ASC - 8000

The ASC-8000 Advanced System Controller is the culmination of extensive research into customer needs, system applications, and microprocessor based technology, combined with Econolite's 50 plus years of traffic control experience. This research has resulted in a system ready controller with a long list of advanced standard features combined with a programming method so easy to learn that most users can be entering data in less than five minutes with little or no instruction.

Keyboard programmable controllers have typically been difficult to program in part due to limited display capability and varying keyboard entry sequences. **Not so with the ASC-8000.**

Through the use of a multi-line alphanumeric Liquid Crystal Display the ASC-8000 provides easy to use menu driven programming, traffic engineering terminology prompts, simple cursor control of data entries, and an extensive status display capability.

Easy to use programming and advanced display capabilities are only two of many features of the ASC-8000. Features exceeding NEMA TS1-1983 standards, state of the art microprocessor design combined with a 5 year warranty put the ASC-8000 at the leading edge in traffic technology.

A S C - 8 0 0 0

EXPANDED FEATURES

DATA ENTRY

Traffic terminology menus lead the user from a main menu to more specific programming areas: Controller, coordination, preemption, detection, time-of-day programming, telemetry, display, utilities and options. All data is input using numeric and cursor keys and consists of number entries and YES/ON or NO/OFF selections which enable or disable controller functions. Easy to read keys provide both tactile and audio feedback. The 4 line by 40 character LCD display has eight keyboard adjustable contrast settings and E-L backlight providing easy to read displays under all lighting conditions.

```
          MAIN MENU
1.CONTROLLER  4.NIC/TOD   7.STATUS DISP.
2.COORDINATOR 5.TELEMETRY 8.UTILITIES
3.PREEMPTOR   6.DETECTORS 9.OPTIONS

        CONTROLLER SUBMENU
1. TIMING DATA   4. START/FLASH DATA
2. OVERLAP DATA  5. OPTION DATA
3. RECALL DATA
```

DATA MODULE

One small plug-in module contains intersection configuration, timing, and operation data. The data can thus be easily transferred from one controller to another. The EEPROM which stores this information retains all data during power or battery failures.
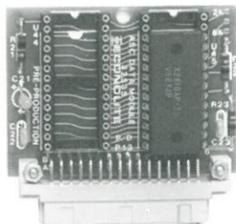
DYNAMIC DISPLAYS

Extensive monitoring capabilities are provided by eight dynamic displays. Overall and specific intersection timing is easily viewed. Displays include error messages which help with fault isolation.

```
2 MGRN   6 T/N  -T- - - -T- -    5% PERM
  PCLR  15 VEH R- -R-R-R- -R-R NIC-112
6 MGRN   6 PED  -N- -R- -N- -R
  PCLR  15 PRE  / / / /        17:40:55
```

TERMINAL INTERFACE

Expanded communication capabilities include: Data transfer between ASC-8000 controllers, printers, and personal computers.

MODULAR DESIGN

Disassembly is simple. Four modules make up the controller: Processor/Display, I/O Interface, Power supply, and Telemetry (optional). All modules may be quickly removed and replaced. Easy access to all modules without the use of extender cards simplifies maintenance.
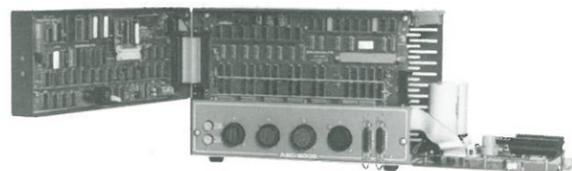
PROGRAMMING FLEXIBILITY

Engineered to satisfy customer needs, flexible programming gives the user control of many powerful traffic techniques.

- System ready controller with coordination, preemption, and time-of-day included as standard functions.
- Phase sequence allows any combination of up to eight phases, two timing rings and six concurrent groups.
- Expanded detector input capabilities overcome standard detector limitations. Sixteen detector inputs programmable as to phase and function including extend or delay, stop, and calling detectors. Cross switching can be used to apply detector inputs to other phases.
- Guaranteed minimum times for major timing intervals.
- Overlap capabilities: Up to twelve overlaps, protected-permissive and timed overlaps, keyboard or NEMA overlap card programmable.
- Five-Section-Left-Turn-Head programming with simple YES and NO selection.
- Soft recall allows selection of rest phases.
- Conditional Service and Reservice allow phase re-timing after normal service.
- Simultaneous Gap Termination for simultaneous phase gap-out in both timing rings.
- Back-up Protection inhibits service of left-turn phases within the same concurrent group for protected-permissive left turns.
- Dynamic Extension of max timers extend the programmed max timer up to a third MAX time based on vehicle demand.
- Dimming is enabled by phase, color, overlap, and time-of-day.
- MUTCD flash operation with keyboard selectable flash phases.
- Provisions for handling Canadian advanced green and early walk indications.

AVAILABLE OPTIONS

- Fiber optic telemetry interface.
- Menu driven diagnostics for component and circuit testing.
- ASC-8000RM rack mounted version with type 170 connector interface.

COORDINATION

SPECIAL FEATURES

Efficient and flexible coordination techniques are easy to implement with ASC-8000 programmability.

