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AEON-LT HEVC 4K Transmitter User Guide

Commercial in Confidence

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0. Preface

0.1 About this Document

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

Since the available functions can be 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 Text Conventions

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

Description	Example
Text in capitals represents a key press on a keyboard. The + sign means hold down the first key while pressing the second key.	ESC, F1, SHIFT CTRL+C
<*Text*> Serves as a placeholder for variable text that is replaced as appropriate, the text may be written in italics.	Use the filename <*system_name*>.sys for…
Text in italics can represent a link to a place in the existing document (often these are hyperlinks) or a reference to another document.	Refer to *section 0.4, Text Conventions*.
Text in bold emphasises a term of significance.	We call this a **protocol** and its function is…
Successive software menu selections are shown using arrows to indicate sub-menus. This is often shown in bold.	Select **Configuration>Global** then edit…

0.5 Symbols

These symbols are used to highlight important information.

WARNING: A notice of when a situation may result in personal injury or loss of life, or destruction of equipment.

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

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 8.1*.

Document	Source
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	Author	Summary of Changes
1.0	04/12/2018	IR	First release

Contents

1. Product Overview

1.1 Description

A compact COFDM digital video transmitter, specifically designed for high quality wireless link applications. With proven Domo COFDM and next generation HEVC encoder technology at its core enabling Ultra High Definition images, the small size and actively cooled enclosure give maximum operational performance.

Designed to offer future proof connectivity, the unit supports quad 3G-SDI video inputs. Two true balanced audio inputs are included with phantom power. The transmitter has an integrated control panel with sunlight-readable display covering all major functions.

The HEVC codec used in AEON products offers a step change in compression efficiency over H.264 systems, whilst maintaining low end-to-end latency suitable for live events.

1.2 Features

- Ultra-low latency HEVC SD, HD and 4K encoding
- Video formats up to 2160p60, 10-bit and 4:2:2 chroma sampling, future HDR support
- Industry standard DVB-T modulation for interoperability with existing systems
- Domo Broadcast UMVL modulation for enhanced high frequency/high speed performance
- Controlled via an integrated sunlight-readable display
- Available as V-mount, AB-mount or no battery mount options
- Designed for sports & events coverage, newsgathering and wireless studio camera applications
- Low power consumption and active cooling for extended field performance

1.3 Basic Specifications

DC Input	9.2V to 17.8V reverse polarity protected
Power consumption	30W max
Temperature range	-10°C to +50°C
Humidity	Less than 85% non-condensing
Dimensions	177mm (L), 125mm (W), 50mm (D)
Weight	1080g

Note: Detailed technical specifications are given in the product datasheet. Please see http://www.domotactical.com/.

1.4 Approval Notices

1.4.1 EMC/Safety and Radio Approvals

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

1.4.2 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.

2. Product Package

2.1 Overview

Carefully open the packaging and the 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 for shipping damage.

Note: If you don't have all the parts or you are not happy with the condition of your delivered product, please call DTC and we'll get this solved for you. See *section 8.2*.

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 Parts List

These items will be in the package.

Part Number	Description
CA0579	5-way Lemo to XLR x 2 audio input cable
CA3348 x 4	SDI HD-BNC to BNC cable, 0.25m
SA4329	AEON-LT USB support stick

2.3 Accessory Options

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

Part Number	Description
CA0340	4-way Lemo to 9-way D-type RS232 data cable
CA0579	5-way Lemo to XLR x 2 audio input cable (for second channel)
CA3421	4-way Lemo to 15V 6.0A 90W PSU
PRORXD-8-2RU-AEON	Eight input PRORXD receiver HEVC decoder

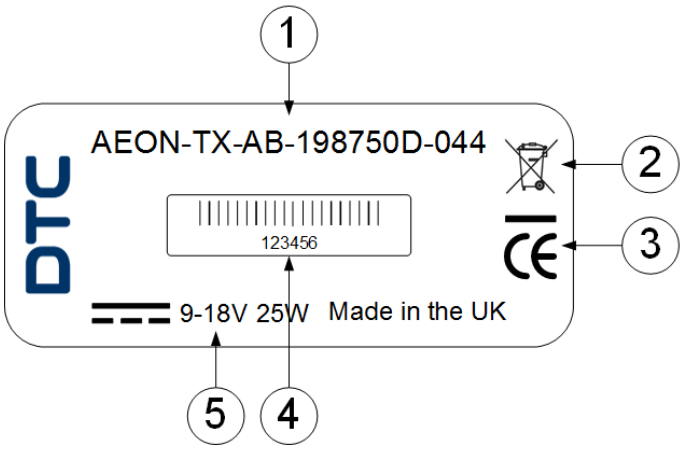
2.4 Variants

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

Part Number	Description
AEON-LT-V-198270	HEVC 4K transmitter 100mW 1.98-2.7GHz
AEON-LT-V-300370	HEVC 4K transmitter 100mW 3.0-3.7GHz
AEON-LT-V-700750	HEVC 4K transmitter 100mW 7.0-7.5GHz

2.5 Labelling

Product Label



No.	Description
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.

