

HMi Series Instruction Leaflet

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Preface

This instruction leaflet will be helpful in the installation, wiring and inspection of the Eaton **HMI** series of operator interface products. Before using the product, please read the entire document and understand all safety precautions before proceeding with installation, wiring and operation.

Please observe the following precautions:

- Install the product in a clean and dry location free from corrosive and flammable gases or liquids.
- Ensure that all installation, wiring, operation, communication, grounding, maintenance, and inspection warnings and guidelines are followed.
- For information on **HMI** software installation and operation, please refer to the **HMIsoft** user manual.

For technical support, please contact the EatonCare at 877-ETN CARE (386-2273) or visit the Eaton website at <http://www.eaton.com/electrical>.

Safety Information

Carefully note and observe the following safety precautions when receiving, inspecting, installing, operating, maintaining and troubleshooting. The following words, **WARNING** AND **CAUTION**, are used to mark safety precautions when using the Eaton product. Failure to observe these precautions may void the warranty!

Installation



WARNING

- Comply with instructions for installation. Otherwise it may cause equipment damage.
- Do not install the product in a location that is outside the stated specification for the device. Failure to observe this caution may result in electric shock, fire or personal injury.

Operation



WARNING

- **HMI** users must use **HMIsoft** to create and edit applications.
- Do not modify wiring during operation or it may result in electric shock or personal injury.
- Never use a hard or pointed object to hit or strike the screen because doing so may cause damage and void the warranty.

Wiring



WARNING

- Connect the ground terminals to a class-3 ground (ground resistance should not exceed 100Ω). Improper grounding may result in electric shock or fire.

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Wiring Method



WARNING

- Remove the terminal block from the HMI before wiring.
- Insert only one wire into each terminal on the terminal block.
- Never use force to remove the terminals or wires as this may cause damage and void the warranty.

Communication Wiring



WARNING

- Comply with communication wiring and grounding specifications for the network being used.

Maintenance and Inspection



WARNING

- Do not touch any internal or exposed electrical parts of the device or electrical shock may result.
- Do not remove the operator interface while power is applied or electrical shock may result.
- Wait at least 10 seconds after power has been removed before touching terminals, wiring and/or inspecting because an electrical charge with hazardous voltages may remain in the unit after power has been removed.
- Turn the power off before changing the backup battery and check system settings after installing the new battery. All system settings will be return to the default settings.
- Be sure the ventilation holes are not obstructed during operation or the operator interface may overheat and malfunction.

General Description

Positioned between the ELC graphics panels and the XV series of operator interfaces, **HMI** is the work horse of the industry. The units feature touchscreen and function keys to suit all environments and applications. They range in screen size and color to fit available space and application needs. All units offer RS-232, RS-485 and RS-422 communications. The 6", 8" and 10" units also offer Ethernet communication options.

- Analog Touchscreen
- Auto-scale application from 10" to 4"
- Screen Saver
- Pop-up Screens
- Animated Graphics
- Clock Synchronization
- Data Archiving
- Multi-Language
- 8 Levels of Security
- Embedded Logic for use with Local I/O
- Ethernet Modbus TCP Communication Drivers
- Ethernet, COMM port and USB Upload / Download
- USB Ports for Data Storage
- 3 Serial Ports
- Up to 4 Simultaneous Protocols
- Math and Logic Functions
- Recipes
- Macro Capability
- Alarm/Event Recording and Viewing
- Real-time and Historical Trending
- On and Off-line Simulation

Accessories (sold Separately)

- ELC-CBPCELC1 — 1 meter cable to connect between the **HMI** and Eaton Logic Controller (ELC)
- HMIEC0806 — 8 DC In, 6 Relay Outputs expansion module for local logic
- HMIEC1612 — 16 DC In, 12 Relay Outputs expansion module for local logic
- HMIECENT — Ethernet expansion card for Modbus TCP communications and application upload/download
- ELC-PS01 — 1 amp 24V DC power supply
- ELC-PS02 — 2 amp 24V DC power supply
- HMI-SPKIT — Spare Parts Kit for **HMI** Operator Interface
- HMI04-GASKET — 2 Spare Gaskets for 4" **HMI** units
- HMI06-GASKET — 2 Spare Gaskets for 6" **HMI** units
- HMI08-GASKET — 2 Spare Gaskets for 8" **HMI** units
- HMI10-GASKET — 2 Spare Gaskets for 10" **HMI** units

