# I R I D E O N ®

# Control Installation and User Manual

Revision B

# Table of Contents

# Introduction

This manual covers detailed steps for installation and operation of the Irideon® control system. It is designed to be used in conjunction with the existing luminaire owners manual for the specific luminaire type you are using.

The introduction contains the following sections:

## Using this manual

This manual is intended for use in conjunction with the manual specific to your luminaire type. This document will cover the detailed steps for installation of the Irideon® control system as well as general information for the owner. Instructions for removing and installing user replaceable items can also be found in this manual.

**Note:** *Notes are helpful hints and information that is supplemental to the main text.*

**CAUTION:** *A Caution statement indicates situations where there may be undefined or unwanted consequences of an action, potential for data loss or an equipment problem.*

**WARNING:** *A Warning statement indicates situations where damage may occur, people may be harmed, or there are serious or dangerous consequences of an action.*

## Related Documents

In addition to this user guide, the following documents are related to the ETC®, Inc. Irideon® product line:

### Composer™ Software V3.1.3 User Guide

The Composer Software V3.1.3 User Guide describes all operational information associated with the Composer Software application. The manual does not provide detailed descriptions of the Composer Hardware components such as the MCP, ATC, Remote Stations, or the automated lighting fixtures themselves. Refer to the associated user manuals for additional information on those components.

### Composer Lite™ V1.1 User Guide

The Composer Lite V1.1 User Guide describes all operational information associated with the Composer Lite software application. The manual does not provide detailed descriptions of the automated lighting fixtures themselves. Refer to the associated user manuals for additional information on those components.

### AR50™ Wash Luminaire Owner's Manual

The AR50 Wash Luminaire Owner's Manual provides a detailed reference on the AR50 luminaire. Fully illustrated, the manual gives step-by-step procedures for site preparation, physical mounting, address configuration, power and control cabling, testing and troubleshooting, and field maintenance procedures, including lamp replacement.

### AR6™ Recessed Luminaire Owner's Manual

The AR6 Recessed Luminaire Owner's Manual provides a detailed reference on the AR6 luminaire. Fully illustrated, the manual gives step-by-step procedures for site preparation, physical mounting, address configuration, power and control cabling, testing and troubleshooting, and field maintenance procedures, including lamp replacement.

### AR500™ *Exterior Wash Luminaire Owner's Manual*

The AR500 Exterior Wash Luminaire Owner's Manual provides a detailed reference on the AR500 luminaire. Fully illustrated, the manual gives step-by-step procedures for site preparation, physical mounting, address configuration, power and control cabling, testing and troubleshooting, and field maintenance procedures, including lamp replacement.

## Maintenance

The ETC Irideon® Control System is designed for maintenance free operation. In the event problems do occur, please contact your local ETC service center or call ETC Technical Support. This manual also contains a troubleshooting guide to aid in the identification of failures discovered during initial installation or daily use.

## Recommended Safety Practices

Do not install this equipment with power applied. Ensure incoming power is disconnected prior to installation or maintenance of this equipment.

# Support

If you are having difficulties, your most convenient resources are the references given in this manual, the luminaire manual, and Software manual provided with your system. To search more widely, try the ETC web site at www.etcconnect.com.

## Your Dealer

ETC, Inc. has a network of authorized dealers. Please call the ETC, Inc. Sales Department for information about contacting an authorized dealer in your area. Your authorized dealer has been thoroughly trained and equipped to assist you with your automated lighting needs. Contact your dealer first if you have any technical questions. For your convenience, write the name, address, and phone number of your dealer here:

Name: _____

Address: _____

City: _____State: ___Zip: _____

Phone: _____Fax: _____

## Technical Support

If none of these resources is sufficient, contact ETC Technical Support hours of operation are 8:00 AM to 5:00 PM Central time, Monday through Friday. If you call after hours, you may leave voice mail. The voice mail activates a pager, so please indicate clearly if your problem is an emergency. Emergency calls can generally be handled within a reasonable time.

Phone: 608-831-4116

Toll Free:800-688-4116 (US Only)

***When calling for assistance please have the following information handy:***

- Type of system installation (ex. Composer with MCP, Composer Lite, or DMX Interpreter).

- List of components in system including luminaire types and other interfaces to the system.

### E-Mail

Ask questions and receive detailed answers from the Technical Support Department. Just send e-mail to the address listed below. You will receive a reply by e-mail.

Service@etcconnect.com

### Fax

You can fax questions or comments to ETC, Inc. Just send a fax to the number listed below. You will receive a reply by fax.

608.836.1736

### Americas

ETC International
Technical Services Department
3030 Laura Lane
Middleton, WI 53562
+1-800-775-4382 (US ONLY)
+1-608 831-4116
service@etcconnect.com

### Europe

ETC Europe Ltd.
Technical Services Department
5 Victoria Industrial Estate
Victoria Road,
London W3 6UU England
+44 (0)20 8896 1000
service@etceurope.com

### Asia

ETC Asia, Ltd.
Technical Services Department
Room 605-606
Tower III, Enterprise Square
9 Sheung Yuet Road
Kowloon Bay, Kowloon, Hong Kong
+852 2799 1220
service@etcasia.com

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# *C h a p t e r   1*
# System Overview

The Irideon architectural lighting control system is designed to maximize the full potential of Irideon multi-parameter luminaires.

This chapter contains the following sections:

# Irideon Control System Options

The Irideon system is a modularized control system designed to maximize the full potential of Irideon® multi-parameter automated luminaires. ETC® Inc., offers three control system options for Irideon® automated luminaires. Depending on the requirements of your application your control system may be defined as any of the following.

- For maximum flexibility and convenience your control system may include a Composer / MCP Control System. This system is comprised of a PC running Windows® (PC not provided by ETC), Composer Software, and a Maser Control Processor (MCP). Optional controls for this system type may include Remote Control Stations and the Irideon Astronomical Time Clock (ATC).

- A simpler less complex control system may include Composer Lite Control System. This system is comprised of a PC running Windows® (PC not provided by ETC), Composer Lite Software and a RJ45 connection from the PC to the luminaire or programming jack for programming. This system is limited to a maximum of 31 Irideon luminaires. The ATC and Remote Control Stations are not compatible.

- For integration of DMX512 control sources your system may include a DMX Interpreter System which converts DMX512 into Irideon protocol allowing Irideon luminaires to be controlled from any DMX512 controller.

# Composer / MCP Control System

AC

AR50's

AR6's

AC

Luminaire Data

AR500's
Standard   &   Remote

MCP

To DMX-512
Devices

ATC

AC

CS

Recall Station
Data & 24VDC

AC

MPR        8RS        2RS
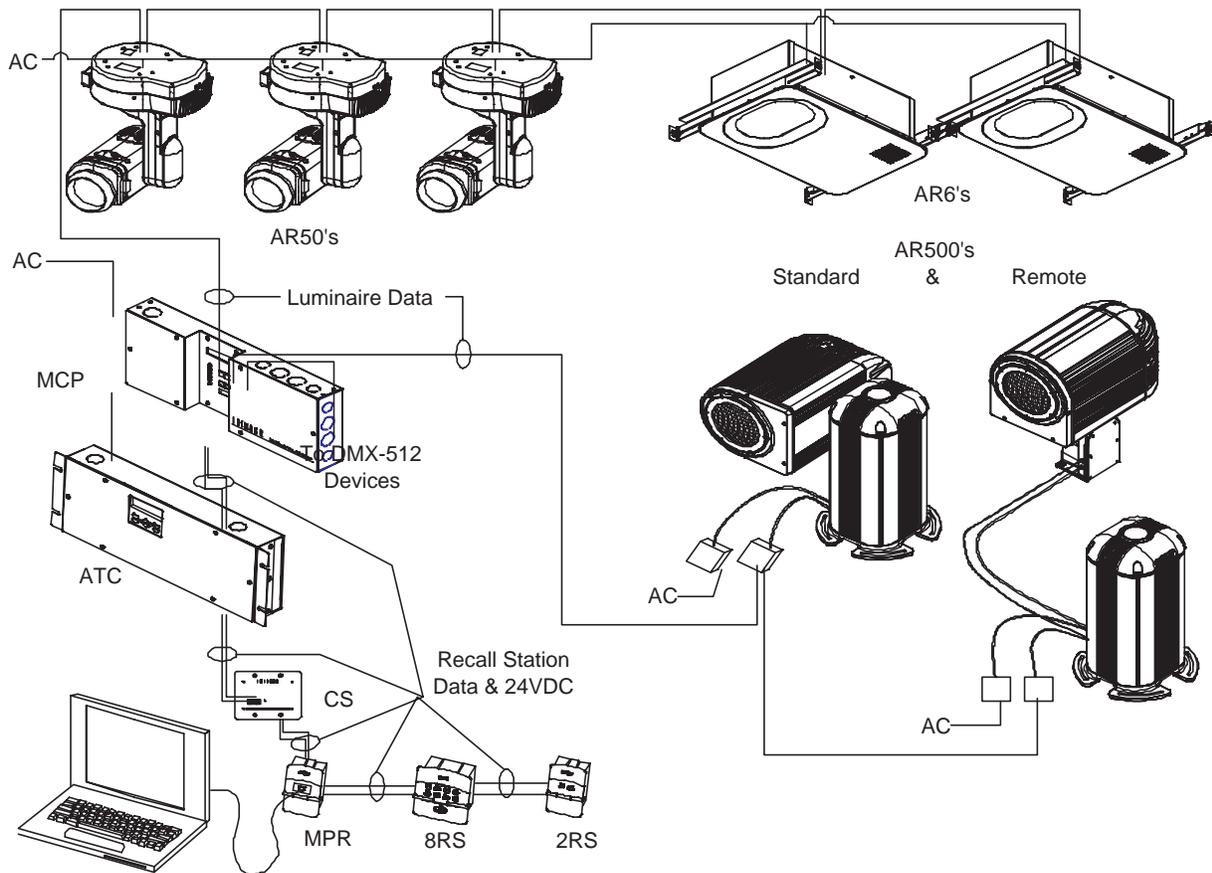
The Composer / MCP Control System provides flexible control of your
Irideon luminaires. This type of system must include a PC running
Windows®, Composer Software, and a Master Control Processor.
Optional controls include Remote Stations and Astronomical Time Clock.

- **Personal Computer** (PC not provided by ETC) - Used to program
  lighting presets and sequences, execute diagnostics, and
  communicate to Master Control Processor. The PC connects the
  Master Control Processor (MCP) via serial extension cable to a DB9
  connector located on the front panel of the MCP or connected to the
  MCP remotely via MCP Remote Programming Receptacle station.
  The PC can download programmed sequence data to the MCP for
  later recall. After initial programming and the show download is
  complete the PC may then be removed from the system until updated
  programming is required.

Minimum recommended requirements for the PC:

- Pentium Processor, 75MHz

- 16Mb RAM

- 15Mb available hard disk space

- Unused serial comm port

- VGA color display

- Compact Disc drive

- 3.5" high-density disk drive (optional)

- Mouse or other pointing device

- Windows® operating system loaded

- **Composer Software** - A Windows® based control software application designed to provide a user friendly means of designing, programming, operating, and testing Irideon luminaires and DMX devices. Composer Software contains step-by-step instructions in the easy to understand user's guide to assist in the programming process.

Features of Composer Software:
- Intuitive graphic user interface

- 62 luminaires with MCP

- 31 remote stations with MCP

- 250 presets

- Manual and Remote on/off

- Store and recall of presets, sequences, and schedules for up to 10 rooms.

- Focus points

- Luminaire and DMX channel groups

- **Master Control Processor (MCP)** - Acts as a remote CPU for the control system. The MCP can receive downloaded preset and sequence data from the PC via a DB9 receptacle located on the front panel of the MCP or from an MCP Remote Programming Receptacle station. Once the program is downloaded the MCP stores the data and the PC can be removed from the system.

Features of the MCP:
- Rack or Wall mount

- 100-240VAC operating voltage

- Non-volatile memory

- Auto reset after power outage

- DB-9 receptacle for programming

- Internal 365-day clock/calendar for activation of scheduled events

- Two dedicated RS485 output ports for the control of up to 31 luminaires each

- A third RS485 output port is available for connection of up to 31 Remote Stations

- A fourth output port is available for programming and play-back of 512 DMX channels

- Liquid Crystal Display (LCD) and LED indicator matrix provides constant status of the overall system in addition to displaying the internal clock/calendar

- **Irideon Astronomical Time Clock (ATC)** - Provides interface to the Composer / MCP system enabling astronomical time programmed events throughout the calendar year.

Features of the ATC:
- Rack or Wall mount
- Available in both 120v or 230v operating voltage
- Easy programming of astronomical events
- Easy to install
- 4 bonus dry Contacts for external sensors

- **8 and 2 Button Recall Station (8RS or 2RS) -** Recall stations can be mapped with any programmed event (preset, sequence, recalibrate). Available for use with Composer / MCP control systems only.

