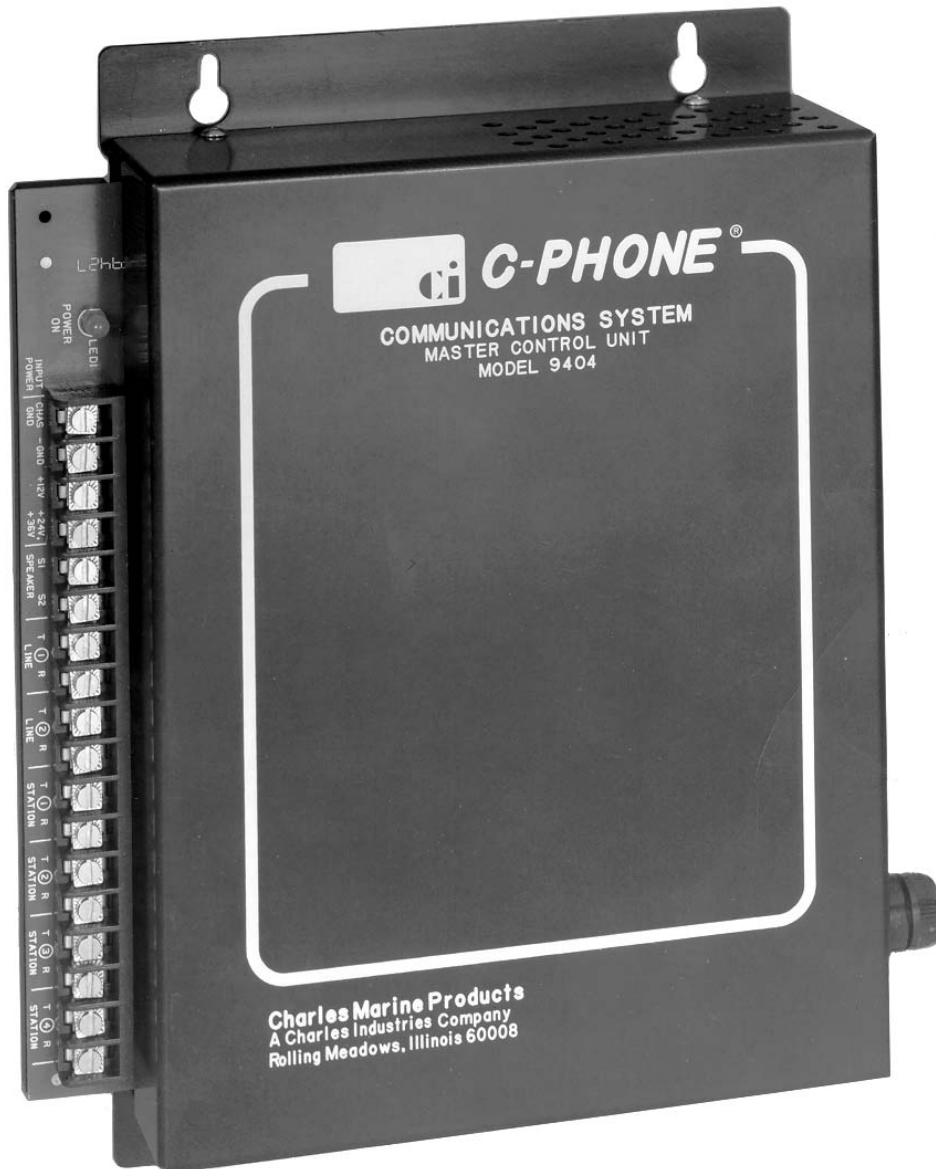# C–PHONE®

COMMUNICATIONS SYSTEM

INSTALLATION INSTRUCTIONS
& OWNER'S MANUAL
Model 9404

Intercom ● *Telephone* ● *Paging* ● *Security Alert* ● *Foghorn*

Marle Group

Contents

INTRODUCING... C-PHONE®

Thank You For Your Purchase

Thank you for purchasing the C-PHONE integrated intercom and telephone system from Charles Marine Products. The C-PHONE will provide years of reliable service if all installation and operating instructions are followed.

Manual Purpose

With your personal safety and satisfaction in mind, this manual lists important safety and regulatory precautions first, then covers installation, features, operation, maintenance, troubleshooting, warranty, and customer service information. To ensure proper installation and operation, please read this entire manual before proceeding.

System Function

Microprocessor controlled, the C-PHONE integrates intercom, two telephone lines, foghorn, security alert and paging features, accessible at every station, by any standard modular (RJ11) plug telephone. Requiring only two conductors at each station, the C-PHONE can utilize existing telephone wiring or can be connected to a previous intercom wire path.

The standard four-station C-PHONE can be increased to eight or a maximum of twelve stations (phones) using one or two C-PHONE EK400, four-station expansion modules.

Two input lines allow the C-PHONE to be connected to a dockside telephone line and a cellular line, or a combination of one or both, to send and receive telephone calls from any station. Typical installations designate Line 1 as the dockside telephone and Line 2 as the cellular line. Cellular line connection to the C-PHONE requires a cellular phone with built-in interface (CP100) or an RJ11 cellular interface device.

Note: Not every cellular phone has an RJ11 interface available to convert cellular signals to telephone signals usable by the Master Control Unit. However, Charles Marine Products offers the CP100 C-PHONE Cellular Transceiver, which is a single-station cellular telephone system and transceiver/interface unit that can add cellular capabilities to your entire on-board C-PHONE system.

The C-PHONE's distinctive ringing feature allows the answering party to distinguish between a Line 1 call (single-ring), a Line 2 call (double-ring), and an intercom call (triple-ring).

Note: The instructions in this manual assume Line 1 is a land line and Line 2 is a cellular line.

The C-PHONE has an internal, automatically adjusting, 4-ohm (20-watt) or 8-ohm (15-watt) hailing amplifier which enables the operation of the foghorn, security alert and paging features from any station when a weatherproof hailer horn is added to the system.

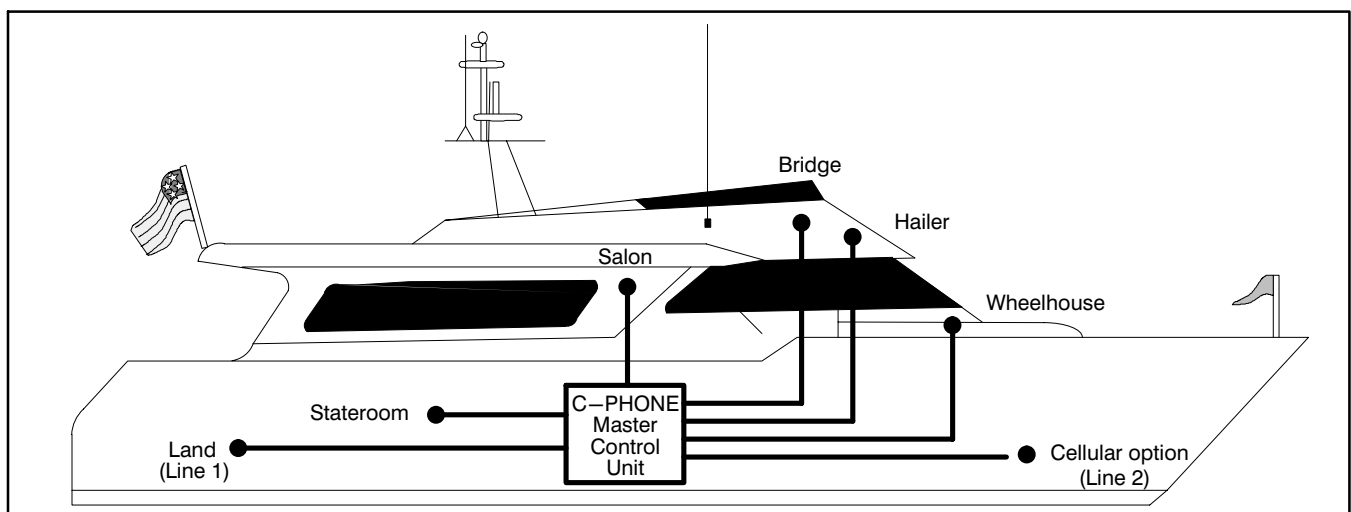*Note: The C–PHONE system is call-waiting compatible.*

Figure 1. Typical C-PHONE 4-Station Configuration

3

REGULATORY INFORMATION

FCC and REN Information

Your new C-PHONE complies with Part 68 and meets Part 15 of the Federal Communications Commission (FCC) rules. A label on the bottom of the Master Control Unit contains the FCC registration number and the Ringer Equivalence Number (REN). Upon request, you must provide this information to your local telephone company. The REN is useful to determine the number of devices that you may connect to a single telephone line and still have all the devices ring properly when your number is called. In most areas, but not all, the sum of the RENs of all devices connected to *one* line should not exceed five (5). To verify the correct maximum REN for your line, contact your local telephone company.

