

# DATA SHEET

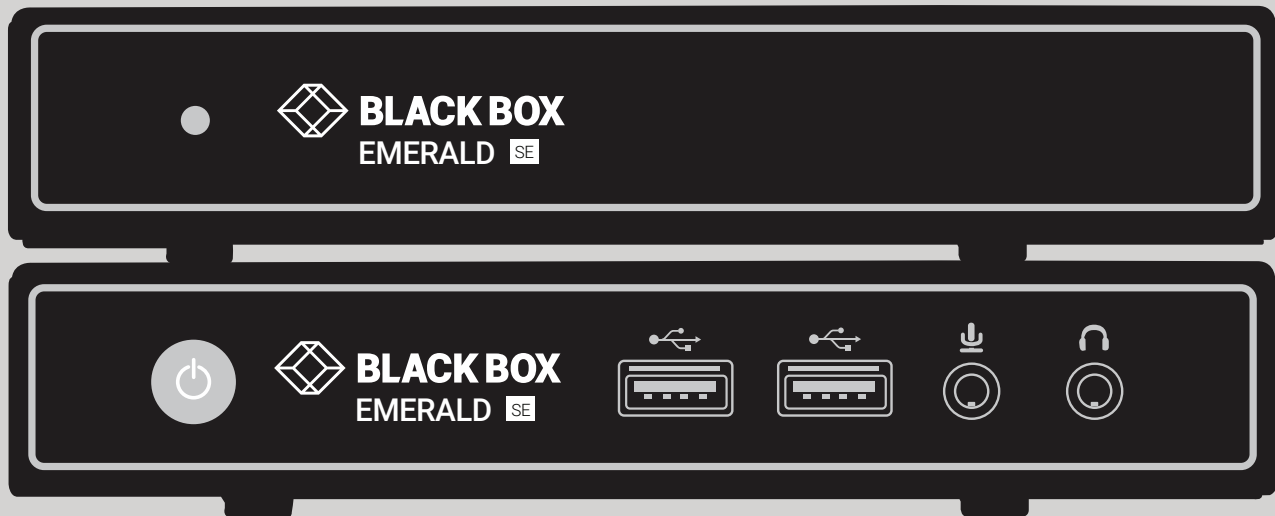
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EMD2000SE-T, EMD2000SE-R, EMD2002SE-T, EMD2002SE-R, EMD200DV-T

# EMERALD SE KVM OVER IP TECHNOLOGY

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# OVERVIEW

## EMERALD SE KVM OVER IP TECHNOLOGY DATA SHEET

### INTRODUCTION

The Emerald SE system provides users with a seamless desktop experience anywhere on a TCP/IP network, while allowing the actual hardware to be securely housed in a corporate data center or in the cloud. Emerald SE enables the same high fidelity experience of a desktop PC even for media-rich applications, for example, watching videos, photo editing with Photoshop or 3D design with AutoCAD. The remote desktops may be hosted on a physical PC / workstation or may be a virtual desktop hosted on a private server or in the cloud. The Emerald SE system provides its users with Receivers that communicate with target computer nodes (whether physical PC or virtual desktop) over a standard TCP/IP network. Physical PCs/Workstations/Servers have an Emerald SE Transmitter unit physically connected to provide communication over the TCP/IP network. The performance of Emerald SE allows them to be deployed on standard corporate networks and even across Wide-Area-Networks (WANs).

Desktop users can access remote keyboard, mouse, video, audio, USB mass storage devices, headsets and other USB devices from the Receiver unit to the remote PC/workstations or Virtual Desktop via the Emerald SE system.

NOTE: Some USB 2.0 devices have been found to be incompatible. Please report these devices to Black Box.

NOTE: References to the Emerald SE system in this document refer to both Receivers (EMD2000SE-R, EMD2002SE-R) and Transmitters (EMD2000SE-T, EMD2002SE-T).