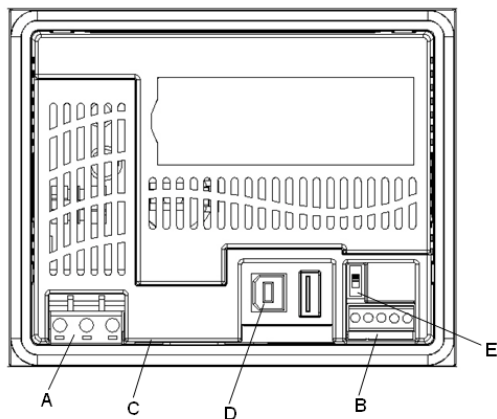
Unpack and Inspect

Included with the **HMI** are:

- Panel Mounting clips (number of clips varies depending on the size of the unit).
- DB9 gender changer for easy connection to the Eaton Logic Controller (ELC).
- 3-pin 24V DC power connector.

Hardware Features

4" HMI (HMI04BU/HMI04CU)



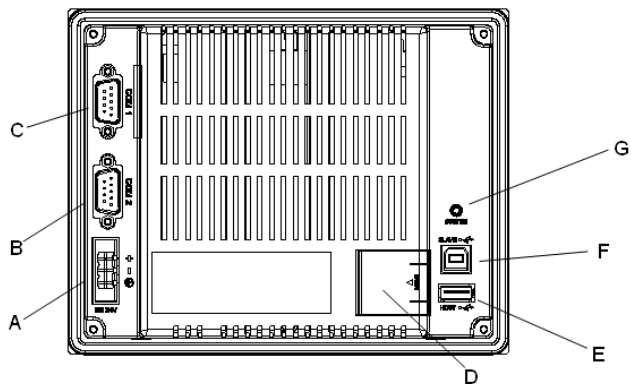
A	Power Input Terminal
B	COM2
C	COM1 ^(Note)
D	USB
E	Startup Switch UP position - Run Mode DOWN position - Boot Menu

NOTE

For simultaneous communications, wire one DB9 connector for COM1 and COM3 according to the pinout diagram in this document.

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6" HMI (HMI06CU)



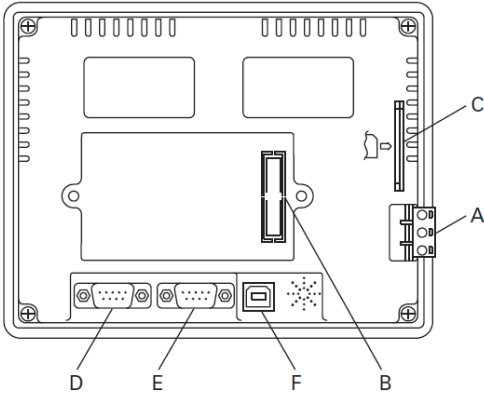
A	Power Input Terminal
B	COM2 ^(Note)
C	COM1
D	Battery Cover
E	USB Host
F	USB Client
G	System Key

NOTE

For simultaneous communications, wire one DB9 connector for COM2 and COM3 according to the pinout diagram in this document.

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6" HMI (HMI06BE/HMI06GE/HMI06CE)



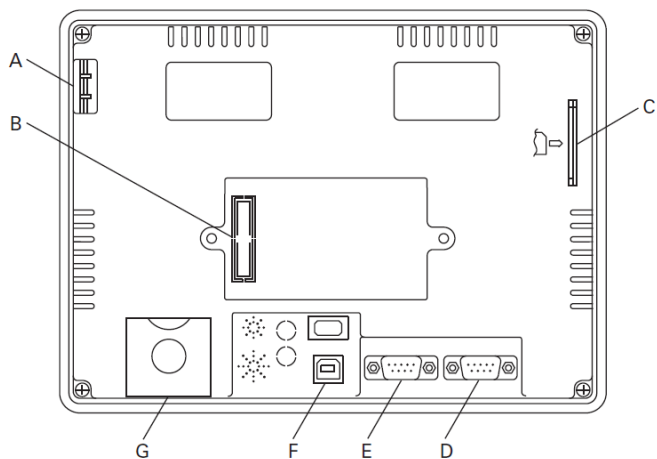
A	Power Input Terminal
B	Expansion Slot
C	Smart Memory Card Slot
D	COM2 ^(Note)
E	COM1
F	USB

NOTE

For simultaneous communications, wire one DB9 connector for COM2 and COM3 according to the pinout diagram in this document.

