Resource Identifier 100217
Revision: 8.0

SOL8SDR Hardware Guide

Commercial in Confidence

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0. Preface

0.1 About this Document

This document contains relevant information required to identify and install the equipment or system.

Since the available functions are licensed and depend on the specific implementation, not all the functions and or applications contained in this document may be relevant or applicable to the system you will be working with.

The actual presentation may differ from those in this document due to hardware or software changes.

0.2 Intended Audience

This document is for anyone interested in how the system can be used, but it is of most benefit to:

- Operators who are in charge of the daily operation of the equipment
- Installers who are responsible for the pre-installation, on-site installation and configuration of the system in the end-user environment
- Maintainers who are responsible for maintaining the equipment or system

0.3 Notice about this Publication

While DTC makes every attempt to maintain the accuracy of the information contained in its product manuals, the information is subject to change without notice.

Performance specifications included in this manual are included for guidance. All particulars are given by DTC in good faith, actual performance may vary.

0.4 Typographic Conventions

This document uses these typographic conventions to identify text that has a special meaning:

Typographic Convention	Example
TEXT in small capitals represents a specific key press on the console keyboard or hardware panel.	ESC, F1, SHIFT
The + sign means “hold down the first key while pressing the second key”.	Press CTRL+C to abort
<Text> Serves as a placeholder for variable text that you will replace as appropriate to its context.	Use the filename <system_name>.sys for…
Text in **bold** emphasises a new word or term of significance.	We call this a **protocol** and its function is…
Text in italics can represent a link to place in the existing document (often these are hyperlinks) or a reference to another document.	Refer to *section 0.4 Typographic Conventions*.
Successive menu selections are shown using arrows to indicate a sub-menu. In this example this would mean: Select the **Insert** menu, then select **picture**, then select **from file**.	**Insert>picture>from file**

0.5 Symbols

This document uses these symbols to highlight important information:

WARNING: A notice to the reader of when a situation might result in personal injury or loss of life, or destruction of equipment.

CAUTION: A notice to the reader of when a situation may result in loss of data or damage to equipment.

Note: A notice to draw attention to something or to supply additional information.

0.6 Trademarks

All trademarks or registered trademarks that appear in this document are the property of their respective owners.

0.7 Related Documents

All DTC documents can be downloaded from WatchDox. See *section* 6.1.

Document	Source
SOL8SDR Transmitter and Encoder Software User Guide	DTC
SOL8SDR Receiver Software User Guide	DTC
NETNode Phase 5 Software User Guide	DTC
SOL8SDR-C OEM Integration Document	DTC
Solo Concept Guide	DTC
IP Concept Guide	DTC

0.8 Document History

This is a controlled document, written and produced by the DTC Technical Publications team. Changes are recorded in the table below.

Revision	Date	Authors	Summary of Changes
1.0	02/08/2016	IR	Initial Release
2.0	06/01/2017	IR	Cable updates (CN02054)
3.0	13/01/2017	IR	SOL8SDR2x2W-P heatsink accessory
4.0	24/03/2017	IR	SOL8SDR-C with 2W Amplifier
5.0	10/05/2017	IR	Corrected 2W AMP part numbers
6.0	06/07/2017	IR	Updated SOL8SDR2X2W-P metalwork, USB peripheral adaptor and DTC screenshots for Device Controller.
6.1	19/01/2018	IR	Updated AMP photo.
6.2	25/04/2018	IR	Added supported dongle list, SOL8SDR Receiver and passwords section. USB stick contents updated.
7.0	14/12/2018	IR	Moved amplifier calibration to integration document.
8.0	15/01/2019	IR	USB serial adaptor. FCC compliance.

Contents

1. Product Overview

1.1 Product Family

The products that will be covered in this guide are:

Equipment Title	Part Number
SOLO8 Software Defined Radio (Concealment)	SOL8SDR-C
SOLO8 Software Defined Radio (Robust)	SOL8SDR-R
SOLO8 Software Defined Radio (Plain)	SOL8SDR2X2W-P

1.2 SOLO8 Software Defined Radio (Concealment)

1.2.1 Description

The SOLO8 Software Defined Radio is an ultra-miniature COFDM digital video transceiver from Domo Tactical Communications (DTC), designed specifically for Point of View (PoV), body worn and concealment applications. Dependent on the applications loaded, the platform can operate as a Transmitter, Receiver, Dual Encoder, Standard IP Mesh and MIMO IP Mesh. Further information on software capability can found in the SDRAPP datasheets.

The SOLO8 SDR Concealment is an ultra-miniature package ideal for integration into the smallest concealment solutions.

The UHF version is larger than the standard SOL8SDR-C due to the lower frequency of operation (320-470MHz). Please see the *SOL8SDR UHF Operation Guidelines* publication for important application notes.

One/two 2W PAs or a 2x1W PA can be connected via D1806 for extended range.

1.2.2 Features

- Dual high profile HD H.264 independent video encoders
- 2x100mW COFDM transceivers for use as COFDM Transmitter, Receiver or IP Mesh
- ISM band telemetry transceiver for control, PTZ and low power standby
- Dual SD/HD-SDI video inputs for recording, transmission and analysis
- Microphone inputs and headphone output for recording, transmission or talkback
- Growing USB support for peripherals such as 3G/4G/Wi-Fi dongles
- Ethernet, RS232 and RS485 connectivity, and 128GB built in storage
- Compact packaging with ultra-miniature connectors

- Very low power consumption: typically 7.5W
- Exceptionally small size: 50mm x 50mm x 18mm (24mm UHF)
- Weighs only 70-82g

1.2.3 Basic Specifications

Dimensions (mm)	50 (L) x 50 (W) x 18 (D)
Weight	80g
Operating Temperature	-20°C to +60°C with additional cooling
Power Consumption	Typically 7.5W (SD), 8.5W (HD), 9.5W (Dual)
DC Input	8 to 18VDC reverse polarity protected
DC Output	1A pass through switchable

1.3 SOLO8 Software Defined Radio (Robust)

1.3.1 Description

The SOLO8 Software Defined Radio is an ultra-miniature COFDM digital video transceiver from Domo Tactical Communications (DTC), designed specifically for Point of View (PoV), body worn and concealment applications. Dependent on the applications loaded the platform can operate as a Transmitter, Receiver, Dual Encoder, Standard IP Mesh and MIMO IP Mesh. Further information on software capability can found in the SDRAPP datasheets.

SOLO8 SDR Robust provides a passively cooled IP66 rated enclosure ideal for outdoor, or body worn applications.

The UHF version is larger than the standard SOL8SDR-R due to the lower frequency of operation (320-470MHz). Please see the SOL8SDR UHF Operation Guidelines publication for important application notes.

1.3.2 Features

- Dual high profile HD H.264 independent video encoders
- 2x100mW COFDM transceivers for use as COFDM Transmitter, Receiver or IP Mesh
- ISM band telemetry transceiver for control, PTZ and low power standby
- Dual SD/HD-SDI video inputs for recording, transmission and analysis
- Microphone inputs and headphone output for recording, transmission or talkback
- Growing USB support for peripherals such as 3G/4G/Wi-Fi dongles

- Ethernet, RS232 and RS485 connectivity, and 128GB built in storage
- Robust packaging with IP66 rated connectors
- Very low power consumption: typically 7.5W
- Exceptionally small size: 130mm x 100mm x 25mm (30.5mm
- UHF)
- Weighs only 314-372g

1.3.3 Basic Specifications

Dimensions (mm)	130 (L) x 100 (W) x 25 (D)
Weight	314g
Operating Temperature	-20°C to +60°C
Power Consumption	Typically 7.5W (SD), 8.5W (HD), 9.5W (Dual)
DC Input	8 to 18VDC reverse polarity protected
DC Output	1A pass through switchable

1.4 SOL08 Software Defined Radio (Plain)

1.4.1 Description

The SOL08 Software Defined Radio is an ultra-miniature COFDM digital video transceiver from Domo Tactical Communications (DTC), designed specifically for Point of View (PoV), body worn and concealment applications. Dependent on the applications loaded the platform can operate as a Transmitter, Receiver, Dual Encoder, Standard IP Mesh and MIMO IP Mesh. Further information on software capability can found in the SDRAPP datasheets.

SOL08 SDR Plain provides a compact higher power solution (2x2W) for increased range and enhanced connectivity with native RJ45 and USB as standard.

1.4.2 Features

- Dual high profile HD H.264 independent video encoders
- 2x2W COFDM transceivers for use as COFDM Transmitter, Receiver or IP Mesh
- ISM band telemetry transceiver for control, PTZ and low power standby
- Dual SD/HD-SDI video inputs for recording, transmission and analysis
- Microphone inputs and headphone output for recording, transmission or talkback

- Growing USB support for peripherals such as 3G/4G/Wi-Fi dongles
- Ethernet, RS232 and RS485 connectivity and 128GB built in storage
- Higher power packaging without the need for breakout cables
- Very low power consumption: typically 12.5W
- Exceptionally small size: 200mm x 100mm x 27mm
- Weighs only 950g

1.4.3 Basic Specifications

Dimensions (mm)	235mm (L) x 100mm (W) x 26mm (H).
Weight	950g
Operating Temperature	-10°C to +50°C.
Power Consumption	Typically 12.5W (SD), 13.5W (HD), 14.5W (Dual).
DC Input	8 to 18VDC reverse polarity protected.
DC Output	1A pass through switchable. 5V regulated output limited to 1A (switchable)

1.5 Approval Notices

1.5.1 EMC/Safety and Radio Approvals

The equipment has been designed to meet and has been tested against harmonized EMC and safety standards.

1.5.2 CE Marking

The CE mark is affixed to all DTC products, the CE Declaration of Conformity as well as the technical file is available on request.

1.6 FCC EMC Compliance

Where SOL8SDR-C and SOL8SDR-P devices carry an FCC compliance identifier on the label (see *section 2.7*), the following statement applies:

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

The use of frequencies not listed in the grant filing are prohibited.

Changes or modifications not expressly approved by Domo Tactical Communications (DTC) could void the user's authority to operate the equipment.

2. Product Package

2.1 Overview

Carefully open the packaging and remove the device and all other items. Verify that all the components have been included in the package as shown in the packing list. Inspect the unit for shipping damage.

Note: If you do not have all the parts or you are not happy with the condition of your delivered product, please call DTC and we will get this solved for you. See *section 6.2*.

Retain the packing list and all the packing materials for storage.

The codes in the packing list mean:

- CA – cable assembly
- SA – sub assembly
- AP – assembly part

The part numbers are useful for identification and if you need to order a new part.

2.2 SOL8SDR-C Parts List

These items will be in the package.