### FEATURES

- VISUALLY LOSSLESS FULL HD DVI VIDEO UP TO 1920 X 1200
- LOW IP BANDWIDTH REQUIREMENTS WITH LESS THAN 40 MBPS REQUIRED FOR 1080P VIDEO
- SHARE MODE ALLOWS MULTIPLE RECEIVERS TO SIMULTANEOUSLY USE ONE SOURCE
- SEAMLESS INTEGRATION OF PHYSICAL AND VIRTUAL DESKTOPS: THE EMERALD SE SYSTEM CONNECTS TO PHYSICAL PCS, SERVERS, AND VIDEO SOURCES AS WELL AS VIRTUAL DESKTOPS HOSTED ON SERVERS OR IN THE CLOUD. THIS ALLOWS SEAMLESS CONNECTION TO PHYSICAL RESOURCES AND VIRTUAL RESOURCES FROM THE SAME RECEIVER UNIT. IT PROFESSIONALS USE THIS CAPABILITY TO OPTIMIZE THEIR DEPLOYMENTS AND MIGRATIONS TO CLOUD SERVICES
- HIGH RELIABILITY AND HIGHLY SECURE
- TRANSPARENT USB RE-DIRECTION: THE EMERALD SE SYSTEM PROVIDES TRANSPARENT USB RE-DIRECTION FOR BOTH VIRTUAL AND PHYSICAL DESKTOP CONNECTIONS
- EASY DEPLOYMENT
- ZERO U TRANSMITTER HAS A SMALL FORM FACTOR SO IT USES ZERO RACKSPACE—YOU SAVE MONEY WHEN RACK SPACE IS EXPENSIVE
- ZERO U TRANSMITTER IS POWERED OVER USB OR VIA A SEPARATE POWER SUPPLY

## WHAT'S INCLUDED WITH SINGLE-HEAD MODEL

EMERALD SE KVM OVER IP TECHNOLOGY, SINGLE-HEAD TRANSMITTER AND RECEIVER (EMD2000SE-T AND EMD2000SE-R)

