PG-214, PG-9H14 and PG-2H14
Pistol Grip
Remote Control User Manual

U045.6.0

FCC Statements

15.19 – Two Part Warning

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference and

(2) This device must accept any interference received, including interference that may cause undesired operation.

15.21 – Unauthorized Modification

NOTICE: The manufacturer is not responsible for any unauthorized modifications to this equipment made by the user. Such modifications could void the user's authority to operate the equipment.

15.105(b) – Note:

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Industry Canada Statement

This device complies with Canadian RSS-210.
The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website www.hc-sc.gc-ca/rpb.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio
exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage
radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Industry Canada Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC Unlicensed Devices EIRP Statements for Removable Antennas

Part 1: Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Part 2: This radio transmitter (LOBSRF-305) has been approved by Industry Canada to operate with the antenna type listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (LOBSRF-305) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

RoHS Compliance Statement

Cervis, Inc. complies with the requirements of ***Restriction of Hazardous Substances (RoHS/WEEE) Specification*** based on in-house practice and declaration of compliance from our vendors. For additional information concerning RoHS compliance, please contact Cervis, Inc. at:

CERVIS, Inc.

170 Thorn Hill Road • Warrendale, PA 15086

Phone: 724.741.9000 • Fax: 724.741.9001

This product may contain material that may be hazardous to human health and the environment. In compliance with EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE):

- ✓ Do not dispose of the product as unsorted municipal waste.
- ✓ This product should be recycled in accordance with local regulations. Contact local authorities for detailed information.
- ✓ This product may be returnable to the distributor for recycling. Contact your distributor for details.

Table of Contents

List of Figures

List of Tables

Definitions

Associate/Association
Mode where by SmaRT handhelds and base units are paired for operation (ID's exchanged). This mode is used to commission spare handhelds or base units.

DSSS
Direct Sequence Spread Spectrum; an advance wireless communication technology resistant to intended or unintended jamming.

Dissociation
The process of decommisioning a handheld from a base unit ID memory — clears both handheld and base unit memory.

Latch
Command from the handheld remote to maintain an output state until until specifically signalled again to change state.

Line of Sight (aka Direct-Line-of-Sight)
Term used to describe RF communication where the pathway between the units is clear of physical obstacles such as walls, earth, and other obstructions.

Momentary
A switch or button capable of turning a base unit output to either an on or off state when an end-user presses the switch. The output returns to its original state when the button is released.

SmaRT Base Unit
I/O unit to which the controlled machine is connected. SmaRT base units communicate with each other and SmaRT handheld, console, and pistol grip, and belt pack remote controllers.

SmaRT Handheld Remote Control
Portable unit that controls base unit activity using RF signals or through a hardwired umbilical connection.

SmaRT Remote Control System
SmaRT system consisting of one or more SmaRT base units and from one to eight SmaRT remote control units. The system operates in the 900MHz or 2.4GHz range and has inputs/outputs or data communications.

TX/RX
Transmit/Receive

Umbilical
Hardwired connection between the handheld remote and base unit. When the umbilical is connected, handheld RF control is disabled and all commands are sent over the unbilical connection to the base unit. This connection is detachable from the handheld remote and when removed the system returns to RF control provided the RF link has been previously established.

Note to the Manual User

✓***Note:*** *The higher transmit power SmaRT pistol grips are available to operate at 900MHz or 2.4GHz using Direct Sequence Spread Spectrum (DSSS) wireless technology. To avoid repetition and possible confusion, high powered pistol grip remote control units will be referred to as the PG-xH14 remote throughout this document, where x represents either 900MHz for PG-9H14, or 2.4GHz for PG-2H14.*

The low power version, which is only available in 2.4GHz, is referred to as PG-214.

Related Documents

Engineered systems related Cervis, Inc. ESD documents — such as ***WSMB-9999 Engineered System Document*** as provided with that particular engineered system.

Installation or Troubleshooting Questions?

Please feel free to contact Cervis at (724) 741-9000 if you have any questions during installation or troubleshooting of a system, a handheld, or a base unit.

1.0 Safety Instructions

CAUTION

These instructions must be read carefully in order to use the SmaRT PG-214 or PG-xH14 properly, to keep it in safe working condition, and to reduce the risks of misuse.

Do not use the system in potentially explosive atmospheres.

Any use other than that specified in this manual is DANGEROUS.

Strict adherence to the following instructions is a MUST.

✓***Note:*** *To comply with FCC RF exposure compliance requirements, this device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.*

CAUTION

Certain adjustments may need to be made while the controlled machinery is active. All personnel must be at a safe distance from the machine during these adjustments to avoid risk of injury or accidental death.

