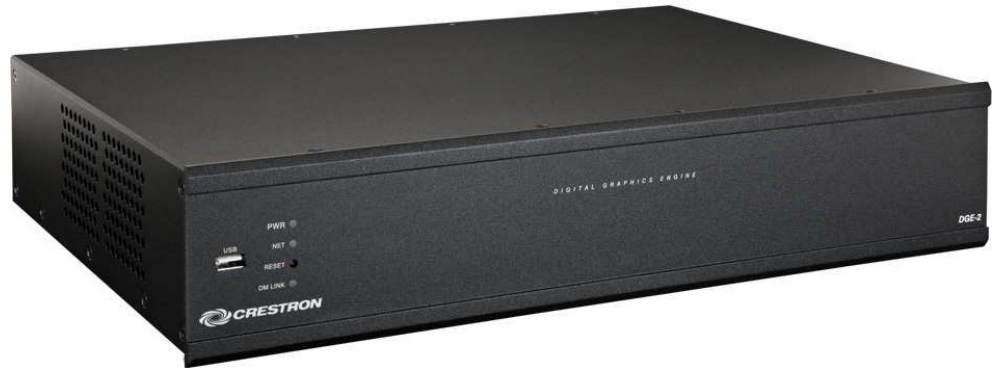


Digital Graphics Engine w/HDMI® and DigitalMedia™ CAT Connectivity

- > Touch screen graphics and HD video processing for V-Panels™
- > Also compatible with third-party touch screens [2]
- > High-definition 24-bit color graphics
- > Smart Graphics™ support
- > Onboard PC applications for Web browsing, playing digital media, and viewing digital documents
- > VNC viewer for remotely accessing and controlling external computers
- > Native H.264 streaming video display
- > Dual-window, full-motion HD video display
- > Allows touch screen viewing of HDCP protected content
- > Handles video sources up to HD 1080p60
- > Handles high-res computer up to UXGA/WUXGA
- > HDMI®, RGB, composite, S-Video, and component video inputs
- > Presentation output via HDMI or DigitalMedia™
- > Built-in annotation
- > Customizable audio feedback
- > Rava™ SIP intercom and phone technology [4]
- > Crestron® IP intercom and wired analog intercom capability [4]
- > HDMI output allows direct connection to a third-party display or touch screen [2]
- > Audio input and output via HDMI, DM®, and balanced line-level
- > Crestron Home® (CH) CAT5 bidirectional audio port
- > USB keyboard/mouse ports
- > Onscreen keyboard and mouse capability
- > High-Speed Ethernet and Cresnet®
- > One-wire DigitalMedia connection to V-Panel or DM switcher [2,3]
- > Two space rack-mountable



Designed for use with a Crestron® V-Panel™ HD Touch Screen Display^[1,2], the DGE-2 Digital Graphics Engine allows for a very streamlined touch screen installation by placing the bulk of the electronics out of sight at the central equipment location. Mounted within an equipment rack, the DGE-2 connects directly to the head end AV sources, switchers, and control network, while the touch screen display can be up to 300 feet (91 meters) away with just a single cable between them^[3].

The DGE-2 delivers the ultimate touch screen experience with advanced high-definition Smart Graphics™, high-performance H.264 streaming video, Rava™ SIP Intercom^[4], onboard multimedia and Web browsing, audio feedback, and built-in annotation. Extensive connectivity is provided for displaying HD video from external AV and computer sources via HDMI®, DigitalMedia™, Ethernet, and various analog connections. Support for HDCP ensures complete compatibility with today's digital sources!

Smart Graphics™

Crestron touch screens use Smart Graphics to deliver the ultimate user experience *and* the ultimate value by enabling the creation of dynamically rich user interfaces with incredible efficiency and unparalleled functionality. Using Smart Graphics, programmers can swiftly integrate fluid gesture-driven controls, animated feedback, metadata, embedded apps, and full-motion video for a deeply engaging and ultra-intuitive touch screen experience.

