Digital Graphics Engine 200 w/PinPoint™ UX & 4K DM 8G+® Input

> Touch screen graphics engine for the Crestron® TSD-2220 or a third-party USB HID compliant touch screen

> Also supports OSM applications without a touch screen

> PinPoint™ UX feature delivers an automated enterprise meeting room solution managed by Crestron Fusion® Cloud

> HDMI® output supports Full HD 1080p60 and 4K Ultra HD (3840x2160@30Hz) display resolutions

> Displays dual-window or full screen video from HDMI, DM 8G+®, and H.264 streaming inputs [4,10]

> Supports video input resolutions up to 4K UHD and DCI 4K via DM 8G+ or up to 1080p60 via HDMI

> Receives H.264 streaming video signals up to 1080p60/25Mpbs [4]

> DM 8G+ input supports cable lengths up 330 ft (100 m) [8]

> HDCP 2.2 and 1.4 compliant

> Crestron Smart Graphics™

> Built-in annotation capabilities

> Customizable audio feedback

> Built-in web browsing

> On-screen multi-language keyboard

> Customizable screensaver

> USB 2.0 port supports most USB HID compliant touch screens, mice, and keyboards

> High-speed 10/100 Ethernet LAN port

> Enables device control via CEC, IR, and RS-232 [1,2]

> 100-240V universal power pack included

> Compact, surface-mountable form factor fits in tight spaces

The DM-DGE-200-C Digital Graphics Engine transforms an HD or Ultra HD touch screen display into an advanced Crestron® controller. Featuring Crestron Smart Graphics™ technology, the DM-DGE-200-C provides for the creation of a completely custom graphical environment combining advanced controls for audio & video, lighting, shades, HVAC, security, and other functions with dual-window video display, annotation, audio feedback, and web browsing. Its low-profile, surface-mountable design allows for a discreet installation behind a flat-panel display, under a table, or inside a lectern or equipment rack.

Alternately, the DM-DGE-200-C offers an enhanced presentation and productivity solution for meeting rooms and huddle spaces using Crestron PinPoint™ UX technology. Without requiring a touch screen or any other controls or programming, PinPoint UX leverages the room's display to create an intelligent meeting space seamlessly integrated as part of a complete Crestron Fusion® Cloud managed enterprise.

The DM-DGE-200-C features a 4K UHD capable HDMI® output for connection to the display device, and includes a USB HID port for touch, mouse, and/or keyboard input. Additional control ports are provided to enable control of the display device and other equipment.[1,2] A single HDMI input allows an AirMedia® wireless presentation gateway or other high-definition video source to be connected and displayed on screen.

A DM 8G+® input is included to support 4K UHD and DCI 4K sources connected at a DM® transmitter or switcher.[3] Additionally, H.264 streaming video signals can be received over a high-speed Ethernet connection.[4] Ethernet also provides the interface to a Crestron control system, which is required for touch screen and OSM control applications.[5]

PinPoint™ UX

The DM-DGE-200-C takes any meeting room or huddle space display device to a higher level, enhancing its usability while eliminating the need for any other AV or control equipment in the room. Built-in PinPoint UX technology works with Crestron Fusion Cloud and the PinPoint app to provide an intelligent meeting space that greets attendees with useful on-screen information and facilitates BYOD presentation without the need for a touch screen, button panel, or remote.

As attendees enter the room, the personalized welcome screen provides essential details about the current scheduled meeting along with simple instructions to guide presenters through connecting their mobile devices and starting the presentation. As the meeting progresses, gentle notifications appear periodically to indicate how much time is left in the meeting and what's scheduled next for the room. Pop-up messages may also appear prominently on screen, sent from Fusion, in the event of an emergency or other important announcement.
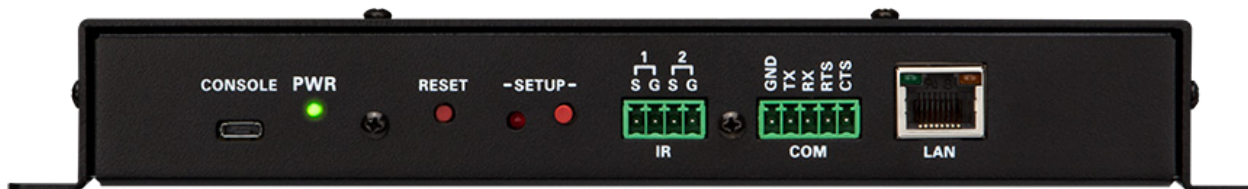
With PinPoint UX, system operation is essentially invisible. Simply connecting a laptop, tablet, or other presentation source causes the video inputs to switch and the display to turn on (if not already on). Sources can be connected via a wired interface or wirelessly via Crestron AirMedia.[6] The display can also be scheduled to turn on and off at set times.