Cervis Inc. Safety Precautions

- ✓ ***Read and follow all instructions.***
- ✓ ***Failure to abide by Safety Precautions may result in equipment failure, loss of authority to operate the equipment, and personal injury.***
- ✓ ***Use and maintain proper wiring. Follow equipment manufacturer instructions. Improper, loose, and frayed wiring can cause system failure, equipment damage, and intermittent operation.***
- ✓ ***Changes or modifications made to equipment not expressly approved by the manufacturer will void the warranty.***
- ✓ ***Owner/operators of the equipment must abide by all applicable Federal, State, and Local laws concerning installation and operation of the equipment. Failure to comply could result in penalties and could void user authority to operate the equipment.***
- ✓ ***Make sure that the machinery and surrounding area is clear before operating. Do not activate the remote control system until certain that it is safe to do so.***
- ✓ ***Turn off the handheld remote and remove power from the base unit before attempting any maintenance. This will prevent accidental operation of the controlled machinery.***
- ✓ ***Power is removed from the Base Unit by detaching the harness wiring cables from the base unit connectors or by removing the source power from the circuit.***
- ✓ ***Use a damp cloth to keep units clean. Remove mud, concrete, dirt, etc. after use to prevent obstructing or clogging the buttons, levers, wiring, and switches.***
- ✓ ***Do not intentionally allow liquid to enter the handheld or base unit enclosures. Do not use high pressure equipment to clean the handheld remote or base unit.***
- ✓ ***Disconnect the radio base unit before welding on the machine. Failure to disconnect the base unit may result in destruction of or damage to the base unit.***
- ✓ ***Keep high-energy RF devices away from handheld remotes. Activation of high-power communication radios, for instance, in close proximity to the handheld remotes can result in interference and "false" circuit activation.***
- ✓ ***Operate and store units only within the specified operation and storage temperatures defined in this document.***
- ✓ ***Do not use two-way radios when the handheld remote is active.***

Cervis Inc. Safety Precautions continued

CAUTION

Outputs under sole control of momentary switches — push-to-operate, for instance — should only change state when the appropriate button or switch of the handheld remote is pressed or positioned, and then only for the duration of time that particular output button is pressed or switch is positioned. Any unexpected motion that occurs when pressing the output controls of the handheld remote must be investigated.

Immediately stop operating **should a jerkiness of motion occur while constantly pressing an output switch. Check the base unit diagnostic LEDs for any indication of a problem. Diagnostic descriptions are found in the manual of the particular SmaRT base unit in use.**

Be aware that even if the diagnostic LEDs of the handheld and base unit do not indicate a problem, one may be present and further troubleshooting steps may be needed.

If a problem is found, do not operate the SmaRT System until the problem is resolved.

2.0 SmaRT PG-214 and PG-xH14 Pistol Grips

✓Note: The x in PG-xH14represents either 900MHz for PG-9H14, or 2.4GHz for PG-2H14.

The SmaRT™ pistol grip remotes are designed for traditional and non-traditional mobile applications. The SmaRT pistol grips are capable of activating digital and trigger-controlled proportional pulse-width-modulated outputs of SmaRT base units. They provide single-handed operation in a comfortable ergonomic layout. Using direct sequence spread spectrum (DSSS) wireless technology at 900MHz or 2.4GHz, the SmaRT pistol grip remotes provides a robust link with a receiver in congested radio environments. The remotes feature seamless association to SmaRT base units without the need to open the case of either unit. The rugged weatherproof pistol grip enclosure allows the unit to operate worry free in harsh weather conditions.

Figure 1. SmaRT PG-214 and PG-xH14 Pistol Grip Remote

Two RF Power Levels Available

There are two power levels available for RF operation, low power and higher power:

- Low power PG-214 pistol grip remote operates in the 2.4GHz range @ 2mW.
- Higher transmit power pistol grip remotes have an “H” designation in its name to indicate they operate at high power. PG-9H14 operates in the 900MHz range @ 10mW, and PG-2H14 units operate in the 2.4GHz range @ 100mW.

Features

- Direct Spread Spectrum Technology (DSSS)
- Controls a variety of SmaRT base units
- Controls accessible while wearing gloves
- Oversized Machine Stop button
- Seven three position, bi-direction toggle switches (standard)
- Trigger as a digital output enable, a digital output, or as a proportional output control
- Four status/diagnostic LEDs
- Comfortable weatherproof design
- Umbilical connection option
- Magnet-embedded handle (to attach to machine surfaces to avoid unit loss)
- Powered by four alkaline AA batteries (+3.0VDC nominal)

3.0 SmaRT Pistol Grip Remote Control System

A standard SmaRT PG-214 or PG-xH14 remote control system consists of a SmaRT pistol grip remote control unit and one or more SmaRT base units. The PG-214 or PG-xH14 is capable of communicating with SmaRT base units in congested radio environments using Direct Sequence Spread Spectrum (DSSS) wireless technology at 900MHz or at 2.4GHz.

