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You can read the recommendations in the user guide, the technical guide or the installation guide for ICOM IC-F1810. You'll find the answers to all your questions on the ICOM IC-F1810 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual ICOM IC-F1810**  
**User guide ICOM IC-F1810**  
**Operating instructions ICOM IC-F1810**  
**Instructions for use ICOM IC-F1810**  
**Instruction manual ICOM IC-F1810**

**ICOM**<sup>®</sup>

**INSTRUCTION MANUAL**

**BIIS 1200  
Compatible**

VHF MOBILE TRANSCEIVER  
**IC-F1721/D**  
**IC-F1821/D**  
UHF MOBILE TRANSCEIVER  
**IC-F2721/D**  
**IC-F2821/D**



This model is IC-F1821/D  
or IC-F2821/D

This device complies with Part 15 of the FCC Rules.  
Operation is subject to the condition that this device  
does not cause harmful interference.

**Icom Inc.**



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**Manual abstract:**

*This may pose a fire hazard or result in an electric shock. @@This connection will ruin the transceiver. NEVER cut the DC power cable between the DC plug and fuse holder. @@NEVER place the transceiver where normal operation of the vehicle may be hindered or where it could cause bodily injury. SAVE THIS INSTRUCTION MANUAL -- This instruction manual contains important operating instructions for the IC-F1721/D, F1821/D, F2721/D and F2821/D VHF/UHF MOBILE TRANSCEIVERS. EXPLICIT DEFINITIONS DEFINITION Personal injury, fire hazard or electric shock RWARNING may occur. CAUTION NOTE Equipment damage may occur. If disregarded, inconvenience only. No risk of personal injury, fire or electric shock. WORD NEVER allow children to touch the transceiver.*

*NEVER expose the transceiver to rain, snow or any liquids. USE the specified microphone only. Other microphones have different pin assignments and may damage the transceiver. Icom, Icom Inc. and the logo are registered trademarks of Icom Incorporated (Japan) in the United states, the United Kingdom, Germany, France, Spain, Russia and/or other countries.*

*All other products or brands are registered trademarks or trademarks of their respective holders. DO NOT use or place the transceiver in areas with temperatures below 30°C (22°F) or above +60°C (+140°F), or in areas subject to direct sunlight, such as the dashboard. i ABOUT APCO PROJECT 25 AVOID operating the transceiver without running the vehicle's engine. @@@@The user of this Technology is explicitly prohibited from attempting to decompile, reverse engineer, or disassemble the Object Code, or in any other way convert the Object Code into a human-readable form. U.*

*S. Pat. Nos. #5,870,405, #5,826,222, #5,754,974, #5,701,390, #5,715,365, #5,649,050, #5,630,011, #5,581,656, #5,517,511, #5,491,772, #5,247,579, #5,226,084, #5,195,166. AVOID placing the transceiver in excessively dusty environments. AVOID placing the transceiver against walls. This will obstruct heat dissipation. AVOID the use of chemical agents such as benzine or alcohol when cleaning, as they damage the transceiver surfaces. BE CAREFUL! The transceiver will become hot when operating continuously for long periods. For U.*

*S.A. only CAUTION: Changes or modifications to this transceiver, not expressly approved by Icom Inc., could void your authority to operate this transceiver under FCC regulations. ii TABLE OF CONTENTS IMPORTANT .....*

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..... 30 iii PANEL DESCRIPTION I Front panel q w e\* e\* 1 1 Icom Inc IC-F1721/D F2721/D IC-F1821/D F2821/D o i uyt r q AF VOLUME CONTROL KNOB Rotate the knob to adjust the audio output level. · Minimum audio level is pre-programmed. r 10-KEYPAD (IC-F1821/D or IC-F2821/D only) The keypad allows you to enter digits to: · Select memory channels, tone channels and DTMF codes (when in the DTMF code channel selection mode) · Set TX codes and BIIS status number · Input text message for SDM operation · Start up with a password · Input the Individual ID code for digital operation. w FUNCTION DISPLAY (p.

