

Digital Radio



Professional In High Quality Two Way Radios

INRICO TECHNOLOGIES CO., LTD.
www.inricosolutions.com

A1703, Shenzhen National Engineering Laboratory Building, Shenzhen. P.R.C



PD660

USER GUIDE

Please read this instruction book carefully before using and keep this with care.

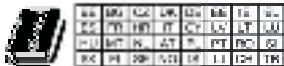
www.inricosolutions.com

Notes Before Using

Please read the following content carefully. It is very important for radio users to gain general knowledge and risks.

- Do not use the device or charging the battery in any hazardous areas such as gas, dust, steam, etc.
- Please turn off the device while refueling or parking at the gas station.
- Do not disassemble your radio.
- Avoid prolonged time in the sun or placing it near heating appliance.
- Avoid excessive exposure to the extreme dusty, damp and splashing place, or leave it on unstable surface.
- Changes or modifications made to this device, not expressly approved by Inrico, could void the user's authority to operate this equipment.
- Reparation by professional technicians, do not disassemble by yourself.

This manual is for reference only and does not constitute any form of commitment. Detailed information is in accord with the final product.



Contents

Unpacking and Device Checking.....	01
Operating Safety Instruction.....	02
Battery Safety Instruction.....	03
Fully Charge Battery Before Initial Use.....	03
Properly Store Batteries.....	03
Features of Lithium Battery.....	03
Clean and Maintenance.....	03
Radio Structure Drawing.....	04
Function Sheet.....	06
Accessories Installation.....	07
Assemble the Battery.....	07
Remove the Battery.....	07
Assemble the Antenna.....	08
Assemble the Belt Clip.....	09
Assemble headphones/speakers.....	10
Charge via Desktop Charger.....	11
Overview.....	12
Basic Functions.....	12
Power on/Power off.....	12
Adjust volume.....	12
Choose Channel.....	13
Voice Broadcast.....	13
PPT Transmit.....	13
User-defined Side Button.....	13
Digital/Analog Communication.....	13
Encryption Function.....	13
Simple Troubleshooting.....	14
Technical Parameters.....	14
Technical Specifications.....	16

Unpacking and Device Checking

Please unpack and take out the device and all accessories carefully, and make sure all items listed below have been received before throwing away the box. If any items are lost or damaged in transit, please contact with our distributors.

Accessories

Items	Number
Walkie-talkie	1
Lithium Battery	1
Power Adaptor	1
Desktop Charger	1
Antenna	1
Belt Clip	1
Hand Strip	1
User Manual	1

Operating Safety Instruction

Please read the following notice carefully. It is very important for device users to gain general knowledge and risks.

- **Do not charge the battery for an extended period of time**

Please stop charging if the battery is found not full charged within the specified time. The battery may overheat and burst with smoke or on fire.

- **Do not put batteries in microwave ovens and high pressure containers**

The battery may overheat and burst with smoke or on fire.

- **Please keep cracked and leaking batteries away from fire**

If the battery leaks or emits a pungent odor, move it away from flammable areas immediately. The electrolyte leaking from the battery is prone to fire, which may cause the battery to smoke or burst into flames.

- **Do not use abnormal battery**

Please remove the battery from charger or device and stop use if the battery smell, discolor, or behaves abnormally for any reason.

- **Please use a dedicated charger**

The charger is specially designed for this type of equipment, which is more scientific, reasonable, safe and reliable.

Battery Safety Instruction

Fully Charge Battery Before Initial Use

- a. Do preserve battery life by switching off a device and removing the batteries when it's not being used, and is not expected to be used for extended periods of time.
- b. Do practice proper battery storage by keeping batteries in a cool, dry place at normal room temperature.

Properly Store Batteries

- Remove the battery from the device.
- Charge and discharge the battery to 40%-65% if it will not be used for 10 days or more. This can greatly extend the battery life.
- The battery should drop below 65% when it is idle for more than 10 days to prevent it from swelling.
- Store the battery in cool and dry environment that's less than 25 °C.

Features of Lithium Battery

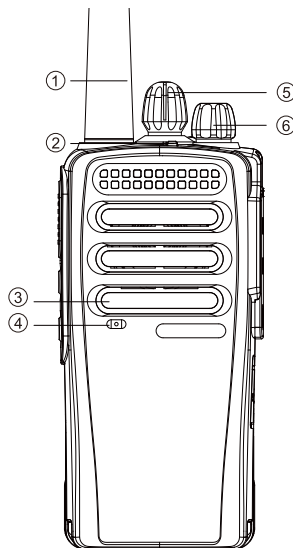
- Battery capacity will reduce after multiple charging cycles.
- The battery capacity drops gradually even without being used.
- Longer charging time is required in shady place.
- Charging and storing Lithium battery in warm condition will short its lifespan. Please do not leave them inside the vehicle or near the heater.
- If the battery working time has reduced significantly, please replace the battery immediately in avoidance of fluid leakage.

