User Guide

MS-DPA-CP

The Ultimate Plug-and-Play USB-C
DP Alternate Mode Extender
for 4K Video, Data and Charging



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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 Cat6A (or above) cable, do not run the Cat6A (or above) 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 MS-DPA-CP USB-C Extender offers a new level of seamless connectivity. This product is capable of extending USB-C DP Alternate Mode over a single category cable. Supporting USB-C Display Port with video up to 4K 60Hz 4:4:4 18G and USB 2.0 data, this solution delivers flawless performance with no Driver Installation, no applications required, and no hassle. The MS-DPA-CP extender ensures versatile connectivity for video and data – all through a single connection including a 60W charge of the laptop from the Host unit. The ultimate plug-and-play USB-C extender.

IMPORTANT INSTALLATION NOTICE: USB-C Charging Compatibility

This system supports bidirectional power, allowing either the Host or Device to power the link. However, due to differences between laptop manufacturers, some host computers may not accept a charge when the power supply is connected to the Device unit.

For Guaranteed Performance: Always connect the power supply to the Host side when host laptop charging is required.

Device-Side Powering: Charging functionality when powered from the Device side is host-dependent, cannot be guaranteed for all PC models, and may affect link stability.

Key Features

- Support for 4/2 lanes in DisplayPort Alt Mode via USB Type-C
- Robust video performance, supporting 4K60 4:4:4 18G
- Extension of USB DP Alternate mode signals up to 100m over a single CAT6A cable
- Bi-directional RS-232 serial pass through
- Bi-directional 24V PoC (Power over Cable)
- HDCP2.2 compliant
- Compatible with Mac and Windows devices

Connectivity Overview - Device



Front panel:

- RJ45 Link-in - connect to a Cat6A or higher towards the Host unit.
- USB-C - connect to a USB-C device
- Micro USB - For control, monitoring and FW updates
- Power - connect to 24V/4A power supply



Back panel:

- RS-232 - use supplied 3-pin phoenix connector to connect to serial device

Connectivity Overview - Host



Front panel:

- RJ45 Link-out - connect to a Cat6A or higher toward the Device unit..
- USB-C - connect to a host PC.
- Micro USB - For control, monitoring and FW updates
- Power - connect to 24V/4A power supply



Back panel:

- 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 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

It is important that the interconnecting category cable between the MSolutions products is 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).

When installing category cables it is advised that the best possible category cable quality possible is used. MSolutions recommends using a Cat6A (or above) cable for installations, especially when running over longer distances, in areas of high EMI, or with high data rate signal distribution.

USB

This USB-C DP Alternate mode extender allows for USB-C DP alt mode video to be extended over a distance of up to 100m. The extender also supports USB 2.0 data extension on the same USB-C connection. The MS-DPA-CP is transparent true plug and play USB-C to USB-C DP alt mode extender without the requirement of software or drivers.

Make sure to use the supplied USB-C cables, they are certified full feature USB-C cables.

The Micro-USB connections on both Host and Device units are utilized for firmware updating, monitoring, and control.

RS-232 Control

The MS-DPA-CP can distribute bi-directional serial commands between the host and device units to allow for control commands to be sent alongside USB.

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.

Power

The MS-DPA-CP uses bi-directional PoC (Power over Cable) to provide power from either the Host or Device unit to the far side of the link over the Cat6A (or above) cable. Please only use the supplied 24V/4A DC PSU supplied with the MSolutions MS-DPA-CP to power the unit.