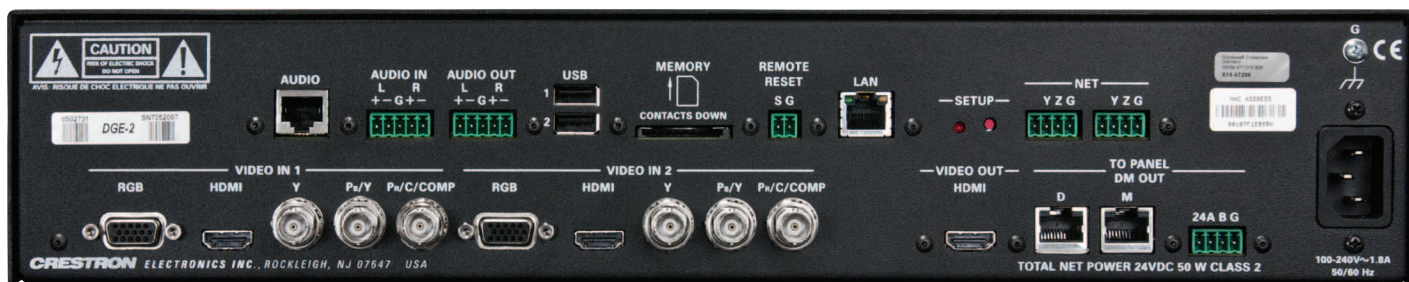
Crestron Smart Graphics include the following enhancements:

- Cool-looking graphical buttons, sliders, knobs, and gauges are intuitive and fun to use.
- Kinetic effects enhance the feeling of realism with lists and toolbars that scroll with momentum at the flick of a fingertip.
- Drag-and-drop objects snap into place offering an easy way to switch sources.
- Dashboard widgets personalize the touch screen with clocks, weather, news, and other information.
- Customizable themes allow a completely different look and feel for every user, event, or season.
- Fully-developed SmartObjects™ enable sophisticated control over complex devices with minimal programming.

Embedded PC Applications

The DGE-2 provides everything you need to enjoy online music and videos, browse the Internet, and even review digital documents, all on your touch screen display without a separate computer. With Microsoft® Internet Explorer® embedded, you have full access to the entire World Wide Web including sites that use Flash® or Java®. Windows Media® Player ensures broad compatibility for playing most types of digital media. Adobe® Acrobat® Reader and Microsoft PowerPoint®, Word, and Excel® document viewers complete the online experience, allowing you to download and view documents and presentations.

DGE-2 Digital Graphics Engine w/HDMI® and DigitalMedia™ CAT Connectivity



DGE-2 – Rear View

In addition, VNC Viewer support delivers enhanced cross-platform interaction with computers over the network or Internet, allowing remote access and control of desktop applications to unleash a host of possibilities for system integration and multimedia presentation.

HD Streaming Video

High-definition streaming video capability makes it possible to view security cameras and other video sources over the network right on the touch screen. Native support for H.264 and MJPEG formats allows the DGE-2 to display live streaming video from an IP camera, a streaming server (Crestron [CEN-NVS200](#)^[1] or similar), a [DigitalMedia](#) switcher, or a [Capture HD](#)® system. And, through its embedded Web browser and media player, it supports a wide variety of other streaming and downloadable video formats, enabling access to all kinds of content from media servers and Web sites like YouTube® and Netflix®^[5].

HDMI® and Analog Video

In addition to handling streaming video, the DGE-2 also provides extensive connectivity for more conventional types of sources including HDMI. The DGE-2 can simultaneously generate two fully-scalable, full-motion video windows, each supporting SD or HD video and high-resolution computer signals from external digital and analog sources.

Input connections include two HDMI, two RGB, and two multi-format analog video. The HDMI inputs support digital HD sources including HDMI, DVI, and DisplayPort Multimode^[6]. The RGB inputs handle high-resolution analog VGA computer sources, and the multi-format video inputs accept analog composite, S-Video, and component HD video sources. External audio signals are handled by the HDMI inputs, and by a single analog line input.

HDCP Support

Industry-leading support for HDCP (High-bandwidth Digital Content Protection) ensures seamless compatibility with content-protected DVD, Blu-ray Disc®, digital HDTV, and multimedia computer sources.

Rava™ SIP Intercom^[4]

[Rava SIP Intercom Technology](#) enables VoIP communication between any two Rava-enabled Crestron touch screens. Rava works over Ethernet, supporting 2-way intercom, video intercom^[7], and paging without requiring any special wiring. VoIP phone capability is also possible through integration with an SIP-compatible IP phone system or SIP server.