Features of Button Recall Stations:
- Easy installation
- Integral LED for visual indication of the activated event.
- Preset recall
- Sequence activation
- Zone control
- User definable buttons
- Multiple templates
- Security

- **Key switch station (KS) -** Station used to disable or enable **adjacen**t recall stations in a Composer System. Available for Composer / MCP control systems only.

- **Closure station (CS)** - A wall mounted station that provides remote termination of remote sensors and/or switches to activate a programmed event. The closure station offer eight programmable inputs accepting momentary or maintained contact. Available for use with Composer / MCP control systems only.

- **MCP Remote Programming Receptacle (MPR)** - A wall mounted RS-232 (DB-9 connector) communication link to the MCP allowing temporary remote access to the system for initial programming. Available for use with Composer / MCP control systems only.

# Composer Lite™ Control System
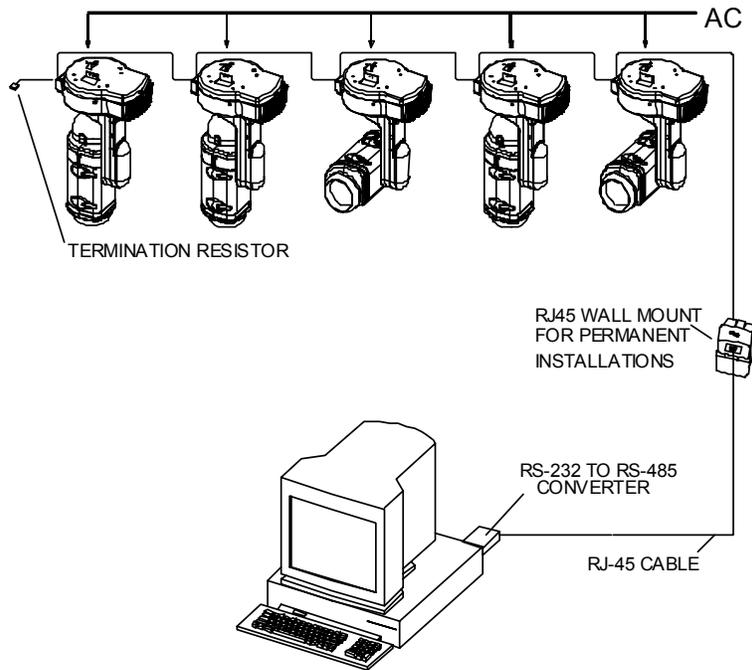


The Composer Lite Control System provides low cost control of your Irideon automated luminaires. This type of system must include only a PC running Windows®, Composer Lite Software, RS232-RS485 adaptor, and at least one but no more than 31 Irideon automated luminaires. Optional accessories include a Luminaire Programming jack, and a Composer Lite Programming kit. Remote control stations are not compatible with Composer Lite systems.

• **Personal Computer** (PC not provided by ETC) - Used to define all programmed actions, including presets and sequences.

Minimum recommended requirements for the PC:

- Pentium Processor, 75MHz

- 16Mb RAM

- 30Mb available hard disk space

- Unused serial comm port

- VGA color display

- Compact Disc drive

- 3.5" high-density disk drive (optional)

- Mouse or other pointing device

- Windows® operating system loaded

- **Composer Lite Software** - A Windows® based control software application designed for use with up to 31 Irideon automated luminaires used in applications desiring single sequence operation. Composer Lite Software step by step instructions in the easy to understand user's guide to assist in the programming process.

Features of Composer Lite Software:
- Intuitive graphic user interface

- Low cost automated luminaire control

- Controls a maximum of 31 Irideon luminaires

- Single sequence operation with up to 30 presets.

- **Luminaire Programming Jack (LPJ) -** The luminaire programming jack is a wall mounted RJ45 connector allowing direct communication interface from a PC utilizing an RS232 to RS485 converter directly to the luminaires.

- **Composer Lite Programming Kit (CLPK)** - A kit which includes RS232-RS485 converter, RJ45-5p XLR cable, and a DB25 modem power supply for programming convenience.

# DMX Interpreter Control System
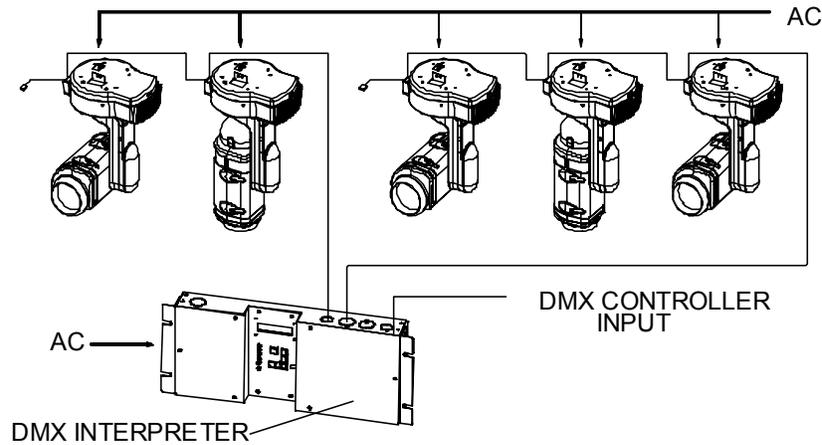


AC

DMX CONTROLLER
INPUT

AC →

DMX INTERPRETER

For integration of DMX512 control sources your system may include a DMX Interpreter which converts DMX512 data into Irideon protocol thus allowing Irideon luminaires to be controlled from a DMX console. Remote control stations are not compatible with the DMX Interpreter.

Features of the DMX Interpreter:

- Rack or Wall mount

- 100-240VAC operating voltage

- Front panel status indication

- On board test diagnostics

- Non-volatile memory

- Auto reset after power outage

- Two dedicated RS485 output ports for control of up to 31luminaires each.

- A Liquid Crystal Display (LCD) and LED indicator matrix provides constant status of the overall system in addition to displaying the internal clock/calendar.

# *Chapter 2*
# Installation

This chapter contains the following sections:

# Site Preparation

When selecting locations for the DMX Interpreter, MCP, ATC, and associated Remote Control Stations (if applicable) consideration should be given to the overall length of daisy-chained cable runs. Recommended maximum **overall cable length** for each data run and remote control run cannot exceed 1000 feet total.

**Note:** *The installation contractor is responsible for compliance with local electrical codes.*

**WARNING:** *Do not install this equipment with power applied. Ensure incoming power is disconnected prior to installation or maintenance of this equipment.*

# Input Power and Control Cabling for Irideon Control System

**Note:** *The following wiring requirements apply to Irideon products with the exception of the Luminaire Programming Jack (LPJ) and the Keyswitch (KS) station.*

| Signal Type | From Source To: | In Conduit | Without Conduit |
|---|---|---|---|
| Data | Luminaire | Belden 9729 | Belden 89729 |
| Data | Remote Stations | Belden 9729 | Belden 89729 |
| DC Power | Remote Stations | Belden 8461 or 2-#18 gauge | Not Recommended |
| AC Power | Luminaire | 18-10 AWG | Not Recommended |
| AC Power | MCP / DMX Interpreter | 18-10 AWG | Not Recommended |

Data and AC power are to be routed through separate conduit. When terminating data and AC power in a common junction box, wiring must be separated by a dividing panel.

Data and DC power from MCP to Remote Stations may be routed through the same conduit. Termination of data and DC power within the junction box does not require isolation of power and data lines.

# Installation Procedure

## *Master Control Processor (MCP)*

The Master Control Processor is available in rack mount and wall mount versions.

Step 1:    Mounting:

   a. For rack mount, attach the two mounting brackets to the sides of the MCP and secure into a 4U space on a standard 19" rack.

   b. For wall hung, remove both left and right front panels and secure unit to wall surface. Do not recess into the wall.



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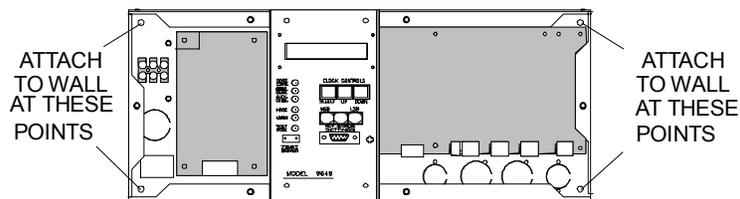
**N o t e :**    *Knockouts are located on top, bottom, and sides of MCP to facilitate hookup.*

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AC voltage connects to the terminal block located behind the left front panel. In the rack mount version, an IEC connector has been installed on the back panel and wired to the AC terminal block. An IEC power cord is required, but not supplied by ETC, for the rack mount MCP.

DC voltage to the Astronomical Time Clock or Remote Stations and all data connections are to terminal blocks located behind the right front panel.

Two part plug-in terminal strips are utilized to connect wiring from the MCP to the Astronomical Time Clock or Remote Stations and the luminaires.

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**N o t e :**    *If your installation includes an Astronomical Time Clock (ATC), Data (P3) and DC Power (P2) from the MCP will terminate to the ATC.*

*If your installation does not include an ATC, Data (P3) and DC power (P2) from the MCP will terminate to the 1st Remote Station.*

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Step 2:    Remove the female portion of the terminal strip and attach wiring utilizing the following pin/wire code:

a. 2-Pin DC Power Terminal Strip P2 on MCP feeds ATC or Remote Control Stations:

| Pin | Wire (Belden 8461 or 2-#18 gauge) |
|---|---|
| + (24vdc) | Black |
| - (Gnd) | White |



b. 3-Pin Data Terminal Strip P3 on MCP feeds ATC or Remote Control Stations:

c. 3-Pin Data Terminal Strip P5 on MCP feeds luminaire data run # 1:

d. 3-Pin Data Terminal Strip P7 on MCP feeds luminaire data run # 2:

e. 3-Pin Data Terminal Strip P9 on MCP for DMX512 output:

For Step 2: (b. thru e.) use the following pin/wire code:

| Pin | Wire (CAT 5) | Belden 9729 |
|---|---|---|
| data + | White/Orange | Red |
| data - | Orange | Black |
| Gnd | Brown | Drain |



Step 3:    Connect AC power as shown:
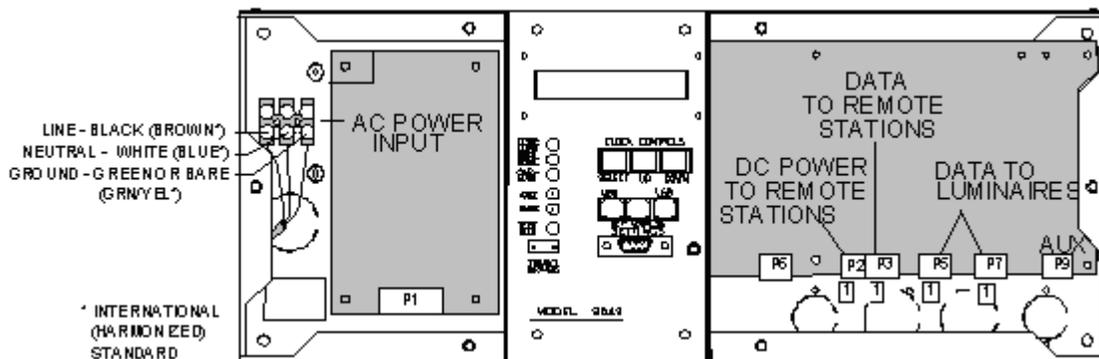


*International Standard: Neutral = Blue; Line = Brown; Ground = Grn/ Yellow*

Step 4:    Replace the front panels.

## *Astronomical Time Clock (ATC)*

The Astronomical Time Clock (ATC) is available as rack mount, 120 or 230 volts. The ATC resides on the same data run as the Remote Stations. Wiring for the ATC with Remote Stations should be a single run daisy chain configuration with a 120 ohm termination resistor between the two data lines (+&-) after the last station. Recommended maximum **overall cable length** for the remote control run cannot exceed 1000 feet total.

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**N o t e :**  *The following installation instructions are for new system installations only. ATC installation instructions See "For existing MCP/Remote Station installations" on page 61. in this manual.*

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Step 1:   Mounting

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**N o t e :**  *The ATC should be mounted in the same proximity as the Master Control Processor (MCP) for easy installation and wiring.*

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a. For rack mount, secure the two mounting brackets on the sides of the ATC into a 4U space on a standard 19" rack.

b. For installations requiring a wall mount unit, remove the rack mount brackets from the unit, then remove the front panel and secure unit to the wall as shown.



