Canvas 10 Datasheet - Model 0

No Built-In I/O

MAN1395_01_EN_CV10D_Mod0

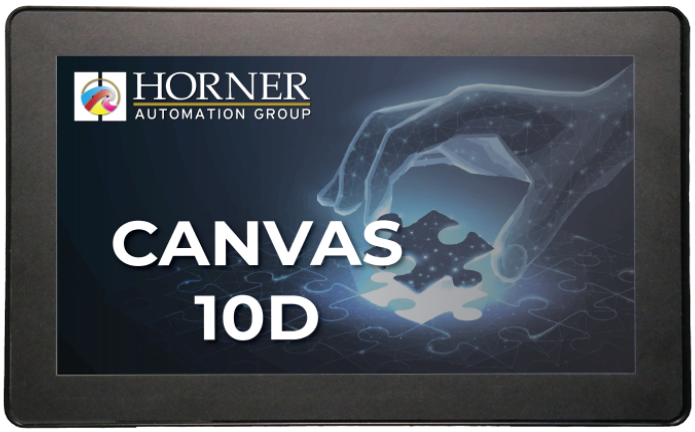

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Table of Contents

Part Number: HE-CV-101D-00

User Manual and Add-Ons

Find the documents via the Documentation Search.

Part #	Description
MAN1393	Canvas 10D User Manual
HE-XCK	Programming Cable Kit
HE-PRGA2C	USB-A to USB-C programming cable
HE-PRGC2C	USB-C to USB-C programming cable
HE-XDAC007	2 channel Analog Output I/O option kit, selectable 0-10V, ±10V, and 4-20mA
HE-XDAC107	4 channel Analog Output I/O option kit, selectable 0-10V, ±10V, and 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

Battery Maintenance

The Canvas 10D OCS uses a packaged lithium coin cell battery to run the Real Time Clock. The battery life is 7-10 years.

For more information, see **MAN1393**.

TECHNICAL SPECIFICATIONS

General Specifications

Inrush Current	25A for < 1ms @ 24VDC, DC switched
Primary Voltage Range	10 - 30VDC
Maximum Current	1100mA, Class 2
Clock Accuracy	± 20 ppm maximum at 25°C (±1 min/month)
Real Time Clock	Battery Backed, Lithium Coin
Operating Temperature	-10°C to +60°C
Storage Temperature	-20°C to +60°C
Relative Humidity	5 to 95%, Non-Condensing
Weight	2.7 lbs.
Altitude	Up to 2000m
Rated Pollution Degree	Degree 2 Rating
Certifications (UL/CE)	North America or Europe
Enclosure Type	1, 3R, 4, 4X, 12, 12K & 13

Backlight

HE-CV-101D-00 (Model 0)	Typical Power Backlight at 100%	870mA@10V(8.7W);379mA@24VDC(9.096W)
	Power Backlight at 50%	224mA@24VDC(5.38W)
	Power Backlight Off	214mA@24VDC(5.14W)
HE-CV-101D-02 (Model 2)	Typical Power Backlight at 100%	1001mA@10V(10.01W);436mA@24VDC(10.464W)
	Power Backlight at 50%	281mA@24VDC(6.74W)
	Power Backlight Off	271mA@24VDC(6.50W)
HE-CV-101D-03 (Model 3)	Typical Power Backlight at 100%	898mA@10V(8.98W);431mA@24VDC(10.344W)
	Power Backlight at 50%	276mA@24VDC(6.62W)
	Power Backlight Off	266mA@24VDC(6.38W)
HE-CV-101D-04 (Model 4)	Typical Power Backlight at 100%	907mA@10V(9.07W);447mA@24VDC(10.728W)
	Power Backlight at 50%	292mA@24VDC(7.01W)
	Power Backlight Off	282mA@24VDC(6.77W)
HE-CV-101D-05 (Model 5)	Typical Power Backlight at 100%	1073mA@10V(10.73W);497mA@24VDC(11.928W)
	Power Backlight at 50%	342mA@24VDC(8.21W)
	Power Backlight Off	332mA@24VDC(7.97W)
HE-CV-101D-06 (Model 6)	Typical Power Backlight at 100%	1057mA@10V(10.57W);465mA@24VDC(11.16W)
	Power Backlight at 50%	310mA@24VDC(7.44W)
	Power Backlight Off	300mA@24VDC(7.20W)

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	0.02ms/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	10.1” 65k Color; 300 cd/m² (nits)
Resolution	1024x600 pixels
Backlight Type	White LED
Backlight Lifetime	50,000 hrs to reach 50% brightness
Backlight Control	0-100% by system register %SR57
User-Programmable Screens / Pages	1023
Number of Objects / Screens	1023
Screen Memory	17MB
Keypad	Touch screen
Tactile Feedback	Optional Sound
Number of Keys	System, seven function keys, and hide key