2.6 Licensing Options

Some product functions are enabled by licenses.

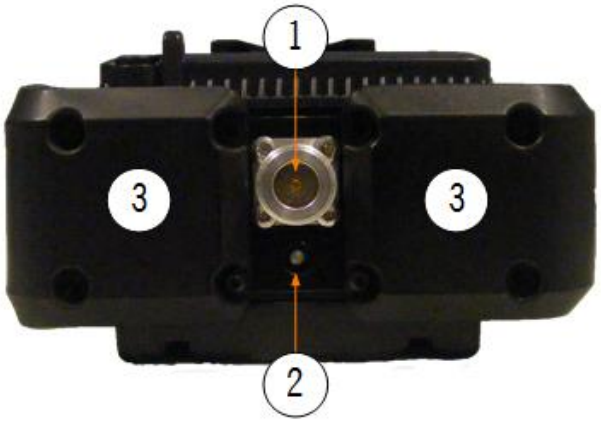
Part Number	Description
Silver (base license)	DVB-T, ultra-mobile video link (UMVL), dual pedestal, single HD encoder
LIC-AEON-PSF	PSF video formats

3. Connections, Controls and Indicators

3.1 Introduction

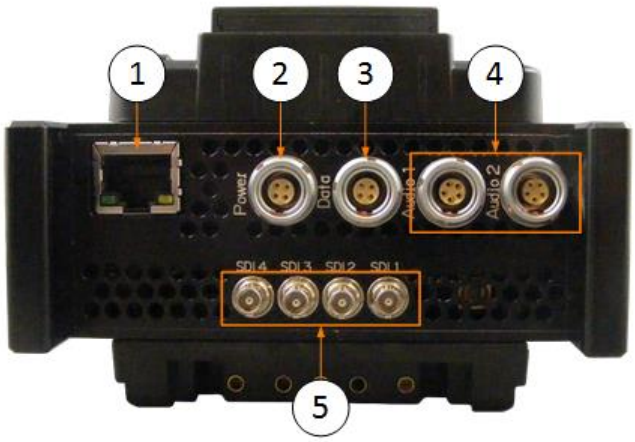
This chapter will help identify all the connections and interfaces of the product needed to install, control and monitor the AEON-LT.

3.2 Top Panel



No.	Item	Connection
1	N-type jack	RF power out. Connect a suitably matched antenna.
2	LED indicator	Power/RF status. **Red** = power on/RF off **Green** = power on/RF on
3	Fan guard	Two fans guards for safety and rain protection.

3.3 Bottom Panel



Note: See *section 3.6* for item power, data and audio pinout.

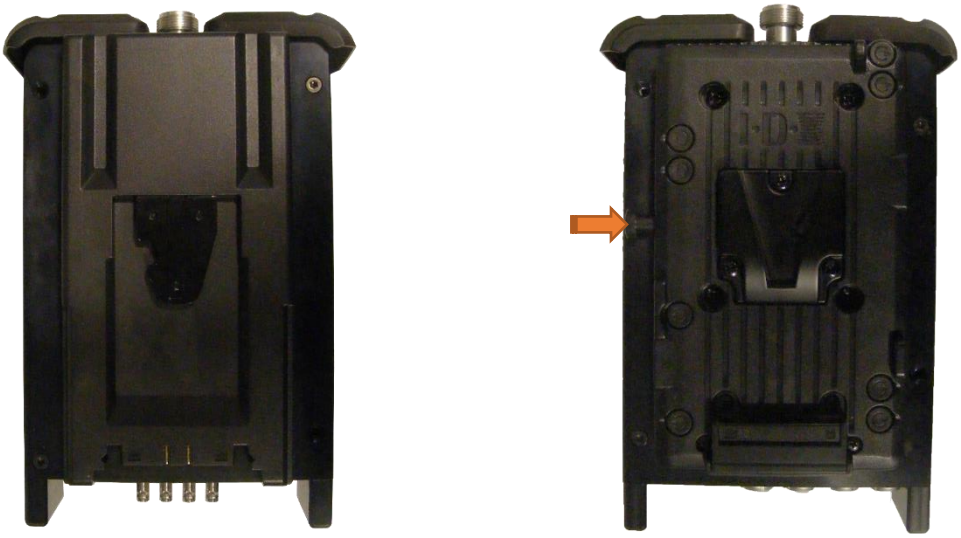
No.	Item	Connection
1	RJ45 jack	Ethernet connection for software updates.
2	4-way OB single key jack	9.2-17.8V power connection. Optional PSU CA3421 can be attached here to provide desktop power.
3	4-way OB twin key jack	RS-232 data interface. Optional cable CA0340 can be attached here to provide an RS232 interface. **Note**: Not currently functional.
4	5-way OB twin key jack x 2	Audio left and right, channel 1 and 2 balanced input with switchable 48V phantom power. Supplied CA0579 audio cable will convert left and right XLR connections from the audio source.
5	HD BNC 75Ω jack x 4	SDI video input **1-4** support 3G-SDI (quad input). The supplied CA3348 cables will adapt the HD-BNC connectors to BNC.