Telephone Company Concerns

Should your telephone equipment cause harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance of this service interruption or ask that you disconnect the equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. But if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC. For service and repair information, please contact Charles Marine Products. Do not attempt to service the equipment yourself.

Your telephone company may also make changes in its facilities, equipment, operations or procedures that could affect the proper operation of your equipment. In the event they do, your telephone company will notify you in advance to give you an opportunity to maintain uninterrupted telephone service.

Hearing Aid Compatibility

The C-PHONE meets the FCC requirement for hearing aid compatibility when hearing aid compatible telephone sets are used with the system.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS. This manual contains important safety, installation and operating instructions for the C-PHONE. Safety instructions are shown in this part and inside all "CAUTION", "DANGER", and "WARNING" boxes within the entire manual. Read the entire manual before usage. Also read and follow all instructions and cautions for and on all phone equipment and peripherals.

Environmental Precautions

Do not expose equipment to water, rain, snow, spray, excessive moisture, gas, fire, or excessive heat: electrical shock could occur.

Application Precautions

The C-PHONE system is intended for permanent installations. All wiring and devices should be permanently located and securely installed. Do not route any wires or cords where they may be abused or damaged, such as on the floor. Do not place devices on unstable or shifting surfaces. Do not use telephones while in a bathtub, shower or pool, if you are exposed to sea spray or water, or in the vicinity of a gas leak. Allow adequate ventilation around telephone equipment and do not block or cover any holes or slots in any telephone device (do not place on a bed, sofa, rug or similar material, and do not drape a towel, curtain, bed cover, cloth or rag over devices). Use of attachments not recommended or sold by Charles Marine Products may result in risk of fire, electrical shock or personal injury.

Installation Precautions

Do not touch uninsulated telephone or power wires unless the telephone and power is first disconnected at the network or power source. Do not install or modify telephone wiring during a lightning storm or when in contact with water. Unless specifically designed for such use, do not install jacks in wet locations. Remove all personal conducting materials such as rings and bracelets during equipment installation/modification.

Damaged C-PHONE Precaution

Do not operate telephone equipment that has received a sharp blow, been dropped, has frayed or damaged wires or plugs, has been exposed to water, performs poorly, or is otherwise damaged. See Part 8 for repair information.

Disassembly Precaution

Do not disassemble C-PHONE or allow any objects to enter any holes or slots.

C–PHONE INSTALLATION

Necessary Tools and Supplies

To install the C-PHONE system, the following tools, supplies, and equipment may be required:

- Drill, for mounting holes

- Screw or nut driver for mounting hardware

- Small standard screwdriver for screw terminals

- Wire crimpers

- Telephone wire strippers

- 4-conductor telephone wire

- Spade or ring wire-conductor ends

- Cable ties, or other wire supports

- Telephone wall jacks/hardware for each station

- Mounting hardware for Master Control Unit and Expansion Module(s) (3 noncorrosive screws or bolts, not provided)

- 9404 C-PHONE Master Control Unit

- Telephone Handset(s) (optional)

- EK400 Expansion Module (optional)

- CP100 Cellular Transceiver (optional)

- Speaker horn (optional)

Many of these items can be ordered from Charles Marine Products. Refer to Table 4 for ordering information.

Master Control Unit & Peripheral Installation

Follow the steps below and refer to Figures 2 through 5 to install the C-PHONE Master Control Unit and peripheral equipment. To install the CP100 Cellular Transceiver or a fax machine, see pages 12 and 13.

WARNING

> **Disconnect power supply at power source before installation. Do not apply power to the unit until all connections are made.**

Mount C-PHONE Master Control Unit

Select a permanent location for the C-PHONE 9404 Master Control Unit (1) and secure with three screws (not provided). Select a dry and cool location that is both high enough to prevent exposure to water and protected from extreme temperatures. If future expansion is likely, allow room below the Master Control Unit to mount the EK400 Expansion Module(s) (2) (see Figures 2 and 5).

CAUTION

> **Do not install the C-PHONE in engine rooms, where temperatures may exceed 125°F.**

Mount Expansion Module

Step	Action
1.	If your C-PHONE was ordered with the EK400 Expansion Module (2), mount the module two inches (2") below the Master Control Unit and secure with three screws (not supplied).
2.	Using the ribbon cable (3) attached to the Expansion Module, connect the Expansion Module to the Master Control Unit.

Check Existing or Install New Phone Wires

The C–PHONE requires one pair (2–conductor) telephone wire to connect each station to the Master Control Unit. If the vessel is prewired, or if existing intercom wire is used, designate and use common TIP (green) and RING (red) color coding. If the vessel is not prewired, run suitable wire lengths, using 22 AWG tinned copper phone wire or shielded phone wire (see (4) and (9) in Figure 2) from the Master Control Unit location (1) to the desired station jack locations (5) and to the speaker horn location (10). Allow ample wire for making connections, and label each wire's end for proper identification. *Use wire supports generously and insulate any sharp edges to prevent abrasion caused by vibrations.* (See Table 4 to order additional wire.)

Check/Install Wire to Vessel's Telephone Inlet

With dockside telephone cord disconnected at the vessel, route the same gauge and type of wire to the vessel's telephone inlet. If an inlet already exists, locate the telephone line inside the vessel and route to the C–PHONE. Always maintain proper green (TIP and red (RING) color coding.

Install Phone Wall Jacks

Position and install individual telephone modular wall jack(s) (5) on nonelectro-conductive material in a dry location as established in Step 3. If using wall phones that attach directly to the wall jack plates, be sure the jack plate's phone mounting screws are installed at the proper depth to accommodate the phone cradle.

Note: Your C-PHONE is compatible with most commercial telephone handsets containing electronic ringers and RJ11 connectors. The system is not restricted to handsets provided by Charles Marine Products.

Install Phones (Cradles/Brackets)

Position and mount all (wall) phone cradles, brackets (7) and handsets at their desired locations. Make sure each handset's ringer switch is "ON" and that the PULSE/TONE switch is in the TONE position. Use the following steps to install the Charles Marine Products wall-mount handset.

Step	Action
1.	Remove the phone cradle's bottom by turning cradle over and removing the release door.
2.	Unwrap the cord (6) concealed in the cradle bottom and feed both the plug and about two inches (2") of cord through the hole in the center of the cradle bottom. Wrap the remaining cord around the wrap post, leaving enough to go through the restrainer at the coiled cord end of the cradle. Refer to the cradle graphics for the proper coiled cord positioning.
3.	Align and re-attach the cradle top to the cradle bottom and secure together with the release door removed in Step 1. Note that the cradle top will not fit on the cradle bottom if either is upside-down (rotated 180°).
4.	Locate the RJ11 plug at the end of the coiled cord on the bottom of the cradle (8) and insert into the phone handset. Next, locate the RJ11 plug on the other cradle cord (6) and insert into the wall jack.
5.	Align the mounting holes at the back of the cradle with the posts on the wall jack plate. Slide the cradle down to secure.