Item	Notes
SOL8SDR-C	SOLO8 Software Defined Radio, Concealment (OEM)
CA2856	Ethernet JST cable
CA3043	JST-banana plug power cable
D1804	Gecko breakout PCB (for pinout see *section 3.6*)
D918	Ethernet Magnetics PCB
SA3774	SOL8SDR-C USB stick containing: Device Controller, Node Finder, Video Download Tool, SDR USB driver, SOL8SDR Hardware Guide, Software User Guides, Quick Start Guide and SOL8SDR-C Integration Documentation

2.3 SOL8SDR-R Part List

These items will be in the package.

Item	Notes
SOL8SDR-R	SOLO8 Software Defined Radio, Robust
AP007377	USB A to micro USB B cable
CA0002	12V DC power cable 3m
CA2396 x 2	DIN 1.0/2.3 to BNC female cable
CA2519	Fischer power cable 3m

Item	Notes
CA2521	Fischer Ethernet breakout cable
CA2522	Fischer USB breakout cable
CA3123	Fischer audio MIC/HEAD cable
SA3741	SOL8SDR-R USB stick containing: Device Controller, Node Finder, Video Download Tool, SDR USB driver, SOL8SDR Hardware Guide, Software User Guides and Quick Start Guide

2.4 SOL8SDR2X2W-P Parts List

These items will be in the package.

Item	Notes
SOL8SDR2x2W-P	SOLO8 Software Defined Radio, Plain
CA0002	12VDC power cable 3m
CA2396 x 2	BNC to DIN 1.0/2.3 RG179 cable
CA3172	12V power block
SA4233	SOL8SDR-P USB stick containing: Device Controller, Node Finder, Video Download Tool, SDR USB driver, SOL8SDR Hardware Guide, Software User Guides and Quick Start Guide

2.5 Accessory Options

If you have purchased these items, they will also be in the package.

Note: If you have ordered the AMP2W or AMP2x1W, they will need to be calibrated with SOL8SDR-C using the process detailed in *SOL8SDR-C OEM Integration Document*. A D1806 is an essential accessory.

Part Number	Equipment Title
SOL8SDR-CK	SOL8SDR Concealment Kit, including CAMuPHDK (HD-SDI pin-hole camera and 3 lenses), microphone, ANT, battery, heatsink, Pelicase. Excludes SOL8SDR-C.
SOL8SDR-RSK	SOL8SDR Robust Surveillance Kit, including CAMuPHDK (HD-SDI pin-hole camera and 3 lenses), microphone, ANT, battery, heatsink, Pelicase. Excludes SOL8SDR-R.
SOL8SDR-C-HSK	Passive heatsink assembly for SOL8SDR-C
SOL8SDR2x2W-P-HSK	Passive heatsink accessory for SOL8SDR2X2W-P only
SOL8KF-043	Three button key fob (433.05-434.79MHz)
SOL8KF-091	Three button key fob (902-928MHz)
SOL8SDI	HDMI/Composite to SDI converter
CAMuPHDK	Pin-hole HD camera kit
CA2830	DIN 1.0/2.3 to MMCX cable for CAMuPHDK
SOL8TELTRX	SOLO8 Telemetry Transmitter/Receiver
AMP2W-xxxxxx-B-OEM	2W PA OEM assembly with bypass, xxxxxx denotes frequency band (SOL8SDR-C only)
AMP2x1W-xxxxxx-B-OEM	Dual 1W OEM AMP with bypass, xxxxxx denotes frequency band (SOL8SDR-C only)
D1806	Gecko active breakout PCB required for PA accessories (SOL8SDR-C only)
SOL8SDR-C-CAKIT-A/B/C	Cable accessory kits A, B and C for SOL8SDR-C. Refer to CAKIT guide.
CA2520	AV/PTZ/data breakout cable (SOL8SDR-R only)
CA3164	Fischer DC/USB/RS485 Wire Breakout (SOL8SDR-R only)
CA3238	GlobalSat BU-353-S4 GPS with UltiMate (SOL8SDR-R only)
AP009131	GlobalSat BU-353-S4 GPS with Type-A USB

2.6 Variants

This part number will identify the product; it is also on the label.

2.6.1 SOL8SDR-C

Part Number	Description
SOL8SDR-C-039091	Software Defined Radio, Concealment, 320-470MHz, 902-928MHz Tel

Part Number	Description
SOL8SDR-C-132043	Software Defined Radio, Concealment, 1.14-1.50GHz, 433.05-434.79MHz Tel
SOL8SDR-C-201043	Software Defined Radio, Concealment, 1.67-2.35GHz, 433.05-434.79MHz Tel
SOL8SDR-C-201091	Software Defined Radio, Concealment, 1.67-2.35GHz, 902-928MHz Tel
SOL8SDR-C-234043	Software Defined Radio, Concealment, 1.98-2.7GHz, 433.05-434.79MHz Tel
SOL8SDR-C-234091	Software Defined Radio, Concealment, 1.98-2.7GHz, 902-928MHz Tel
SOL8SDR-C-470043	Software Defined Radio, Concealment, 4.40-5.00GHz, 433.05-434.79MHz Tel
SOL8SDR-C-470091	Software Defined Radio, Concealment, 4.40-5.00GHz, 902-928MHz Tel
SOL8SDR-C-575091	Software Defined Radio, Concealment, 5.50-6.00GHz, 902-928MHz Tel

2.6.2 SOL8SDR-R

Part Number	Description
SOL8SDR-R-039091	Software Defined Radio, Robust, 320-470MHz, 902-928MHz Tel
SOL8SDR-R-132043	Software Defined Radio, Robust, 1.14-1.50GHz, 433.05-434.79MHz Tel
SOL8SDR-R-201043	Software Defined Radio, Robust, 1.67-2.35GHz, 433.05-434.79MHz Tel
SOL8SDR-R-201091	Software Defined Radio, Robust, 1.67-2.35GHz, 902-928MHz Tel
SOL8SDR-R-234043	Software Defined Radio, Robust, 1.98-2.7GHz, 433.05-434.79MHz Tel
SOL8SDR-R-234091	Software Defined Radio, Robust, 1.98-2.7GHz, 902-928MHz Tel
SOL8SDR-R-470043	Software Defined Radio, Robust, 4.40-5.00GHz, 433.05-434.79MHz Tel
SOL8SDR-R-470091	Software Defined Radio, Robust, 4.40-5.00GHz, 902-928MHz Tel
SOL8SDR-R-575091	Software Defined Radio, Robust, 5.50-6.00GHz, 902-928MHz Tel

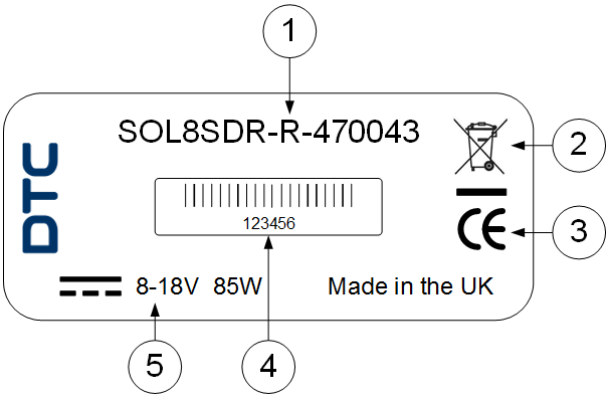
2.6.3 SOL8SDR2x2W-P

Part Number	Description
SOL8SDR2x2W-P-132043	Software Defined Radio, Plain, 2x2W, 1.14-1.50GHz, 433.05-434.79MHz Tel
SOL8SDR2x2W-P-201043	Software Defined Radio, Plain, 2x2W, 1.67-2.35GHz, 433.05-434.79MHz Tel
SOL8SDR2x2W-P-201091	Software Defined Radio, Plain, 2x2W, 1.67-2.35GHz, 902-928MHz Tel
SOL8SDR2x2W-P-234043	Software Defined Radio, Plain, 2x2W, 1.98-2.70GHz, 433.05-434.79MHz Tel
SOL8SDR2x2W-P-234091	Software Defined Radio, Plain, 2x2W, 1.98-2.70GHz, 902-928MHz Tel
SOL8SDR2x2W-P -470091	Software Defined Radio, Plain, 2x2W, 4.40-5.00GHz, 902-928MHz Tel

2.7 Labelling

2.7.1 Generic

All SOL8SDRs will be identified by generic label information.



No	Item
1	Part number – this is the variant explained above.
2	This symbol indicates that the unit should be disposed of in accordance with the WEEE Directive.
3	The CE mark certifies that a product has met EU consumer safety, health and environmental requirements.
4	A barcoded, six-digit serial number. This may be required during a support call.
5	Power requirements.

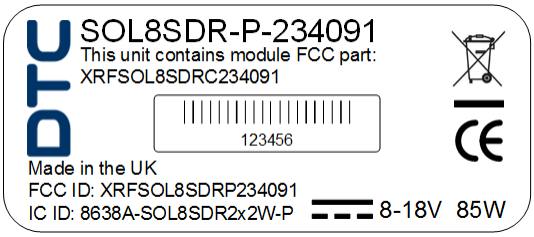
2.7.2 SOL8SDR FCC Labelling

An FCC ID is a unique identifier assigned to a device registered with the United States Federal Communications Commission, see *section 1.6*.

Where SOL8SDR is certified, the FCC identifier will be indicated on the label.

SOL8SDR-C FCC Label

SOL8SDR-P FCC Label



2.8 Licensing Options

Some product functions are enabled by licenses.

SDR applications are used in combination with SOL8SDR products to add functionality. Combinations of SDRAPP licenses may need to be purchased to meet the requirements.

2.8.1 SDRAPP-ENC

If the SOL8SDR is to be used as a **Video Encoder**, choose from the **SDRAPP-ENC** licenses.

Part Number	SDRAPP-ENC
Silver	Streaming and Recording
Gold	Silver plus MPEG-4 H.264 (SD)
Platinum	Gold plus MPEG-4 H.264 (HD)

2.8.2 SDRAPP-TX

If the SOL8SDR is to be used as a **COFDM Transmitter**, choose from the **SDRAPP-TX** licenses.

Part Number	SDRAPP-TX
Silver	DVB-T Modulation, Ultra Mobile Video Link (UMVL) and Telemetry.
Gold	Silver plus 1.25MHz and 2.5MHz Narrowband Modulation.
Platinum	Gold plus 625MHz Narrowband Modulation.

2.8.3 SDRAPP-RX

If the SOL8SDR is to be used as a **Receiver**, choose from the **SDRAPP-RX** licenses.