The DGE-2 also supports legacy Crestron IP Intercom and Crestron Home® (CH) CAT5 wired intercom. Crestron IP Intercom enables compatibility with older Crestron touch screens that do not support Rava. CH CAT5 wired intercom provides compatibility with the [C2N-IADS30X24](#)^[1] and other CH CAT5 based switchers and processors.

Keyboard/Mouse Options

On-screen keyboard and mouse capabilities enable complete control of the DGE-2's embedded Web browser and other applications, and can also be used to control computers running TouchPoint® Virtual Mouse & Keyboard Software ([VMK-WIN](#)). USB ports are also provided on the front and rear of the DGE-2, and on some V-Panel displays^[1], allowing for the connection of a physical keyboard and mouse.

Real-Time Annotation

Whether conducting a high-level boardroom meeting, training seminar, or watching sports in your home theater, annotation helps put the fine point on any presentation. Native to the DGE-2, annotation provides the ability to illustrate your thoughts on-the-fly, letting you draw and write over high-definition video and computer images, and sketch out ideas on a whiteboard screen, without leaving the podium or your favorite chair while other viewers watch on the big screen.

Remote Annotation

Remote annotation capability allows multiple touch screen users to draw with their fingertips over the same video image or whiteboard screen, enabling enhanced interaction between several participants in a courtroom, classroom, or council chamber.

Presentation Output

Through its HDMI output, or via a [DigitalMedia](#) system, the DGE-2 allows the touch screen image to be sent to additional display devices, allowing videos, PowerPoint presentations, annotation, and other on-screen media to be shared with a live audience.

DigitalMedia™

DigitalMedia (DM®) connectivity opens up new ways to configure a touch screen control system. For instance, using a DM switcher such as the [DM-MD8X8](#)^[1], multiple touch screens can be connected to a single DGE-2, providing a simple, cost-effective way for multiple participants to view and control the same graphical interface. DigitalMedia also provides a versatile means for distributing touch screen content to a larger audience, routing the DGE-2's DM output to feed additional video displays and sound equipment.

DGE-2 Digital Graphics Engine w/HDMI® and DigitalMedia™ CAT Connectivity

V-Panel Connectivity

The DGE-2 features a DM CAT type output, supporting the direct connection to a V-Panel touch screen model **V12** or **V15**^[1]. It can also connect to any DM switcher or receiver equipped with a DM CAT input. A single DigitalMedia cable carries all video, audio, Ethernet, USB, control, and power signals up to 300 ft (91 m) between the V-Panel and DGE-2.^[2,3]

The DGE-2 is also compatible with the **V24R-C** series of V-Panel 24" HD Touch Screen Displays^[1]. A DigitalMedia 8G+™ transmitter (**DM-TX-201-C** or equivalent)^[1] provides the interface between the DGE-2's HDMI output and the DM 8G+™ input of a V24R-C. Alternately, when feeding a V24R-C display through a DM switcher, the DM 8G+ transmitter is not required.

The DGE-2 is also compatible with the **TSD-2020** V-Panel 20" HD Touch Screen Display^[1]. The TSD-2020 can be connected directly to the DGE-2 via HDMI and USB, or through a DigitalMedia CAT Receiver (**DM-RMC-100** or **DM-RMC-100-1**^[1]) for longer wire runs.

SPECIFICATIONS

Graphics Engine

Supports Smart Graphics™ or "traditional" GUI projects

Embedded Applications

Microsoft® Internet Explorer® 7 w/Adobe® Flash® plug-in and Java® Runtime plug-in, Windows Media® Player, Remote Desktop, VNC Viewer, Adobe Acrobat® Reader, WordPad, MS Word Viewer 2007, Excel® Viewer 2007, PowerPoint® Viewer 2007

Languages

Arabic, Chinese Simplified, Chinese Traditional, Croatian, Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hebrew, Hungarian, Icelandic, Indonesian, Italian, Japanese, Korean, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovak, Slovenian, Spanish, Swedish, Turkish