Attach to wall at these points

Attach to wall at these points

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**C A U T I O N :**   *This unit is not designed to recess into the wall.*

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**N o t e :**  *Knockouts are located on top and bottom of the ATC to facilitate hookup*

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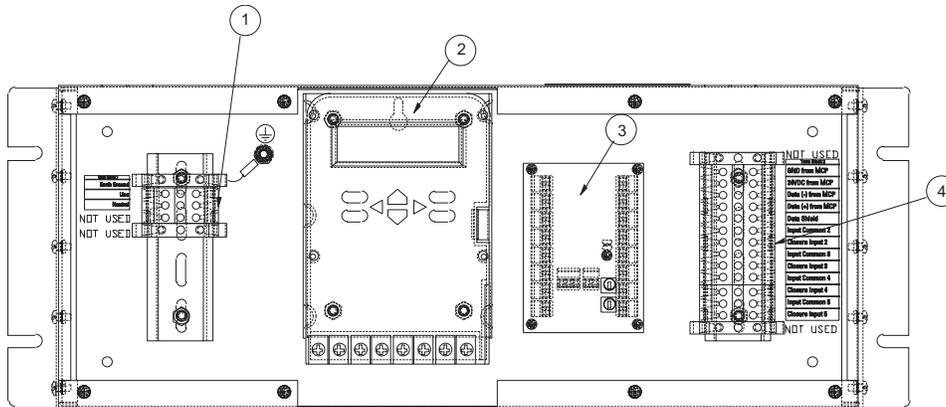
- AC Power connects to the terminal block, referenced by #1, on the left side of the ATC.

- Data and DC Power from the MCP terminates to the terminal block, referenced by #4, on the ATC.

- The Astronomical Timeclock, referenced by # 2, is used for initial programming. No Contractor wiring termination required, wiring is by the factory.

- The Contact Closure, referenced by # 3, is used as the interface for the MCP system to the Astronomical Time Clock. This station will be addressed by the contractor. The address information should come from the same source as the luminaire addresses. Wiring for these components by the factory, no contractor terminations necessary.

Step 2: Wiring:

a. Data and DC Power should be run from the MCP.

a. Connect Data and DC Power to the ATC following the label chart inside the ATC:



| Term Block 2 |
| --- |
| GND from MCP |
| 24VDC from MCP |
| Data (-) from MCP |
| Data (+) from MCP |
| Data Shield |
| Input Common 2 |
| Closure Input 2 |
| Input Common 3 |
| Closure Input 3 |
| Input Common 4 |
| Closure Input 4 |
| Input Common 5 |
| Closure Input 5 |
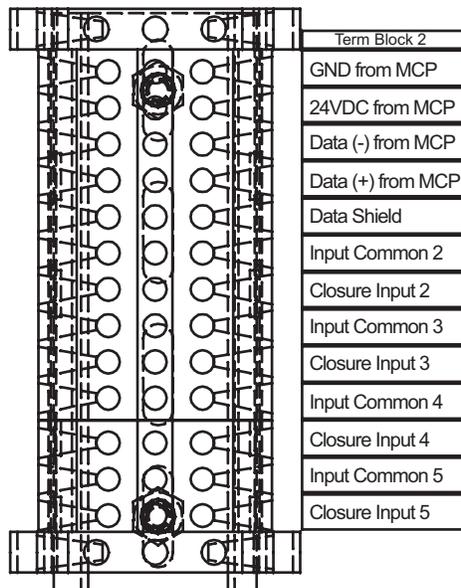
b. Connect AC power to the AC terminal block following the label chart inside the ATC:



Term Block 1
Earth Ground
Line
Neutral
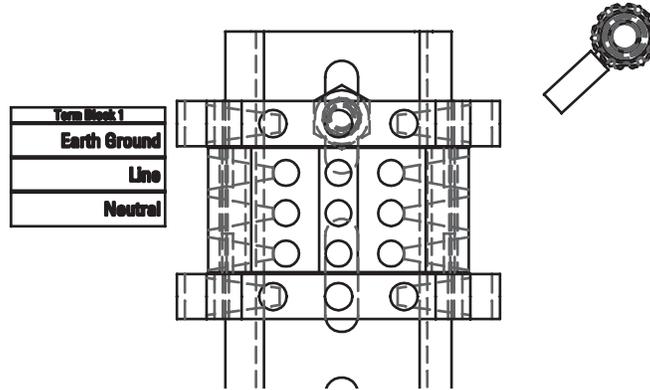
Step 3: If your installation includes Remote Stations, continue the single daisy chain run for the Data and DC Power to the next station.

Step 4: Using a small screwdriver, set the two rotary switches found on the ATC's Contact Closure station to the fixture address assigned to the ATC. This address information should come from the same source as the luminaire addresses.

Step 5: Replace the ATC front panel.

## *Remote Control Stations*

Remote Control Stations which include Recall Stations, Closure Stations, and Receptacle Stations reside on a single data run and are to be wired in a daisy-chain configuration with a 120 ohm termination resistor between the two data lines(+&-) after the last station. Recommended maximum **overall cable length** for the remote control run cannot exceed 1000 feet total.

Step 1: Mounting:

    a. For 8-Button and Closure/Join stations use RACO #681 (4"square x 2-1/8"deep) double box or equivalent. All other stations use RACO #680 single box (2-1/2" deep gang able) or equivalent.

Step 2: For installations not including the Irideon Astronomical Time Clock, Data and DC power should be run from the MCP then daisy chained from station to station.

    a. For installations including the ATC, Data and DC Power should be run from the MCP to the ATC, then daisy-chained from the ATC to the next station. Continue the single run daisy chain and install a 120 ohm termination resistor between the two data lines (+ & -) after the last station.

Step 3: Remove the remote station faceplate exposing a 2-position (DC power) and a 3-position (Data) terminal strip and mounting holes for attachment of station to the junction box. For those stations with a hinged cover, screws behind the cover hold the faceplate in place. For those stations without a hinged cover, a screwdriver may be used to gently pry the faceplate loose from the bottom of the station.

Step 4: The terminal strips are of a two part plug-in style. Remove the outer section to allow wire connection. Connect the data using the following pin/wire code:
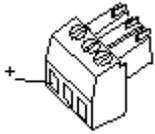
| Pin | Wire (Cat 5) | Belden 9729 |
| --- | --- | --- |
| data + | White/Orange | Red |
| data - | Orange | Black |
| Gnd | Brown | Drain |

Step 5: Connect the DC power using the following pin/wire code:
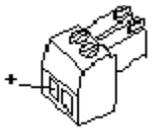
| Pin | Wire Belden 8461 | Wire (Belden 8790) |
| --- | --- | --- |
| + (24vdc) | Black | Red |
| Gnd | White | White |

Step 6: Reconnect the two part terminal strips.

Step 7: Using a small screwdriver, set the two rotary switches to the fixture address assigned to the remote station. This information should come from the same source as the luminaire addresses.

**N o t e :** *Remote Stations should have a unique address number from other Remote Stations in the system. Since Remote Station addresses are not linked in any way to luminaire addresses you may assign address numbers also assigned to luminaires without fear of complications.*

Step 8: Using the screws provided, secure the remote station in the junction box.



J-BOX NOT SUPPLIED

FIXTURE ADDRESS ROTARY SWITCHES
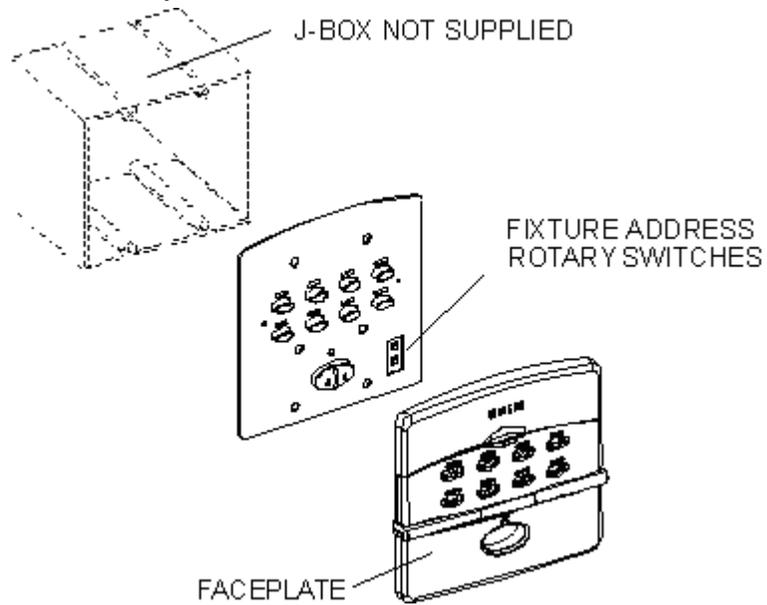
FACEPLATE

Step 9: Replace the station faceplate.

CAUTION: *Do not over tighten faceplate as damage may occur to the circuit board.*

# *Composer Lite*

AC

AR50's

AR6's

AR500's
Standard  &  Remote

Luminaire Data

LPJ

CL/PK

AC

AC
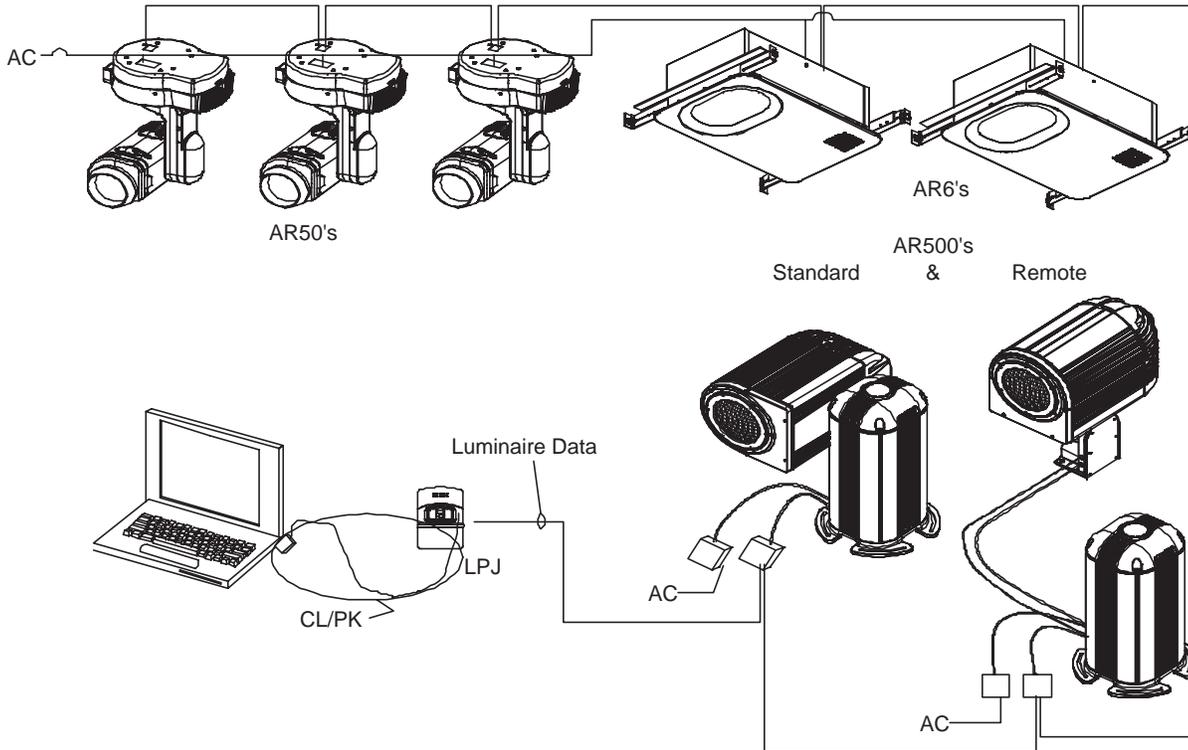
Purpose and Function:

A Composer Lite system requires that a custom sequence with up to 30 presets, programmed via Composer Lite Software, be downloaded from the PC to the luminaire(s) and stored in the luminaire memory. Once the programmed sequence is downloaded to the luminaire, it can be played from a master luminaire (luminaire #1) by toggling the luminaire address into test mode (address 0 for the AR50 and AR500, for the AR6 turn dip switch #7 ON). Once the luminaires have the sequence, there is no need to have a PC to control the luminaires, unless a change in sequence is desired.

The Composer Lite Control System configuration utilizes an RJ45 connection from the PC to the luminaires or Luminaire Programming Jack for programming. This system is limited to 1-31 Irideon luminaires which are to be wired in a single data run (daisy chain configuration). Remote Control Stations are not compatible.

Installation:

The Composer Lite System is a software driven control system more so than a hardware system. In a Composer Lite Control System the only hardware that may be installed is the Luminaire Programming Jack (LPJ). Additionally the Composer Lite Programming Kit may be used for initial programming, then removed from the system with the PC.

**Note:** *For installation of your luminaire(s) please follow the luminaire installation instructions found in the luminaire owner's manual. For programming instructions please reference the Composer Lite Software User's Guide.*

## *Luminaire Programming Jack (LPJ)*

The Luminaire Programming Jack (LPJ) is a wall mount RJ45 receptacle used for linking your PC to the luminaires.

Step 1:    Mounting:

a.  Use a RACO #680 single gang backbox, or equivalent.

Step 2:    Remove the faceplate, exposing the RJ45 connector.

a.  Connect the data using the following pin/wire code:



```
1
2 —— Ground
3
4 —— Data +
5 —— Data -
6
7
8
```
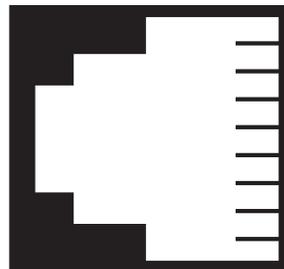
**Note:** Pins 4 & 5 (Data + & Data -) must share a twisted pair.

