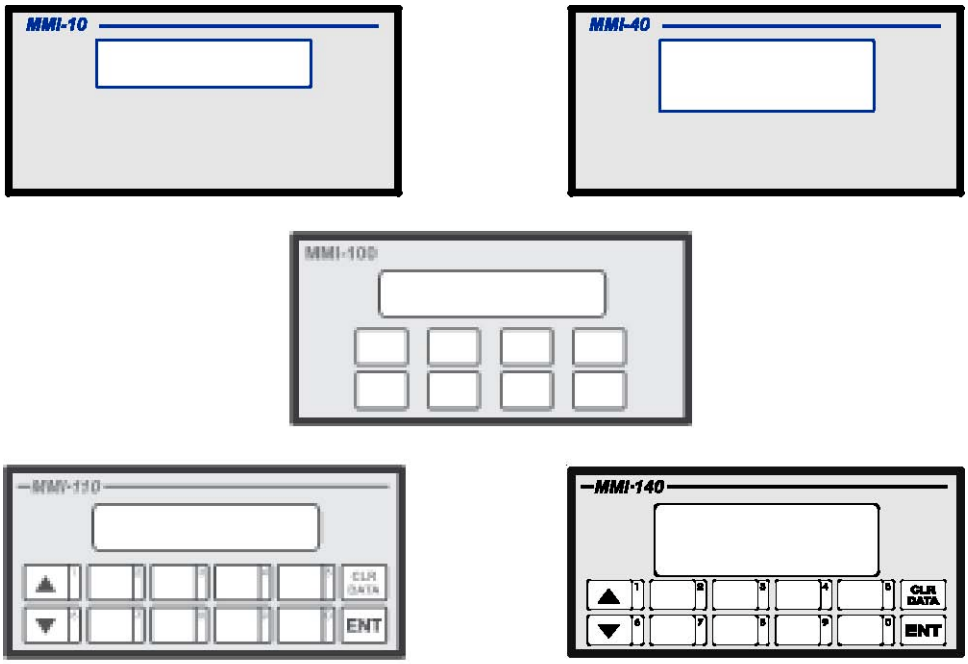
MMI-1XX SERIES

Operating and Installation Instructions

for use with MMI-10, MMI-40, MMI-100, MMI-110 and MMI-140



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PROPRIETARY NOTICE

Contents

About this Manual

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Some common terms used

MTR: This stands for **M**essage **T**riggering **R**egister. The **MTR** is the register that holds the message number for the **MMI** to display.

PLC: **P**rogrammable **L**ogic **C**ontroller. Typically, the MMI is connected to one of these devices. This is a generic term covering a large range of programmable devices used in machine control applications.

Symbology

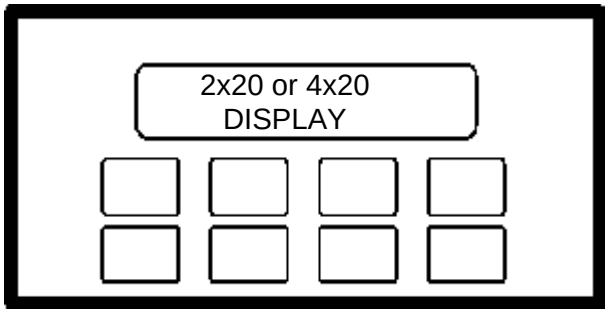
Warning! Indicates that the reader should pay special attention to the accompanying text. Precautionary steps should be taken to insure that the installation is in compliance with warnings. Warnings include hazardous conditions that could cause personal injury or equipment damage if care is not taken.

1.0 Getting Started

1.1 What is the MMI 1XX Series?

MMI 1XX Series

The MMI Series are small interfaces for PLCs. They display messages that are preloaded into them with a Personal Computer. They have 8 legendable keys, which can be programmed to perform various functions.



Equipment Checklist

An MMI system should include:

- ❑ An MMI-1XX Series base unit
- ❑ An interface cable to the programmable controller
- ❑ A personal computer with MMI programming software. A PC to MMI cable is required.

Designed For Use

Provides a convenient way for a machine operator to:

- View machine status and parameters.
- Change machine status or applicable operating parameters of the machine.
- Maintain the running of the machine.

It also gives enhanced capabilities to the machine through:

- RS232 ASCII output.
- Direct keypad interface
- Visually displayed prompts.

1.1.1 The MMI Series and Its Environment

Where Used

The MMI Series is designed for use in a factory environment. They are designed to operate under the same temperature conditions as PLC's used in an industrial environment. They may not be suitable for use in certain outdoor applications. Please consult the factory for advised usage in outdoor applications.

NEMA Rating

The MMI-1XX Series front bezel is Nema 4 rated. When installed properly in a NEMA 4 panel, the NEMA 4 rating of the panel will not be compromised. This means that fluids will not enter the panel during wash downs.

Electrical Environment

The MMI Series has been tested to conform to European CE requirements. This means that the MMI circuitry is designed to resist the effects of electrical noise. This does not guarantee noise immunity in severe cases. Proper wire routing and grounding will insure proper operation of the MMI.

Mechanical Environment

Avoid installing MMI units in environments where severe mechanical vibration or shock are present.