Install Speaker Horn

The C–PHONE requires a separate and dedicated speaker; a speaker wired to another system cannot be used.

Step	Action
1.	Position and install the external speaker horn (10) in the desired exterior or interior location.
2.	Connect the speaker wire (9) conductors to the SPEAKER S1 and SPEAKER S2 terminal screws on the Master Control Unit.

Make Station Connections at Master Control Unit.

Step	Action
3.	Identify and label each station's conductors.
4.	Connect each station's wires (4) to the corresponding station on TB1 of the Master Control Unit.
5.	Connect the green (TIP) wire to the STATION terminal screw "T" and the red (RING) wire to the same STATION's screw "R" (see Figures 3 and 5). Use the same nominal size ring or captive spade terminal end as the C-PHONE terminal screws. Leave enough wire length to provide tension relief. *If you are not familiar with how to make this type of connection, follow these steps:* 1. Carefully strip approximately 1" of the *outer* wire insulation. Then carefully strip approximately 1/2" of the insulation from the green (TIP) conductor. 2. Insert the stripped wire into a spade or ring connector through the hollow shaft in the connector, pressing down on shaft and wire with a crimping tool or pliers until wire is secure in the connector. 3. Repeat steps 1 & 2 above to connect the red (RING) wire to the same station's "R" screw. 4. *If using spade connectors*, loosen the desired STATION's "T" terminal screw. Make sure the connector is not wider than the terminal's square washers, or it will not fit between the walls on the TB1 terminal strip. Place and hold the spade connector under the screw head and between the two square washers. Tighten securely, making sure the connector stays in place. 5. *If using ring connectors*, remove the desired STATION's "T" terminal screw. Make sure the connector is not wider than the terminal's square washers, or it will not fit between the walls on the TB1 terminal strip. Place and center the ring connector between the two square washers. Re-insert the terminal screw through the first square washer, the ring connector, and then the second square washer. Tighten securely.

CAUTION

Connect only one conductor to each terminal screw.

Make Connections at EK400 Expansion Module

If more than four stations (phones) are desired, connect the additional stations to the Expansion Module (2) (EK400) terminal block labeled TS1 (see Figure 2). Write down the additional station numbers and their intercom numbers for future directory identification. Up to two Expansion Modules may be used with the C-PHONE system.

When used with the EK400 Four−Station Expansion Module (part number 93−EK4000−A), please note that although the colors of the 9404 and the EK400 are different, the components are fully−compatible, both functionally and electronically.
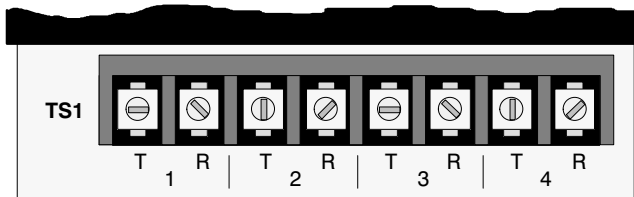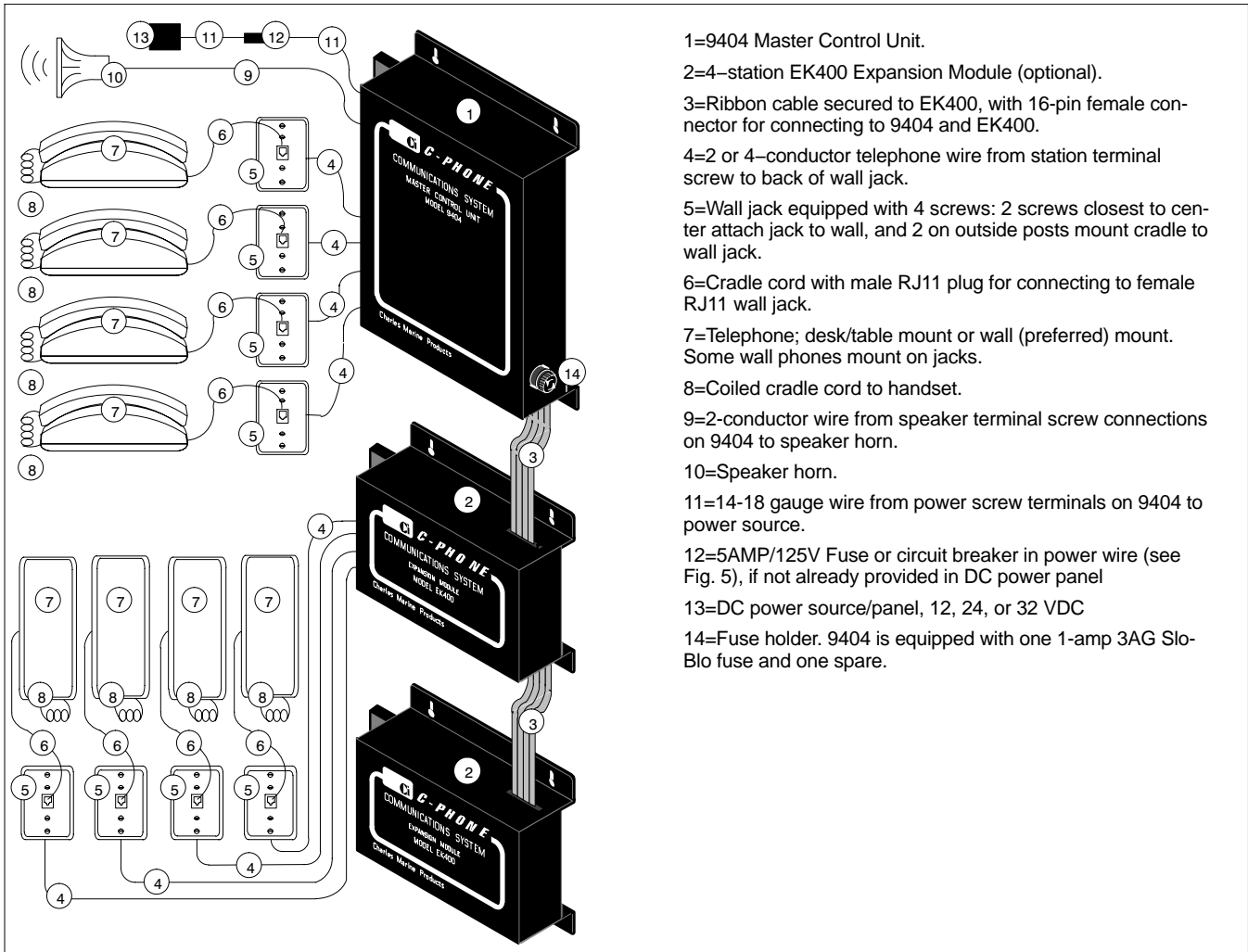

Figure 2. Expansion Module Terminal Block (left side of EK400 model)

1=9404 Master Control Unit.

2=4−station EK400 Expansion Module (optional).

3=Ribbon cable secured to EK400, with 16-pin female connector for connecting to 9404 and EK400.

4=2 or 4−conductor telephone wire from station terminal screw to back of wall jack.

5=Wall jack equipped with 4 screws: 2 screws closest to center attach jack to wall, and 2 on outside posts mount cradle to wall jack.

6=Cradle cord with male RJ11 plug for connecting to female RJ11 wall jack.

7=Telephone; desk/table mount or wall (preferred) mount. Some wall phones mount on jacks.

8=Coiled cradle cord to handset.

9=2-conductor wire from speaker terminal screw connections on 9404 to speaker horn.

