User Guide

MS-6U41A

USB Extender Set - up to 100m. PoC, 1x USB-C, 4x USB (USB 3.0 compatible), RS-232 pass through, and bi-directional analogue audio extension



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Contents

Introduction 03

Key Features 03

Connectivity Overview (TX and RX) 04

Understanding the LED's 05

Cabling for HDBaseT 05

Audio 05

USB 06

RS-232 Control & Power 06

Specifications & Package Contents 07

Schematic 08

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 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

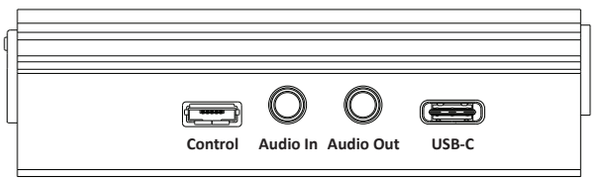
The MSolutions MS-6U41A is a high performance USB extender allowing for a single USB-C data, and 4 x USB3.0 compatible devices to be extended to distances of up to 100m over a single CATx cable infrastructure.

The extender features a bi-directional analogue audio pass-through channel allowing for 2ch audio to be run from TX to RX, or RX to TX. RS-232 serial pass-through and bi-directional 12V PoC (Power over Cable) expand the capabilities of this extender kit for a variety of commercial uses including USB peripheral extension, and remote connectivity for USB VC equipment.

Key Features

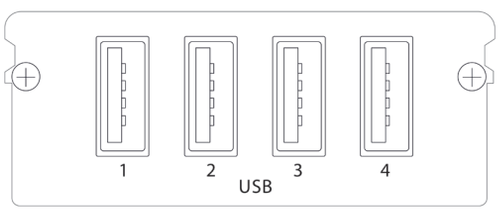
- Uncompressed extension of USB data and analogue audio up to 100m over single CAT
- 1 x USB-C channel for data connectivity of USB-C devices across the link
- 4 x USB2.0 channels with USB3.0 compatibility for KVM connectivity of multiple USB devices across the link - max 320Mbps data rate pass-through (combined)
- Flexible USB extension for: USB3.0 cameras, touch screens, smart boards, hard drivers, games controllers, USB audio devices, printers, scanners and HID's (mouse or keyboard)
- Supports transparent USB2.0 signals and true plug-and-play (no software or drivers required)
- In-built analogue unbalanced audio extender allowing 2ch stereo audio to be sent between TX and RX, or RX and TX
- Bi-directional RS-232 serial pass through
- Bi-directional 12V PoC (Power over Cable)

Connectivity Overview - RX



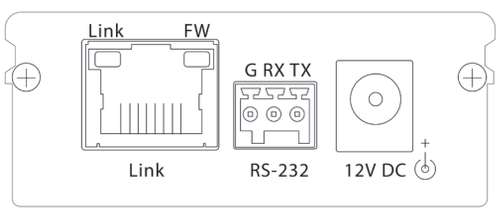
Side panel:

- Control - Micro USB for firmware and control (reserved for future use)
- Audio In - connect to audio device
- Audio Out - connect to analogue audio amplification / distribution device
- USB-C - connect USB-C peripheral



Front panel:

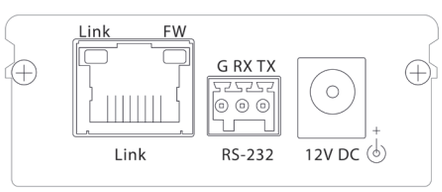
- USB - connect USB peripheral devices (x4 Type A connections)



Rear panel:

- CATx Link - connect to Cat cable from receiver
- RS-232 - use supplied 3-pin phoenix connector to connect to serial device
- Power - connect to 12V/2A DC power supply

Connectivity Overview - TX



Side panel:

- Control - Micro USB for firmware and control (reserved for future use)
- Audio In - connect to audio device
- Audio Out - connect to analogue audio amplification / distribution device
- USB-C - connect USB-C host



Front panel: (rear panel is blank)

- CATx Link - connect to Cat cable from receiver
- RS-232 - use supplied 3-pin phoenix connector to connect to serial device

Understanding the LED's

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

The RJ45 Link connections on both the transmitter and receiver 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.

Cat Cabling for Extenders

It is important that the interconnecting Cat cable between the MSolutions products 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. MSolutions recommends using a Cat6 (or higher) cable for installations, especially when running over longer distances, in areas of high EMI, or with high data rate signal distribution.

Audio

The MS-6U41A allows for 2 x independent analogue audio signals to run between the TX and RX using the 3.5mm jack connections. These connections do not embed or de-embed audio from any USB audio signals that may be passing over the link simultaneously.

USB

This KVM extender allows for USB 3.0 compatible and 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 USB2.0 pass-through without the requirement of software or driver son the extender kit.

A maximum combined data transfer of 320Mbps can be achieved over the link.

The Micro-USB connections on both Transmitter and Receiver 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.

RS-232 Control

The MS-6U41A can distribute bi-directional serial commands between the transmitter and receiver to allow for control commands to be sent alongside USB KVM.

Each unit is fitted with a 3-pin phoenix connector block that will need the serial TX, RX and Ground pins terminating into for serial pass-through. The link has the ability to transparently send any type of serial data as both pieces of equipment are able to communicate using the same baud rate, stop-gap, and parity.