2) Displays a variety of information, such as an operating channel number/name, 5-tone code, DTMF numbers and audible condition, etc. e DIAL or UP/DOWN KEYS · IC-F1721/D, F2721/D: DIAL Rotate to select an operating channel, etc. · IC-F1821/D, F2821/D: UP/DOWN Keys Push to select an operating channel, etc. \*The desired function can be assigned by your dealer. (p. 3) t BUSY INDICATOR Lights green while receiving a signal, or when the squelch is open. 1 1 PANEL DESCRIPTION y POWER SWITCH [POWER] Push to turn the power ON and OFF. · The following functions are available at power ON as options: - Automatic scan start - Password prompt - Set mode I Function display q w e r t y u i o u TRANSMIT INDICATOR Lights red while transmitting. i DEALER-PROGRAMMABLE KEYS Desired functions can be programmed independently by your dealer. (p.

3) In this instruction manual, these keys are from the left, called [P0]/[P1]/[P2]/[P3]/[P4]. o MICROPHONE CONNECTOR Connect the supplied microphone or optional DTMF microphone. NEVER connect non-specified microphones. The pin assignments may be different and the transceiver may be damaged. D MICROPHONE The supplied microphone has a PTT switch and a hanger hook. · The following functions are available when the microphone is on or off hook: - Automatic scan start when on hook. - Automatic priority channel selection when off hook. - Sets to 'Inaudible' condition (mute condition) when on hook. - Sets to 'Audible' condition (unmute condition) when off hook. 136. 1 Nar !1 !0 q SIGNAL STRENGTH INDICATOR Indicates relative signal strength level. w LOW POWER INDICATOR Appears when low output power is selected. e AUDIBLE INDICATOR Appears when the channel is in the 'audible' (unmute) condition. Appears when the specified 2/5-tone/BIIS code is received. r COMPANDER INDICATOR Appears when the compander function is activated. t SCRAMBLER INDICATOR Appears when the voice scrambler function is activated. 2 PANEL DESCRIPTION 1 1 I Programmable function keys y BELL INDICATOR Appears/blinks when the specific 2/5-tone/BIIS code is received, according to the pre-programming. u CALL CODE MEMORY INDICATOR Appears when the call code memory is selected.



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i SCROLL INDICATOR Appears when a received SDM including more than 12 characters is displayed. o SDM INDICATOR Appears when an SDM is received, or a transmit SDM is selected.

!0 ALPHANUMERIC DISPLAY Displays an operating channel number, channel name, Set mode contents, DTMF code, etc. The indication mode can be selected from 1 line or 2 lines. Ask your dealer for details. In this instruction manual, the LCD illustration is described using the 2 lines indication mode. !1 ACTIVATED KEY INDICATOR Appears above the key assigned as [DIGITAL] key when that key has been activated. The following functions can be assigned to [DIAL]\*, [UP], [DOWN], [P0], [P1], [P2], [P3] one while pushing the PTT switch. · [CH Up]/[CH Down] allow you to set the audio output level from minimum to maximum. 1 1 OUTPUT POWER SELECTION KEY Push to select the transmit output power temporarily or permanently, depending on the pre-

setting. · Ask your dealer for the output power level for each selection. C.

TONE CHANNEL ENTER KEY Push to select the continuous tone channel using [CH Up]/ [CH Down] to change the tone frequency/code setting after pushing this key. The selected channel remains set as the continuous tone channel until another channel is designated code. TALKGROUP KEY Push to enter the talkgroup ID code selection mode directly. Then select the desired talkgroup ID code using [CH Up]/ [CH Down]. (p.

12) Push to stop the beep emission when receiving a matched talkgroup ID code. Push and hold this key again to exit user set mode. User set mode is also available via the 'Power ON function.' Refer to p. 13 also.

