



Canvas 4 - Model 0

No Built-In I/O

MAN1366_00_EN_CV4_Mod0



Part Number: HE-CV-035C-00

User Manual and Add-Ons

Find the documents via the [Documentation Search](#).

Part #	Description
MAN1364	Canvas 4 User Manual
HE-BAT013	CR2032 Lithium Battery
HE-XCK	Programming Cables
HE-XDAC	2 channel Analog Output I/O option kit, selectable 0-10V, $\pm 10V$, 4-20mA.
HE-XDAC107	4 channel Analog Output I/O option kit, selectable 0-10V, $\pm 10V$, 4-20mA.
HE-XKIT	Blank I/O Board
HE200MJ2TRM	Adapter, RJ45 (8P8C) male to 8-position terminal strip.
HE-FBD001	Ferrite core for filtering out electrical noise.

Backup Battery

The Canvas 4 uses a Renata CR2032 lithium battery to run the Real Time Clock. The battery life is 7-10 years.

For more information, see **MAN1364**.

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TECHNICAL SPECIFICATIONS

General Specifications

Required Power (Inrush)	2A for < 1ms @ 24VDC, DC switched
Heater Option* (add a -22 to model #)	Add 250mA with heater* (24VDC)
Primary Power Range	10 - 30VDC; 10 - 24VDC (with heater option*)
Maximum Current	500mA, Class 2; 750mA, Class 2 (with heater option*)
Relative Humidity	5 to 95%, Non-Condensing
Clock Accuracy	± 20 ppm maximum at 25°C (± 1 min/month)
Relative Humidity	5 to 95%, Non-Condensing
Clock Accuracy	± 20 ppm maximum at 25°C (± 1 min/month)
Real Time Clock	Battery Backed, Rechargeable Lithium
Operating Temperature	-10°C to +60°C; -40°C to +60°C (with heater option*)
Storage Temperature	-20°C to +60°C
Weight	12 oz/340g (without I/O)
Altitude	Up to 2000m
Pollution Degree	Degree 2 Rating
Certifications (UL/CE)	North America or Europe
Enclosure Type	1, 3R, 4, 4X, 12, 12K & 13

Backlight

HE-CV-035C-00 (Model 0)	Typical Power Backlight at 100%	239mA @ 10V (2.39W); 106mA @24VDC (2.54W)
	Power Backlight at 50%	81mA @ 24VDC (1.94W)
	Power Backlight Off	79mA @ 24VDC (1.90W)
HE-CV-035C-02 (Model 2)	Typical Power Backlight at 100%	351mA @ 10VDC (3.51W); 163mA @ 24VDC (3.912W)
	Power Backlight at 50%	138mA @ 24VDC (3.31W)
	Power Backlight Off	136mA @24VDC (3.26W)
HE-CV-035C-03 (Model 3)	Typical Power Backlight at 100%	248mA @10VDC (2.48W); 158mA @24VDC (3.792W)
	Power Backlight at 50%	133mA @24VDC (3.19W)
	Power Backlight Off	131mA @24VDC (3.14W)
HE-CV-035C-04 (Model 4)	Typical Power Backlight at 100%	257mA @10VDC (2.57W); 174mA @24VDC (4.176W)
	Power Backlight at 50%	149mA @ 24VDC (3.58W)
	Power Backlight Off	147mA@24VDC (3.53W)
HE-CV-035C-05 (Model 5)	Typical Power Backlight at 100%	423mA@10VDC(4.23W); 224mA @24VDC (5.376W)
	Power Backlight at 50%	199mA @24VDC (4.78W)
	Power Backlight Off	197mA@24VDC (4.73W)
HE-CV-035C-06 (Model 6)	Typical Power Backlight at 100%	407mA @ 10VDC (4.07W); 192mA @24 VDC (4.608W)
	Power Backlight at 50%	167mA @24VDC (4.01W)
	Power Backlight Off	165mA @ 24VDC (3.96W)

