saved in it.

To set the related parameters in the CPS, go to:

- Digital Common -> Basic -> Miscellaneous -> Send Talker Alias
- Digital Common -> Basic -> Miscellaneous -> Alias Data Format
- Digital Common -> Basic -> Basic Setting -> Contact Alias Synchronization
- Digital Common -> Basic -> Basic Setting -> Alias Display Priority
- General Setting -> Menu -> Common Menu -> Settings -> Radio Settings -> Send Alias

Voice with GPS

The Voice with GPS feature is a new feature in DMR standard, which allows the GPS data to be sent with voice during transmission.

To set the related parameters in the CPS, go to:

- General Setting -> Menu -> Common –> Accessories -> GPS -> Voice with GPS
- General Setting -> Accessories -> GPS -> Voice with GPS

RSSI Report

This feature allows the radio to report downstream RSSI data together with GPS data through the dedicated GPS data channel, saving channel resources and improving reporting efficiency.The dispatch center can optimize the frequency coverage by analysing the received RSSI data.The radio may report RSSI data either periodically or for once.

This feature is applicable to regular GPS reporting in repeater mode rather than in DMO mode or fast GPS reporting, thus the dispatch center must use a repeater as the dispatch station.

To set the related parameters in the CPS, go to "General Setting -> Accessories -> GPS -> RSSI

Report".

Dual Vocoder

This release allows the radio to integrate AMBE+ and NVOC vocoders. The radio user can change the vocoder through the radio menu as required. This feature is available only to PD98X.

To set the related parameters in the CPS, go to:

- Common -> Setting -> Basic -> Vocoder Type
- Conventional -> General Setting -> Menu -> Common Menu -> Settings -> Radio Settings -> Vocoder Set

BT Programming

This feature allows you to program the radio through a wireless connection to the radio.
To perform wireless programming, do as follows:

- Connect a BT adapter to the PC with the CPS installed.
- Establish the wireless connection between the radio and the PC through the radio menu.
- After the connection is established, the BT icon on the CPS is enabled.
- Program the radio by using the CPS.
- This feature is available only to PD98X.

To set the related parameters in the CPS, go to :

General Setting -> Menu -> Accessories -> BT

Note

The BT adapter needs to support the virtual serial port. It is recommended that you use the BlueSoleil adapter.

BT Data Access

This release supports third-party development through a wireless connection to the radio.The BT-based interface is available only to PD98X. For third-party development protocols, please contact the nearest salesperson or the Company.

Noise Suppression

This release provides the Noise Suppression feature, which can be enabled in the CPS or through the

menu.Due to the application of noise suppression algorithm, it takes 130 ms longer to establish a call with this feature enabled. This feature is available only to PD98X.

To set the related parameters in the CPS, go to:

- General Setting -> Menu -> Common Menu -> Audio Settings -> Noise Suppression
- Common -> UI Setting -> Volume -> Digital Noise Suppression/Analog Noise Suppression

Smart Battery

This release allows the radio to use the smart battery. The smart battery enables the radio user to check battery information and status and reminds the radio user to charge or replace the battery.The battery information includes battery level, software version, alias, and life span.This feature is available only to PD98X. For more information, please contact the nearest salesperson.

To set the related parameters in the CPS, go to:

General Setting -> Menu -> Common Menu -> Radio Settings -> Battery

Emergency Exit

This release allows the radio initiating the emergency alarm to send an emergency exit message to the radio receiving the emergency alarm after exiting the emergency mode. After receiving the message, the radio receiving the emergency alarm exits the emergency mode automatically.

This feature allows the radio receiving the emergency alarm to timely exit the emergency mode after the emergency is over.

To set the related parameters in the CPS, go to:

- Conventional -> Emergency -> Digital Emergency -> Send Emergency Exit Message
- XPT Trunking-> Emergency -> XPT Emergency -> Send Emergency Exit Message

One-Key Connect/Disconnect

This release allows you to assign the One-Key Connect/Disconnect function to the corresponding programmable key (**P1** and **P2** for portable radio; **P5** and **P6** for mobile radio). After configuration, the radio user can press the programmed key to send the connect/disconnect code, so that the radio accesses/exits the phone system.

To set the related parameters in the CPS, go to:

- Phone -> Phone System -> Connect Code -> One-Key Connect

- Phone -> Phone System -> Disconnect Code -> One-Key Disconnect

Quick Dial

This release allows you to assign a specific function to each numeric key. After configuration, the radio user can enable a feature by entering the corresponding number (0–9) on the home screen and then pressing the OK key.