OPT OUT KEYS Push to control the output signal level from the optional unit connector. DIGITAL KEY (BISS operation only) Push to select the call ID list, transmit message and standby condition. @@ Push and hold to select queue channel indication. @@@@ Methods may differ according to your system set up. @@@@ When turning power ON, the transceiver automatically starts scanning. @@ Turn the power off and start over in this case. 8 BASIC OPERATION 2 I Call procedure When your system employs tone signaling (excluding CTCSS and DTCS), the call procedure may be necessary prior to voice transmission. The tone signalling employed may be a selective calling system which allows you to call specific station(s) only and prevent unwanted stations from contacting you. @· Refer to pgs. 1012 for selection.

@@@ Release [PTT] to receive. IMPORTANT: To maximize the readability of your signal; 1. Pause briefly after pushing [PTT]. 2. @@@@ - Un-matched (or matched) CTCSS is received. @@@@ \*Digital mode operation only. @@@@ w Push [TX Code Enter] to enter the TX code edit mode. e Push [TX Code Enter] to select the desired digit to be edited. · The digit to be edited blinks. 2 w Push [TX Code CH Select] for 1 sec.

to enter the TX code edit mode. e Push [TX Code CH Select] to select the desired digit to be edited. · The digit to be edited blinks. r Push [CH Up], [CH Down] or 10-keypad\*, or rotate [CH Up/Down] to set the desired digit. t Push [TX Code Enter] to set the digit.

The digit to the right will blink automatically. · When the 10-keypad\* is used for setting, the digit to the right will blink automatically without pushing [TX Code CH Select]. y Repeat r and t to input all allowable digits. u Push [Call] or [PTT] to transmit the edited TX code. \*IC-F1821/D or IC-F2821/D only r Push [CH Up], [CH Down] or 10-keypad\*, or rotate [CH Up/Down] to set the desired digit.

t Push [TX Code CH Select] to set the digit. The digit to the right will blink automatically. · When the 10-keypad\* is used for setting, the digit to the right will blink automatically without pushing [TX Code CH Select]. y Repeat r and t to input all allowable digits. u Push [Call] or [PTT] to transmit the edited TX code. \*IC-F1821/D or IC-F2821/D only 11 2 BASIC OPERATION r Change the channel-- cancels the selected Talkgroup ID code (return to the pre-set Talkgroup ID code in the channel.) D Individual ID code selection (Digital mode operation only) If the transceiver has [Individual] assigned to it, the indication can be toggled between the operating channel number (or name) and Individual ID code (or name). When the Individual ID code (or name) is displayed, [CH Up], [CH Down] or [CH Up/Down] selects the desired Individual ID code. q Push [Individual]-- an Individual ID code (or name) appears. w Push [CH Up] or [CH Down], or rotate [CH Up/Down] to select the desired Individual ID code.

e Push [PTT] to transmit the selected Individual ID code. r Push [Individual]-- cancels the selected Individual ID code (return to the pre-set Talkgroup ID code in the channel.) D DTMF transmission If the transceiver has [DTMF Autodial] assigned to it, the automatic DTMF transmission function is available. Up to 8 DTMF channels are available. TO SELECT A TX CODE: q Push [DTMF Autodial]-- a DTMF channel appears. w Push [CH Up] or [CH Down], or rotate [CH Up/Down] to select the desired DTMF channel. e Push [DTMF Autodial] to transmit the DTMF code in the selected DTMF channel. D Talkgroup ID code selection (Digital mode operation only) If the transceiver has [Talkgroup] assigned to it, the indication can be toggled between the operating channel number (or name) and Talkgroup ID code (or name). When the Talkgroup ID code (or name) is displayed, [CH Up], [CH Down] or [CH Up/Down] selects the desired Talkgroup ID code. q Push [Talkgroup]-- a Talkgroup ID code (or name) appears.

w Push [CH Up] or [CH Down], or rotate [CH Up/Down] to select the desired Talkgroup ID code. e Push [PTT] to transmit the selected Talkgroup ID code. 12 BASIC OPERATION 2 I User set mode User set mode is accessed with [User Set Mode] and allows you to set seldom-changed settings. In this case you can "customize" the transceiver operation to suit your preferences and operating style. Entering the user set mode: q While pushing and holding [P1] and [P2], push [ ] to turn the power ON.