Part Number	SDRAPP-TX
Silver	DVB-T Modulation and Telemetry.
Gold	Silver plus 1.25MHz and 2.5MHz Narrowband Modulation.
Platinum	Gold plus 625MHz Narrowband Modulation.

2.8.4 SDRAPP-MESH

If the SOL8SDR is to be used as a **Mesh IP Radio**, the **SDRAPP-MESH** license will need to be applied.

Part Number	SDRAPP-MESH
Silver	Standard Mesh, MIMO Mesh and DES Mesh Encryption.

2.8.5 SDRAPP-IAS

If the SOL8SDR Mesh is to use the **Interference Avoidance Scheme**, the SDRAPP-IAS license will need to be applied.

Part Number	SDRAPP-MESH
Silver	Interference Avoidance Scheme.

2.8.6 Encryption

Encryption licenses are used for secure communications.

Part Number	SDRAPP-TX
AES128TX	AES 128-Bit Encryption License
AES256TX	AES 256-Bit Encryption License

3. Connections, Controls and Indicators

3.1 Introduction

This chapter will help you identify all the connections and interfaces to help you install and control your SOL8SDR device.

Each SOL8SDR has **front** and **rear** panels which contain all the interfaces for the unit. The SOL8SDR2X2W-P also has a **left** panel with some connections.

3.2 Antenna Polarization

3.2.1 COFDM Transmitter/Receiver

COFDM links are very robust and are tolerant to changes in antenna location, but, it is important to try and keep the antennas in the **same plane** if possible.

The antennas used with the COFDM links are usually **linearly** polarized.

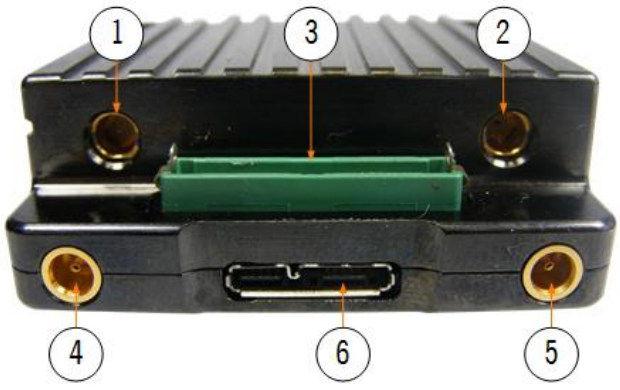
3.2.2 MIMO Mesh

MIMO Mesh antennas are ideally polarised **orthogonally**, at right angles to each other.

3.3 SOL8SDR Concealment

CAUTION: The SOL8SDR-C product is an OEM module which will need careful consideration for heatsinking or fan cooling as part of the installation. Please read *SOL8SDR-C OEM Integration Document* available on DTC's WatchDox facility.

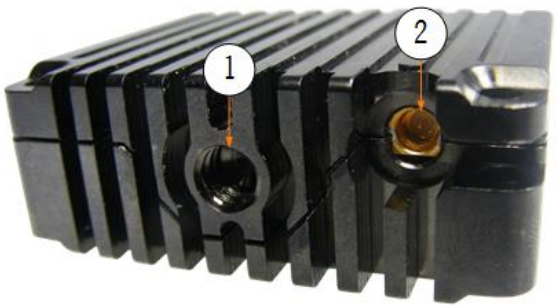
3.3.1 Front Panel



No	Item	Purpose
1	SMP 50Ω jack (pin)	RF-A COFDM antenna connects here.
2	SMP 50Ω jack (pin)	RF-B COFDM antenna connects here. This is the default transmit output.

No	Item	Purpose
3	Harwin Gecko 34-way header	This header accepts D1804 Gecko breakout PCB supplied with the unit which breaks out to: Power in, power out, Ethernet, PTZ control, RS232 debug, PA control, headphone out, and left and right microphone inputs. For pinout of the Gecko breakout PCB see *section 3.6*. **Note**: If you have a power amplifier, you will need the D1806 PCB. For integration, read the *SOL8SDR-C OEM Integration Document*.
4	MCX jack (socket)	SDI-1 video connects here.
5	MCX jack (socket)	SDI-2 video connects here.
6	USB 3.0 Micro-B jack	Use DTC cable AP007377 to connect to your PC. A USB to serial adaptor can be used for serial data transfer. If you want to attach USB peripheral devices, you will need a suitable micro B to type A female adaptor.

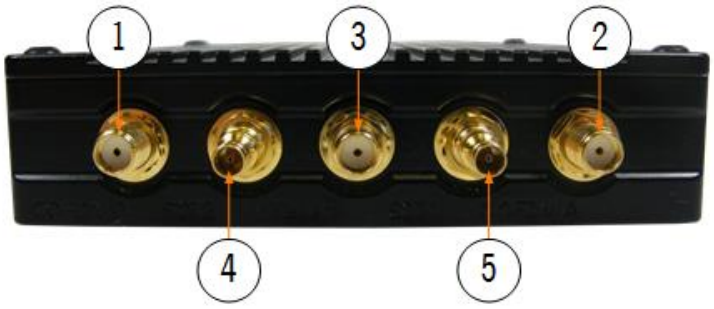
3.3.2 Rear Panel



No	Item	Purpose
1	Threaded mounting	British Standard Whitworth (BSW) 1/4” x 20 for mounting.
2	SMP 50Ω jack (pin)	Telemetry antenna connects here.

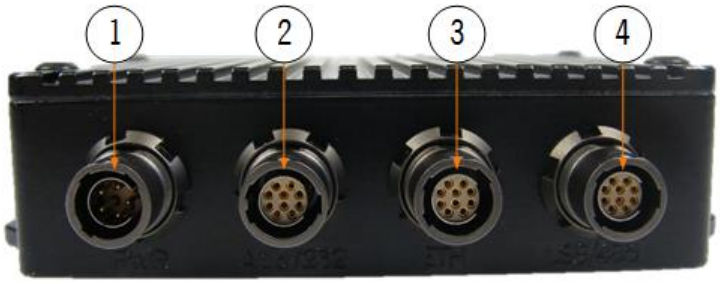
3.4 SOL8SDR Robust

3.4.1 Front Panel



No	Item	Purpose
1	SMA 50Ω jack (socket)	COFDM B antenna connects here. This is the default transmit output.
2	SMA 50Ω jack (socket)	COFDM A antenna connects here.
3	SMA 50Ω jack (socket)	Telemetry antenna connects here.
4	DIN 1.0/2.3 jack (socket)	SDI-1 video connects here. **Note**: SOL8SDI option will allow for a Composite or HDMI video connection.
5	DIN 1.0/2.3 jack (socket)	SDI-2 video connects here. **Note**: SOL8SDI option will allow for a Composite or HDMI video connection.

3.4.2 Rear Panel



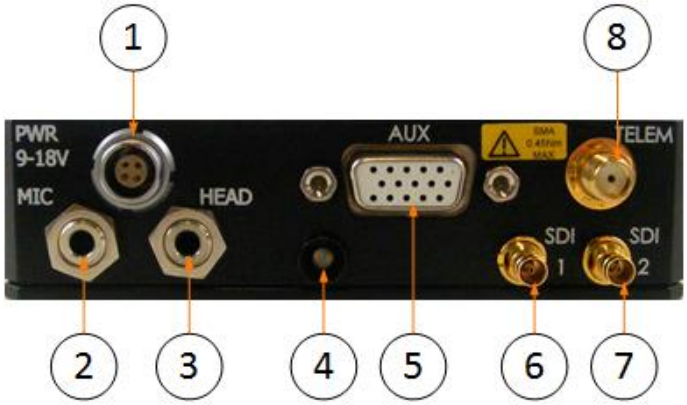
Note: For pinout of the four Fischer connectors, USB/485, ETH, Aud/232 and PWR, refer to *section 3.7*.

No	Item	Purpose
1	Fischer Ultimate 5-way jack (pins) marked PWR	CA2519 (replaced by CA3173) connects here to provide 12V Power In.

No	Item	Purpose
2	Fischer Ultimate10-way jack (sockets) marked Aud/232	CA3123 connects here to provide Mesh audio talkback. CA2520 (option) connects here to provide analogue audio in left/right and RS232.
3	Fischer Ultimate10-way jack (sockets) marked ETH	CA2521 connects here to provide Ethernet connectivity to a laptop or network.
4	Fischer Ultimate10-way jack (sockets) marked USB/485	CA2522 connects here to provide USB connectivity. Use with supplied cable AP007377 to connect to a PC. A USB to serial adaptor can be used for serial data transfer. If you want to attach USB peripheral devices, you will need a suitable micro B to type A female adaptor.

3.5 SOL8SDR Plain

3.5.1 Front Panel



No	Item	Purpose
1	Lemo 4-way jack (sockets)	CA0002 or CA0023 can be inserted here to provide power.
2	3.5mm jack (socket)	Microphone audio signals can be connected here.
3	3.5mm jack (socket)	Headphone audio signals can be connected here.
4	Status LED	Power/RF status. **Red** = power on/RF off **Green** = power on/RF on in transmitter mode or when a successful Mesh link has been established in Mesh mode.
5	High density D-type 15-way connector (sockets)	Auxiliary port. For pinout see *section 3.8*.
6	DIN 1.0/2.3 jack (socket)	SDI1 video input connects here. **Note**: SOL8SDI option will allow for a Composite or HDMI video connection.

No	Item	Purpose
7	DIN 1.0/2.3 jack (socket)	SDI2 video input connects here. **Note**: SOL8SDI option will allow for a Composite or HDMI video connection.
8	SMA 50Ω jack (socket)	The telemetry antenna connects here.

3.5.2 Rear Panel

No	Item	Purpose
1	SMA 50Ω jack (socket)	COFDM B antenna. This is the default transmit output.
2	SMA 50Ω jack (socket)	COFDM A antenna.

3.5.3 The Left Panel

No	Item	Purpose
1	USB 2.0 4-way type A jack	Provides USB connectivity for host or peripheral devices. A USB to serial adaptor can be used for serial data transfer.
2	Magjack RJ45 8-way jack	Provides Ethernet connectivity.

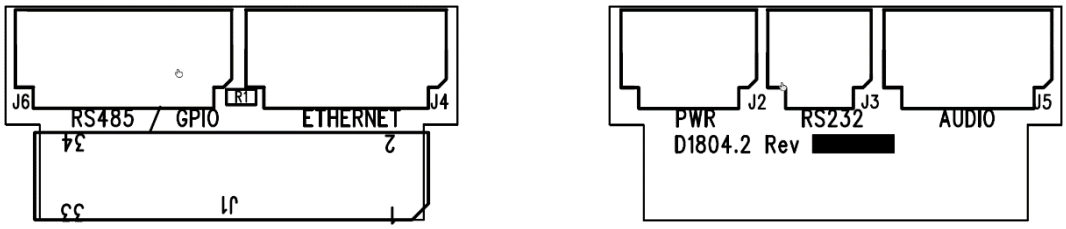
3.5.4 Top Panel

On the SOL8SDR2X2W-P top panel there is a thermal path indicator. This indicator is to alert the customer to use this panel to provide the most effective heatsink path.