The communication link between the pistol grip remote control and the base unit is established at the factory using a process known as Associate Mode. Situations in the field may arise where it becomes necessary to reestablish the system RF link. The flexible wireless system can be seamlessly associated in the field without the need to open the enclosures of either handheld or base unit by a series of switch operations detailed in Heading 7.0.

SmaRT base units come in a variety of standard configurations for 900MHz or 2.4GHz operation among which are the base units shown in Figure 2. SmaRT handhelds and base units can be standard or custom configured by Cervis Engineering.

Figure 2. SmaRT PG-214 and PG-xH14 Pistol Grip Remote and Base Unit Examples

4.0 SmaRT Pistol Grip Battery Installation

The SmaRT pistol grip handheld unit is powered by four size AA alkaline batteries. When installing batteries, be sure to observe proper polarity as marked on the inside of the compartment to avoid damaging the unit. To replace or install batteries in the handheld:

1. Loosen the four Phillips battery compartment cover screws on the rear of the remote and lift the cover from the handheld.
2. Install (or replace with) four (4) fresh size AA alkaline batteries. Observe the proper polarity by positioning the batteries as shown in Figure 3.
3. Replace the compartment cover and tighten the four Phillips screws. These screws should not be over-tightened, *but they must be tight enough to insure the gasket provides a proper watertight seal*.

CAUTION **Be sure to observe proper polarity when placing batteries in the handheld battery compartment.**

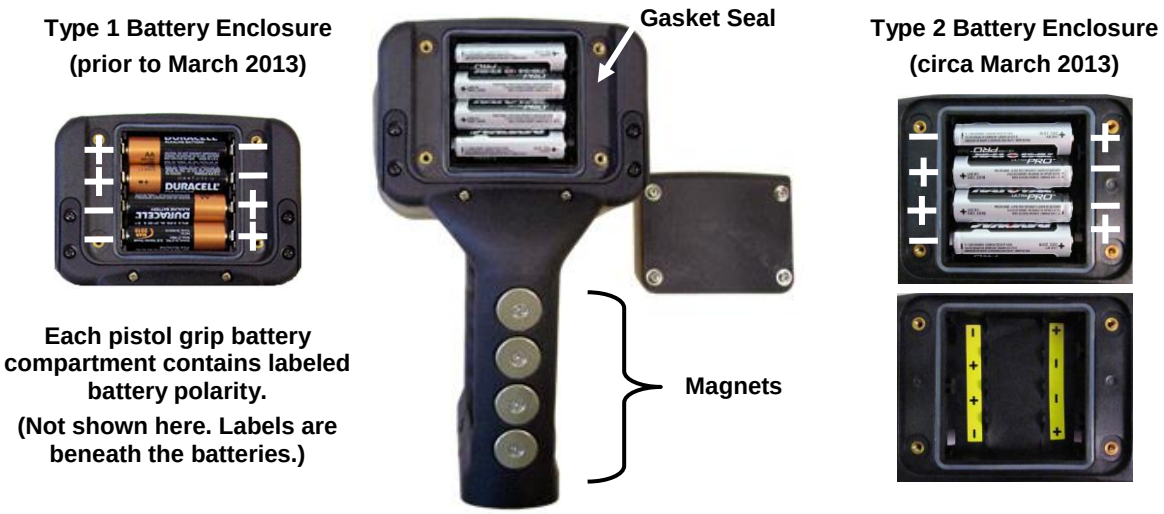

Figure 3. SmaRT Pistol Grip Battery Installation

✓***Note:*** *Cover screws must be tightened enough to insure the sealing gasket is compressed. Do not over-tighten the screws.*

5.0 Pistol Grip Umbilical Connection

The pistol grip umbilical connection is a 4-pin Turck-style connection that is keyed to prevent misalignment of the connector pins. A cap is attached to the handheld remote with a sturdy chain to prevent loss while it is unscrewed from the connector. When not in use, the connector should be capped by the operator. The RF is disabled whenever the umbilical is attached to the handheld remote and the target base unit. When the umbilical is attached, all control signals are transmitted via the umbilical cable. The example shown in Figure 4 uses a Cervis C6-12 cable, but other cables and configurations are available. For detailed information on umbilical options, please contact your Cervis sales representative at: (724) 741-9000.

