



Con-Space
hardline

SAVOX

**CSI-2000 HARDLINE COMMUNICATION SYSTEMS
OPERATION AND MAINTENANCE MANUAL**

www.savox.com



CAUTION**PROPER TRAINING**

The CSI-2000 Confined Space Communication System is a safety system. It is designed to assist workers in the accomplishment of their tasks, to make their jobs easier, more relaxed and most of all, safer.

As no product can "guarantee" life protection, neither can the CSI-2000, but properly used and maintained, this equipment will provide a safer environment in which to work. Please ensure that all users of this equipment are properly instructed and knowledgeable as to the features and benefits of this and any other equipment used.

BACKUP COMMUNICATION

Prior to entry, Savox recommends that an alternate method of communication be agreed to between all parties involved, to be used in the unlikely event of a breakdown in the CON-SPACE system. Remember, the prime issue is the safety of the entrant and back-up procedures for all aspects of an entry are necessary to ensure entrant safety.

WARNING

PLEASE READ AND UNDERSTAND THE FOLLOWING WARNING NOTES AND USE IN ACCORDANCE WITH CONTROL DRAWING E-1040, ON PAGE 8 OF THIS MANUAL.



TO PREVENT IGNITION OF A HAZARDOUS (EXPLOSIVE) ATMOSPHERE BATTERIES MUST BE CHANGED IN AN AREA KNOWN TO BE NON-HAZARDOUS



TO MAINTAIN INTRINSIC SAFETY USE ONLY DURACELL MN-1400, PC-1400 OR EVEREADY/ENERGIZER E93, EN93 "C" SIZE 1.5V ALKALINE BATTERIES



THE CSI-2000 INTERCOM SYSTEM IS COMPRISED OF EQUIPMENT THAT IS NOT USER REPAIRABLE. TO MAINTAIN INTRINSIC SAFETY, THE CSI-2000 COMMAND MODULE AND ACCESSORIES MUST NOT BE TAMPERED WITH IN ANY WAY.



DO NOT USE EQUIPMENT THAT IS DAMAGED SUCH AS CRACKED OR BROKEN HOUSINGS, OR CABLES WITH CUTS OR ABRASIONS EXPOSING WIRE.



THE CSI-2000 INTERCOM SYSTEM IS APPROVED FOR USE ONLY WITH THOSE ACCESSORIES SHOWN IN CONTROL DRAWING E-1040 PAGE 6.



THE CSI-2000 INTERCOM SYSTEM IS NOT APPROVED FOR USE IN OXYGEN ENRICHED ATMOSPHERES.

OPERATING A CSI-2000 HARDLINE SYSTEM

Part 1: The CSI-2000 Command Module

IDENTIFYING MODULE FEATURES

PORT 3 VOLUME CONTROL

PORT 2 VOLUME CONTROL

PORT 1 VOLUME CONTROL

OPERATOR VOLUME CONTROL

OPERATOR PORT

ON/OFF SWITCH

LOW BATTERY INDICATOR LIGHT

NOISE REDUCTION BUTTON

GROUND TERMINAL

EXPANSION PORT

ALARM PORT



COM PORT 3 / TALK BOX PORT

COM PORT 2

COM PORT 1

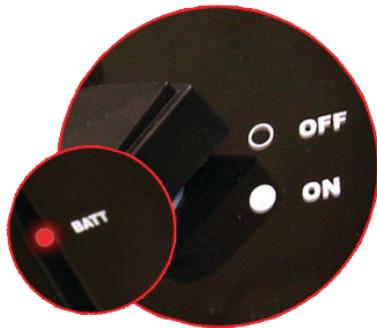
BATTERY COMPARTMENT

BATTERY GUARD



Part 1: The CSI-2000 Command Module

USING THE MODULE



ON/OFF SWITCH & LOW BATTERY INDICATOR LIGHT:

Power Unit Off or On/LED flashes red indicating diminishing battery life, flashes green indicating unit is on.



OPERATOR PORT:

Male Connector Port that connects with Female Connector of Headset or Operator/Mic Mute Cable.



COM PORT 1 & 2:

Male Connector Ports that connect with Female Connector of Com Cables or with a Double Splitter.



TALK BOX PORT 3:

Male Connector Port that connects with Female Connector of Com Cable & connects to Talk Box/Power Talk Box see [Note 1](#).



VOLUME CONTROL KNOBS:

Regulate Volume of Com Ports (Port 1,2,3 & Operator Port)



NOISE REDUCTION BUTTON:

Push and hold to reduce any high pitched ambient noise (i.e. drilling) to any open mics connected to the Command Module (i.e. Talk Box)



Part Number:
0302-01-0002

EXPANSION/RESCUE PORT:

Combine two Command Modules using Expansion Cable, allows on-site worker's module to connect to a rescue team's module providing inter-communication between both teams (allows for up to 14 users total).