For assembly of the optional heatsink accessory see *section 5.2*.

3.6 SOL8SDR-C (D1804) Pinouts

3.6.1 D1804 PCB Assembly



3.6.2 J1

Pin	Function	Pin	Function
1	GPIO0	2	GPIO1
3	VIN	4	0V
5	12V SW OUT	6	0V
7	Ethernet MDIP0	8	Ethernet MDIP2
9	Ethernet MDIN0	10	Ethernet MDIN2
11	Ethernet MDIP1	12	Ethernet MDIP3
13	Ethernet MDIN1	14	Ethernet MDIN3
15	0V	16	0V
17	RS232 TX	18	RS232 RX
19	RS485 TX+	20	RS485 RX+
21	RS485 TX-	22	RS485 RX-
23	GPIO2	24	GPIO3
25	PA TDD	26	0V

Pin	Function	Pin	Function
27	Headphone GND	28	Headphone Right
29	Microphone 10V	30	Microphone 10V
31	Microphone GND	32	Microphone GND
33	Microphone Left	34	Microphone Right

3.6.3 J2 (PWR)

Pin	Function
1	VIN
2	VIN
3	0V
4	0V
5	PA TDD
6	0V

3.6.4 J3 (RS232)

Pin	Function
1	RS232 TX
2	RS232 RX
3	0V
4	12V SW OUT

3.6.5 J4 (ETHERNET)

Pin	Function
1	Ethernet MDIP0
2	Ethernet MDIN0
3	Ethernet MDIP1
4	Ethernet MDIN1
5	Ethernet MDIP2
6	Ethernet MDIN2
7	Ethernet MDIP3
8	Ethernet MDIN3
9	0V
10	N/C

3.6.6 J5 (AUDIO)

Pin	Function
1	Microphone 10V
2	Microphone Left
3	Microphone GND
4	Microphone 10V
5	Microphone Right
6	Microphone GND
7	Headphone GND
8	Headphone Right

3.6.7 J6 (RS485/GPIO)

Pin	Function
1	12V SW OUT
2	0V
3	RS485 RX+
4	RS485 RX-
5	RS485 TX+
6	RS485 TX-
7	GPIO0
8	GPIO1
9	0V
10	GPIO2
11	GPIO3

3.7 SOL8SDR-R Pinouts

3.7.1 PWR

Pin	Function
1	VBATT Input
2	VBATT Input
3	GND
4	GND
5	PA TDD

3.7.2 AUD/232

Pin	Function
1	VBATT Output
2	GND
3	Headphone Output
4	Headphone GND
5	RS232 TX
6	RS232 RX
7	Microphone 10V
8	Microphone Left
9	Microphone Right
10	Microphone GND

3.7.3 ETH

Pin	Function
1	VCC
2	GND
3	Ethernet MDIN3
4	Ethernet MDIP3
5	Ethernet MDIN2
6	Ethernet MDIP2
7	Ethernet MDIN1
8	Ethernet MDIP1
9	Ethernet MDIN0

Pin	Function
10	Ethernet MDIP0

3.7.4 USB/485

Pin	Function
1	GND
2	USB ID
3	USB DP
4	USB DM
5	USB VBUS
6	RS485 TX+
7	RS485 TX-
8	RS485 RX+
9	RS485 RX-
10	VBATT Output

3.8 SOL8SDR2X2W-P Pinouts

3.8.1 Audio Jack

HEAD

Pin	Function
Tip	Audio Out (mono)
Ring 1	Audio Out (mono)
Ring 2	Ground
Sleeve	Ground

MIC

Pin	Function
Tip	Audio In Left
Ring 1	Audio In Right
Ring 2	Ground
Sleeve	Ground

3.8.2 Auxiliary Port

Pin	Function
1	RS485 TX+
2	RS485 TX-
3	GND
4	RS485 RX+
5	RS485 RX-
6	12V OUT
7	5V
8	No Connect
9	GND
10	RS232 TX
11	RS232 RX
12	GND
13	No Connect
14	No Connect
15	GND

3.1 Supported USB Dongles

3.1.1 4G Dongle

4G dongles that are currently supported:

- Huawei E3372s-153 (pid 157d)
- Huawei E3372h-153 (pid 1f01)
- Verizon MiFi USB620L 4G (USA)

3.1.2 Wi-Fi Dongle

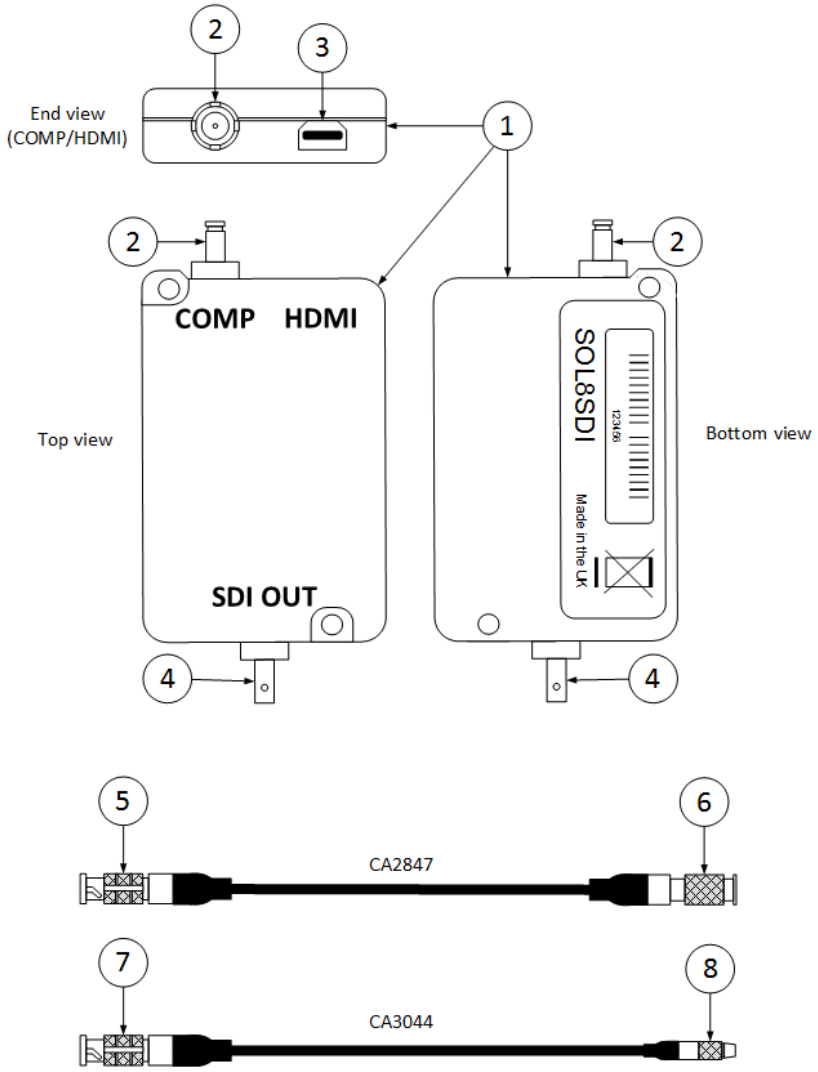
Wi-Fi dongles that are currently supported:

- TP-LINK AC1300
- TP-LINK AC1200

3.2 SOL8SDI Option as a Video Source

Composite or **HDMI** video signals can also be used as a source for **SOL8SDR** by using a **SOL8SDI** option to convert the signal source to SDI.

Note: SOL8SDI receives 5VDC power from the SOL8SDR. This is configurable from Domo Device Controller **Video Source** selection.



No	Item	Function
1	SOL8DI	Primary unit.
2	DIN1.0/2.3 2-way jack (socket)	PAL or NTSC composite video input connects here.
3	Micro HDMI type-D socket	HDMI video input connects here.
4	HD-BNC 75R jack (socket)	SD-SDI or HD-SDI video output here.
5	CA2847 HD-BNC plug (pin)	Connect this to SOL8SDI SDI OUT connector.
6	CA2847 DIN 1.0/2.3 2-way plug (pin)	Connect this to SOL8SDR-R SDI input.
7	CA3044 HD-BNC plug (pin)	Connect this to SOL8SDI SDI OUT connector
8	CA3044 MCX 75R plug (pin)	Connect this to SOL8SDR-C SDI input.

4. Getting Started

4.1 Introduction

This chapter will help the user power up and communicate with their SOL8SDR product. It will explain installation instructions for any relevant applications.

4.2 Initial Connections

Once you have unpacked your SOL8SDR, you will need to provide 12VDC power and connect to a PC or Network using Ethernet for control.

There is no power switch on a SOL8SDR, as soon as the power supply is switched on, your device will boot up.

4.3 Access the USB Stick

The USB support stick contents will provide you with all the user guides and applications needed to operate a SOL8SDR.

1. Plug the USB stick into the USB port of your PC.
2. The USB stick device drivers will load the first time you plug it in to your PC. Wait for the drivers to load successfully, you should see the progress in the bottom right of your PC screen.
3. Once they have loaded, a USB drive will have been created. Open Windows Explorer and you will be able to view the USB stick contents.

4.4 Using Node Finder

Our devices are shipped to you with the IP DHCP setting enabled. This means that if your SOL8SDR is connected to a network which is administered by a DHCP server, the IP address will be automatically allocated to it.

Node Finder can be used to identify a device IP address, or disable DHCP if you are not connected through a DHCP server or using a standalone PC or laptop.

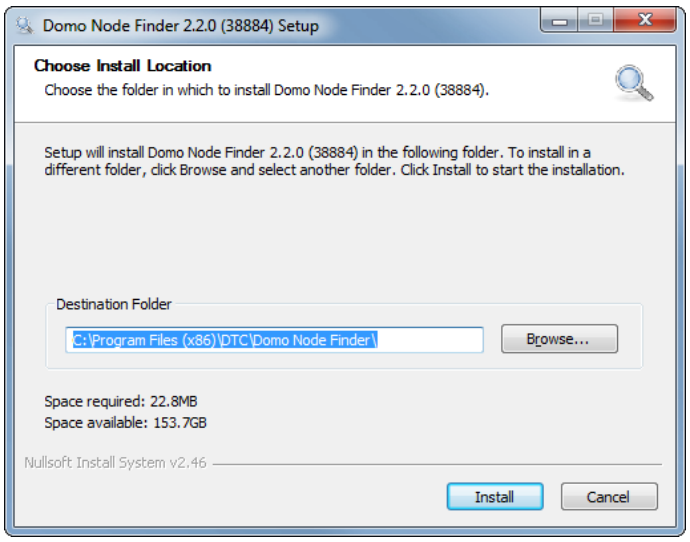
If you are unsure about your server settings, check with your Network Administrator.