✓**Note:** ***Any similarly configured handheld remote can operate a base unit in umbilical mode. But, when the umbilical is removed the handheld and base unit will not communicate unless the units have been associated — that the RF link is currently established.***

✓***Note: Keyways may be positioned other than as shown. Pins are always positioned relative to the Keyway positions.***

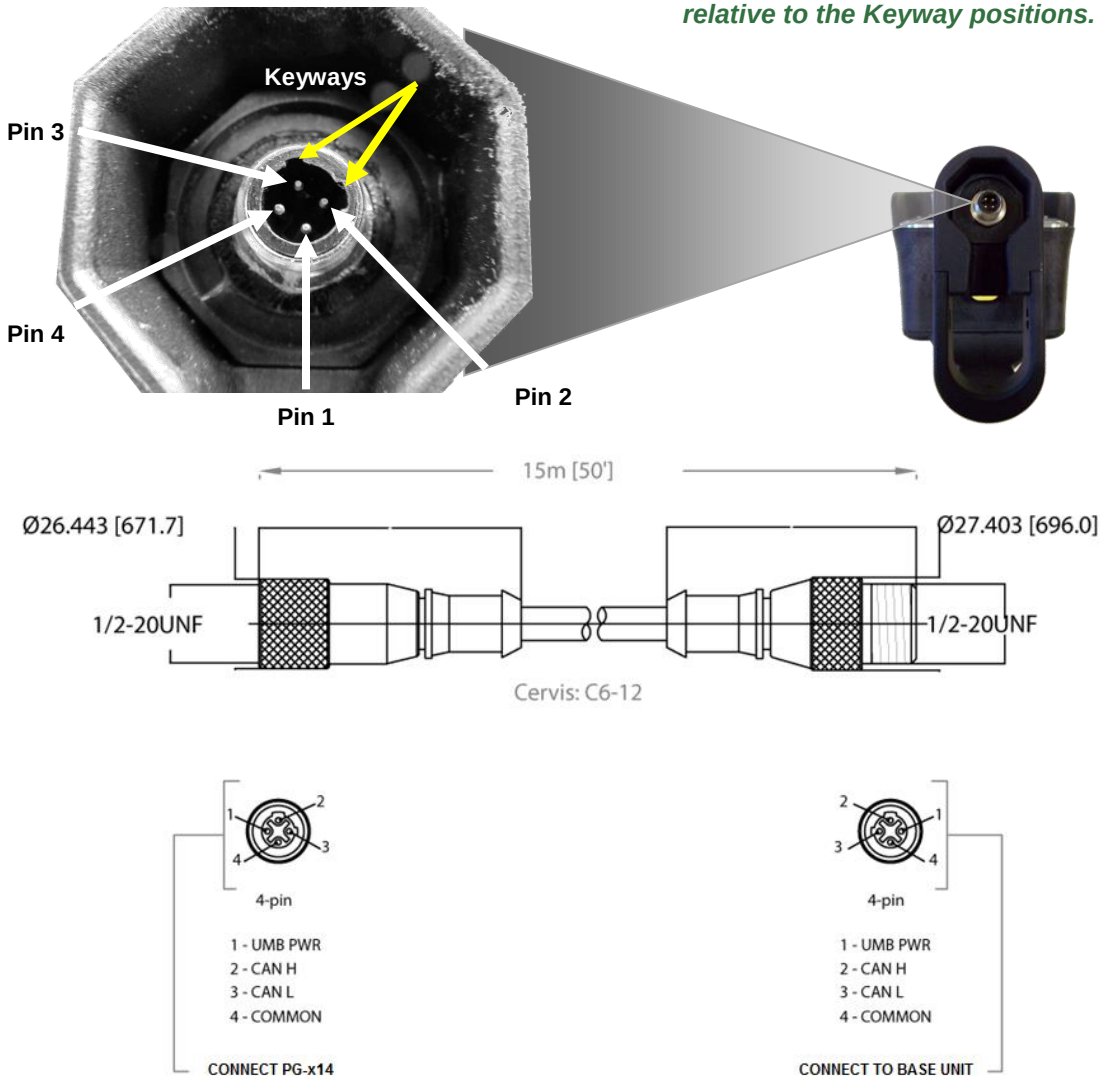

Figure 4. Pistol Grip Umbilical Connection

6.0 Operation

6.1 Turn ON the Unit

The SmaRT PG-xH14 Pistol Grip Remote is powered **ON** by releasing the large red mushroom-style button by twisting it clockwise until it springs UP, and then activating a toggle switch. Prior to activation of the toggle switch, the unit will not transmit or receive messages.