2.0 Installation Instructions

2.1 Mounting Instructions

2.1.1 Location Considerations.

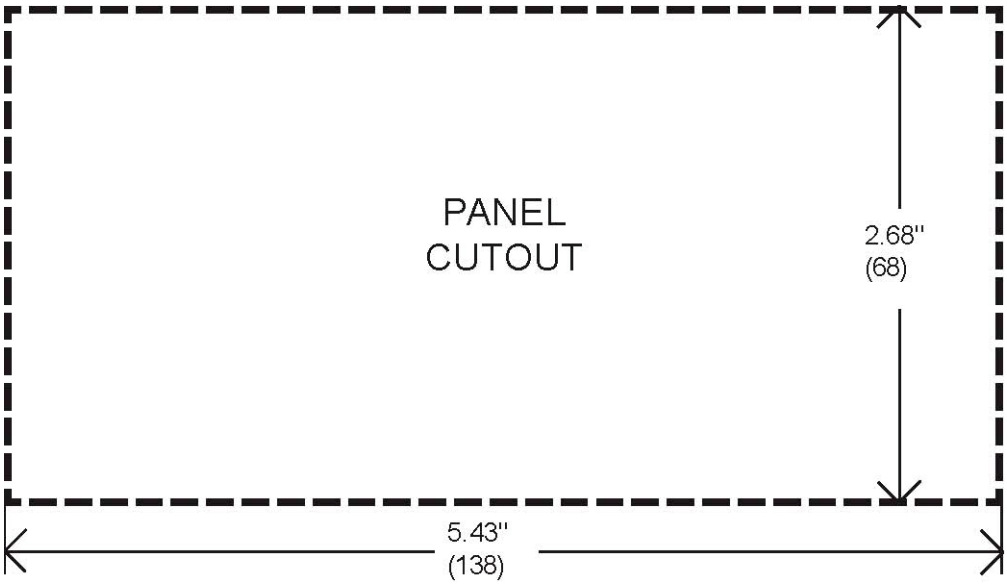
Care should be taken when locating equipment behind the MMI to ensure that AC power wiring, PLC output modules, contactors, starters and relays, and any other source of electrical interference are located away from the back of the unit.

Particular note should be taken to the position of variable speed drives and switching power supplies. Their input and load cables should be screened to a central star earth point.

2.1.2 Making a NEMA-4 Mounting.

Panel Details

The MMI can be mounted into panels with a depth of 6"(152mm). It is recommended that the MMI be mounted on the front panel of a steel enclosure, through a 5.43"(138mm) X 2.68"(68mm) opening. Allow a clearance of 1"(25mm) on each side of the unit for mounting hardware. Allow clearance for cable connections to the back of the unit. Unit depth may vary according to cable type used. Typically, plan a depth to accommodate at least 5"(130mm) behind the panel.



Standard Mounting

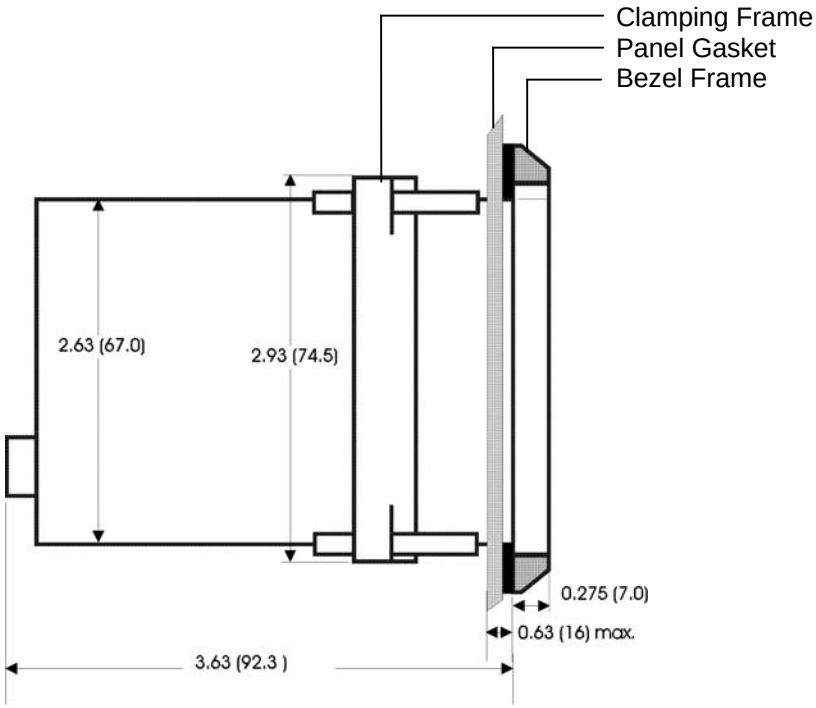
Put the MMI through the panel cut out. Slide the Clamping frame over the case until the clips snap into the retaining slots. Tighten the clamping screws in an even pattern until the MMI is secured in the panel.

NEMA-4 Mounting

Slide the Bezel frame over the case. Slide the gasket over the case so that it rests behind the Bezel Frame. Continue with standard mounting as described above.