Note

With both the Quick Dial feature and the Manual Dial feature enabled, the radio user can press the # key to switch between these features: Quick Dial, Private Call and Group Call.

To set the related parameters in the CPS, go to:

- General Setting -> Buttons -> Default Numeric Key Selection -> Enable
- General Setting -> Buttons -> Quick Dial
- Digital Common -> Quick Dial

Menu in Indonesian Language

This release provides a language packet including Indonesian. Languages available for selection are subject to the language packet contained in the radio. For more information on the language packet, please contact the nearest salesperson.

Tone Acquisition

This release allows you to obtain the information on the alert tone using third party software, realizing synchronization between third party development and the radio. This feature is applicable to third-party development protocol. For third-party development protocols, please contact the nearest salesperson or the Company.

2.2.2 Enhancements

2.2.2.1 XPT Trunking Features

XPT Multi-Sites Roam

This release provides the following enhancements for the XPT Multi-site Roam feature:

- The number of roaming sites increases from 4 to 8.
- The radio can initiate calls or send data during roaming.
- Roam RSSI Offset can be configured in the CPS, avoiding frequent site switching by the radio.

- Roam Interval Time can be configured in the CPS, allowing you to set the interval time for the radio to stay at a temporary site.
- Roam List has been replaced with the neighbor site list, which lists the available sites for active roaming and passive roaming. In active roaming, the radio selects the available neighbor site to continue the services; in passive roaming, the radio will stay on the site with strongest signal.

For detailed description and configuration, refer to *Hytera XPT System Application Notes*. For more information, please contact the nearest salesperson or the Company.

To set the related parameters in the CPS, go to:

- XPT Trunking -> Roam -> Roam List -> Details of XPT Personalities
- XPT Trunking -> Roam -> Roam List -> Roam RSSI Offset
- XPT Trunking -> Roam -> Roam List -> Roam Interval Time

Channel Busy Tone

In this release, the alert tone when there is no available channel for the radio is optimized as “Channel Busy Tone”.

To set the related parameters in the CPS, go to:

XPT Trunking-General Setting-UI Indication-Alert Tones- Channel Busy Tone

Out of Range Tone

This release allows the radio user to set whether the radio gives an alert tone when it is out of range through the radio menu. The radio can also set the alert tone type and the volume.

To set the related parameters in the CPS, go to:

"XPT Trunking -> General Setting -> Menu -> Common Menu -> Settings -> Radio Settings -> Tones".

2.2.2.2 Conventional Features

5 Tone Features Enhancement

To be better compatible with the 5-tone signaling feature for analog radios, this release adds Emergency Exit as a decode type and adds Missed Call Tone as an alert tone type.

To set the related parameters in the CPS, go to:

- Conventional -> Analog Service -> 5-Tone Services -> Decode Definition -> Decode Options -> Decode Type -> Emergency Exit

- General Setting -> UI Indication -> Alert Tones -> Missed Call Tone
- General Setting -> UI Indication -> Alert Tone Setting -> Missed Call Tone

Monitor Key

In this release, the monitor key of the desk microphone in the mobile radio is a programmable key, to which the following functions can be assigned: Squelch Off Momentary and Hook.

To set the related parameters in the CPS, go to :

Common -> Accessories -> Desk Microphone -> Monitor

2.2.2.3 Common Features

Voice Notify

In this release, the Voice Notify feature is applicable to the programmable keys. When the radio user presses a programmed key, the radio automatically plays the voice file to inform the user of the corresponding programmed function. For detailed description and configuration, refer to *DMR Radio Voice Tool Operation Guide*.This feature is available only to PD98X.

To set the related parameters in the CPS, go to:

- General Setting -> Voice Notify
- General Setting -> UI Indication -> Alert Tones -> Voice Notify Tone

Query Location

In this release, the azimuth (ranges from 0° to 89°) of the target radio will be displayed when the radio user tries to locate the target radio using the Query Location feature. For example, 12° Southeast indicates that the target radio is 12 degrees to the southeast of the radio.

To set the related parameters in the CPS, go to:

General Setting -> Menu -> Common Menu-> Accessories -> GPS -> Query Location

Display sender in Group Message

In this release, in addition to the alias and icon of the group call, the alias and icon of the initiating party will also be displayed on the call logs. In case that the group alias has not been saved in the radio, the initiating party ID will be displayed.