**Note:** *The LPJ does not have a station address.*

Step 3:    Using the screws provided, secure the LPJ in the junction box.

Step 4:    Replace the LPJ faceplate.

### Composer Lite Programming Kit (CLPK)

The Composer Lite Programming kit is used with Composer Lite systems for programming. This kit includes:

•   RS232-485 converter - for PC's that do not have an RS485 communications card added.

•   RJ45 cable assembly

•   RJ45 - 5pin XLR extension cable

•   DB9/DB25F adaptor, and a DB25 Power Supply

## DMX Interpreter

The DMX Interpreter is available in rack mount and wall mount versions.

Step 1:    Mounting:

a.  For rack mount, attach the two mounting brackets to the sides of the DMX Interpreter and secure into a 4U space on a standard 19" rack.

b.  For wall mount, remove both left and right front panels and secure unit to wall surface. This unit is not designed to recess into the wall.



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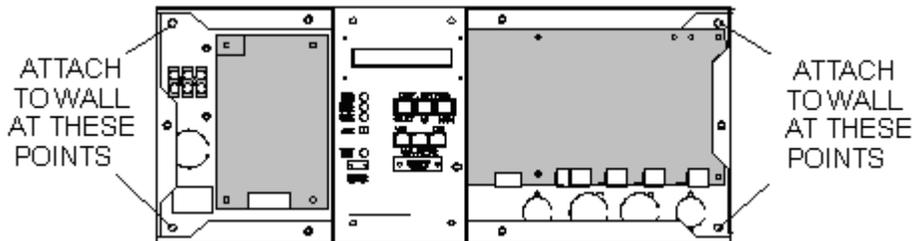
**Note:**  *Knockouts are located on top, bottom, and sides of DMX Interpreter chassis to facilitate hookup.*

---



DATA RUN#1 FOR LUMINAIRE FIXTURE ADDRESSES 01 THRU 31.
DATA RUN#2 FOR LUMINAIRE FIXTURE ADDRESSES 32 THRU 62.
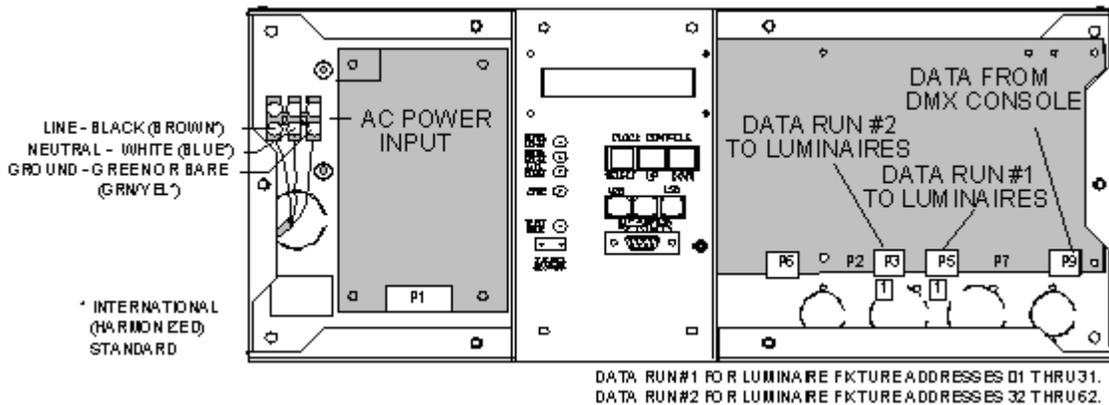
AC voltage connects to the DMX Interpreter terminal block located behind the left front panel. In the rack mount version, an IEC connector has been installed on the back panel and wired to the AC terminal block. All data connections are to terminal blocks located behind the right front panel.

---

**Note:**  *An IEC power cord is required (not supplied) for the rack mount version of the DMX Interpreter.*

---

Two part plug-in terminal strips are utilized to connect wiring from the DMX console to the DMX Interpreter and from the DMX Interpreter to the luminaires.

Step 2: Remove the female portion of the terminal strip and attach wiring utilizing the following pin/wire code:

    a. P2 is not used on the DMX Interpreter.

    b. 3-pin Data Terminal Strip P3 on DMX Interpreter feeds luminaire data run # 2 (fixture addresses 32 thru 62):

    c. 3-pin Data Terminal Strip P5 on DMX Interpreter feeds luminaire data run # 1 (fixture addresses 01 thru 31):

    d. P7 on DMX Interpreter is not used.

    e. Terminal Strip P9 on DMX Interpreter is used for DMX input from console:

| Pin | Wire (Cat 5) | Wire (Belden 9729) |
|-----|--------------|--------------------|
| data + | White/Orange | Red |
| data - | Orange | Black |
| Gnd | Brown | Drain |

+ - Gnd

Step 3: Connect AC power as shown:

LINE - BLACK (BROWN*)
NEUTRAL - WHITE (BLUE*)
GROUND - GREEN OR BARE (GRN/YEL*)

AC POWER INPUT

DATA FROM DMX CONSOLE
DATA RUN #2 TO LUMINAIRES
DATA RUN #1 TO LUMINAIRES

* INTERNATIONAL (HARMONIZED) STANDARD

P1

P5  P2  P3  P5  P7  P9

DATA RUN#1 FOR LUMINAIRE FIXTURE ADDRESSES 01 THRU 31.
DATA RUN#2 FOR LUMINAIRE FIXTURE ADDRESSES 32 THRU 62.
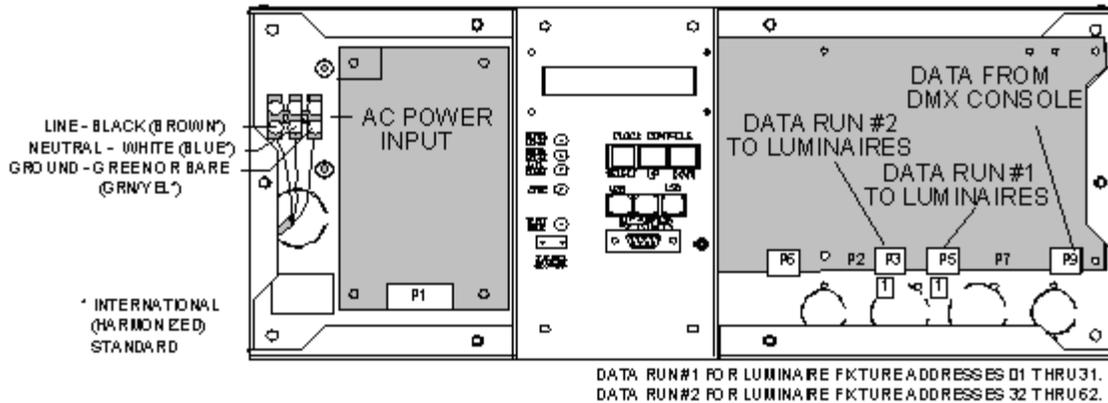
*International Standard: Neutral = Blue; Line = Brown; Ground = Grn/Yellow; Neutral = Blue*

Step 4: Address the DMX Interpreter rotary switch to the desired starting address.

Step 5: Replace the front covers of the DMX Interpreter.

# Product Detail

The following is product detail that may be a useful resource during power up and system test for your specific control product. For luminaire power up and system test procedures please refer to the appropriate luminaire user's guide.

## *Master Control Processor - detail*
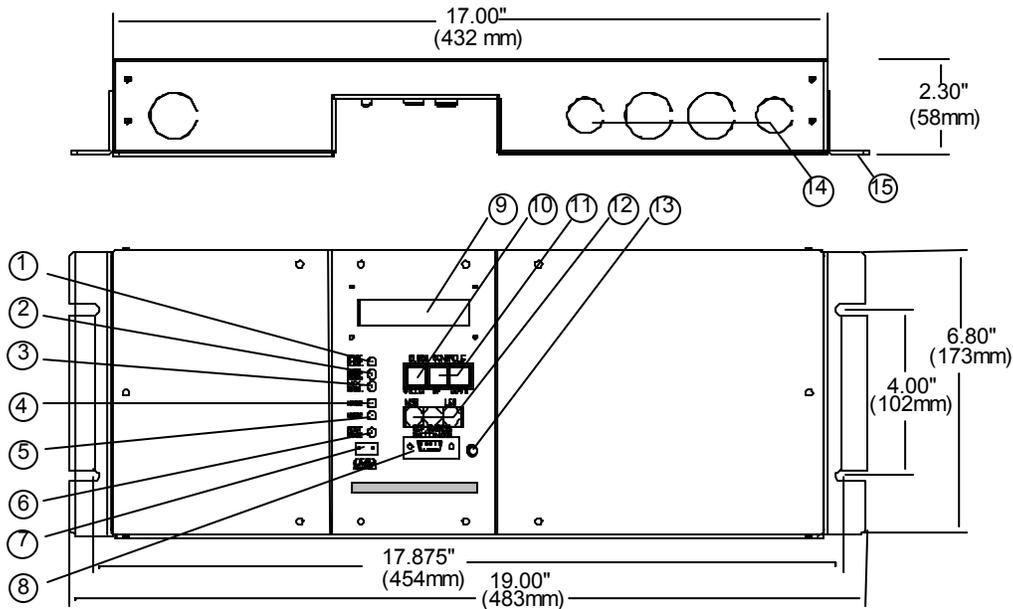


**1. DEVICE COM. - LED indicating data transmission between the MCP and the luminaires.**

**2. CONTROL COM. - LED indicating data transmission between the MCP and Remote Control Station or the PC.**

**3. AUX. COM. - LED indicating data transmission between the MCP and DMX devices.**

**4. 5VDC - LED indicating the presence of DC logic voltage for control electronics (internal power supply working properly).**

**5. 24VDC - LED indicating the presence of DC voltage to operate Remote Control Stations (internal power supply working properly).**

**6. TEST MODE - LED indicating MCP TEST MODE SWITCH is in test position.**

**7. TEST MODE SWITCH - Initiates self test of luminaire control.**

**8. PC Connect - DB9 Receptacle for PC connection.**

**9. Clock / Calendar Display - LCD showing Day, Date and Time.**

10. **Clock Control Select - Selects clock/calendar functions to be updated.**

11. **Clock Control Up/Down - Incremental adjustment for Day, Date and Time.**

12. **MCP Address - Rotary switches for setting address of Master Control Processor.**

13. **RESET - Reboots the processor software without removing power.**

14. **Knock-Outs - Manufacturer provided knock-outs for easy wiring access.**

15. **Mounting Bracket - For installations requiring rack mount use.**

# *Astronomical Time Clock (ATC)- detail*
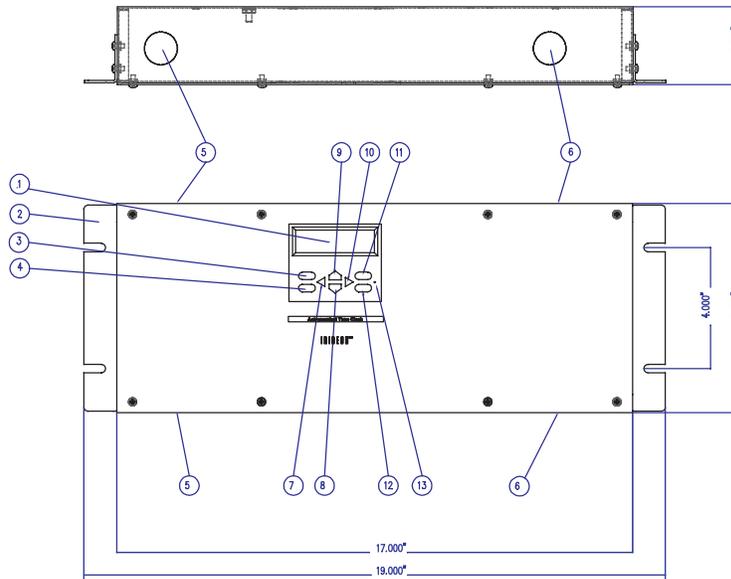


1. **Astronomical Time Clock display.**

2. **Mounting Bracket - for rack mounting.**

3. **Review - key used during programming for review of programmed steps.**

4. **Run - key used during programming to return the control to RUN mode.**

5. **Knock-Outs - manufacturer provided knock-outs for easy wiring access.**

6. **Knock-Outs - manufacturer provided knock-outs for easy wiring access.**

7. **(+) - key used during programming to decrement a current flashing item.**

8. **Next - key used during programming to move the display to the next program step.**

9. **Previous - key used during programming to move the display to the previous program step.**

10. **(-) - key used during programming to increment a current flashing item.**

11. **Program - key used during programming to add, delete, or change parameters.**

12. **Override - key used during programming, takes the user to the override header.**