10=Speaker horn.

11=14-18 gauge wire from power screw terminals on 9404 to power source.

12=5AMP/125V Fuse or circuit breaker in power wire (see Fig. 5), if not already provided in DC power panel

13=DC power source/panel, 12, 24, or 32 VDC

14=Fuse holder. 9404 is equipped with one 1-amp 3AG Slo-Blo fuse and one spare.

Note: The C−PHONE internal amplifier automatically adjusts to either 8 ohms (15 watts) or 4 ohms (20 watts), depending on the speaker horn used. When selecting a speaker horn, note that the speaker horn wattage should not be less than the C−PHONE amplifier wattage.

Figure 3. C-PHONE Connection Diagram

Figure 4. Block Diagram
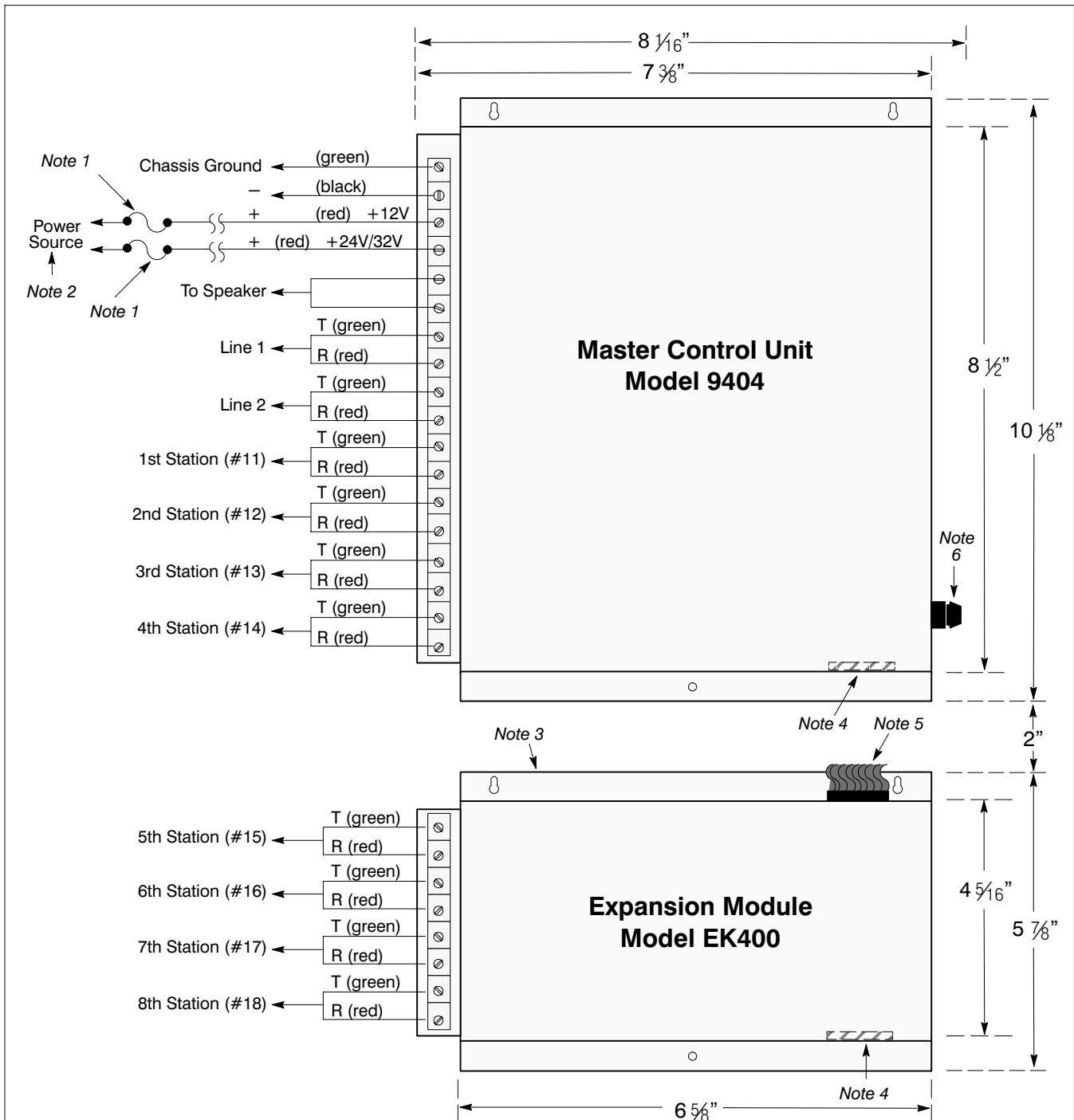
Notes:

1. Connect to a DC accessory panel with a 5A 125V breaker.

2. C-PHONE has a terminal for +12V or a combination +24V/+32V. Make only one of these red, positive (+) connections to the power source (determined by the power source voltage). Also see Figure 3.

3. System may be expanded to a maximum of 12 stations by adding two EK400 Expansion Modules (also see Figure 2).

4. 16−pin connector is accessible through the base of the 9404 Master Control Unit.

5. Ribbon cable with 16−pin connector supplied with the EK400 Expansion Module (see Figure 2).

6. Fuse holder for 3AG 1A Slo−Blo® fuse (2 fuses supplied).

7. T = Tip, R = Ring.

Connect Speaker Horn to Master Control Unit

Connect the speaker horn (10) wire conductor (9) ends to the Master Control Unit's S1 and S2 SPEAKER terminal screws on TB1. The conductors may be connected to either screw, as there is no + or − distinction.

Prepare Vessel's (UNCONNECTED) Grounding

Locate and run a connected, green, ground conductor from the vessel's grounding system to the C−PHONE Master Control Unit. **Do not make the connections at this time.**

Note: The green grounding wire conductor may be connected to the vessel's bonding system at a convenient point other than near or at the DC power sources.

Prepare Vessel's (UNCONNECTED) DC Power Source

Locate a 12, 24, or 32-volt DC accessory panel (13) which has accommodations for a 5-amp 125-volt circuit breaker to be dedicated to the C−PHONE Master Control Unit. If panel space is not available, install an in-line, 5-amp, 125-volt fuse (12) to the positive (+) DC input line between the power source and the Master Control Unit. From the DC power source, run the **unconnected** red positive (+) and black negative (−) power conductors (11) to the C−PHONE Master Control Unit.

Make Grounding Connections

Connect the green, ground conductor to the "CHAS GND" (chassis ground) terminal screw on TB1 of the Master Control Unit, shown in Figure 5.
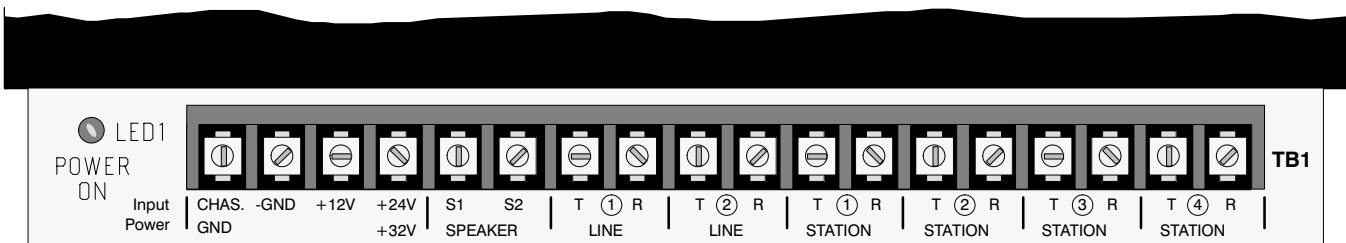
Figure 5. Master Control Unit TB1 Terminal Block (left side of 9404 model)

Connect Non-live Power Wires to Master Unit

Connect the unpowered, black, negative (−), power conductor to the "−GND" (negative ground) terminal screw of TB1 on the Master Control Unit. Connect the unpowered, red, positive (+), power conductor to the "+12V" or "+24V/+32V" terminal screw of TB1. As previously stated, all power wires should be of the proper gauge and conductor size, properly supported for strain relief, abrasion protected, and installed with the proper rated/sized terminal connectors. Refer to Figure 3.