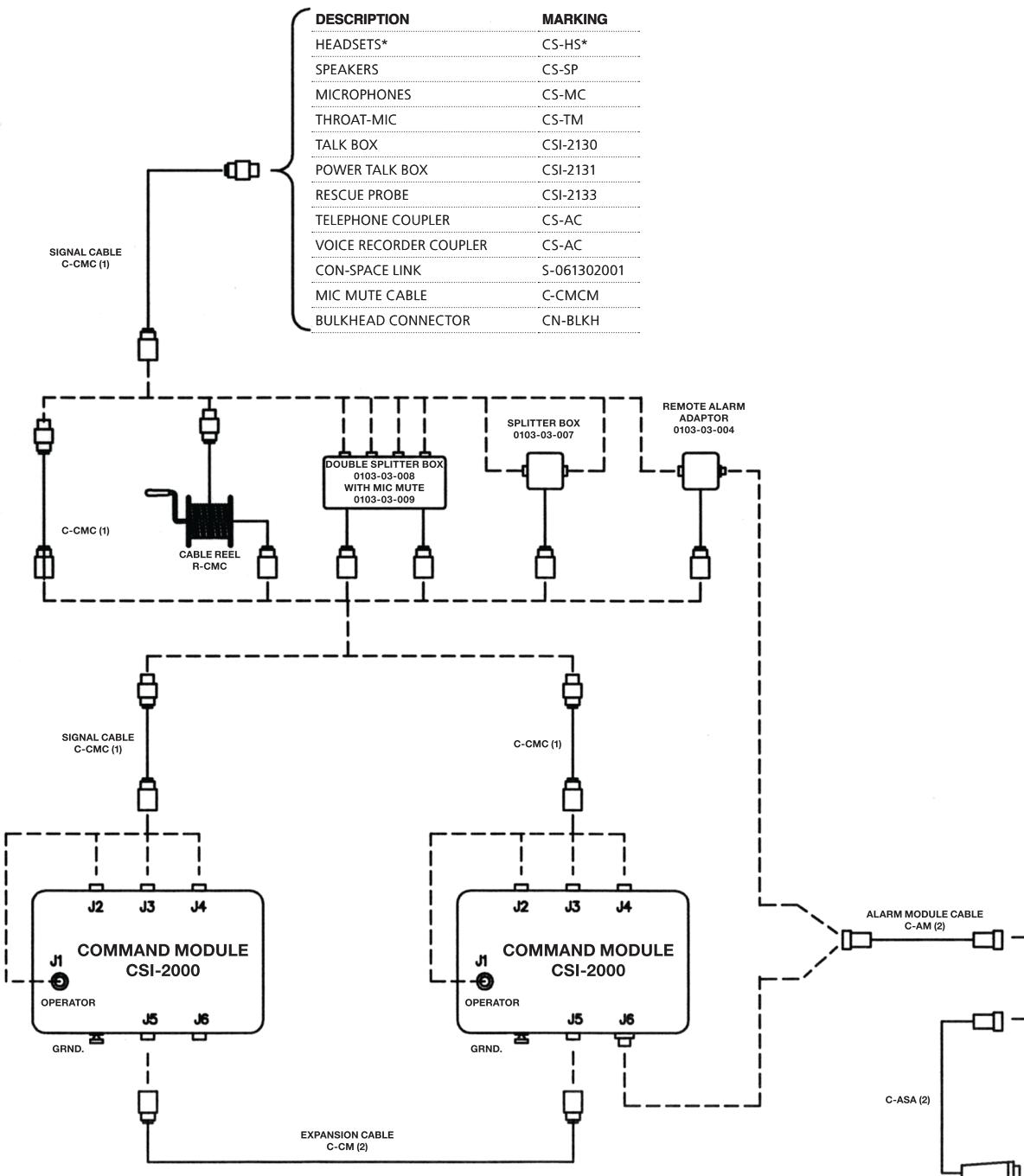


AUXILIARY PORT:

Connect an Alarm Module to Command Module using a Barrier Interconnect Cable (see Alarm Module)

[Note 1: Talk Box Port can also be used to connect a headset or facemask comset, however NO sidetone is available on this port](#)

CSI-2000 INTERCOM SYSTEM: CONTROL DRAWING



* - HEADSET IS DEFINED AS ANY SET OF SPEAKER/S AND MICROPHONE ARRANGED TO BE WORN ON THE HEAD AND LABELED AS, "CON-SPACE, CS-HS".

APPROVED DRAWING. NO MODIFICATION/REVISION TO BE MADE WITHOUT REFERENCE/APPROVAL FROM: INTEK (ITS).

APPROVALS

APPROVED TO OPERATE IN THE FOLLOWING HAZARDOUS LOCATIONS ONLY WHEN USING DURACELL MN-1400, PC-1400 OR EVEREADY/ENERGIZER E93, EN93 1.5V "C" BATTERIES.

NORTH AMERICA

FMRC APPROVED FOR CLASS I, II, III, DIVISION 1, GROUPS A,B,C,D,E,F,G. T3C
4V0A3.AX

CSA APPROVED FOR CLASS I, DIVISION 1, GROUPS A, B, C, D: CLASS II, DIVISION 1, GROUP G AND COAL DUST: CLASS III, DIVISION 1. T3C
LR 88176

NOTES:

(1) MAXIMUM COMBINED LENGTH 500 METERS PER CHANNEL

(2) MAXIMUM LENGTH 500 METERS

FOR CSA, INSTALL IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE (CEC)

FOR FMRC, INSTALL IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC)
ANSWSA RP 12.6

ATEX

 0359 Ex II 1 GD
EEx ia IIC T4
ITSO4ATEX21945X

IEC

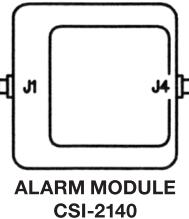
Ex ia IIC T4 Ga
IECEx ITS 08.0022X

NOTES:

(1) MAXIMUM COMBINED LENGTH 1000 METERS PER CHANNEL

(2) MAXIMUM LENGTH 1000 METERS

X - THE 'X' BESIDES THE CERTIFICATION NUMBER INDICATES THAT ACCESSORIES BUILT OF INSULATIVE MATERIAL ARE COATED WITH A STATIC DISSIPATIVE COATING



