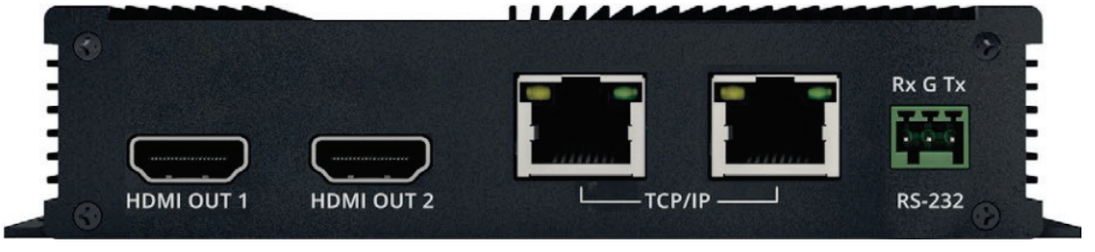
Solutions

User Guide

1Connect™ MS-63DOC

USB-C docking extension system –
up to 100m



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Notices

- This MSolutions product contains electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection is highly recommended in order to protect and extend the life of your equipment.
- The transmission distances of data over Cat cables are measured using TE CONNECTIVITY 1427071-6 EIA/ TIA-568B termination (T568B) of cables is recommended for optimal performance. To minimise interference of unshielded twisted pairs in the CAT5e/6 cable, do not run the Cat5e/6/6a cabling with or in close parallel proximity to mains power cables.
- Do not substitute or use any other power supply other than the enclosed unit, or an MSolutions approved replacement. Do not disassemble either the Transmitter or Receiver units for any reason. Doing so will void the manufacturer's warranty.
- MSolutions reserves the right to change the specifications of this unit without prior notice. As a result of this, physical representations or graphical elements contained within this user guide may not be accurate.

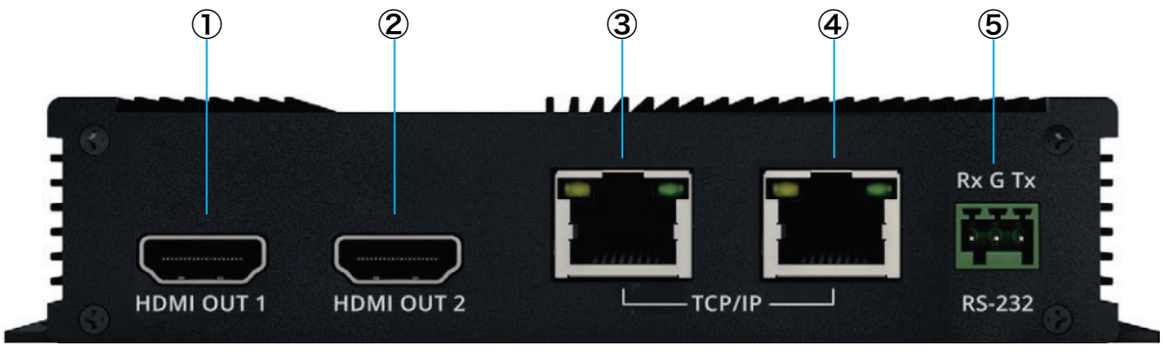
Introduction

The MSolutions MS-63DOC Docking Extender is a revolutionary solution that simplifies installation and consolidates all video, audio, and data signals through a single USB-C cable and extends it over a single Cat 6A cable up to 100 meters. More than a simple receiver, the MS-63DOC Device has an internal IP control unit that can manage all the third-party IP devices in the meeting room.
It is a docking extender capable of feeding up to two 4K displays (via separate HDMI connections), two USB-A 3.0 ports, one USB-C port, one analog audio out port and an RS232 connector.