✓***Note:*** *Power to the handheld is available when the mushroom-style Machine Stop button is twisted clockwise until it springs UP, but the transceiver is not yet enabled. The unit does not transmit or receive until it is enabled.*

The standard pistol grip transceiver is enabled by initial operation of any of the toggle switches (either UP or DOWN) following the release of the Stop button. (A specific switch can be configured as an 'ON' switch on non-standard/custom pistol grip remotes.) Initial operation of a toggle switch following power-up of the handheld does not send a command to the base unit.

✓***Note:*** *If a switch is held prior to release of the Stop button (enable the remote), the red ERR LED begins to flash. The handheld will not operate until the condition is remedied.*

6.2 Turn OFF the Unit

The SmaRT PG-xH14 Pistol Grip Remote is turned **OFF** by pushing the large Red mushroom-style button **IN** or by allowing the unit to "time out".

CAUTION

A stuck switch is indicated if the remote Stop button is depressed and the red ERR LED lights and remains lit. Check all switches before use. If the LED remains lit, the remote will need to be serviced before it can be safely used. Contact Cervis Support at (724) 741-9000.

6.3 Proportional Control Trigger

The SmaRT PG-xH14 spring-loaded trigger is used to control a digital output, as an output enable, or for proportional output control.

6.4 Toggle Switches SW1 through SW7

Toggle switches SW1 through SW7 (see Figure 6) are 3-position, return-to-center; Up or Down with a return to center detent. These switches are used for digital control and for various setup and adjustment functions described later in this manual.