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8" HMI (HMI08CE)



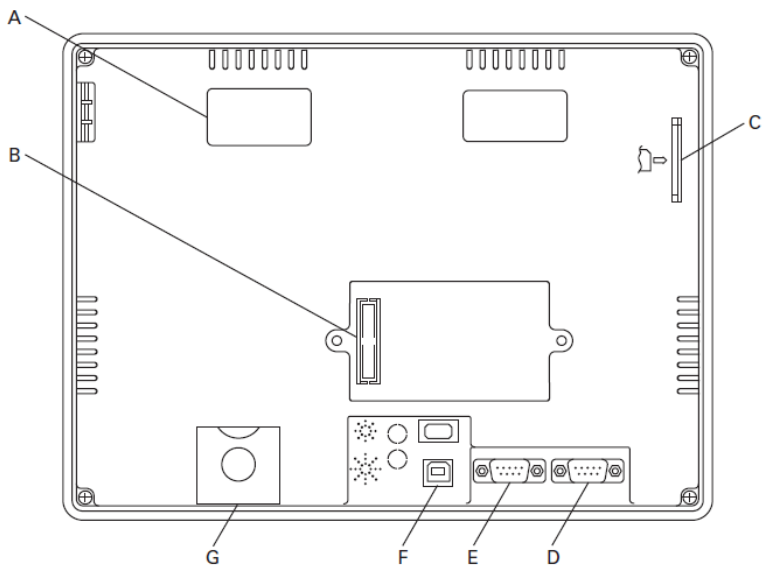
A	Power Input Terminal
B	Expansion Slot
C	Smart Memory Card Slot
D	COM2 ^(Note)
E	COM 1
F	USB
G	Battery Cover

NOTE

For simultaneous communications, wire one DB9 connector for COM2 and COM3 according to the pinout diagram in this document.

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10" HMI (HMI10CE)



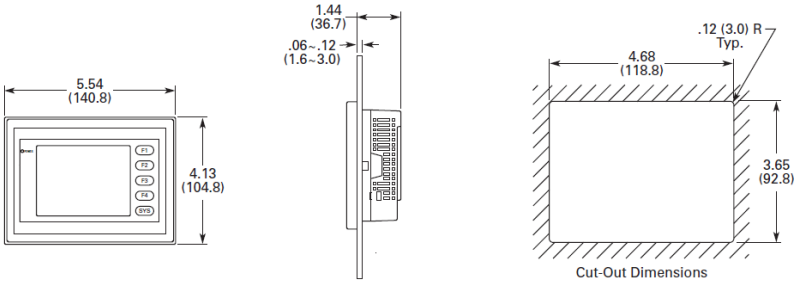
A	Power Input Terminal
B	Expansion Slot
C	Smart Memory Card Slot
D	COM2 ^(Note)
E	COM 1
F	USB
G	Battery Cover

NOTE

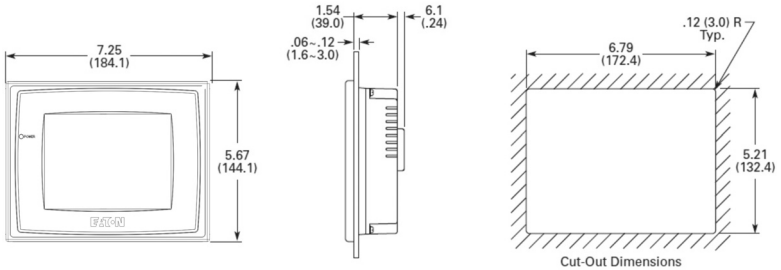
For simultaneous communications, wire one DB9 connector for COM2 and COM3 according to the pinout diagram in this document.