Key Features

- Solves the challenge of extending USB 3.2 Gen 1 camera data, video and audio over a single category 6A cable up to 100m
- Provides a USB channel of up to 5Gbps of data connectivity across the link
- Flexible USB extension for PTZ cameras, hard drives, laptops and other USB peripherals
- Has a built-in IP controller for any 3rd party IP system
- Bi-directional RS-232 serial pass-through
- 1x USB-C & 2x USB-A on the device
- 1x USB-C & 2x USB-A on host for additional local USB connections
- A Two-port Ethernet hub at the device side
- Extended mode display – two HDMI ports for two individual streams based on Display Link technology. (May require driver installation)
- Has an analog audio (stereo) out port on the device side

Connectivity Overview - Device

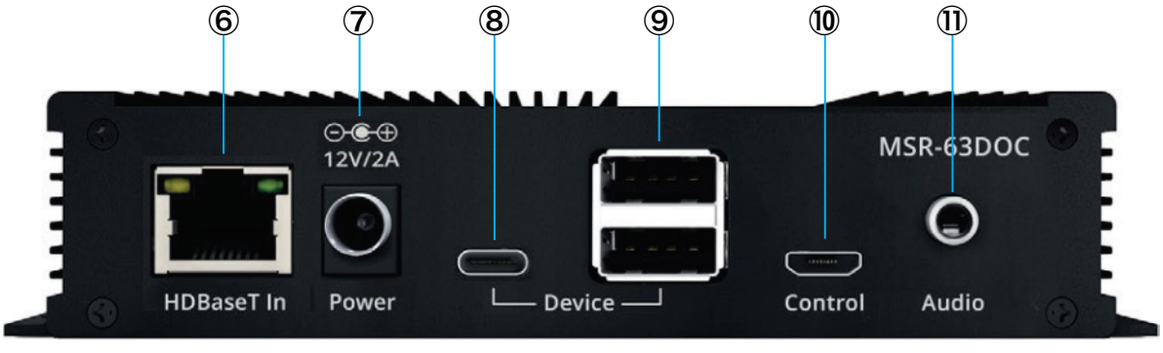


Front panel:

①+② - HDMI OUT 1,2 – 4K60FPS

③+④ - 1Gbps 2 port TJ45 Ethernet hub

⑤ - RS-232, 3-pin Phoenix connector to connect a serial device/controller



Back panel:

⑥ - HDbaseT in – Link in

⑦ - Power jack 12Vdc/2A

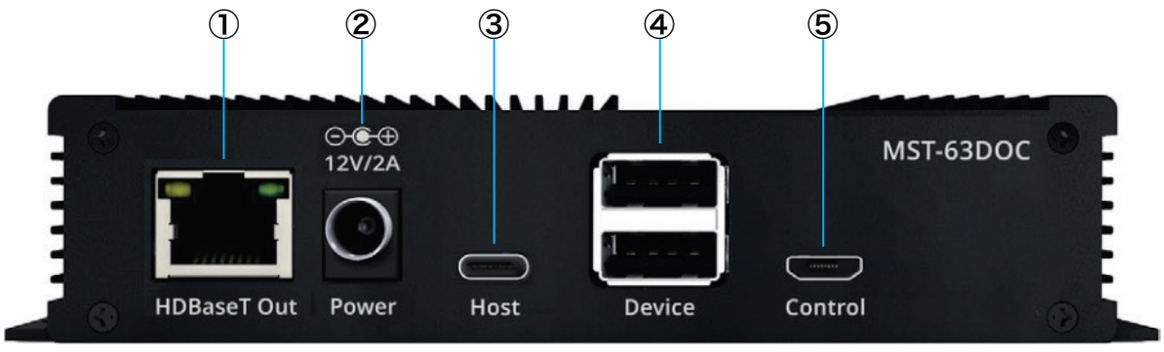
⑧ - USB-C – USB 3.0 type C for any USB device

⑨ - 2 ports of USB type A for any USB device

⑩ - Micro USB - Micro USB connector for FW updates and maintenance

⑪ - Audio out – PL3.5m analog Audio out jack. Supports stereo.

Connectivity Overview - Host



Front panel:

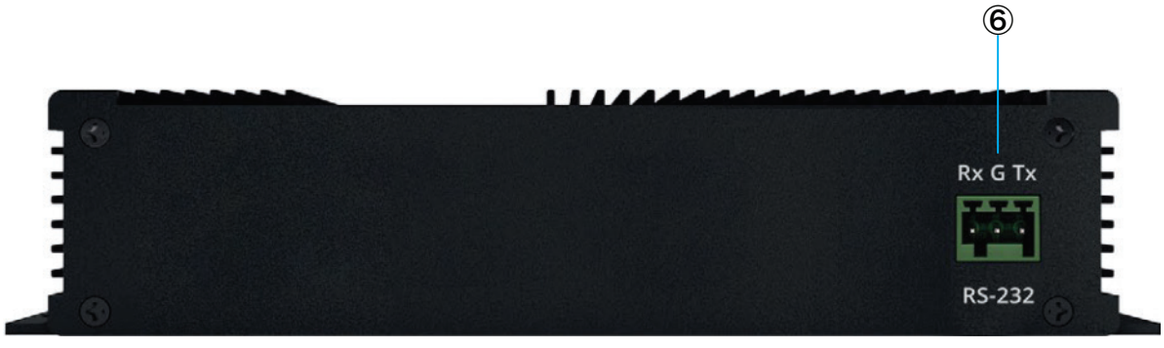
① - HDbaseT out – Link out

② - Power jack 12Vdc/2A

③ - USB-C – USB type C for the main connection to the Host PC
(Full feature USB-C)

④ - 2 ports of USB type A for any USB device. For local use by the host

⑤ - Micro USB - Micro USB connector for FW updates and maintenance



Back panel:

⑥ - RS-232, 3-pin Phoenix connector to connect a serial controller/device

Understanding the LED's

This MSolutions extender set includes status LED indicators on both the Host and Device products to show active connections and to further help integrators diagnose potential problems with the associated cabling.

The RJ45 Link connections on both the host and device units have orange and green LED's.

- The orange LED indicates that the unit is receiving power. The LED will blink continuously when there is a link to the unit on the opposing side of the cable.
- The green LED indicates that the unit is communicating with the unit attached to the far side of the link over the Cat cable.

Category Cabling for Extenders

The interconnecting category cable between the MSolutions products must be terminated using the correct RJ45 pin configuration. The link category cable must be a 'straight' (pin-to-pin) category cable and it is advised that this is wired to the T568B wiring standard as this format is less prone to EMI (Electro-Magnetic Interference).

For the MS-63DOC it is recommended that a Category 6A minimum be used to get the best performance.

HDMI

The MS-63DOC device has 2 ports of HDMI2.0 that support 4K60FPS resolution. The devices also support extended view for dual display work. Please note that some PCs may require Display Link drivers in order to transmit the video over the single USB-C. For details use the following links:
Windows: www.synaptics.com/products/displaylink-graphics/downloads/windows-11.0-m0-public
Mac: www.synaptics.com/products/displaylink-graphics/downloads/macos

USB

This USB 3.2 extender allows for USB-C peripherals including cameras, touch screens, smart boards, hard drives, games controllers, USB audio devices, printers, scanners, and HID's (mouse or keyboard) to be distributed over a distance of up to 100m to a USB-C host device on the far side of the link.

The extender supports transparent true plug and play USB pass-through without the requirement of software or driver son the extender kit.

A maximum combined data transfer of 5Gbps can be achieved over the link.

The Micro-USB connections on both Host and Device units are utilised for firmware updating and are reserved for future CloudOS control.

Note: the USB-C connectivity does not support high-bandwidth video data from a laptop / tablet to a display due to the limitation of available bandwidth.

Ethernet Hub

The MS-63DOC device has 2 X1Gbps Ethernet ports for a simple local hub. The hub also allows for a user to connect to the internal network controller. Ethernet is NOT transmitted back to the Host side and to the user

RS-232 Control

The MS-63DOC can distribute bi-directional serial commands between the device and host to allow for control commands to be sent. Each unit is fitted with a 3-pin Phoenix connector block.

Power

The MS-63DOC uses uses two power supplies, one at each end. Please only use the supplied 12V/2A DC PSU supplied with the MSolutions MS-3doc to power the unit.