Connectivity

Serial Ports	1 RS-232 & 1 RS-485 on first Modular Jack (MJ1/2); 1 RS-232 or 1 RS-485 on second Modular Jack (MJ3)
USB C	PD Capable Port Required for USB-C Power. USB 2.0 (480Mbps) Programming & Data Access, & Device Power
USB A (1000mA max)	USB 2.0 (480Mbps) for USB flash drives (≤2TB)
CAN Port (Independently Isolated)	Remote I/O, Peer-to-peer Comms, Cscape
CAN Protocols	CsCAN, CANopen, DeviceNet, J1939
Ethernet	Two 10/100 Mbps, Auto-MDX
Ethernet Protocols	TCP/IP, Modbus TCP, FTP, SMTP, EGD, ICMP, ASCII
Remote I/O	SmartRail, SmartStix, SmartBlock, SmartMod, OCS-I/O
Removable Memory	microSD, SDHC, SDXC (Formatted as FAT32)
Maximum Capacity	Support for 32GB max.
Functions	Application Updates, Datalogging
Audio	Line out and microphone in

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 features such as zoom and high definition are not supported by the OCS.

CONTROLLER OVERVIEW

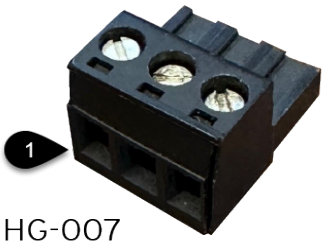
Overview of OCS

1. Touchscreen	
2. microSD: Data Storage	9. Power In
3. USB Type C 2.0 Port	10. LAN2 Port
4. CAN 2 Port	11. LAN1 Port
5. MJ1/2 Port	12. Audio Line Out/Mic In
6. DIP Switches	13. USB Type A 2.0 Port
7. MJ3 Port	14. OCS-I/O Port (for future support)
8. CAN 1 Port	

NOTE: 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.

Power Wiring

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



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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 either 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.

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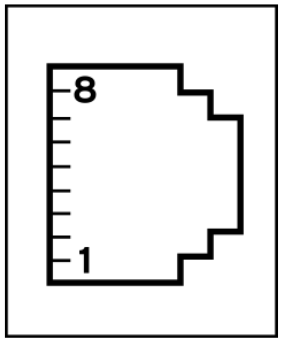
2. Connect to earth ground.
3. Apply recommended power.

COMMUNICATIONS

Serial Communication

MJ1/2 Serial Ports



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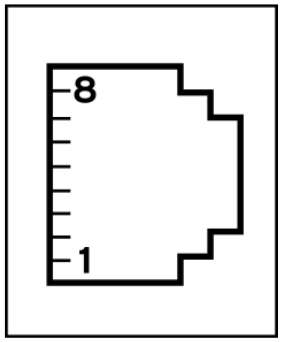
MJ1: RS-232 w/Full Handshaking
MJ2: RS-485 Half-Duplex

	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

MJ3 Serial Port



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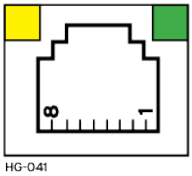
2 Multiplexed Serial Ports on One Modular Jack (8 position)

	MJ3 PINS	
PIN	**SIGNAL**	**DIRECTION**
8	TXD RS-232	OUT
7	RXD RS-232	IN
6	0V	COMMON
5	+5V @ 60mA	OUT
4	TX- RS-485	OUT
3	TX+ RS-485	OUT
2	RX- RS-485	IN
1	RX+ RS-485	IN

NOTE: Attach optional ferrite core with a minimum of two turns of serial cable.

Ethernet



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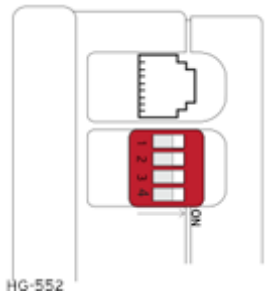
Green LED indicates link - when illuminated, data communication is available.
Yellow LED indicates activity - when flashing, data is in transmission.

DIP Switches



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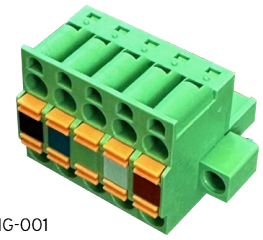
DIP Switches			
SWITCH	**NAME**	**FUNCTION**	**DEFAULT**
1	MJ3 RS-485 Termination	ON = Terminated	OFF
2	MJ3 Duplex	Both ON = Half Both OFF = Full	OFF
3			OFF
4	MJ2 RS-485 Termination	ON = Terminated	OFF

The DIP switches are used to provide a built-in termination and duplex configuration for the modular jacks. 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.