Then, push and hold [P0] to enter user set mode. e Push [ ] again to exit set mode. 2 [ ] User set mode is also available via a programmable key. Please refer to p. 7 [User Set Mode] section.

I Scrambler function [P0] [P1] [P2] [ ] w Push [P0] several times to select the appropriate item. Then, push [Up] or [Down] or rotate [DIAL] to set the desired level/condition. · Available set mode functions are Backlight, LCD Contrast, Beep, Beep Level, SQL Level, AF Min Level, Mic Gain and Horn. The voice scrambler function provides private communication between stations. The frequency inversion type is equipped to all versions, moreover, the optional Rolling or Non-rolling type can be available. @· " " appears and the mute is released. @@@@ " " appears or blinks depending on the setting.

@@ However, the assigned function can be changed by your dealer. Ask your dealer for details.



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During digital mode operation, BIIS is not available.

@@@@@ [P2]; Null : No function is assigned. @@@@. "CLR DOWN" is displayed for 2 sec. (approx.). " " disappears and the transceiver returns to the standby condition. BIIS OPERATION 3 D Group call q When a group call is received; · Beeps sound. " " appears and the mute is released. ·

The programmed text message (e.g. "GROUP") and the calling station ID (or text) is displayed when the indication mode is 2 lines.

· The programmed text message (e.g. "GROUP") and the calling station ID (or text) is displayed alternately when the indication mode is 1 line, depending on the setting. " " appears or blinks depending on the setting. Appears Appears or blinks D Displaying the received call record -- Queue indication The transceiver memorizes the calling station ID in the memory.

Up to 3 calls can be memorized, and the oldest call record is erased when a 4th call is received. However, once the transceiver is powered OFF, the all records are cleared. q Push [P1] (Digital) for 1 sec. · Displays following indication. 3 When a record is available GROUP 1120 w Push and hold [PTT], then speak into the microphone at a normal voice level.

· TX indicator lights red. <QUEUE> -QUEUE! When no record is available NOTE: Only one station is permitted to speak. e Release [PTT] to return to receive. · BUSY indicator lights green while receiving a signal. <QUEUE> NO QUEUE w Push [Up] or [Down], or rotate [DIAL] to select the desired call. e Push [P1] (Digital) for 1 sec. again to return to the standby condition. · When no operation is performed for 30 sec., the transceiver returns to the standby condition automatically. r To finish the conversation, push [MONITOR] (Moni(Audi)) to send the 'Clear down' signal.

· Either station can send a 'Clear down' signal. · "CLR DOWN" is displayed for 2 sec. (approx.). " " disappears and the transceiver returns to the standby condition. 15 3 BIIS OPERATION I Transmitting a call A total of 3 ways for code selection are available--selecting the call code from memory, entering the call code from the keypad and calling back from the queue channel record. D Calling back from the queue channel q While in the standby condition, push [P1] (Digital) for 1 sec. to enter the queue memory channel selection mode. w Push [Up] or [Down] or rotate [DIAL] to select the desired record. D Using call memory q While in the standby condition, push [P1] (Digital) to enter the call code memory channel selection mode. " " appears.

Appears <QUEUE> -QUEUE! e Push [P0] (Call) or [PTT]\* to call. CALLING 0500 w Push [Up] or [Down], or rotate [DIAL] to select the desired call code. e Push [P0] (Call) or [PTT]\* to call. \*PTT call can be made only when PTT call capability is permitted. \*PTT call can be made only when PTT call capability is permitted.

NOTE: When no answer back is received, the transceiver repeats the call 3 times (default) automatically, and "WAIT" is displayed during each call. However, an error beep sounds and "FAILED" is displayed when no answer back is received after the calls. r Push [PTT] to transmit; release to receive. t Push [P4] (Moni(Audi)) to send the 'Clear down' signal. NOTE: When no answer back is received, the transceiver repeats the call 3 times (default) automatically, and "WAIT" is displayed during each call.