Audio

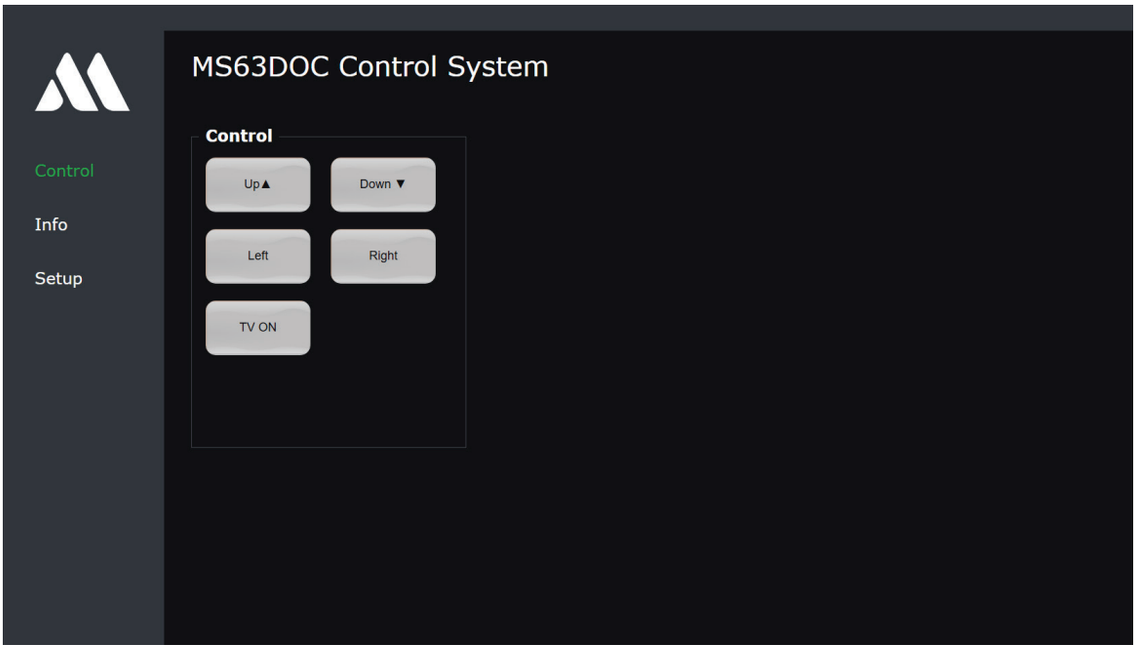
The MS-63DOC device has an analog stereo audio out 3.5mm port. The audio that plays is being transmitted over the same USB-C host connection.

Built-in Network Controller

The MS-63DOC system has a built-in network controller. It allows the user to control every third-party IP system. The user can access the local IP address of the MS-63DOC and configure the controller to control any IP device with an open API.

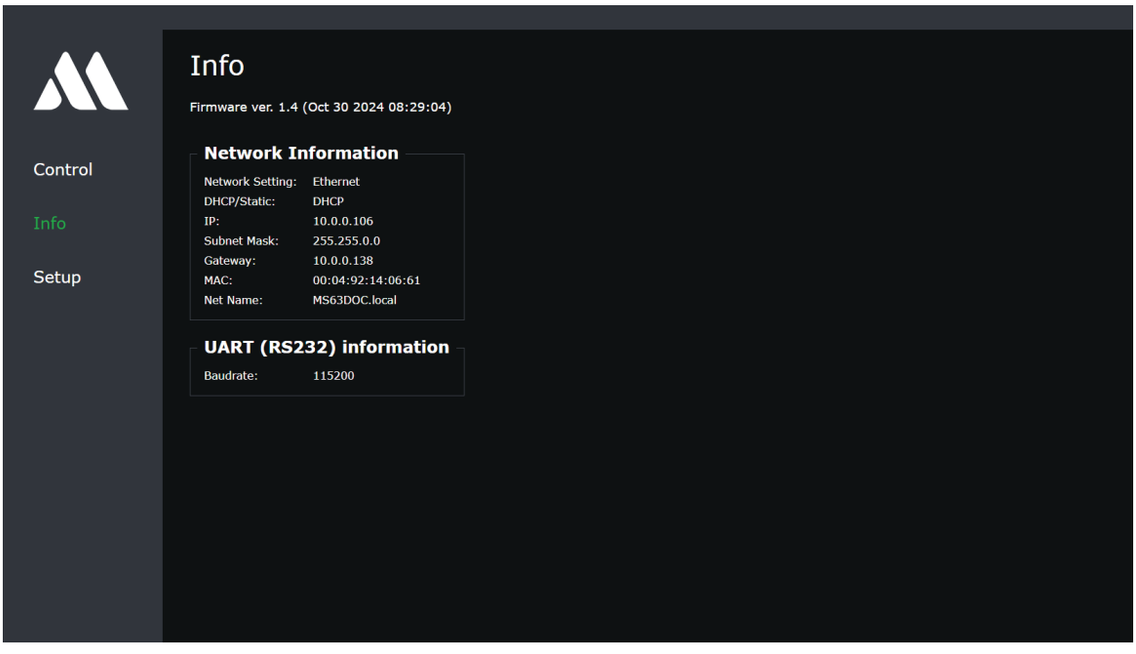
The user will be able to create and manage buttons for a verity of commands and present them in a graphic form on the main web interface. The MS-63DOC is a docking station extender and an IP controller, all in one set of extenders.