Control and Logic

Control Language Support	Register-Based Advanced Ladder Logic; Variable-Based Advanced Ladder; IEC 61131-3 Languages
Logic Program Size	2MB, maximum
Scan Rate	0.02 ms/kB
Digital Inputs	2048
Digital Outputs	2048
Analog Inputs	512
Analog Outputs	512
General Purpose Registers	50,000 (words) Retentive 16,384 (bits) Retentive 16,384 (bits) Non-retentive

User Interface

Display Type	3.5" TFT Color
Screen Brightness	640cd/m ² (nits)
Resolution	QVGA (320 x 240)
Color	16-bit (65,535)
User-Program. Screens	1023 max pages; 1023 objects per page
Backlight	LED - 50,000 hour life
Brightness Control	0-100% via System Register %SR57
Number of Keys	5

Connectivity

Serial Ports	1 RS-232 and 1 RS-485 on singular Modular Jack
USB mini-B	USB 2.0 (480Mbps) Programming & Data Access
USB A (500mA max)	USB 2.0 (480Mbps) for USB flash drives (2TB)
CAN Port Isolated 1kV	Remote I/O, Peer-to-peer Comms, Cscape
CAN Protocols	CsCAN, CANopen, DeviceNet, J1939
Ethernet	10/100 Mb (Auto-MDX)
Ethernet Protocols	TCP/IP, Modbus TCP, FTP, SMTP, EGD, ICMP, ASCII
Remote I/O	OCS-I/O
Removable Memory	microSD, SDHC, SDXC (in FAT32 format), support for 32GB maximum. Application Updates, Datalogging

USB Webcams

USB Webcams supported should support the UVC (USB Video class) protocol for the OCS to be able to display video. Most USB based video devices support this today. Special feature such as zoom and high definition are not supported by the OCS.

CONTROLLER OVERVIEW

Overview of OCS

1. Touchscreen
2. Function Keys
3. High Capacity microSD Slot
4. DIP Switches
5. USB Mini-B Port
6. Wide-Range DC Power
7. CAN Port
8. Ethernet LAN Port
9. USB A Port
10. RS-232/RS-485 Serial Port

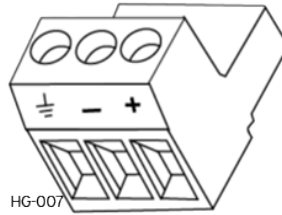
NOTE: See "Precautions" on page 10 about USB and grounding.



HG-745

Power Wiring

NOTE: The Primary Power Range is 10VDC to 30VDC.



Primary Power Port Pins		
PIN	Signal	Description
1	Ground	Frame Ground
2	DC-	Input Power Supply Ground
3	DC+	Input Power Supply Voltage

DC Input/Frame

- Solid/Stranded Wire: 12-24 AWG (2.5-0.2mm²)
- Strip length: 0.28" (7mm)
- Torque, Terminal Hold-Down Screws: 4.5 – 7 in•lbs (0.50 – 0.78 N•m)
- DC- is internally connected to I/O V-, but is isolated from CAN V-. A Class 2 power supply must be used.

Power UP

1. **OPTION:** Attach ferrite core with a minimum of two turns of the DC+ and DC- signals from the DC supply that is powering the controllers.

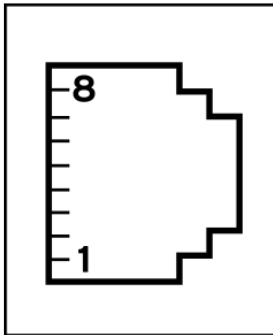


2. Connect to earth ground.
3. Apply recommended power.

COMMUNICATIONS

Serial Communication

MJ1/2 Serial Ports

 HG-008	2 Serial Ports on 1 Module Jack (8 position) MJ1: RS-232 w/Full Handshaking MJ2: RS-485 Half-Duplex		MJ1 Pins		MJ2 Pins	
		PIN	SIGNAL	DIRECTION	SIGNAL	DIRECTION
		8	TXD	OUT	--	--
		7	RXD	IN	--	--
		6	0V	COMMON	0V	COMMON
		5	+5V @ 60mA	OUT	+5V @ 60mA	OUT
		4	RTS	OUT	--	--
		3	CTS	IN	--	--
		2	--	--	RX-/TX-	IN/OUT
		1	--	--	RX+/TX+	IN/OUT

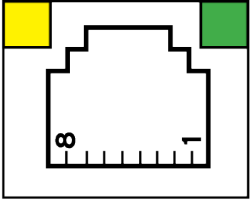
NOTE: Attach optional [ferrite core](#) with a minimum of two turns of serial cable.