However, an error beep sounds and "FAILED" is displayed when no answer back is received after the calls. r Push [PTT] to transmit; release to receive. t Push [P4] (Moni(Audi)) to send the 'Clear down' signal. 16 BIIS OPERATION 3 D Direct code entry q While in the standby condition, push [P3] (TX Code Enter) to enter the TX code edit mode. · Code digit for editing blinks. u Push [PTT] to transmit; release to receive. i Push [P4] (Moni(Audi)) to send the 'Clear down' signal. For your information When the "UpDate" setting for the call code is enabled, the set code is overwritten into the call code memory. 3 0500 w Push [P3] (TX Code Enter) to select the desired digit to be edited. · Digit for editing differs according to the setting.

e Set the desired digit using [CH Up]/[CH Down]/[DIAL] or 10-keypad\*. \*IC-F1821/D or IC-F2821/D only r Push [P3] (TX Code Enter) to set the digit, then the digit to the right will blink automatically. · When the 10-keypad is used for setting, the digit to the right will blink automatically without pushing [P3] (TX Code Enter). t Repeat e and r to input all allowable digits. y Push [P0] (Call) or [PTT]\* to call. \*PTT call can be made only when PTT call capability is permitted. NOTE: When no answer back is received, the transceiver repeats the call 3 times (default) automatically, and "WAIT" is displayed during each call. However, an error beep sounds and "FAILED" is displayed when no answer back is received after the calls. 17 3 BIIS OPERATION I Receiving a message D Receiving a status message q When a status message is received; · Beeps sound. · The calling station ID (or text) and the status message is displayed alternately when the indication mode is 1 line, depending on the setting.

D Receiving an SDM (Short Data Message) q When an SDM is received; · Beeps sound. · The calling station ID (or text) and the SDM is displayed alternately when the indication mode is 1 line, depending on the setting. " " appears Appears RX Status BASE 01 SDM 8 BASE w Push [P4] (Moni(Audi)) to return to the standby condition. NOTE: Only the calling station ID (or text) is displayed (no message is displayed alternately) when the scroll timer is set to 'OFF.' In this case, push [Status Up]/[Status Down] to display the status message manually.

w When the received SDM includes more than 12 characters, " " appears and the message scrolls automatically, when the automatic scroll function is activated. · Push [Status Up]/[Status Down] to scroll the message manually. SDM 12345678 BASE e Push [P4] (Moni(Audi)) to return to the standby condition. 18 BIIS OPERATION 3 D Received message selection The transceiver memorizes the received message in the memory. Up to 6 messages for status and SDM, or 95 character SDM's can be memorized.

The oldest message is erased when the 7th message is received. However, once the transceiver is powered OFF, all messages are cleared. q Push [P1] (Digital) for 1 sec. · Displays queue memory. r Push [P1] (Digital) for 1 sec. again to return to the standby condition. · When no operation is performed for 30 sec., the transceiver returns to the standby condition automatically. 3 w Push [P1] (Digital) momentarily.



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· Displays message memory.

When a message is available MESSAGE - MSG! When no message is available MESSAGE -NO MSGe Push [Up] or [Down], or rotate [DIAL] to select the desired message. · When selecting the SDM that includes more than 12 characters, " " appears and the message scrolls automatically when the automatic scroll function is activated. · Push [Status Up]/[Status Down] to scroll the message manually. 19 3 BIIS OPERATION I Transmitting a status D General The status message can be selected with the programmed text, and the message text is also displayed on the function display of the called station. Up to 24 status types (1 to 24) are available, and the status messages 22 and 24 have designated meanings. Status 22: Emergency\* Status 24: GPS request \*The status 22 can also be used as a normal status message by disabling the designated meaning. However, the status 24 is fixed. D Transmitting a status q While in the standby condition, push [P1] (Digital), then push [Up] or [Down], or rotate [DIAL] to select the desired station/group code. w Push [P1] (Digital) again, then push [Up] or [DOWN] to select the desired status message. Or, you can select the desired status message using [Status Up]/[Status Down] key directly.