Specifications

Note: To seal to NEMA-4 specifications, supplied bezel kit must be used and panel cannot flex more than 0.010". When optional bezel kit is used, the bezel must be sealed to the case using an RTV type sealer to maintain NEMA-4 rating. When optional bezel kit with gasket is used, the maximum panel thickness allowed is 0.375". Without bezel kit, maximum panel thickness is 0.400". Without bezel kit or gasket, maximum panel thickness is 0.500".



2.1.3 Environmental Considerations

- The MMI is to be used indoors as a built in display. Make sure that the display is installed correctly and that the operating limits are followed (See Specifications).

- The MMI should not be installed where fast temperature variations and/or high humidity are present. This will cause condensation of water in the device.

- Do not operate the MMI in areas subject to explosion hazards due to flammable gases, vapors or dusts.

2.2 Power Connections

Make sure that all local and national electrical standards are met when the installing the MMI. Contact your local authorities to determine which codes apply.

2.2.1 Power Requirements

Power

The MMI can be powered by DC power only. The specified voltage range is +12 to 27 Volts DC. This insures compatibility with most DC systems. The power conditioning circuitry inside the unit is accomplished by a switching power supply. Due to the nature of switching power supplies, a wide range of over and under voltages may be used without adversely affecting the unit.

Fusing Requirements

It is recommended that all input power lines be protected from incorrect wiring or product failure by a 400 mA fuse or a breaker. If the display does not come on within 2 seconds of power up, remove power. An internal diode will prevent damage if the polarity of the DC power is incorrect. Check wiring to insure proper connections and try to power up again.

Caution Strain Relief

Adequate strain relief must be provided for the power connector, to ensure that vibration or the disturbance of cables during maintenance does not cause the connector to pullout. Retention of the power cables by a tye-wrap onto the trunking, or an adhesive pad mounted tye-wrap point is normally suitable.

Caution High Voltage

Connecting high voltages or AC power mains to the DC input will make the MMI unusable and may create an electrical shock hazard to personnel. Such a failure or shock could result in serious personal injury, loss of life and or equipment damage.
DC voltage sources should provide proper isolation from main AC power and similar hazards.

Caution Emergency Stop

A Hard wired EMERGENCY STOP should be fitted in any system using the MMI to comply with ICS Safety Recommendations.

Caution Supply Voltage Condition

Do not power the MMI and inductive DC loads, or input circuitry to the PLC with the same power supply. The 24 VDC output from some PLC's may not have enough current to power the MMI.

Caution Power Cycling

Power supplies with large capacitive outputs may cause problems if power is cycled within a short time period. The power supply's capacitor will supply enough current to keep the microprocessor running for a few minutes but not enough to keep the display active. If full power is restored during that time the microprocessor may not initialize the display module. The result is that the display will remain blank or show just the cursor in the upper left-hand corner and the rest of the unit will be fully functional.

To remedy this problem run power to the unit through a "seal in" circuit or remove the capacitor (the MMI does not mind if power is unregulated) or wait sufficient time between power cycles.

Caution Wire Routing

Wire lengths should be minimized (Maximum 1600' (500 m) shielded, 1000' (300 m) unshielded).
Wires should be run in pairs with a neutral or common paired with a hot or signal line.
If wiring is to be exposed to lightning or surges, use appropriate surge suppression devices.
Keep AC, high energy, and rapidly switching DC wiring separate from signal wires.
Equip ungrounded DC supplies with a resistor and capacitor in parallel to earth ground. This provides a path for static and high frequency dissipation. Typical values to use are 1MOhm and 4700pF.

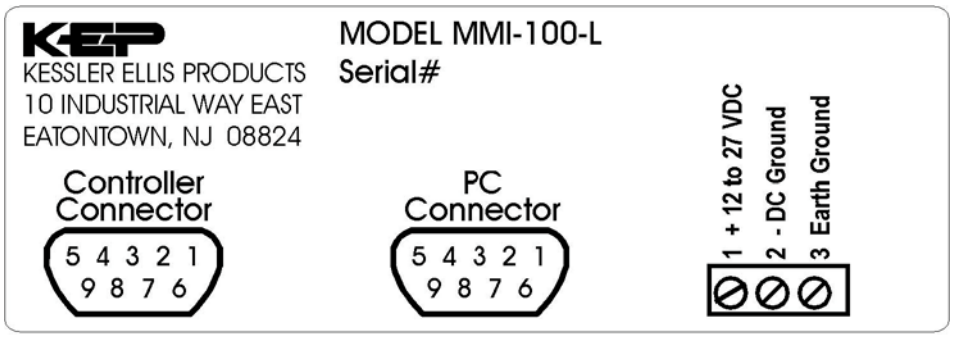
Connection

To make a connection, strip about 1/4" of insulation off the end of the wire, turn the connector screw counterclockwise until the gap is wide open, insert the wire all the way in, and turn the screw clockwise until it's tight.
Connect positive DC line to terminal 1 and the DC ground to terminal 2.

2.2.2 Grounding Requirements

Chassis ground must be used. DC ground (Terminal 2) is not directly coupled to Earth ground internally. It is preferable not to ground DC negative return to chassis ground, pin 3, as poor site earths can introduce noise into a system, but if necessary an earth connection should be made, from the power supply return point to the central star earth point.

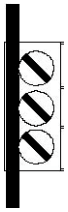
Ground conductors should be as short and as large in size as possible. The conductors must always be large enough to carry the maximum short circuit current of the path being considered. Ground conductors should be connected from a tree from a central star earth ground point. This ensures that no ground conductor carries current from any other branch.



