



# Avocent<sup>®</sup> LongView<sup>™</sup> 5020

## **Installer/User Guide**

High Performance KVM Extender System

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### **Technical Support Site**

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit <https://www.vertiv.com/en-us/support/> for additional assistance.

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# 1 Product Overview

The Avocent LongView 5020 extender system is a DisplayPort KVM extender that enables you to locate the critical computing hardware in a secure and temperature controlled environment, away from the user workstation, while maintaining the same desktop experience. Using either one or two CATx cable links, you can achieve separation distances of up to 150 m (492 ft) between the transmitters and receivers. At such distances, the units can transfer high resolution DisplayPort video, USB 2.0 (low/full and high-speed), digital and analog audio plus RS-232 serial.

## 1.1 Features and Benefits

### 1.1.1 Video support

The Avocent LongView 5020 extender system provides the highest possible video bandwidth between the transmitters and receivers. To allow for the differing grades of CATx links, the extender system periodically checks the quality of the link and can accurately determine which of the two video transfer modes can be supported. The extender system supports low rate mode and high rate mode.

Low rate mode allows the transmitter and receiver extender units to be placed up to 150 m (492 ft) apart. The units actively monitor video link quality at link distances of less than 100 m (328 ft).

High rate mode provides a second video port and more than twice the video bandwidth capability as low rate mode. In high rate mode, there is enough video bandwidth to support a single high resolution 2560 x 1600 display or two 1920 x 1200 displays (at 60 Hz refresh) or even 4K video, 4096 x 2160 (at 30 Hz refresh, single display).

### 1.1.2 Extended Display Identification Data (EDID) management

The extender system intelligently manages the Extended Display Identification Data (EDID) information that each video display provides before reporting to the host computer. If sufficient bandwidth does not exist for the modes declared by the second display, it is not reported to the host computer.

### 1.1.3 USB support

A wide range of USB devices are supported on the receiver via the four ports on the front of the unit. Three of the ports support low/full speed (version 2.0) USB for keyboard and mouse. The fourth port provides high-speed (version 2.0) USB with transfer rates up to 80 Mbits/sec and supports mass storage and isochronous devices.

**NOTE: Availability of the fourth USB port depends upon the use of CATx link B cable, which is used for the transport of high-speed USB signals.**

### 1.1.4 Audio support

The Avocent LongView 5020 extender system can transfer analog and digital audio signals across the CATx cable link. Standard analog audio is supported through 3.5 mm jacks on the transmitters and receivers. Additionally, the line-in jack on the transmitter and the line-out jack on the receiver are dual purpose; they can accept either 3.5 mm analog jacks or mini-TOSLINK optical fiber connectors.

## 1.1.5 Serial support

The transmitters and receivers each have a serial Options port, which operates as a serial connection that can be used for either:

- Updating the firmware of the unit. See [Upgrading Firmware](#) on page 11.
- or-
- Establishing an RS-232 serial connection to transfer high speed serial data across the CATx link between the transmitter and receiver.

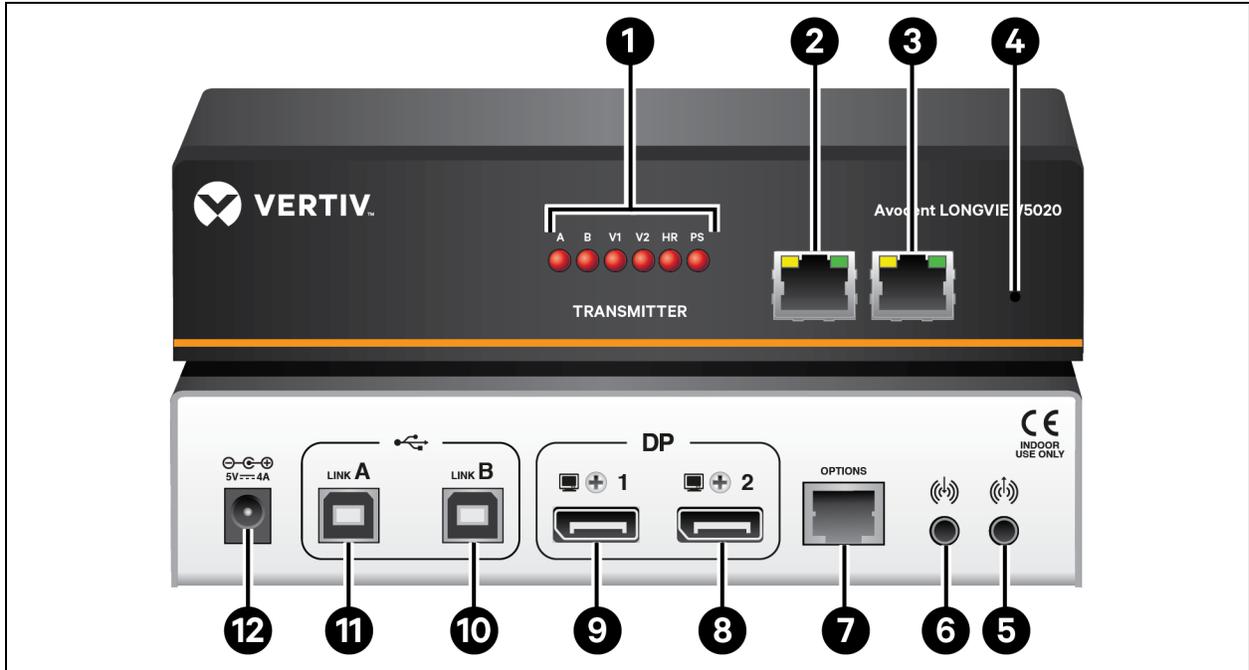
When the extenders are not in upgrade mode, they can be used to transfer serial data between them at rates up to 115200 baud. When serial devices are attached to the Options ports on the transmitter and receiver, the units transparently convey the signals between them and no serial configuration is required.