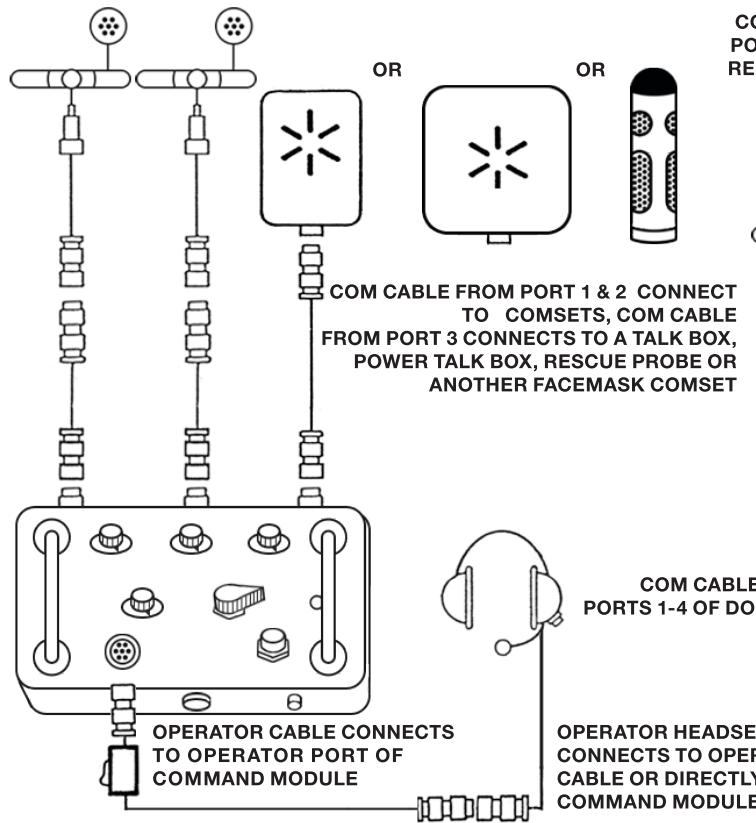
ALARM MODULE
CSI-2140

TITLE	CONTROL DRAWING CSI-2000 INTERCOM SYSTEM	DRAWING
SAVOX COMMUNICATIONS. LTD	BC, CANADA	E-1040 PAGE 1 OF -

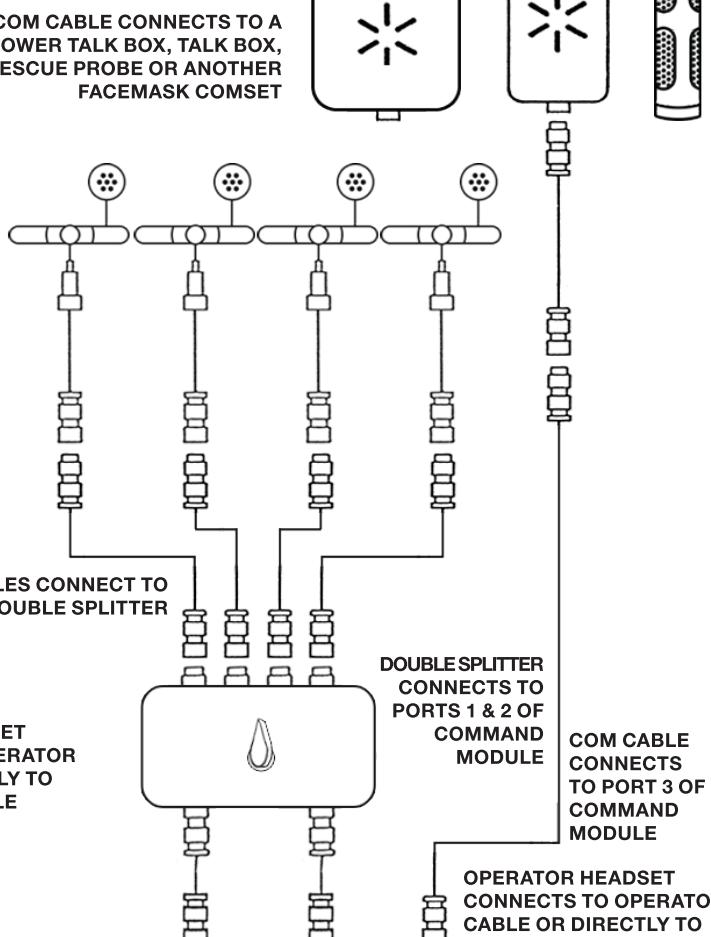
Part 2: Connecting & Using Hardline Accessories