DIP Switches

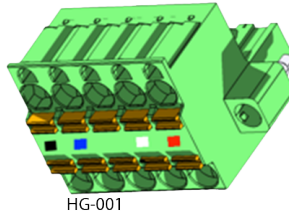
DIP Switches			
SWITCH	NAME	FUNCTION	DEFAULT
1	MJ3 RS-485 Termination	ON = Terminated	OFF
2	Spare	Always OFF	OFF
3	Factory Use	Always OFF	OFF

The DIP switches are used to provide a built-in termination to the MJ2 port if needed. The termination for these ports should only be used if this device is located at either end of the multidrop/daisy-chained RS-485 network.

Ethernet

 HG-048	Green LED indicates link - when illuminated, data communication is available. Yellow LED indicates activity - when flashing, data is in transmission.
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CAN Communications

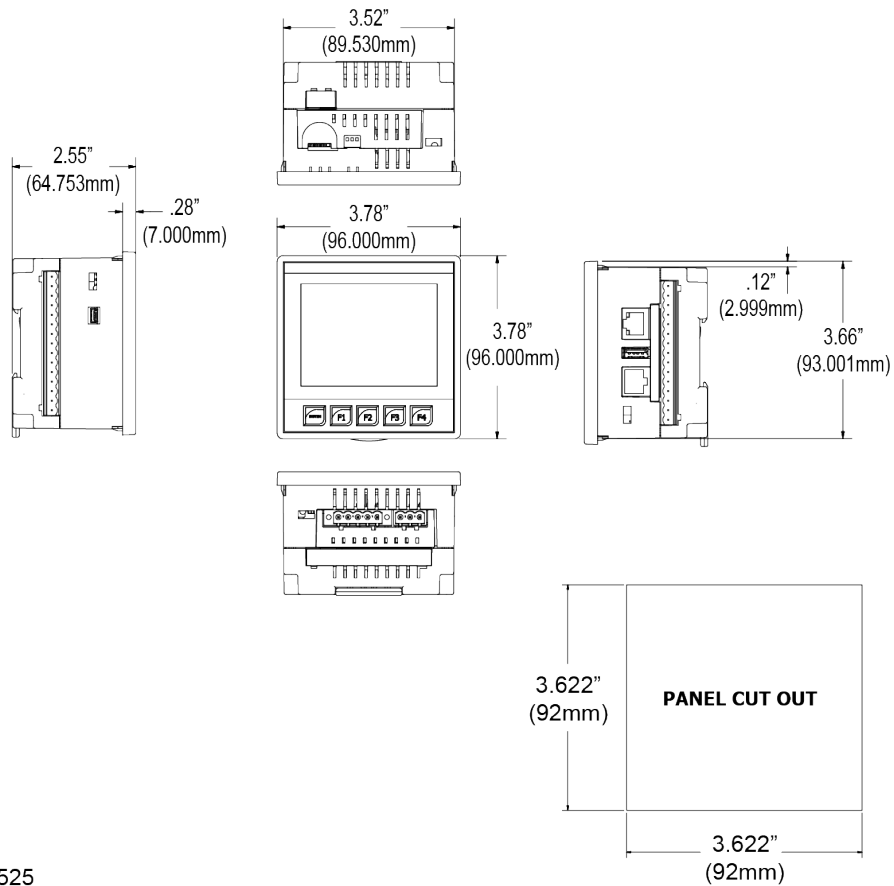


CAN Network & Power Port Pin Assignment		
Pin	Signal	Signal Description
1	V-	CAN Ground – Black
2	CN_L	CAN Data Low – Blue
3	SHLD	Shield Ground – None
4	CN_H	CAN Data High – White
5	V+ (NC)	No Connect – Red

