

# DM-DGE-200-C

## Digital Graphics Engine 200 with 4K DM 8G+® Input



- Touch screen graphics engine for the Crestron® TSD-2220 or a third-party USB HID-compliant touch screen
- Supports OSM (on-screen menu) applications without a touch screen
- HDMI® output supports display resolutions up to Full HD 1080p60 and 4K Ultra HD (3840x2160@30Hz)
- Displays dual-window or full screen video from HDMI, DM 8G+, and H.264 streaming sources
- Supports video input resolutions up to 4K UHD and DCI 4K via DM 8G+ or 1080p60 via HDMI
- Receives H.264 streaming video signals up to 1080p60/25 Mbps
- HDCP 2.2 and 1.4 compliant
- Supports Smart Graphics® technology custom user projects
- Built-in annotation capabilities
- Built-in web browsing
- Onboard COM, HDMI, IR/serial, DM 8G+, and high-speed Ethernet ports
- High-speed USB 2.0 port for USB HID-compliant peripheral devices
- Powered via included power pack
- Enterprise-grade security and authentication
- Web or cloud-based configuration
- Compact, surface-mountable form factor

The Crestron® [DM-DGE-200-C](#) digital graphics engine transforms an HD or Ultra HD touch screen display into an advanced Crestron controller. The DM-DGE-200-C features Smart Graphics® technology that may be used to create a custom graphical environment for controlling audio, video, lighting, shades, HVAC, security, and other amenities. The DM-DGE-200-C can also be used for 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.

The DM-DGE-200-C features a 4K UHD capable HDMI® output for connecting to a display device, and includes a USB HID port for touch, mouse, or keyboard input. Additional control ports are provided for controlling the display device and other equipment.<sup>1,2</sup> The HDMI input allows an AirMedia® wireless presentation gateway or other high-definition video source to be connected and displayed on-screen. The DM 8G+® input supports 4K UHD and DCI 4K sources connected at a DM® transmitter or switcher.<sup>3</sup> Additionally, H.264 streaming video signals can be received over a high-speed Ethernet connection, and Ethernet provides an interface to a Crestron control system.<sup>4</sup>

**NOTE:** An Ethernet connection is required for touch screen and OSM control applications.

### Touch Screen Interface

The DM-DGE-200-C can be paired with the [TSD-2220](#) HD touch screen display to deliver a high-definition 21.5 in. touch screen control panel that is ideal for home, corporate, and government applications. The DM-DGE-200-C is also compatible with third-party touch screen displays to support a range of control, collaboration, video display, and interactive kiosk solutions. The DM-DGE-200-C 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, providing a fully-customizable control menu on a television or video display. The control menu is easily navigated via a [Crestron handheld remote](#) or a USB mouse. The DGE-100 delivers high-resolution menu graphics that pop up unobtrusively at the edge of the screen alongside the video source. Control functions such as adjusting lighting or lowering shades can be easily performed without interrupting a television program or video stream. Detailed alert messages can be configured to display on-screen for events such as security alarms or a doorbell ring, and a live-streaming camera window can be accessed to check security cameras.

# DM-DGE-200-C

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### Smart Graphics Technology

Smart Graphics® technology enables programmers to integrate fluid gesture-driven controls, animated feedback, rich metadata, embedded apps and widgets, and full-motion video into their user interfaces. Smart Graphics provides dynamic features such as graphical buttons and sliders, lists and toolbars, drag-and-drop objects, dashboard widgets, screensavers, and customizable themes.<sup>1</sup>

### HD Streaming Video

The DM-DGE-200-C supports high-definition streaming video, making it possible to view security cameras and other video sources over the network via the touch screen display. 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 ([DM-TXRX-100-STR](#) or similar), or a [DigitalMedia™ switcher](#).<sup>4</sup>

### 4K DM 8G+ Input

Via its DM 8G+® input, the DM-DGE-200-C is able to display video sources with resolutions up to Ultra HD and DCI 4K. Connectivity for these video sources can be provided through a DM 8G+ transmitter or a DM® switcher.<sup>3,5,8,9</sup>

### HDMI Input

An HDMI® input is provided for connecting and displaying an HD video source. Wireless presentation is also supported by connecting an [AirMedia® gateway](#) to the HDMI input, allowing for laptops and mobile devices to connect to the DM-DGE-200-C over Wi-Fi® communications.