3.4 OLED Control Panel

No.	Item	Connection
1	OLED display	Status monitoring and control for field operation.
2	Control buttons	These buttons allow editing and navigation of the OLED.

3.5 Camera/Battery Mount

3.5.1 V-Mount



The images above show a V-mount camera plate (left picture) and V-mount battery plate (right picture). The arrow indicates the battery release button.

3.5.2 AB Mount

TBD

3.6 Pinout

3.6.1 Power

Lemo EEG.0B.304.CLL single key

Pin	Function
1	VIN
2	VIN
3	GND
4	GND

3.6.2 Data

Note: Note Currently functional.

Lemo EEA.0B.304.CLL twin key

Pin	Function
1	DATA_TX_RS232
2	DATA_RX_RS232
3	No connect
4	GND

3.6.3 Audio 1 and 2

Lemo EEA.0B.305.CLL twin key

Pin	Function
1	AUD_IN_L+
2	AUD_IN_L-
3	GND
4	AUD_IN_R+
5	AUD_IN_R-

4. Getting Started

4.1 Introduction

This chapter gives the information required to power up and control an AEON-LT unit.

4.2 Power

There is no power switch, the AEON-LT will start the moment the power supply is connected.

Power can be supplied to the AEON-LT in two ways:

- Via an AB or V mount battery, depending on the battery mounting plate
- Via a 9.2–17.8VDC input to the power connector on the bottom panel

4.3 User Control

Once power has been supplied, the only method to configure and monitor the AEON-LT is by the OLED display and control buttons. See *chapter 5* for full details.

5. OLED Control and Monitoring

5.1 Introduction

An OLED display and control buttons provide full control and monitoring of the AEON-LT. This chapter describes how to navigate the menu structure and edit settings.

5.2 Control Button Functions

Six control buttons are located to the left of the OLED to let you navigate, select and edit the AEON-LT menu structure.

The four buttons with arrow indicators are for navigation and editing.

The button indicated with a tick (✓) is for selection and save.

The button indicated with a cross (×) is to go back a menu level, or cancel an edit without saving.

5.3 Menu Structure

5.3.1 Overview

On power up, the AEON-LT OLED will present the **Status** page after approximately one minute boot up time.

Press the cross (×) button to go to the top-level menu.

Scroll through the top-level menu by pressing the up/down arrow buttons. If you select **Status** and press the tick (✓) button, it will take you back to the opening display.

The following sections give an overview of the **Status**, **Config** and **Unit** parameters.

5.3.2 Status Menu

The Status menu is displayed on boot up, or select **Status** from the top-level menu and press the tick button.

Scroll through the status parameters by pressing the up/down arrow buttons. The status parameters will let you know how the AEON-TX is setup and how it is performing.

5.3.3 Config Menu

Select **Config** from the top-level menu and press the tick button.

Scroll through the config parameters by pressing the up/down arrow buttons. The following tables show the sub-menus that can be edited from the **Config** menu.