To set the related parameters in the CPS, go to:

General Setting -> Menu -> Digital Menu-> Call Logs -> Incoming/Missed

One Touch Call

This release adds All Call as a call type for the One Touch Call feature. Besides private call and group call, the radio user can also make an all call to the predefined contact by pressing a programmed One Touch Call key.

To set the related parameters in the CPS, go to:

General Setting -> One Touch Call/Menu -> Call Type-> All Call

GPS & RRS Reporting

In this release, the radio reports GPS & RRS data to the ID of the dispatch station sending the query command or modifying such parameters as Time and Distance in GPS Trigger, rather than to the ID pre-defined in the CPS.

To set the related parameters in the CPS, go to:

- General Setting -> Accessories -> GPS -> GPS Trigger -> Time”
- General Setting -> Accessories -> GPS -> GPS Trigger -> Distance
- General Setting -> Network -> Radio Services -> RRS & GPS Radio ID

GPIO Pins New Features

This release adds four pin features for mobile radios: volume up, volume down, channel up and channel down.

To set the related parameters in the CPS, go to:

- General Setting -> Accessories -> GPIO Pins -> Pin -> Volume Up/Down
- General Setting -> Accessories -> GPIO Pins -> Pin -> Channel Up/Down

Programmable Features

This release adds the following new features that can be assigned to the programmable key: SPK Set Switch and Mic Set Switch.The radio user can press the preprogrammed **SPK Set Switch** key to switch the speaker setting among "Only Internal", "Only External", and "External First".The radio user can press the preprogrammed **MIC Set Switch** key to switch the microphone setting among "Follow PTT", "Only Internal", "Only External", and "External First".

The "External First" option is available only to the portable radio.

To set the related parameters in the CPS, go to:

- General Setting -> Buttons -> SPK Set Switch
- General Setting -> Buttons -> Mic Set Switch

Keypad Lock Backup

This release provides the Keypad Lock Backup feature, allowing the Keypad Lock feature to function in the last state upon power-on of the radio.

To set the related parameters in the CPS, go to:

- Common -> UI Setting -> Keypad Lock -> Keypad Lock Backup
- General Setting -> Menu -> Common Menu -> Settings -> Radio Settings -> Keypad Lock

Optimize Channel Switch via Up/Down Button

In this release, when the channel or zone switching function is assigned to the **Up**/**Down** key, the radio user can switch the channel or zone by pressing the **Up**/**Down** key during a call, scanning and roaming.

To set the related parameters in the CPS, go to:

- General Setting -> Buttons -> Up/Down -> Channel Up/Channel Down
- General Setting -> Buttons -> Up/Down -> Zone Up/Zone Down

Channel Quantity

This release increases the quantity of channels per zone from 16 to 256, meeting radio users' demands of more channels.

To set the related parameters in the CPS, go to:

Conventional -> Zone -> Zone X.

Channel Knob Type

This release allows you to set the channel knob type in the CPS as "Infinite" or "Fixed".In case there are more than 16 channels per zone, it is recommended that you select "Infinite"; otherwise, "Fixed" is recommended.

To set the related parameters in the CPS, go to:

Common -> Setting -> Basic -> Channel/Group Knob Type

Engineering Mode Disable Menu

In this release, the “Engineering Mode Disable” option is added. After this parameter is checked, the radio cannot enter the Engineering Mode.

To set the related parameters in the CPS, go to:

Common -> Setting -> Basic -> Engineering Mode Disable

2.3 Repeater

R8.0 is an upgrade version based on R7.6 and R7.7. This document describes only features added or enhanced in R8.0.

2.3.1 New Features

XPT Multi-Sites System Repeater API Dispatch

R8.0 supports multi-sites repeater dispatch while R7.6 supports only the single-site repeater API dispatch. In this release, after connecting the third-party dispatch software to the repeater, the user can dispatch, respond to and monitor the services in the XPT multi-sites system, diversifying the application scenarios. The API configuration in multi-sites system is the same as that in the single-site system.

To set related parameter in the CPS, go to "XPT Trunking -> General Setting -> Network -> Application Programming Interface -> Forward to PC".

For detailed configuration, refer to *Hytera XPT System Application Notes*. For more information, please contact the nearest salesperson or the Company.