- 6 cycles, 5 offsets and 4 splits per cycle.
- Automatic calculation of yield and force off points.
- Three permissive periods: Automatic, Dual and Single.
- Three methods for offset correction: Smooth Transition, Add Only Smooth Transition, and Dwell.
- Split demand allows local split selection to handle critical or problem traffic movements.
- Nonactuated or actuated coordinated phase. Dynamic split allows extension of coordinated phase split.
- Coordinated phase selectable per cycle.
- Lead-lag phase sequence selectable per cycle.
- Omit phases on a per cycle or per split basis.
- Recall programmable per cycle.
- Crossing artery split selection for synchronization between main and crossing arteries.
- Sync monitor detects loss of sync and selects NIC® mode as backup.
- Plan commands for multiple zone coordination.
- Coordinator display shows command source, current cycle, offset, split, system and local cycle in percent, commanded and actual offset, offset correction, hold, force-off, permissive, and green band indicators.

```
CMD-NIC    LOC CYC 35%     RING 1 2 DIR
CYC-1  90  SYS CYC 98%     HOLD    1 2
OFT-1      CMD OFT 50%     F.O.
SPL-2      ACT OFT 62% ADD PERM 4 8
```

MODES OF OPERATION

- Noninterconnected coordination — using time-of-day programming.
- Telemetry — Provides complete systems capabilities.
- Standard, Fixed Time or TM series — Hardwire interconnect.
- Free — Controller operates on its own timing in a fully acutated mode.
- Time-of-day master/local controller — Hardwire interconnect.

MANUAL OVERRIDE

Manually set controller operation in any cycle, offset, split or free. Manual commands override other coordinator source inputs.

NONINTERCONNECTED COORDINATION

Time-of-day programming defines the operation of the NIC® coordination and backup mode.

- Patented time-base provides accurate time and date information. Time drift with power removed is less than 25 ppm (parts per million).
- Automatic daylight savings and leap year adjustment.
- Dynamic status display shows time, date, current program, weekly program, next step and time, current program step, cycle, offset, split, flash, max timer and special functions selected.

- Yearly program with 53 weeks.
- Ten weekly programs to accommodate both normal and seasonal traffic patterns.
- 16 day programs.
- 36 holiday programs override normal day programming. Select date, program number and repeat feature. Repeat allows program to be in effect the following year.
- 160 program steps available for creating day programs. Each step selects starting time, cycle, offset, split and optional selection of flash, max timers, dimming, and control of four special outputs.

```
18:02:59  3/11/88        MAX SPECIAL
STEP PGM TIME  C/O/S FL DIM 2 3 1 2 3 4
  22   1 8:46  1/1/2        X X   X
WEEKLY PGM 01      NEXT STEP  7  23:00
```

®NIC is a registered trademark of Econolite Control Products, Inc.

PREEMPTION

PRIORITY PREEMPTORS

Six priority preemptors allow multiple railroad or emergency vehicle preempt sequences. Priority preemption options include:

- Preemptors can be linked for complex or varied preemption sequences including multiple track clearance phases.
- Preemptors served on priority or nonpriority basis.
- Locking or non locking preemptor call.
- Hold options allow emergency lane green, all red, limited service, or flash conditions.
- Preemptor can override controller timing except during limited service in the Hold interval.
- Pedestrian indicators can be selected as ON, OFF or operational during preemption.
- Overlaps may be terminated at the beginning of preemption.
- Special timers: Duration of preemption sequence, Delay time between receipt of preemptor call and initialization of preemption, Inhibit time to stop normal phase sequencing.
- Easy selection of track clearance, hold and exit phases.
- Selection of calls to be placed after preemption.

BUS PREEMPTORS

Four bus preemptors allow preferential service for bus traffic. Programming options include:

- Reservice time control of repeated preemptor service.
- Delay time between receipt of bus preemptor call and start of preemption sequence.
- Inhibit time stops normal phase sequencing before preemption.
- Preemptor interval times for green, yellow, red, and pedestrian clearance.
- Selection of phases in effect during preemption.
- Direct interface to Opticom high and low priority preempt calls.
- Preemptor dynamic status display shows preemptor timing interval and status plus indications for calls, inhibit, delay and bus reserve timers.

```
PRIORITY      BUS          PMT   1
1 2 3 4 5 6 1 2 3 4  PHASE 4 T/C YEL  2.5
A D   C          R   PHASE 8 T/C YEL  2.5
                        DURATION 017
```

TELEMETRY

SYSTEM APPLICATIONS

Designed for system applications, the ASC-8000 can be a local or master controller operating in a hardwire interconnected system or part of a non-interconnected time-based system. When equipped with an optional Telemetry module, the ASC-8000 becomes a part of Econolite's Zone Monitor III system specifically designed to implement the many features of the ASC-8000. Time proven communication techniques are combined in the module with extensive status reporting for diagnostics and evaluation of system performance, providing the system owner with the most complete real-time displays capability in the industry.

SYSTEM COMMUNICATIONS

The Telemetry module operates as a transceiver providing communication between the ASC-8000 and KMC-10,000 master. Communication is achieved over voice grade four-wire type 3002 leased line or customer owned cable. Capabilities include: receipt of system commands; readback of intersection status including vehicle, pedestrian, and overlap indications; detector activity; event and alarm conditions; system detector data; and upload/download of entered data.

SPEED DETECTORS

Used for speed monitoring, two system detector pair inputs are used to generate counts for calculating speed based on speed detector distance. The speed data is then read back to the system master for reporting.

SYSTEM I/O INTERFACE

System inputs:

- Eight system detector inputs for volume and occupancy counts.
- Two user defined Alarm inputs allow reporting of special conditions or events.
- External address assignment provides permanently defined and enabled telemetry address.
- Conflict flash input alerts system of a conflict condition.
- Local flash input indicates that intersection has been set to flash.
- Door Open (MAINT REQD) indicates cabinet door open.

System Outputs:

- Four special function outputs provide control of auxiliary functions or equipment on a system wide basis.
- LEDs indicate receipt of carrier, valid data and transmission.

SPECIAL FEATURES

- Keyboard entry of telemetry address or external address assignment.
- Self-diagnostics test major functions and circuits. Test status is displayed.
- Dynamic status display shows system detector inputs, telemetry address, speed calculations, transmit and valid data indicators.