**NOTE:** The maximum resolution supported by the HDMI input is 1080p60 (1920x1080@60Hz).<sup>9,10</sup>

### HDCP 2.2 Support

Support for HDCP 2.2 (High-bandwidth Digital Content Protection) ensures seamless compatibility with content-protected optical disc, television, and streaming sources.

**NOTE:** HDCP 2.2 is supported through the DM 8G+ input and HDMI output, while the HDMI input supports HDCP 1.4 only.

### Web Browsing

Using its built-in web browser, the DM-DGE-200-C provides access to online program guides and other web-based services, and it can be used to control DVRs and other devices without having to pick up a separate tablet or smartphone.<sup>7</sup>

### Multitouch Support

When paired with the TSD-2220 or another multitouch compatible touch screen display, the DM-DGE-200-C affords enhanced capabilities for browsing web pages using multitouch control.

### On-screen Keyboard

Typing in passwords, URLs, and text searches is facilitated using the on-screen multilanguage keyboard.

### Built-in Annotation

Annotation helps to add another dimension to any presentation. Native to the DM-DGE-200-C, annotation provides the ability to capture ideas in real time, letting you draw and write over a video source or sketch out thoughts on a whiteboard screen.

Remote annotation capability allows multiple participants, each with a separate touch screen, to annotate over the same video image or whiteboard for enhanced collaboration. Remote annotation is possible by using multiple digital graphics engines and touch screens. Adding a dedicated DM-DGE-200-C to the main display in a room allows the annotated session to be viewed by an entire audience.

### Onboard Control Ports

The DM-DGE-200-C provides built-in RS-232 and IR ports for programmable control of the connected display and other devices via a control system. When connected to a control system via Ethernet, the DM-DGE-200-C offers a gateway for controlling the display device directly through its HDMI connection, which reduces the need for any dedicated serial cables or IR emitters. Additional control capabilities are available by using CEC (Consumer Electronics Control) that is embedded within the HDMI signal.<sup>1,2</sup>

### 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.

### Enterprise-Grade Security

The DM-DGE-200-C employs enterprise-grade networking with robust security features such as 802.1X authentication, TLS encryption, HTTPS connectivity, and Active Directory® service integration. These features help to protect your network and to ensure compliance with your organization's network policies. Cloud-based provisioning and management streamlines the process of configuring, monitoring, and updating each DM-DGE-200-C on the network. Additional support for SNMP allows the DM-DGE-200-C to be monitored by your IT administrator.

# DM-DGE-200-C

## Digital Graphics Engine 200 with 4K DM 8G+® Input

### XiO Cloud Service

The DM-DGE-200-C is compatible with the XiO Cloud® service, which is an IoT (Internet of Things) based platform for remotely provisioning, monitoring, and managing Crestron devices across an enterprise or an entire client base. Built on the Microsoft® Azure® software platform and utilizing Microsoft's industry-leading Azure IoT Hub technology, XiO Cloud enables installers and IT managers to deploy and manage thousands of devices simultaneously. Unlike other virtual machine-based cloud solutions, Azure services provide unlimited scalability to suit the ever-growing needs of an enterprise. For more information, visit [www.crestron.com/xiocloud](http://www.crestron.com/xiocloud).

### Specifications

#### Graphics Engine

Smart Graphics® technology, local and remote annotation, multilanguage web browser<sup>7</sup>, 10-point multitouch support, multilanguage on-screen keyboard, screensaver, scalable dual streaming video windowing, displays any combination of HDMI®, DM 8G+®, and streaming sources<sup>1,3</sup>, setup and diagnostics via web browser, on-screen UI, or cloud

#### Languages

|                                  |   |
|----------------------------------|---|
| <b>Smart Graphics Technology</b> | 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   |
| <b>On-screen Keyboard</b>        | 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   |
| <b>Web Browser</b>               | 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 |

#### Memory

|                             |                 |
|-----------------------------|-----------------|
| <b>RAM</b>                  | 2 GB DDR3-SDRAM |
| <b>Flash</b>                | 4 GB            |
| <b>Maximum Project Size</b> | 1 GB            |