XPT Multi-Sites System Dedicated Data Repeater

This feature is developed based on the multi-sites dispatch feature. R8.0 supports dedicated data repeater application in multi-sites system. Users can use the dedicated data repeater to forward the RRS and GPS data while transmitting voice. The configuration in multi-sites system is the same as that in the single-site system.

To set related parameter in the CPS, go to:

- XPT Trunking -> General Setting -> Network -> IP Connect Configuration -> Repeater Type (must select “Slave“ here)
- XPT Trunking -> XPT Service -> Setting -> Site Setting -> Repeater Service Type

For detailed configuration, refer to *Hytera XPT System Application Notes*. For more information, please contact the nearest salesperson or the Company.

XPT Multi-Sites System SIP Phone

Session Initiation Protocol (SIP) Phone Call is a feature that realizes the real-time communication between the radio and telephone (including PSTN phone, VoIP phone and mobile phone).Similar to the conventional voice service, SIP phone service can realize channel sharing with higher efficiency.R8.0 supports SIP phone service in multi-sites system while R7.6 supports only SIP phone service in single-site system.The configuration in multi-sites system is the same as that in the single-site system.Note that the router configuration is different. For details, refer to *Hytera XPT System Application Notes*.

To set related parameter in the CPS, go to:

- XPT Trunking -> Phone -> Phone System
- XPT Trunking -> Phone -> Phone Call

For detailed configuration, refer to *Hytera XPT System Application Notes*. For more information, please contact the nearest salesperson or the Company.

XPT System Priority Interrupt

This release adds an API interface, allowing priority interrupt between radios and the dispatch station, in addition to priority interrupt among radios.A free channel can be automatically allocated as the slot for priority interrupt by the system. Also, a channel can be reserved as the slot for priority interrupt, in which case relevant configuration is required in the CPS.

To set related parameter, go to "XPT Trunking -> XPT Services -> Setting -> Site Setting -> Priority Interrupt Dedicated Slot".

XPT System OTAP

For the ease of expanding capacity of the XPT system, R8.0 provides the XPT OTAP feature. By connecting the dedicated OTAP tool to the repeater, you can modify parameters for the radio via the OTAP tool. For details, refer to *Hytera XPT System Application Notes*.No additional configuration is required to enable this feature, except that the repeater firmware must be upgraded to R8.0 or later.

Over the Air Encrypt

In the earlier version, only voice packet and data are encrypted; however, the control signaling is not encrypted.This release adds the Over the Air Encrypt feature, encrypting both the air interface signaling and the communication data between the radio and the repeater. This helps improve system security by preventing unauthorized access to the repeater. This release also provides the Migration Mode, which enables the repeater to forward voices, data and signaling (whether encrypted over the air interface or not) in plain text. In this way, a radio with the Over the Air Encrypt feature disabled can communicate with another with the Over the Air Encrypt enabled. It is recommended that you enable the Migration Mode when upgrading radios in batches. After upgrading, disable the Migration Mode so that the Over the Air Encrypt feature functions in the whole voice and data services.

To set related parameters in the CPS, go to:

- Conventional -> Digital Common -> Encrypt -> Over the Air Encrypt Type
- Conventional -> Digital Common -> Encrypt -> Migration Mode
- Conventional -> Digital Common -> Encrypt -> Key Value

Voice with GPS

This release allows the radio to report GPS data during transmission. No additional configuration is required to enable this feature, except that the repeater firmware must be upgraded to R8.0 or later.

Send Talker Alias

This release allows the alias to be carried over the air interface between the radio and the dispatcher. With this feature, the radio user can recognize the dispatcher even if the dispatcher ID has not been saved in the radio.No additional configuration is required to enable this feature, except that the repeater API protocol must be modified. For more information, please contact your nearest salesperson or the Company.

Reporting RSSI Data with GPS Data

This release allows the radio to report downstream RSSI data while transmitting GPS data, facilitating the environment assessment and base station site selection.

Emergency Exit

This release adds the Emergency Exit feature, allowing the radio receiving the emergency alarm to timely exit the emergency mode after the emergency is over. For more information, please contact your

nearest salesperson or the Company.

Repeater Backup

Given that repeaters are usually located in remote suburbs, which makes timely maintenance difficult and that all radios might be affected in case of repeater failure, it is essential to ensure proper operation of the repeater. To solve this problem, this release provides the repeater backup feature. During establishing base station, two repeaters will be set up, with one as the working repeater, the other as the backup repeater. In case the working repeater fails to operate properly, the backup repeater automatically activates, ensuring smooth repeating service.