The status call can be sent with both individual and group calls. STATUS 01 TX Status 01 Status message is displayed. e Push [P0] (Call) or [PTT]\* to transmit the status message to the selected station/group. \*PTT call can be made only when PTT call capability is permitted. · 2 beeps will sound and the transceiver returns to the standby condition automatically when the transmission is successful.

20 BIIS OPERATION 3 I Transmitting an SDM (Short Data Message) D General The short data message, SDM, can be sent to an individual station or group stations. Also, 8 SDM memory channels are available and the messages can be edited via PC programming. D Transmitting an SDM q While in the standby condition, push [P1] (Digital), then push [Up] or [Down] or rotate [DIAL] to select the desired station/group code. w Push [P1] (Digital) again, then push [Up] or [Down] or rotate [DIAL] to select the desired SDM. Or, you can select the desired SDM using [Status Up]/[Status Down] key directly.

Appears 3 MESSAGE SDM I SDM is displayed. 1 e Push [P0] (Call) or [PTT]\* to transmit the SDM to the selected station/group. \*PTT call can be made only when PTT call capability is permitted. · 2 beeps will sound and the transceiver returns to the standby condition automatically when the transmission is successful. 21 3 BIIS OPERATION · Available characters Key [0] [1] [2] [3] [4] [5] [6] [7] [8] [9] 0 1 2 3 4 5 6 7 8 9 Characters ! " # \$ % & ' ( ) \* + , - . / : ; \_ ( ) < > [ ] (space) # \* / + - = / & % \$ @ ^ ABCabc DEFdef GHIghi JKLjkl MNomno PQRSpqrs TUVtuv WXYZzxyz D Programming an SDM memory (IC-F1821/D or IC-F2821/D only) q During standby condition, push [P1] (Digital) twice, then push [Up] or [Down] to select the desired SDM to be edited. w Push [M] or [#] to enter the message editing condition. · The first character blinks when [#] is pushed, the last character blinks when [M] is pushed. " " blinks. Blinks Blinks MESSAGE SDM 8 When [#] is pushed. 8 e Push the appropriate digit key, [0] to [9], to enter the desired character.

· See the table at right for the available characters. · Pushing [UP] also enters space, pushing [DOWN] deletes the selected character. NOTE: A decimal point can only be written with the CSF1700 CLONING SOFTWARE. Pre-programmed characters can be rewritten with the 10-keypad, except for the decimal point, as it is not included in the transceiver character list, and cannot be displayed again. r Push [#] to move the cursor to the right, push [M] to move the cursor to the left. t Repeat steps e and r to set the desired text message. y Push [P1] (Digital) for 1 sec. to overwrite the set content into the memory. · Push [P1] (Digital) momentarily to cancel the editing and return to the original message indication. 22 BIIS OPERATION 3 I Position data transmission When the optional cable and a GPS receiver is connected to the transceiver, the position (longitude and latitude) data can be transmitted automatically.

Ask your dealer or system operator for connection details. The position data is transmitted when; · Status 24 message is received \*When the status 24 message, GPS request, is received. I Digital ANI The own ID can be transmitted each time the PTT is pushed (log-in) or released (log-off) during individual or group call communications. By receiving the ANI, the communication log can be recorded when using a PC dispatch application. In addition, when using the ANI with log-in, the PTT side tone function can be used to inform you that the ID is sent and voice communication can be performed.

3 · Fully automatic When automatic position transmission is enabled, send the position data according to 'Time Marker' and 'Interval Timer' settings. · PTT is released When 'Send with Logoff' is enabled. - Set the 'Log-In/Off' item as 'L-OFF.' · After sending a status message When 'Send with Status' is enabled. · After sending an SDM When 'Send with SDM' is enabled.