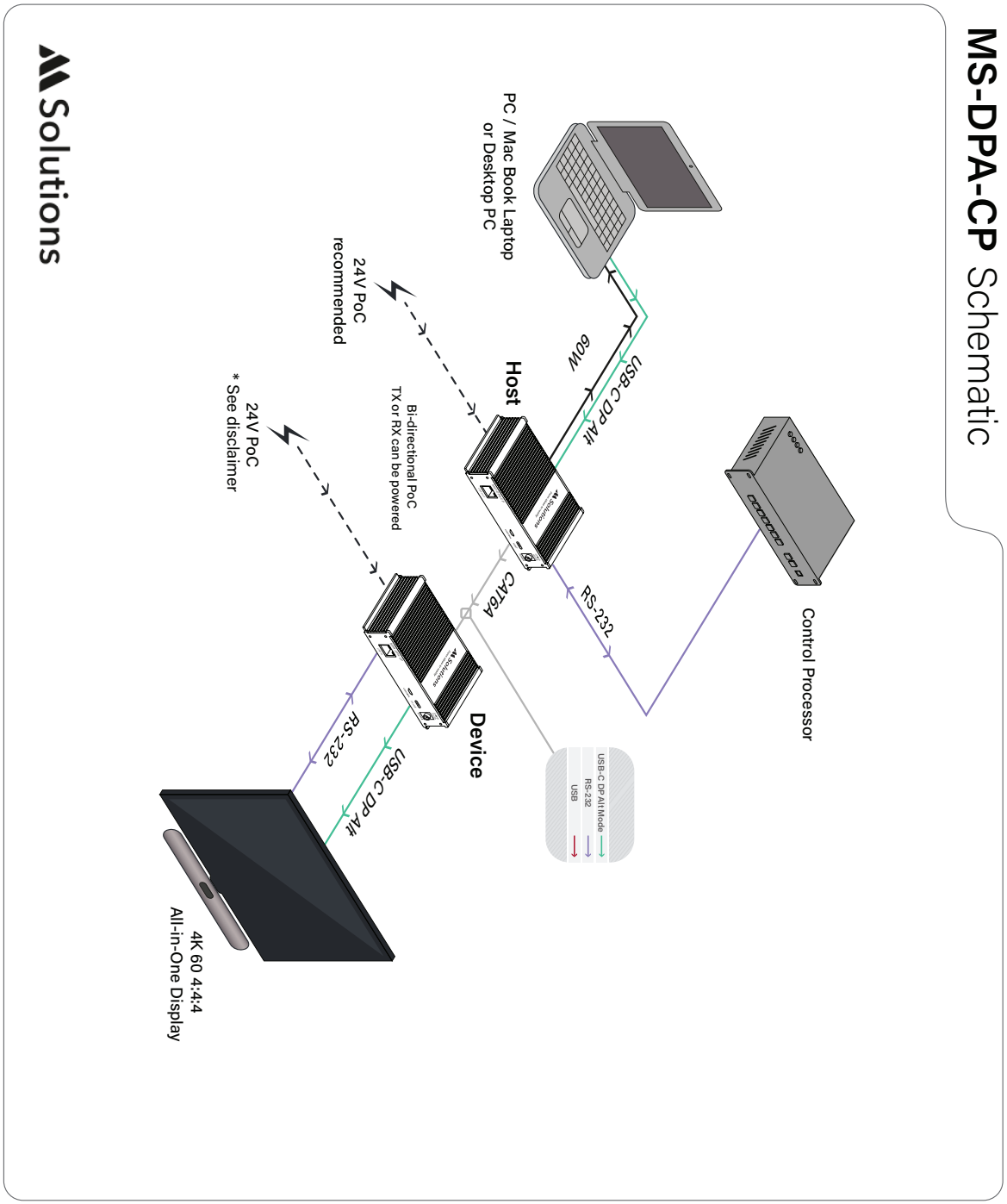
Specifications

- Host (TX): 1x link output (RJ45 port), 1x USB-C (Female) - data and video
- Micro-USB connectivity for product update, Cloud control and monitoring
- Device (RX): 1x link input (RJ45 port), 1x USB-C (Female) - data and video
- Micro-USB connectivity for product update, Cloud control and monitoring
- RS-232 connectivity (Host & Device): 1x 3-pin phoenix connector, block included
- Power supply: 1x 24V 4A DC
- Power consumption: 10W
- Charging Power: 60W
- Individual unit dimensions (W x D x H): 135 x 70 x 31mm
- Individual unit weight: 0.24kg (0.53 lb)
- Package dimensions (W x D x H): 163 x 147 x 85mm
- Package weight: 1kg (2.2 lb)
- 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
- Installation requires CAT6A cable or above

Package Contents

- 1x MS-DPA-CP Host
- 1x MS-DPA-CP Device
- 1 x 24V/4A DC power supply with US, UK, and EU clips
- 2x Full feature 1 meter USB-C cables
- 2 x 3-pin phoenix connector blocks

Schematic


MS-DPA-CP Schematic
PC / Mac Book Laptop or Desktop PC
60W
USB-C DP Alt
Control Processor
Host
24V PoC recommended
Bi-directional PoC
TX or RX can be powered
24V PoC
* See disclaimer
CAT6A
RS-232
Device
RS-232
USB-C DP Alt
4K 60 4:4:4
All-in-One Display
USB-C DP Alt Mode
RS-232
USB
Host
Device
* For Guaranteed Performance: Always connect the power supply to the Host side when host laptop charging is required.
Device-Side Powering: Charging functionality when powered from the Device side is host-dependent, cannot be guaranteed for all PC models, and may affect link stability.
USB-C DP Alt
RS-232
USB



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