SUGGESTED CONFIGURATIONS

CONFIGURATION 1

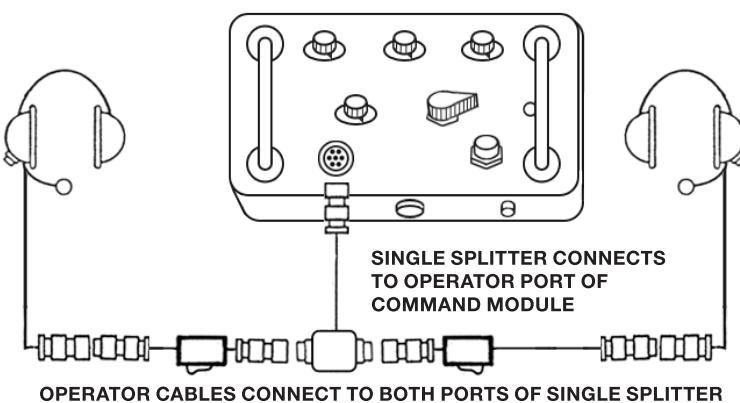


CONFIGURATION 2

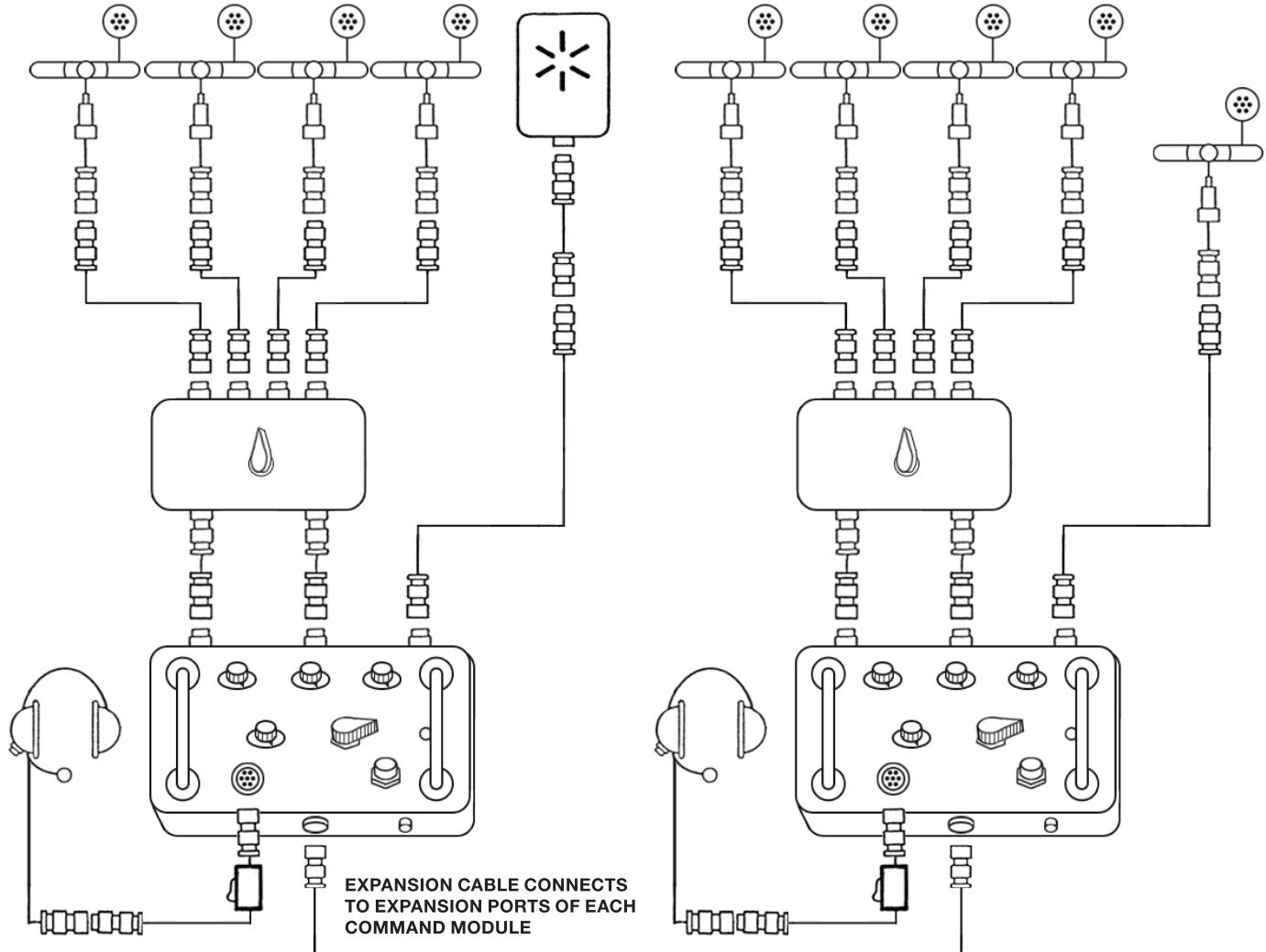
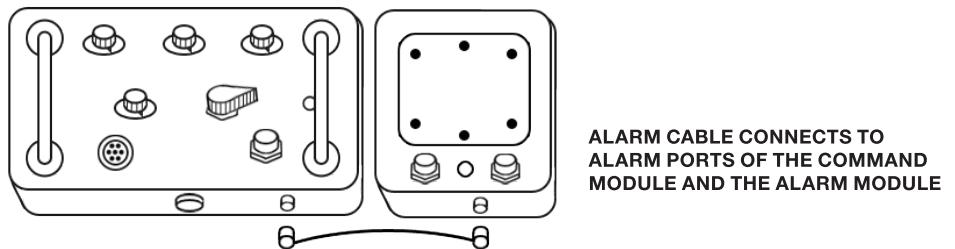


CONFIGURATION 3

OPERATOR HEADSETS CONNECT TO OPERATOR CABLES OR DIRECTLY TO PORTS OF SINGLE SPLITTER



Part 2: Connecting & Using Hardline Accessories

SUGGESTED CONFIGURATIONS**CONFIGURATION 4**
(REFER TO CONFIGURATION 2 FOR CONNECTION LABELS)**CONFIGURATION 5 (APPLICABLE TO ALL CONFIGURATIONS)**

Part 2: Connecting & Using Hardline Accessories

THE HEADSET

Ensure Boom Mic is ONLY a Finger-width distance from the mouth



THE COMSET



Secure Hearing Option and test voice audio input from other users



Make sure Throat Mic Element is worn snugly to LEFT or RIGHT of Adam's Apple and test audio output while adjusting element up & down / side-to-side



Connect Male Connector of Com Cable into Female Connector of Comset Cable

Part 2: Connecting & Using Hardline Accessories

OPERATOR PORT CONNECTIONS



CONNECT DIRECT TO HEADSET:

Plug Female Connector of Headset directly to Male Connector Port of CSI-2000 Command Module.