Memory

SDRAM: 2 GB

Flash: 4 GB

Memory Card: Supports SD™ and SDHC™ cards up to 32 GB (not included)

Maximum Project Size: 240 MB

Communications

Ethernet: 10/100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP, for control and console

Cresnet®: Cresnet slave mode for control and console

USB: USB 2.0 host, supports USB HID class devices, touch screens, and USB flash drives

DigitalMedia™: DM CAT, DMNet®, HDCP, EDID, 100 Mbps Ethernet

HDMI®: HDCP, EDID, CEC

Touch Screen Device Support

In addition to Crestron® V-Panel™, compatible touch screen products are offered by (but not limited to) the following manufacturers:

3M® Touch Systems

CyberTouch®

Elo® Touch Solutions

HP® Compaq®

PQ Labs®

Please contact the respective manufacturer for further details. For latest touchscreen and mouse device support information, refer to Crestron True Blue Online Help Answer ID 4666, or contact Crestron True Blue Support.

Video

Input Signal Types: HDMI, DVI^[6], DisplayPort Multimode^[6], RGB, component (YPbPr), S-Video (Y/C), composite

Output Signal Types: DM CAT, HDMI, DVI^[6]

Formats: HDMI, DVI, HDCP content protection support, computer up to UXGA/WUXGA, HD up to 1080p60, NTSC or PAL

Input Resolutions, HDMI, Progressive: 640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz

Input Resolutions, HDMI, Interlaced: 720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30)

Input Resolutions, RGB: 640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x1200@60Hz, 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz

Input Resolutions, Component: 480i, 576i, 480p, 576p, 720p50, 720p60, 1080p24, 1080i25 (1125 lines), 1080i30, 1080p30, 1080p50 (1125 lines), 1080p60

Input Resolutions, Composite and S-Video: 480i, 576i

Output Resolutions, HDMI & DM: 800x600@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1600x1200@60Hz, 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz

Color Depth: 24-bit, 16.7M colors

Streaming/File Formats: H.264 (MPEG-4 part 10 AVC), MJPEG, plus other formats as supported by Windows Media Player

DGE-2 Digital Graphics Engine w/HDMI® and DigitalMedia™ CAT Connectivity

Audio

Features: Internal volume control and audio mixer, Rava™ SIP Intercom^[4], Crestron IP Intercom^[4]

Input Signal Types: HDMI, DisplayPort Multimode^[6], analog stereo, Crestron Home® (CH) CAT5

Output Signal Types: DM CAT, HDMI, analog line-level, CH CAT5
Formats, DM & HDMI: 2ch PCM

Formats, Analog: Stereo 2-Channel

A-D/DA Conversion: 24-bit 48 kHz

Streaming/File Formats: As supported by Windows Media Player

Audio Feedback: MP3 using Smart Graphics, WAV using “traditional” graphics

Connectors

AUDIO: (1) 8-pin RJ45 female, shielded;
Bidirectional CAT5 balanced stereo audio port;
Paralleled to AUDIO IN and AUDIO OUT connectors;
Connects to any other Crestron “CH” CAT5 balanced audio port via CresCAT® cable^[1];
Maximum Cable Length: 1000 feet

AUDIO IN: (1) 5-pin 3.5mm detachable terminal block;
Balanced/unbalanced stereo line-level input;
Input Impedance: 20k Ohms balanced, 10k Ohms unbalanced;
Maximum Input Level: 4 Vrms balanced, 2 Vrms unbalanced

AUDIO OUT: (1) 5-pin 3.5mm detachable terminal block;
Balanced/unbalanced stereo line-level output;
Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced;
Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

USB 1 – 2: (2) USB Type A female;
USB 2.0 host ports for connection of USB HID-compliant mouse/keyboard, touch screen, or USB flash drives

MEMORY: (1) SD memory card slot;
Accepts one SD or SDHC card up to 32 GB for memory expansion

REMOTE RESET: (1) 2-pin 3.5mm detachable terminal block;
Contact closure sensing input for hardware reset