Typical Label on Rear of MMI-1XX Series unit.

+12 to 27 VDC Wiring Diagram

View from top of connector



3 Earth Ground
2 - DC Ground
1 + 12 to 27 VDC

2.2.3 CE Requirements

To make the MMI comply with EMC directives, and to reduce susceptibility to electrical interference, a separate #14 AWG ground wire should be taken to terminal 3 of the power connector. This ground connection should be run directly to the central star earth connection point (as recommended in most PLC Installation Instructions).

2.2.4 Safety Guidelines

This section presents recommended installation practices, and procedures. Since no two applications are identical, these recommendations should be considered as guidelines.

Hardware Considerations

WARNING!

The system designer should be aware that control devices in Programmable Controller systems can fail and thereby create an unsafe condition. Furthermore, electrical interference in an operator interface, such as the MMI, can lead to equipment start-up, which could result in property damage and/or physical injury to the equipment operator.

If you, or your company, use any programmable control systems, which require an operator or attendant, you should be aware that this potential safety hazard exists and take appropriate precautions. Although the specific design steps depend on your particular application, the following precautions generally apply to installation of solid-state programmable control devices. In addition, these precautions conform to the guidelines for installation of Programmable Controllers as recommended in the NEMA ICS 3-304 Programmable Control Standards.

Programming Considerations

To conform with ICS Safety Recommendations, checks should be placed in the PLC program to ensure that all writable registers that control critical parts of plant or machinery should have upper and lower limit checks built into the program, with an out-of-limit safe shut down procedure to ensure safety of personnel.

ICS 3-304.81 Safety Recommendations: Consideration should be given to the use of an emergency stop function which is independent of the programmable controller.

Where the operator is exposed to the machinery, such as in loading or unloading a machine tool, or where the machine cycles automatically, consideration should be given to the use of an electromechanical override or other redundant means, independent of the programmable controller, for starting and interrupting the cycle.

If provision is required for changing programs while the equipment is in operation, consideration should be given to the use of locks or other means of assuring that such changes can be made only by authorized personnel.

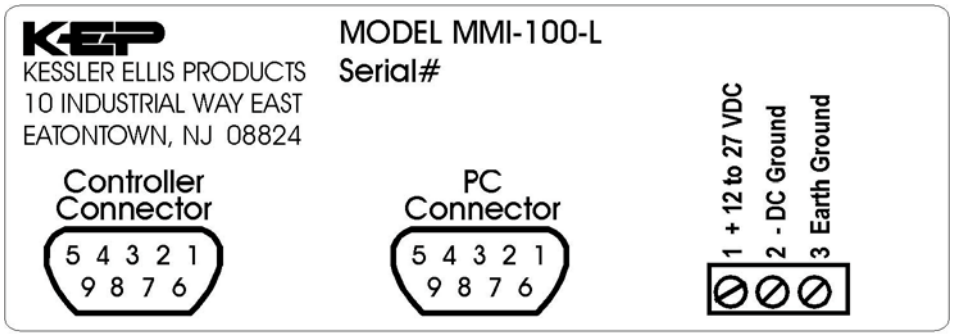
These recommendations are intended as safeguards against the failure of critical components and the effects of such failures or the inadvertent errors that might be introduced if programs are changed while the equipment is in operation.*

* The ICS 3-304.81 Safety Recommendations are reproduced by permission of the National Electrical Manufacturers Association from NEMA ICS 3-304, Programmable Controller Standard.

2.3 Communications Connections

2.3.1 Connection to an External Device

The DB9 port farthest from the power connector, as you look at the back of the case, is the port for connecting to a PLC or external device (Controller Connector).



Cable Requirements

Different cables are required for various devices. The KEP part numbers have the SMIC prefix. Refer to a KEP catalog or datasheet for a complete listing of MMI-1XX compatible devices.
These cables can be obtained from the same distributor where you purchased the MMI-1XX.

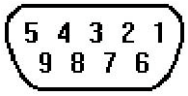
Caution

Restrict cable length to less than 500' (150m) for RS485/422 devices and 50' (15m) for RS232 devices to avoid communications problems. Communications problems cause the MMI display to hold until communications can be established.

Shielded cable must be used for long lengths or cables run in an electrically noisy environment.
Do not run cables next to AC power lines or near sources of electrical noise.

Be sure that the cable ends have been inserted all of the way into mating connectors and are secure.

Pin Designations

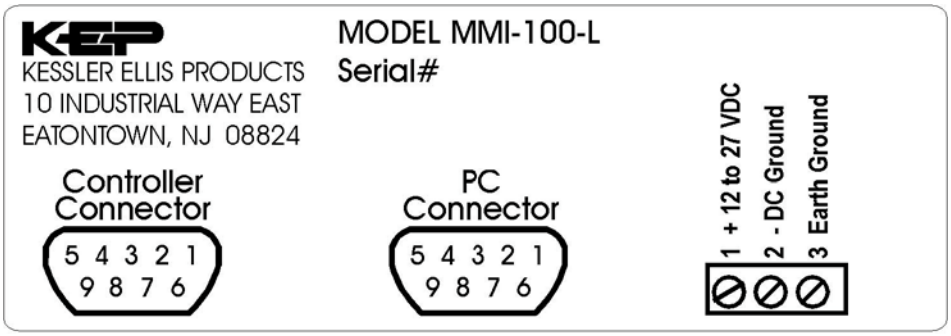


Pin assignment of the 9 pole SUB-D RS232 to external device port

Pin#	Symbol	Function
1	Shield	Earth Ground
2	TxD	Transmitted Data
3	RxD	Received Data
4	Not used	
5	GND	Signal Ground
6	Vcc	**DO NOT GROUND THIS PIN**
7	Not used	
8	CTRL	Flow Control Line for RS485
9	RSV	DO NOT USE Reserved for MMI use