To access the web interface, simply open a browser and input the IP address of the MS-63DOC. The first tab when accessing the web interface is the MS-63DOC control system. On this page, the user can See and use the control interface programmed on the MS-63DOC.



Example of Control System screen

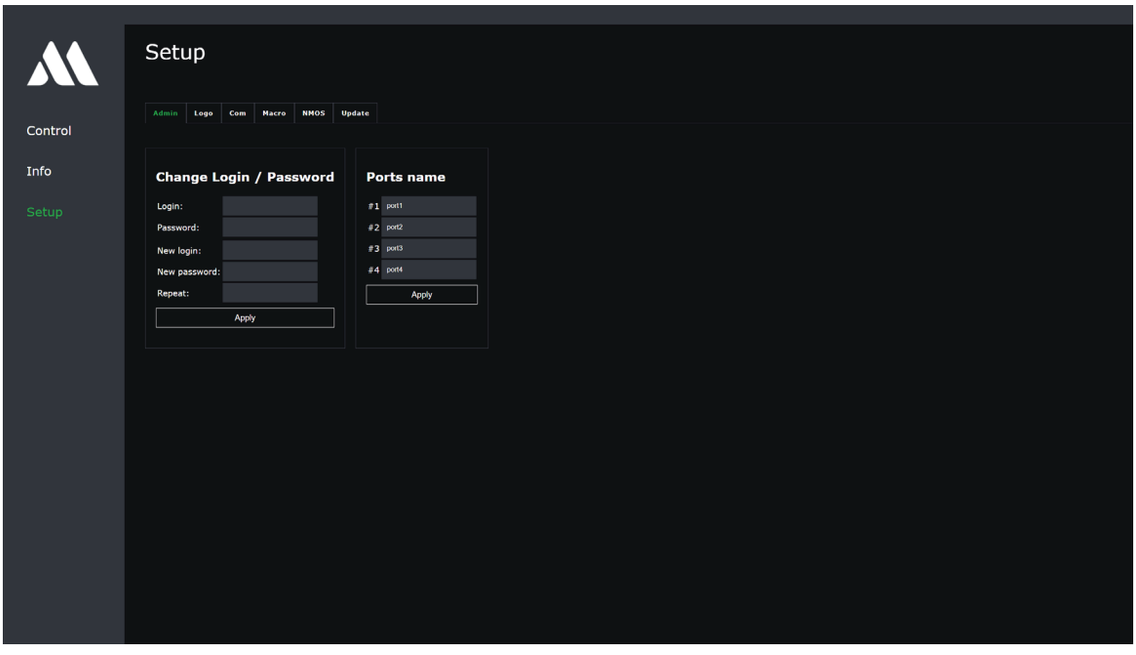
The 2nd tab is the Info page:
This page displays all the relevant information on the device, such as: IP address, FW version, name, etc.