Power

The MS-6U41A uses bi-directional PoC (Power over Cable) to provide power from either the Transmitter or Receiver unit to the far side of the link over the Cat cable. Please only use the supplied 12V/2A DC PSU supplied with the MSolutions MS-6U41A to power the unit

Specifications

Receiver

- USB-C connectivity: 1 x USB-C (female) - peripheral
- USB connectivity: 4 x USB type A (female) - peripheral
- USB control: 1 x Micro USB (female)
- Analogue audio connectivity: 1 x analogue audio output - 3.5mm jack (female), 1 x analogue audio input - 3.5mm jack (female)
- RS-232 connectivity: 1 x 3-pin phoenix connector, block included
- Power supply (PoC): 1x 12V/2A DC
- Individual unit dimensions (W x D x H): 60 x 84 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: 0-80% non condensing

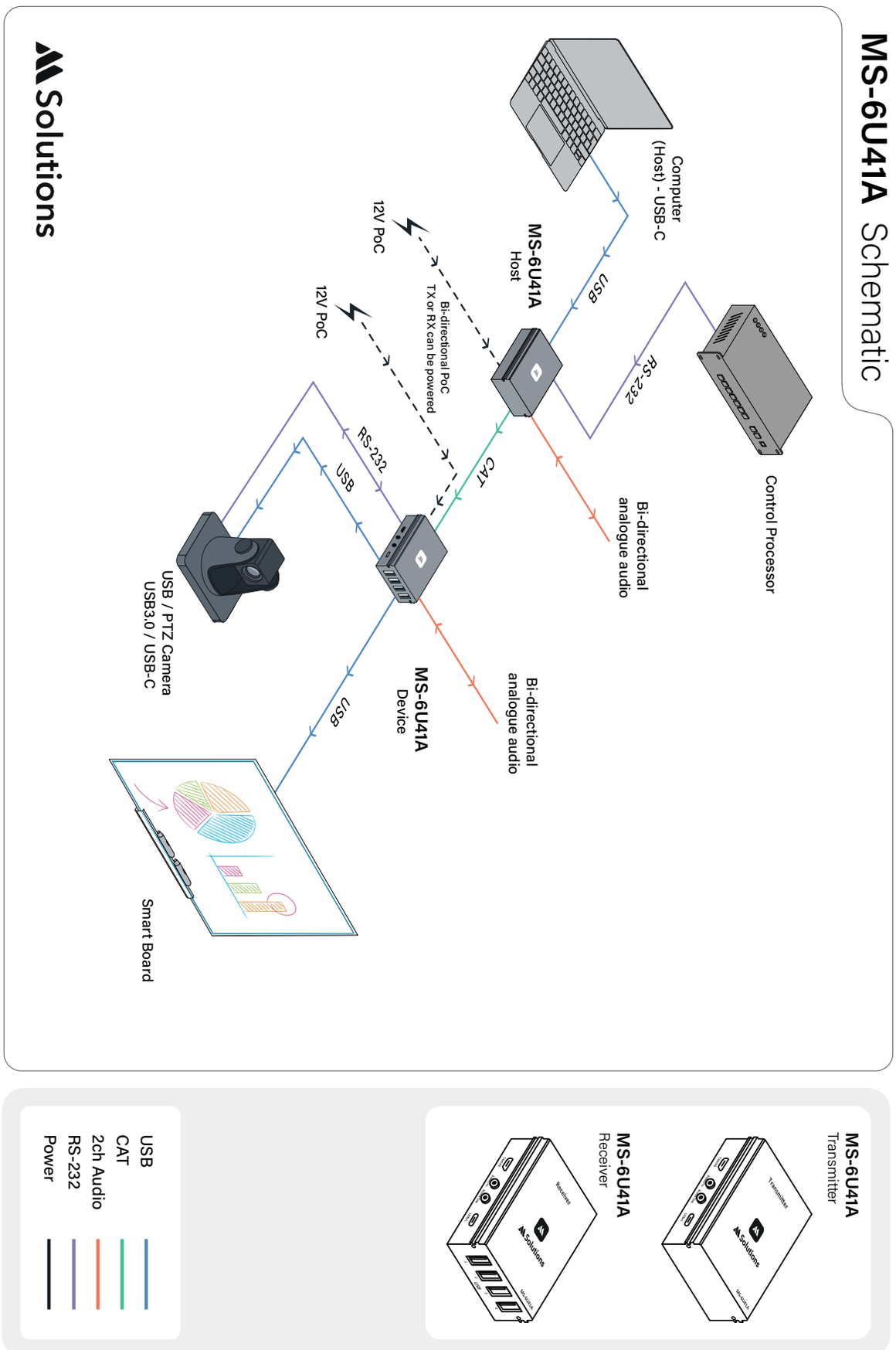
Transmitter

- USB-C connectivity: 1 x USB-C (female) - host
- USB control: 1 x Micro USB (female)
- Analogue audio connectivity: 1 x analogue audio output - 3.5mm jack (female), 1 x analogue audio input - 3.5mm jack (female)
- RS-232 connectivity: 1x 3-pin phoenix connector, block included
- Power supply (PoC): 1x 12V/2A DC
- Individual unit dimensions (W x D x H): 60 x 84 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: 0-80% non condensing

Package Contents

- 1 x MST-6U41A (transmitter)
- 1 x MSR-6U41A (receiver)
- 1 x 12V / 2A DC power supply with US, UK, and EU clips
- 2 x 3-pin phoenix connector blocks
- 2 x Surface mounting brackets

Schematic


MS-6U41A Schematic
Solutions
Computer (Host) - USB-C
MS-6U41A Host
12V PoC
12V PoC
Bi-directional PoC
TX or RX can be powered
USB
RS-232
CAT
Control Processor
Bi-directional analogue audio
RS-232
USB
USB / PTZ Camera
USB3.0 / USB-C
MS-6U41A Device
Bi-directional analogue audio
USB
Smart Board
MS-6U41A
Transmitter
MS-6U41A
Receiver
USB
CAT
2ch Audio
RS-232
Power



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