Use Operator Volume Knob to increase or decrease volume level of Operator Headset



CONNECT MIC MUTE SWITCH/OPERATOR CABLE:
Plug Female Connector of Mic Mute Switch or Operator Cable to Male Connector Port of CSI-2000 Command Module.

Connect Male Connector of Mute Switch or Operator Cable to Female Connector of Headset. Mute Switch allows Operator to mute his/her Microphone (see Mute Switch)

CONNECT A SINGLE SPLITTER:
Plug Female Connector of Single Splitter to Male Connector Port of CSI-2000 Command Module

Single Splitter allows the use of Two Headsets on one Port (Single Splitter can also be plugged to Talk Box Port to allow Two Talk Boxes)



Part 2: Connecting & Using Hardline Accessories

THE MUTE SWITCH



THE RESCUE PROBE

The Rescue Probe is a cylindrical speaker and microphone which functions as a Talk Box



Part 2: Connecting & Using Hardline Accessories

THE DOUBLE SPLITTER



Part 2: Connecting & Using Hardline Accessories

THE DOUBLE SPLITTER W/MUTE SWITCH



Switch to BOTH ON: All microphones live allowing Team 1 & 2 members to fully communicate with each other and the Attendant.



Switch to TEAM 1 ON: Team 1 fully active, mutes Team 2 microphones but allows its members to listen to all conversations.



Switch to TEAM 2 ON: Team 2 fully active, mutes Team 1 microphone but allows its members to listen to all conversations.

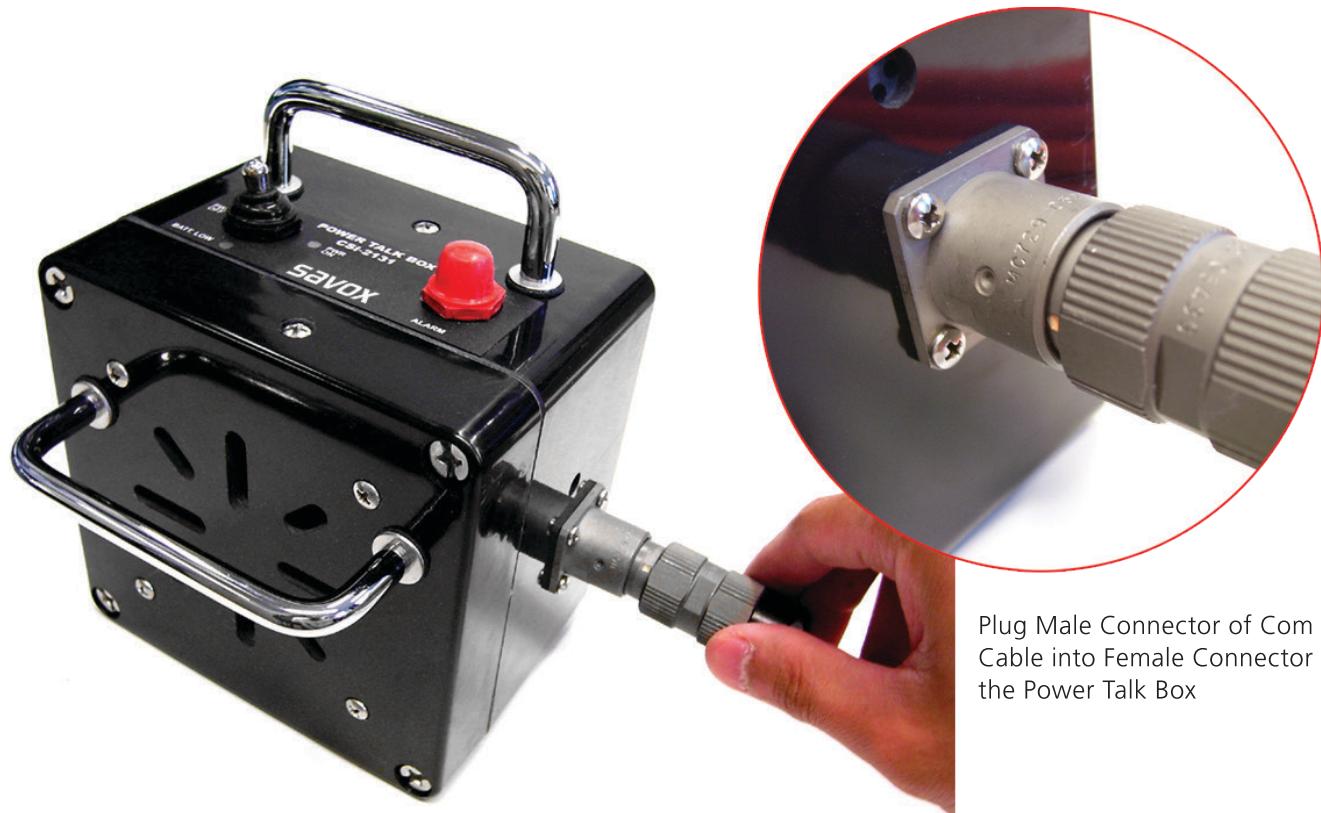
Part 2: Connecting & Using Hardline Accessories

THE TALK BOX



Part 2: Connecting & Using Hardline Accessories

THE POWER TALK BOX (PTB)



Part 2: Connecting & Using Hardline Accessories

BATTERY REPLACEMENT

WARNING: Batteries should only be replaced in an area known to be NON Hazardous

1. REMOVE GUARD:

Use the supplied Hex key to remove the screws securing the compartment lid guard.



2. REMOVE COMPARTMENT LID:

Remove the Battery Compartment Lid by hand turning it repeatedly counter-clockwise.