#### Communications

|                                 |  |
|---------------------------------|--|
| <b>Ethernet</b>                 | 100 Mbps, autoswitching, autonegotiating, autodiscovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), SNMP, IPv4 or IPv6, Active Directory® authentication, HTTPS web browser setup, XiO Cloud® client, Crestron control system integration <sup>5</sup> |
| <b>USB Host</b>                 | Supports TSD-2220 touch screen display and most third-party USB HID compliant peripherals  |
| <b>USB Device</b>               | For computer console (installer setup and firmware updates)  |
| <b>RS-232</b>                   | 2-way device control and monitoring up to 115.2k baud with hardware and software handshaking <sup>1</sup>  |
| <b>IR/Serial</b>                | 1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0–5V) up to 19200 baud <sup>1</sup>  |
| <b>DigitalMedia™ Technology</b> | DM 8G+, HDCP 2.2, EDID, Ethernet, PoDM (Power over DM®) sourcing   |
| <b>HDMI, Input</b>              | HDCP 1.4, EDID, CEC <sup>2</sup>   |
| <b>HDMI, Output</b>             | HDCP 2.2, EDID, CEC <sup>2</sup>   |

#### Pointing Device Support

Compatible with the TSD-2220 touch screen display and most third-party USB HID compliant touch screens, mice, and keyboards

#### Streaming Decoder

|                      |                                   |
|----------------------|-----------------------------------|
| <b>Video Formats</b> | H.264 (MPEG-4 part 10 AVC), MJPEG |
| <b>Audio Formats</b> | AAC stereo                        |
| <b>Bitrates</b>      | Up to 25 Mbps <sup>4</sup>        |
| <b>Resolutions</b>   | Up to 1080p60                     |

#### Video

|                            |  |
|----------------------------|--|
| <b>Input Signal Types</b>  | DM 8G+, HDMI (DVI and dual-mode DisplayPort™ signal compatible <sup>11</sup> ) |
| <b>Output Signal Types</b> | HDMI (DVI compatible <sup>11</sup> )   |

# DM-DGE-200-C

## Digital Graphics Engine 200 with 4K DM 8G+® Input

### 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 HD 1080p                     | 60 Hz      | 4:4:4          | 36 bit      |
|            | Interlaced      | 1920x1080 HD 1080i                     | 30 Hz      | 4:4:4          | 36 bit      |
| HDMI®      | Progressive     | 1920x1080 HD 1080p                     | 60 Hz      | 4:4:4          | 36 bit      |

**NOTE:** Common input resolutions are provided in the table above. 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 scaled automatically to the operative output resolution when displayed full screen.

### Audio

|                               |   |
|-------------------------------|---|
| <b>Input Signal Types</b>     | DM 8G+, HDMI (dual-mode DisplayPort compatible <sup>11</sup> ) <sup>9</sup> |
| <b>Output Signal Types</b>    | HDMI  |
| <b>DM Input Formats</b>       | Up to 8 channel LPCM  |
| <b>HDMI Input Formats</b>     | 2 channel LPCM  |
| <b>HDMI Output Formats</b>    | Up to 8 channel LPCM  |
| <b>Audio Feedback Formats</b> | MP3   |

### Connectors

|                      |  |
|----------------------|--|
| <b>CONSOLE (USB)</b> | (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<sup>1</sup>;  
IR output to 1.1 MHz;  
1-way serial TTL/RS-232 (0-5V) up to 19200 baud

### COM

(1) 5-pin 3.5 mm detachable terminal block;  
Bidirectional RS-232 port<sup>1</sup>;  
Up to 115.2k baud, hardware and software handshaking support

### LAN

(1) 8-pin RJ-45 connector, female;  
100BASE-TX Ethernet port

### HDMI INPUT

(1) HDMI Type A connector, female;  
HDMI digital video/audio input<sup>9</sup>;  
DVI and dual-mode DisplayPort signal compatible<sup>11</sup>

### HDMI OUTPUT

(1) HDMI Type A connector, female;  
HDMI digital video/audio output<sup>9</sup>;  
DVI compatible<sup>11</sup>

### USB

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

### DM IN

(1) 8-pin RJ-45 connector, female;  
DM 8G+ input<sup>3,5,8,9</sup>, PoDM PSE (Power over DM Power Sourcing Equipment) port

### 24VDC 0.75A

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

### G

(1) 6-32 screw;  
Chassis ground lug

### Controls and Indicators

#### PWR

(1) Green LED, indicates operating power is present via the local power pack;  
Flashes while the device is booting

