

The MC100 is a microprocessor based clock and auxiliary circuit controller capable of synchronizing both digital and analog secondary clocks. The MC100 provides automatic corrections for power outages as well as programmed events such as daylight savings. Powered by a 120VAC supply, the MC100 utilizes a 10 year lithium battery for backup during power outages. A user-selectable time base allows the master clock to either monitor the power-line frequency, internal crystal oscillator as well as an optional GPS or LAN interface to provide the most accurate time keeping.

The MC100 comes standard with four circuits which may be used as either clock circuits or auxiliary circuits for tones, bells, and other timed events. Each circuit has an indicating LED and an OFF/AUTO/RESET slide switch for ease of manual control. The wall mount MC100 may be expanded to up to 12 circuits with the addition of EXP-4 circuit expander boards.

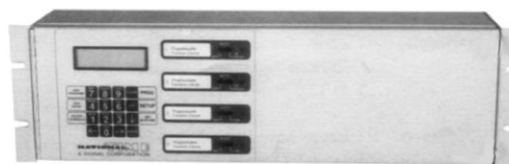
The MC100-RM Rack mount master clock provides easy mounting into standard rack enclosures and may be expanded to 8 circuits. An MC100-WP is a weather proof version offering up to 4 circuits of control for National's outdoor series of clocks when mounting in a sign or clock tower.

Programming is easy utilizing a backlit 32 character liquid crystal display and a 16 button keypad. The multifunction keypad provides single button menu access allowing quick and easy time, schedule, and setup changes. Two level password security may be used to protect technician level settings and programmed events.

The standard MC100 supports 20 program schedules with up to 200 program entries. Multiple schedules can be programmed to enable or disable on any date with Special Date events. When combined with the WeM-MC100 web-enable module, 20 program schedules and thousands of events can be programmed using the keypad or through a user-friendly browser based interface from any PC. Attractive neutral Powder Gray finish with Night Blue graphic overlay complete with label pockets for custom circuit legends.



MC100 shown with 12
circuit expander



MC100-RM



MC100-WP

Features:

- 4 Programmable Function Circuits
- Available to 12 Circuits
- Controls Clocks of Most Manufacturers
- Automatic Daylight Savings Adjustment
- 20 Program Schedules
- Special Date Schedule Programming
- 10 Year Lithium Battery Backup
- Manual Activation Switches per Circuit
- NIST, LAN, and GPS timekeeping options
- Web Browser Programming option

EXP-4 Expansion Module

The EXP-4 circuit expander adds additional clock and auxiliary circuits to a standard MC100. Included are four slide switches, relay board with terminal block, and graphic overlay with label pocket. The wall mount MC100 may be expanded to up to 12 circuits with two EXP-4s. The MC100-RM Rack Mount may be expanded to 8 circuits. The EXP-4 modules must be ordered with the MC100 since it may not be field upgraded.

SF100 Semi-Flush Trim

The SF100 is a heavy gauge steel trim which allows the MC100 to be mounted semi-flush and provides a 1" flange to create an attractive installation. The trim mounts between the box and the door so that only the low profile door is left proud of the finished wall.

Specifications

Input Power: 120VAC 50/60Hz, 0.20A Max

Standby Power: 10 year lithium battery

Control Circuits: 4 circuits standard with individual switch and LED indicator

Contacts: 2 Circuits have Form A and Form C Contacts;

2 Circuits have Form C Contacts.

8A @ 120VAC/24VDC resistive

Material: 18ga. Galvannealed Steel. Neutral Powder Gray finish w/ Night Blue Graphic

Dimensions: Surface Mount - 12"x12"x4"D, with SF100 Trim - 14"x14"

Rack Mount - 5.25"H x 19"W x 10.5"D (3U)

Weather Proof - 10"W x 7.25"H x 4.5"D

Part No.	Description
MC100	Surface Mount Master Clock with 4 Control Circuits
MC100-RM	Rack Mount Master Clock with 4 Control Circuits
MC100-WP	Weather Proof Master Clock with 4 Control Circuits
EXP-4	4 Circuit Adder Module for MC100 and MC100-RM
SF100	Semi-Flush Trim Kit for MC100

MC100-GPS

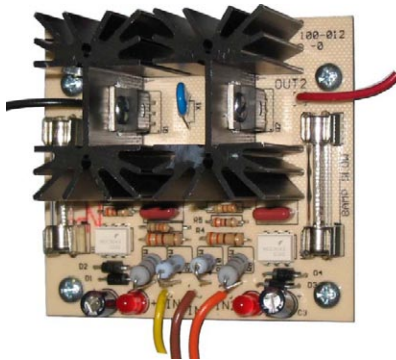
The NATIONAL TIME GPS Antenna enables the MC100 Master Clock to receive accurate time information from up to 12 satellites. Each satellite sets its time based on the atomic clock at the National Institute of Standards and Technology (NIST) which is exact to milliseconds in ten thousand years.