For information about the supported pin-outs for the Options ports, refer to [Pin-outs](#) on page 14.

## 1.2 Appearance and Components

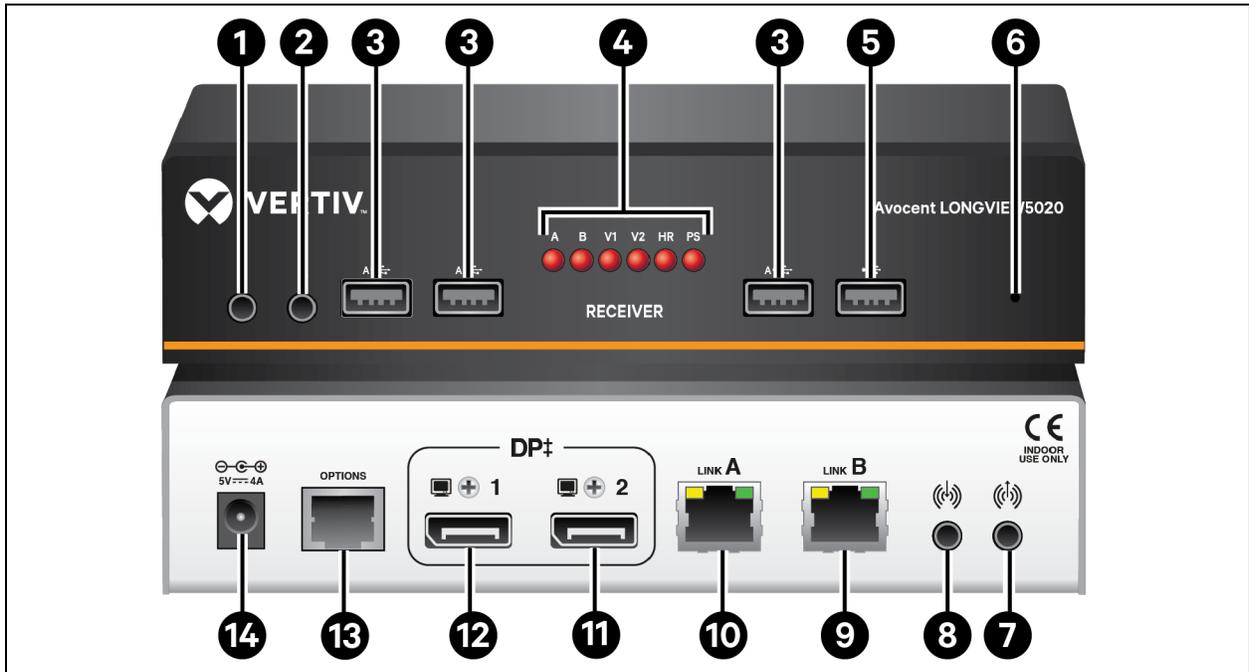
Figure 1.1 below and Figure 1.2 on the next page shows the connectors on the transmitters and receivers.