13. **Master Reset - clears time and program**

## *Remote Station - detail*

2 Button Recall Station (2RS):
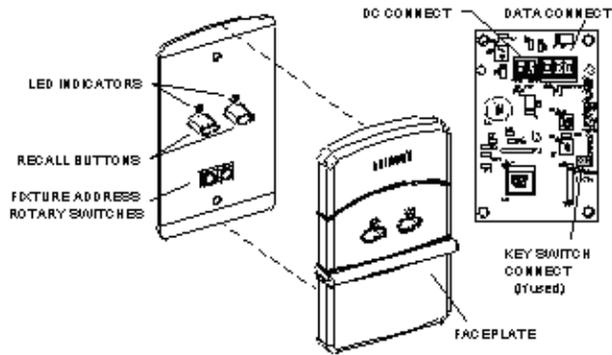
LED INDICATORS

RECALL BUTTONS

FIXTURE ADDRESS
ROTARY SWITCHES

DC CONNECT

DATA CONNECT

KEY SWITCH
CONNECT
(If used)

FACEPLATE

8 Button Recall Station (8RS)

DATA CONNECT

DC CONNECT

KEY SWITCH
CONNECT
(If used)

FIXTURE ADDRESS
ROTARY SWITCHES

ATTACH PRESET
LABELS HERE

MCP Programming Receptacle (MPR)

FIXTURE ADDRESS
SWITCHES

DATA CONNECT

DC CONNECT
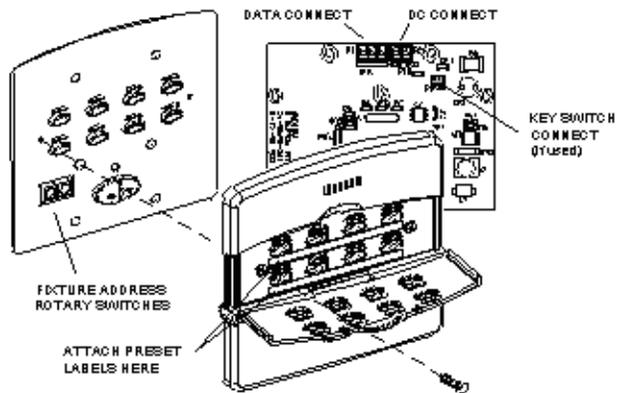
## Closure Station (CS)
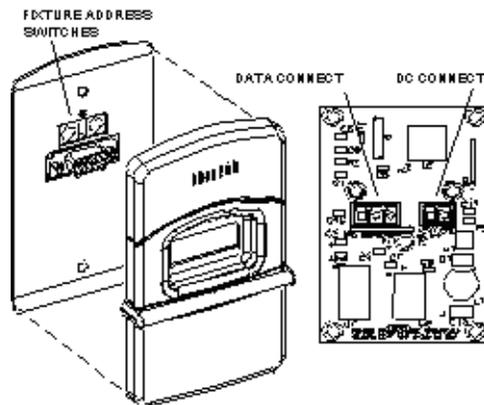


KEY SWITCH CONNECT (If used)    PROGRAMMABLE INPUTS

---
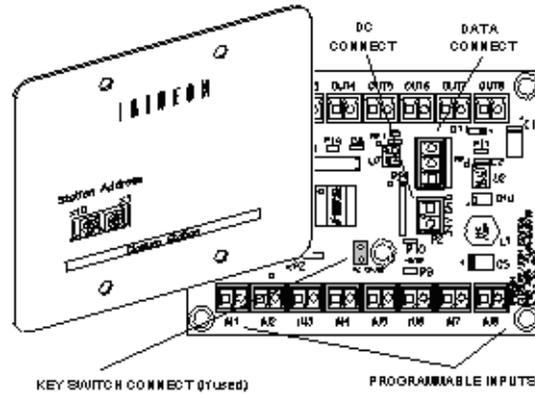
⚠ **WARNING:** *Inputs IN1-IN8 of the Contact Closure are for dry contact switches only. DO NOT apply voltage to these terminals.*

---

## Key Switch (KS)



ATTACH THIS 2-POSITION
NON-POLARIZED CONNECTOR
TO RECALL STATION

## Luminaire Programming Jack (LPJ)



TOP VIEW RS45

| | |
|---|---|
| GND 2 | 8 |
| 1 | 7 |
| DATA +4 | 6 |
| DATA - 5 | 3 |

FRONT VIEW RS45
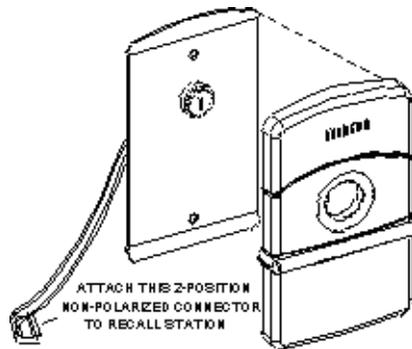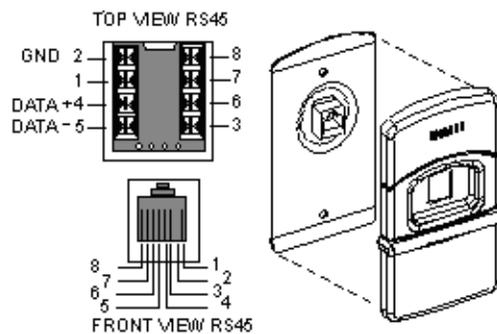
## DMX Interpreter - detail



1. **DEVICE COM. - LED indicating data transmission between DMX Interpreter and luminaires on data run #1.**

2. **DEVICE COM. - LED indicating data transmission between DMX Interpreter and luminaires on data run #2**

> **Note:** *Port #2 of the DMX Interpreter does not support ON/OFF feature.*

3. **DMX.COM - LED indicating data transmission from DMX controller to DMX Interpreter**

4. **5VDC - LED indicating presence of DC logic voltage for control electronics (internal power supply working properly)**

5. **TEST MODE - LED indicating DMX TEST MODE SWITCH is in test position.**

6. **TEST MODE SWITCH - Initiates self test of luminaire control**

7. **PC CONNECT - DB9 Receptacle for PC connection. Required for downloading software updates.**

8. **LCD Display - Displays selected bit mode**

9. **MODE STORE - Stores DMX channel mode displayed from up/down arrow scroll.**

10. **MENU UP/DOWN ARROWS - Scrolls through channel mode selection menu**

11. **DMX START ADDRESS SETTINGS - Rotary switches for setting DMX Interpreter start address.**

12. **RESET - Resets processor without removing power.**

13. **Knock-outs - Provided for wiring access.**

14. **Rack Mount Brackets - Provided for installations requiring 19" rack mounting.**

# Power Up Procedures

MCP responses. When power is applied, note the following:

- +5 volt and +24 volt Led illuminate.

- Device Com LED flashes for approximately two seconds every 20 seconds.

- Control Com LED flashes as it attempts to communicate with luminaires.

- LCD readout displays the resident software version and then shows date and time. Using the select button in conjunction with the up/down buttons, date and time fields may be accessed and updated as needed.

Astronomical Time Clock responses. When power is applied, note the following:

- LCD displays MEMclr

Remote Stations responses. When power is applied, note the following:

- LED's will flash briefly then will go out.

DMX Interpreter responses. When power is applied, note the following:

- +5 volt LED illuminates.

- LCD readout displays "DMX Interpreter", then software version, then one of four operating modes ("Standard 8 - 6 CH", "Standard 16 - 8 CH", "Enhanced 8 - 9 CH", Enhanced 16 - 11 CH").

# Chapter 3
# System Test

This chapter contains the following sections:

# System Test

## *MCP/DMX Interpreter Testing*

Although the MCP and DMX Interpreter are different in function, they have been programmed to perform identically during the unit system test. The following test procedure applies to both the MCP and the DMX Interpreter.

The system test is a series of commands resident in the MCP/DMX Interpreter. The commands have been designed to allow the installer/user to observe the various functions of the luminaire for the purpose of verifying proper communication between the controllers and the luminaires. The total test time is approximately one minute. The test will repeat in continuous cycle until test is terminated.

Step 1:   Before initiating the MCP/DMX Interpreter system test, power up the luminaires allowing them to recalibrate. After successful completion of the calibration sequence, the luminaires will go to their "home" position.

Step 2:   The system test is initiated by setting the test switch located on the face of the MCP to the "test" position. When the test switch is set to the "test" position the luminaires will execute a test routine (refer to the luminaire user's manual for details.).

**N o t e :**   *Each luminaire type has its own internal self test which is initiated with its address switches. To prevent the luminaire's self test from interfering with the system test, ensure that the luminaire address switches are set to luminaire's correct address.*

## *Remote Station and ATC Testing*

**N o t e :**   *Note: For MCP with remote stations only--does not apply to DMX Interpreter Control Systems.*

When the MCP test switch is placed in the test position, LED status indicator lights will flash indicating data is being received.

**8 Button Recall Station (8RS)** -the eight button recall station has two rows of buttons and LEDs.

- The left-most column of LEDs will flash for a period of one second.

- The column of LEDs just to the right of these will then flash for one second.

- The third column of LEDs will then flash followed by the fourth column for one second each.

- At the end of this four seconds, the test sequence will recycle and continue cycling until the test switch is returned to its normal operation position.

**2 Button Recall Station (2RS)** - the two button recall station responds to this same four second test as the 8RS.

- The first button will flash during the first second

- The second button during the next second.

- No lights flash during the third and fourth second of the test sequence.
- At the end of this four second test, the test sequence will recycle and continue cycling until the test switch is returned to its normal operation position.

**MCP Programming Receptacle (MPR) and Closure Station (CS)** - the MCP Programing Receptacle station and Closure Station both have one LED.

- This LED will flash at a fast rate for one second, then turn off for one second, then flash at a fast rate for one second.
- This cycle will continue until the MCP test switch is returned to its normal operation position.

**Astronomical Time Clock (ATC)** - the ATC has one LED which is only visible with the front panel removed.

- This LED will flash at a fast rate for one second, then turn off for one second, then flash at a fast rate for one second.
- This cycle will continue until the MCP test switch is returned to its normal operation position.

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# *Chapter 4*
# Troubleshooting

This chapter contains the following sections:

# System Identification

If you are experiencing problems with your Irideon system please refer to this manual and the accompanying luminaire user's manual for assistance. If you do not find the answer in the manual's please call your local dealer or ETC Technical Services.

Your Irideon Control System may be defined as any of the following:

**Composer / MCP Control System with Irideon luminaires**

This system is comprised of a PC running Windows® and Composer Software which will be used only for initial programming, then removed from the system until reprogramming is required. Installed ETC® product will include a Maser Control Processor (MCP), Irideon automated luminaire(s), and may include any of the following as optional equipment; recall stations, closure stations, MCP programming receptacle stations, keyswitch stations, and the Irideon Astronomical Time Clock (ATC).

**Composer Lite Control System**

This system is comprised of a PC running Windows® and Composer Lite Software, and the Composer Lite Programming kit which will be used only for initial programming, then removed from the system until reprogramming is required. Installed ETC® products will include Irideon automated luminaire(s) and may include a Luminaire Programming Jack for easy programming access.

**DMX Interpreter Control System**

This system is comprised of a DMX Interpreter, which receives 512 data from a DMX 512 control console, and converts the DMX 512 into Irideon protocol for control of Irideon automated luminaires. Installed ETC® products include the DMX Interpreter and Irideon automated luminaires.

# Troubleshooting

Regardless of the control system in place, it is necessary to isolate the fault to a single piece of equipment.

***In general:***

- If the problem is with all luminaires it is unlikely they have all gone bad at the same time, check the control system.

    - This can be made easier by running the system test from the Master Control Processor or the DMX Interpreter. Refer to "Chapter 4 System Test" in this manual for instructions on how to initiate the System Test from the MCP and DMX-Interpreter.

    - In the Composer Lite Control System the system test program can be found in the Composer Lite Software "System menu". Further details of this software can be found in the Composer Lite Software User's Guide.

- If the problem is with only one luminaire, check the luminaire. Luminaire troubleshooting instructions can be found in the luminaires user manual. Here are some troubleshooting techniques non luminaire specific.

    - Verify fixture address of the luminaire matches the address entered in the configuration screen of the Composer Software on the PC. Refer to the Composer Software User's Guide for address setting information.

    - Verify start address on DMX Interpreter is correct. Proper operation of the luminaire may be verified by use of the luminaire self test described in the specific luminaire user's manual.

# Symptom Diagnostics

The following troubleshooting steps are designed to aid the user in symptom diagnostics.

***Luminaire responds properly to system test but not to programmed instructions.***

- In this instance the control system is directing the luminaire regardless of its address setting and the luminaire is performing properly.

    - Verify fixture address of the luminaire matches the address entered in the configuration screen of the Composer Software on the PC. Refer to the *Composer User's Guide* for address settings.

    - Verify start address on DMX Interpreter is correct. If address is correct, verify programmed instructions.

***All luminaires do not respond properly to controller's system test instructions.***

- In this instance the controller is not sending the proper instructions.