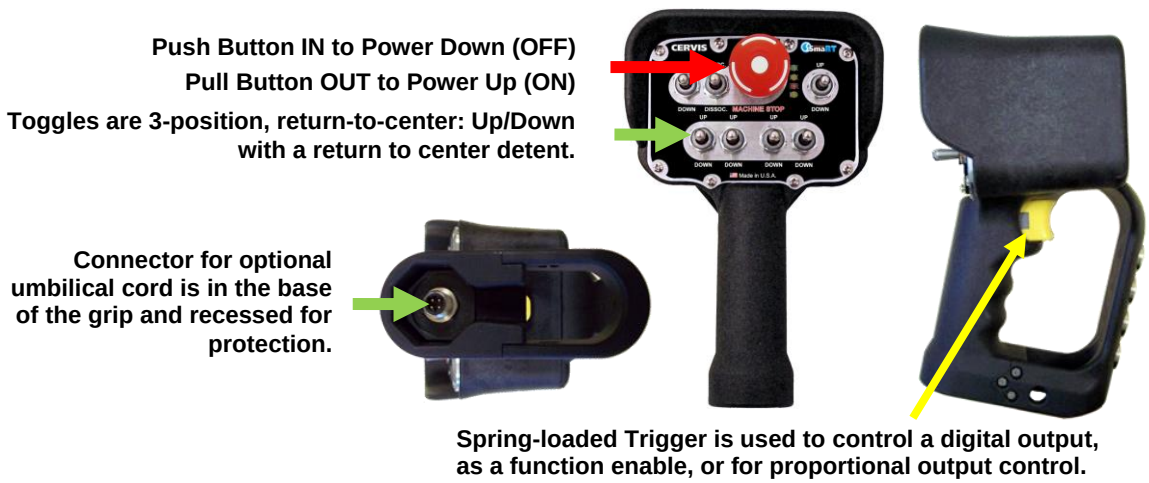

Figure 5. Button, Switch, and Trigger Operation

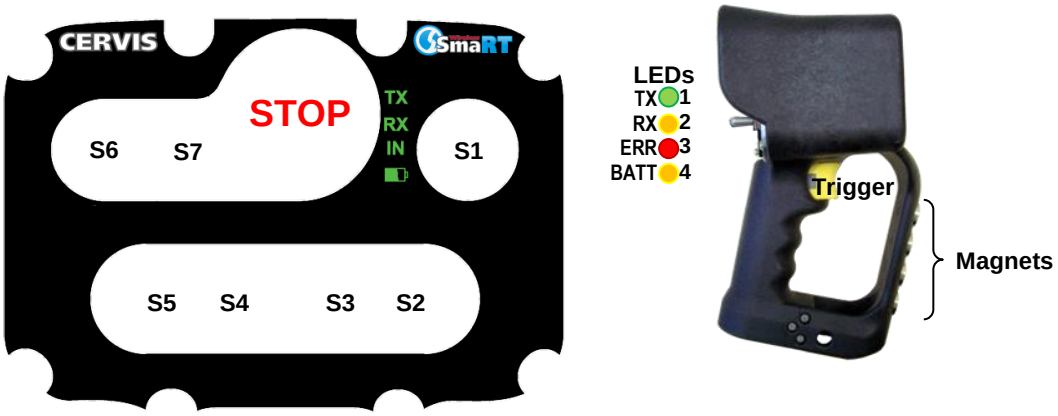

Figure 6. SmaRT PG-214 and PG-xH14 Switch and LED Layout

6.5 Standard LED Indications

Table 1. Standard LED Indications

LED	Action	Indication
TX Transmit – Green LED 1	Steady lit	Switch active
	Blink	Transmitting
RX Receive – Amber LED 2	Blink	Receiving
ERR Error – Red LED 3	Steady lit when Stop is pushed in or released	Stuck switch, contact Cervis Support
	Flashing while Stop is released (unit turned on)	Switch conflict; switch is being held by the user
BATT Battery – Amber LED 4	Cycle on/off	Change batteries

7.0 Associate and Dissociate Radio (RF) Link

The RF link between a handheld and a base unit is established for a system by Cervis Inc. prior to shipment of the system. In some circumstances after the system is received, it may be necessary to re-establish or to remove the communications link – for the purpose of troubleshooting, for instance. The pistol grip remote allows the radio link between the handheld remote and the base unit to be established or removed when necessary. The Associate procedure is used to establish the communications link between the pistol grip remote and base unit. The Dissociate procedure is used to remove the radio link between the pistol grip remote and the base unit.

To associate or dissociate there must be a clear line of sight between the handheld remote and the base unit, and both units must be OFF (powered down). The pistol grip remote is immediately turned off by pushing in the oversized mushroom STOP button, which removes power from the unit. The pistol grip can also turn off if the auto-shutdown time limit is exceeded. Standard auto-shutdown time is four (4) minutes of switch or button inactivity. A SmaRT base unit is safely powered down by removing the power source from the unit.

✓**Note:** *If an umbilical cable is attached it must be removed before the RF link can be established using the Associate procedure, or before the Dissociate procedure can be used to break the link.*

CAUTION

To prevent inadvertent movement of the controlled machine, be sure to remove power from the Base Unit before attempting to enter Associate Mode.

7.1 Associate PG-xH14 to Base Unit

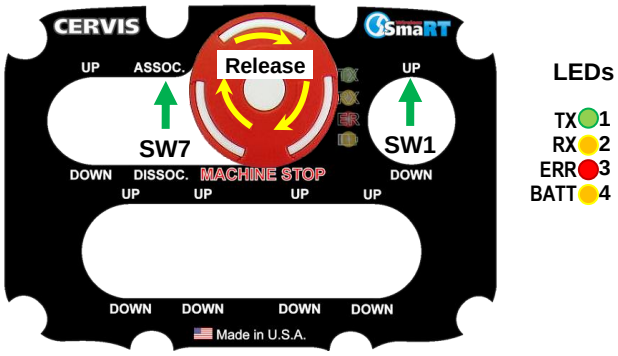

Figure 7. Associate Mode Switches

1. Stand near to the base unit (in line of sight).
2. Twist the **MACHINE STOP** button clockwise to its **UP** position.
3. Hold **SW7** in the **ASSOCIATE** (**UP**) position.
4. Hold **SW1** in the **UP** position. This activates the handheld remote.

   All four LEDs will flash once and then TX (transmit) lights steady,and RX, ER, and Battery go out.
5. Continue to hold SW1 and SW7.
6. **Power Up** the base unit.
7. Release SW7 and SW1.

   Handheld and base unit Association is complete when TX and RX continue to blink (fllicker) while the handheld is on indicating communication is established.

7.2 Dissociate PG-xH14 Remote from a Base Unit

1. Stand near to the base unit (in line of sight).
2. Twist the **MACHINE STOP** button clockwise to the **UP** position.
3. Hold **SW7** in the **DISSOC.** (**DOWN**) position.
4. Hold **SW1** in the **UP** position. This activates the handheld remote.

All four LEDs will flash once and then TX (transmit) continuouesly blinks (flickers), RX goes out, and ER and Battery light steady.

5. Continue to hold SW1 and SW7.
6. **Power Up** the base unit.
7. Release SW7 and SW1.

Handheld and base unit Dissociation is complete when the ERR, Battery, and RX go out while TX continues to blink (fllicker) when the switches are released. An inactive RX while the base unit is powered affirma that the communication link between the handheld and base unit is broken.