Example of Info screen

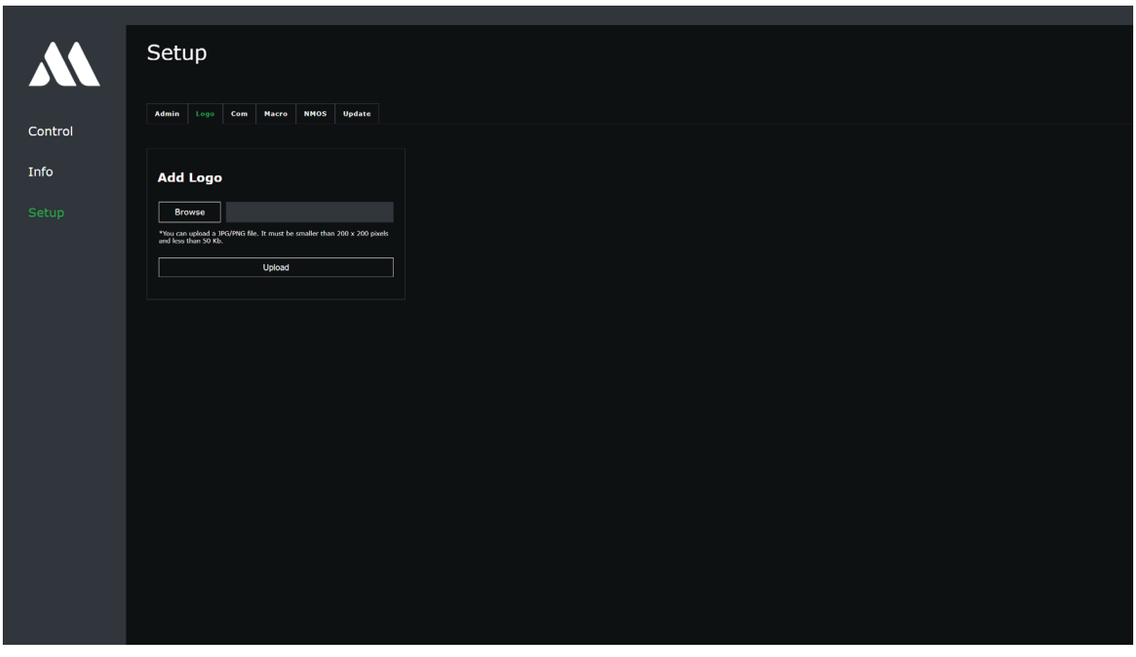
In the 3rd tab are the Setup pages:
To access this field the default credentials are:
User: *MSolutions*
Password: *MSolutions*

The first subtab is the Admin tab. The user can set a new login user and password on this tab. Additionally, the user can change the switching button's names to suit the solution's implementation.



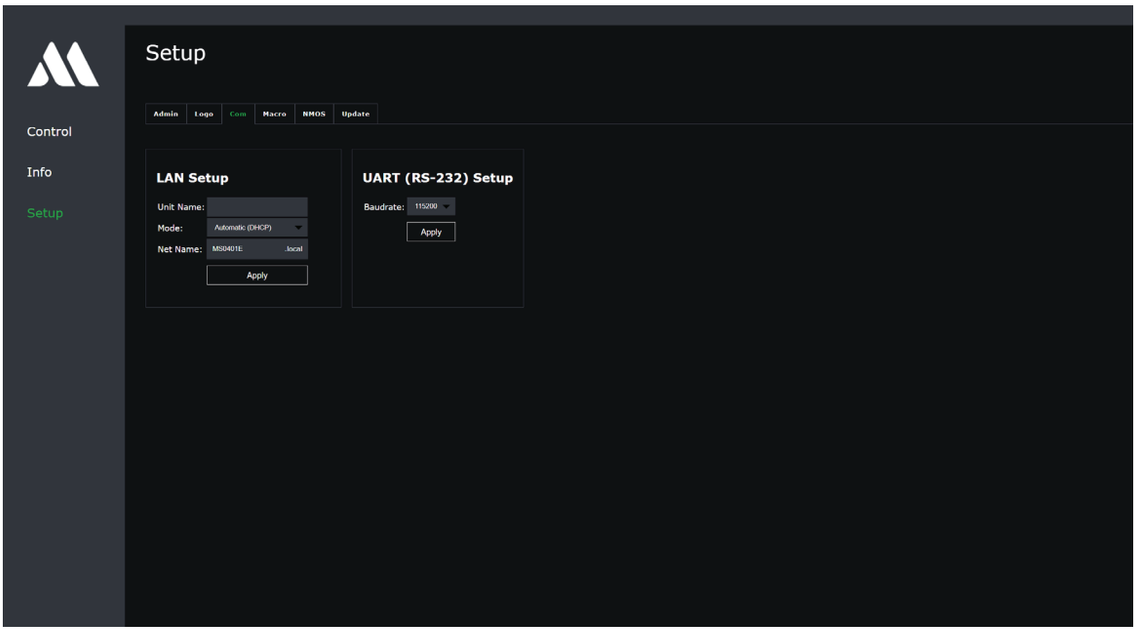
Example of Setup screen, Admin tab

The next subtab is the Logo tab:
On this tab, the user can upload their logo. It needs to be up to 200x200 pixels and smaller than 50Kb.