    - If a MCP or DMX Interpreter is present, verify DC voltage LEDs are illuminated. If DC voltage LEDs are not illuminated, replace the MCP/DMX Interpreter power supply. Contact your Dealer or ETC Technical Services for further assistance.

    - If a MCP or DMX Interpreter is present, verify the **Device Comm** and **Control Comm** LEDs are flashing. If LEDs are not flashing, replace the MCP/DMX Interpreter circuit board. Contact your Dealer or ETC Technical Services for further assistance.

***Individual luminaires do not respond to controller's system test instructions.***

- In this instance the controller is sending instructions to all luminaires regardless of their fixture address but some are unable to respond.

    - This indicates there is a fault at the individual luminaire. Luminaire troubleshooting tips can be found in the luminaire user manual.

***Luminaires do not respond to commands from remote stations.***

- Data from the remote station to the luminaire is routed through the MCP. DC operating voltage for the remote station also comes from the MCP. It is therefore important that the MCP operate properly to support remote station activity.

    - Verify DC voltage LEDs are illuminated on the MCP. If LEDs are not illuminated, replace the MCP power supply. Contact your Dealer or ETC Technical Services for further assistance.

- Verify fixture address of the remote station matches the address entered in the configuration screen of the Composer Software on the PC. Refer to the *Composer Software User's Guide* for address settings.

---

**N o t e :**   *Remote station address switches are located behind the stations faceplate.*

---

- Perform the MCP system test and compare the 2-button and 8-button remote's LED activity. Details of the test procedure for your particular station can be found in Chapter 4 of this manual.

- If errors occur with one station and not with others, replace the station. Contact your Dealer or ETC Technical Services for further assistance.

- If errors occur with all stations, replace the MCP circuit board. Contact your Dealer or ETC Technical Services for further assistance.

If it becomes necessary or desirable to return an item to an authorized service center, a Return Material Authorization (RMA) must be obtained prior to shipment. Items will not be accepted without an RMA number. Contact your Dealer or ETC Technical Services for further assistance.

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# *Chapter 5*
# Maintenance

---

This chapter deals with the removal and installation of user replaceable items. This chapter contains the following sections:

## Recommended Safety Practices

## MCP and DMX Interpreter Maintenance

Although the MCP and the DMX Interpreter are different in functional design, they are identical in physical configuration. Each has a power supply, liquid crystal display and main circuit board. The following removal and replacement procedures apply to both the MCP and the DMX Interpreter.

### Power Supply Replacement

The power supply is mounted to a base plate and the plate is secured to the back wall of the MCP or DMX Interpreter. To remove the power supply, first remove the face panel from the unit, then remove the power supply from the base plate.

To remove and replace the power supply:

Step 1:   Remove the three screws holding the left front panel of the MCP or DMX Interpreter.

Step 2:   Remove the left front panel of the MCP or DMX Interpreter.



REMOVE THESE THREE SCREWS AND LIFT OFF THIS FRONT PANEL
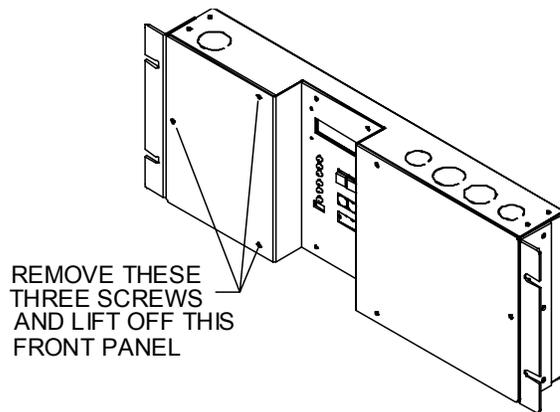
Step 3:   Unplug the cable assembly connected to P1 located at the bottom of the power supply.

Step 4:   Unplug the incoming power connector located in the top right corner of the power supply.

Step 5:   Unplug the Faston crimp connector from the ground lug located in the top right corner of the power supply.

DISCONNECT
GROUND LUG     DISCONNECT INCOMMING AC

POWER
SUPPLY

CLOCK CONTROLS

DISCONNECT P1
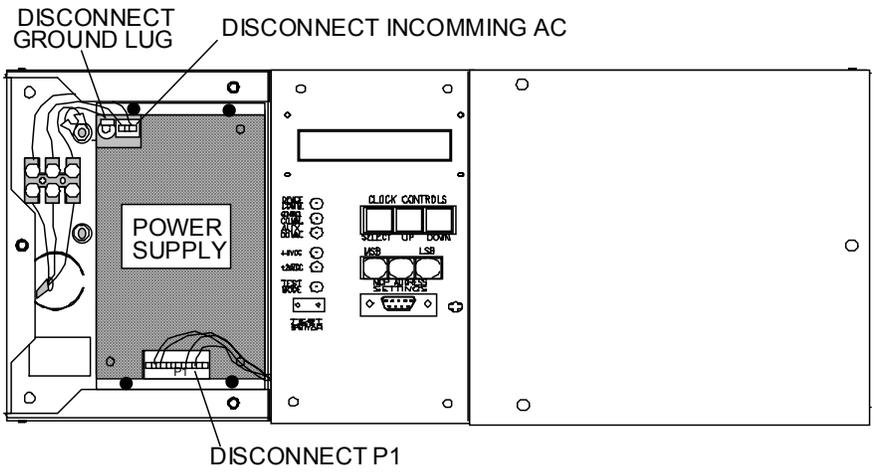
Step 6:    Remove the screws holding the power supply and base plate to
           the back wall of the MCP or DMX Interpreter and lift out the
           power supply and its mounting plate.

Step 7:    Remove the mounting base plate from the power supply by
           removing the four screws on the back of the plate.

MOUNTING              REMOVE
BASE PLATE         THESE SCREWS

POWER
SUPPLY

REMOVE
THESE SCREWS

REMOVE
BASE PLATE FROM
POWER
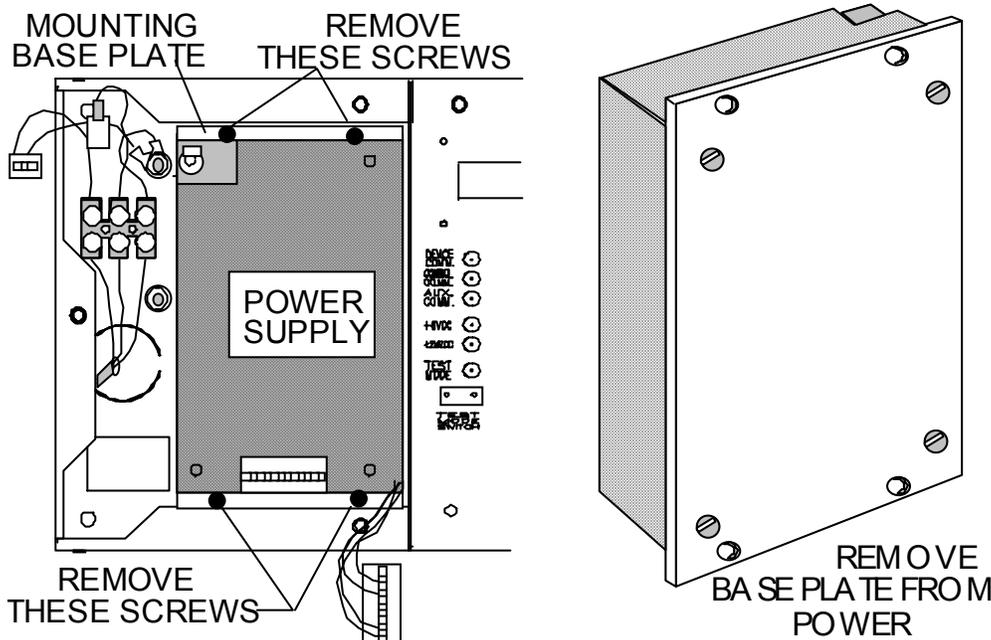
Step 8:    Place the mounting base plate on the back of the new power
           supply and secure in place with the four screws removed in the
           above step.

Step 9:    Replace the power supply by performing Steps 1 through 6 in
           reverse order.

### *Liquid Crystal Display (LCD) Replacement*

The LCD Display is mounted to the back side of the MCP or DMX Interpreter center control panel. A ribbon cable connects the display to the main circuit board. It is necessary to lift the center panel and unplug the ribbon cable prior to moving the panel away.

## To remove and replace the LCD:

Step 1:   Remove the three screws from the left front panel.

Step 2:   Set left panel aside.

Step 3:   Remove the three screws from the right front panel.

Step 4:   Set right panel aside.

Step 5:   Remove the four screws from the center front display panel.

Step 6:   Carefully lift the center panel and unplug the ribbon cable from the back of the LCD.
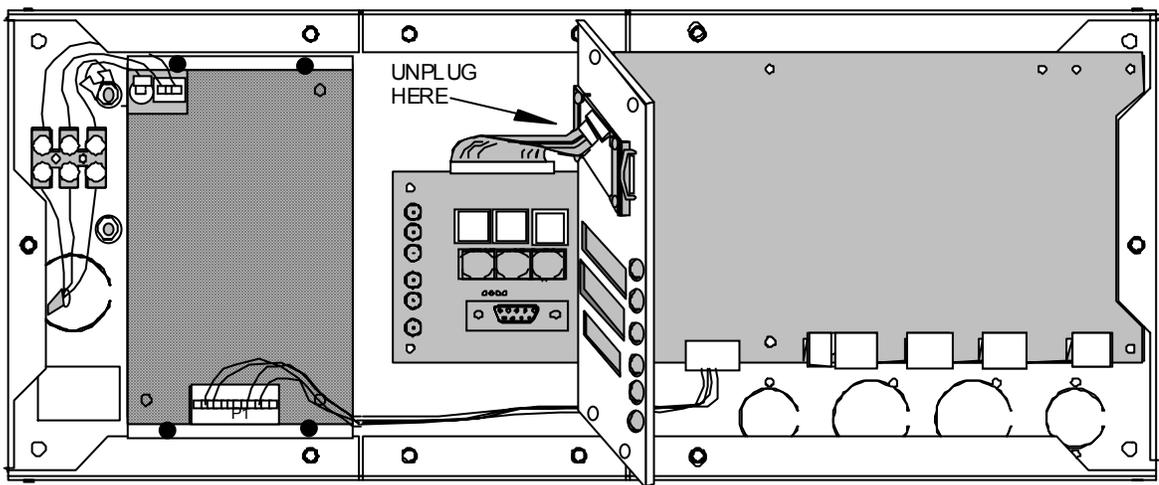
Step 7: Remove the four screws from the back of the display and lift off the spring holders.

Step 8: Remove and replace the LCD taking care to ensure the lens remains in place between the LCD and the bezel.
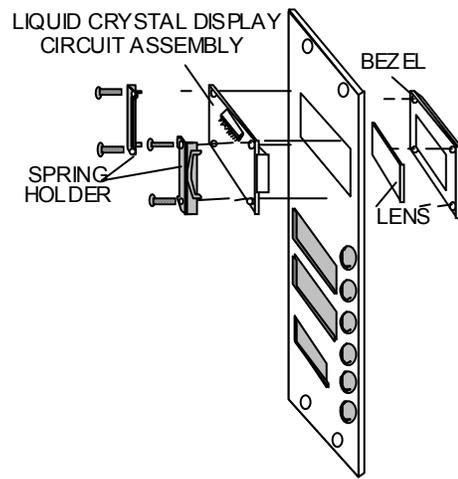


Step 9: Replace the spring holders.

Step 10: Thread the four screws through the spring holders, LCD, faceplate, and into the bezel, sandwiching the lens in place and securing the display.

**Note:** *Do not over tighten as damage to the display may result.*

Step 11: Reconnect the ribbon cable to the display PCB.

Step 12: Position the center front display panel so that the push buttons and DB9 connector extend through the panel. Secure with the four screws removed in Step 3 above.

Step 13: Replace the left and right front panels and secure in place with the screws removed in Steps 1 and 2 above.

### MCP Circuit Board Replacement

Aside from the power supply and liquid crystal display module, all electronics reside on a single circuit board within the MCP.

To remove and replace the MCP circuit board:

Step 1:   Remove the three screws from the left front panel.

Step 2:   Remove the three screws from the right front panel.