For a repeater which has been remotely upgraded to R8.0 and which has the Repeater Backup feature enabled, remote upgrade will not be applicable to it.

To set related parameters in the CPS, go to:

- Conventional -> General Setting -> Accessories -> GPIO Pins -> Repeater Backup
- Conventional -> General Setting -> Accessories -> GPIO Pins -> Network Abnormal Backup Enable

For detailed configuration, refer to *DMR Repeater Repeater Backup Application Notes*.

AIS Features (Registration, Authentication and Radio Control)

This release adds and enhances the following AIS features.

- The repeater serves as the registration server, supporting both dynamic and static registration;
- Authentication
- Multiple consoles are allowed to participate in the same group call;
- Short message can be sent to multiple consoles;
- Radio control: repeater frequency can be modified and the repeater channel can be switched;

To set related parameters in the CPS, go to:

- Conventional -> AIS -> AIS -> AIS Setting -> AIS Enable
- Conventional -> AIS -> AIS -> AIS Setting -> AIS Voice Service Slot1 Port
- Conventional -> AIS -> AIS -> AIS Setting -> AIS Voice Service Slot2 Port
- Conventional -> AIS -> AIS -> AIS Setting -> SIP T1 Timer[S]
- Conventional -> AIS -> AIS -> AIS Setting -> Authentication Password
- Conventional -> AIS -> AIS -> AIS Setting -> Static Registration Enable

- Conventional -> AIS -> AIS -> AIS Setting -> Console Information Setting
- Conventional -> AIS -> AIS -> AIS Setting -> Group Call List Setting

2.3.2 Enhancements

All Call for Phone Service

This release adds all call to the call type for phone service.

To set related parameters in the CPS, go to "Conventional -> Phone -> Phone Call -> Phone Call List -> Call Type".

Remote Power Configuration

In previous release, the radio user can only remotely adjust the power level for the repeater, but cannot precisely configure the value.This release adds relevant remote configuration interface, allowing the radio user to remotely set the power level. For more information, please contact your nearest salesperson or the Company.

Emergency Call to Dispatch Station and Call Alert

In previous release, the repeater API feature supports only the upstream emergency call and provides alert only for the downstream call. This release supports both upstream and downstream emergency calls and provides alert for both upstream and downstream calls. Moreover, the radio user can initiate a call carrying the dispatch station ID. For more information, please contact your nearest salesperson or the Company.

2.4 Application

2.4.1 New Features

Record Manager

This software is available when the Record feature is enabled.For details, refer to *DMR Record Manager Operation Guide*.

XPT OTAP

For detailed description and configuration, refer to *Hytera XPT System Application Notes*. For more information, please contact your nearest salesperson or the Company.

CPS Multilanguage Conversion Tool

This tool provides the CPSResourceManager tool for you to develop CPS in other languages than Chinese and English.For details, refer to *CPS Resource Manager Operation Guide*. For more information, please contact the nearest salesperson or the Company.

CPS Configuration Conversion

The CPS of this release implements conversion between the configuration file for a PD7 radio and that for a PD9 radio.

To set related parameters in the CPS, go to：

Tools-CPS Data Conversion

Upgrade Kit

This release optimizes the Upgrade Kit so that up to 6 radios can be upgraded simultaneously using one computer. For details, refer to DMR Multi-Terminal Batch Upgrade Tool_ Operation Guide_R1.0. For more information, please contact the nearest salesperson.

Note

Memory fragmentation due to the USB driver, when Multi-Radio batch upgrade tool is used for a long time, the tool such as crashes or the computer blue screen will appear, requiring user to restart the computer.

2.4.2 Enhancements

Setting Repeater Power Level via RDAC

In earlier release, user can only adjust the repeater power level using RDAC, but cannot set a specific level remotely.This release allows the user to remotely set the repeater power level remotely using RDAC.This feature is applicable to repeater with firmware of R8.0 or later.

Channel Import and Export

The CPS of this release allows you to export the common parameters from the radio, and then import them into other radios. This helps improve the configuration efficiency.

To perform the related operations, go to:

- Tools -> Export Conventional Channel

- Tools -> Import Conventional Channel

English Language Import and Export

The CPS of this release allows you to export the English UI terminologies from the radio, modify them, and then import them into the radio.