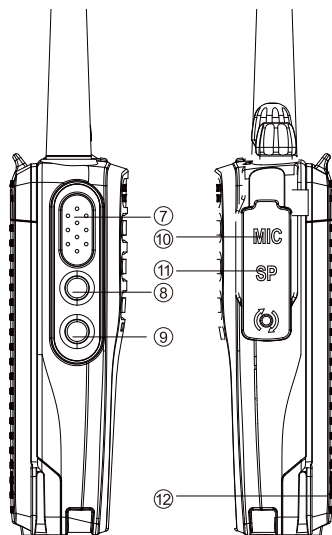
Clean and Maintenance

- Before cleaning and maintaining the device: please stop running, turn off the device, and disconnect all connections with other equipment.

- When you do not use the radio, please cover the accessories connector.
- When cleaning the dust, please use soft brush and neutral detergent (no strong corrosive chemicals) to wipe it.
- Please keep the equipment and accessories dry.
- Please do not use the microwave oven or hair dryer or other heating devices for dry them.

Radio Structure Drawing





1	Antenna	7	PTT
2	Status Indicator	8	Side Button1
3	Loud Speaker	9	Side Button2
4	Microphone	10	Microphone/ Loud Speaker Interface
5	Frequency Switch	11	Program Interface
6	Power Switch/Volume	12	Li-ion Battery Pack

Function Sheet

Button Name	Function
Frequency Switch	Rotate the knob to select channels 1 to 32.
Power Switch/ Volume	Turn it clockwise to turn on the power of the walkie-talkie, and turn it counterclockwise until a click sounds to turn off the power of the walkie-talkie; Rotate to adjust the volume of the sound.
PTT Button	Press the PTT button, the red indicator light will light up, then speak into the microphone; Release the PTT button to receive, the LED indicator will be green.
Side Button1	Short press and long press function of side key can be customized through program software.
Side Button2	Short press and long press function of side key can be customized through program software.

Accessories Installation

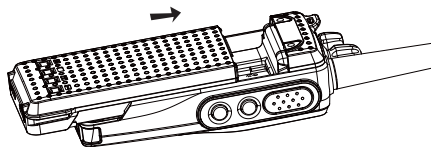
1. Assemble the Battery

The average usage time of the Li-ion battery pack is 8 hours. Average usage time is calculated base on 5% transmit time, 5% receive time and 90% standby time.

Attention

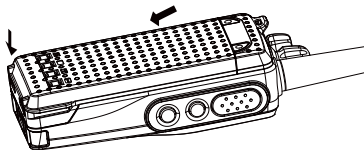
- Do not short-circuit battery terminals or dispose of batteries in fire.
- Do not disassemble the cover of the battery pack without authorization.

Align the four grooves of the battery pack with the corresponding guides on the back of the radio. Push the battery pack along the back of the radio until the release latch on the base of the radio locks.



2. Remove the Battery

Pull down on the release latch and push the battery pack off the radio.

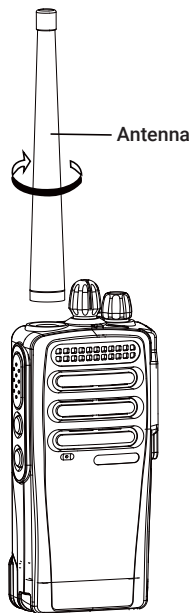


3. Assemble the Antenna

Holding the antenna base, screw the antenna clockwise into the connector on the top of the radio until it is firmly screwed.

Attention

- Do not use the antenna as a handle, keychain or speaker/microphone hanger. Otherwise the antenna will be damage and the performance will be degraded.

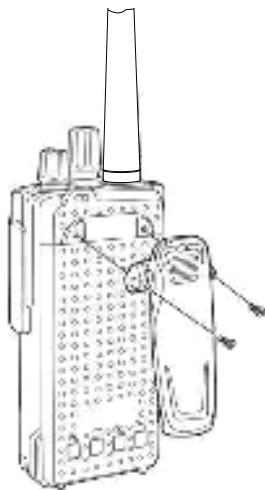


4. Assemble the Belt Clip

If necessary, use the two included 3x8mm screws to fasten the back clip.

Attention

- If the back clip is not assembled, its site will become hot during continuous communication or when placed in a hot environment.