WARNING

> **Be sure the positive (+) and negative (−) terminal connections correspond to the positive and negative terminals of the battery system.**

Connect Dockside Telephone Terminals

Confirm that the dockside telephone is unplugged or disconnected. Using the proper terminal connectors, connect the dockside telephone line's green (TIP and red (RING) to the terminal block marked LINE 1.

Note: If installing a system with the Charles CP100 Cellular Transceiver or other cellular transceiver, proceed to page 11.

Connect Non-Live Power Wires at Power Source

With the designated DC power source circuit off (**no live power**), connect the black, negative (−) power conductor and the red, positive (+) power conductor at the power source.

Activate C-PHONE Power Source (Turn Power On)

After all conductor connections are properly made and secured at the power source and at the Master Control Unit, activate the circuit power. The green, "POWER ON" LED on the Master Control Unit will illuminate if all connections have been properly made.

Note: Except for installing and servicing the unit, always keep power continuously supplied to the C-PHONE, for proper operation.

Make Station Directory/Listing

Create a station number directory (phone listing), using the station/wire identification information gathered during the phone and wiring installation. A blank station directory form or listing is provided with the handset on Charles Marine Products phones. The C-PHONE recognizes 12 predetermined station numbers: 11 through 22. The phone connected to the T and R terminals at STATION (1) on TB1 on the Master Control Unit is automatically assigned station number "11" by the C−PHONE. Likewise, the phone connected to T and R at STATION (2) on TB1 is assigned the number "12". This number sequence designation continues through the number 22, which is the last available station on the optional second EK400 Expansion Module, if purchased. A typical station directory may look as shown in Figure 6.

Dial Station #	Phone Location	
11	Bridge	C−PHONE − 4 Stations
12	Wheelhouse	
13	Salon	
14	Stateroom	
15	Galley	EK400 Expansion Module − 4 Stations
16	Stateroom	
17	Engine Room	
18	Aft Deck	
19	Stateroom	EK400 Expansion Module − 4 Stations
20	Stateroom	
21	Stateroom	
22	Stateroom	

Figure 6. Typical Station Directory

Check C-PHONE System Intercom Operation

Pick up any phone handset to verify the presence of the C-PHONE intercom tone. If intercom tone is present, test all station connections by pressing 2 + 5 (the number 2 key and then the number 5 key) on the key pad, which will ring all connected stations with a distinctive triple ring. To stop the ringing, hang up the phone or depress the hook switch. To test individual stations, depress the desired station's 2-digit number, such as 1 + 1 (station #11). If a station does not ring during this test, see Table 1 for troubleshooting procedures.

Using Cordless Telephones

Cordless telephones can be used within the intercom system, though they may have delayed ringing.

CP100 Cellular Transceiver Installation

Especially useful where dock telephone service is not available, the CP100 allows cellular access at all stations. The CP100 cellular system requirements include (see Figure 7):

- CP100 Transceiver (E) equipped with internal cellular interface and transceiver mounting bracket (F)
- Cellular Handset (H) with mounting cradle
- RJ11 jack (B) with connecting spades

11

- Male-to-male telephone cord (C) used between the RJ11 jack and the transceiver (not supplied with CP100)

- Power cord (G) for CP100 transceiver connection to power source

- Antenna (D) (not supplied with CP100)

When properly connected to either line of the C-PHONE Master Control Unit (whichever line you've designated for cellular operation), the integrated cellular interface of the CP100 transceiver enables cellular line access from all stations. For this reason, the CP100 cellular handset and transceiver are typically mounted out of sight in a dry, secure location.

Other Cellular Phone Concerns (not CP100)

If another cellular transceiver (phone) is used with the C-PHONE system, contact your local cellular phone dealer to purchase a compatible RJ11 interface unit for the cellular phone being used. Using a double-male-ended spade connector, connect the green wire to the "T" terminal screw and the red wire to "R" terminal screw of the designated cellular line, either Line 1 or Line 2 on TB1 of the C–PHONE Master Control Unit.

CP100 Installation Procedure

Follow the steps below and refer to Figure 7 to install the CP100 Cellular Transceiver for use with the C-PHONE.

Step	Action
1.	**Install RJ11 Jack**. Loosen the designated cellular line terminal screw "T" (A) on TB1 (typically LINE 2) of the C-PHONE Master Control Unit. Place the spade end of the green conductor of the RJ11 jack (B) under terminal screw "T" (and under the *top* square washer that is attached to the screw head). While holding the spade end in position between the two square washers, retighten "T". Repeat this procedure for the spade end of the red conductor to terminal screw "R".
2.	**Install Double–Male Cord.** Insert one end of the double-ended RJ11 phone cord (C) into the RJ11 jack (B) installed in Step 1 above, and plug the other end into the transceiver's (E) RJ11 receptacle.
3.	**Install Power Cord**. Plug the multipin connector end of the power cord (G) into the corresponding connector receptacle in the top of the CP100 transceiver (E). Next, connect the red, positive (+) and black, negative (−) wires at the other end of the multiwire power cord (J) to a 12 VDC power source.
4.	**Install Handset.** Plug the cellular handset's (H) male RJ11 plug into the RJ11 female receptacle (I) located at the end of the transceiver's power cord. Note that the cellular handset is not a part of the C-PHONE station system (thus, it cannot be used an an additional station). The handset is only used for cellular programming.
5.	**Install Antenna**. Install the cellular antenna (D) and the antenna cable, (customer supplied) in accordance with the antenna manufacturer's installation instructions. After the cable has been run to the CP100, connect the coaxial plug into the CP100 transceiver. *Note:* *For best results, use the shortest length of cable between the antenna and transceiver, with as few connections as possible.*
6.	**Turn On CP100**. Turn on the CP100 using the power button on the cellular handset. The "IN USE" light and the LCD display on the cellular handset should come on.
7.	**Verify Operation.** To verify proper operation, pick up a C-PHONE handset (not the CP100 handset), press 8, wait for dial tone, and dial a phone number. (See Part 5 for operating features.) If properly connected, the phone number that was dialed on the C–PHONE will appear on the cellular handset's display.
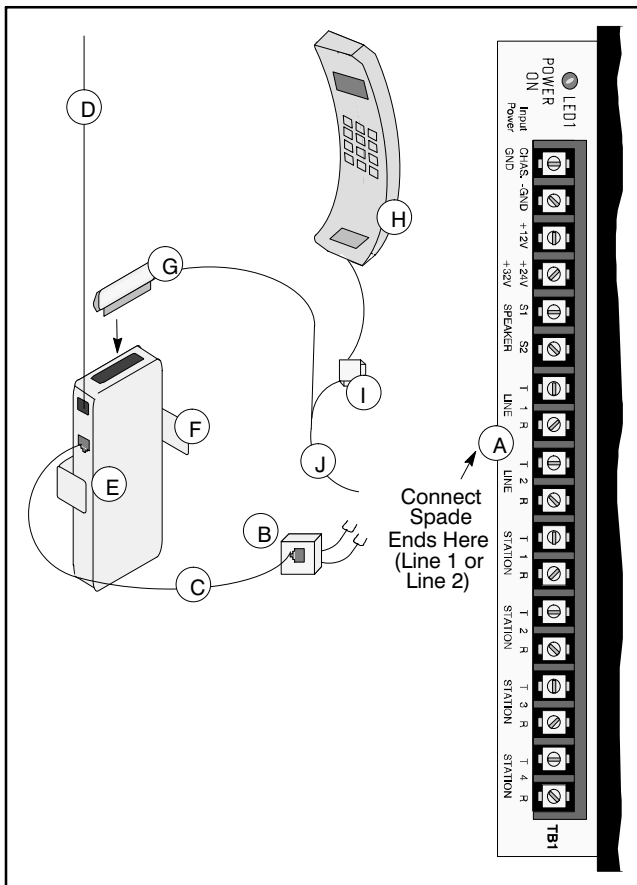
A= Master Control Unit TB1 connection point for RJ11 Jack spade ends
B = Female RJ11 Jack with spade ends
C = Cord from RJ11 Jack to CP100 transceiver
D = Antenna
E = Transceiver
F= Transceiver mounting bracket
G= Power cord
H= Cellular Handset with LCD display
I= Handset's RJ11 receptacle (part of "G")
J= To 12 VDC power source