TRANSMITTER FRONT VIEW



TRANSMITTER BACK VIEW



RECEIVER FRONT VIEW



RECEIVER BACK VIEW



### WHAT'S INCLUDED WITH THE TRANSMITTER (EMD2000SE-T)

- (1) EMERALD SE TRANSMITTER, SINGLE-HEAD
- (1) 5 VDC POWER SUPPLY
- (1) US POWER CORD

### WHAT'S INCLUDED WITH THE RECEIVER (EMD2000SE-R)

- (1) EMERALD SE RECEIVER, SINGLE-HEAD
- (1) 5 VDC POWER SUPPLY
- (1) US POWER CORD



# SPECIFICATIONS FOR SINGLE-HEAD MODEL

SPECIFICATIONS FOR EMERALD SE TRANSMITTER AND RECEIVER, SINGLE-HEAD (EMD2000SE-T AND EMD2000SE-R)	
<b>APPROVALS</b>	
UNIT	FCC, CE, RoHS, WEEE
POWER SUPPLY	TUV, UL
<b>PHYSICAL</b>	
LED INTERFACE	(1) Power LED button (deactivated, not used); NOTE: Unit automatically powers on when plugged in; must be powered off at the power source. (1) RJ-45 Speed LED (green, located on top left of RJ-45 connector): Blinks three times when the network connection is 1000 Mbps, Blinks two times when network connection is 100 Mbps, Blinks once when the network connection is 10 Mbps, Not blinking: No Link to network; (1) Activity LED (green, located on top right of RJ-45 connector): Solid green: Link up, Blinking: Activity on the link, OFF: No link
MAXIMUM DISTANCE FROM CPU TO TRANSMITTER	EMD2000SE-T: 16 ft. (5 m), DVI-D and USB limitations
MAXIMUM DISTANCE BETWEEN TRANSMITTER AND RECEIVER	328 ft. (100 m), use a network switch to get farther distances
OPERATING SYSTEM SUPPORT	Microsoft Windows® Vista, XP, Windows 7, Windows 8, Windows 10, Server 2003, Server 2008, Server 2012, Linux®, Mac OS
CONNECTORS	EMD2000SE-T: (1) DVI input, (1) USB Type B female, (1) RJ-45 network, (1) RJ-45 serial, (2) 3.5 mm audio, (1) 2.5 mm barrel for power; EMD2000SE-R: (1) DVI output, (4) USB Type A female, (1) RJ-45 network, (1) DB9 serial, (2) 3.5 mm audio for SPK and MIC, (1) 2.5 mm barrel for power
DIMENSIONS	EMD2000SE-T, EMD2000SE-R: 1.15"H x 6.2" W, 4.2"D (2.92 x 15.75 x 10.67 cm)
WEIGHT	EMD2000SE-T, EMD2000SE-R: 1.18 lbs (0.54 kg)
<b>OPERATION</b>	
DEFAULT IP ADDRESS	EMD2000SE-T: 192.168.1.22; EMD2000SE-R: 192.168.1.21
ENCRYPTION	Secure Sockets Layer (SSL) over TCP/IP, 128-bit between TX and RX, user set between RX and Hyper-V
DEFAULT USERNAME	admin
DEFAULT PASSWORD	The password is blank by default
DDC SUPPORT	Built-in/clone of remote
<b>POWER</b>	
POWER SOURCE	External in-line power supply
INPUT VOLTAGE	100–240 VAC, 50/60 Hz
INPUT CURRENT	0.9 amps maximum
POWER CONSUMPTION	Unit: 6.5 watts with keyboard and mouse attached; Power supply is 20 W to support USB based powered devices
HEAT DISSIPATION	(5 VDC x 4 amps) x 3.41 = 68.2 BTU/hour maximum (Voltage x Nominal Current) x 3.41 = BTU/hr
OUTPUT CONNECTOR	2.5-mm barrel
INPUT CONNECTOR	IEC-320, C8
POWER SUPPLY CORD LENGTH	6 ft. (1.8 m)
<b>ENVIRONMENTAL</b>	
OPERATING TEMPERATURE	32 to 104° F (0 to 40° C)
STORAGE TEMPERATURE	-4 to +140° F (-20 to 60° C)
OPERATING HUMIDITY	5 to 95%, noncondensing



# WHAT'S INCLUDED WITH DUAL-HEAD MODEL

EMERALD SE KVM OVER IP TECHNOLOGY, DUAL-HEAD TRANSMITTER AND RECEIVER  
(EMD2002SE-T AND EMD2002SE-R)