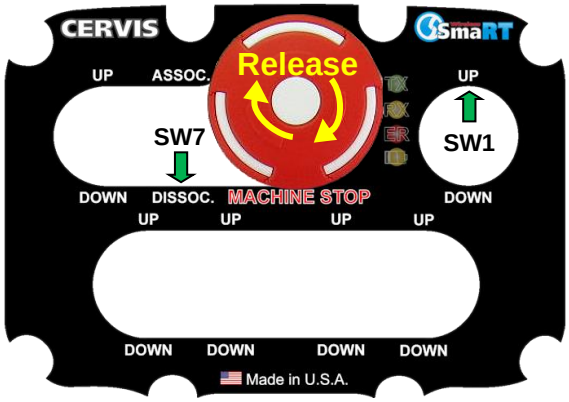

Figure 8. Dissociate PG-xH14 Remote from Base Unit

8.0 Proportional Output MIN and MAX Adjustments

MIN and MAX Adjustment Fundamentals

CAUTION ***Keep in mind at all times that you are going to control a moving piece of machinery. You must strictly adhere to the safety instructions described in Heading 1.0, Cervis Inc. Safety Precautions of this manual.***

- The operator must make sure the area around the controlled machine is safe to operate before performing dynamic MIN and MAX adjustments.
- The base unit must be powered for dynamic adjustment.
- The base unit LEDs and display should be close enough to be easily read.
- Adjust Mode timeout defaults to a ten (10) second window of opportunity, where the unit returns to normal operating mode if none of the switches are operated within the 10 second window. The timer resets to 10 seconds each time a switch or the trigger is operated while in Adjust Mode.
- Adjust Mode is exited by pressing the STOP button, by waiting for 20 seconds without operating any of the function switches on the unit, or by releasing the function switch used to enter trigger adjustment.

MIN and MAX Adjustment Procedure for BU-xH18XF, BU-xH20XF, and BU-9H8D

✓***Note: The x in a base unit name represents either a 9 or a 2. A 9 indicates the base unit radio is a 900MHz. A 2 indicates the radio is a 2.4GHz radio.***

1. Turn the controller on by twisting the **STOP** button clockwise until the button releases (pops UP), and then move SW1 DOWN (STOP) and allow it to return to center.
2. Adjust Mode is entered by first holding SW7 DOWN and then, while still holding SW7, hold SW1 DOWN for four seconds (until the bottom three base unit LEDs begin to flash). Adjust Mode is indicated when the bottom three base unit LEDS 6, 7, and 8 begin flashing.

To enter Adjust Mode, hold handheld SW7 and then SW1 until base unit LEDs 6, 7, and 8 begin to flash.

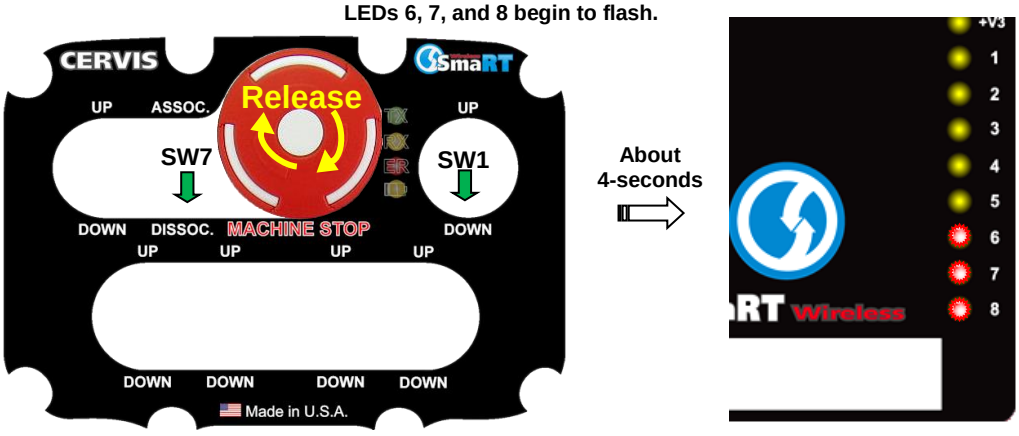

Figure 9. Enter Adjust Mode for Min/Max Adjustments

3. Release SW7 and SW1.
4. Operate any of the function toggles either UP or DOWN and hold. Continue to hold the function switch throughout the entire Calibrate procedure. The base unit LED 8 will light solid indicating MIN calibration mode. LEDs 6 and 7 will go out (extinguish).

5. While observing the machine being controlled, slowly press the pistol grip trigger (proportional control) to the point where the machine just begins to move.
6. When the desired result is achieved, move SW7 DOWN to the STORE position. The MIN value is stored. Base unit LED 7 will activate.
7. Release all switches including the trigger. The system switches to MAX adjustment mode. The base unit LED 8 goes out and LED 6 lights solid indicating MAX calibration mode.
8. Engage and hold a function switch. Operate the trigger while observing the machine being controlled.
9. When the desired MAX value is achieved, move SW7 DOWN to the STORE position. The MAX value is stored. Base unit LED 8 will activate.
10. Release all switches including the trigger. The system returns to minimum calibration.