Figure 7. Installing CP100 Cellular Transceiver

Fax/Answering Machine/Computer Modem Compatibility

Due to the distinctive ringing feature of the C–PHONE, fax and answering machines are unable to differentiate the system's ringing patterns, and are therefore not compatible when connected to a specific C–PHONE station. The recommended installation location for fax and answering machines is in the incoming telephone line *between* the vessel's phone inlet and the C–PHONE system; not within or connected to the C–PHONE system. Refer to Figure 8. Computer modems may be used with the C-PHONE for outgoing connection if the modem has a jack for a handset or phone. First access the outside line with the handset by pressing ⑨ for Line 1 or ⑧ for Line 2, then use the computer to dial the desired number.

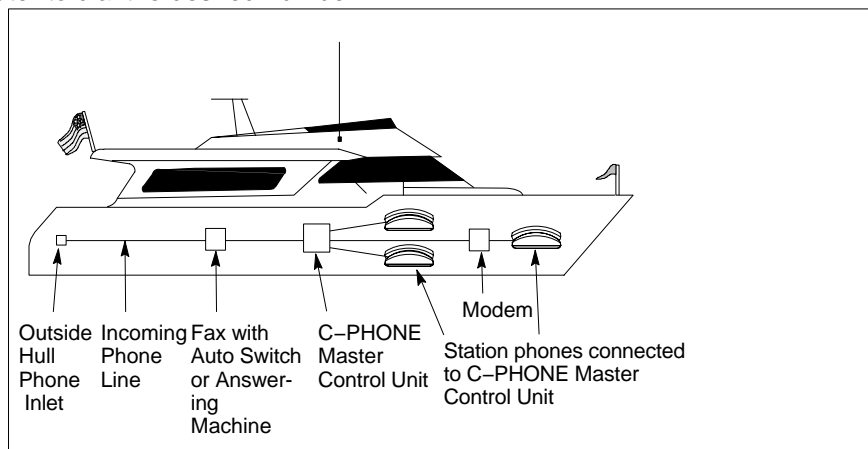Outside Hull Phone Inlet
Incoming Phone Line
Fax with Auto Switch or Answering Machine
C–PHONE Master Control Unit
Modem
Station phones connected to C–PHONE Master Control Unit

Figure 8. Fax, Answering Machine, or Modem Location

C-PHONE OPERATION

C-PHONE Functions

The versatile C-PHONE performs intercom, telephone, paging/hailing, and foghorn operations. These operations are described in this section. To use most features, the necessary equipment must be properly installed, the phone's TONE/PULSE switch should be in the TONE position, the handset (telephone receiver) must be picked up before dialing or pressing any buttons, and the "To Activate" part of each feature's operating instructions must be followed.

Note: All C-PHONE features apply to both lines (Line 1 and Line 2) unless otherwise noted.

Intercom Operation

The C-PHONE's primary function is the intercom. An intercom call is a call made between stations (phones) on the vessel. An intercom call is identified by a triple-ring. (A double-ring is an outside call on Line 2, a single-ring is an outside call on Line 1.)

Note: Incoming calls may occur during an intercom call. You will be alerted to an incoming call by the presence of a background ringing tone. To answer the incoming call during an intercom call, press 0 and either ⑨ or ⑧ (depending on which line is ringing: single-ring = Line 1, double-ring = Line 2). All intercom parties will be connected to the incoming call.

MAKE INTERCOM CALL	
Description:	Make (send) a call to another station within the vessel.
To Activate:	Pick up the handset, then press the desired station's 2-digit number.
Phone Response:	Dialed station will triple-ring.
User Response:	Talk to party when call is answered.
To Deactivate:	Hang up.
Comments:	To make an inside call (intercom) to another station, pick up the handset and dial the desired party's station. All stations have an assigned 2-digit identification number. Refer to the handset directory card for the desired station's number. Station 1's assigned identification number is 11. Station 2's number is 12 (see Figures 5 and 6). If an invalid number is dialed, the internal system dial tone will be heard. Hang up and redial. A busy indicates you have called your own station. To ring <u>all</u> C-PHONE stations, press ② + ⑤.
Feature Notes:	Cordless phones may exhibit delayed ringing. Intercom calls are *not* private! Any handset can be picked up to join an intercom call in progress.

ANSWER INTERCOM CALL (Triple Ring)	
Description:	Answer an intercom call from another station within the vessel.
To Activate:	Pick up the ringing handset.
Phone Response:	Open connection between stations.
User Response:	Talk to calling party.
To Deactivate:	Hang up.

JOIN INTERCOM CALL	
Description:	Join an existing intercom call from within the vessel.
To Activate:	Pick up the handset.
Phone Response:	Open connection between stations.

User Response:	Talk to party(s) already on the intercom.
To Deactivate:	Hang up.

INTERCOM CONFERENCE CALL	
Description:	Ring and add an additional station/party to an existing intercom call.
To Activate:	During an existing intercom call, press 0 and the desired 2-digit station number.
Phone Response:	After 0, a tone is present. After the desired 2-digit station number is pressed, the connection to the new station opens, resulting in a triple-ring at that station.
User Response:	Introduce new station party to existing parties; repeat to add more station parties.
To Deactivate:	Hang up to end the call or dial 00 to return to the call in progress.

TELEPHONE OPERATION

The C-PHONE provides the following telephone functions. Also, call-waiting is compatible with the C-PHONE.

MAKE OUTGOING CALL	
Description:	Make (send) an outside call from the vessel.
To Activate:	Line 1: Pick up the handset, then press ⑨. Line 2: Pick up the handset, then press ⑧.
Phone Response:	Outside dial tone.
User Response:	Dial outside number.
To Deactivate:	Hang up.
Comments:	Pick up the handset and press ⑨ to access an outside dial tone on Line 1 (press ⑧ for Line 2). When dial tone is present, dial the correct outside number. Some land connected phone lines may be part of another phone system that requires dialing an additional access number. If a blocking signal (alternating high/low signal or fast busy) is heard, contact the operator of connected system for the correct dial-out procedure. For example, when in a marina or park with a switchboard, press ⑨ (outside Line 1), then press the prescribed number to access the local or long distance line (usually another ⑧ or ⑨). *Note: If the intercom is in use and an outside call is made from the vessel, all active stations will be included in the call.*
Feature Notes:	During an outside call, if an attempt is made to access the line in use from another handset, a background busy signal will be heard. To make a second outside call, access the other line.

ANSWER INCOMING CALL (Single ring = Line 1, Double ring = Line 2)	
Description:	Answer (receive) a call from outside the vessel.
To Activate:	Pick up the handset.
Phone Response:	Open connection with caller.
User Response:	Speak into handset to caller.
To Deactivate:	Hang up.
Comments:	The distinctive ringing facilitates line identification prior to answering. A single ring indicates an incoming outside call on Line 1, a double ring indicates an incoming outside call on Line 2.