Figure 1.1 Avocent LongView 5020 Transmitter



Item	Description
1	Front panel indicators
2	Main A link
3	Optional B link
4	System reset
5	Audio line-out
6	Audio line-in
7	Options serial port
8	Secondary DisplayPort video input
9	Primary DisplayPort video input
10	USB Link B port
11	USB Link A port
12	Power input

Figure 1.2 Avocent LongView 5020 Receiver



Item	Description
1	Headphone input
2	Microphone input
3	USB port
4	Front panel indicators
5	High-speed USB port
6	System reset
7	Audio line-out
8	Audio line-in
9	Optional B link
10	Main A link
11	Secondary DisplayPort video input
12	Primary DisplayPort video input
13	Multi-function serial port
14	Power input

**Table 1.1** below contains indicator descriptions for both the transmitter and receiver.

**Table 1.1 Front Panel Indicator Description**

Indicator	Mode	Description
A	On	Main A link is connected.
	Flashes	Main A link is not connected.
	Off	No power is present.
B	On	Optional B link is connected.
	Off	Optional B link is not connected.
V1	On	Video port 1 is connected and receiving video.
	Flashes	Video port 1 is connected and not receiving video.
	Off	Video port 1 is not connected.
V2	On	Video port 2 is connected and receiving video.
	Flashes	Video port 2 is connected and not receiving video.
	Off	Video port 2 is not connected.
HR	On	High rate mode is active.
	Flashes	High rate mode is preferred but cannot be established. Low rate mode is active.
	Off	Low rate mode is active.
PS	On	Power connected.
	Flashes	Upgrade error.
	Off	No power.

## 1.3 Operating Modes

The Avocent LongView 5020 extender system maximizes the data that is transferred between the extenders. The achievable throughput depends upon the length and quality of the cable links that join the units.

Video signals are most sensitive to link quality and for this reason the extenders have two modes of operation: low rate mode and high rate mode. The extenders periodically check the link quality and determine which video transfer mode can be successfully used. The difference between the two modes is considerable as high rate mode can deliver over twice the video bandwidth. You can also choose the operating mode by using the Hotkey functions. For more information, refer to [Using Hotkeys](#) on page 9.

When the link mode changes, on-screen icons are displayed, while the indicators on the front panels of both units show which mode is currently being used. If a rate change occurs, the entire data link is reset causing a momentary loss of the video, audio and USB services.

## 2 Peripheral Connections

### 2.1 Video Display

Two DisplayPorts are provided on the rear panel of the transmitters. When using high resolution video displays, it is important that the video bandwidth requirements are within the capabilities of the port to which they are attached. The bandwidth availability of the two ports on the receiver unit can be different and is greatly affected by the mode in which the extender system is running. See the release notes on the [Avocent LongView 5020 Software Downloads](#) page for details about which high and low rate modes and resolutions are supported.

The link capacity between the transmitter and receiver is checked periodically to determine which rate mode can be supported. The checks are generally performed when the units are powered on, when the main CATx link is established, if cables are disconnected or if the CATx link is lost. Refer to [Using Hotkeys](#) on page 9 for information on selecting the rate mode.

#### Support for other video standards

Both ports support the DisplayPort Dual-Mode (DP++) standard, which means that as well as providing high resolution DisplayPort signals, they can also sense when a single-link HDMI or DVI adapter is attached. When this occurs, the output signals are adjusted accordingly to support those display types. Additionally, a dual-link DVI adapter can be attached (to port 1 only), which provides higher resolution signals for special DVI displays. Some adapters use power from the video socket whereas others require an external power supply, and this is usually gained from a spare USB socket. Port 1 provides a higher bandwidth than port 2 which is limited to a maximum of 154 Mpixels/per second. Single-link DVI can require up to 165 Mpixels/per second.

### 2.2 Extended Display Identification Data (EDID) Management

The extenders mask the resolution modes that cannot be supported within the available bandwidth. The display attached to Video port 1 is given priority. If sufficient bandwidth does not exist for the modes declared by the second display, it is not reported to the host PC. Extended Display Identification Data (EDID) information is checked when a new monitor connection is sensed and it is passed to the computer.

### 2.3 USB

The receiver provides four USB ports on the front panel. Three ports are labeled for low/full speed USB keyboard and mouse only. These are also suitable for providing power to third-party DisplayPort adapters. The fourth port is the high-speed USB port which provides the following:

- One of the host computer USB ports is connected to the Link B port on the transmitter and supports USB version 2.0.
- The second CATx Link B is in place.

### 2.4 Link

Transmitters and receivers are linked by either one or two CATx cables at a distance of up to 150 m (492 ft). The type and quality of the CATx cables used are crucial to the mode of operation. If a high-speed USB is not needed at the receiver, a CATx link between the B ports of the units is not required.