The status of the display and any connected devices is reported to Fusion to enable monitoring and logging of equipment usage, and notification if a device is powered off or disconnected. Complete setup and configuration of PinPoint UX is performed through a simple web browser interface or

DM-DGE-200-C Digital Graphics Engine 200

Top View

Bottom View

through Fusion, with the ability to configure many PinPoint UX devices at once over the network.

Note: PinPoint UX may be used without Crestron Fusion Cloud to provide a simple standalone meeting room presentation solution with customizable welcome screen and automatic operation. PinPoint UX also supports direct integration with Microsoft® Exchange Server.

Touch Screen Interface

For traditional touch screen control applications, the DM-DGE-200-C pairs perfectly with a Crestron TSD-2220 HD Touch Screen Display to deliver a high-definition 21.5" touch screen control panel that's ideal for home automation, corporate multimedia presentation, and command center applications. Third-party touch screens of varying sizes can be used with the DM-DGE-200-C to fulfill a range of control, collaboration, video display, and interactive kiosk solutions. The DM-DGE-200-C currently supports either Full HD 1080p60 (1920x1080@60Hz) or 4K UHD (3840x2160@30Hz) display resolutions.

OSM Interface

On-screen menu (OSM) capability offers an alternative to touch screen control, enabling a fully-customizable control menu to appear on any TV or video display, with simple navigation provided using the same Crestron handheld remote that's controlling the TV. A USB mouse may also be used. The DM-DGE-200-C delivers stunning menu graphics that pop up unobtrusively at the edge of the screen alongside the video image, letting you quickly adjust lighting and climate control settings, lower the shades, check security system status, and lock or unlock the front door without interrupting the movie or TV program you're watching. Detailed alert messages can also appear on screen in case of a security alarm, doorbell, or other event. You can even pop up a live streaming camera window to see who's at the door or coming up the driveway.

Smart Graphics™

The DM-DGE-200-C uses 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 [7]
- A power-saving screensaver that allows display of time, temperature, and other text content at a reduced brightness level
- 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
- A consistent look and feel across touch screens of varying sizes

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 DM-DGE-200-C to display live streaming video from an IP camera, a streaming encoder (Crestron CEN-NVS200, DM-TXRX-100-STR, or similar), or a DigitalMedia™ Switcher.[4]

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4K DM 8G+® Input

Via its DM 8G+ input, the DM-DGE-200-C allows the display of video sources with resolutions up to Ultra HD and DCI 4K. Connectivity for such sources can be provided through a DM 8G+ transmitter or a DM switcher.[3,5,8,9]

HDMI® Input

An HDMI input is included to allow a local HD video source to be connected and displayed. Wireless presentation capability can also be enabled by connecting an AirMedia gateway (AM-101) to the HDMI input, allowing Wi-Fi® enabled laptops and mobile devices to connect wirelessly to the DM-DGE-200-C. Please note that the maximum resolution supported by the HDMI input is 1080p60 (1920x1080@60Hz).[9,10]

HDCP 2.2 Support

Industry-leading support for HDCP 2.2 (High-bandwidth Digital Content Protection) ensures seamless compatibility with content-protected DVD, Blu-ray Disc®, broadcast TV, and Internet TV sources. HDCP 2.2 is supported through the DM 8G+ input and HDMI output, while the HDMI input supports HDCP 1.4.

Web Browsing

Using the DM-DGE-200-C's built-in web browser, it's possible to access online program guides and other web-based services at the touch of a button, allowing enhanced touch screen control of DVRs and other appliances without having to pick up a separate tablet or smartphone. If a device can be controlled or managed through a web browser, it can be integrated into the Crestron system through the DM-DGE-200-C. Of course, the web browser may also be used to simply browse the Internet, watch online videos, and check up on social media.[7]

Multi-Touch Support

Paired with the TSD-2220 or other multi-touch compatible touch screen display, the DM-DGE-200-C affords enhanced capabilities for browsing web pages using multi-touch gestures.

On-Screen Keyboard

An on-screen multi-language keyboard allows for quick entry of passwords, URLs, and text searches.

Built-in Annotation

Whether conducting a high-level boardroom meeting or training seminar, sharing ideas in a huddle space, or watching sports in your home theater, annotation helps put the fine point on any presentation. Native to the DM-DGE-200-C, annotation provides the ability to illustrate your thoughts on-the-fly, letting you draw and write over video and computer images, and sketch out ideas on a whiteboard screen.