The GPS Antenna sends the number of satellites in view to the MC100 which is displayed on its LCD display. For proper operation, only three satellites are necessary. The communication between the MC100 and antenna is supervised and fault conditions are displayed. During fault conditions, the masters use their internal crystal to keep time accurate. The standard outdoor mounting requires a 1" x 14 TPI pole (by others). The GPS antenna comes standard with a 30' cable. Cable length may be extended to 100' with 5 conductor shielded low capacitance cable. For further distances up to 4000', RS232 to RS485 converters may be used (Telebyte 253T or equivalent) with 4 conductor shielded low capacitance cable.



Part No.	Description
MC100-GPS	Pole mount GPS Antenna w/ 30' cable for MC100

Power Supply Driver



The PS-DRIVER-2/5A output module provides general purpose solid state outputs to be used in conjunction with other National Time products to enhance the performance of the standard relay outputs. "Zero-Cross" turn on technology greatly reduces inrush currents and contact arcing exhibited by standard relay type control circuits.

A standard MC100 Master Clock's relay output performance may be enhanced with the addition of the PS-DRIVER-2/5A output module. When On-Demand resets are superimposed on an existing synchronous clock circuit, it is recommended to utilize this solid state output to eliminate the contact damaging arcing and high currents caused by high inductive loads like synchronous clock motors. The 5 amp outputs share a common feed which may be either 120VAC or 24VAC depending upon the clock or auxiliary device requirements. The outputs are indi-

vidually fused with standard Type GBB fuses.

The PS-DRIVER-2/5A module may be controlled with equipment by others since the outputs are controlled via two open-collector inputs of either AC or DC power with a wide operating range of 5 to 24 volts.

- Control Input Power: 5-28VAC; 52mA @ 24VAC; 11mA @ 5VDC
- Load Power Input Voltage: 19-120VAC
- Load Output Voltage: (Load Input Power Voltage - 1VAC)
- Load Output Power: 5A @ 24VAC; 5A @ 120VAC
- Dimensions: 2.75"W x 3.0"L x 1.75"H (board only)
9" x 8" x 4" (with enclosure)

Part No.	Description
PS-DRIVER-2/5A	Dual 5A Solid State Output Module in 9" x 8" x 4" Enclosure
PS-DRIVER-2/5A-BO	Dual 5A Solid State Output Module; Board Only
PS-DRIVER-2/5A-MP	Dual 5A Solid State Output Module; Board w/ Mounting Plate for MC100

MC100-LAN Time Base Module



The MC100-LAN Interface will allow the MC100 Master Clock to communicate with a Local Area Network. This communication allows the MC100 to synchronize its time display, and therefore every clock of your system, to a network time base. The time base is user selectable and can range from any PC on the network, the network server, any Simple Network Time Protocol SNTP server, or even the National Institute of Standards and Technology NIST over the internet. The MC100 can automatically connect to the network using the latest in DHCP technology and will auto negotiate 10/100 Mbit communication. The LAN interface is easily configured either through the MC100 keypad or through a convenient browser based interface from any PC on the network.

The MC100-LAN mounts directly into the MC100 enclosure to provide a standard RJ-45 connection to the network. Power to the interface is provided by the MC100. 10/100Mbit auto-negotiating. TCP/IP; DNS; DHCP; SNTP; TIME; HTTP; FTP protocols supported.

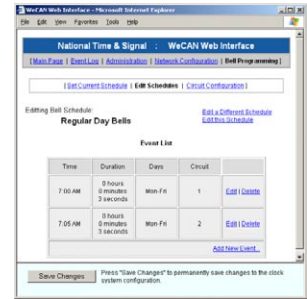
Part No.	Description
MC100-LAN	LAN Timekeeping Interface for MC100

WeM-MC100 Web-Enable Module



The WeM-MC100 Module will allow the MC100 Master Clock to communicate with a Local Area Network for time keeping as well as provide web browser accessibility. All MC100 settings and schedules can be programmed using any standard web browser without the need to install special software using National's exclusive WeCAN™ programming interface. This allows access from any computer on the internet. Security is achieved using MD5 Digest Authentication.

The WeM-MC100 increases the total event storage from 200 in the standard MC100 to thousands of events. Up to 20 simultaneous schedules can be enabled for special dates such as holidays, half days, and special events. The WeM-MC100 mounts directly into the MC100 enclosure to provide a standard RJ-45 connection to the network. Power to the interface is provided by the MC100. The MC100-LAN can be field upgraded to WeM-MC100 operation. (Consult factory).



Part No.	Description
WeM-MC100	Web-Enable Module for MC100 Master Clock

WeCAN™ Family of Devices Web Enabled Clock and Auxiliary Network