## 2.5 Audio

The receiver has two analog audio inputs, a microphone input on the front panel and a line-in input on the rear of the receiver. You can choose between these two analog inputs using a hotkey switch.

### To choose between the line-in and microphone inputs:

1. Using a USB keyboard attached to one of the USB A ports on the receiver, press **CTRL** three times. The three keyboard indicators will all flash once per second.
2. Use the numeric keys to select the required input.

### NOTE: Do not use the numeric keypad.

- To select line-in mode, press **2**. The line-in icon is displayed on the screen to confirm the selection.
- or-
- To select microphone mode, press **3**. The microphone icon is displayed on the screen to confirm the selection.

The selected input is patched through, via the link cable, to the line-out jack of the transmitter.

## 2.6 Power

Each receiver is supplied with a 20 W power adapter. There is no on/off switch on the unit, so operation begins as soon as a power adapter is connected.

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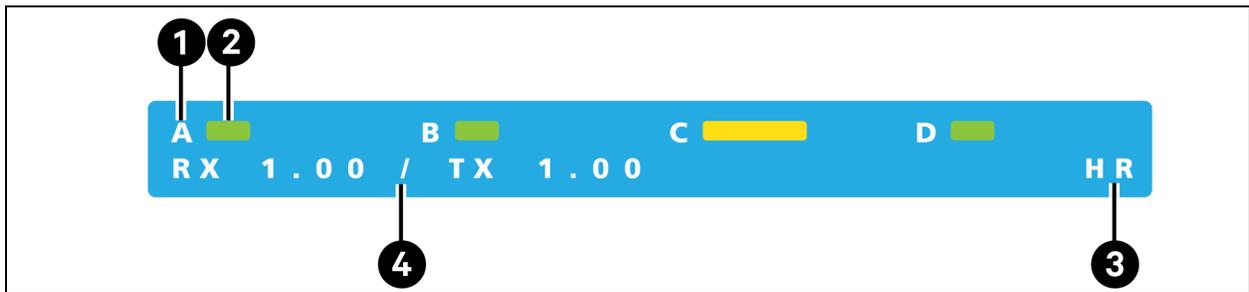
## 3 Operation

The Avocent LongView 5020 extender system is designed to be transparent in operation. All peripherals should respond as they would when connected to your host computer.

### 3.1 Accessing the Dashboard

The dashboard provides a quick overview of link quality as well as confirmation of the current link rate mode and the firmware revisions of both the transmitter and receiver units.

Figure 2.1 Dashboard



Item	Description
1	Label for the wire-pair within the main link cable.
2	Signal indicators for each of the four wire pairs within the main link. Depending on the number of signal errors detected, each of the four bars increase in length and change colors. Green indicates the best quality and red the worst quality. The length of the bar also indicates the amount of data errors.
3	Current firmware version. If the link between the units is not currently valid, the transmitter entry displays --.
4	The current link mode. Either an HR or LR are displayed for high rate mode or low rate mode. If the link is not operating, the entry displays --.

#### To access or exit the dashboard:

1. Press and release the **Ctrl** key three times in quick succession. The three keyboard indicators flash once per second.
2. Press the numeric **1** located above the main section of the keyboard.

**NOTE: The 1 on the numeric keypad will not work.**

When the dashboard is enabled, repeat the steps above to exit it.

### 3.2 Using Hotkeys

The Avocent LongView 5020 extender system provides hotkey features, which allow you to check and adjust certain aspects of the operation as follows:

- Monitor link quality using the dashboard.
- Choose the preferred link rate mode.
- Choose between line-in and microphone modes at the receiver.

**To use hotkeys:**

1. Using a USB keyboard attached to one of the USB A ports on the receiver, press **CRTL** three times. The three keyboard indicators will all flash, once per second.
2. Use the numeric keys **1 to 7**, located above the main section of the keyboard, to select the required action.

**Table 2.1 Hotkey Options**

Item	Icon	Description
1	N/A	Displays the dashboard.
2		Line-in mode for the receiver analog audio input. The line-in icon is displayed for confirmation.
3		Microphone mode for the receiver analog audio input. The microphone icon is displayed for confirmation.
4		Low rate mode for the preferred link speed. The low rate icon is displayed for confirmation.
5		High rate mode for the preferred link speed. The high rate icon is displayed for confirmation.
6		Balanced mode (available in high rate mode only). Balanced mode allows you to share the available video bandwidth equally between the two video displays, regardless of the EDID being reported. The balanced mode icon is displayed for confirmation.
7		Priority mode (default mode). Video link 1 takes priority, allowing it to display resolutions greater than 1900 x 1200 (the limit for the video 2 link). The priority mode icon is displayed for confirmation.