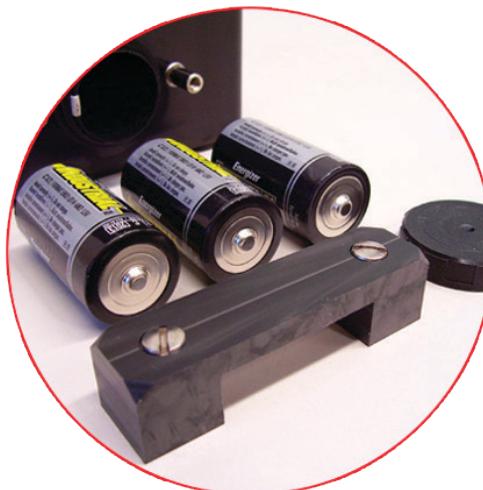
3. REMOVE BATTERIES:

Remove all 3 Batteries from Compartment and dispose of old Batteries.



4. REPLACE BATTERIES:

Insert 3 Brand New C-sized, Alkaline Batteries into the Battery Compartment ensuring that the negative (-) end of each battery goes in first with the positive (+) end facing the opening, secure Compartment Lid and Guard.



*Module approved to operate in hazardous locations only when using Eveready/Energizer E93, EN93 or Duracell MN-1400, C-1400 1.5 "C" Batteries

Part 2: Connecting & Using Hardline Accessories

REPLACING POWER TALK BOX BATTERIES

WARNING: Batteries should only be replaced in an area known to be NON Hazardous

1. REMOVE SCREWS:

Loosen four screws securing the Top Cover of the Power Talk Box using the supplied Hex key.



3. REMOVE BATTERIES:

Remove all three previously used Batteries and Replace with three brand new C-Sized Alkaline Batteries making sure that each new battery is placed in the appropriate position of polarity according to the Compartment diagram.



2. REMOVE TOP COVER:

Carefully remove Top Cover of Power Talk Box By folding it open to reveal the inside Battery Compartment.



***MICROPHONE SENSITIVITY SWITCH:**
Allows you to decrease sensitivity of Power Talk Box Microphone to fixed levels



Part 2: Connecting & Using Hardline Accessories

ADDING THE ALARM OPTION

1. REMOVE RUBBER GRIPS:

Remove Rubber Grips from the bottom of the CSI-2000 Command Module.



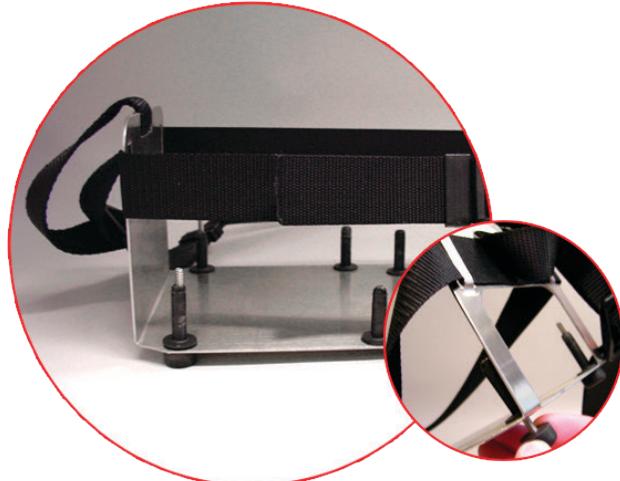
3. SECURE COMMAND MODULE:

Secure the Command Module to the Carry case by placing it in-line with the anchor points of the case and re-tightening the anchors screws underneath.



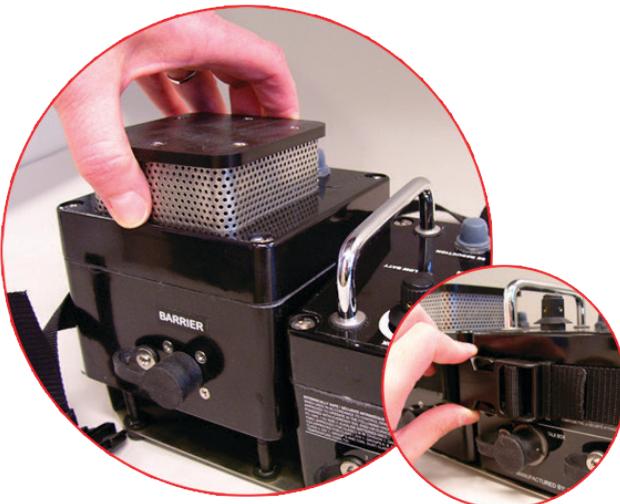
2. RETRACT ANCHORS OF CARRY CASE:

Retract Anchors of Carry Case by loosening the screws from underneath the Case.



4. SECURE THE ALARM MODULE:

Secure the Alarm Module to the Carry Case beside the Command Module using the Anchors to lock it in place then secure both modules together using the Belt & Buckle of the Case.



Part 2: Connecting & Using Hardline Accessories

ADDING THE ALARM OPTION... CONT'D

5. CONNECT ALARM MODULE:

Use Alarm Cable to Connect the Alarm Module to the CSI-2000 Command Module.

**USING THE ALARM MODULE****RESET BUTTON:**

Disables Alarm when activated and returns unit to normal working capacity

LOW BATTERY INDICATOR LIGHT:

Flashes Red to indicate diminishing battery life.

ALARM BUTTON:

Activates Auditory Alarm built into Module or when the Module is used with an Alarm Barrier can activate an external alarm to which it is connected (i.e. Siren, Garage Door etc., etc.)



