

## EAGLE EPAC M50 NEMA Controller

### Hardware Features

- Exceeds NEMA TS-1 and TS-2 standards for traffic controllers
- Removable Hand-held, multi-line alphanumeric backlit display
- 8MB of flash memory is used to retain all timing and control parameters even during power outages. No replacement of EPROMs necessary
- Built-in 10 Base-T Ethernet and Infrared ports
- Datakey™ option - carries timing data easily from controller to controller

### Coordination Modes

- Permissive Mode
- Yield Mode
- Permissive Yield Mode
- Permissive Omit Mode
- Sequential Omit Mode
- Full Actuated Mode

### Adaptive Traffic Control

- 16 Vehicle Phases
- 16 Pedestrian Phases
- 4 Timing Rings
- 16 Overlaps
- 80 Detectors
- Adaptive Maximum Routines
- Adaptive Protected/Permissive Routines
- Coordination Virtual Split Routine

### Time Base Control

- 250 Events
- 99 Day Programs
- 10 Week Programs

### Preemption/Priority

- 6 Preempt Routines
- 6 Priority Routines

### Other Features

- Diagnostics & Status Displays
- Reports

The EAGLE EPAC M50 Series Controller Unit is a fully actuated controller unit with a full complement of operational, programming, and diagnostics capabilities. The M50 Series Controller Unit EXCEEDS both NEMA TS-1 1989 and TS-2 2003 Actuated Controller Unit Standards.

The M50 Series Controller Unit has a removable LCD alphanumeric backlit display unit (8-line · 40 char/line). Programming is easy and error free using English Language Menus. Within a menu, each parameter can be viewed and a cursor moved to that parameter for changes. Related parameters are visible simultaneously, making verification an easy matter. The screen provides both programming area identification and editing prompts. The M50 can also be utilized as a master control unit using SE-MARC Master software.



EAGLE EPAC M52 TS-2, Type 2 Controller  
w/ Datakey™ Card (optional)

### Hardware Design

The M50 Series Controller Unit is designed for efficient operation and ease of maintenance. The chassis is made of injection molded, high impact polycarbonate and is designed for easy access to the boards for testing without disassembly. A molded handle makes the lightweight controller easy to carry.

The controller is convection cooled with vent slots in the back and openings along the bottom. Adjustable rubber feet along the front allow users to change the angle of the display and create more or less space around the controller. Grounding metal feet in the rear stabilize the controller.

The M50 features a removable, hand-held LCD alphanumeric backlit display unit, with 8-line, 40 characters per line display capability. The display unit connects to the controller via a dedicated C60 port.

# A Look at the EAGLE EPAC M50 Series Controller...

## TS-2 Type 1 and 2 Features

TS-2, Type 1 Actuated Controller Unit is a performance oriented controller unit using a high speed data channel between all major components within the Terminal and Facilities.

TS-2, Type 2 Actuated Controller Unit includes all the features of the Type 1 and adds the following:

1. MSA, MSB, and MSC connectors for data exchange with the Terminals & Facilities. This provides a degree of downward compatibility with NEMA TS-1 counterparts.
2. 37 pin "D" connector for backward compatibility with TS-1 counterpart.

## TS-2 Advantages

Controller assemblies with TS-2 Detector Racks provide increased capability, consume less power, and provide additional diagnostic data to the Controller Unit via the SDLC port. The Controller Unit can take corrective action much earlier than one based on internal diagnostics.

Controller assemblies with TS-2 Monitors provide additional diagnostic data to the Controller Unit via the SDLC port.



Removable Hand-held Display

## Six Modes of Coordination

**Permissive Mode** provides non-actuated coord phase, vehicle and pedestrian, with permissive windows opened phase by phase to the non-coord phases.

**Yield Mode** provides non-actuated coord phase, vehicle and pedestrian, with a single permissive window for all non-coord phases.

**Permissive Yield Mode** provides for actuated coord phase, vehicle and pedestrian, with permissive windows opened phase by phase to the non-coord phases. Additionally, the coord phase vehicle may extend its green time at the beginning of the first permissive window.

**Permissive Omit Mode** provides operation similar to the Permissive Yield Mode, except that the coord phase, once terminated, is prevented from occurring prior to the end of the last permissive.

**Sequential Omit Mode** provides operation similar to the Permissive Yield Mode, except the permissive is a phase by phase sliding window (only one phase in a ring will be allowed service at any time).

**Full Actuated Mode** provides operation similar to the Permissive Yield Mode, except that any phase may be serviced and rescheduled in the standard sequence following the first permissive and through the last permissive.

## Adaptive Traffic Control

Simple or highly complex control including:

- 16 Vehicle Phases
- 16 Pedestrian Phases
- 4 Timing Rings
- 16 Overlaps
- 80 Detectors

**Adaptive Maximum Routines** which are enabled via Time Base, offer three separate Step values to cause the running maximum to increase or decrease smoothly based on current traffic conditions. Separate Dynamic Maximum parameters are available for each Step value.