· After sending status 22 (Emergency) When 'Send with Emergency' is enabled. I Auto emergency transmission When [Emergency Single (Silent)] or [Emergency Repeat (Silent)] is pushed, an emergency signal is automatically transmitted for the specified time period. The status 22 (Emergency) is sent to the selected ID station, and the position data is transmitted after the emergency signal when a GPS receiver is connected to the transceiver. The emergency transmission is performed on the emergency channel, however, when no emergency channel is specified, the signal is transmitted on the previously selected channel. There is no change in the function display or beep emission during automatic emergency transmission. I Printer connection When the optional cable is connected to the transceiver, a printer can be connected to print out the received SDM content and the ID of the station who sent the message. Ask your dealer or system operator for connection details. 23 3 BIIS OPERATION I Stun function When the specified ID, set as a killer ID, is received, the stun function is activated. When the killer ID is received, the transceiver switches to the password required condition. Entering of the password via the keypad is necessary to operate the transceiver again in this case.

I Priority A channel selection When one of the following operations is performed, the transceiver selects the Priority A channel automatically. Priority A is selected when; · Clear down signal is received/transmitted - Set the 'Move to PrioA CH' item as 'Clear down.'



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· Turning the power ON The Priority A channel is selected each time the transceiver power is turned ON. · Status call The Priority A channel is selected when transmitting a status call. - Enable the 'Send Status on Priority A CH' item in the MSK configuration. I BIIS indication The following indications are available for the BIIS operation on an MSK channel. CONNECT : Individual/group call is successful. OK : Message (status or SDM) transmission is successful. FAILED : No answer back is received. WAIT : Appears during retry of the call (2nd call).

CLR DOWN : End the communication. BUSY : Operating channel is in the busy condition. I Horn output Automatic honking function is available when the optional OPC-617 ACC CABLE is connected. When a status message is received, the transceiver controls the vehicle's horn for the specified time period to inform a status message is received. This function is convenient when the operator away from the transceiver.

Ask your dealer or system operator, or refer to the service manual for connection and setting details. 24 CONNECTION AND MAINTENANCE I Rear panel connection Antenna q ANTENNA CONNECTOR Connects to an antenna. Contact your dealer about antenna selection and placement. w Reserved for a future function. e EXTERNAL SPEAKER JACK Connect a 48 external speaker.

4 3 4 Supplied speaker SP-22 (IC-F1821/D or IC-F2821/D only. IC-F1721/D and IC-F2721/D has a built-in speaker.) q w e r y DC POWER RECEPTACLE Connects to a 12 V DC battery. Pay attention to polarities. NEVER connect to a 24 V battery. This could damage the transceiver. y Red Black t 12V Battery R CAUTION! NEVER remove the fuse-holder from the DC power cable. NOTE: Use the terminals as shown below for the cable connections. Crimp Solder r MICROPHONE HANGER Connect the supplied microphone hanger to the vehicle's ground for microphone on/off hook functions. (See p.

2) t OPTIONAL CABLE (OPC-617) Connect an external modem unit, dimmer control, etc. 25 4 CONNECTION AND MAINTENANCE I Supplied Accessories Microphone Microphone hanger and screw set Microphone hanger cable DC power cable Speaker\* Function name stickers KEY-STICKER · Function name stickers There are no names on the programmable function keys since the functions can be freely assigned to these keys. Attach the supplied function name stickers as below to the appropriate keys for easy recognition of that key's assigned function. @@@@w Unscrew the 4 cover screws, then remove the bottom cover. @@r Install the unit as shown in the diagram below. @@28 when uninstalling the unit. CP58 27 4 CONNECTION AND MAINTENANCE I Optional UT-109 or UT-110 installation q Turn the power OFF, then disconnect the DC power cable. w Unscrew the 4 cover screws, then remove the bottom cover. e Cut the pattern on the PCB at the TX mic circuit (MIC) and RX AF circuit (AF OUT), then solder CP37 as shown below. r Install the scrambler unit as described in the installation of optional UT-111 installation on p.