Video

Sub-Menu	Options	Description
Encoding Mode	H.264 AVC H.265 HEVC	The video encoding mode.
Video Format	720p50/59/60 1080i50/59/60 1080p23/24/25/29/30/50/59/60 2160p23/24/25/29/30/50/59/60	The video format.
Sample Format	2SI SQD	2 Sample Interleave (2SI) – each 3G-SDI link contains a full image at 1/4 resolution. Square Division (SQD) – each 3G-SDI link contains one quarter of the original image.
Chroma Format	4:2:2 4:2:0	The level of chroma sampling required.
Chroma Depth	10-bit 8-bit	The number of bits per pixel.
Quad Sync	Off On	Set this On to synchronise four non time-aligned HD sources.
Video Latency	Normal Low Ultra-Low	Improved latency can come at the expense of picture quality.
Manual Mode	Off On	If set to On, enables **CPB delay**.
CPB Delay	09000kb/s default	Coded Picture Buffer Delay. Used in ultra-low delay mode to improve picture quality, please contact DTC for guidance.

Audio

Sub-Menu	Options	Description
Audio Input Ch1 Audio Input Ch2 Audio Input Ch3 Audio Input Ch4	Test Tone Embedded Analogue 1 Analogue 2	The audio source.
Audio Ch1 Mode Audio Ch2 Mode Audio Ch3 Mode Audio Ch4 Mode	Off MPEG L1 MPEG L2 AAC-LC LPCM 16-bit LPCM 20-bit LPCM 24-bit	The audio encoding format.
Audio Gain Ch1 L Audio Gain Ch1 R Audio Gain Ch2 L Audio Gain Ch2 R	0-40dB	Gain can be applied if the source is at low level.
Audio P48 Ch1 Left Audio P48 Ch1 Right Audio P48 Ch2 Left Audio P48 Ch2 Right	Off On	48V phantom power can be applied to the microphone, if required.
Audio PTS Offset	0-1000	May need to be adjusted to achieve lip sync.

Service

Sub-Menu	Options	Description
Program Number	Default – 1	Transport streams have programs. This is a number to identify the program.
Service Name	Default – Service 1	Transport streams may be made up of several services. This is a name to identify the service.
Video PID	Default – 100	This sets the PID for the video content. The Video PID is listed in the PMT.
Audio Ch1 PID Audio Ch2 PID Audio Ch3 PID Audio Ch4 PID	Default – 200/201/202/203	This sets the PID for the audio content. The Audio PID is listed in the PMT.
PCR PID	Default – 250	This sets the PID for the Program Clock Reference that is used to synchronize the audio and video. The PCR PID is listed in the PMT.
PMT PID	Default – 251	This sets the PID for the Program Map Table. For each Program, there is one PMT.

TX

Sub-Menu	Options	Description
Frequency	Frequency dependent	Enter a transmit frequency for the system.
RF Output	Off On	Sets the RF output on or off.
RF Power	10mW 50mW 100mW	Sets the RF output power level.
Mod Scheme	DVB-T UMVL/Narrowband	**DVB-T** modes give excellent data throughput. **Ultra Mobile Video Link** uses the same bandwidths as DVB-T, but will give an advantage at C/X-band in short range mobile environments.
DVB-T or NB/UMVL Bandwidth	6MHz 7MHz 8MHz	Sets the RF bandwidth for the transmission of data.
DVB-T or NB/UMVL Constellation	QPSK 16QAM 64QAM	QPSK – less user data, more robust, more range. 16QAM – more user data, less robust, less range (link performance reduced by 5db). 64QAM – max user data, least robust, least range.
DVB-T or NB/UMVL FEC	1/2 2/3 3/4 5/6 7/8	The forward error correction (FEC) rate. 1/2 means 1 bit out of 2 bits is data and thus 1 bit is used for error correction. 7/8 means 7 bits out of 8 bits are data and thus 1 bit is used for error correction.
DVB-T or NB/UMVL Guard Interval	1/4 1/8 1/16 1/32	The guard interval is an extension of the RF symbol period to give immunity to reflections. 1/32 deals with fast reflections, more data, less range. 1/4 deals with slower reflections, less data, more range. More user data means better picture quality, but less error correction means less robust signal and thus less range.
DVB-T or NB/UMVL Dual Pedestal	On Off	DVB-T only. Dual Pedestal mode will double the bitrate by using two adjacent COFDM channels with 1MHz separation. i.e. DVB-T 8MHz in dual pedestal mode will give a total bandwidth of 17MHz.
DVB-T or NB/UMVL Polarity	Normal Inverted	DTC equipment operate in **Normal**.
DVB-T or NB/UMVL 4K Offset	None +4kHz -4kHz	DVB-T only. Shifts the spectrum by one carrier (approx. 4kHz) to overcome interference. Only use if needed.