Note: If you are using a standalone PC or laptop, you will also need to set the IP address of the PC. Refer to *section 5.1* to find out how to do this.

If the DTC device is connected to a network which does **not** have a DHCP server, contact your Network Administrator for an IP address you can use.

4.4.1 Install Node Finder on your PC

1. Double click the **NodeFinder.exe** file from the USB drive on your PC.
2. The **Node Finder Setup** window opens.

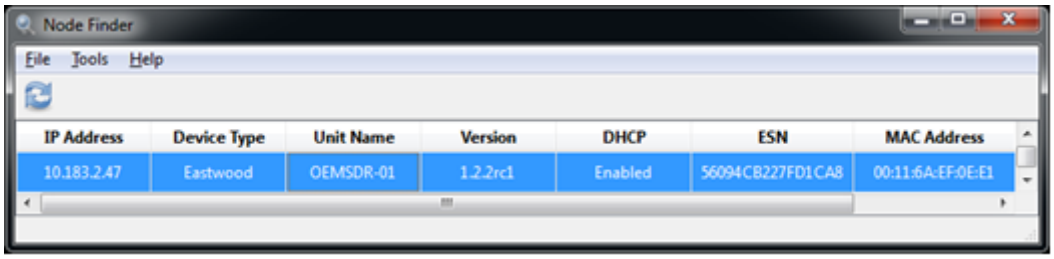


3. **Browse** to the location where you wish to install the software or leave the **Destination Folder** at default (recommended).
4. Click the **Install** button.
5. On completion **Close** the installer. A Node Finder icon will appear on your desktop.

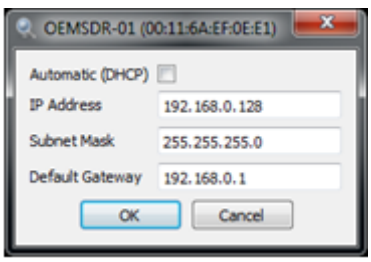
4.4.2 Establish IP Address using Node Finder

1. Double click the newly installed Node Finder icon from your PC desktop.
2. Establish the SOL8SDR IP address from Node Finder.

Note: If the device is not connected to a network with a DHCP server, the IP address may appear as 0.0.0.0.



3. Right click on the SOL8SDR to disable DHCP and set the IP address, if required.

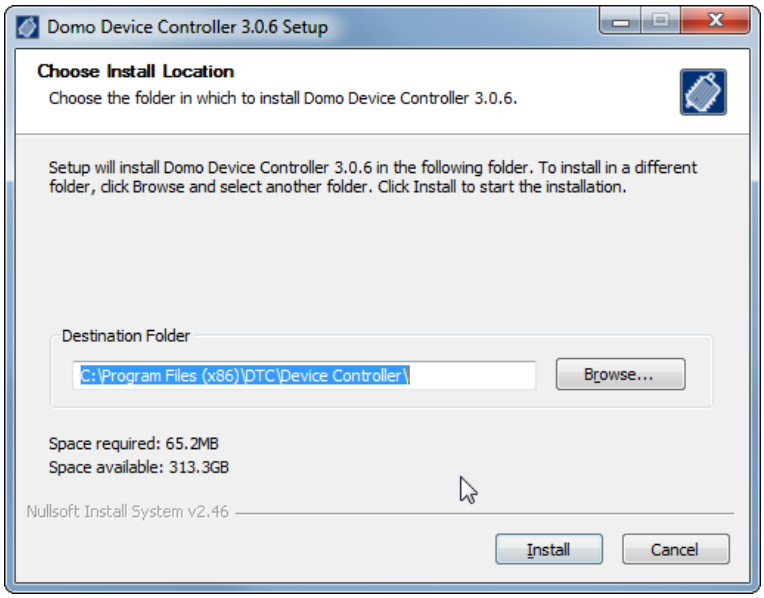


4.5 Installing the Domo Device Controller

Note: Domo Device Controller will only connect to a device which is configured as a Transmitter. If configured as a Receiver or Mesh, use the web browser.

4.5.1 Install the Domo Device Controller on your PC

1. Double-click the DomoDeviceController-Installer.exe on your USB stick.
2. The Domo Device Controller Setup window opens.

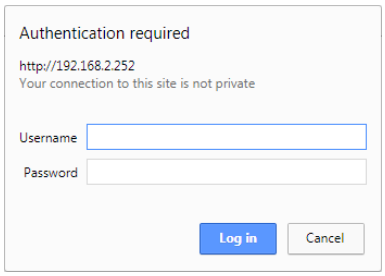


3. **Browse** to the location where you wish to install the software (or leave at default).
4. Click the **Install** button.
5. On successful completion, close the installer. A desktop icon will have been created.

4.6 Using a Web Browser Application

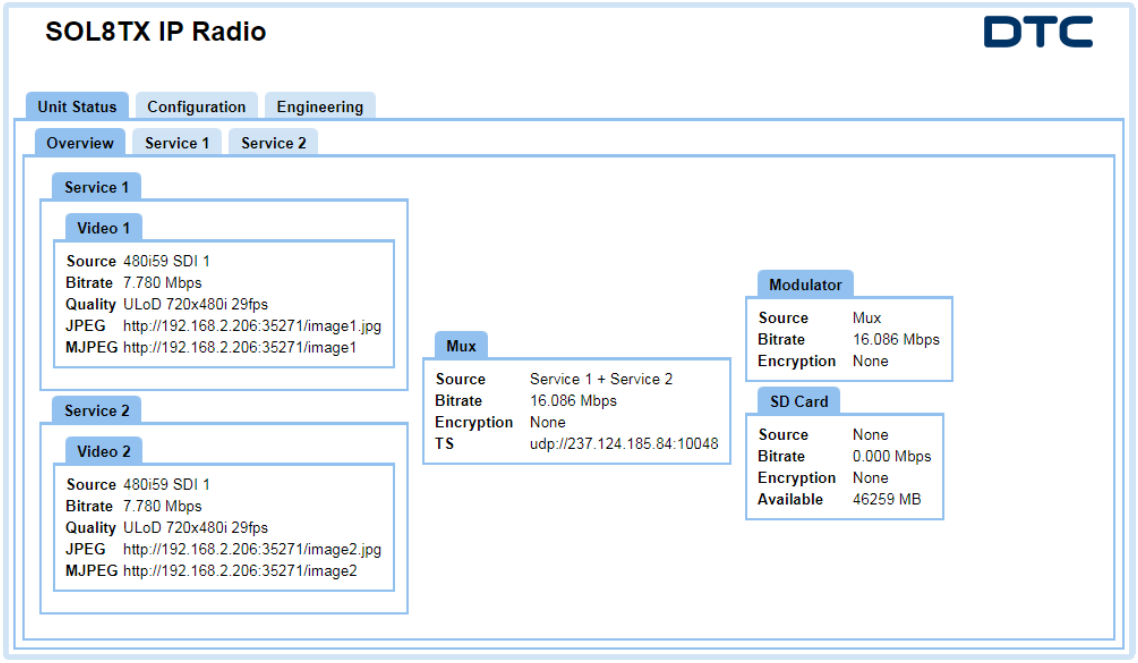
4.6.1 Connect Using a Web Browser Application

1. On your PC, open a **web browser** application.
2. In the **Address Bar**, enter the IP address of the SOL8SDR that was discovered using Node Finder.
3. The **Windows Security** dialog box opens.



4. Leave the **Username** blank and enter the **Password** as **Eastwood** (this is case sensitive).
5. Click **OK**.
6. Your SOL8SDR **Control Page** opens.

The actual appearance of the web browser will depend on the SDR application that is configured in the **Configuration>Global** tab. This is an example of a SOL8SDR configured as a transmitter.

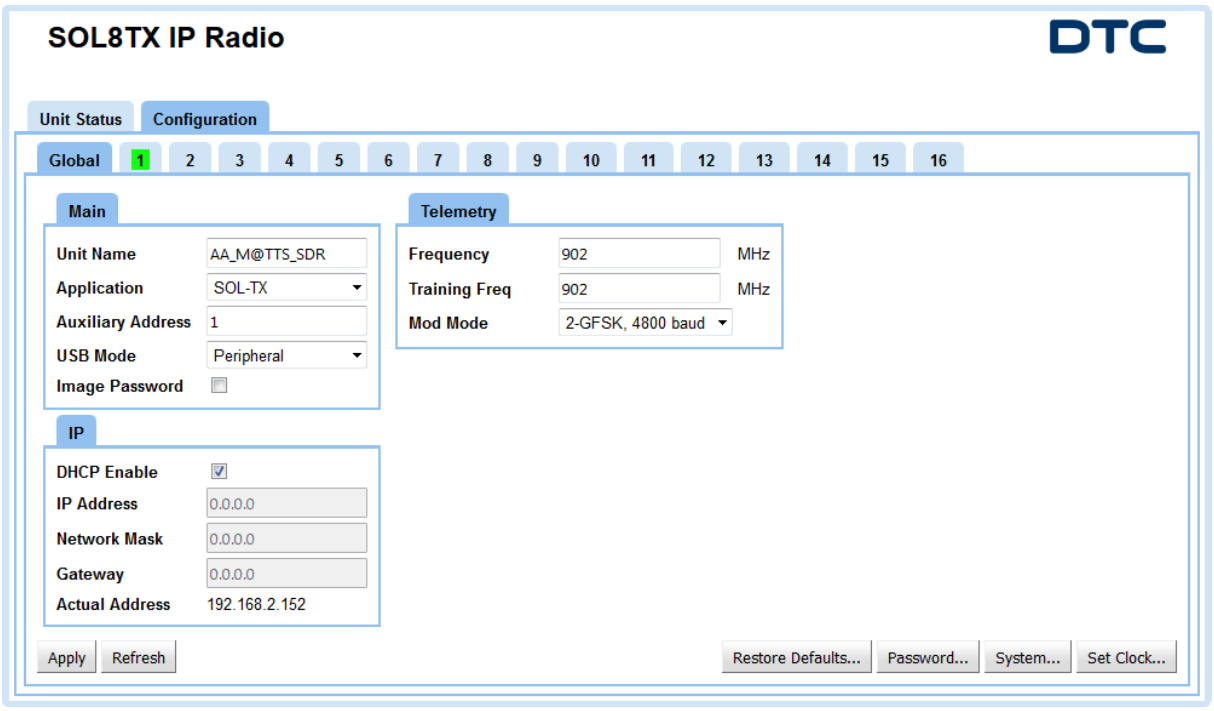


4.7 Configure the SOL8SDR Application

You may need to change the application if you have more than one SDRAPP license installed.