27 t Replace the bottom cover and screws. MIC and AF OUT FRONT I Optional OPC-617 installation Install the OPC-617 as shown below. OPC-617 Cut off the bushing as in the illustration, when you install the optional OPC-617. CP37 OPTIONAL CABLE PIN ASSIGNMENT NOTE: When uninstalling the unit Be sure to re-solder the disconnected points and un-solder the connected points as above when you remove the unit. @@@IN or IGSW cont. IN w AF OUT e Det. AF OUT r Mod. IN t PTT control IN or FTSW control IN y Horn drive cont. OUT u AF GND i Det. AF GND o Mod. @@@@ · SP-5/SP-22 EXTERNAL SPEAKER Input impedance : 4 Max. input power : 5 W SP-5 : Large speaker for good audio quality. SP-22 : Compact and easy-to-install. @@@HM-148 : The same as supplied with the transceiver (depending on version.) · SM-25 DESKTOP MICROPHONE · UT-109 (#02)/UT-110 (#02) SCRAMBLER UNITS Non-rolling type (UT-109)/Rolling type (UT-110) voice scrambler unit provides higher communication security. · UT-111 LTR TRUNKING BOARD Provides trunking operation. · OPC-617 ACC CABLE Allows you to connect to an external terminal. 4 I Fuse replacement A fuse is installed in the supplied DC power cable. If a fuse blows or the transceiver stops functioning, track down the source of the problem if possible, and replace the damaged fuse with a new rated one. Fuse rating: 20 A USE the 20 A fuse only.

I Cleaning If the transceiver becomes dusty or dirty, wipe it clean with a soft, dry cloth. AVOID the use of solvents such as benzene or alcohol, as they may damage the transceiver surfaces. 29 5 W ARN ING SAFETY TRAINING INFORMATION Your Icom radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as "Occupational Use Only", meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the "General Population" in an uncontrolled environment. To ensure that your exposure to RF electromagnetic energy is within the FCC allowable limits for occupational use, always adhere to the following guidelines: C AU T IO N · DO NOT operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed FCC RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio. · DO NOT transmit for more than 50% of total radio use time ("50% duty cycle"). Transmitting more than 50% of the time can cause FCC RF exposure compliance requirements to be exceeded. The radio is transmitting when the "TX indicator" lights red. You can cause the radio to transmit by pressing the "PTT" switch. · For compliance with FCC and Industry Canada RF Exposure Requirements, the transmitter antenna installation shall comply with the following two conditions: 1. The transmitter antenna gain shall not exceed 0 dBi. 2. IC-F1721/IC-F1721D/IC-F1821/IC-F1821D: The antenna is required to be located outside of a vehicle and kept at a distance of 1 meter or more between the transmitting antenna of this device and any persons during operation. For small vehicle as worst case, the antenna shall be located on the roof top at any place on the centre line along the vehicle in order to achieve 1 meter separation distance. In order to ensure this distance is met, the installation of the antenna must be mounted at least 1 meter away from the nearest edge of the vehicle in order to protect against exposure to bystanders. 3. IC-F2721/IC-F2721D/IC-F2821/IC-F2821D: The antenna is required to be located outside of a vehicle and kept at a distance of 79 centimeters or more between the transmitting antenna of this device and any persons during operation.



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*For small vehicle as worst case, the antenna shall be located on the roof top at any place on the centre line along the vehicle in order to achieve 79 centimeters separation distance.*

*In order to ensure this distance is met, the installation of the antenna must be mounted at least 79 centimeters away from the nearest edge of the vehicle in order to protect against exposure to bystanders. Electromagnetic Interference/Compatibility During transmissions, your Icom radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. DO NOT operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites. 30 5 A-6406H-1EX Printed in Japan © 2004 Icom Inc. 1-1-32 Kamiminami, Hirano-ku, Osaka 547-0003, Japan .*



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