Remote annotation capability allows multiple participants, each with a separate touch screen, to draw with their fingertips over the same video image or whiteboard, enabling enhanced collaboration in a classroom, courtroom, or council chamber. Remote annotation works using multiple DM-DGE-200-C's and other Crestron touch screens. Adding a dedicated DM-DGE-200-C to the main display in any room allows the annotation session to be viewed by the entire audience.

Device Controller

The DM-DGE-200-C includes built-in RS-232 and IR control ports to allow for programmable control of the connected display and other devices via the control system. Additional control capability is afforded by harnessing the CEC (Consumer Electronics Control) signal embedded in HDMI. Via its Ethernet connection to the control system, the DM-DGE-200-C provides a gateway for controlling the display device right through its HDMI connection, potentially eliminating the need for any dedicated serial cables or IR emitters.[1,2]

Low-Profile Installation

The DM-DGE-200-C mounts conveniently to a wall, ceiling, or other flat surface. Its compact, surface-mountable form factor fits easily behind a flat panel display, beneath a tabletop, or inside a lectern or other furniture. It can even be attached directly to a single rack rail in the back of an equipment cabinet.

SPECIFICATIONS

Graphics

Graphics Engine: Crestron Smart Graphics
Features: Local and remote annotation, multi-language web browser [7], 10-point multi-touch support, multi-language on-screen keyboard, screensaver, built-in PinPoint UX application
Video Windowing: Scalable dual video windowing, displays any combination of HDMI, DM 8G+, and/or streaming sources [4,10]; *(Note: Only full screen video is supported using PinPoint UX)*
PinPoint UX Logo/Background File Support: GIF, JPEG, PNG

Languages

Smart Graphics: Arabic, Chinese (Simplified), Chinese (Traditional), Czech, Danish, Dutch, English (UK), English (US), Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Portuguese (Brazilian), Romanian, Russian, Slovak, Spanish, Swedish, Thai
On-Screen Keyboard: Arabic, Chinese (Simplified), Croatian, Czech, Danish, Dutch, English (UK), English (US), Finnish, French (Canada), French (Switzerland), German, Hebrew, Hungarian, Italian, Japanese, Norwegian Bokmal, Polish, Portuguese, Russian, Serbian, Spanish, Swedish, Turkish
Web Browser: Arabic, Bulgarian, Catalan, Chinese, Croatian, Czech, Danish, Dutch, English, Filipino, Finnish, French, German, Greek, Hebrew, Hindi, Hungarian, Indonesian, Italian, Japanese, Korean, Latvian, Lithuanian, Norwegian Bokmal, Pashto, Persian, Polish, Portuguese, Romanian, Romansh, Russian, Serbian, Slovak, Slovenian, Spanish, Swedish, Thai, Turkish, Ukrainian, Vietnamese
Crestron Fusion Cloud: Chinese (Simplified), Chinese (Traditional), Danish, Dutch (Netherlands), English (US), English (UK), French, German, Hebrew, Italian, Japanese, Korean, Norwegian, Portuguese (Brazil), Portuguese (Portugal), Russian, Spanish, Swedish

Memory

DDR3 SDRAM: 2 GB
Flash: 4 GB
Maximum Project Size: 1 GB

Communications

Ethernet: 10/100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1X, SNMP, IPv4 or IPv6, web browser setup, Crestron control system integration [5]
USB Host: Supports the Crestron TSD-2220 touch screen display and most third-party USB HID compliant touch screens, mice, and keyboards
USB Device: For computer console (installer setup and firmware update)
RS-232: 2-way device control and monitoring up to 115.2k baud with hardware and software handshaking [1]
IR/Serial: 1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 Volts) up to 19.2k baud [1]
DigitalMedia: DM 8G+, HDCP 2.2, EDID, Ethernet, PoDM sourcing

HDMI, Input: HDCP 1.4, EDID, CEC [2]
HDMI, Output: HDCP 2.2, EDID, CEC [2]

NOTE: Supports management of HDCP and EDID; supports management of CEC between the connected HDMI devices and a control system

Pointing Device Support

The DM-DGE-200-C is compatible with the Crestron TSD-2220 touch screen display and most third-party USB HID compliant touch screens, mice, and keyboards

Streaming Decoder

Video Formats: H.264 (MPEG-4 part 10 AVC), MJPEG
Audio Formats: AAC stereo
Bitrates: Up to 25 Mbps [4]
Resolutions: Up to 1080p60

Video

Input Signal Types: DM 8G+, HDMI (DVI & Dual-Mode DisplayPort compatible [11])
Output Signal Types: HDMI (DVI compatible [11])

Maximum Input Resolutions:

Input Type	Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
DM 8G+	Progressive	4096x2160 DCI 4K or 3840x2160 Ultra HD	24 Hz	4:4:4	30 bit
			30 Hz	4:4:4	24 bit
			30 Hz	4:2:2	36 bit
			60 Hz	4:2:0	24 bit
		2560x1600 WQXGA	60 Hz	4:4:4	36 bit
		1920x1080 HD1080p	60 Hz	4:4:4	36 bit
	Interlaced	1920x1080 HD1080i	30 Hz	4:4:4	36 bit
HDMI	Progressive	1920x1080 HD1080p	60 Hz	4:4:4	36 bit

NOTE: Common input resolutions are shown; other custom input resolutions are supported at pixel clock rates up to 300 MHz for the DM 8G+ input, or 148 MHz for the HDMI input; interlaced video is not supported via the HDMI input

Output Resolutions: 1920x1080@60Hz (1080p60), 3840x2160@30Hz (4K UHD)

NOTE: All video inputs are automatically scaled to the operative output resolution when displayed full screen

Audio

Input Signal Types: DM 8G+, HDMI (Dual-Mode DisplayPort compatible [11]) [9]
Output Signal Types: HDMI
DM Input Formats: Up to 8 channel LPCM
HDMI Input Formats: 2 channel LPCM
HDMI Output Formats: Up to 8 channel LPCM
Audio Feedback Formats: MP3

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Connectors

CONSOLE, USB: (1) USB Micro-A connector, female;
USB computer console port;
Type A to Micro-A USB cable included

IR 1 – 2: (1) 4-pin 3.5 mm detachable terminal block;
Comprises (2) IR/Serial ports [1];
IR output up to 1.1 MHz;
1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud

COM: (1) 5-pin 3.5 mm detachable terminal block;
Bidirectional RS-232 port [1];
Up to 115.2k baud, hardware and software handshaking support

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

HDMI INPUT: (1) HDMI Type A connector, female;
HDMI digital video/audio input [9];
(DVI & Dual-Mode Displayport compatible [11])

HDMI OUTPUT: (1) HDMI Type A connector, female;
HDMI digital video/audio output;
(DVI compatible [11])

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

DM IN: (1) 8-pin RJ45 connector, female, shielded;
DM 8G+ input [3,5,8,9];
PoDM PSE (Power Sourcing Equipment) port

24 VDC 2.0 A: (1) 2.1 x 5.5 mm DC power connector;
24 Volt DC power input;
PW-2420RU power pack included

Ground: (1) 6-32 screw;
Chassis ground lug

Controls & Indicators

PWR: (1) Green LED, indicates operating power supplied via the local power pack, flashes while booting
RESET: (1) Recessed pushbutton for hardware reset
SETUP: (1) Red LED and (1) recessed pushbutton for Ethernet setup
LAN: (2) LEDs, green LED indicates Ethernet link status, amber LED indicates Ethernet activity
ONLINE: (1) Green LED, indicates connection to a control system via Ethernet
HDMI IN & OUT: (2) Green LEDs, indicate HDMI signal presence at the HDMI input or output
DM IN: (2) LEDs, green LED indicates DM link status, amber LED indicates video and HDCP signal presence

Power

Power Pack (included): Input: 1.5 Amps maximum @ 100-240 Volts AC, 50/60 Hz;
Output: 2 Amps @ 24 Volts DC;
Model: PW-2420RU

Power Consumption: 24 Watts (typical without a PoDM PD connected)

Power over DM (PoDM) Sourcing: IEEE 802.3at Type 1 compliant PoDM PSE (Power Sourcing Equipment), supplies up to 15.4 Watts (Class 0-3) to power one PoDM PD (Powered Device)

Environmental

Temperature: 32° to 104° F (0° to 40° C)
Humidity: 10% to 90% RH (non-condensing)
Heat Dissipation: 81.9 BTU/hr

Enclosure

Chassis: Metal, black finish, with (2) integral mounting flanges, fan cooled, vented sides
Mounting: Freestanding, surface mount, or attach to a single rack rail

Dimensions

Height: 7.93 in (203 mm)
Width: 9.29 in (236 mm)
Depth: 1.36 in (35 mm)

Weight

25.6 oz (726 g)

DM 8G+ Maximum Cable Lengths

Cable Type: Resolution:	DM-CBL-ULTRA DM® Ultra Cable	DM-CBL-8G DM 8G® Cable	CAT5e (or better) [8]
1080p60 Full HD	330 ft (100 m)	330 ft (100 m)	330 ft (100 m)
1920x1200 WUXGA			
1600x1200 UXGA			
2048x1080 DCI 2K			
2560x1440 WQHD		230 ft (70 m)	165 ft (50 m)
2560x1600 WQXGA			
3840x2160 Ultra HD			
4096x2160 DCI 4K			

