Solutions MS-0401 4-way HDBaseT – IP Gateway User Guide

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Contents

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 HDMI over Cat cables are measured using TE CONNECTIVITY 1427071-6 EIA/TIA-568-B 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 HDBaseT / 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.

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Introduction

The MSolutions 4-way HDBaseT / IP Gateway is a small form-factor unit with 5 x HDBaseT / IP ports, offering an efficient HDBaseT / IP switching platform.

The unit is designed to offer two differing types of HDBaseT / IP switching, allowing for up to 4 x HDBaseT source devices (Transmitters) or IP Hosts to be linked through the MSolutions Gateway to a single HDBaseT / IP output, or for a single HDBaseT / IP input to be independently switched to the 4x HDBaseT / IP outputs.
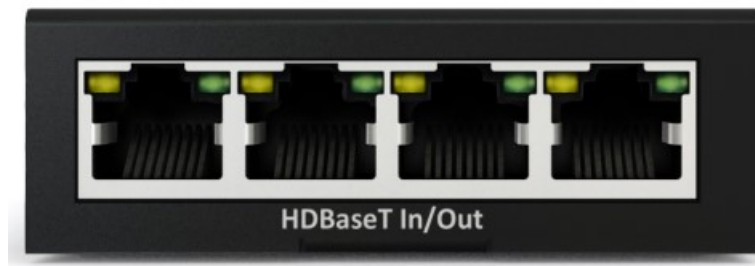
The unit can be used with any manufacturers compatible HDBaseT transmitter and receiver equipment to provide extra connectivity to larger distribution systems, or for separation of multiple units via LAN, to provide a simple, yet cost-effective switching solution.

Key Features

- Inline switching of HDBaseT Transmitters or Receivers: 1 x input to 4 x selectable outputs, or, 4 x independent inputs to 1 x output
- Can be used for dynamic routing of LAN connections (outside of HDBaseT spec)
- Interoperability with all HDBaseT manufacturers equipment
- Distances of manufacturers HDBaseT equipment maintained with switch inline
- Support for all HDBaseT specifications up to HDBaseT Spec 3.0 including video, audio, audio return, control and Ethernet (based on spec of individual TX or RX attached)
- Transparent to HDCP content being sent via HDBaseT – pass-through is based on the specification of the HDBaseT transmitter and receiver modules attached
- Supports pass-through of all HDBaseT power formats: PoE, PoH, PoC up to 100W
- Switching control via serial / RS-232
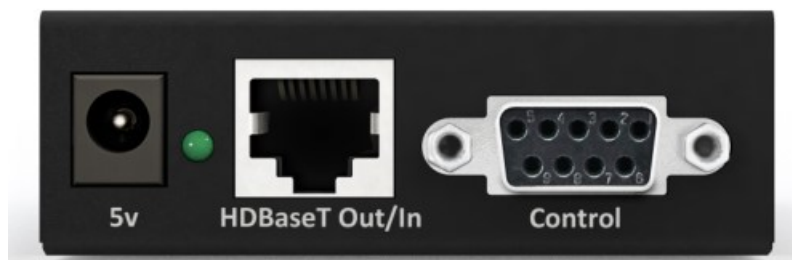- Internal galvanic separation of inputs / outputs to ensure disconnect when ports are not in use

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Connectivity Overview – front

- HDBaseT input / output ports (x 4) – connect to Cat cable to transmitter/s or receiver/s

Connectivity Overview – back

- Power connector – connect to supplied 5V 1A power supply
- HDBaseT Input / Output – connect to Cat cable to transmitter or receiver
- Control – DB9 serial connector

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Single Input to Multiple Outputs

The MS-0401 can be used to transfer the signal from one point of transmission to one of the 4 x outputs. When there is no power to the MS-0401, port 1 is automatically selected as a static passthrough.