Open the web browser application and go to the **Configuration>Global** tab. Change the **Application** setting to suit, there is a choice of SOL-TX, SOL-RX and MESH.

Note: If you only have the **SDRAPP-ENC** license, the SOL8SDR will need to be configured as a **SOL-TX**.



4.8 Passwords

The default password for the SOL8SDR is **Eastwood** with no username necessary. This username is applicable for all user application logins, if necessary (i.e. Milestone, ONVIF etc.).

Some specific SOL8SDR applications may use alternative passwords.

4.9 Using Domo Device Controller via IP

4.9.1 Before you start

You will need:

- A Personal Computer with the **Domo Device Controller** and **Node Finder** installed
- Connect and apply power to the SOL8SDR
- Connect the SOL8SDR to the PC or Network via Ethernet

Note: Ensure the SDR is configured as a Transmitter (this can be verified in the web browser). Device controller will not work if SOL8SDR is configured as a Mesh or Receiver.)

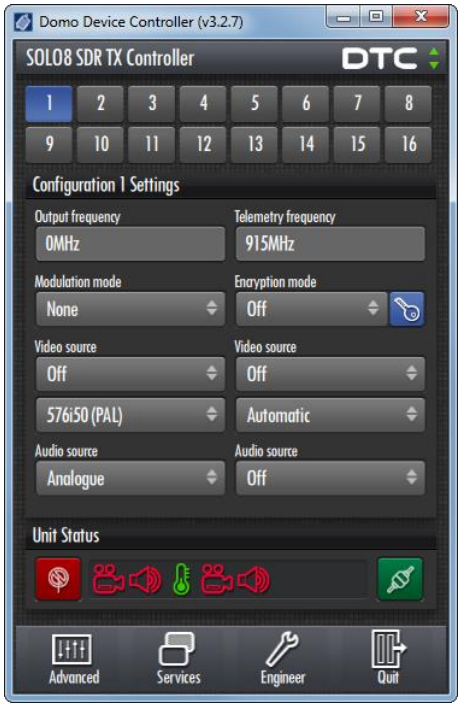
4.9.2 Connect Using Domo Device Controller

1. On your desktop, double-click the **Domo Device Controller** icon.
2. The Domo Device Controller opens showing the **Splash Screen**.

3. Click the orange **Connect** button.

4. The **Device Connection** window opens.

5. Select **TCP Socket** from the drop-down list.
6. Type the **IP address** of the SOLO8 or click the search button to find your device.
7. Make sure the **Port** number is set to **39183**.
8. Click the **Connect** button.
9. The **Primary Page** opens.



4.10 Using Domo Device Controller via USB

4.10.1 Before you start

You will need:

- A Personal Computer with the **Domo Device Controller** loaded
- Connect and apply power to the SOL8SDR
- Connect SOL8SDR to the PC USB port
- Supplied USB stick with SOL8SDR drivers

Note: SOL8SDR2X2W-P cannot currently operate with USB control signals to your PC.

4.10.2 Step 1: Load drivers (only needs to be done once)

The first time the SOL8SDR is connected via USB the device drivers will attempt to load. This is likely to be unsuccessful and the following process will need to be completed.

Note: The device drivers for the SOL8SDR will be on the USB stick supplied with the package. If you do not have the drivers access DTC WatchDox for the latest SOL8SDR software or refer to *section 6.2* for help.

For the following steps refer to *Figure 4-1*.

1. From your PC Start menu, select **Control Panel>System and Security>Device Manager**. Right click on **CDC Serial** and select **Update Driver Software**.
2. Select the option **Browse my computer for driver software**. Insert the supplied USB stick and browse to the folder which has the .inf driver file and click OK.
3. Click **Next** to carry out the update. It is possible that a **Windows Security** alert will be displayed, if this happens click the option to **Install this driver software anyway**.
4. On successful installation of the driver, Device Manager will update the Ports and Gadget Serial will be displayed with a Com Port allocation. This is the com port for the SOL8SDR.

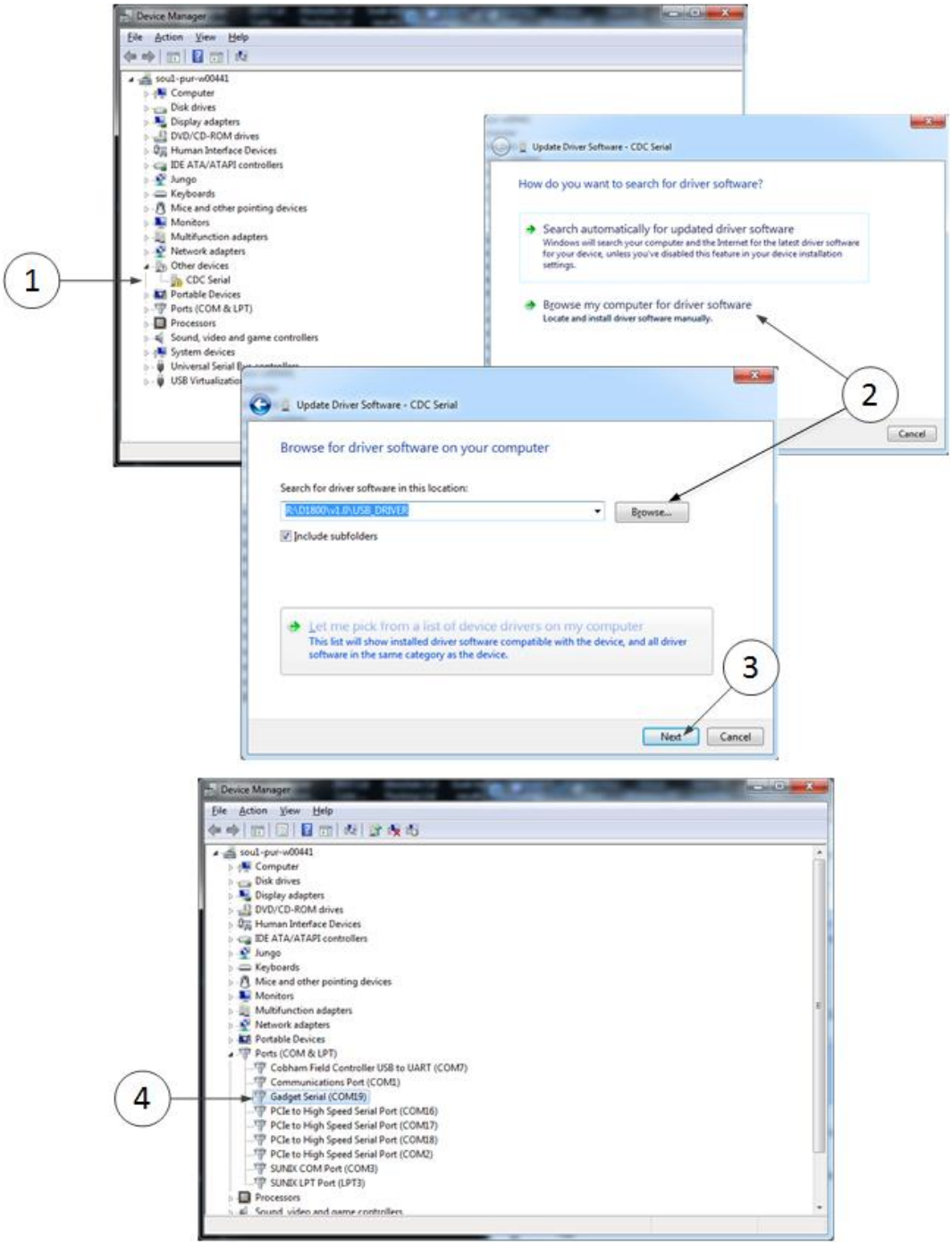
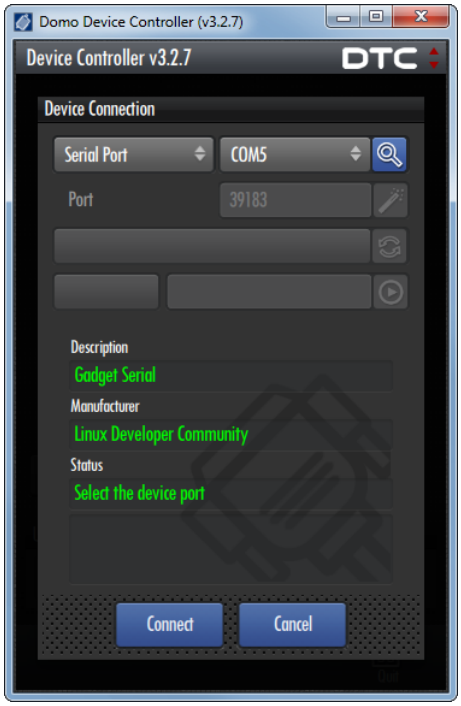


Figure 4-1 Update Device Drivers

4.10.3 Step 2: Connect Using Domo Device Controller

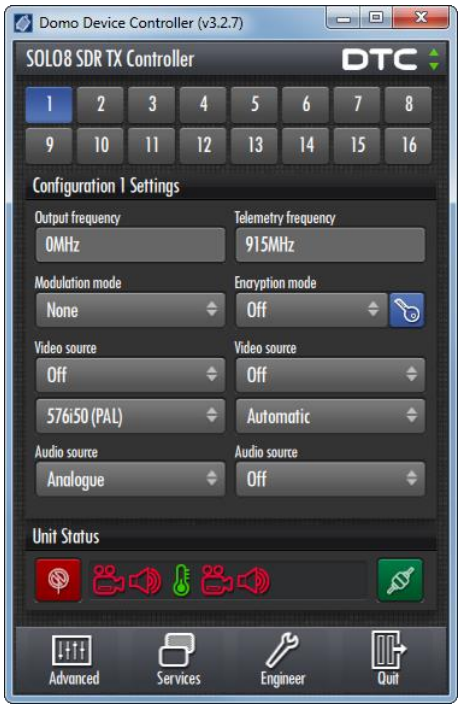
1. On your desktop, double-click the **Domo Device Controller** icon.
2. The Domo Device Controller opens showing the **Splash Screen**.

