

- > 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
- > 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™, dual-window HD video, high-performance H.264 streaming video, Rava® SIP Intercom [4], 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 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, rich metadata, embedded apps and



widgets, and full-motion video for a deeply engaging and ultra-intuitive touch screen experience.

Crestron Smart Graphics offers these enhancements and more:

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

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, DM-TXRX-100-STR, or similar [1]), or a DigitalMedia switcher.

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 ^[5]. 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





DGE-2 - Rear View

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 with other Rava-enabled touch screens and door stations. Rava works over Ethernet, supporting 2-way intercom, video intercom [6], 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.

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 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. Longer wire runs are enabled using a DigitalMedia 8G+transmitter and receiver (DM-TX-201-C and DM-RMC-SCALER-C [1]).



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® PO 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 [5], DisplayPort Multimode [5], RGB,

component (YPbPr), S-Video (Y/C), composite Output Signal Types: DM CAT, HDMI, DVI [5]

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

Input Pagalutiana HDMI Programming 640y49

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 Formats: H.264 (MPEG-4 part 10 AVC), MJPEG

Audio

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

Input Signal Types: HDMI, DisplayPort Multimode [5], 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

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 [5]

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 [5]

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.

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

 $\pmb{\text{V12:}} \ \ \text{V-Panel} \\ ^{\text{@}} \ \text{12" VESA Mount HD Touch Screen Display, DM CAT}$

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 require a

DM-RMC-SCALER-C and DM-TX-201-C)

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-CBL-NP: DigitalMedia™ Cable, non-plenum

DM-CBL-P: DigitalMedia™ Cable, plenum-rated

DM-CONN: Connector for DM-CBL

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

DM-TXRX-100-STR: HD Streaming Transmitter/Receiver

SW-VMK-WIN: TouchPoint® Virtual Mouse & Keyboard Software for

Windows®

Notes:

- 1. Item(s) sold separately.
- 2. For direct connection to the DGE-2, the V-Panel touch screen must be equipped with a DM CAT type interface. Other V-Panel touch screens that have a DM 8G+ type interface may be connected to the DGE-2 through a DM 8G+ transmitter (DM-TX-201-C) or DigitalMedia switcher. Touch screens with an HDMI interface may be connected to the DGE-2 either directly via HDMI and USB, or remotely through a DM 8G+ transmitter and receiver (DM-TX-201-C and DM-RMC-SCALER-C) or DigitalMedia switcher. Contact your Crestron representative for additional design assistance.
- For DigitalMedia CAT wiring, use DM-CBL DigitalMedia Cable. The 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 are 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.
- HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. CBL-HD-DVI interface cables available separately.
- 6. H.264 compatible IP camera required.

This product may be purchased from an authorized Crestron dealer. To find a dealer, please contact the Crestron sales representative for your area. A list of sales representatives is available online at www.crestron.com/salesreps or by calling 800-237-2041.

The specific patents that cover Crestron products are listed online at: patents.crestron.com.

Crestron, the Crestron logo, CresCAT, Cresnet, Crestron Home, DigitalMedia, DigitalMedia 8G+, DM, DM 8G+, DMNet, Rava, Smart Graphics, SmartObjects, TouchPoint, V-Panel, and V-Panels are either trademarks or registered trademarks of Crestron Electronics, Inc. in the United States and/or other countries. 3M is either a trademark or registered trademark of 3M Company in the United States and/or other countries. Acrobat, Adobe, and Flash are either trademarks or registered trademarks of Adobe Systems Incorporated in the United States and/or other countries. Blu-ray Disc is either a trademark or registered trademark of Blu-ray Disc Association in the United States and/or other countries. Compag is either a trademark or registered trademark of Compaq Trademark B.V. in the United States and /or other countries. Elo is either a trademark or registered trademark of Elo Touch Solutions, Inc. in the United States and/or other countries. HDMI is either a trademark or registered trademark of HDMI Licensing LLC in the United States and/or other countries. HP is either a trademark or registered trademark of Hewlett-Packard Development Company, L.P. and HPQ Holdings, LLC in the United States and/or other countries. Excel, Internet Explorer, Microsoft, PowerPoint, Windows, and Windows Media are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries. Java is either a trademark or registered trademark of Oracle America, Inc. in the United States and/or other countries. PQ Labs is either a trademark or registered trademark of PQ Labs Inc. in the United States and/or other countries. CyberTouch is either a trademark or registered trademark of Transparent Devices, Inc. in the United States and/or other countries. Other trademarks, registered trademarks, and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Crestron disclaims any proprietary interest in the marks and names of others. Crestron is not responsible for errors in typography or photography. Specifications are subject to change without notice. ©2015 Crestron Electronics, Inc.