- **Solid/Stranded Wire:** 12-24 AWG (2.5-0.2mm²).
- **Strip Length:** 0.28" (7mm).
- Locking spring-clamp, two-terminators per conductor.
- **Torque, Terminal Hold-Down Screws:** 4.5 – 7 in•lbs (0.50 – 0.78 N•m).
- V+ pin is not internally connected, the SHLD pin is connected to Earth ground via a 1MΩ resistor and 10 nF capacitor.

DIMENSIONS & INSTALLATION

Canvas 4 Dimensions



HG-525

* ± 0.1 mm cutout tolerance

Installation Information

- The Canvas 4 utilizes a clip installation method to ensure a robust and watertight seal to the enclosure. Please follow the steps below for the proper installation and operation of the unit.
- This equipment is suitable for Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.
- Digital outputs shall be supplied from the same source as the operator control station.
- Jumpers on connector JP1 shall not be removed or replaced while the circuit is live unless the area is known to be free of ignitable concentrations of flammable gases or vapors.
- The USB ports are for operational maintenance only. Do not leave permanently connected unless area is known to be non-hazardous.

Installation Procedure

1. Carefully locate an appropriate place to mount the OCS. Be sure to leave enough room at the top of the unit for insertion and removal of the microSD™ card.
2. Carefully cut the host panel per the diagram, creating a 92mm x 92mm ± 0.1 mm opening into which the OCS may be installed. If the opening is too large, water may leak into the enclosure, potentially damaging the unit. If the opening is too small, the OCS may not fit through the hole without damage.
3. Remove any burrs and or sharp edges and ensure the panel is not warped in the cutting process.
4. Remove all Removable Terminals from the OCS. Insert the OCS through the panel cutout (from the front). The gasket must be between the host panel and the OCS.
5. Install and tighten the four mounting clips (provided in the box) until the gasket forms a tight seal.

NOTE: Max torque is 0.8 to 1.13 N•m (7 to 10 in•lbs).

6. Reinstall the I/O Removable Terminal Blocks. Connect communications cables to the serial port, USB ports, Ethernet port, and CAN port as required.

SAFETY & MAINTENANCE

Warnings

1. To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.
2. To reduce the risk of fire, electrical shock, or physical injury, it is strongly recommended to fuse the voltage measurement inputs. Be sure to locate fuses as close to the source as possible.
3. Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.
4. In the event of repeated failure, do **NOT** replace the fuse again as repeated failure indicates a defective condition that will **NOT** clear by replacing the fuse.
5. Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment.
6. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.
7. **WARNING:** Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.
8. **WARNING:** EXPLOSION HAZARD- Batteries must only be changed in an area known to be non-hazardous.
9. **WARNING:** Do not disconnect while circuit is live unless area is known to be non-hazardous.

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Precautions

All applicable codes and standards need to be followed in the installation of this product. Adhere to the following safety precautions whenever any type of connection is made to the module:

1. Connect the safety (earth) ground on the power connector first before making any other connections.
2. When connecting to the electric circuits or pulse-initiating equipment, open their related breakers.
3. Do NOT make connection to live power lines.
4. Make connections to the module first; then connect to the circuit to be monitored.
5. Route power wires in a safe manner in accordance with good practice and local codes.
6. Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
7. Ensure hands, shoes, and floor are dry before making any connection to a power line.
8. Make sure the unit is turned OFF before making connections to terminals.
9. Make sure all circuits are de-energized before making connections.
10. Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.
11. Use copper conductors in field wiring only, 60/75°C.

12. Use caution when connecting controllers to PCs via serial or USB. PCs, especially laptops, may use “floating power supplies” that are ungrounded. This could cause a damaging voltage potential between the laptop and controller. Ensure the controller and laptop are grounded for maximum protection. Consider using a USB isolator due to voltage potential differences as a preventative measure.

Technical Support

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