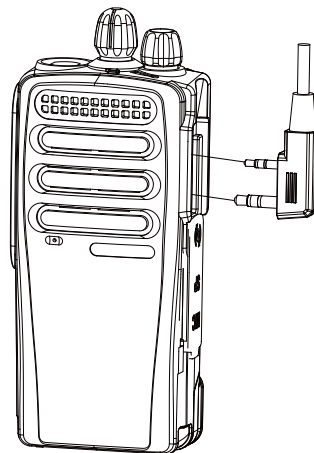


5. Assemble headphones/speakers

Insert the speaker/microphone into the speaker/microphone jack cover.

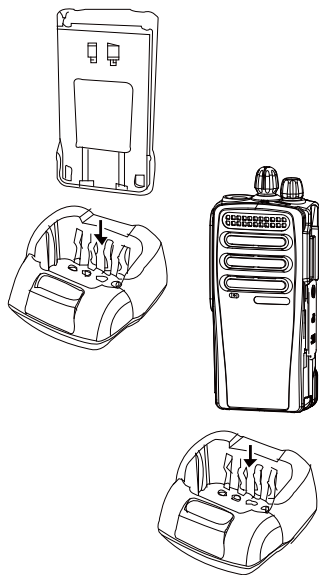
Attention

- The walkie-talkie is not fully waterproof when using the speaker/microphone.



6.Charge via Desktop Charger

The desktop charger must be placed on a plane away from inflammable materials when charging. Align the intercom with the charging port, and put it down into the desktop charger port according to the instructions. The battery does not need to be removed from the intercom when charging.



Overview

Main Feature

32 Storage Channels

Dual Mode Communication Mode:DMR/Analog

Computer Program Function

Transmit High and Low Power Selection

Transmit Timeout Prompt

Chinese and English Voice Prompts

Analog Communication: CTCSS(QTV (DQT) Functional

Analog Communication : WIDNAR

Digital Communication: Encryption Function

Digital Communication: Single Call/Group Call

Basic Function

● Power on

Rotate the power switch/volume knob clockwise to power on the radio, and simultaneously hear the "Beep", the unit will broadcast the current corresponding channel by voice.

● Power off

Rotate the power switch/volume knob counterclockwise until a click sounds, it will turn off and the indicator light will be off.

● Adjust volume

Turn the volume control knob clockwise to increase the volume; turn it counterclockwise to decrease the volume.

● Choose Channel

You can turn the knob to select the channel you want. A total of 16 channels are available for programming.

● Voice Broadcast

1.This machine has a voice broadcast function, which is convenient for you to quickly know the current channel of the walkie-talkie you are using when operating at night or in the dark. This function can be realized by computer programming software

2.Program Software 【Setting】 ->Choose Language English/Chinese

● PTT Transmit

- 1.Hold the PTT button and speak in a normal tone. (Red light on when launching)
- 2.Release the PTT button and wait for reception when you finish speaking.

● User-defined Side Button

1.Set the function of long press and short press in program software(Keys Setting)

● Digital/Analog Communication

1.DMR and Analog modes are both optional. Set the corresponding communication mode through program software.

● Encryption Function

- 1.This function is only valid in digital channels
- 2.Only in the same method and serial of encryption then the receive radio and the transmit radio can communicate successfully.

Simple Troubleshooting

Situation	Possible Reason and Solution
Fail to turn on	<ul style="list-style-type: none"> ● Incorrectly assemble of battery:remove and reassemble ● Run out of battery: charge or replace battery ● Poor connection because of dirty or damage battery ● Battery contact: Clean contact point or replace the battery
Shorten the standby time	<p>Hot environment:battery lifespan is shorten because of high temperature, replace the battery</p> <p>Local operator:power consumption increases in areas with weak signal. Please temporarily turn off the intercom</p>
Receiver light is on, but speaker is silent	<p>Make sure the volume knob is set to maximum</p> <p>Speaker damage: replace speaker</p>
The light is red, but there's no sound	<p>The power module is damaged: replace the power module</p> <p>The microphone is damaged:replace the microphone</p>

Technical Parameters

Analog(CTCSS)									
1	67.0	14	103.5	27	159.8	39	196.6		
2	69.3	15	107.2	28	162.2	40	199.5		
3	71.9	16	110.9	29	165.5	41	203.5		
4	74.4	17	114.8	30	167.9	42	206.5		
5	77.0	18	118.8	31	171.3	43	210.7		
6	79.7	19	123.0	32	173.8	44	218.1		
7	82.5	20	127.3	33	177.3	45	225.7		
8	85.4	21	131.8	34	179.9	46	229.1		
9	88.5	22	136.5	35	183.5	47	233.6		
10	91.5	23	141.3	36	186.2	48	241.8		
11	94.8	24	146.2	37	189.9	49	250.3		
12	97.4	25	151.4	38	192.8	50	254.1		
13	100.0	26	156.7						