Part 2: Connecting & Using Hardline Accessories

REPLACING ALARM MODULE BATTERIES

WARNING: Batteries should only be replaced in an area known to be NON Hazardous

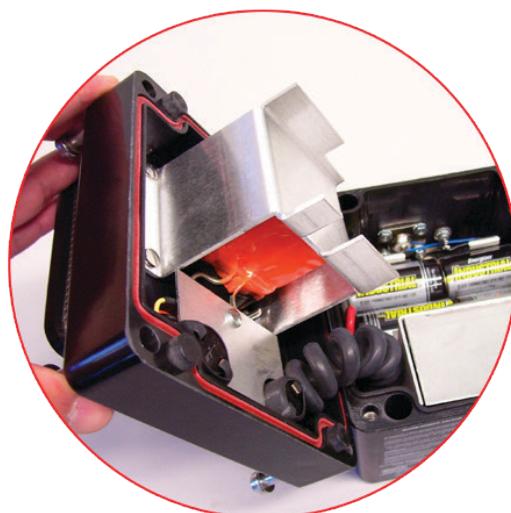
1. LOOSEN SCREWS:

Loosen four screws securing the Top Cover of the Alarm Module using the supplied Hex key.



2. REMOVE TOP COVER:

Carefully remove Top Cover of Alarm Module by folding it open to reveal the inside Battery Compartment.



3. REMOVE USED BATTERIES AND REPLACE WITH NEW:

Remove all four previously used Batteries and Replace with four brand new C-Sized Alkaline Batteries making sure that each new battery is placed in the appropriate position of polarity according to the Compartment diagram.



Part 3: Troubleshooting — CSI-2000 Command Module

CSI-2000 Command Module		
Problem	Cause	Solution
Will NOT Work	Power switch in "OFF" position	Turn switch to "ON" position
	Batteries are low/discharged	Replace batteries with 'C' ALKALINE Batteries. (See battery replacement instructions)
	Batteries are installed incorrectly	Check battery polarity
	Battery compartment lid is too tight or too loose	Loosen/tighten down battery compartment lid
Low/No Volume	Volume controls set too low	Adjust volume
	Loose connection	Ensure connectors are correctly mated
	Dirty connector contacts	Check contacts on connectors and clean to expose gold plated pins
	Faulty/damaged cable	Test cable if faulty, replace cable
	Faulty/damaged accessory (i.e. headsets)	Contact manufacturer/distributor
	Loose connector on speaker accessories	Check plug for proper connection
	Noise reduction button depressed	Release noise reduction button
Low/No Voice Transmission	Loose mic connectors on headset or mic accessories	Check 2 prong plug for proper connection
	Volume controls set too low	Adjust volume
	Loose connection	Ensure cable/accessory connectors are correctly mated
	Dirty connector contacts	Check contacts on connectors and clean to expose gold pins
	Faulty-damaged cable	Test cable, if faulty replace cable
	Faulty/damaged accessory (i.e. headset)	Contact factory/distributor
	Noise reduction button depressed	Release noise reduction button
	Mute switch on cable is on	Release switch
Squeal/Feedback/Hum	Mics and speakers are too close together	Move accessories further apart or adjust volume to a lower setting

Part 3: Troubleshooting — Talk Box, Power Talk Box & Other Accessories

Talk Box, Power Talk Box & Other Accessories		
Problem	Cause	Solution
Low Volume	Poor connection	Check connection
	Volume control set too low	Adjust volume on CSI-1100, CSI-2100, CSI-2105
	Dirty connection	Clean contacts
	Speaker filled with dirt or fluid	Clear out speaker (be careful not to puncture speaker cone)
	Operator accessory mic placement incorrect	Correctly position mic
Cannot transmit	Clogged mic port	Clear out 5 small holes on Talk Box face (be careful not to pierce mic barrier beneath holes)
	Poor Connection	Check connection
	Dirty connector contacts	Clean connector contacts
Alarm does not sound when Red alarm button is depressed	No Alarm Module connected to CSI-2100	Connect an Alarm Module to CSI-2100
	Poor connection	Check connection
	Dirty connection	Clean connector contacts
	Damaged/faulty cable	Replace cable
	Faulty Talk Box alarm switch	Contact manufacturer/distributor
Squeal/Feedback	Mic on other accessories too close to Talk Box	Move mic further apart or adjust volume to a lower setting
	Faulty Talk Box	Contact manufacturer/distributor
	Talk Box connected to operator port	Cannot use Operator Port due to sidetone feature of that Port
	Two Talk Boxes	Only one Talk Box can be used per system
	Mode Switch is set to "Normal"	Position Switch to "Talk Box" Mode

Part 3: Troubleshooting — CSI-2140 Alarm Module /Hardline Cable

CSI-2140 Alarm Module		
Problem	Cause	Solution
Alarm does not sound when Red alarm button is depressed	Poor connection	Check connection
	Dirty connection	Clean connector contacts
	Damaged alarm cable	Replace cable
	Dead battery	Replace battery
Hardline Cable		
Cables are hard to connect	Dry 'O' Ring	"Wet" 'O' Ring, if possible use silicone grease or vaseline (saliva can be used if nothing else is available)
	Poor Connection	Re-seat Connectors
Cable Does NOT Work	Dirty connectors	Clean connector pins
	Damaged/faulty Cable	Replace Cable

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HARDLINE INDEX



ALARM CABLE

Connect Alarm Module to a CSI-2100.



ALARM OPTION

Add an Alarm to the CSI-2100. Option includes the following, Alarm Module, Carrier with strap and Alarm Cable with Connectors.



CABLE W/ CONNECTORS

Triple Shielded Cable that is the HARDLINE linking all Users on the System. It is as tough as the System and made with care to protect.



CABLE HOSE WRAP

The Cable/Hose Wrap binds air hose and communication cable into one neat package (Cable not included).



