ENFORCER®

MVE-AH1T1-01YQ

HDMI Extender over Two Wires

Manual

HDMI®
HIGH-DEFINITION MULTIMEDIA INTERFACE

1080p — Resolution

Up to 984ft (300m) — Range

RS-232 — Pass-Through

IR — Pass-Through

Features:

- Extends HDMI over two wires
- Supports resolutions from 480i to 1080p with zero signal loss
- Transmits up to 984ft (300m) at 1080p over two wires
- Plug and play operation – comes as a complete set
- HDMI Loop output for local HDMI display
- Supports up to four (4) receivers for multicast applications
- Two (2) 12VDC power supplies included
- Bi-directional RS-232 pass-through
- IR Pass-through for remote control extension and operation

SECO-LARM® **SLI®**

FC CE RoHS

Introduction:

The ENFORCER HDMI Extender over Two Wires extends the range of traditional HDMI cabling methods by using an active transmitter and receiver to send video and audio over any two copper wires including Cat5e/6 cables, telephone wires, and coaxial cables. HDMI formats as large as 1080p can be transmitted up to 984ft (300m) between the two units with zero signal loss by using integrated circuits in the receiver and transmitter.

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Features:

- **Signal Strength** – Active operation ensures signal strength remains strong over the length of the wiring.
- **Distance** – The HDMI Extender over Two Wires is capable of providing a clear HDMI signal up to 984ft (300m).
- **Formats Supported** – The HDMI Extender over Two Wires supports both progressive and interlaced formats: 1080p/1080i/720p/576p/576i/480p/480i.
- **Plug and Play** – The HDMI Extender over Two Wires comes as a complete set consisting of a transmitter and receiver, power supplies, and IR dongles.
- **Zero Signal Loss** – Integrated circuits in the transmitter and receiver clean, buffer, and amplify the HDMI signal to prevent signal loss and ensure a clear signal.
- **IR Pass-Through** – Send IR signals from the monitor to the source for discrete operation of devices.
- **Bi-Directional RS-232** – Send RS-232 commands from a control system to the display and back without extra cabling.
- **HDMI Loop Output** – Secondary HDMI output for local displays.
- **Multicast Configuration** – Supports up to 4 receivers for multicast applications.

Parts List:

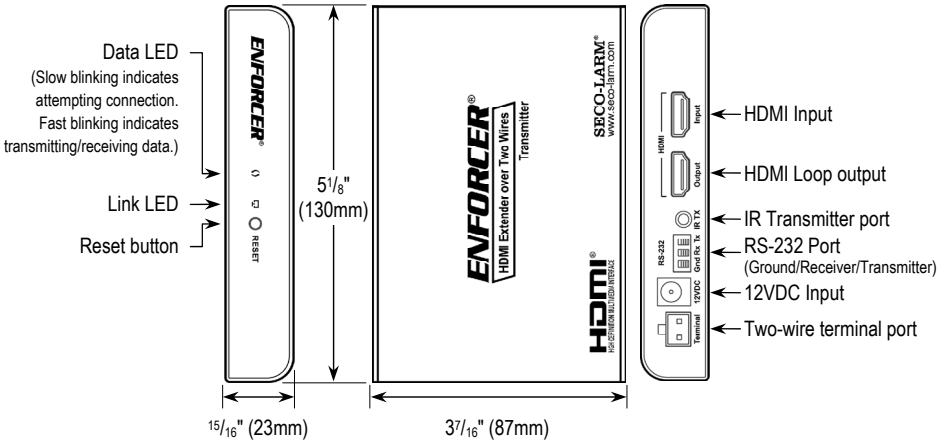|			
1x	Transmitter (MVE-AH1T1-01YTQ)	2x	Terminal 2-pin connectors
1x	Receiver (MVE-AH1T1-01YRQ)	2x	RS-232 3-Pin connectors
2x	12VDC Power adapters	1x	IR Transmitter (with double sided tape)
1x	Manual	1x	IR Receiver (with double sided tape)

Specifications:

Input video signal		3.3V
Input DDC signal		5Vp-p (TTL)
Maximum single link range		1080p
Deep color		24bit
Video formats supported		High-speed HDMI, HDCP 1.3
Audio formats supported		PCM
Output video		HDMI
Resolutions supported		1080p/1080i/720p/576p/576i/480p/480i
Range		Up to 984' (300m)
Video input/output connector		HDMI Type A 19-pin female
Max. input/output cable length		24AWG (15m), 26AWG (10m), 28AWG (5m)
IR Pass-through frequency		20~60 kHz
RS-232 Pass-through baud-rate		Up to 115,200
Operating voltage		12VDC
Power supply		2A@12VDC (2 Adapters) (2.1mm plug)
ESD Protection (human body model)		±8kV (Air-gap discharge), ±4kV (contact discharge)
Current draw	Transmitter	625mA@12VDC
	Receiver	580mA@12VDC
Operating temperature		32°~140° F (0°~60° C)
Dimensions		$5^{1}/_{8}$"x$^{15}/_{16}$"x$3^{7}/_{16}$" (130x23x87 mm)
Weight		7.4-oz (210g) (Each)

Overview:

Transmitter MVE-AH1T1-01YTQ:

Data LED
(Slow blinking indicates attempting connection. Fast blinking indicates transmitting/receiving data.)

Link LED

Reset button

5¹/₈" (130mm)

¹⁵/₁₆" (23mm)   3⁷/₁₆" (87mm)

← HDMI Input
← HDMI Loop output
← IR Transmitter port
← RS-232 Port (Ground/Receiver/Transmitter)
← 12VDC Input
← Two-wire terminal port

Receiver MVE-AH1T1-01YRQ:

Data LED
(Slow blinking indicates attempting connection. Fast blinking indicates transmitting/receiving data.)

Link LED

Reset button

5¹/₈" (130mm)

¹⁵/₁₆" (23mm)   3⁷/₁₆" (87mm)

← HDMI Output
← IR Receiver port
← RS-232 Port (Ground/Receiver/Transmitter)
← 12VDC Input
← Two-wire terminal port

IR Pass-Through:

The MVE-AH1T1-01YQ supports IR pass-through signals to allow for remote operation of the source device from the display location. The IR transmitter and IR receiver support a frequency range between 20~60 kHz.

HDMI Loop Output:

The MVE-AH1T1-01YQ includes a secondary HDMI output on the transmitter unit. This HDMI output can be used for local displays that are in the same location as the HDMI source.

Bi-directional RS-232:

The MVE-AH1T1-01YQ supports bi-directional RS-232 data transmission to allow for control, debugging, and monitoring from a connected control system.

Configuring Baud-Rate

1. To set the baud-rate (default: 9600) to match the baud-rate of the connected control system, connect the control system to the MVE-AH1T1-01YTQ transmitter unit and connect the MVE-AH1T1-01YRQ receiver unit to the remote device to be controlled.
2. Once connected, use the desired RS-232 software on the control system to set the correct baud-rate. The MVE-AH1T1-01YQ supports the following baud-rates: 2400 / 4800 / 9600 / 19200 / 28800 / 38400 / 57600 / 115200.

Installation:

1. Determine the location where the MVE-AH1T1-01YQ units will be wired as well as length of two conductor wire necessary.
2. Connect the transmitter to the HDMI output of the source device.
3. Connect two copper conductor wires to the terminal ports on both the receiver and transmitter units. Any two copper wires will work, including network Cat5e/6 cables, telephone wires, and coaxial cables. Shielded wiring is recommended to avoid cross-talk and digital noise.
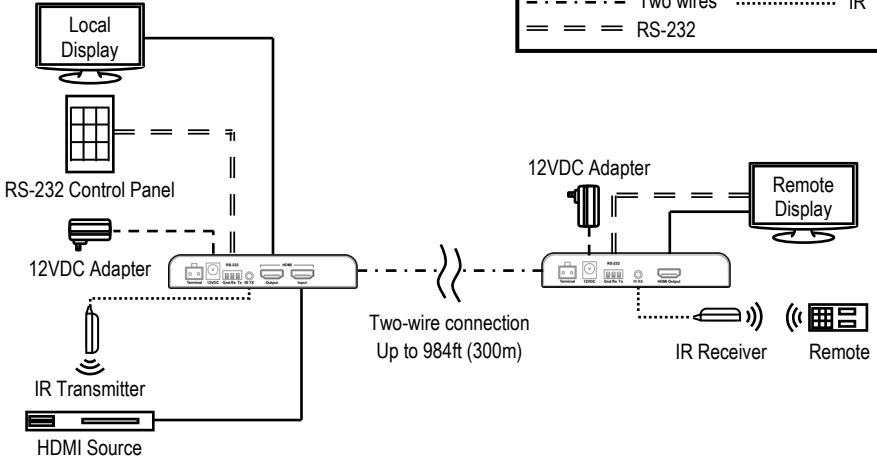   **NOTE:** The maximum length of conductor wire for all installations is 984ft (300m).
4. Connect the receiver to the HDMI input of the display or other device.
5. Connect one 12VDC adapter to the transmitter and the other 12VDC adapter to the receiver.
6. Install the IR transmitter to the IR-TX port located on the transmitter unit, pointing the IR transmitter at the device to be controlled.
7. Install the IR receiver to the IR-RX port located on the receiver unit, pointing the IR receiver to where the remote control will be. Point the remote control at the IR receiver when in use.
8. Connect an RS-232 controller unit to the MVE-AH1T1-01YTQ transmitter unit and connect the MVE-AH1T1-01YRQ receiver unit to the remote device to be controlled.
9. Switch on the HDMI source and display to verify that the system is functioning properly.
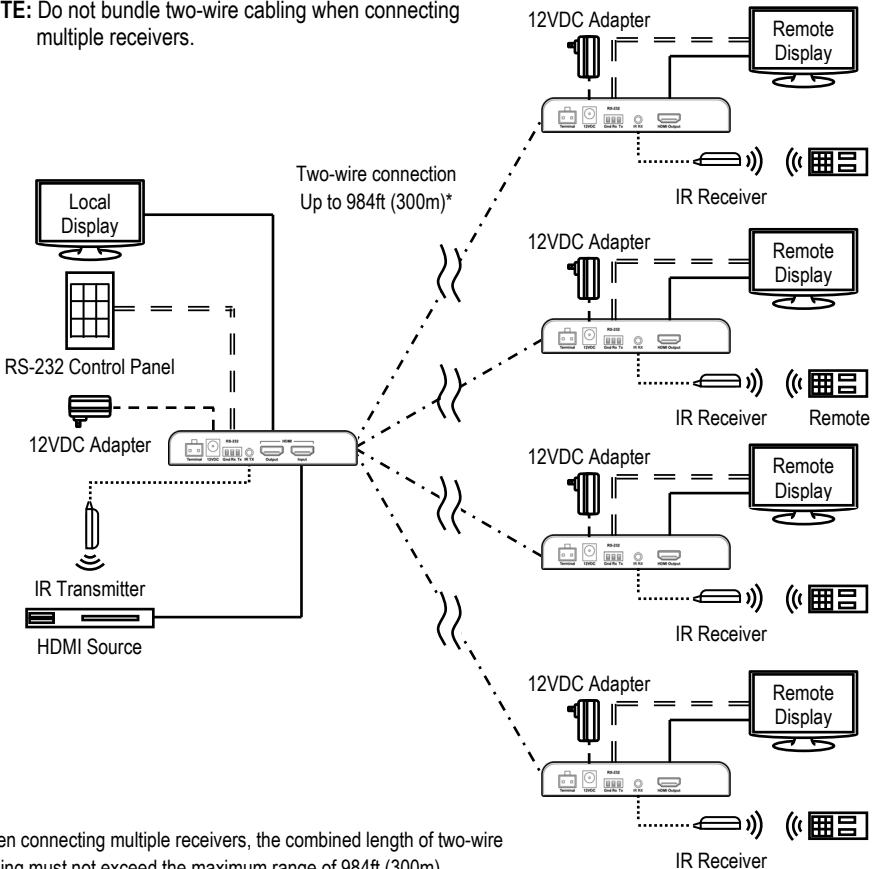
ENFORCER HDMI Extender over Two Wires

Sample Applications:
One Transmitter, One Receiver:

Cable Legend:

—————— HDMI	– – – – – Power
– · – · – · – Two wires	···················· IR
= = = RS-232	

Local Display

RS-232 Control Panel

12VDC Adapter

IR Transmitter

HDMI Source

12VDC Adapter

Remote Display

Two-wire connection
Up to 984ft (300m)

IR Receiver   Remote

One Transmitter, Multiple Receivers (Up to 4), Cascaded Wiring:

NOTE: Do not bundle two-wire cabling when connecting multiple receivers.

12VDC Adapter

Remote Display

IR Receiver

Two-wire connection
Up to 984ft (300m)*

Local Display

12VDC Adapter

Remote Display

RS-232 Control Panel

IR Receiver   Remote

12VDC Adapter

12VDC Adapter

Remote Display

IR Transmitter

HDMI Source

IR Receiver

12VDC Adapter

Remote Display

* When connecting multiple receivers, the combined length of two-wire
cabling must not exceed the maximum range of 984ft (300m).