TRANSMITTER FRONT VIEW



RECEIVER FRONT VIEW



TRANSMITTER BACK VIEW



RECEIVER BACK VIEW



## WHAT'S INCLUDED WITH THE TRANSMITTER (EMD2002SE-T)

- (1) EMERALD SE TRANSMITTER, DUAL-HEAD
- (1) 5 VDC POWER SUPPLY
- (1) US POWER CORD

## WHAT'S INCLUDED WITH THE RECEIVER (EMD2002SE-R)

- (1) EMERALD SE RECEIVER, DUAL-HEAD
- (1) 5 VDC POWER SUPPLY
- (1) US POWER CORD

# SPECIFICATIONS FOR DUAL-HEAD MODEL

SPECIFICATIONS FOR EMERALD SE TRANSMITTER AND RECEIVER, DUAL-HEAD (EMD2002SE-T AND EMD2002SE-R)	
<b>APPROVALS</b>	
UNIT	FCC, CE, RoHS, WEEE
POWER SUPPLY	TUV, UL
<b>PHYSICAL</b>	
LED INTERFACE	(1) Power LED button (deactivated, not used); NOTE: Unit automatically powers on when plugged in; must be powered off at the power source. (1) RJ-45 Speed LED (green, located on top left of RJ-45 connector): Blinks three times when the network connection is 1000 Mbps, Blinks two times when network connection is 100 Mbps, Blinks once when the network connection is 10 Mbps, Not blinking: No Link to network; (1) Activity LED (green, located on top right of RJ-45 connector): Solid green: Link up, Blinking: Activity on the link, OFF: No link
MAXIMUM DISTANCE FROM CPU TO TRANSMITTER	EMD2002SE-T: 16 ft. (5 m), DVI-D and USB limitations
MAXIMUM DISTANCE BETWEEN TRANSMITTER AND RECEIVER	328 ft. (100 m), use a network switch to get farther distances
OPERATING SYSTEM SUPPORT	Microsoft Windows® Vista, XP, Windows 7, Windows 8, Windows 10, Server 2003, Server 2008, Server 2012, Linux®, Mac OS
CONNECTORS	EMD2002SE-T: (2) DVI inputs, (1) USB Type B female, (1) RJ-45 network, (2) 3.5 mm audio, (1) 2.5 mm barrel for power; EMD2002SE-R: (2) DVI outputs, (4) USB Type A female, (1) RJ-45 network, (2) 3.5 mm audio for SPK and MIC, (1) 2.5 mm barrel for power
DIMENSIONS	EMD2002SE-T: 1.43" H x 6.2" W x 4.2" D (3.65 x 15.75 x 10.67 cm); EMD2002SE-R: 1.15" H x 6.2" W x 4.2" D (2.92 x 15.75 x 10.67 cm)
WEIGHT	EMD2002SE-T: 1.47 lb. (0.67 kg); EMD2002SE-R: 1.36 lb. (0.62 kg)
<b>OPERATION</b>	
DEFAULT IP ADDRESS	EMD2002SE-T: 192.168.1.22; EMD2002SE-R: 192.168.1.21
ENCRYPTION	Secure Sockets Layer (SSL) over TCP/IP, 128-bit between TX and RX, user set between RX and Hyper-V
DEFAULT USERNAME	admin
DEFAULT PASSWORD	The password is blank by default
DDC SUPPORT	Built-in/clone of remote
<b>POWER</b>	
POWER SOURCE	External in-line power supply
INPUT VOLTAGE	100–240 VAC, 50/60 Hz
INPUT CURRENT	0.9 amps maximum
POWER CONSUMPTION	Unit: 6.5 watts with keyboard and mouse attached; Power supply is 20 W to support USB based powered devices
HEAT DISSIPATION	(5 VDC x 4 amps) x 3.41 = 68.2 BTU/hour maximum (Voltage x Nominal Current) x 3.41 = BTU/hr
OUTPUT CONNECTOR	2.5-mm barrel
INPUT CONNECTOR	IEC-320, C8
POWER SUPPLY CORD LENGTH	6 ft. (1.8 m)
<b>ENVIRONMENTAL</b>	
OPERATING TEMPERATURE	32 to 104° F (0 to 40° C)
STORAGE TEMPERATURE	-4 to +140° F (-20 to 60° C)
OPERATING HUMIDITY	5 to 95%, noncondensing



# SPECIFICATIONS FOR ZERO U MODEL

## EMERALD ZERO U DVI TRANSMITTER (EMD200DV-T)

### TRANSMITTER



### WHAT'S INCLUDED WITH THE TRANSMITTER (EMD200DV-T)

- (1) EMERALD ZERO U DVI TRANSMITTER

NOTE: The Emerald Zero U DVI Transmitter (EMD200DV-T) must be used with the Emerald SE Receiver (EMD2000SE-R).