Dimensions and Cut-Outs

4" HMI (HMI04BU/HMI04CU)

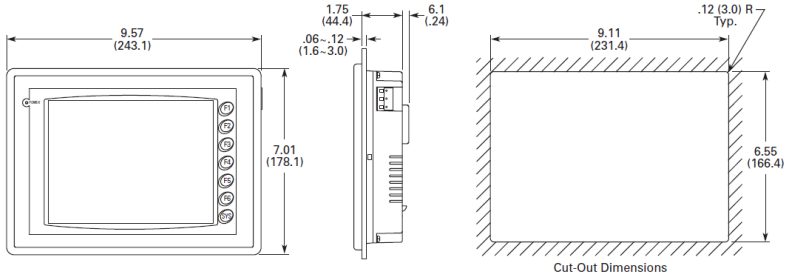


6" HMI (HMI06BE/HMI06GE/HMI06CE/HMI06CU)

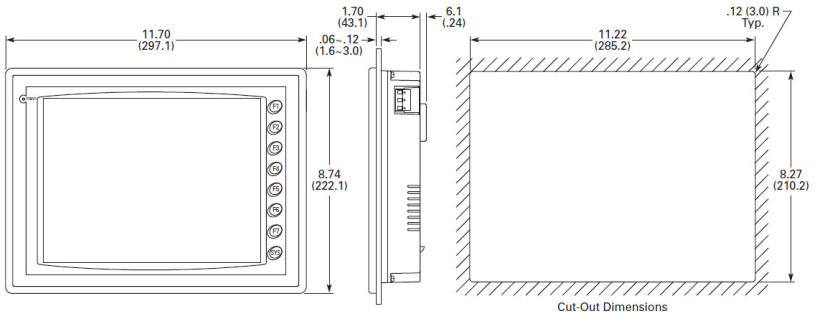


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8" HMI (HMI08CE)



10" HMI (HMI10CE)



Serial Port Pinout

For 4" (HMI04BU/HMI04CU)

COM1 and COM3 are RS-232 only

DB 9 Pinout for COM1 and COM3 RS-232				
PIN	COM3 Not Used		COM3 Used	
	COM1	COM3	COM1	COM3
1		Not Used		
2	RX		RX	
3	TX		TX	
4				
5	GND		GND	GND
6				
7	RTS			TX
8	CTS			RX
9				

Note: Blank=No connection.

COM2

COM2 Pinout for RS-422 & RS-485		
PIN	RS-422	RS-485
G	GND	GND
T+	TX+	TX+
T-	TX-	TX-
R+	RX+	RX+
R-	RX-	RX-

Note: Blank=No connection.

Note: For RS-485 Connect TX+ to RX+ and TX- to RX-.

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For 6" (HMI06CU)

COM1 is RS-232 only

DB 9 Pinout for COM1 RS-232	
PIN	COM1
1	
2	RX
3	TX
4	
5	GND
6	
7	RTS
8	CTS
9	

Note: Blank=No connection.

Note: HMI06CU supports RS-232 flow control.

COM2 and COM3

DB 9 Pinout for COM2 and COM3				
PIN	RS-232		RS-232	RS-485
	COM3 Not Used		COM3 Used	
	COM2	COM3	COM2	COM3
1		Not Used		
2	RX		RX	
3	TX		TX	
4				D+
5	GND		GND	GND
6				
7				
8				
9				D-

COM2 and COM3

DB 9 Pinout for COM2 and COM3				
PIN	RS-485			
	COM3 Not Used		COM3 Used	
	COM2	COM3	COM2	COM3
1	D+	Not Used	D+	
2				
3				
4				D+
5	GND		GND	GND
6	D-		D-	
7				
8				
9				D-

Note: Blank=No connection.

Note: HMI06CU does not support RS-422 flow control.