Digital(D.C.S)							
1	D023N	28	D155N	54	D315N	80	D503N
2	D025N	29	D156N	55	D325N	81	D506N
3	D026N	30	D162N	56	D331N	82	D516N
4	D031N	31	D165N	57	D332N	83	D523N
5	D032N	32	D172N	58	D343N	84	D526N
6	D036N	33	D174N	59	D346N	85	D532N
7	D043N	34	D205N	60	D351N	86	D546N
8	D047N	35	D212N	61	D356N	87	D565N
9	D051N	36	D223N	62	D364N	88	D606N
10	D053N	37	D225N	63	D365N	89	D612N
11	D054N	38	D226N	64	D371N	90	D624N
12	D065N	39	D243N	65	D411N	91	D627N
13	D071N	40	D244N	66	D412N	92	D631N
14	D072N	41	D245N	67	D413N	93	D632N
15	D073N	42	D246N	68	D423N	94	D645N
16	D074N	43	D251N	69	D431N	95	D654N
17	D114N	44	D252N	70	D432N	96	D662N
18	D115N	45	D255N	71	D445N	97	D664N
19	D116N	46	D261N	72	D446N	98	D703N
20	D122N	47	D263N	73	D452N	99	D712N
21	D125N	48	D265N	74	D454N	100	D723N
22	D131N	49	D266N	75	D455N	101	D731N
23	D132N	50	D271N	76	D462N	102	D732N
24	D134N	51	D274N	77	D464N	103	D734N
25	D143N	52	D306N	78	D465N	104	D743N
26	D145N	53	D311N	79	D466N	105	D754N
27	D152N						

Technical Specifications

Basic Parameter	
Frequency	UHF 400~480MHz
Channel Capacity	16*2 Channels
Channel Spacing	12.5K
Output power	4W/1W
Antenna Impedance	50Ω
Microphone Impedance	2.2KΩ
Speaker	16Ω/1W
Earphone Jack	Kenwood 2pin connector
Voltage	DC7.4V±15%
Battery Capacity	1500mAh
Physical	
Dimension (H*W*D)	125x60x37mm (Without Antenna & Belt clip)
Weight	≈230g
Working Temperature	-20°C ~ 55°C
Storage Temperature	-25°C ~ 70°C
Ingress Protection	IP55
CMIIT ID	2019FP13099
Radiating Portion	
Modulation(Analog)	11K0F3E@12.5KHz
Modulation(Digital)	12.5KHz data: 7K60F1D (data) 12.5KHz Voice and data: 7K60F1E (voice+data)
Frequency Stability	±1.5PPM
Modulation Limiting	±2.5KHz@12.5KHz
Transmitting SNR	≥45dB@12.5KHz
Audio Distortion	≤3%
Audio Response	+1~-3dB
Conducted / Radiated Emission	≤36dBm@<1GHz, ≤-30dBm@>1GHz
Adjacent Channel Power	60dB
Digital Vocoder Type	AMBE+2™
Digital Protocol	ETSI TS 102 361-1,-2,-3
Receiving Part	
Sensitivity	Analog(12dB SINAD): 0.20μW/-121dBm Digital (BER 3%): 0.25μW/-119dBm
Intermodulation	60dB
Adjacent Channel Selectivity	60dB
Channel Inhibition	-8dB
Spurious Response Rejection	60dB
Blocking	85dB
Rated Audio	1W
Audio Response	+1~-3dB
Audio Distortion	≤3%
Received SNR	≥40dB@12.5KHz

FCC Warning:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF Exposure Compliance and Control Guidelines and Operating Instructions

To control your exposure and ensure compliance with the occupational/controlled environment exposure limits always adhere to the following procedures.

Guidelines:

Do not remove the RF Exposure Label from the device.

User awareness instructions should accompany device when transferred to other users.

Do not use this device if the operational requirements described herein are not met.

Operating Instructions:

Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), push the Push-To-Talk (PTT) button. To receive calls, release the PTT button. Transmitting 50 % of the time, or less, is important because this radio generates measurable RF energy exposure only when transmitting (in terms of measuring for standards compliance).

Hold the radio in a vertical position in front of face with the microphone (and the other parts of the radio, including the antenna) at least one inch (2.5 cm) away from the nose. Keeping the radio at the proper distance is important because RF exposures decrease with distance from the antenna. Antenna should be kept away from eyes.

When worn on the body, always place the radio in approved clip, holder, holster, case, or body harness for this product. Use of non-approved accessories may result in exposure levels, which exceed the occupational/controlled environment RF exposure limits.

Use only manufacturer's name approved supplied or replacement antennas, batteries, and

accessories. Use of non-manufacturer-name approved antennas, batteries, and accessories may exceed the FCC and IC RF exposure guidelines.

For a list approved accessories please consult your local dealer for information.