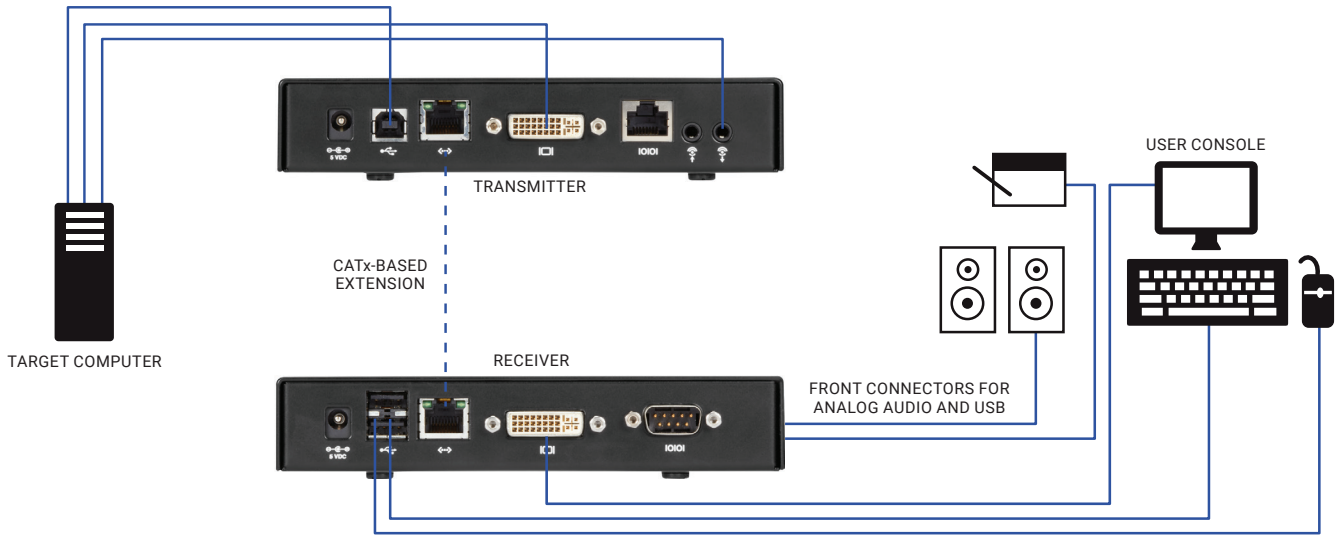
The Emerald Zero U DVI Transmitter (EMD200DV-T) and the Emerald SE Receiver (EMD2000SE-R) must be purchased separately.

SPECIFICATIONS FOR EMERALD ZERO U DVI TRANSMITTER (EMD200DV-T)	
<b>APPROVALS</b>	
<b>UNIT</b>	FCC, CE, RoHS, WEEE
<b>PHYSICAL</b>	
<b>LED INTERFACE</b>	(1) Power LED (green); (1) RJ-45 Speed LED (green, located on top left of RJ-45 connector): Blinks three times when the network connection is 1000 Mbps, Blinks two times when network connection is 100 Mbps, Blinks once when the network connection is 10 Mbps, Not blinking: No Link to network; (1) Activity LED (green, located on top right of RJ-45 connector): Solid green: Link up, Blinking: Activity on the link, OFF: No link
<b>MAXIMUM DISTANCE FROM CPU TO TRANSMITTER</b>	EMD200DV-T: 12" (30.48 cm) via connected cable harness
<b>MAXIMUM DISTANCE BETWEEN TRANSMITTER AND RECEIVER</b>	328 ft. (100 m), use a network switch to get farther distances
<b>OPERATING SYSTEM SUPPORT</b>	Microsoft Windows® Vista, XP, Windows 7, Windows 8, Windows 10, Server 2003, Server 2008, Server 2012, Linux®, Mac OS
<b>CONNECTORS</b>	EMD200DV-T: (1) DVI input, (2) USB Type A female, (1) RJ-45 network, (1) 3.5 mm audio for speakers (only on 12" version), (1) 2.5 mm barrel for power; NOTE: The Zero U Transmitter can be powered via (2) USB Type A connectors or via an optional DC power adapter;
<b>OPERATION</b>	
<b>DEFAULT IP ADDRESS</b>	EMD200DV-T: 192.168.1.22
<b>ENCRYPTION</b>	Secure Sockets Layer (SSL) over TCP/IP, 128-bit between TX and RX, user set between RX and Hyper-V
<b>DEFAULT USERNAME</b>	admin
<b>DEFAULT PASSWORD</b>	The password is blank by default
<b>DDC SUPPORT</b>	Built-in/clone of remote
<b>POWER</b>	
<b>POWER SOURCE</b>	Via USB or an optional 5-VDC power adapter
<b>INPUT VOLTAGE</b>	5 VDC
<b>ENVIRONMENTAL</b>	
<b>OPERATING TEMPERATURE</b>	32 to 104° F (0 to 40° C)
<b>STORAGE TEMPERATURE</b>	-4 to +140° F (-20 to 60° C)
<b>OPERATING HUMIDITY</b>	5 to 95%, noncondensing



# APPLICATION DIAGRAMS

## BASIC EXTENDER APPLICATION



## EMERALD SE MANAGED APPLICATION