IR Receiver
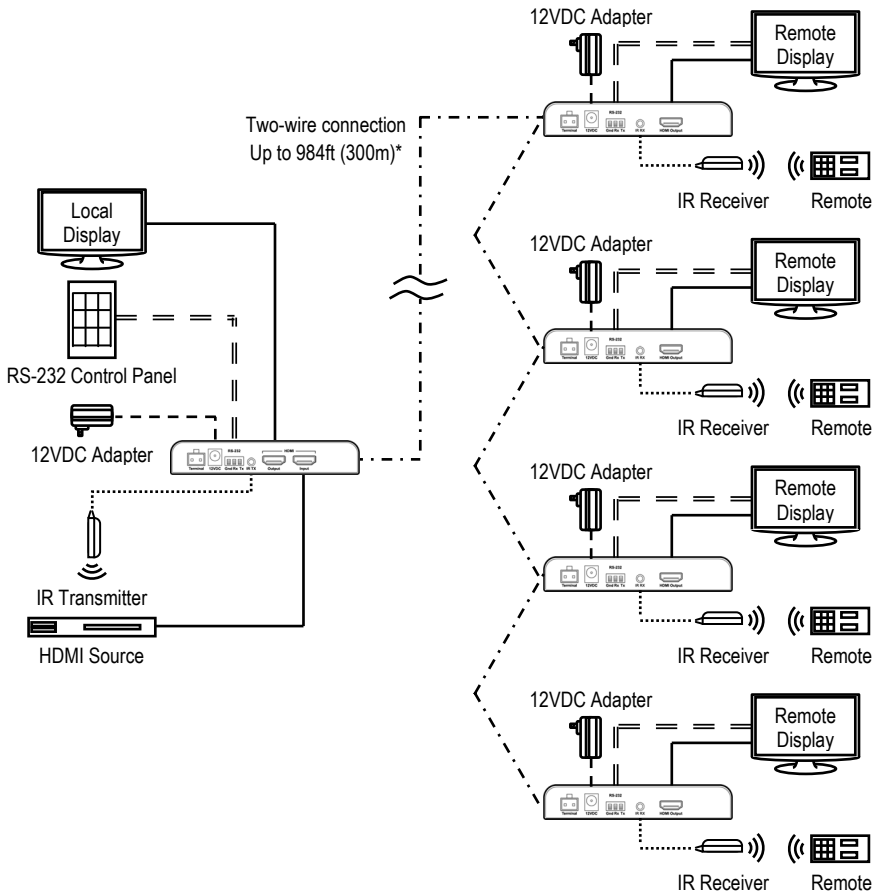
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Sample Applications (Cont.):
One Transmitter, Multiple Receivers (Up to 4), Daisy-Chain Wiring:
NOTE: Do not bundle two-wire cabling when connecting multiple receivers.

Cable Legend:

———— HDMI	– – – – –	Power
– · – · – · Two wires	··············	IR
= = = RS-232		

Two-wire connection Up to 984ft (300m)*

12VDC Adapter — Remote Display — IR Receiver — Remote

Local Display

RS-232 Control Panel

12VDC Adapter

IR Transmitter

HDMI Source

* When connecting multiple receivers, the combined length of two-wire cabling must not exceed the maximum range of 984ft (300m).

Troubleshooting:

HDMI device does not function correctly	- Verify the extender is powered on both sides - Verify the source and the display are powered - Test the two conductor wires between the receiver and transmitter to confirm they are functional - Verify that there are no problems with the HDMI source, HDMI cables, or HDMI display by plugging the source directly into the display using an HDMI cable - Do not bundle cables when connecting multiple receivers
Screen flickering or brief image loss	Switch the source device to a lower HDMI output (e.g., 1080p to 1080i)

Also Available from **SECO-LARM®**:

HDMI Extender over Single Cat5e/6	**HDMI Extender over Single Cat5e/6**	**High-Speed HDMI Cables**
MVE-AH030Q	MVE-AH1E1-01NQ	MC-1130-xxFQ

4K HDMI Splitters	**HDMI Extender over IP**	**Enhanced HDMI Extenders over Single Cat5e/6**
MVD-AH1x-01Q	MVE-AHMPM-01NQ	MVE-AH1H1-0xxQ

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SECO-LARM® U.S.A., Inc.

16842 Millikan Avenue, Irvine, CA 92606
Phone: (949) 261-2999 | (800) 662-0800

Website: www.seco-larm.com
Email: sales@seco-larm.com

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