MODELS & ACCESSORIES

Available Models

DM-DGE-200-C: Digital Graphics Engine 200 w/PinPoint™ UX
& 4K DM 8G+® Input

Included Accessories

PW-2420RU: Desktop Power Pack, 24VDC, 2A (50 Watts), 2.1mm,
Universal (Qty. 1 included)

Available Accessories

TSD-2220: 21.5" HD Touch Screen Display
Crestron Fusion® Cloud: Enterprise Management
AM-101: AirMedia® Presentation Gateway
CEN-NVS200: Network Video Server
DM-TXRX-100-STR: HD Streaming Transmitter/Receiver
DM-TX-200-C-2G: Wall Plate DigitalMedia 8G+® Transmitter 200
DM-TX-4K-202-C: 4K DigitalMedia 8G+® Transmitter 202
DM-TX-4K-302-C: 4K DigitalMedia 8G+® Transmitter 302
DM-TX-201-C: DigitalMedia 8G+® Transmitter 201
DM-TX-401-C: DigitalMedia 8G+® Transmitter 401
DM-CBL-ULTRA: DigitalMedia™ Ultra Cable
DM-CONN: Connector for DM-CBL-ULTRA
DM-CBL-ULTRA-PC: DigitalMedia™ Ultra Patch Cable
DM-CBL-ULTRA-RECP: DigitalMedia™ Ultra Keystone RJ45 Jack
DM-CBL-8G: DigitalMedia 8G™ Cable
DM-8G-CONN: Connector for DM-CBL-8G
DM-8G-CONN-WG: Connector with Wire Guide for DM-CBL-8G
CBL Series: Crestron® Certified Interface Cables
CNSP-XX: Custom Serial Interface Cable
IRP2: IR Emitter

Notes:

1. When using the PinPoint UX application without a control system, the onboard RS-232 COM port supports basic on/off power control of a single display device and the IR port is not utilized. The COM and IR ports may all be utilized for fully-customizable control applications through integration with a Crestron control system with custom programming.
2. When using the PinPoint UX application without a control system, CEC may be utilized at the HDMI output to provide basic on/off power control of a single display device. CEC may be utilized through either HDMI port for fully-customizable control applications through integration with a Crestron control system with custom programming.
3. When using the PinPoint UX application without a control system, if a DM 8G+ transmitter is connected, the transmitter's input switching capability is limited to auto-switching mode and any control ports on the transmitter are disabled. Manual switching and control port functionality on the transmitter require a control system with custom programming. Control port functionality is not supported at all on a DM-TX-4K-100-C-1G transmitter.
4. Supports up to two simultaneous streaming video inputs with a maximum combined total bitrate of 25 Mbps. Streaming video input is not supported using the PinPoint UX application unless connected to a Crestron control system with custom programming.
5. When connected to a DM switcher via DM 8G+, the DM-DGE-200-C can obtain its LAN connection through the switcher but does not receive an IP address on the switcher's private network. Thus, it requires an IP address on the customer's LAN.
6. AirMedia wireless presentation support requires a wireless LAN and the addition of an AirMedia presentation gateway, model AM-101, sold separately.
7. Web browsing, weather information, and certain other functions require an Internet connection.
8. The maximum cable length for DigitalMedia 8G+ (DM 8G+) is dependent upon the type of cable, resolution of the video signal, and capabilities of each connected device. Refer to the "DM 8G+ Maximum Cable Lengths" table for a detailed overview. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise which may impact performance at resolutions above 1080p. Refer to the Crestron DigitalMedia Design Guide, Doc. #4546 for DM system design guidelines. All wire, cables, transmitters, and other devices are sold separately.
9. The audio signal from any source connected to the HDMI or DM input is passed through to the HDMI output without processing, downmixing, volume control, or mute control.
10. The HDMI video input signal cannot be downscaled by more than 4x. For instance, a 1920x1080 source signal can be displayed no smaller than 480x270 pixels.
11. HDMI connections require an appropriate adapter or interface cable to accommodate a DVI or Dual-Mode DisplayPort signal. CBL-HD-DVI interface cables are available separately.

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.

Certain Crestron products contain open source software. For specific information, please visit www.crestron.com/opensource.

DIMENSIONAL DRAWING

9.29 in
236 mm

5.87 in
149 mm

7.93 in
203 mm

7.76 in
197 mm

8.78 in
223 mm

1.36 in
35 mm

1.28 in
33 mm