Step 3:   Remove the four screws from the center front display panel.
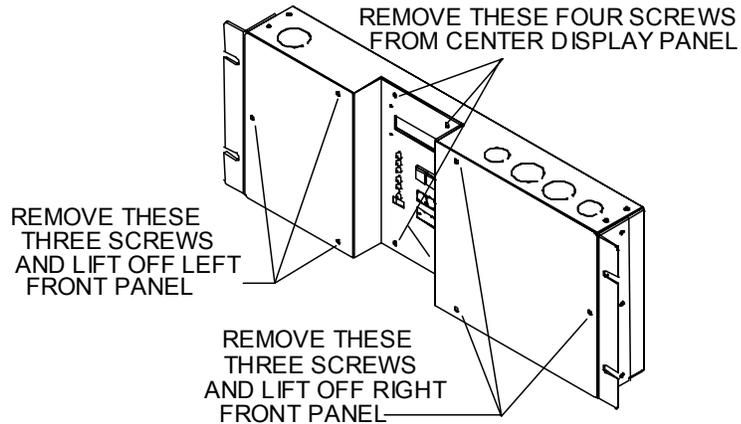


Step 4:   Carefully lift the center panel and unplug the ribbon cable from the back of the LCD.
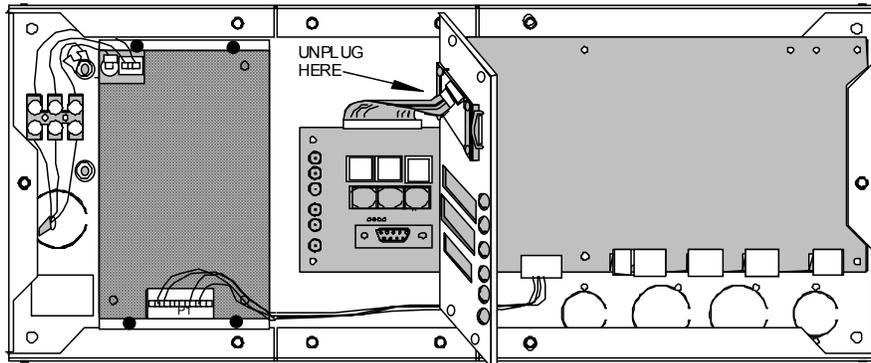


Step 5:   Identify cables to ensure proper re-connection and remove from P2, P3, P5, P6, P7, and P9.



Step 6:   Remove the nine screws securing circuit board in place.
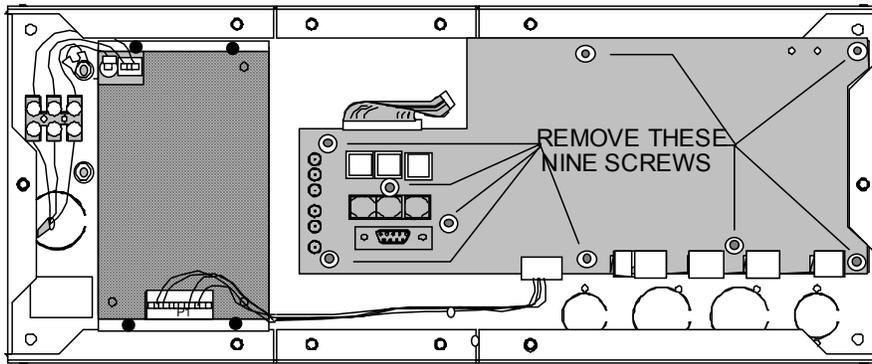
REMOVE THESE NINE SCREWS

Step 7: Remove circuit board from chassis.

Step 8: Remove display module ribbon cable from circuit board and connect to new circuit board.

Step 9: Install new circuit board and replace nine screws removed in Step 6 above.

Step 10: Reconnect cables to P2, P3, P5, P6, P7, and P9. Use the following table to assist in proper relocation of identified cables.

| Connector | Cable Destination: |
|-----------|--------------------|
| P2 | Connects +24vdc to remote stations if present |
| P3 | Connects data lines to and from remote stations if present |
| P5 | Connects MCP to luminaire data run #1 |
| P6 | Connects power supply to circuit board |
| P7 | Connects MCP to luminaire data run #2 |
| P9 | Auxiliary connection for future application |

Step 11: Reconnect display module ribbon cable to LCD.

Step 12: Replace four screws in center front panel.

Step 13: Replace left and right front panels.

### *DMX Interpreter Circuit Board Replacement*

Aside from the power supply and liquid crystal display module, all electronics reside on a single circuit board within the DMX Interpreter.

To remove and replace the DMX Interpreter circuit board:

Step 1:    Remove the three screws from the left front panel.

Step 2:    Remove the three screws from the right front panel.

Step 3:    Remove the four screws from the center front display panel.

REMOVE THESE FOUR SCREWS
FROM CENTER DISPLAY PANEL

REMOVE THESE
THREE SCREWS
AND LIFT OFF LEFT
FRONT PANEL

REMOVE THESE
THREE SCREWS
AND LIFT OFF RIGHT
FRONT PANEL

Step 4:    Carefully lift the center panel and unplug the ribbon cable from the back of the LCD.

UNPLUG
HERE

Step 5:    Identify cables to ensure proper re-connection and remove from P3, P5, P6, and P9.

P6    P2 P3    P5    P7    P9
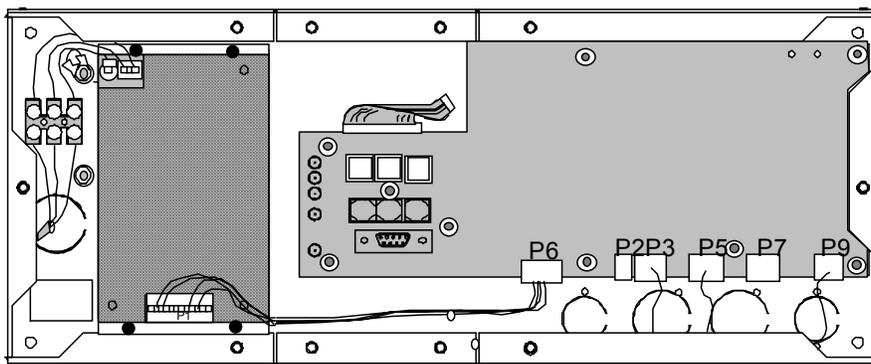
Step 6:     Remove the nine screws securing circuit board in place.



Step 7:     Remove circuit board from chassis.

Step 8:     Remove display module ribbon cable from circuit board and connect to new circuit board.

Step 9:     Install new circuit board and replace nine screws removed in Step 6 above.

Step 10:    Reconnect cables to P3, P5, P6, and P9.

Use the following table to assist in proper relocation of identified cables.

| Connector | Cable Destination: |
|-----------|--------------------|
| P2 | Not used. |
| P3 | Connects DMX to luminaire data run #2. |
| P5 | Connects DMX to luminaire data run #1. |
| P6 | Connects power supply to circuit board. |
| P7 | Not used. |
| P9 | Input Data from DMX console. |

Step 11:    Reconnect display module ribbon cable to LCD.

Step 12:    Replace four screws in center front panel.

Step 13:    Replace left and right front panels.

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# *Appendix A*

# Software Hardware Components

This Appendix describes all of the individual products that are considered the Irideon Control System. Luminaire information can be found in the specific luminaire user's guide.

This appendix contains the following sections:

# Software/Hardware Components

### Composer™ Software

Composer is a Windows® based PC application software which you directly interact. The software allows you to program recall stations, schedule lighting events and transfer information between the PC and the MCP. It is a powerful, yet user friendly application that connects you with your lighting system components. Composer Software is designed to maximize the full potential of Irideon® multi-parameter luminaires. Additionally, many DMX512 devices may be operated by the Composer System.

### Composer Lite™

Composer Lite is a Windows® based PC application software which you directly interact. The software allows you to program presets, sequences and transfer information between the PC and the luminaires.

### Master Control Processor (MCP)

The MCP is a rack mount, wall mount, or connectorized unit that manages both the remote control stations and the lighting fixtures by acting as a remote central processing unit for the control of the system. The MCP can receive and recall downloaded data from the PC, as programmed by Composer Software, and store this data after the PC has been removed from the system. The MCP has two dedicated RS485 output ports for the control of up to 31 luminaires each. A third RS485 output port is available for connection of up to 31 Remote Stations.

### 8 Button and 2 Button Recall Stations (8RS or 2RS)

The recall stations act as a remote playback control for invoking programmed actions. These stations are wall mounted and available in 2-button and 8-button versions. Recall stations are for use with the MCP and are not supported by Composer Lite or DMX interpreter systems.

### MCP Remote Programming Receptacle Station (MPR)

The MCP Remote Programming Receptacle Station is a wall mounted RS-232 (DB9 connector) which allows for temporary remote connection of the PC to the MCP via DB9 connector for initial programming of your system. MCP Remote Programming Receptacle Stations are designed for use with thee MCP and are not supported by Composer Lite or DMX Interpreter systems.

### Closure Station (CS)

The Closure Station provides eight dry-contacts for the installation of remote sensors and/or switches to activate a programmed event. The user provides the sensors and/or switches. Irideon Closure Stations are for use with the MCP and are not supported by Composer Lite or DMX Interpreter systems.

### Key Switch (KS)

The Key Switch provides local security to a single Irideon recall station or closure station. The Key Switch allows you to turn the 8 button, 2 button, or Closure Station on or off, thereby enabling or disabling the system control from that station. Irideon Key Switch stations are designed for use with the MCP and are not supported by Composer Lite or DMX Interpreter control systems.

### Irideon Astronomical Time Clock (ATC)

The Irideon Astronomical Time Clock is a rack mount or wall mount unit that provides interface to the Composer MCP system enabling timed specific programmed events (example: sunset = power on -or- sunrise = power off) throughout the calendar year. The ATC is designed for use with Composer/MCP systems and is not compatible with the Composer Lite or DMX Interpreter control systems.

### DMX Interpreter (DMXI)

The DMX Interpreter is a rack mount, wall mount, or connectorized unit that converts DMX512 data into Irideon protocol thus allowing Irideon luminaires to be controlled from a DMX console. The DMX Interpreter has two dedicated RS485 ports for the control of up to 31 luminaires each.Standard or Enhanced mode selection determines maximum number of luminaires allowed on each data run.

- In the case of Standard mode selection, data run #1 supports luminaire addresses "32" thru "62". As an example, if 48 luminaires were equally divided between the two data runs - the 24 luminaires on data run #1 would have fixture address "01" thru "24" and the 24 luminaires on data run #2 would have fixture addresses "32" thu 55".

### Composer Lite Programming Kit (CL/PK)

The Composer Lite Programming Kit is used with Composer Lite systems for initial programming. This kit includes an RS232-485 converter, for PC's that do not have an RS485 communications card added, RJ45 cable assy, DB9/DB25F adapter, RJ45 extension cable, and a DB25 Power Supply.

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# *Appendix B*

# Astronomical Time Clock installation instructions

## *For existing MCP/Remote Station installations*

This Appendix describes the installation instructions for the addition of the Astronomical Time Clock in *existing installations* of the MCP control system with Remote Stations.

Existing MCP/Remote Station installations requiring the addition of an ATC will not be able to use the installation instructions noted in Chapter 2 of this manual. Please follow these installation instructions for successful installation of the ATC to your existing installation.

This appendix contains the following sections:

# Astronomical Time Clock (ATC) installation instructions for existing MCP/Remote Station installations.

The Astronomical Time Clock is available as rack mount, 120 or 230 volts. *The ATC resides on the **same data run** as the Remote Stations.* Wiring for the ATC with Remote Stations should be a single run daisy chain configuration with a 120 ohm termination resistor between the two data lines (+&-) after the last station. Recommended maximum **overall cable length** for the remote control run cannot exceed 1000 feet total.

Existing MCP/Remote Station installations that are adding the ATC into the system, for astro time clock functionality, currently have the Remote Station (Data & DC power) wired directly from the Master Control Processor (MCP).

## *Installation of the ATC into an existing system:*

Step 1:    Mounting

**Note:**    *The ATC should be mounted in the same proximity as the Master Control Processor (MCP) for easy installation and wiring.*

a.  For rack mount, secure the two mounting brackets on the sides of the ATC into a 4U space on a standard 19" rack.

b.  For installations requiring a wall mount unit, remove the rack mount brackets from the unit, then remove the front panel and secure unit to the wall as shown.



Attach to wall at these points

Attach to wall at these points

**CAUTION:**    *This unit is not designed to recess into the wall.*

**Note:**    *Knockouts are located on top and bottom of the ATC to facilitate hookup.*

Step 2:    Remove power from the MCP.



New AC Power wire from MCP

Remove terminating resistor (R180)

Data and DC Power to existing Recall Stations

New Data and DC Power to ATC terminal block
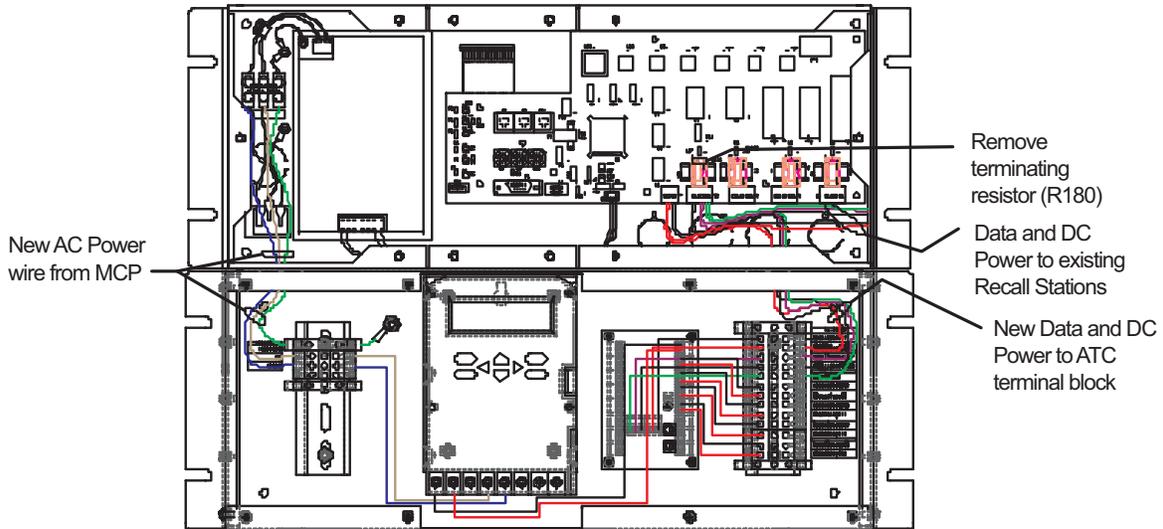
Step 3:    Remove the left and right front panels of the Master Control Processor.