2.3.2 Connection to a Personal Computer

The 9 Pin Female connector closest to the power connector on the back of the unit is the programming port (PC Connector).



Connection

This port can be attached to a Computer via a DB9 Male to DB9 Female straight through cable. Make sure 2 and 3 are not reversed.

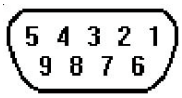
Port Activation

This port is activated by disconnecting the MMI from the SMIC cable.
The Programmer Port and the MMI cannot be on line to the PLC at the same time. The MMI does not have networking capabilities.

Print Out

The MMI has print out capabilities. When a message is assigned to be sent out the serial port, the transmit line of the computer port becomes active momentarily.
Note: The receive line is never active when the MMI is connected to a PLC.

Pin Designations



The MMI has print out capabilities. When a message is assigned to be sent out the serial port, the transmit line of the computer port becomes active momentarily.
Note: The receive line is never active when the MMI is connected to a PLC.

Pin assignment of the 9 pole SUB-D RS232 to Computer port

Pin#	Symbol	Function
1	Not used	
2	TxD	Transmitted Data
3	RxD	Received Data
4	Not used	
5	GND	Signal Ground
6	Not used	
7	Not used	
8	Not used	
9	Not used	

2.4 CE Requirements

2.4.1 EU directives that apply to the MMI-1XX Series:

- EMC Directive (89/336/EEC, 92/31/EEC, 93/68/EEC) electromagnetic emissions and immunity
- Low Voltage Directive (73/23/EEC, 93/68/EEC) electrical safety
- Machinery Directive (89/392/EEC, 91/368/EEC, 93/44/EEC, 93/ 68/EEC) machine safety

MMI products will be CE-marked to indicate compliance with the EMC Directive. Declarations of Conformity that specify the directive(s) and the catalog numbers of the products covered are available from Kessler Ellis Products.

The MMI has been designed to operate satisfactorily in electromagnetic noise (immunity) and without emitting high levels of electrical noise into the environment (emission). The MMI was designed to meet European Community standards when installed per the wiring instructions in this manual.

Compatibility Standards

The MMI has been designed to meet electromagnetic compatibility for industrial environments.

- CISPR (EN 55011) Group 1, Class A Radiated Emissions levels
- EN50081-2 Generic emission standard, industrial environment (Also US FCC Class A)
- EN50082-2 Generic immunity standard, industrial environment

2.4.2 General Installation Guide Lines for EU Installations.

- Be aware that wiring leaving the cabinet where the MMI is installed may be exposed to interference sources.
- The installation practices in the individual product installation manuals of other components in the system must also be followed.
- Locally applicable grounding safety regulations and machinery directives should be followed for providing a protective ground to earth. The EMC ground must be a low impedance, low inductance path to the machine chassis ground.
- The MMI power supply must be through an IEC-rated isolation transformer.
- The Power supply to the PLC must be controlled to ensure that it does not exceed overvoltage category II per EN60204-1 (IEC 240).
- Other requirements of the Machinery Directive involving displays, languages, instructions, Emergency Stop functions, machine operation, protective guards and interlocks are the responsibility of the machine manufacturer.

2.4.3 General Safety Guide Lines for EU Installations.

- Only qualified personnel should be allowed to specify, apply, install, operate, maintain or perform any other function related to MMI products. Qualified persons are defined as follows: System application and design engineers who are familiar with the safety concepts of automation equipment. Installation, start-up, and service personnel who are trained to install and maintain automation equipment. Operating personnel trained to operate automation equipment and trained on the specific safety issues and requirements of the particular equipment.

- Before switching on the equipment, make sure that the voltage range for the equipment is correct.

- Emergency tripping devices in accordance with EN60204/IEC204 must be effective in all operating modes of the automation equipment. Resetting the emergency off device must not result in any uncontrolled or undefined restart of the equipment.

- Automation equipment and its operating elements must be installed so that unintentional operation is prevented.

- Make sure that operating sequences interrupted by a voltage dip or power supply failure resume proper operation when the power supply is restored. If necessary, the equipment must be forced into the “emergency off” state.

- Install the power supply and signal cables so that inductive and capacitive interference voltages do not affect automation functions.

3.0 MMI Operations

Once the MMI is programmed and connected to the PLC, normal operation begins. The MMI establishes communications with the PLC. It then requests the number in the Message Triggering Register (MTR) and displays the corresponding message.

3.1 The Message Queue

Occasionally messages are called up faster than they can be displayed. When this happens messages are held in a Queue and wait their turn to be displayed. The message Queue holds up to 5 message numbers.