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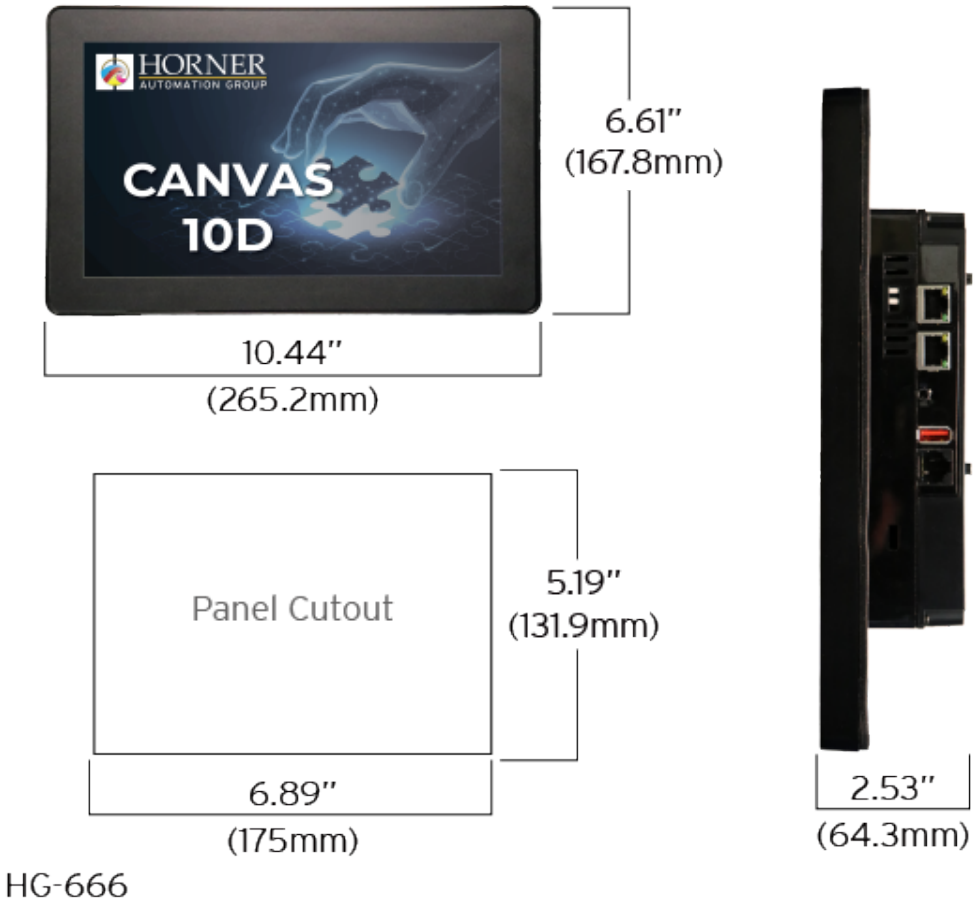
CAN Network & Power Port Pin Assignment		
Pin	**Signal**	**Signal Description**
1	V-	CAN Ground – Black
2	CN_L	CAN Data Low – Blue
3	SHLD	Shield Ground – None
4	CN_H	CAN Data High – White
5	V+ (NC)	No Connect – Red

- **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 10D



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+1.0 mm / -0 mm cutout tolerance

NOTE: With the addition of an I/O module (models 2-6 only) add +0.78" (19.8mm) to the depth.

Installation Information

The Canvas 10D uses a clip installation method to ensure a robust and watertight seal to the enclosure. Use the following steps to ensure the correct 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 must 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.

WARNING: The USB ports are for operational maintenance only. Do not leave permanently connected unless area is known to be non-hazardous.

Installation Procedure

1. Download and print the panel stud diagram from the Canvas 10D Quick Reference Guide, part number MAN1394.
2. Remove all connectors from the Canvas 10D
3. Locate an appropriate place to mount the Canvas 10D. Be sure to leave enough room for insertion and removal of the microSD card, USB flash drives, and wiring.
4. Cut the host panel per the diagram, with a tolerance of +1.0 mm / -0 mm. Remove any burrs/sharp edges and ensure the panel is not warped in the cutting process.
    - If the opening is too large, water may leak into the enclosure, potentially damaging the OCS.
    - If the opening is too small, the OCS may not fit through the hole without damage.
5. Drill holes per the panel stud diagram from the Canvas 10D Quick Reference Guide to accommodate the panel studs. Drill the holes just large enough for the panel studs to pass through.
6. Push the studs through the rubber gasket at the four indentions so that the studs can be screwed into the plastics base.
7. Install the four studs directly to the Canvas 10D unit until tight.
8. Confirm the gasket is installed on the Canvas 10D and that it is free from dust and debris. Confirm that the corners are secure, and then insert the unit into the cutout; the studs must go into their drilled holes.
9. Inserts the four mounting clips into the Canvas 10D unit. Lightly tighten each screw so that the unit is held in place.
10. Tighten the screws on each evenly so that the gasket is compressed against the wall. Recommended Torque is 7-10 in•lbs (0.79-1.13 N•m).
11. Attach the nuts to each stud and tighten until they assist in the compression. Recommended Torque is 3-4 in•lbs (0.34-.45 N•m).
12. Reconnect all previously attached connectors.

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 know 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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