DB 9 Pinout for COM2 and COM3				
PIN	RS-232		RS-232	RS-422
	COM3 Not Used		COM3 Used	
	COM2	COM3	COM2	COM3
1		Not Used		TX+
2	RX		RX	
3	TX		TX	
4				RX+
5	GND		GND	GND
6				TX-
7				
8				
9				RX-

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For 6" (HMI06BE, HMI06GE, HMI06CE), 8" (HMI08CE), and 10" (HMI10CE)

COM1 is RS-232 only

DB 9 Pinout for COM1 RS-232	
PIN	COM1
1	
2	RX
3	TX
4	
5	GND
6	
7	RTS
8	CTS
9	

Note: Blank=No connection.

COM2 and COM3

DB 9 Pinout for COM2 and COM3					
PIN	RS-232				
	COM3 Not Used		COM3 Used		
	COM2	COM3	COM2	COM3	
1		Not Used			
2	RX			RX	
3	TX			TX	
4					
5	GND			GND	GND
6					
7	RTS				TX
8	CTS				RX
9					

COM2 and COM3

DB 9 Pinout for COM2 and COM3				
PIN	RS-485			
	COM3 Not Used		COM3 Used	
	COM2	COM3	COM2	COM3
1	RX-	Not Used	RX-	
2	RX+		RX+	
3	TX+		TX+	
4	TX-		TX-	
5	GND		GND	GND
6				TX-
7				TX+
8				RX+
9				RX-

Note: Blank=No connection.

Note: For RS-485 Connect TX+ to RX+ and TX- to RX-.

DB 9 Pinout for COM2 and COM3				
PIN	RS-422			
	COM3 Not Used		COM3 Used	
	COM2	COM3	COM2	COM3
1	RX-	Not Used	RX-	
2	RX+		RX+	
3	TX+		TX+	
4	TX-		TX-	
5	GND		GND	GND
6	RTS-			TX-
7	RTS+			TX+
8	CTS+			RX+
9	CTS-			RX-

Accessing the Setup Screens

To bring up the System menu, press and hold the SYS key for several seconds located on the front for those models with function buttons and on the back of the unit for all other models. The following may be changed from the System menu:

- Date & Time
- Touchscreen settings and calibration
- Adjust backlight settings
- Select the download method
- COMM port settings
- Security

Apply Power

For 4" (HMI04BU/HMI04CU),
6" (HMI06BE/HMI06GE/HMI06CE),
8" (HMI08CE), 10" (HMI10CE)

Recommended wiring:

Type	Wire Gauge (AWG)	Stripped length	Torque
Solid	28 ~ 12	7 ~ 8 mm	4.5 lb-in
Stranded	28 ~ 12	7 ~ 8 mm	4.5 lb-in

For 6" (HMI06CU)

Recommended wiring:

Type	Wire Gauge (AWG)	Stripped length	Torque
Solid	28 ~ 12	7 ~ 8 mm	4.3 lb-in
Stranded	30 ~ 12	7 ~ 8 mm	4.3 lb-in

Specifications

MODEL	HMI04BU	HMI04CU	HMI06BE	HMI06GE
Display Type	STN	TFT LCD	STN	FSTN
Display Color	8 Blues	65536 Colors	8 Blues	16 Grays
Screen Pixels	320 x 240 pixels			
LCD Module	LED Back Light	LED Back Light	CCFL Back Light	
Back-light Life	About 10,000 hours half-life at 25°C (Note 1)	About 30,000 hours half-life at 25°C (Note 1)	About 50,000 hours half-life at 25°C (Note 1)	
Display Size	3.8" (78.8 x 59.6mm)	3.5" (70.08 x 52.56mm)	5.7" (118.2 x 89.4mm)	
Operation System	Real Time OS			
MCU	32-bit RISC Micro-controller / 206.4MHz			
Memory				
Program	1M	3M	3M	3M
History	120K	120K	360K	360K
Recipe	64K (Note 2)	64K (Note 2)	128K	128K
Alarm	4K	4K	16K	16K
Data Register				
Volatile	64K	64K	64K	64K
Non-volatile	1K	1K	1K	1K
Backup Memory (Bytes)	128K	128K	512K	
EXT. Memory	SM Card		✓	✓
	USB Disk		✓	✓
Extension Interface			✓	✓
USB Host / Client	1 Host (Note 3) Ver 1.1 / 1 Client Ver 1.1			
Serial COM Port	COM1	RS-232		
	COM2	RS-422 / RS-485	RS-232 / RS-422 / RS-485	
	COM3	RS-232	RS-232 / RS-422 / RS-485	
Function Key	User defined key x 4 + System key x 1			
Perpetual Calendar (RTC)	Built-in			
Cooling Method	Natural air circulation			
Safety Approval (Waterproof for front panel)	IP65 / NEMA 4X (indoor only)/ CE / UL / cUL / C-Tick			
Operation Voltage	DC +24V (-10% ~ +15%) (Please use isolated power supply) (Note 4)			