Please note: the input is only ever routed to one output in this configuration. The unit does not act as a splitter connecting all outputs ot the input simultaneously.
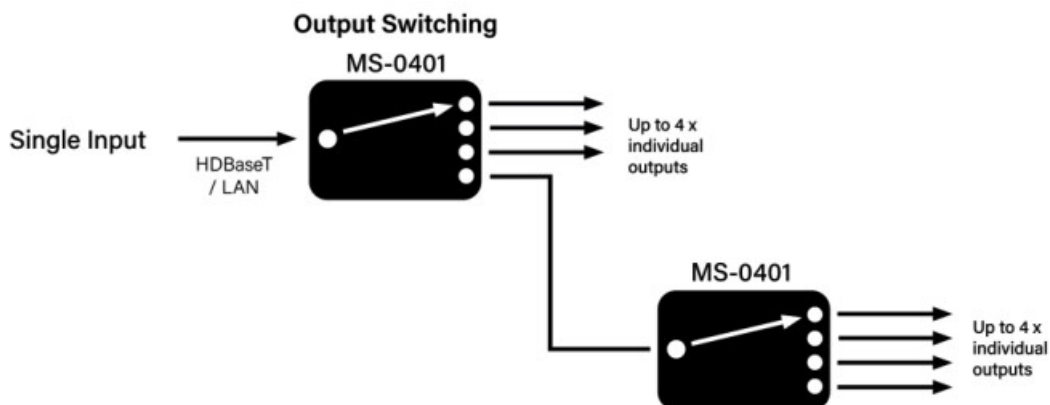
Multiple Inputs to Single Output

The MS-0401 can also be used to route any of up to 4 x input signals to the output.

Cascading

Networks and HDBaseT connectivity can be expanded using multiple MS-0401 units inline between point of transmission to receive. Adding in a subsequent MS-0401 unit will provide connectivity to up to 7 x displays from a single source. Cascading can also work for extra inputs.

Cabling for HDBaseT

It is important that the interconnecting Cat cable between the MSolutions HDBaseT switch and the HDBaseT / LAN equipment is terminated using the correct RJ45 pin configuration. The link Cat cable must be a `straight' (pin-to-pin) Cat 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).

When installing Cat cables it is advised that the best possible Cat cable quality possible is used. HDMI distribution products will only work if used with Cat5e standard cable or above. MSolutions recommends using a Cat6 (or higher) cable for installations, especially when running over longer distances, in areas of high EMI, or with 4K signal distribution.

For HDBaseT and HDMI testing capabilities, please refer to the MSolutions MS-TestPro to prove Cat cables can be used for video signal distribution.

Power

The MS-0401 allows for all HDBaseT and PoE power schemes to pass-through the unit the same as if a single Cat cable were to be connected between the transmission equipment were connected to the remote equipment. The MS-0401 does not use the PoE, or power contained within the signal for its own switching or power processes.

Control

The MS-0401 is managed via the units RS-232 interface. Serial configuration as below:

Baud rate: 9600
Data bit: 8
Stop bit: 1
Parity: none

Following a power on sequence or hardware reset, the unit will send two continuous bytes to the host to indicate a start-up condition. These two bytres are 0x4F and 0x4B (`OK' in ASCII format).

MSOPS is the management software for the MS-0401 which can be downloaded from the product page on the MSolutions website. MSOPS runs on the MS Windows 10 operating system.

To configure the switch using the MSOPS software:

- Power on the switch using the supplied PSU, and connect the supplied serial to USB adaptor cable from your computer to the switch.
- Launch the MSOPS software
- Select the port corresponding to the UAERT port used on your computer and click the `Press to Connect' button. The button should turn green at this point.
- Select one of the 4 interface ports on the control page to switch the traffic to / from the input / output port on the other side of the unit. The interface selected is highlighted in green.

For 3rd party control, please see below command:

Command	Read / Write	Byte 1 (register)	Byte 2	Byte 3	Byte 4
Initialisation 1 (bits 0-7)	Write	0x57	0x02	0xAA	0x50 (end)
Initialisation 2 (bits 8-15)	Write	0x57	0x03	0xAA	0x50 (end)
Select Port 1	Write	0x4F	0x1C	0x50 (end)	
Select Port 2	Write	0x4F	0x5A	0x50 (end)	
Select Port 3	Write	0x4F	0x36	0x50 (end)	
Select Port 4	Write	0x4F	0xAE	0x50 (end)	
Check initialisation 1 (bits 0-7)	Read	0x52	0x02	0xAA	0x50 (end)
Check initialisation 2 (bits 8-15)	Read	0x52	0x03	0xAA	0x50 (end)
Status	Read	0x49			