3. Click the orange **Click to connect** button.
4. The **Device Connection** window opens.



5. Select **Serial Port** from the drop-down list.
6. Select the correct **COM port** for your SOL8SDR from the drop-down list.
7. You can **scan** for COM ports by clicking the **search**.

8. Click the **Connect** button. The SOL8SDR should connect and the Primary Page will open



9. See that the green **Connect** button is showing. This means you are connected.

Note: We selected **Serial Port** in item 5 but we connected the PC to the transmitter with a **USB cable**. Why not select the USB entry that was in the list?

The SOL8SDR handles the serial cable and the USB cable as serial connections. If we use one of these two cables we *must* select **Serial Port**. USB only appears in the list to deal with legacy products.

4.10.4 Troubleshooting

☹ SOL8SDR won't connect!

☺ SOL8SDR will only connect to Domo Device Controller if it is configured as a Transmitter. Connect using the web browser and go to the **Configuration>Global** Tab and change the **Application** to **TX**.

☹ My SOL8SDR2X2W-P won't connect!

☺ SOL8SDR2X2W-P will only connect using IP. Change the **Device Controller** connection type to **TCP Socket**, see *section 4.9* or use web browser control.

4.11 Further Reading

Depending on the license of the SOL08 Software Defined Radio and how you wish to use it, you will need to refer to the specific Software User Guide for detailed software operation.

When configured as a Transmitter or Encoder, refer to **SOL8SDR Transmitter and Encoder Software User Guide**.

When configured as a Receiver, refer to **SOL8SDR Receiver Software User Guide**.

When configured as a Mesh, refer to **NETNode Phase 5 Software User Guide**.

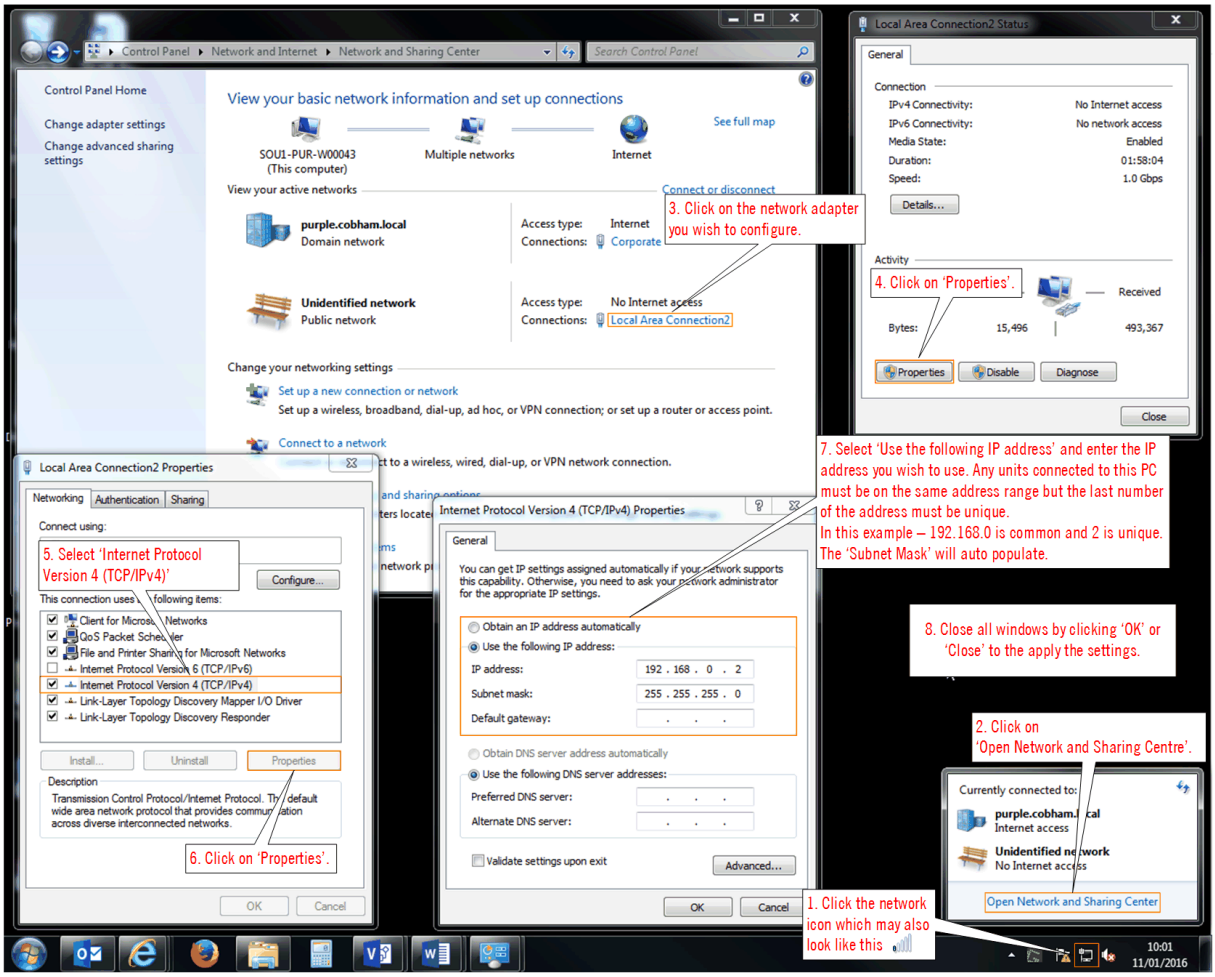
These documents can be found in DTC's WatchDox facility, see *section 6.1* for details.

5. Appendix A – Reference Material

5.1 How to Configure a PC IP Address

The following guide will tell you how to configure your PC or laptop IP address so that it matches the IP address range of the unit you are connected to. This is important because if they don't match, you will not be able to communicate with your device.

The IP address range given in this example is a good one to use if you are unsure.



5.2 SOL8SDR2x2W-P-HSK – Heatsink Accessory

5.2.1 Parts List

Item	Description
AP008895 x 4	M6x12 socket cap screw black
MW3376	SOL8SRD2X2-P heatsink

5.2.2 Assembly

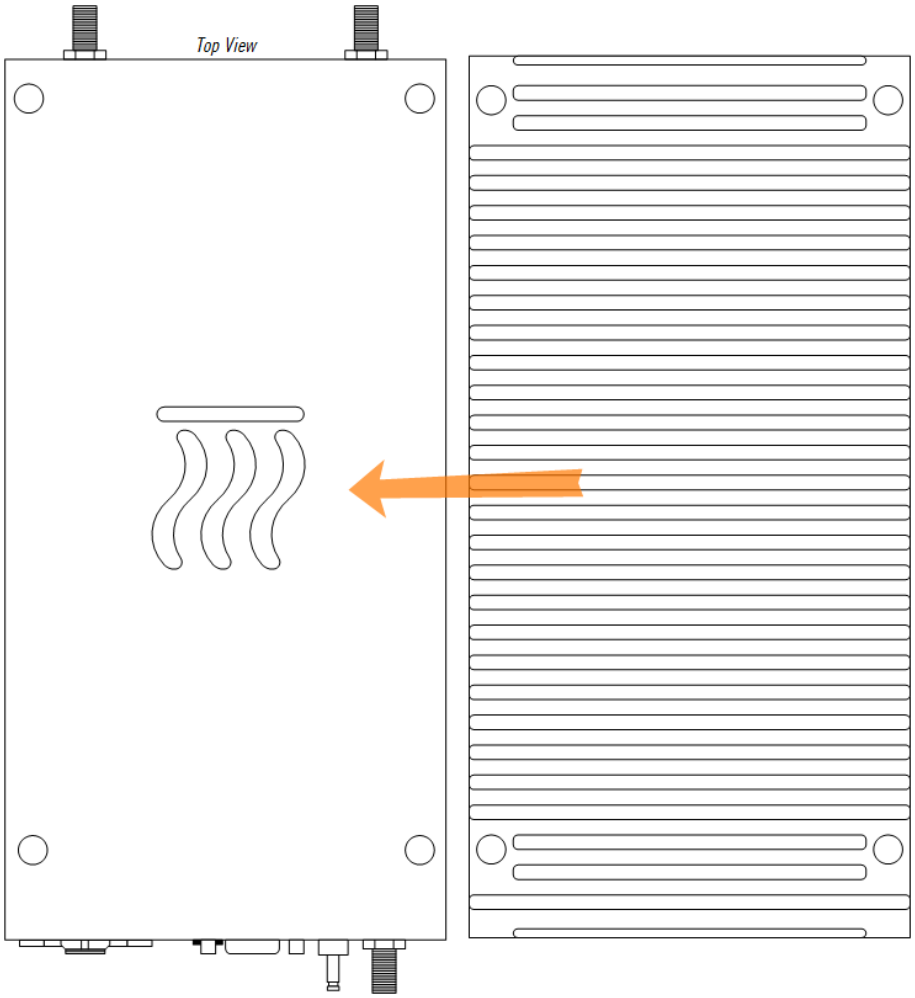


Figure 5-1 Heatsink Accessory Assembly

1. Orientate the heatsink as in *Figure 5-1* and lay the heatsink on the top face of the SOL8SDR2X2W-P, indicated by the thermal path symbol. Carefully align the screw holes.
2. Using the 4 x M6x12 socket cap screws, assemble the heatsink to the SOL8SDR2X2W-P. The screws should be tightened to a torque of 8Nm.

6. Appendix B – After Sales Support

6.1 Documentation and Software

It is DTC's practise to make the majority of our latest user guides and software available to customers online, by using our WatchDox facility. To access this site, please contact your Account Manager or send a request to solent.support@domotactical.com.

You will be sent a link where you can log in and create your own password followed by a confirmation email. Once you have done this, you can then log in to your account.

6.2 Contact Technical Support

The Technical Support team can be accessed by one of the following:

- **Post**: DTC – Solent, Fusion 2, 110 Parkway, Solent Business Park, Whiteley, Hampshire, PO15 7AB, England
- **Phone**: +44 1489 884 550. Office hours: 0900-1700 UK time excluding holidays
- **Email**: solent.support@domotactical.com (no restricted content)

6.3 Using the DTC RMA Service

If there is a problem and all troubleshooting steps have been unsuccessful, you may need to contact DTC for Return Material Authorisation (RMA) service.

6.3.1 Contact DTC

Please call our Technical Support Line on +44 (0) 1489 884550. If this has been done and the issue cannot be resolved, email solent.customerhub@domotactical.com to request an RMA form.