JOIN OUTSIDE CALL	
Description:	Join another station's existing outside call.
To Activate:	Line 1: Pick up the handset, press ⑨ + 0
	Line 2: Pick up the handset, press ⑧ + 0
Phone Response:	Open connection to all parties.
User Response:	Speak into handset.
To Deactivate:	Hang up.
Comments:	To join an outside call in progress, pick up the handset, then press ⑨ (or ⑧ to join a call on Line 2). At this point a busy signal is present. During the busy signal, press 0 to join the call in progress.

PULSE/TONE OUTSIDE LINE DIALING	
Description:	Selects outside line dialing signal type to either pulse dialing (rotary/analog) or tone dialing (digital).
To Activate:	Set PULSE/TONE switch on handset to either PULSE for pulse (rotary/analog) dialing or to TONE for tone (digital) dialing, then press ⑨ or ⑧ for outside dial tone.
Phone Response:	Outside dial tone is provided and the selected dialing signaling type will be used.
User Response:	Make desired call.
To Deactivate:	Return switch to TONE position.
Comments:	If dial tone remains after attempting to make an outside land call, depress the hook switch for a few seconds or hang up. Move the slide PULSE/TONE switch on the handset to the desired position, access the desired outside line, listen for a dial tone, and then redial. Remember that a delay between numbers occurs with rotary dialing.
Feature Note:	The C–PHONE operates on tone only. Pulse should be used only for outside dialing in areas where tone service is not available.

PRIVACY RINGING – SINGLE STATION	
Description:	Direct all incoming *outside* calls to ring at one station only.
To Activate:	Pick up any handset, press * + the 2-digit station number that is to receive the incoming calls, then hang up.
To Deactivate:	Pick up any handset, press * + ④, then hang up.
Comments:	Especially convenient at night, this feature directs all incoming outside calls on either line to ring at one station only.
Feature Note:	Privacy Ringing does not prevent or turn off intercom (*inside*) calls. Intercom calls can still be made to and between any/all stations while Privacy Ringing is turned on or activated.

2-LINE CAPABILITY	
Description:	Any C-PHONE station can receive and/or send calls on Line 1 or Line 2, if available, at the same time.
Comments:	In the unlikely event a call on each line is received simultaneously, the call that was received first by the system will be the one that first activates the system ringing. If other handsets continue ringing after the first handset is picked up, it indicates the presence of the second call on the other line.

CALL WAITING	
Description:	Call Waiting, if provided by the phone company, is compatible with the C−PHONE system and can be used with either line.

Paging (Hailing) Operation

When equipped with a speaker horn, the C-PHONE also functions as a paging (or hailing) system for the vessel. To perform this function, the necessary equipment must be properly installed (see Table 4 to order Charles Marine Product's 8-ohm weather-proof speaker horn).

PAGING OPERATION	
Description:	Send (transmit) a page from the speaker horn from any station.
To Activate:	Pick up the handset, then press * + ⑦.
Phone Response:	Speaker is activated.
User Response:	Speak into handset.
To Deactivate:	Hang up.
Feature Note:	If the handset is too close to the speaker horn, audio feedback may occur.

PAGING VOLUME	
Description:	Set the speaker horn volume.
To Activate:	Pick up the handset, press * + ⑦, then press # either one, two, or three times.
Phone Response:	Increases speaker volume one level each time # is pressed, then resets to lowest level.
User Response:	Hang up.
To Deactivate:	Must reset to change volume level.
Comments:	There are three volume settings: low, medium, and high. Each time the # button is pressed, an increased volume level is selected. Low volume, typical bridge/helm to bow, medium, typical bridge/helm to dock, high, typical bridge/helm to another vessel.

FOGHORN OPERATION

When equipped with a speaker horn, the C-PHONE also functions as a foghorn for the vessel. To use this feature, a speaker horn must be properly installed (see Table 4 to order Charles Marine Product's weatherproof speaker horn). Also, the foghorn note applies to all foghorn types.

Note: *Incoming outside calls and intercom calls can be **received** while the foghorn is active. foghorn volume is not reduced, and conversation will not be heard over the speaker horn.*

*Outgoing outside calls can be **sent** with the foghorn function remaining unchanged at maximum volume except for during the dialing time period. During the outgoing outside call dialing period (starting when the handset is picked up), the foghorn will decrease in volume by 33 percent. However, once an outside line is accessed (whether busy or ringing or answered), the foghorn will return to maximum volume.*

*Intercom calls can be **sent** during the foghorn operation, however, the foghorn volume will decrease 33 percent for the duration of the intercom call. All outgoing intercom conversation will be heard on the speaker horn.*

After any call terminates, the foghorn will continue uninterrupted at full volume.

FOGHORN – POWER BOAT "UNDERWAY" SIGNAL	
Description:	Power boat "underway" signal: one 5-second blast, repeated at 2-minute intervals.
To Activate:	Pick up the handset, press *, ⑤, + ②.

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Phone Response:	Foghorn cycle starts.
User Response:	Hang up.
To Deactivate:	Pick up the handset, press * + 5, then hang up.
Comments:	For maximum volume, hang up handset.

FOGHORN – POWER BOAT "STOPPED" SIGNAL	
Description:	Power boat "stopped" signal: <u>two 5-second blasts</u>, with a 2-second interval between blasts, repeated at 2-minute intervals.
To Activate:	Pick up the handset, press *, ⑤, + ③.
Phone Response:	Foghorn cycle starts.
User Response:	Hang up.
To Deactivate:	Pick up the handset, press * + ⑤, then hang up.
Comments:	For maximum volume, hang up handset.

FOGHORN – SAIL/TOW/FISHING BOAT	
Description:	"Sail/tow/fishing boat" signal: <u>one 5-second blast followed by two 1-second blasts</u>, with a 2-second interval between each blast. Cycle is repeated at 2-minute intervals.
To Activate:	Pick up the handset, press *, ⑤, + ④.
Phone Response:	Foghorn cycle starts.
User Response:	Hang up.
To Deactivate:	Pick up the handset, press * +⑤, then hang up.
Comments:	For maximum volume, hang up handset.

FOGHORN – UNDERTOW SIGNAL	
Description:	"Undertow" signal: <u>one 5-second blast followed by three 1-second blasts</u>, with a 2-second interval between each of the blasts. Cycle is repeated at 2-minute intervals.
To Activate:	Pick up the handset, press *, ⑤, + ⑤.
Phone Response:	Foghorn cycle starts.
User Response:	Hang up.
To Deactivate:	Pick up the handset, press * + ⑤, then hang up.
Comments:	For maximum volume, hang up handset.

Security Alert Operation

When connected to a speaker horn, the C-PHONE also functions as a security alert system for the vessel. This feature allows persons on-board to alert others to an emergency (via a verbal hail with low volume "yelp" or a single amplified "yelp"). (See Table 4 to order Charles Marine Product's weatherproof speaker horn). To use the security alert feature, a speaker horn must be properly installed.

Note: *Telephone and intercom calls can be received and made from the C–PHONE during the security alert operation. The security alert speaker horn functionality and volume is similar to the foghorn speaker functionality and volume previously described in the foghorn note.*

SECURITY ALERT	
Description:	Transmit "yelp" or verbal alarm messages from speaker horn.
To Activate:	Pick up the handset, press * + ⑥.
Phone Response:	Low-volume yelp while handset is picked up; full–volume yelp after user hangs up.
User Response:	Speak into the handset over the low-volume yelp, or hang up for maximum yelp volume.

To Deactivate:	Pick up the handset, press * + ⑥, then hang up.
Comments:	A verbal alarm with a low-volume "yelp", can be transmitted to the speaker horn by picking up the handset, pressing * + ⑥, and then speaking into the handset. The verbal portion of this alarm option stops when the user hangs up, activating the maximum volume "yelp" until the user deactivates the alert. To skip the verbal alarm and quickly access the loudest yelp, hang up immediately after pressing * + ⑥. The alarm continues until * + ⑥ is pressed again.