LAN: (1) 8-wire RJ45 female;
10Base-T/100Base-TX Ethernet port

NET: (2) 4-pin 3.5mm detachable terminal blocks;
Cresnet Slave Ports, paralleled

VIDEO IN 1 – 2, RGB: (2) DB15HD female, RGB (VGA) video inputs;
Formats: RGBHV, RGBS, RGsB;
Input Levels: 0.5 to 1.5 Vp-p with built-in DC restoration;
Input Impedance: 75 Ohms;
Sync Input Type: Autodetect RGBHV, RGBS, RGsB;
Sync Input Level: 3 to 5 Vp-p;
Sync Input Impedance: 1k Ohms

VIDEO IN 1 – 2, HDMI: (2) 19-pin Type A HDMI female;
HDMI digital video/audio inputs;
Also supports DVI and DisplayPort Multimode^[6]

VIDEO IN 1 – 2, Y,PB/Y,PR/C/COMP: (2) auto-sensing multi-format analog video inputs, each comprised of (3) BNC female;
Signal Types: Component (YPbPr), S-Video (Y/C), or composite;
Input Level: 1 Vp-p nominal;
Input Impedance: 75 Ohms nominal

VIDEO OUT, HDMI: (1) 19-pin Type A HDMI female;
HDMI digital video/audio output;
Also supports DVI^[6]
Carries same audio and video signals as DM OUT

TO PANEL, DM OUT, D & M: (1) DM CAT output composed of (2) 8-pin RJ45 female, shielded;
Connects to DM CAT input of a V-Panel display, DM switcher, DM receiver, or other DM device via DM-CBL cable^[2,3]

TO PANEL, DM OUT, 24 A B G: (1) 4-pin 3.5mm detachable terminal block, DMNet port;
Connects to DMNet port of a V-Panel display, DM switcher, DM receiver, or other DM device via DM-CBL cable^[2,3]

G: (1) 6-32 screw, chassis ground lug

100-240V~1.8A 50/60Hz: (1) IEC 60320 C14 main power inlet;
Mates with detachable power cord, included

USB (front): (1) USB Type A female;
USB 2.0 host port for connection of a USB HID-compliant mouse/keyboard, touch screen, or USB flash drive

DM CAT Cable Length

Maximum length without, between, before, or after repeater:

150 ft (45 m) for 800x600 @60Hz (V12)
150 ft (45 m) for 1024x768 @60Hz
150 ft (45 m) for 720p
150 ft (45 m) for 1280x768 @60Hz (V15)
150 ft (45 m) for 1280x1024 @60Hz
150 ft (45 m) for 1080p (TSD-2020)
150 ft (45 m) for 1920x1200 @60Hz (V24R-C)
125 ft (38 m) for 1600x1200 @60Hz

Maximum total length using 1 repeater:

300 ft (91 m) for 800x600 @60Hz (V12)
300 ft (91 m) for 1024x768 @60Hz
300 ft (91 m) for 720p
300 ft (91 m) for 1280x768 @60Hz (V15)
300 ft (91 m) for 1280x1024 @60Hz
300 ft (91 m) for 1080p (TSD-2020)
300 ft (91 m) for 1920x1200 @60Hz (V24R-C)
250 ft (76 m) for 1600x1200 @60Hz

Note: A DM 8G+ transmitter is required when used with a V24R-C touch screen display, supporting a maximum cable length of 330 ft (100 m). No repeaters are necessary when used with the V24R-C.

DGE-2 Digital Graphics Engine w/HDMI® and DigitalMedia™ CAT Connectivity

Controls & Indicators

PWR: (1) Green LED, indicates AC line power is connected
NET: (1) Amber LED, indicates communication with Cresnet system
RESET: (1) Recessed miniature pushbutton, resets the DGE
DM LINK: (1) Green LED, indicates connection to a V-Panel or other DM device
LAN (rear): (2) LEDs, green LED indicates Ethernet link status, amber LED indicates Ethernet activity
SETUP (rear): (1) Recessed miniature pushbutton and red LED for Ethernet auto-discovery and TSID

Power Requirements

Main Power: 1.8 Amps @ 100-240 Volts AC, 50/60 Hz
Power Consumption: 120 Watts maximum
Cresnet Power Usage: Does not draw Cresnet power
Available DMNet Power: 50 Watts (2.08 Amps) at 24 Volts DC