**Adaptive Protected / Permissive Routines** measure the volume of Left Turn vehicle traffic and available gap windows in the conflicting Through-Vehicle traffic to determine whether the Left Turn should operate protected or permissive.

**Coordination Virtual Split Routine** provides for actuated coord phase vehicle and pedestrian modes. This control provides for a period of time of each cycle which is distributed to the Coord Phase(s) or non-coord phases, based on Coord Phase vehicle traffic activity.

**Coordination Adaptive Split Routines** which are enabled via Time Base adjust split times smoothly based on current traffic conditions.

## Time Base Control

Internal Time Base Control is a highly flexible routine operating within the M50 Series Controller Unit. Included are:

- 250 Events for the control of Pattern Selection, Free, Flash, Dimming, Detector Diagnostic Parameters, System Detector Logging, 3 Auxiliary Functions, 8 Special Functions, 16 Traffic Functions
- 99 Day Programs
- 10 Week Programs

## Preemption/Priority

Internal Preemption is a highly flexible routine operating within the M50 Series Controller Unit. Included are:

- 6 Preempt Routines providing complete signal control
- 6 Priority Routines providing complete phase control and in-sync return to coordination

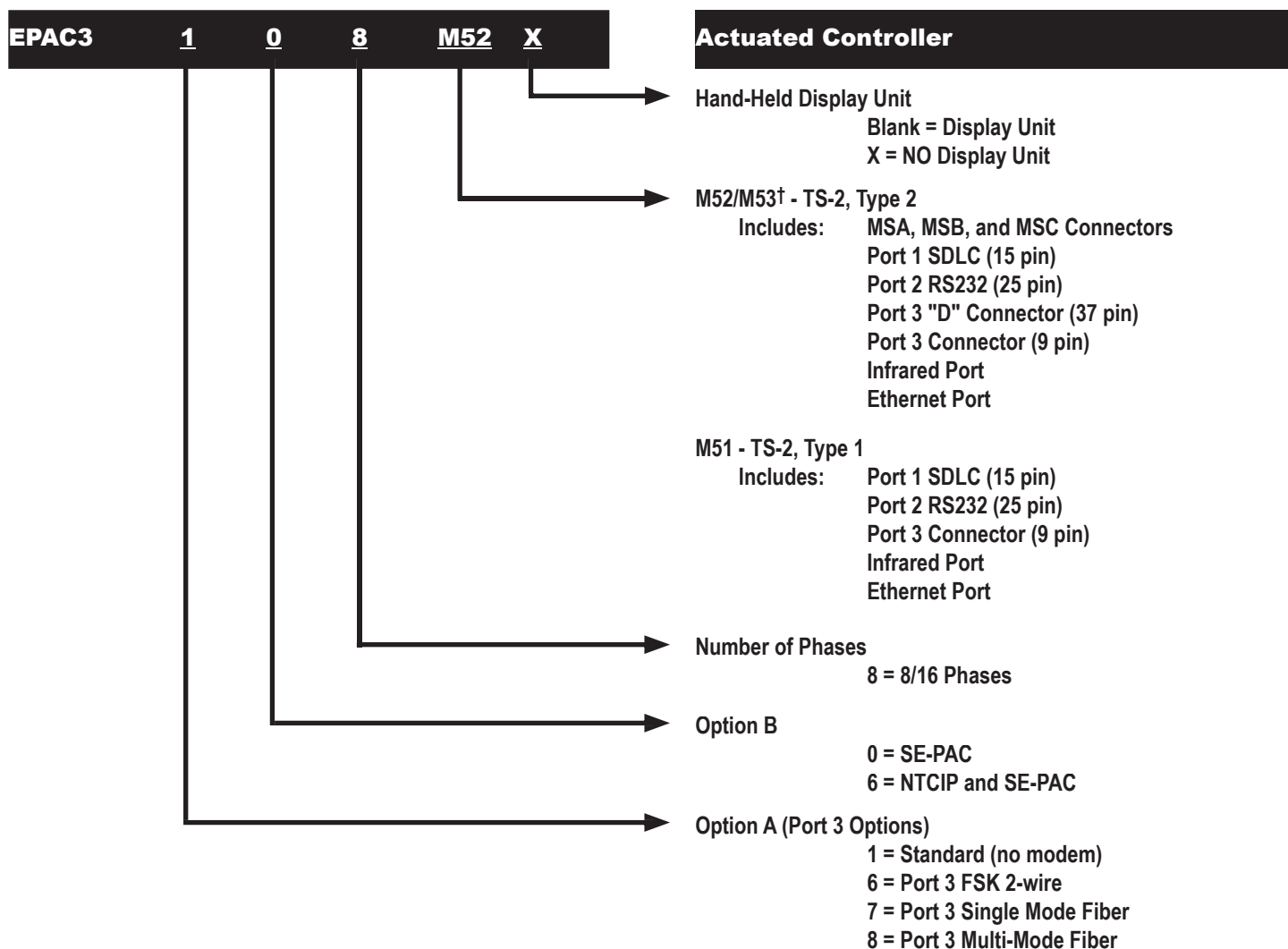
Preempt activity can be monitored on a Preempt Status display which denotes:

- Preempt In Control, Interval Timing, & Interval Countdown
- Individual Preempt Status & Timing
- Individual Priority Status & Timing

## Security

The M50 Series Controller Unit provides for a user specified security code entry before data may be altered. This security code entry is not required to view any parameters. The M50 Series Controller Unit can also disable security code requirements for perpetual access.