5.3.4 Unit Menu

Select **Unit** from the top-level menu and press the tick button.

Scroll through the unit parameters by pressing the up/down arrow buttons. The following tables show the sub-menus that can be edited from the **Unit** menu.

Note: Our devices are shipped to you with the DHCP setting enabled. This means that if the AEON-LT is connected to a network that is administered by a DHCP server, an IP address will be automatically allocated to it.

Sub-Menu 1	Options	Description
DHCP	Off On	See note above. If set to Off, the **Static IP**, **IP Mask** and **IP Gateway** parameters will need to be set manually.
Static IP	User defined.	Only valid if DHCP is disabled. Enter a valid IP address.
IP Mask	User defined.	Only valid if DHCP is disabled. An IP Mask lets a network administrator divide a network into smaller more efficient subnets.
IP Gateway	User defined.	Only valid if DHCP is disabled. A gateway is used when an IP packet's destination address belongs outside the local subnet. The default gateway address is usually an interface belonging to the LAN's router.
Restore Defaults	Select only	If this is selected, the unit will return all settings to defaults.

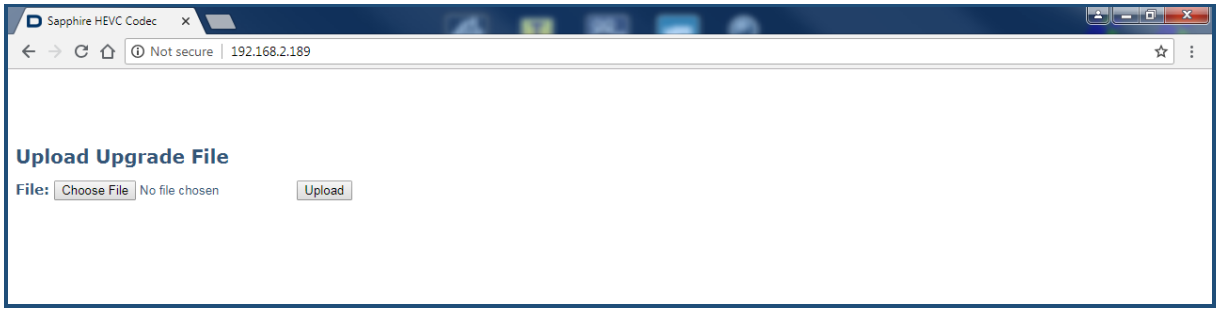
6. Advanced Operation

6.1 Software Upgrade

Software upgrades for the AEON-LT are loaded via the Ethernet connection on the bottom panel. The IP address for the encoder can be found in the OLED status menu, see *section 5.3.2*.

If there is a software upgrade required, DTC will provide an upgrade file.

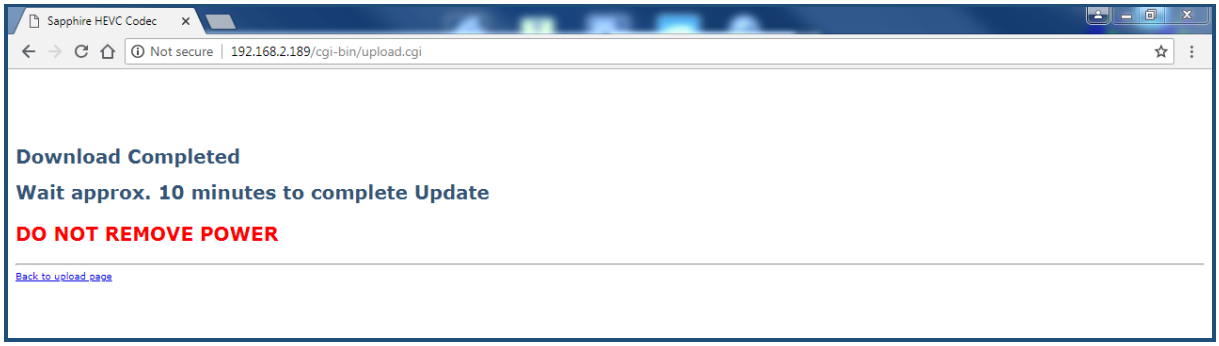
Open a web browser and enter the IP address of the AEON-LT.



Click **Choose File** and browse to the saved upgrade file, select **Open** and click **Upload** on the web browser.

The web browser page will change from downloading code to an updating page. The power to the AEON-LT **must not** be removed at any stage during the update.

Please wait approximately 10 minutes for the upgrade to complete.