Example of Setup screen, Logo tab

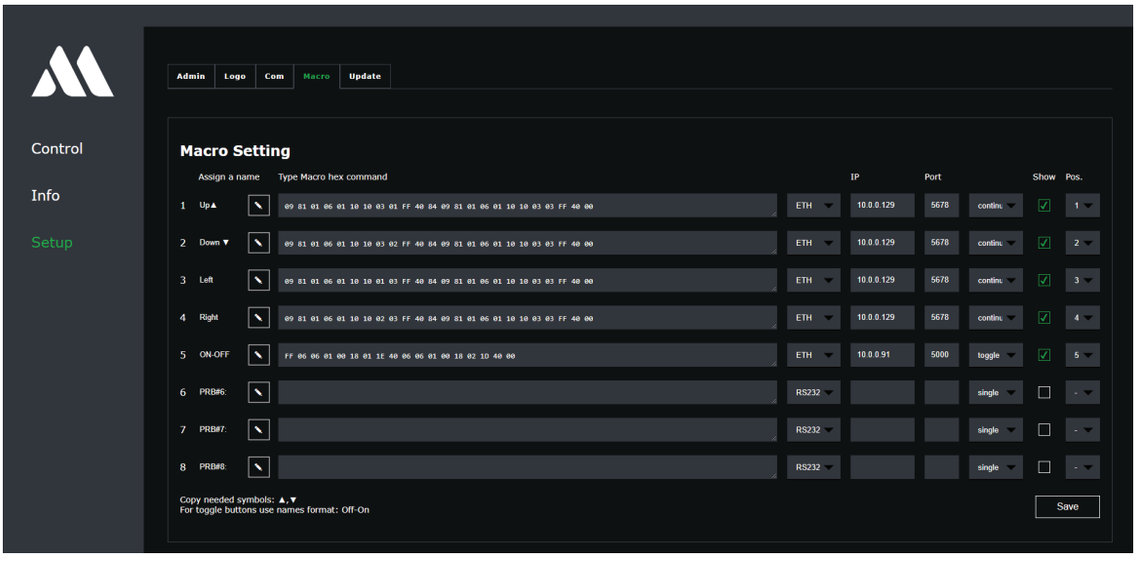
The Com subtab:
On this subtab, the user can change the communication parameters of the MS-63DOC, both IP and serial.



Example of Setup screen, Com subtab

The Macro subtab:

This subtab contains all the parameters to set the IP control for any 3rd party devices. Here the user can create commands for any 3rd party device with an open API for IP control. Simply input the hex command, IP address, and logical port and assign a button to the command. After enabling the button (“Show”), the buttons will appear on the main page under control. Make sure to add the length of the command before the command and end it with FF. You can also download the MSolutions script creator software for easier use.