Environmental

Temperature: 32° to 113°F (0° to 45°C)
Humidity: 10% to 90% RH (non-condensing)
Heat Dissipation: 410 BTU/Hr

Enclosure

Chassis: Metal, black finish, vented sides, fan-cooled
Faceplate: Metal, black finish, polycarbonate label overlay
Mounting: Freestanding or 2U 19-inch rack-mountable (adhesive feet and rack ears included)

Dimensions

Height: 3.56 in (91 mm);
3.47 in (89 mm) without feet
Width: 17.03 in (433 mm);
19.00 in (483 mm) with ears
Depth: 12.19 in (310 mm)

Weight

8.6 lb (3.9 kg)

MODELS & ACCESSORIES

Available Models

DGE-2: Digital Graphics Engine w/HDMI® and DigitalMedia™ CAT Connectivity

Available Accessories

V12: V-Panel™ 12" VESA Mount HD Touch Screen Display, DM CAT
V12-TILT: V-Panel™ 12" Tilt HD Touch Screen Display, DM CAT
V12-WALL: V-Panel™ 12" Wall Mount HD Touch Screen Display, DM CAT
V15: V-Panel™ 15" VESA Mount HD Touch Screen Display, DM CAT
V15-TILT: V-Panel™ 15" Tilt HD Touch Screen Display, DM CAT
V15-WALL: V-Panel™ 15" Wall Mount HD Touch Screen Display, DM CAT
TSD-2020: V-Panel™ 20" HD Touch Screen Display (May requires a DM-RMC-100 or DM-RMC-100-1)
V24R-C: V-Panel™ 24" VESA Mount HD Touch Screen Display, DM 8G+ (Requires a DM-TX-201-C)
V24R-WALL-C: V-Panel™ 24" Wall Mount HD Touch Screen Display, DM 8G+ (Requires a DM-TX-201-C)
V24RL-C: V-Panel™ 24" Lectern Mount HD Touch Screen Display, DM 8G+ (Requires a DM-TX-201-C)
DM-TX-201-C: DigitalMedia 8G+™ Transmitter (Required for use with V24R-C displays)
DM-CBL-NP: DigitalMedia™ Cable, non-plenum
DM-CBL-P: DigitalMedia™ Cable, plenum-rated
DM-CONN-20: DigitalMedia™ Cable Connectors, 20-Pack
DM-DR: DigitalMedia™ CAT Repeater
CBL Series: Crestron® Certified Interface Cables
CRESNET-NP: Cresnet® Control Cable, non-plenum
CRESNET-P: Cresnet® Control Cable, plenum
CEN-NVS200: Network Video Streamer
SW-VMK-WIN: TouchPoint® Virtual Mouse & Keyboard Software for Windows®

Notes:

1. Item(s) sold separately.
2. The V-Panel touch screen must be equipped with a DM CAT type interface for direct connection to the DGE-2. V-Panel touch screens having a DM 8G+ type interface may be connected to the DGE-2 through a DM 8G+ transmitter ([DM-TX-201-C](#)) or DigitalMedia switcher. Other touch screens may be connected directly to the DGE-2 via HDMI and USB, or remotely through a DM CAT receiver ([DM-RMC-100](#) or [DM-RMC-100-1](#)) or DigitalMedia switcher. Contact your Crestron representative for additional design assistance.
3. For DigitalMedia CAT wiring, use [DM-CBL](#) DigitalMedia Cable. Maximum cable length is 300 ft (91 m). A single DM CAT Repeater (Model [DM-DR](#)) is required for lengths over 150 ft (45 m). All wire, cables, and repeaters sold separately. Refer to the [Crestron DigitalMedia Design Guide, Doc. #4546](#) for DM system design guidelines.
4. Supports [Rava SIP Intercom](#), as well as legacy IP Intercom and wired analog intercom. Supports push-to-talk mode only. Hands-free mode is not supported. Intercom is only supported using a V-Panel model [V12](#) or [V15](#). For Rava or IP Intercom, the V-Panel must connect directly to the DGE-2 via DM CAT with no repeaters or switchers in line.
5. Accessing Netflix content requires an active Netflix account. See www.netflix.com for details.
6. HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. [CBL-HD-DVI](#) interface cables available separately.
7. H.264 compatible IP camera required.