To perform the related operations, go to:

- Tools -> Export English Language
- Tools -> Import English Language

3. Important Notes

3.1 Radio

3.1.1 Software

The main issues are as follows:

- New features developed in this release such as RSSI Report, Voice with GPS and Send Talker Alias are applicable only to radios with firmware version of R8.0.
- The Send Talker Alias feature is compatible with radios with earlier firmware version. However, only the repeater with firmware version of R8.0 or later can display the alias.
- The Voice with GPS feature is compatible with radios with earlier firmware version. However, only the repeater with firmware version of R8.0 or later can perform this feature when it serves as a dispatch station.
- With the Over the Air Encrypt feature enabled, only radios with firmware version of R8.0 or later can communicate with each other in DMO mode. In case the radio operates in repeater mode, a repeater with firmware version of R8.0 or later is required to ensure smooth communication.
- In earlier release, single-site system supports only private call without acknowledgement. In this release, single-site system supports private call with acknowledgement.

SFR

For the same frequency, only one radio is allowed to enable this feature. In case two or more radios serve as repeater, communication abnormality may occur.

TF Application

The storage capacity of a TF card (or Miscro SD card) ranges from 1 G to 32 G. For reliable performance, it is recommended that you use the standard TF card (or Miscro SD card) provided by us or other industrial grade TF cards (or Miscro SD cards) for recording purpose exclusively.

BT

It is recommended that you use the BlueSoleil dongle.

Battery

For safe operation, it is recommended that you use the anti-counterfeit battery or smart battery provided

by us, which enable you to check battery information and status and remind you to charge or replace the battery in case of low battery power.

3.1.2 Hardware

New models in R8.0

None

Newly supported frequencies and models in R8.0

- PD98X U1/U3
- X1p V1/U1/U3 BDS Digital Radio
- X1p V1/U1/U3 Enhanced Radio
- PD70X V1/U1 UL913 Ex GLONASS Digital Radio
- PD78X V1/U1 UL913 Ex GLONASS Digital Radio
- PD78X U3 UL913 Ex Digital Radio

3.2 Repeater

3.2.1 Software

Software compatibility in R8.0

XPT system has several SW tools which have different version, please use the correct version when deploy the system.

Repeater Backup

For a repeater which has been remotely upgraded to R8.0 and which has the Repeater Backup feature enabled, remote upgrade will not be applicable to it.

Over the Air Encrypt

When upgrading radios, it is recommended that you enable the Migration Mode for the repeater, to ensure smooth communication between a radio with the Over the Air Encrypt feature disabled and another with the Over the Air Encrypt enabled.

3.2.2 Hardware

Newly supported frequencies in R8.0

RD620 U3

3.3 Application

None

3.4 Accessory

Smart battery BL2015

4. Resolved Issues

This section introduces the solved serious problems which existed between R7.6 and R8.0. (Serious problem indicates that the problem may have serious impact on users.)

No.	Product	Description
001	Portable/Mobile Radio	The voice received by PD7 series is not clear enough in noisy environment.
002	Portable/Mobile Radio	Parameters in "5-Tone Services -> Encoder Definition -> Multicall -> Address" cannot be deleted once they have been set.
003	Portable/Mobile Radio	For PD70XS, when a record file is played using the record software, a received call can be recorded, but without any voice in it.
004	Portable/Mobile Radio	During roaming, the roaming function of Channel Steering 1 fails. After the radio switches from a channel that roams properly to Channel Steering 1, the roaming function also fails.

5. Appendix

The table below lists the new model that supports 1 pulse per second (PPS) in R8.0:

Model Name	Model Number
PD70XG	PD70X-000G00PL-M00000-V1-0-B PD70X-000G00PL-000000-V1-0-B PD70X-000G00PL-M00000-U1-0-B PD70X-000G00PL-000000-U1-0-B PD70X-000G00PL-M00000-U2-0-B PD70X-000G00PL-000000-U2-0-B PD70X-000G00PL-M00000-U3-0-B PD70X-000G00PL-000000-U3-0-B PD70X-000G00PL-M00000-V4-0-A PD70X-000G00PL-000000-V4-0-A
PD700S	PD700-00SG00PL-M00000-U1-0-B PD700-00SG00PL-M00000-V1-0-B
PD78XG	PD78X-000G00PL-M00000-V1-0-B PD78X-000G00PL-000000-V1-0-B PD78X-000G00PL-M00000-U1-0-B PD78X-000G00PL-000000-U1-0-B PD78X-000G00PL-M00000-U2-0-B PD78X-000G00PL-000000-U2-0-B PD78X-000G00PL-M00000-U3-0-B PD78X-000G00PL-000000-U3-0-B PD78X-000G00PL-M00000-U6-0-B PD78X-000G00PL-M00000-V3-0-B PD78X-000G00PL-000000-Ut-0-D PD78X-000G00PL-M00000-V4-0-A PD78X-000G00PL-000000-V4-0-A
PD78X Compass	PD78X-000C00PL-000000-V1-0-B