CABLE SPLITTERS

Increase the number of users on your Hardline System by twice the amount.



CSI-1100 MINI MODULE

Mini-Module provides up to three people with Full Duplex Communication, Hardline Intercom, self-powered, portable Intrinsically Safe Approved in N.A & Europe.



CSI-2100 COMMAND MODULE

Command Module provides Full duplex communication for up to 7 people. A Hardline, portable, self-powered intercom with Intrinsic Safe Approvals for N. America & Europe



CSI-2105 POWER TALK BOX CONTROLLER

The Power Talk Box Controller is used in conjunction with a CSI-2131 Power Talk Box to create a portable untethered two-way communication system.



CSI-2130 TALK BOX

An open speaker and microphone, providing untethered, full duplex communication. Picks up and delivers clear voice audio from a radius of 6ft.



CSI-2131 POWER TALK BOX

A powered open speaker and microphone, providing untethered, full duplex communication. Picks up and delivers clear voice audio from a radius of 30ft.



CSI-2140 ALARM MODULE

Add a Safety Alarm to your CSI-2100 System.



DIVE SYSTEM ADAPTERS

Connect your existing dive communication system and underwater accessories to either our CSI 1000 or 2000 series Hardline systems.



FACEMASK COM/RESCUE SETS

A Throat Mic based COM system that can be used in conjunction with any facemask, breathing apparatus or protective suit. A variety of hearing options are available.



GEO CABLE

This cable is used in environments where cables will be exposed to Sour Crude Oil for prolonged periods of time. Most Petro applications use standard cables.



HEADSETS

Built to high quality standards and guaranteed to work in rough and hazardous environments, CON-SPACE Headsets combine user comfort with clear, reliable two-way, voice communication.



IN-LINE ALARM ADAPTER

Connect Alarm Button Accessory in-line with any Cable or Accessory on the System to provide the ability to activate Alarm.



MIC MUTE OPTION

Can be added to any length of Com Cable allowing the user the ability to mute his/her microphone by activating the switch.

HARDLINE INDEX



OPERATOR EXTENSION CABLES

Custom length Com Cables with a built-in Mic Mute Option allowing the operator to mute his/her microphone by activating the switch.



PASS-THRU CONNECTORS

Pass-Thru Connectors can be installed in metal plates, bulkheads, solid walls or in encapsulated suites to allow uninterrupted Hardline communication between users in difficult work environments.



PROBE INTERFACE CABLE

Special Com Cable for the Rescue Probe has connector designed to fit through a PVC pipe. Allows pipe to be lengthened and used in conjunction with the Probe.



CABLE REELS

Cable Reel can be invaluable asset in operations requiring multiple cables or cables that exceed 200ft in length especially when approaching the maximum cable length of 1500ft. (500 metres). Slip rings in CON-SPACE Reels allow users to reel out as much cable as needed for the job at hand, leaving the unused portion of the cable stored neatly on the reel.



REMOTE FOOT SWITCH

Allow Attendant to activate Push-To-Talk via a foot pedal to eliminate the need for crouching.



RESCUE PROBE

A rugged, cylindrical, two-way speaker & microphone designed to penetrate through rubble and/or debris in order to reach victims trapped in a structural collapse. Works with any CON-SPACE Rescue Hardline System.



SPEAKER HARNESS

A comfortable, easy to wear harness that anchors the Universal Speaker to the most clear and comfortable position adjacent to your ear. "Universal Speaker not included.



THROAT MIC

The CON-SPACE Throat Mic is New Generation Technology, delivering clear speech even in high noise environments. The hypo-allergenic silicone rubber housing is held comfortable in place with a slip-resistant, expanding neck band, adjustable to anyone's neck size. These components are all of rugged construction, completely waterproof, durable and easily cleaned and disinfected between uses.



UMBILICAL COVERS

Cable and Air Hose Protection. Also joins your Cable and Airline to avoid entanglement issues.

APPROVALS

The CSI-2000 Hardline Systems and accessories are Intrinsically Safe Approved in Canada, the United States and the European Union when powered by Energizer/Eveready E-93, EN-93 or Duracell MN-1400, PC-1400, 1.5V "C" size alkaline batteries and used in accordance with Control Drawing E-1040, Page 6.

UNITED STATES

MSHA Approval No. 9B-199-0

CANADA

CSA Class I, Division 1, Groups A, B, C, D; Class II, Group G and Coal Dust; Class III, T3C

EUROPEAN UNION

INTERTEK

ATEX

 0359 Ex II 1 GD
EEx ia IIC T4
ITSO4ATEX21945X

IEC

Ex ia IIC T4 Ga
IECEx ITS 08.0022X

WARRANTY

Savox intercom modules and accessories except cables and cable assemblies are warranted for one year against defects in workmanship and materials. This does not include damage caused by mis-use and specifically excludes cable assemblies. No other warranties are expressed or implied.

EXTENDED WARRANTY: The CSI-2000 Module, CSI-2131 Power Talk Box and CSI-2130 Talk Box carry and extended one year warranty for a total of two years against defects in workmanship and materials. This does not include damage caused by mis-use and applies specifically to the Modules listed. No other warranties are expressed or implied.

ABOUT SAVOX

Savox Communications was founded in 1982 and today is one of the largest professional communication solution providers in the world. Savox helped to establish the Confined Space Industry and has extended its line of communication products to help people working in many hazardous environments.

We build our communication products rugged, because we know what it takes for you to do your job. Clear voice is what you need to hear and is what you get from all Savox products. Our communication equipment is extensively used in a wide range of difficult and hazardous applications, is easy to operate, survives and certified for use in any explosive environment. We are ISO 9001 Certified and many of our products are Intrinsically Safe Approved.

SAVOX

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