✓***Note:*** *Activating SW7 down will toggle between MIN and MAX while in Adjust Mode.*

Adjustment Mode is exited by releasing all switches including the trigger and waiting for the handheld to timeout. Or, you can exit by pressing the STOP button, which powers down the handheld remote.

9.0 Specifications

Table 2. SmaRT PG-xH14 Pistol Grip Remote Specifications

Item	Description	
Power	**V_{in}**	+1.6V to +3.2VDC
	Batteries	Four (4) AA
	Battery Life	100 hours
	Low V Shutdown	1.6VDC
	Auto-shutdown	Four (4) min. of button inactivity (standard)
Environment	**Operating Temp**	-20°C to 55°C (-4°F to 131°F)
	Storage Temp	-40°C to 55°C (-40°F to 131°F)
	Humidity	0 to 100%
Radio	**Frequency**	906-924MHz @ 10mW 2405-2480MHz @ 100mW (high power) 2405-2480MHz @ 2mW (low power)
	License	None required
	Modulation	DSSS
	Antenna	Internal
Enclosure	**Dimensions**	mm: 230.6x133.9xH146.9; inch: 9.1 x 5.3 x 5.8
	Total Weight	1.36kg; 3lbs
	Durability	High Impact Polymer case
	Faceplate	Aluminum or Polycarbonate
Indicators (4 LED)	**TX (green)**	Blinking – transmitting, no switch active
		Solid – transmitting, switch active
	RX (amber)	Blinking – receiving, no output of interest active
		Solid – receiving, output of interest active
	ERR (red)	Indicates error with handheld remote
	BATT (amber)	Low battery indication
Control Switches	**Toggle**	Seven 3-position, return to center push-to-operate or latch
	Trigger	Proportional controller, function enable, or digital output
	M-Stop	One mushroom-style, spring-loaded 2-position

Appendix A: Exposure to Radio Frequency Energy

SmaRT handheld remote units contain radio transceivers. When active, handheld remotes send out radio frequency (RF) energy through its internal antenna.

For optimal performance and to ensure that human exposure to RF energy does not exceed the recommended guidelines, always follow these instruction and precautions: When using the handheld remote, hold the remote so that the top buttons are away from the body in the direction of the base unit. Keep the remote when in use at least 15mm (5/8 inch) away from the body, and only use carrying cases, belt clips, or holders that are approved by Cervis, Inc.

An active SmaRT base unit sends out radio frequency (RF) through its internal or external antenna. Base units using an external antenna should be mounted to ensure the antenna is at least 20cm away from the human body. Only the external antennas recommended by Cervis, Inc. are to be used.

Appendix B: Agency Identification Label Location

✓ **Note:** ***The pistol grip agency ID label position is identical for all pistol grip remote units, including all 900MHz and 2.4GHz units.***

Figure 10. Agency Identification Label Location

Appendix C: Declaration of Conformity

DECLARATION OF CONFORMITY

IN ACCORDANCE TO ISO/IEC GUIDE 22

FOR A

PG-214	PG-210JS
PG-214-UMB	PG-210JS-UMB
PG-212JS	BP-210JS
PG-212JS-UMB	

MANUFACTURER: Cervis Inc.
170 Thorn Hill Road
Warrendale, PA 15086
Phone: 724-741-9000 Fax: 724-741-9001

MODEL NUMBER:

PG-210JS	07121570
PG-210JS-UMB	07121571
PG-212JS	07122570
PG-212JS-UMB	07122571
PG-214	07120570
PG-214-UMB	07120571

REPORT #: F2LQ5095A-C1-01E R&TTE
Cervis 5096B-02S – Controller Unit – EN60950-1 2nd Edition

DIRECTIVES:
Council Directive 1999/5/EC (R&TTE)
Council Directive 2006/95/EC (Low Voltage)
Council Directive 2004/108/EC (Electromagnetic Compatibility)

STANDARDS:
- EN 301-489-17 v2.1.1
- EN 60950-1:2006

TEST FACILITY: *F2 Labs*
26501 Ridge Road
Damascus, MD 20872

The equipment names and model numbers are in effective conformance to the Directives and Standards referenced above.

Authorized by: Anthony M. Di Tommaso Date: 1/8/13

Name: Anthony M. Di Tommaso Title: Director of Product Development & Quality

Visit our Web site at: www.cervisinc.com