Example of Macro Setting screen

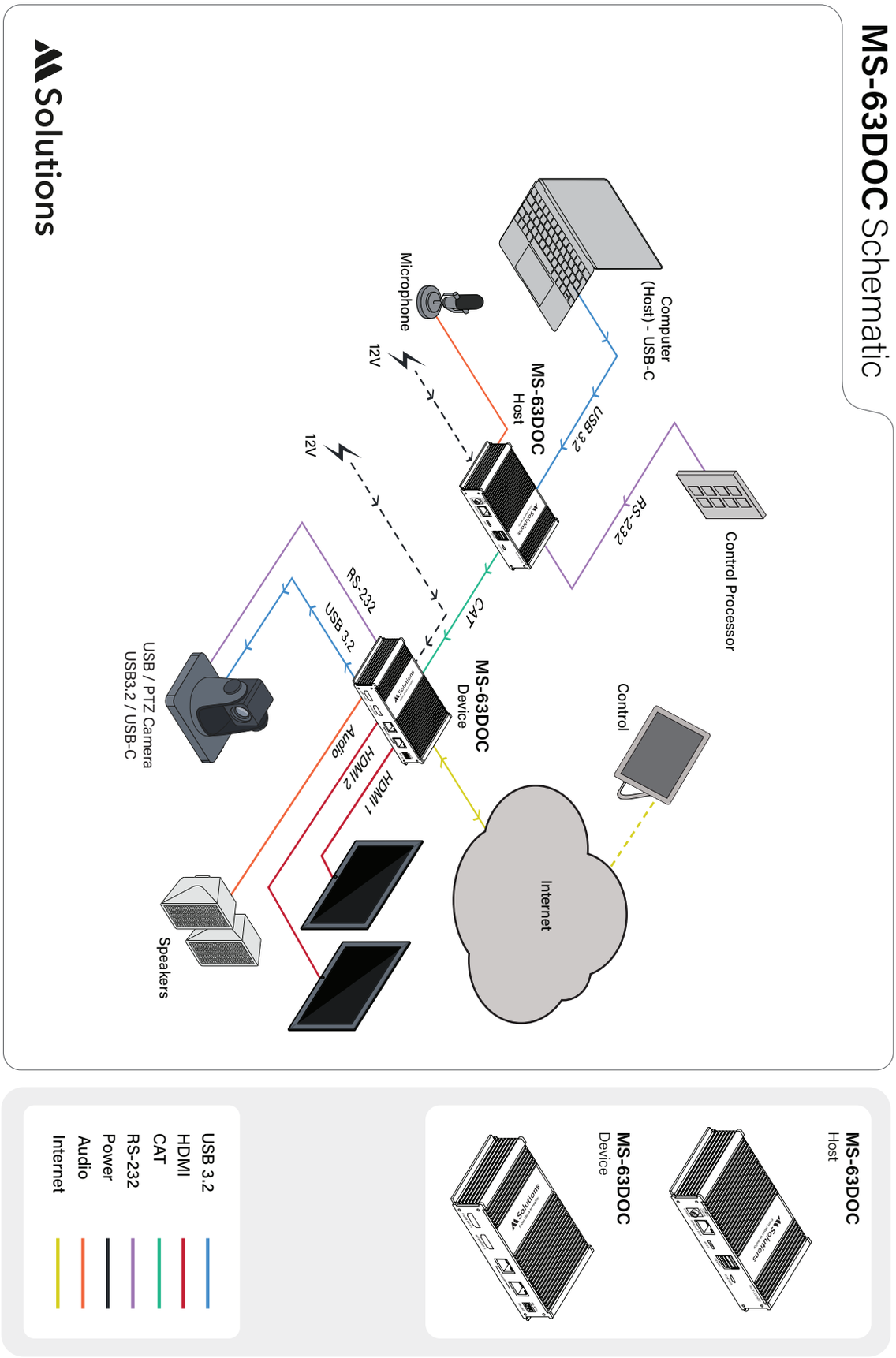
Specifications

- USB connectivity Host: 1x USB-C (female) – data & video, 2x USB-A (female) – data
- USB connectivity Device: 1x USB-C (female) – data, 2x USB-A (female) – data
- Micro-USB connectivity (Host & Device): for product update, and Cloud control (future)
- RS-232 connectivity (Host & Device): 1x 3-pin phoenix connector, block included
- Power supply: 2x 12V 2A DC – Unit needs to be powered from both Host and Device
- Power consumption: 7W
- 2x Ethernet ports RJ-45
- Individual unit dimensions (W x D x H): 60 x 84 x 25mm
- Individual unit weight: 300g
- Package dimensions (W x D x H): 163 x 147 x 85mm
- Package weight: 350g
- Master carton quantity: 18
- Master carton dimensions (W x D x H): 540 x 270 x 260mm
- Master carton weight: 7.5kg
- Operating temperature: 32°F to 104°F (0°C to 40°C)
- Storage temperature: -4°F to 140°F (-20°C to 60°C)
- Operating humidity: 0-80% non condensing

Package Contents

- MS-63DOC Host & Device
- 2 x 12V 2A power supplies with US, UK & EU territory clips
- 1 x 3-pin Phoenix connector
- 1 x USB-C cable
- 1X USB-C to USB-A cable

Schematic


MS-63DOC Schematic
Solutions
Computer (Host) - USB-C
Microphone
12V
12V
MS-63DOC Host
USB 3.2
RS-232
Control Processor
CAT
RS-232
USB 3.2
MS-63DOC Device
Control
USB / PTZ Camera USB3.2 / USB-C
Audio
HDMI 2
HDMI 1
Internet
Speakers
MS-63DOC Host
MS-63DOC Device
USB 3.2
HDMI
CAT
RS-232
Power
Audio
Internet

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