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### 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
- System Detector Log, stores up to 96 events
- Monitor Compatibility Diagnostics
- Port 1 Message Display
- Speed Log, stores up to 24 events
- Detector Diagnostics
- Detector Fault Log, stores up to 60 events
- Cycle MOE Log, stores up to 60 events
- MOE Log, stores up to 24 events
- MMU Fault Log, stores up to 10 events
- Volume Count Log, stores up to 72 events
- Comm Fault Log, stores up to 60 events
- Hardware I/O Status Display
- MMU Status Display
- Port 3 Comm Status Display
- Port 2 Comm Status Display

### 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
<table>
<thead>
<tr>
<th>Physical Dimensions</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>177mm H x 394mm W x 241mm D</td>
<td>25 Watts (typical) · 120 Watts (max)</td>
</tr>
<tr>
<td>Weight</td>
<td>Temperature</td>
</tr>
<tr>
<td>8 lbs. (typical)</td>
<td>-30° F to +165° F</td>
</tr>
</tbody>
</table>

### Hardware Features
- Exceeds NEMA TS-1 and TS-2 standards for traffic controllers
- Removable hand-held, multi-line alphanumeric backlit display
- 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 Omni Mode
- Sequential Omni Mode
- Full Actuated Mode

### Adaptive Traffic Control
- 16 Vehicle Phases
- 16 Pedestrian Phases
- 4 Timing Rings
- 16 Overlaps
- 20 Detectors
- Adaptive Maximum Routines
- Adaptive Protected/Permissive Routines

### Time Base Control
- 200 Events
- 99 Day Programs
- 250 Events

### Preemption/Priority
- 6 Preempt Routines
- 6 Priority Routines

### Other Features
- Diagnostics & Status Displays
- Reports

### 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 NBM-13-1 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.

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**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, after three separate Set values to cause the running maximum to increase or decrease smoothly based on current traffic conditions. Separate Dynamic Maximum parameters are available for each Set value.

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

**Coordination Virtual Signal Routines** provides for actuated coord phase vehicle and pedestrian phases. The control provides for a period of time 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, Internal Timing & Internal 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.

---

**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 1st 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.

**Permissive Yield Omit modes** provide 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 reserved in the standard sequence following the first permissive and through the last permissive.

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

- **AAD1528BP001** Datakey®, Port 3 RS-232
- **AAD1528BP002** Datakey®, Port 3 RS-232, Single Mode Fiber
- **AAD1528BP003** Port 3 RS-232
- **AAD1528BP004** Datakey®, Port 3 RS-232, FSK
- **AAD1528BP005** Datakey®, Port 3 FSK
- **AAD1528BP006** Port 3 RS-232, FSK

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**Necessary**

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

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**Security+Intelligence**

Hand-held display can be ordered as a separate item (AAD14767P001). Unit can also be ordered with NTCIP firmware (MBU13995P100). Please contact your local area distributor to order SCOOT enabled controllers.
A Look at the EAGLE EPAC M50 Series Controller...

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, after three separate 8-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 8-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.

Coordinated virtual gap routine provides for coordinated phase and pedestrian modes. This control provides for a period of time of each cycle which is distributed to the coordinated phase(s) or non-coordinated phases, based on coordinate 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 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-synch return to coordination

Preempt activity can be monitored on a Preempt Status display which denotes:
- Preempt in Control, Internal Timing, & Internal 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.
Local Alarm Log, stores up to 120 events
System Detector Log, stores up to 96 events
Cycling Diagnostics
Detector Fault Log, stores up to 60 events
MMU Status Display
Monitor Field Status Diagnostics
Speed Log, stores up to 24 events
MOE Log, stores up to 24 events
Monitor Compatibility Diagnostics
Hardware I/O Status Display
Port 1 Message Display
MMU Fault Log, stores up to 10 events
Comm Fault Log, stores up to 60 events
Detector Diagnostics
Volume Count Log, stores up to 72 events
Port 3 Comm Status Display

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
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- 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
- Manual Override 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
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- Detector Diagnostics
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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 x 40 characters). 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.

The EAGLE EPAC 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 Series Controller Unit has an external Ethernet interface port, a dedicated Ethernet port, a Datakey™ Option, and a USB port. The EAGLE EPAC M50 Series Controller Unit also has an external Ethernet interface port, a dedicated Ethernet port, and a Datakey™ Option. The EAGLE EPAC M50 Series Controller Unit also has an external Ethernet interface port, a dedicated Ethernet port, and a Datakey™ Option.

EAGLE EPAC M50 NEMA Controller

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

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
- 8 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

SPECIFICATIONS

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Intelligent Transportation Systems