7. Appendix A – Reference Material

7.1 How to Configure a PC IP Address

The following guide will tell you how to configure a 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.

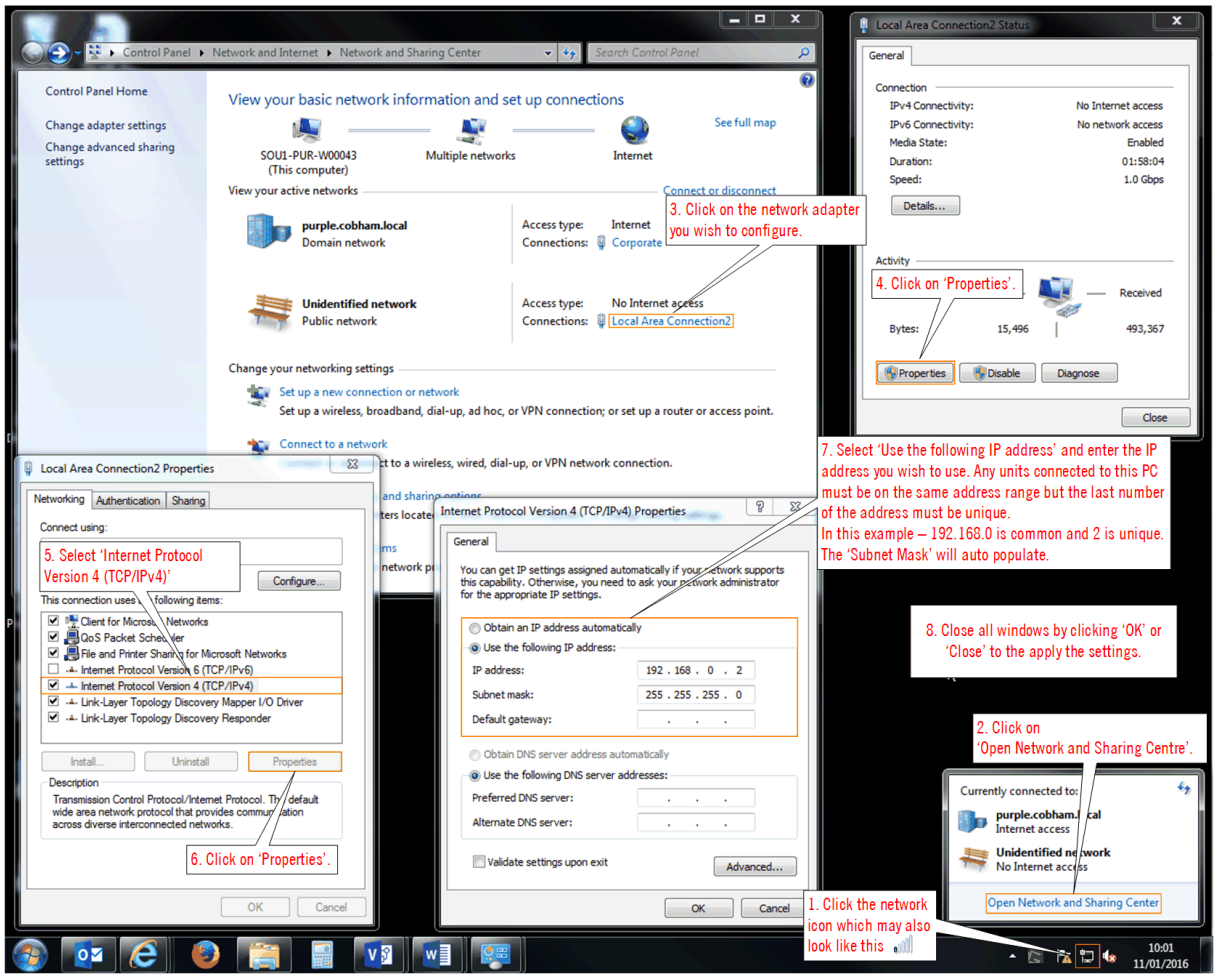


Figure 7-1 How to configure a PC IP address

8. Appendix B – After-Sales Support

8.1 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.

8.2 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)

8.3 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.

8.3.1 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.

8.3.2 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.

8.3.3 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.

8.3.4 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.

8.3.5 Send the Box to DTC

Send the box using your normal shipping process.

9. Appendix C – Safety and Maintenance

9.1 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.

9.2 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 8.2*.

9.3 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.

9.4 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

9.5 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.

9.6 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

9.7 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

10. 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.
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.
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.