**NOTE:** If you do not press any key within five seconds, or press any key other than the digits 1 to 7, the keyboard will revert to normal operation. To use another hotkey function, repeat the procedure.

### 3.3 Resetting a Transmitter or Receiver

On the left side of the front panel of each transmitter or receiver is a small reset hole used for special functions.

**To reset a transmitter or receiver:**

Using a thin tool, such as a straightened paper clip, press and release the button concealed in the reset hole. The power indicator displays red. After a few seconds, the power indicator changes from red to green to indicate the reset is complete.

## 3.4 Upgrading Firmware

The Avocent LongView 5020 extender system is flash upgradeable. The same upgrade file is used to upgrade both the transmitter and receiver units, but the units are upgraded separately.



**WARNING! During the upgrade process, ensure that power is not interrupted as this may leave the unit in an inoperable state.**

### To upgrade the extenders:

1. Download the upgrade file from <https://www.vertiv.com/en-us/support/software-downloads/>.
2. Connect a serial cable between the computer and the options port of the extender to be upgraded.
3. Using a straightened-out paper clip, press and hold the recessed reset button on the front panel until the indicators begin pulsing.
4. With the unit in download mode, transfer the upgrade file using an XMODEM file transfer via any terminal emulator program. Use the following settings:
  - 115200 baud
  - 8-bit word
  - No parity
  - 1 stop bit (8N1)
  - No flow control
5. After the download completes, the extender firmware is upgraded. Once this process is complete, the unit will reboot.

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# Appendices

## Appendix A: Technical Support and Contacts

### A.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2378

Liebert® Channel Products

1-800-222-5877

Liebert® AC and DC Power Products

1-800-543-2378

### A.2 Locations

#### United States

Vertiv Headquarters

505 N Cleveland Ave

Westerville, OH 43082

#### Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

#### Asia

7/F, Dah Sing Financial Centre

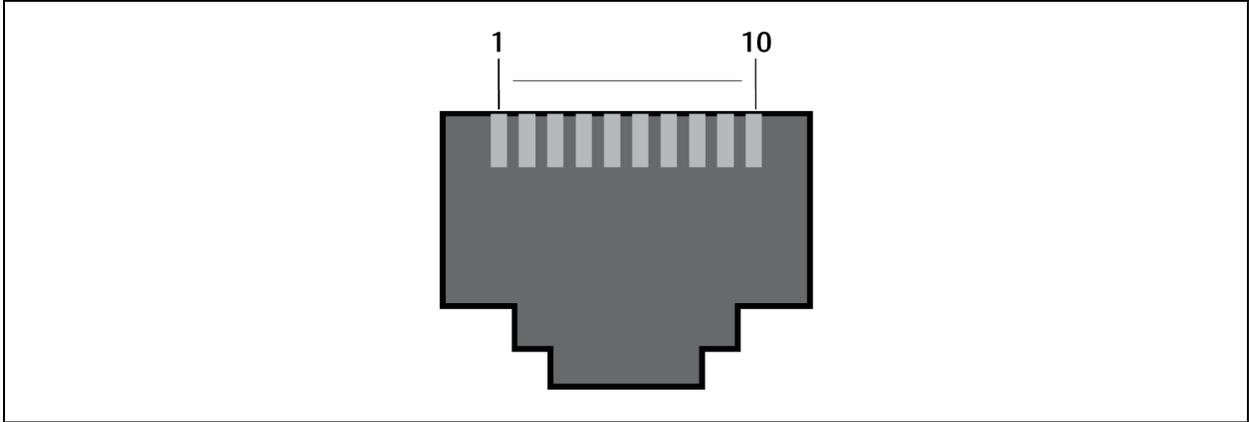
3108 Gloucester Road, Wanchai

Hong Kong

## Appendix B: Pin-outs

The Options port on each extender accepts either 8p8c or 10p10c connectors, as required.

Figure 3.1 Port Pinouts



8p8c	10p10c	Signal
N/A	1	Not used
1	2	5 VDC power output (100 mA maximum)
2	3	GND reference for all signals
3	4	RS-232 data receive (RXD)
4	5	RS-232 auxiliary data transmit (reserved)
5	6	RS-232 auxiliary data receive (reserved)
6	7	RS-232 data transmit (TXD)
7	8	Not used
8	9	Not used
N/A	10	Not used

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