3.1.1 Queue Activation Messages are stored in the Queue when:

1 A series of Chained messages are being displayed.
2 A message with a long minimum display time is displayed.
3 A message with a long scrolling time is displayed.

3.1.2 Queue Action

The Queue is emptied on a first in first out basis. If the Queue is full, additional messages will be lost.

Warning **Function keys that have displayable message text assigned to them clear the Queue.**

3.1.3 The Interrupt Message

Message number **255** is the Interrupt message. When message 255 is called the Queue is immediately cleared. The next message number that appears in the message triggering register is then displayed.

An example of Queue operations:
Message 62 is being displayed with a minimum time of 10 seconds.

Display	Queue
23	—

During that period message numbers 34, 15 and then 211 are called for by the MTR.

Display	Queue
23	34
	15
	211

The MMI will put message 34, 15 and 211 in the Queue. When message 23 has timed out, message 34 will be called up and displayed.

Display Queue
34 15
211
When 34 is done, message 15 will be displayed.

Display Queue
15 211
When 15 is done, message 211 will be displayed.

Display Queue
211 EMPTY

Message 211 will continue to be displayed until a new message number is put in the MTR

3.2 Alarm Messages

You can define up to 32 alarms. These can be defined either by 2 Words (16 bits) or 32 distinct bits. Alarms can take up to 304 bytes of memory. Alarms have a hierarchical structure and are triggered by bit ON status only.

Note: The host PLC has the entire responsibility for performing all acknowledges and clear functions. It is suggested that the function keys on the MMI and their existing functions be used for these purposes in conjunction with the PLC program.

If Alarms are defined wordwise, the unit reads the designated (2) alarm registers. The registers bits are then parsed from 0 to 15 (Register 1) then 0 to 15 (Register 2). If Alarms are defined bitwise, MMI reads the bits as a cluster or individually in order as specified by a list of designated bits. The first logical 1 bit encountered is processed as an alarm. Its associated message is displayed and acted upon. Further parsing action is inhibited until the alarm is cleared or an alarm of higher priority is encountered in subsequent reads.

Note: If a bit is not assigned a message number then activating the bit suppresses all alarms after that bit.

Alarms interrupt MTR operations. MTR operations resume when all alarms are cleared or inhibited.

Description of alarm operation

Triggering a message

Bit 1 of alarm register one is assigned message #34, which reads This is a test message.
Bit 5 of alarm register one is assigned message #35, which reads The phone is ringing.
Bit 2 of alarm register two is assigned message #36, which reads An alarm message.

Bit 2 of register two goes to the ON state. The display shows message 36:
AN ALARM MESSAGE.

Then bit 1 of alarm register one goes to the ON state. The display shows message

34:
THIS IS A TEST MESSAGE.

Finally, bit 5 of alarm register one changes to the ON state. The display shows message 34:
THIS IS A TEST MESSAGE.

Note how the first alarm encountered inhibits the message from bits 5 of reg. 1 and 2 of reg. 2 from being displayed. Actually, they are never processed.

Bit 0 of register one goes to the ON state. Since no message is assigned to that bit the display shows the message that is in the Message Triggering Register or the default message.

3.3 Using the Function Keys

The MMI-100, 110 and 140 models have programmable function keys. Simply press a Function key to initiate their programmed action and/or call up their associated messages. One of the following conditions will apply.

3.3.1 The Function key may have message text assigned to it or may be chained to a message.

The Function key message will interrupt the active display.

Note: Function keys with message text assigned to them clear the message
Queue and interrupt minimum display times, chained and scrolling messages.

The message assigned to the Function key will be displayed.
At the end of a Function call and after all message chaining is done, the display does one of the 3 options listed in priority below.

1 Chains, if programmed, to the next message.
2 Displays the message whose number is next in the message Queue.
3 Displays the message whose number is in the MTR.

3.3.2 No message text is assigned to the Function key and no messages are chained to or from the Function key.

Press the Function key. The Queue is not cleared and the display is not be interrupted but the function is carried out.

3.3.3 No message is assigned to the Function key.

When the Function key is pressed, nothing happens.

3.4 Entering Numerical Values

MMI-110
MMI-140

The MMI-110 & 140 may have data or bit status embedded in messages for the purpose of editing. Such data is usually machine status, setpoints and other setup parameters that may need to be changed from time to time. Such values flash when they are displayed. The operator may change these values by the following procedure:

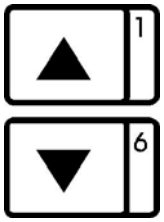
- Press the CLR DATA key. The function keys will now act as numerical entry keys.
- Key in the new data value or use the 1 and 0 keys to change status.
- Press the ENT key. Only after the ENT key is pressed will the new value will be written to the PLC.
- To escape from entering a value, wait ten seconds. The MMI will time out and display the value that is in the register in the PLC.

MMI-100

The MMI-100 has no direct facility to allow the operator to enter operational parameters outside of limited function key capabilities. Numerical entry can still be achieved using some Controller Logic and the function keys. This technique will use 5 or 6 MMI-100 function keys.

- Designate a register in the PLC as the working register. This register will be modified by Controller Logic prompted by function key actions.
- Define 4 of the function keys to turn bits on momentarily. Use the function key's bits to trigger one shots that add 1, 10, 100 or 1000 to the working register. You may want to designate another function key to clear the working register.
- Define a momentary function key to act as the Enter key. When this key is pressed the Controller Logic should move the working register to its intended destination.
- Label the function keys appropriately.