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MODEL	HMI04BU	HMI04CU	HMI06BE	HMI06GE
Power Consumption ^(Note 5)	2.64W	3.36W	7.2W	7.2W
Voltage Endurance	AC500V for 1 minute (between charging (DC24 terminal) and FG terminals)			
Operation Temp.	32°F ~ 122°F (0°C ~ 50°C)			
Storage Temp.	-4°F ~ 140°F (-20°C ~ +60°C)			
Ambient Humidity	10% ~ 90% RH [0 ~ 40°C], 10% ~ 55% RH [41 ~ 50°C] Pollution Degree 2			
Shock	30G @ 11ms			
Vibration Resistance	IEC 61131-2 Compliant 5Hz ≤ f < 9Hz = Continuous: 1.75mm / Occasional: 3.5mm 9Hz ≤ f ≤ 150Hz = Continuous: 0.5g / Occasional: 1.0g X, Y, Z directions for 10 times			
Backup Battery	3V lithium battery CR2032 x 1 / Battery life: 5 years			
Backup Battery Life	It depends on the temperature used and the conditions of usage, about 3 years or more at 25oC.			
Buzzer	Multi-Tone Frequency (2K ~ 4K Hz) / 85dB			
Dimensions (W) x (H) x (D) in Inches (mm)	5.54 x 4.13 x 1.76 (140.8 x 104.8 x 44.8)		7.25 x 5.67 x 1.85 (184.1 x 144.1 x 47)	
Panel Cutout (W) x (H) in Inches (mm)	4.68 x 3.65 (118.8 x 92.8)		6.79 x 5.21 (172.4 x 132.4)	
Weight in Lbs. (kg)	.69 (.315)	.62 (.310)	1.69 (.768)	
NIT Rating	100 cd/m ²	300 cd/m ²	130 cd/m ²	

NOTE

- 1) The half-life of backlight is defined as original luminance being reduced by 50% when the maximum driving current is supplied to **HMI**. The life of LED backlight shown is an estimated value under 25°C normal temperature and humidity conditions.
- 2) Program memory is used for recipes.
- 3) USB Host port can provide up to 5V/ 500mA of power.
- 4) Please use isolated power supply (not applicable for HMI08CE and HMI10CE).
- 5) The value of the power consumption indicates the electrical power consumed by **HMI** only without connecting to any peripheral devices. In order to ensure the normal operation, it is recommended to use a power supply which the capacity is 1.5 ~2 times the value of the power consumption.
- 6) For further details, please visit the Eaton website www.eaton.com/electrical.