Specifications

• RJ45 connectivity (HDBaseT or LAN): 5x RJ45 – 1:4 or 4:1
• RS-232 connectivity: 1 x DB9 serial – serial to USB cable included
• Power supply: 5V 0.3A DC
• Power consumption: 7.5W
• Individual unit dimensions (W x D x H): 77 x 94 x 25mm
• Individual unit weight: 0.2Kg
• Operating temperature: 32°F to 104°F (0°C to 40°C)
• Storage temperature: -4°F to 140°F (-20°C to 60°C)
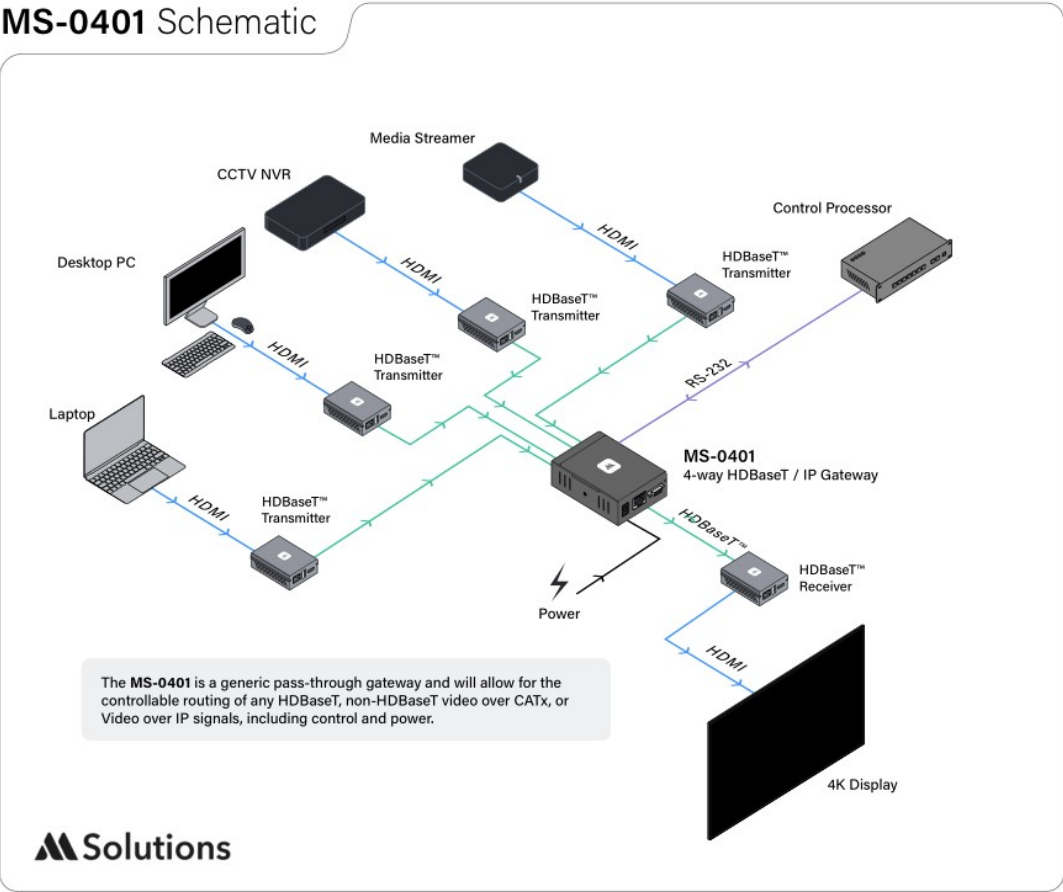• Operating humidity: 10-90% non condensing

Package Contents

• 1 x MS-0401 Switch
• 1 x 5V 1A power supply with US, UK & EU territory clips
• 1x Serial DB9 to USB cable – 1.2m
• 2 x Surface mounting brackets

Example Schematic

MS-0401 Schematic

The **MS-0401** is a generic pass-through gateway and will allow for the controllable routing of any HDBaseT, non-HDBaseT video over CATx, or Video over IP signals, including control and power.

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Documents / Resources

Solutions MS-0401 4-way HDBaseT - IP Gateway [pdf] User Guide
MS-0401 4-way HDBaseT - IP Gateway, MS-0401, 4-way HDBaseT - IP Gateway

References

- **Msolutions - Pro AV Solutions, HDBaseT Products and Tools!**

Manuals+,