3.5 Using the Up and Down Arrow keys (MMI-110 &140 Only)



The Up and Down Arrow keys on the MMI-110 & 140 are used to step up or down through a preprogrammed list of messages. The list may be called up by the PLC or by pressing a Function key. The message will stay on the display until a new message is called by the MTR, Function Key press or one of the arrow keys is pressed. When the top of the list is reached the up arrow is ignored. When the bottom of the list is reached the next message called by the down arrow will be the top of the list.

3.6 MMI Response

The MMI is limited in its response to key presses and information update by the serial communications to the PLC. The MMI has been optimized to provide reasonable response times to events.

3.6.1 Response Time to Message Calls

A message number must be in the MTR for at least 300 milliseconds to be recognized by the MMI.

3.6.2 Response Time to Function Key Presses

Function keys are handled on an interrupt basis. As soon as a key is pressed a communication is sent to the PLC. Response to a key press by the PLC depends on the PLC's scan time and communications handling. Typically, response times are less than 1 second. We do not recommend using the function keys for JOGGING applications.

3.6.3 Response Time to Serial Port Transmissions

When a called message has the attribute to be sent to the serial port, the MMI-1XX will send the message to the port before displaying it. Response time is determined by the number of registers/bits embedded in the message. The serial port baudrate also determines how long it will be before the message is displayed. A 200 character scrolling message with several embedded registers and bits sent out at 300 baud may take up to 10 seconds to appear on the display.

4.0 Trouble Shooting

4.1 Power Problems

Problems on power up

Unit does not light or unit lights but does not display any messages.

1. The MMI has a switching power converter in it. If the Power Supply voltage rises too slowly the converter does not get the “kick” it needs to start switching properly. If the power supply has a large capacitor, it may cause this problem. Remove the capacitor and try again. The MMI does not require strict power regulation.
2. Most electrical noise is present at start up when solenoids and motor starters activate. This may also cause a momentary brown out in power. To eliminate the effects of this on the MMI, use a delay relay (3 seconds) on the DC line providing power to the MMI. This will also prevent the problem of the power supply capacitor as well.

Problems during operation

Faulty operation of the MMI may be due to problems with power quality. The MMI has been designed to work in environments where electrical noise is present. However, extreme electrical noise will still cause problems. Make sure that the system is properly earth grounded.

4.2 Communications Problems

Sometimes communications fail. There are various reasons why this happens; electrical noise, loose cables, time outs, and power loss. When communications fail, the MMI tries to re-establish the communications link. During the time the MMI is establishing communications, the keypad of the MMI will not respond. Function key operations will be interrupted. The implication is that the MMI should not be used for Emergency Stop applications. A loss of communications can happen at any time. Using the function keys on the MMI for critical operations can lead to a potential disaster. It is good programming practice to allow for safe operation in the event of failure of the interface.

The use of proper grounding techniques will insure reliable communications. Make sure the PLC and the MMI are connected to good earth ground sites. This allows EMI (Electro-Magnetic Interference, commonly called electrical noise) to be channeled to ground where it can no longer disrupt electrical operations. Be sure to route communications cables in separate bundles and locations from AC power and control wiring. Do not run communications cables near solenoid and relay coils or AC and DC drive controllers. Care should also be taken to locate the MMI itself away from sources of EMI.

4.3 Commonly Asked Questions

Q. Can I have multiple MMI's connected to one Controller?
A. The ability to connect more than one MMI to a PLC depends on the type of serial interface the PLC has. PLCs with RS232 communications cannot be networked due to the nature of RS232 signal requirements. PLCs with RS485 or RS422 can be networked, but, not all of these PLCs support networking. The MMI supports networking on a limited number of PLCs.

Q. Can I down load a recipe?
A. Yes. To do this chain Special messages together with the recipe values as constants. Do not assign any message text to these messages. The recipe download can then be activated by Function key or MTR.

Q. Can I Have PC and MMI active at the same time?
A. Yes, the MMI PC port is always active for PC to MMI programming and MMI printout. The PC port is NOT a pass through port to the PLC.

Q. Do I need to change any jumpers to go from one PLC type to another?
A. No. The PLC type is determined by the driver that is downloaded into the MMI at programming time.

Q. Is there any way to completely erase the MMI memory?
A. Yes. The MMI memory can be initialized by the following procedure.

Caution!
All Message and Driver programming will be erased!
Make sure you want to do this!!!

1. Remove power from the MMI.
2. Hold the F5 and F8 Function keys for MMI-100 or Down Arrow and Enter keys for MMI-110 & 140 (the lower most right and left-hand key) down.
3. While holding the two keys down apply power to the MMI.
4. When the MMI displays "INITIALIZING ALL MEMORY" you can release the keys.

The MMI must be reprogrammed using the PC software.

Q. How Do I change the Battery?
A. There is none! The MMI requires no routine maintenance.

4.4 Repair and Return Policies

The MMI is designed to provide years of trouble free service. The MMI is burned in for at least 24 hours and under goes a full functional test before it is released by Quality Assurance for shipment.