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MODEL	HMI06CE	HMI06CU	HMI08CE	HMI10CE
Display Type	STN	TFT LCD	TFT LCD	TFT LCD
Display Color	256 Colors	65536 Colors	65536 Colors	65536 Colors
Screen Pixels	320 x 240 pixels		640 x 480 pixels	
LCD Module	CCFL Back Light	LED Back Light	CCFL Back Light	2CCFL Back Light
Back-light Life	About 50,000 hours half-life at 25°C ^(Note 1)	About 20,000 hours half-life at 25°C ^(Note 1)	About 50,000 hours half-life at 25°C ^(Note 1)	
Display Size	5.7" (118.2 x 89.4mm)	5.6" (113.28 x 84.70mm)	8" (162.2 x 121.7mm)	10.4" (215.2 x 162.4mm)
Operation System	Real Time OS			
MCU	32-bit RISC Micro-controller /206.4MHz	32-bit RISC Micro-controller /266MHz	32-bit RISC Micro-controller /206.4MHz	
Memory				
Program	3M	7M	7M	7M
History	360K	125K ^(Note 6)	360K	360K
Recipe	128K	128K	128K	128K
Alarm	16K	125K ^(Note 6)	16K	16K
Data Register				
Volatile	64K	64K	64K	64K
Non-volatile	1K	1K	1K	1K
Backup Memory (Bytes)	128K	128K	512K	
EXT. Memory	SM Card	✓	✓	✓
	USB Disk	✓	✓	✓
Extension Interface	✓	✓	✓	✓
USB Host / Client	1 Host ^(Note 3) Ver 1.1 / 1 Client Ver 1.1			
Serial COM Port	COM1	RS-232		
	COM2	RS-232 / RS-422 / RS-485	RS-232 / RS-485	RS-232 / RS-422 / RS-485
	COM3	RS-232 / RS-422 / RS-485	RS-422 / RS-485	RS-232 / RS-422 / RS-485
Function Key	User defined key x 4 + System key x 1	N/A	User defined key x 6 + System key x 1	User defined key x 7 + System key x 1
Perpetual Calendar (RTC)	Built-in			
Cooling Method	Natural air circulation			

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MODEL	HMI06CE	HMI06CU	HMI08CE	HMI10CE
Safety Approval (Waterproof for front panel)	IP65 / NEMA 4X / CE / UL / cUL / C-Tick			
Operation Voltage	DC +24V (-10% ~ +15%) (Please use isolated power supply) ^(Note 4)			
Power Consumption ^(Note 5)	7.2W	3.0W	14W	15W
Voltage Endurance	AC500V for 1 minute (between charging (DC24 terminal) and FG terminals)			
Operation Temp.	32°F ~ 122°F (0°C ~ 50°C)			
Storage Temp.	-4°F ~ 140°F (-20°C ~ +60°C)			
Ambient Humidity	10% ~ 90% RH [0 ~ 40°C], 10% ~ 55% RH [41 ~ 50°C] Pollution Degree 2			
Shock	30G @ 11ms			
Vibration Resistance	IEC 61131-2 Compliant 5Hz ≤ f < 9Hz = Continuous: 1.75mm / Occasional: 3.5mm 9Hz ≤ f ≤ 150Hz = Continuous: 0.5g / Occasional: 1.0g X, Y, Z directions for 10 times			
Backup Battery	3V lithium battery CR2032 x 1 / Battery life: 5 years			
Backup Battery Life	It depends on the temperature used and the conditions of usage, about 3 years or more at 25oC.			
Buzzer	Multi-Tone Frequency (2K ~ 4K Hz) / 85dB			
Dimensions (W) x (H) x (D) in Inches (mm)	7.25 x 5.67 x 1.85 (184.1 x 144.1 x 47)		9.57 x 7.01 x 2.06 (243.1 x 178.1 x 52.4)	11.70 x 8.74 x 2.01 (297.1 x 222.1 x 51.1)
Panel Cutout (W) x (H) in Inches (mm)	6.79 x 5.21 (172.4 x 132.4)		9.11 x 6.55 (231.4 x 166.4)	11.23 x 8.28 (285.2 x 210.2)
Weight in Lbs. (kg)	1.69 (.768)	1.48 (.670)	2.52 (1.147)	3.79 (1.721)
NIT Rating	100 cd/m ²	200 cd/m ²	400 cd/m ²	330 cd/m ²

NOTE

- The half-life of backlight is defined as original luminance being reduced by 50% when the maximum driving current is supplied to **HMI**. The life of LED backlight shown is an estimated value under 25°C normal temperature and humidity conditions.
- Program memory is used for recipes.
- USB Host port can provide up to 5V/ 500mA of power.
- Please use isolated power supply (not applicable for HMI08CE and HMI10CE).
- The value of the power consumption indicates the electrical power consumed by **HMI** only without connecting to any peripheral devices. In order to ensure the normal operation, it is recommended to use a power supply which the capacity is 1.5 ~2 times the value of the power consumption.
- A total of 125K Bytes of memory is shared for History and Alarms.
- For further details, please visit the Eaton website www.eaton.com/electrical.

HMI Series Instruction Leaflet



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