# Ordering Matrix



†M53 same as M52, with reverse order MSC, MSB, and MSA connectors.

For Datakey™ and/or additional Port 3 Options, add one of the following part numbers (use 1 for Option A):

Part Number	Description	Part Number	Description
AAD15288P001	Datakey*, Port 3 RS-232	AAD15288P007	Datakey*, Port 3 RS-232, Single Mode Fiber
AAD15288P002	Datakey*	AAD15288P008	Datakey*, Port 3 Single Mode Fiber
AAD15288P003	Port 3 RS-232	AAD15288P009	Port 3 RS-232, Single Mode Fiber
AAD15288P004	Datakey*, Port 3 RS-232, FSK	AAD15288P010	Datakey*, Port 3 RS-232, Multi-Mode Fiber
AAD15288P005	Datakey*, Port 3 FSK	AAD15288P011	Datakey*, Port 3 Multi-Mode Fiber
AAD15288P006	Port 3 RS-232, FSK	AAD15288P012	Port 3 RS-232, Multi-Mode Fiber

\* Datakey™ reader ONLY. Datakeys must be purchased separately.

Hand-held display can be ordered as a separate item (AAD14767P001). Unit can also be ordered with NextPhase firmware (MBU13995P100). Please contact your local area distributor to order SCOOT enabled controllers.

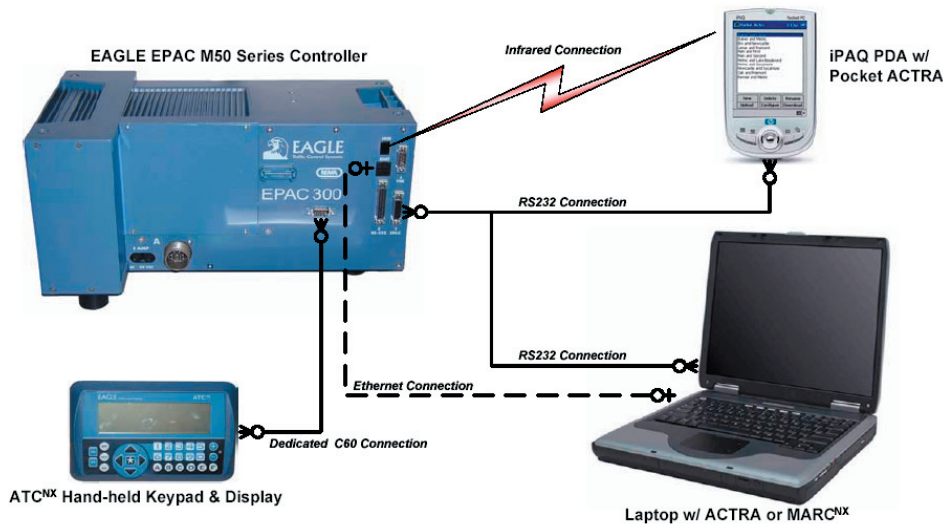


Diagram of the many available options for connecting to the EPAC M50 series in the field, to view and change data.

## Reports

The M50 Series Controller Unit provides extensive reporting capability. Each report entry includes the Date and Time of occurrence.

- Local Alarm Log, stores up to 120 events
- Comm Fault Log, stores up to 60 events
- Detector Fault Log, stores up to 60 events
- System Detector Log, stores up to 96 events
- MOE Log, stores up to 24 events
- Speed Log, stores up to 24 events
- Volume Count Log, stores up to 72 events
- Cycle MOE Log, stores up to 60 events
- MMU Fault Log, stores up to 10 events

## Diagnostics & Status Displays

A resident diagnostic program is standard in the M50 Series Controller Unit. In addition to the extensive displays to aid in intersection setup, monitoring, and operation, the resident diagnostic program enhances the maintenance and troubleshooting of the controller assembly.

- Monitor Compatibility Diagnostics
- Monitor Field Status Diagnostics
- Cycling Diagnostics
- Detector Diagnostics
- Port 1 Message Display
- Port 2 Comm Status Display
- Port 3 Comm Status Display
- Hardware I/O Status Display
- MMU Status Display

## SPECIFICATIONS

### Physical Dimensions

177mm H x 394mm W x 241mm D  
7" H x 15.5" W x 9.5" D

### Weight

4 kg (typical)  
8 lbs. (typical)

### Power Consumption

25 Watts (typical) · 120 Watts (max)  
89 to 135 VAC · 57 to 63 Hz

### Temperature

-34°C to +74°C  
-30° F to +165° F

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