The MMI is warrantied for 12 months under normal use.

The MMI does not require any “Routine Maintenance” by the user. If a problem should occur, and all troubleshooting procedures have been exhausted, contact your local representative or distributor.

Use our toll free number to contact KEP if persistent problems are encountered.
Phone: 1-800-631-2165.
If the product must be returned for any reason, be sure to call KEP and get a Return Material Authorization (RMA) number first.

We hope you will be pleased with our product. If you have any questions concerning our warranty, repair, modification or returned goods process, please contact your local distributor.

WARRANTY

This product is warrantied against defects in materials and workmanship for a period of 12 months from the date of shipment to Buyer. The Warranty is limited to repair or replacement of the defective unit at the option of the manufacturer. This warranty is void if the product has been altered, misused, dismantled, or otherwise abused.

ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARE EXCLUDED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

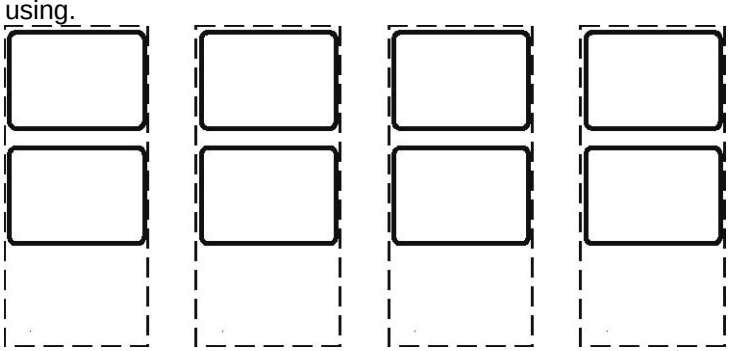
5.0 Specifications

Power	12 (150 mA) to 24 (75 mA) VDC (2W)
Memory	EEPROM 8K Byte
Temperature	VFD Type: 32 to 140 °F (0 to 60 °C) LCD Type: 32 to 122 °F (0 to 50 °C)
Display	Vacuum Fluorescent or backlit LCD; 2 or 4 Lines of 20 characters each; Character height is 0.2"
Communications	Serial RS232 Selectable 7 or 8 bit, Odd, Even or No Parity, 1 Start, 1 Stop bit, No handshake, 300, 600, 1200, 2400, 4800, 9600 or 19200 Baud. Note: Serial communications specifications apply to MMI printer setup and do not affect PC to MMI or Controller to MMI communications.
Controller Port Communications	RS232; Adaptor cable required. Communications parameters are Controller dependent.
Bezel	Membrane Keypad with tactile feedback; Rated NEMA 4X (water tight) provided it is installed with gasket provided as per installation instructions.
Dimensions	Bezel: 2.83(72)" H x 5.67(144)" W Panel Cutout: 5.43"(138mm) W X 2.68"(68mm) H x 3.5(89mm)" D Clearance depth required behind unit: approximately 3.54"(89mm) depending on cable connectors. Bezel Adaptor: 3.43(87)"H x 6.18(157)"W
Default Settings	Default Serial Port Communications Set Up: 9600 Baud, 8 bits, Parity = None.

Insert Planning Worksheet

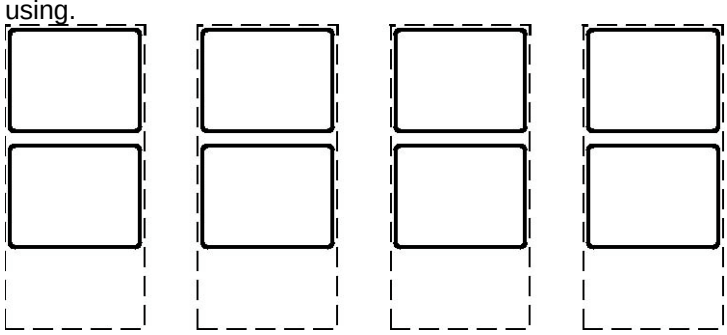
MMI-100 Function Key Insert Drawing

Make copies before using.



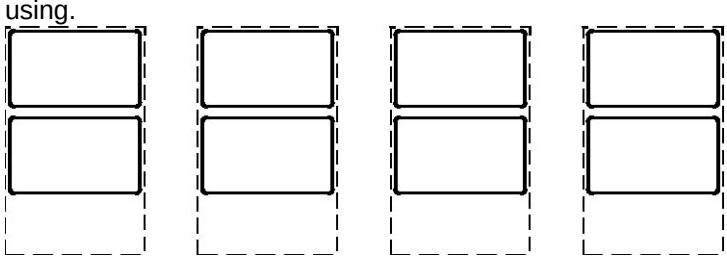
MMI-110 Function Key Insert Drawing

Make copies before using.



MMI-140 Function Key Insert Drawing

Make copies before using.



Message Planning Worksheet

Make copies before using.
Fill in blanks and circle items as desired.

Message # __ __ __ Chained to # __ __ __
Attributes: Line: U L B Flash Print Scroll: N F M S Min Time: __ __
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Message Triggering Register: ________________________
Serial Setup: ________________________________
Controller Type: _______________________ Model: ____________________

Alarm Planning Worksheet

Alarm Registers: _____, _____

Alarm Bit	Msg #	Alarm Bit	Msg#