C-PHONE MAINTENANCE

No maintenance is required for the C-PHONE other than periodically checking all wires and connections for tightness and corrosion.

TROUBLESHOOTING

If there is a problem with the C-PHONE, first check all connections, wires, and fuses and then retest. If all wires, connections, and fuses are good, refer to Table 1. If the condition is not covered in Table 1, or if the C-PHONE still malfunctions after performing the solution(s) given, contact Charles Marine Products for technical assistance.

Table 1.   Troubleshooting Suggestions

Item	Condition	Checks and Remedies
1.	Intercom does not operate.	Determine if there is an intercom tone when handset is picked up.
		Check that called handset's ringer switch is "on" and modular plug connections are secure.
		Check to make sure all connections are proper at the Master Control Unit. Red to "R" and green to "T" for station wires. Red to "+" and black to "−" on DC power input wires. The POWER ON LED should be illuminated.
		Check to see if there is proper DC input voltage and that the fuse is good.
		If all of the above steps check out to be OK, follow the steps below.
		Call other intercom stations. If those stations are functioning, recheck the nonfunctioning station's RJ11 plug for good connection into the wall jack.
		Swap a functioning handset with the nonfunctioning handset to determine if the problem is in the handset or in the station wiring.
		If functioning handset does not work at nonfunctioning station, a problem may exist with the wall jack or station wiring.
2.	Phone does not ring.	Check that the handset's ringing switch is "on".
		Deactivate Privacy Ringing feature (press * and 4), if on.
		See Items 7 and 8.
		See checks and remedies for Item 3 below.
3.	No outside line dial tone.	Confirm that dockside telephone cord is properly/securely inserted into dockside receptacle and not damaged.
		Check that the hook switch is fully extended (up) when the handset is picked up.
		See Items 1, 7, and 8.

Item	Condition	Checks and Remedies
4.	Telephone outside line dial tone present but cannot complete call.	Depress the hook switch or hang up. If dialing to a land line pulse system, verify that the handset switch is in the PULSE position after accessing the outside line in the tone mode.
		Check if the shore line system requires a prescribed access code to complete a call.
		Contact marina switchboard to attain an additional dial−out access number, if applicable.
5.	Faint tones or "yelp", *and* no system dial tone is present when handset is picked up.	If system is not connected to an external speaker horn, a hailer function has been inadvertently activated. See page 17 for instructions to deactivate the foghorn and security features.
6.	When handset is picked up, a high-pitched squeal is heard and the fuse in the Master Control Unit blows shortly thereafter.	There is a short somewhere in the station wiring.
		If this occurs on a new installation, check for a faulty connection or a crossover of one station wire connected to terminals of two different stations. Also check for a short in the wiring connections at the back of the wall jack plates.
		For older installations, the short may be in one of the handsets, in the RJ11 connection in the wall jack plate, in the wire connections behind the wall jack plate(s), or from chaffing of a station wire. Check exterior stations first (aft deck, or flybridge). Remove fuse and disconnect each station's connectors at the Master Control Unit, then reconnect each station, one at a time, re-installing and removing the fuse each time, until the symptom occurs again.
7.	Line 1 does not operate.	Check incoming Line 1 connections at dock and vessel's inlet, if line 1 is dockside service, or at cellular transceiver if cellular is designated Line 1.
		Pull fuse out of holder, pick up any handset and listen for dial tone.
		a. If dial tone is not present, either there is no telephone service or there is still a faulty connection between the input line and the C-PHONE Master Control Unit. Recheck the connection behind the vessel's inlet or cellular transceiver.
		b. If dial tone is present, call Charles Marine Products for customer service.
8.	Line 2 does not operate.	Follow Condition 7's Checks and Remedies, above.

WARRANTY & CUSTOMER SERVICE

Warranty

The CHARLES Marine & Industrial Group warrants the unit will be free from defects in materials and workmanship that cause mechanical failure for one (1) year, as set forth in the Limited Warranty. Notice of any alleged defect in material or workmanship must be provided within thirty (30) days of discovering the problem, and within the warranty period. Follow the procedure outlined below to obtain warranty service.

Service Center and Repair Correspondence

Note: Do not attempt to service the unit. Contact the Service Center.

To contact the Service Center via telephone directly:
        800−830−6523 (Toll Free)
        217−932−2317 (Voice)
        217−932−2473 (FAX)

Call to obtain a Returned Materials Authorization (RMA) number prior to returning any unit to Charles Industries.

Return the unit for repairs to the Service & Repair Center address below:

> Charles Industries, Ltd.
> Marine & Industrial Group
> 503 NE 15th Street
> Casey, IL 62420-2054
> USA

Correspondence can be sent to Corporate Headquarters via the address below:

Note: *Do not return the unit to this address.*

> Charles Industries, Ltd.
> Marine & Industrial Group
> 5600 Apollo Drive
> Rolling Meadows, IL 60008-4049
> USA
> 847–806–6300
> www.charlesindustries.com

Future Features

Your input is important to us. If there is a feature you feel would add to the system's operation, please let us know. Likewise, if this manual or a feature of the system is not clear, please do not hesitate to let us know.

SPECIFICATIONS

The specifications for the C-PHONE are listed in Table 2 and Table 3.

Table 2. C-PHONE Master Control Unit (9404) Specifications

Feature	U.S.	Metric
Weight	33 oz.	1.03 kilogram
Height (Includes mounting flanges)	10 1/8 inches	25.7 centimeters
Width (includes fuse holder)	8 1/16 inches	20.5 centimeters
Depth	2 3/16 inches	5.6 centimeters
Fuse	3AG 1–amp Slo–Blo®	
Amperage Draw (typ.)	250 mA @ 12 VDC	
DC Input Voltage	12, 24, or 32 VDC	

Table 3. C-PHONE Expansion Module (EK400) Specifications

Feature	U.S.	Metric
Weight	15.5 oz.	0.48 kilogram
Height (Includes mounting flanges)	5 7/8 inches	15 centimeters
Width	7 3/8 inches	18.7 centimeters
Depth	2 3/16 inches	5.6 centimeters
Amperage Draw (typical)	75 mA @ 12 VDC	
DC Input Voltage	12, 24, or 32 VDC	

Table 4. C-PHONE Equipment & Accessories

Model/Part #	Description
93−940400	Master Control Unit (only): 4 stations.
93−EK4000	Expansion Module (only): 4 stations.
03−200375	Wire: 4-conductor, 22 ga., 150 ft.
97−001684	Modular (RJ11) receptacle wall jack.
93−008371	Handset: Switchable tone pulse.
38−003006	Directory: With station locations.
99−003008	Horn: Weatherproof, 8-ohm, 40-watt speaker.
93−008394	External ringer.
97−001686 (CP100)	Cellular Transceiver and Handset: Cellular system, transceiver/interface unit, necessary wiring and instruction for adding cellular capabilities to entire on-board C-PHONE system.
Ci−IPHTVMAC	Hull Inlet: Chrome−plated, ABS, watertight threaded cover.
Ci−IPHTVMP	Hull Inlet: White, polycarbonate, watertight threaded cover, provides telephone and cable TV connections.
Ci-IPHTVMP-AC	Hull Inlet: White, polycarbonate, chrome-plated, ABS, watertight threaded cover.
Ci−PHRJM1	Adapter Cable: Telephone, locking plug, with RJ11 modular jack.
Ci−PH50	Cable Set: 50', Yellow, 3 conductor, 16 AWG SJTO cord for marine and RV applications, locking plug and connector.
Ci−PH/TV50W	Cable Set: White, combination telephone and TV applications.
Ci−PR/PH/TVF	Receptacle: Exterior, weatherproof, for phone and CATV.