Model Name	Model Number
	PD78X-000C00PL-M00000-V1-0-B PD78X-000C00PL-M00000-U1-0-B PD78X-000C00PL-000000-U1-0-B PD78X-000C00PL-M00000-U5-0-F PD78X-000C00PL-M00000-U3-0-B PD78X-000C00PL-000000-U3-0-B
PD75XG	PD75X-000G00PL-000000-U1-0-B PD75X-000G00PL-M00000-U1-0-B PD75X-000G00PL-000000-U2-0-B PD75X-000G00PL-M00000-U2-0-B PD75X-000G00PL-000000-V1-0-B PD75X-000G00PL-M00000-V1-0-B
PD88XL	PD88X-000G00PL-000000-U1-0-B PD88X-000G00PL-M00000-U1-0-B PD88X-000G00PL-000000-V1-0-B PD88X-000G00PL-M00000-V1-0-B PD88X-000C00PL-000000-U1-0-B PD88X-000C00PL-M00000-U1-0-B PD88X-000C00PL-000000-V1-0-B PD88X-000C00PL-M00000-V1-0-B
MD78XG	MD78X-000G00P0-000000-V1-H-F MD78X-000G00P0-000000-V1-L-F MD78X-000G00P0-000000-V3-L-A MD78X-000G00P0-000000-U1-H-L MD78X-000G00P0-000000-U1-L-L MD78X-000G00P0-000000-U2-H-L MD78X-000G00P0-000000-U2-L-L MD78X-000G00P0-000000-U3-H-L MD78X-000G00P0-000000-U3-L-L

Model Name	Model Number
	MD78X-000G00P0-000000-U6-H-K MD78X-000G00P0-000000-U6-L-K MD78X-000G00P0-000000-U7-H-L MD78X-000G00P0-000000-V1-A-F MD78X-000G00P0-000000-U6-L-L MD78X-000G00P0-000000-U6-H-L MD78X-000G00P0-000000-Ut-L-L MD78X-000G00P0-000000-Ut-H-L
MD78X Compass	MD78X-000C00P0-000000-U3-L-K MD78X-000C00P0-000000-V1-L-F MD78X-000C00P0-000000-V1-A-F MD78X-000C00P0-000000-V1-H-F MD78X-000C00P0-000000-U1-L-K MD78X-000C00P0-000000-U1-L-L MD78X-000C00P0-000000-U1-H-L MD78X-000C00P0-000000-U3-L-L MD78X-000C00P0-000000-U3-H-L
MD78XG_D	MD78X-000G00PD-000000-V1-H-B MD78X-000G00PD-000000-V1-L-B MD78X-000G00PD-000000-U3-H-A MD78X-000G00PD-000000-U3-L-A
MD65XG	MD65X-000G00P0-000000-V1-A-A MD65X-000G00P0-000000-U1-A-C MD65X-000G00P0-000000-U2-A-C
X1e	X1e0X-000G00P0-MB0000-U1-0-F X1e0X-000G00P0-MB0000-U2-0-F X1e0X-000G00P0-MB0000-U3-0-F X1e0X-000G00P0-MB0000-U6-0-F X1e0X-000G00P0-MB0000-V1-0-H