#### RESET

(1) Recessed push button for hardware reset

#### SETUP

(1) Red LED and (1) recessed push button for Ethernet setup

#### LAN

(1) Green LED and (1) amber LED;  
Green LED indicates the Ethernet link status;  
Amber LED indicates Ethernet activity

#### ONLINE

(1) Green LED, indicates a connection is established to a control system via Ethernet

# DM-DGE-200-C

## Digital Graphics Engine 200 with 4K DM 8G+® Input

**HDMI IN/OUT** (2) Green LEDs, indicate the presence of an HDMI signal at the HDMI input or output, respectively

**DM IN** (1) Green LED and (1) amber LED; Green LED indicates the DM link status; Amber LED indicates video and HDCP signal presence

### Power

**Power Pack (Included)** Input: 1.5A (maximum) @ 100–240VAC, 50/60 Hz; Output: 2A @ 24VDC; Model: PW-2420RU

**Power Consumption** 24 W (typical, without a PoDM PD connected)

**PoDM (Power over DM) Sourcing** IEEE 802.3at Type 1 compliant PoDM PSE (Power Sourcing Equipment), supplies up to 15.4 W (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 (noncondensing)

**Heat Dissipation** 81.9 BTU/hr

### Enclosure

**Chassis** Metal, black finish, (2) integral mounting flanges, 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)

### Compliance

**Regulatory Model: DM-DGE-200-C;** UL® Listed for US and Canada, IC, CE, FCC Part 15 Class B digital device

To search for product certificates, refer to [support.crestron.com/app/certificates](http://support.crestron.com/app/certificates).

### DM 8G+ Maximum Cable Lengths

| Resolution         | DM-CBL-ULTRA DM Ultra Cables | DM-CBL-8G DM 8G® Cables | CAT5e (or better) |
|--------------------|------------------------------|-------------------------|-------------------|
| 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   |                              |                         |                   |

### Model

#### DM-DGE-200-C

Digital Graphics Engine 200 with 4K DM 8G+® Input

### Included Accessories

#### PW-2420RU

Desktop Power Pack, 24VDC, 2.5A, 2.1 mm

### Available Accessories

For a list of available accessories, visit the [DM-DGE-200-C](http://DM-DGE-200-C) product page.

#### Notes:

1. The COM and IR ports can be used for fully-customizable control applications via integration with a Crestron control system with custom programming.
2. CEC may be utilized through either HDMI port for fully-customizable control applications via integration with a Crestron control system with custom programming.
3. Manual switching and control port functionality on the transmitter require a control system with custom programming. Control port functionality is not supported on [DM-TX-4K-100-C-1G](http://DM-TX-4K-100-C-1G) transmitters.
4. The DM-DGE-200-C supports up to two simultaneous streaming inputs with a maximum combined total bitrate of 25 Mbps.

# DM-DGE-200-C

## Digital Graphics Engine 200 with 4K DM 8G+<sup>®</sup> Input

5. When connected to a DM<sup>®</sup> switcher via the DM 8G+<sup>®</sup> input, 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. Therefore, the device IP address must be set on the customer LAN.
6. AirMedia<sup>®</sup> wireless presentation support requires a wireless LAN and the addition of an [AirMedia gateway](#) (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 in the Specifications section 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 System Design Guide](#) 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<sup>®</sup> or DM input is passed through to the HDMI output without processing, downmixing, volume control, or mute control.
10. The HDMI input signal cannot be downscaled more than 4 times. 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 select authorized Crestron dealers and distributors. To find a dealer or distributor, please contact the Crestron sales representative for your area. A list of sales representatives is available online at [www.crestron.com/How-To-Buy/Find-a-Representative](http://www.crestron.com/How-To-Buy/Find-a-Representative) or contact us for additional information by visiting [www.crestron.com/contact/our-locations](http://www.crestron.com/contact/our-locations) for your local contact.

The original language version of this document is U.S. English. All other languages are a translation of the original document.

The product warranty can be found at [www.crestron.com/warranty](http://www.crestron.com/warranty).

The specific patents that cover Crestron products are listed online at [www.crestron.com/legal/patents](http://www.crestron.com/legal/patents).

Certain Crestron products contain open source software. For specific information, please visit [www.crestron.com/opensource](http://www.crestron.com/opensource).

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## HDMI

Specifications are subject to change without notice.

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