6.3.2 Complete and Return the RMA Form

Complete the RMA form with the following information and return to the customer hub:

- Name
- Address
- Unit serial number
- Date of purchase or the original invoice number
- Date of failure
- A detailed description of the problems you have encountered
- A list of the hardware/software configuration if applicable

Once the hub receive the complete form, we will then send an RMA number and shipping instructions.

6.3.3 Pack the Device

Note: Before packing, remove all personal non-DTC kit or media from the device.

Use the original shipping container and packing materials, if possible.

If the original packing materials are not available, wrap the equipment with soft material (e.g. PU/PE form) then put the wrapped equipment into a hard cardboard shipping box.

6.3.4 Put the RMA Number on the Box

Clearly mark the outside of the shipping box with the RMA number. If an RMA number is not present on the shipping box, receiving will be unable to identify it and it might be returned.

6.3.5 Send the Box to DTC

Send the box using your normal shipping process.

7. Appendix C – Safety and Maintenance

7.1 Cautions and Warnings

Note: The following guidelines may or may not be applicable to your product. However, we would ask that you read them to assess their relevance.

Area	Note
Enclosures	Do not remove any factory installed screws or fastenings. Damage to the units may result and void any warranties. Only authorised, trained personnel should open the product. There are no functions that require the user to gain access to the interior of the product. There are no user serviceable parts inside.
Maintenance	Other than cleaning, no scheduled maintenance is required to ensure proper function of the unit.
Environment	The equipment should not be used in hazardous or corrosive atmospheres. Users are reminded of the necessity of complying with restrictions regarding the use of radio devices in fuel depots, chemical plants and locations where explosives are stored and/or used.
Power supply	Ensure that the power supply arrangements are adequate to meet the stated requirements of each product. Observe all electrical safety precautions.
Electro static discharge precautions	ESD guidelines must be followed for this electrostatic sensitive device.
Lightning strike	There is a risk of lightning strike to antennas. The equipment should not be assembled in an area at the time of lightning activity. Antennas should be adequately protected from lightning strikes.
Working at height	Observe caution when locating the device at height, for example on a mast. Ensure the unit is well secured to prevent it falling and injuring personnel.
Risk of eye injury	Care should be taken to avoid eye contact with the antennas.
Cables	Connecting cables should not be positioned where they are likely to become damaged or where they may present a trip hazard.
Thermal control system	Any powered device will always produce heat as a by-product of its operation. If you operate this device in an enclosed space you must ensure it has adequate airflow to keep it cool. Also, if worn close to the body, care must be taken to protect the operator from excessive temperatures.
RF emission system	When using this device please ensure a distance of 20cm is maintained between your device and your body while the device is transmitting.
Aircraft safety	Use of this equipment on board aircraft is strictly forbidden, unless confirmed as safe by the aircraft operator. Use of radio transmitter equipment in an aircraft can endanger navigation and other systems.

7.2 Repairs and Alterations

Attempted repairs, alterations, improper installations or connections may invalidate the warranty.

Please contact Technical Support if you suspect a faulty or defective component. See *section 6.2*.

7.3 Caring for your Equipment

- Do not subject the unit to physical abuse, excessive shock or vibration
- Do not drop, jar or throw the unit
- Do not carry the unit by the antenna
- Avoid exposure to excessive moisture or liquids
- Do not submerse the unit unless it is designed to be submersible
- Do not expose the unit to corrosives, solvents, cleaners or mineral spirits
- Avoid exposure to excessive cold and heat
- Avoid prolonged exposure to direct sunlight
- Do not place or leave units on surfaces that are unstable
- Only use accessories intended for the specific make and model of your unit, especially batteries, chargers and power adapters.

7.4 Charging

- Use approved batteries, chargers and adapters designed specifically for your make and model unit
- Do not attempt to charge a wet unit or battery pack
- Do not charge the unit or battery pack near anything flammable
- Stabilize the battery pack to room temperature (22°C) before charging
- Do not charge units and/or battery packs on wet or unstable surfaces
- Do not leave units and/or batteries in chargers for excessive periods

7.5 Working with Lithium Batteries

- Charge only with the approved charging cable
- Batteries are to be used only for the specified purpose. Incorrect use will invalidate the warranty and may make the battery become dangerous.
- Charge in a clean, dry environment ideally at 10°C (0 to 45°C is permissible).
- Do not store or operate in direct sunlight for extended periods. Battery can be damaged by over-heating, for example if placed on the rear parcel shelf of a motor vehicle.
- Store in a cool dry environment. Storage at elevated temperatures can cause permanent loss of capacity.
- For short term storage (less than six months), store in a fully charged state.
- For extended periods of storage (more than one year), charge before storage and recharge every six to nine months.
- Always fully recharge the battery after any storage period greater than one month before use.

- Do not store the battery with the charge depleted as this can cause failure of the battery and invalidate warranty.
- Do not short circuit
- Do not immerse in water
- Do not incinerate. Cells are likely to explode if placed in a fire.
- Dispose of batteries in accordance with the regulations in place for the country of use. Batteries are normally considered separate waste and should not be allowed to enter the normal waste stream. Either return to the seller, or deliver to an approved re-cycling facility.

7.6 Cleaning

- Turn off the unit and remove batteries (if applicable) before maintenance
- Use a clean, soft, damp cloth to clean the unit. A microfiber cloth is recommended.
- Do not use alcohol or cleaning solutions to clean the unit
- Do not immerse the unit in water to clean it
- If the unit becomes wet, immediately dry it with a microfiber or other lint-free cloth

7.7 Storage

- Turn off the unit and remove batteries before storage
- Store units and battery packs in a cool, dry area at room temperature (22°C)
- Do not store units and/or batteries in active chargers

8. Appendix D – Glossary

A	Definition
AES	**Advanced Encryption Standard**. Originally published as Rijndael, this specification has been adopted by the U.S. government. Each AES cipher has a 128-bit block size, with key sizes of 128 and 256 bits, respectively.
ASI	**Asynchronous Serial Interface** is a streaming data interface that often carries an MPEG Transport Stream. An ASI signal can carry one or multiple SD, HD or audio programs that are already compressed, not like an uncompressed SD-SDI (270Mbs) or HD-SDI (1.45Gbs). An ASI signal can carry varying amounts of data but is always padded to run at a fixed line rate of 270 Mb/s.
Antenna Gain	Antenna gain is a measure of how well an antenna converts power into radio waves or radio waves into power, depending on whether it is fitted to a transmitter or receiver device. Antenna gain is expressed in dB (decibels).

B	Definition
Bandwidth	RF – the width of a band of frequencies used for a particular purpose. Computing – the rate of data transfer measured in bit/s.

C	Definition
COFDM	**Coded Orthogonal Frequency Division Multiplexing** is a frequency-division multiplexing (FDM) scheme utilized as a digital multi-carrier modulation method. A large number of closely spaced orthogonal sub-carriers are used to carry data.

D	Definition
Decibel (dB)	The standard unit used to express transmission gain or loss and relative power levels.
Decoder	A processor in a receiver that converts compressed digital video or audio data to a format suitable for monitoring.
Demodulate	To recover the information originally impressed on the radio wave.
Downconverter	A device that converts microwave frequencies to UHF frequencies for use in DTC receivers.

E	Definition
Elementary Stream	These streams contain only one MPEG video or audio channel. Elementary streams are required if you intend to use Milestone or any player that cannot operate with transport streams.

E	Definition
Encoder	A processor in a transmitter that converts video or audio to compressed digital signals.

F	Definition
FEC	**Forward Error Correction** is a system of error control for data transmission, whereby the sender adds redundant data to its messages. This allows the receiver to detect and correct errors without the need to ask the sender for additional data.
FPGA	A **Field-Programmable Gate Array** is an integrated circuit that can be programmed to perform complex logic functions.

G	Definition
Gain	An increase in signal strength, typically by an amplifier.
GUI	A **Graphical User Interface** allows users to interact with an electronic device.

I	Definition
IP address	An Internet Protocol address is a unique numeric ID for a device within a network.

L	Definition
LOS	**Line-of-sight** propagation refers to RF transmissions that travel in a direct path from transmitter to receiver.

M	Definition
MPEG	**Moving Pictures Experts Group** is an organisation that sets the standards for audio and video compression and transmission.
Modulation	To change the output of a transmitter in amplitude, phase or frequency in accordance with the information to be transmitted. Data is superimposed on a carrier current or wave by means of a process called modulation.
Multicast	Multicasting is sending data from a sender to multiple receivers where each receiver signals that they *want* to receive the data.

N	Definition
NLOS	**Non-line-of-sight** propagation refers to RF transmissions that travel in a path obstructed by physical objects.

N	Definition
NTSC	**National Television Systems Committee** is the analogue television system used mainly, but not exclusively, in the Americas.
Noise	Unwanted disturbance in an electrical signal.

O	Definition
Omnidirectional antenna	An antenna whose radiation pattern shows equal radiation in all horizontal directions.

P	Definition
PAL	**Phase Alternate Line** is the analogue television system used mainly, but not exclusively, throughout the world (see NTSC).
PTZ	**Pan-tilt-zoom** is a common way of referring to controllable cameras.

Q	Definition
QAM	**Quadrature Amplitude Modulation**. DTC products commonly use either the 16 state (16-QAM) or 64 state (64-QAM) modulation schemes
QPSK	**Quadrature Phase Shift Keying** digital modulation scheme.

R	Definition
RTSP	**Real Time Streaming Protocol** is a network control protocol designed for the transfer of real-time media data The protocol is used for establishing and controlling media sessions between end points.

S	Definition
SDI	**Serial Digital Interface** is a standard used for the transmission of uncompressed digital video signals, often including embedded audio.
SNR	**Signal to Noise Ratio** is an electrical engineering measurement defined as the ratio of wanted signal power to the corrupting noise power. The higher the ratio, the less obtrusive the background noise is.
Streaming	Streaming is the transmission of digital media over an IP network.

T	Definition
Transport Stream	A standard digital container format for transmission and storage of audio, video, and Program and System Information Protocol (PSIP) data. Channels are multiplexed together, allowing the receiver to choose which to play back.

U	Definition
UDP	**User Datagram Protocol** is a core of the Internet Protocol suite. UDP does not employ reliability mechanisms, therefore, if the receiver does not get a packet, the sender will never know. However, UDP is very efficient when there is little chance of errors.
USB	**Universal Serial Bus** defines the cables, connectors and protocols used in electronic bus connections.
Unicast	Unicast is simply sending packets from one source to one destination.

V	Definition
Viterbi Decoder	A Viterbi decoder uses the Viterbi algorithm for decoding a bit stream that has been encoded using forward error correction based on a convolutional code.

W	Definition
Waveguide	A specially formed hollow metal tube, usually rectangular in cross section, used to connect a high power amplifier to the antenna.