Model Name	Model Number
	X1e0X-000G00P0-MB0000-U1-0-G X1e0X-000G00P0-MB0000-U2-0-G X1e0X-000G00P0-MB0000-U3-0-G X1e0X-000G00P0-MB0000-U6-0-G X1e0X-000C00P0-MB0000-U1-0-G X1e0X-000C00P0-MB0000-U3-0-G X1e0X-000C00P0-MB0000-V1-0-H
X1p	X1p0X-000G00P0-MB0000-U1-0-F X1p0X-000G00P0-MB0000-U2-0-F X1p0X-000G00P0-MB0000-U3-0-F X1p0X-000G00P0-MB0000-U6-0-F X1p0X-000G00P0-MB0000-V1-0-H X1p0X-000G00P0-MB0000-U1-0-G X1p0X-000G00P0-MB0000-U2-0-G X1p0X-000G00P0-MB0000-U3-0-G X1p0X-000G00P0-MB0000-U6-0-G X1p0X-000G00PE-MB0000-V1-0-K X1p0X-000G00PE-MB0000-U1-0-K X1p0X-000G00PE-MB0000-U3-0-K X1p0X-000C00P0-MB0000-U1-0-G X1p0X-000C00P0-MB0000-U3-0-G X1p0X-000C00P0-MB0000-V1-0-H X1p0X-000C00P0-MB0000-V1-0-K X1p0X-000C00P0-MB0000-U1-0-K X1p0X-000C00P0-MB0000-U3-0-K X1p0X-000C00PE-MB0000-V1-0-K X1p0X-000C00PE-MB0000-U1-0-K

Model Name	Model Number
	X1p0X-000C00PE-MB0000-U3-0-K
PD60XG	PD60X-000G00P0-M00000-Um-0-C PD60X-000G00P0-N00000-Um-0-C PD60X-000G00P0-100000-Um-0-C PD60X-000G00P0-M00000-V1-0-A PD60X-000G00P0-N00000-V1-0-A PD60X-000G00P0-100000-V1-0-A PD60X-000G00P0-N00000-U2-0-C PD60X-000G00P0-100000-U2-0-C
PD68XG	PD68X-000G00P0-N00000-Um-0-A PD68X-000G00P0-100000-Um-0-A PD68X-000G00P0-N00000-U1-0-A PD68X-000G00P0-100000-U1-0-A PD68X-000G00P0-N00000-U2-0-A PD68X-000G00P0-100000-U2-0-A PD68X-000G00P0-N00000-V1-0-A PD68X-000G00P0-100000-V1-0-A
PD66XG	PD66X-000G00P0-N00000-Um-0-A PD66X-000G00P0-100000-Um-0-A PD66X-000G00P0-N00000-U1-0-A PD66X-000G00P0-100000-U1-0-A PD66X-000G00P0-N00000-U2-0-A PD66X-000G00P0-100000-U2-0-A PD66X-000G00P0-N00000-V1-0-A PD66X-000G00P0-100000-V1-0-A PD66X-000G00P0-N00000-U1-0-C PD66X-000G00P0-100000-U1-0-C
PD78XE	PD78X-000G00PE-M00000-U3-0-B PD78X-000C00PE-M00000-U3-0-B

Model Name	Model Number
PD70X UL913	PD70X-0U0G00PL-M00000-U1-0-B PD70X-0U0G00PL-000000-U1-0-B PD70X-0U0G00PL-M00000-V1-0-B PD70X-0U0G00PL-000000-V1-0-B PD70X-0U0G00PL-000000-U2-0-B PD70X-0U0G00PL-M00000-U2-0-B
PD78X Ul913	PD78X-0U0G00PL-M00000-U1-0-B PD78X-0U0G00PL-000000-U1-0-B PD78X-0U0G00PL-M00000-V1-0-B PD78X-0U0G00PL-000000-V1-0-B PD78X-0U0G00PL-000000-U2-0-B PD78X-0U0G00PL-M00000-U2-0-B PD78X-0U0G00PL-M00000-U3-0-B
X1p UL913	X1p0X-0U0G00P0-MB0000-U1-0-G X1p0X-0U0G00P0-MB0000-V1-0-H X1p0X-0U0G00P0-MB0000-U2-0-G
PD70X Ex	PD70X-0E0G00P0-M00000-V1-0-D PD70X-0E0G00P0-M00000-U1-0-N PD70X-0E0G00P0-M00000-U3-0-N
PD78X Ex	PD78X-0E0G00P0-M00000-V1-0-D PD78X-0E0G00P0-M00000-U1-0-N PD78X-0E0G00P0-M00000-U3-0-N
PD98X	PD98X-000G00PD-MB0000-Ux-0-D PD98X-000G00PD-MB0000-U3-0-D PD98X-000G00PD-MB0000-U1-0-D PD98X-000C00PD-MB0000-Ux-0-D PD98X-000C00PD-MB0000-U1-0-D

Model Name	Model Number
	PD98X-000C00PD-MB0000-U3-0-D

Address: HYT Tower, Hi-Tech Industrial Park North, Beihuan RD., Nanshan District, Shenzhen, China
Postcode:518057
http://www.hytera.com