Step 4:    *Assuming that you have installed the ATC directly below the MCP*, remove the knockouts from the top right side of the ATC and remove the knockouts from the bottom right side of the MCP to facilitate Data and DC Power hookup.
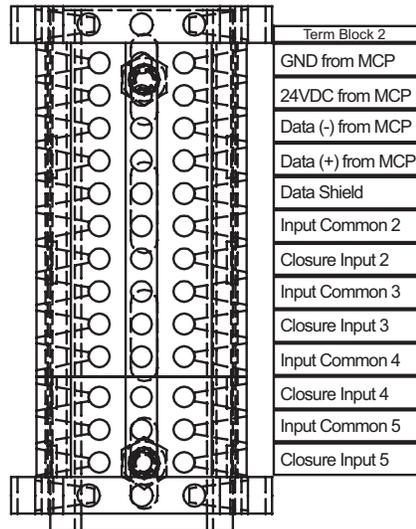
Step 5:    Obtain the necessary Data and DC Power wires. "Input Power and Control Cabling for Irideon Control System" on page 17. Approximate length of wires, if installed as pictured above, should be 16".

Step 6:    Obtain the appropriate AC Power wiring as per your local code.

Step 7:    Pass Data and DC Power wires through the knockouts of the ATC and MCP on the right side of the units.

Step 8:    Pass AC Power wires through the knockouts of the ATC and MCP on the left side of the units.

Step 9:    Following the label chart on the right side of the ATC, connect DC-, DC+, DATA-, DATA+, and Data Shield.



| Term Block 2 |
| --- |
| GND from MCP |
| 24VDC from MCP |
| Data (-) from MCP |
| Data (+) from MCP |
| Data Shield |
| Input Common 2 |
| Closure Input 2 |
| Input Common 3 |
| Closure Input 3 |
| Input Common 4 |
| Closure Input 4 |
| Input Common 5 |
| Closure Input 5 |

Step 10: Following the label chart on the left side of the ATC, connect Earth Ground, Line and Neutral.
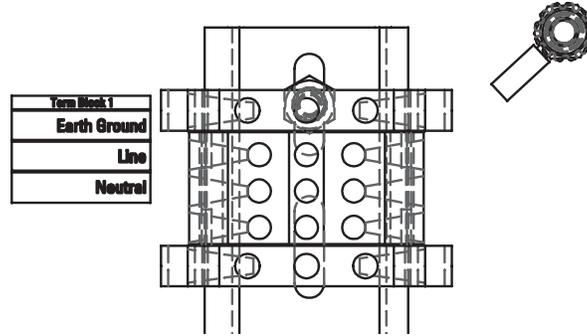


Step 11: Attach the DATA wires pulled from the ATC to **P3** on the MCP using the following pin/wire code:



+ - Gnd
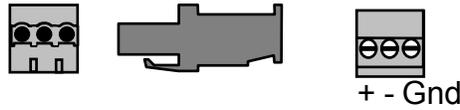
| Pin | Wire (CAT 5) | Belden 9729 |
|---|---|---|
| data + | White/Orange | Red |
| data - | Orange | Black |
| Gnd | Brown | Drain |

Step 12: On the MCP, find the fuse assembly (R180) directly above **P3** on the MCP and remove it from the assy.
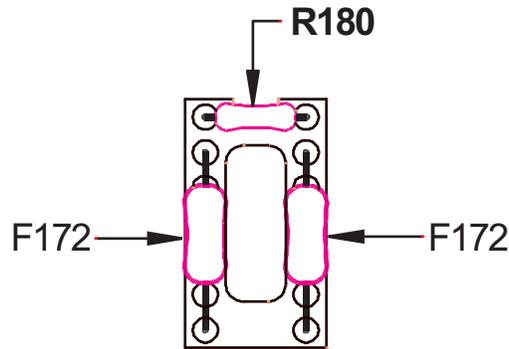


Step 13: Attach the DC Power wires pulled from the ATC to **P2** on the MCP using the following pin/wire code:
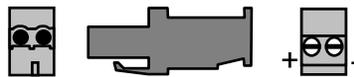


| Pin | Wire (Belden 8461) | Wire (Belden 8790) |
|---|---|---|
| + (24vdc) | Black | Red |
| - (Gnd) | White | White |

Step 14:   Connect AC Power wires pulled from the ATC to the AC terminal block on the MCP using the following pin/wire code:

LINE - BLACK (BROWN*)
NEUTRAL - WHITE (BLUE*)
GROUND - GREEN OR BARE (GRN/YEL*)

AC POWER INPUT

P1

\* INTERNATIONAL (HARMONIZED)
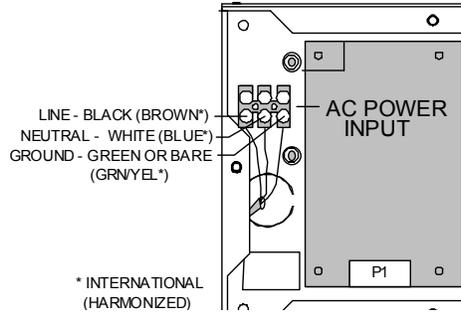
Step 15:   Using a small screwdriver, set the two rotary switches found on the ATC's contact closure station to the fixture address assigned to the ATC. This address information should come from the same source as the luminaire and remote station addresses.

Step 16:   Replace the ATC front panel.

Step 17:   Replace the MCP front panels.

Step 18:   Refer to "Power Up Procedures" on page 36.

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# Appendix C

# Astronomical Time Clock Programming

This Appendix describes the features and programming instructions for the Astronomical Time Clock (ATC).

This appendix contains the following sections:

# Introduction to Programming the ATC

The Irideon Astronomical Time Clock (ATC) is an electronic time control that provides simple, inexpensive interface to the Irideon Composer/MCP system.

### Functional description:

Programming for the ATC is accomplished with the simple keypad combined with a large, user friendly display.
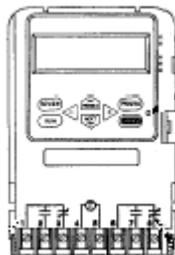
### Specification:

The ATC is specifically designed as an astronomical time clock interface for MCP/Composer Control Systems.

### Features of the ATC:

- Astronomical time clock
- Selectable Clock Format - 12 hour (AM/PM) or 24 hour clock format
- Maintained relay operation
- Easy installation, programming and maintenance free operation

## Keypad Description and Function:



- **MASTER RESET** - Clears time and program

    - Display will show "MEM CLR." The reset switch is accessed by inserting a pointed object, such as a paper clip, into the reset hole to the right of the keypad.

- **PROGRAM** - This key allows the user to add, delete or change parameters (events, time, holidays, etc.).

    - When pressed from the RUN mode, the programming menu is displayed starting with the TIME menu header.

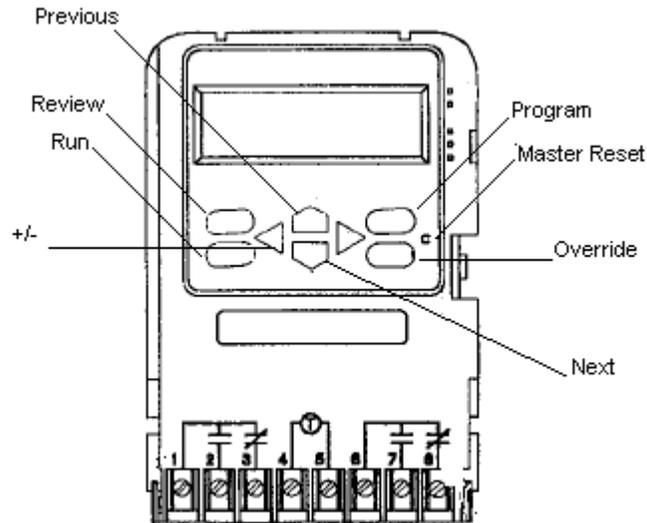    - When pressed from a menu header, the control will advance to the next menu header.

    - When pressed from a programming step, the control returns to that menu header.

    - When pressed during review, the control will go to the appropriate programming display.

- **REVIEW** - This key allows the user to review all the programmed steps using displays condensed to show as much information as possible on one display. The user will not be able to change the program in the Review mode.

    - When pressed from the RUN mode or any programming step within a menu header, the control will return to the TIME menu header.

    - When pressed from any menu header during review, the control will move to the next menu header.

    - When pressed from a review step, the control returns to that menu header.

- **RUN** - This key will return the control to the RUN mode.

    - From all programming steps (excluding the override menu), the control will perform a status update and return to the RUN mode.

- From all review steps, the control will go straight to the RUN mode without updating.

- If the REVIEW key was pressed while in a programming step, the control will perform a status update and return to the run mode.

- When in the override menu, this key will return the selected channel from an override to the current event status shown and return the control to the RUN mode.

- **OVERRIDE** - This key will take the user to the override header.

    - From the RUN mode, this key will jump to the override header.

    - From the override header, the selected channel's state is toggled and the control returns to the RUN mode.

- **PREVIOUS/NEXT** - Moves the display selection to the previous or next program step.

    - While in a programming step, the current item (to be modified) will be flashing.

- **+/-** - These keys will change (increment or decrement) the current (flashing) item.

    - The +/- keys will not work during review, except to allow a faster step through events, inputs and holidays.

## Program Header Menu

TIME - set time, date, daylight savings time

CONF - 12/24, stagger up, durations 1-4, duty cycles 1-4

ASTR - sunrise, sunset, latitude, hemisphere

EVNT - on, off, durations 1-4, duty cycles 1-4

INPT - configure inputs

EVNT SENS - sensor events

HOL - set holidays

**Note:** *From the HOL menu header, the control will loop around to the TIME header. The OVER (override) mode is only accessible from the RUN mode.*

## Mode Descriptions

In all modes, use the NEXT key to advance to the next item to be programmed or reviewed and the PREVIOUS key to go back to the previous item. Use the + and - keys to modify the current (flashing) item.

**Memory Clear** - Indicates that the memory has been cleared. Use the NEXT key to begin programming. After initial power-up or a reset, the control will be in MEM CLR (memory clear) mode. This mode is only accessible once.

**MAINTained** Operation - when configured for maintained relay operation the ATC will only require use of channel one.

**CLOCK FORMAT** - Toggle between 12 hour (AM/PM) or 24 hour (00:00-23:59) clock format using the +/- key.

**SET TIME HEADER** - This mode is used for setting time, date and daylight saving time. Program hours, minutes, seconds and day of week using the +/- key. The PM indicator is used in the 12 hour format. AM begins with midnight and PM begins with noon. Only the PM indicator will appear in the 12 hr. format. Program month, date and year by using the +/- key.

**ASTRO HEADER** - The Astro function provides a means for controlling lights based on the changing sunrise and sunset times throughout the year without use of a photocell. The Astro feature does not turn loads on or off.

# Astronomical Time Clock (ATC) Programming

After the ATC is installed and power up is successful you may proceed to set up and program the ATC.

Step 1: After power up, the ATC LCD will display MEM CLR - this indicates that the memory is clear and you may proceed with setup.

**Note:** *The MEM CLR mode is only accessible once.*

Step 2: Press the NEXT key to begin. The display will show the relay operation to be MAINtain (maintained relay operation).

Step 3: Press the NEXT key to continue. The display will flash 12HR clock format.

Step 4: Use the +/- key to choose 12 hour (AM/PM) or 24 hour (00.00-23:59) clock format of your choice.

**Note:** *The PM indicator is used in the 12 hour format. AM begins with midnight and PM begins with noon. Only the PM indicator will appear in the 12 hour format.*

Step 5: After selecting relay operation and clock format, Press the PROGRAM key to begin the programming steps in the **TIME** header.

Step 6: Press the Next key to continue. Using the +/- key, program hours (press Next), program minutes (press Next), program seconds (press Next) and day of week.

Step 7: Press the Next key to continue. Using the +/- key, program month (press Next), program date (press Next) and year.

Step 8: Press the Next key to continue. DST will display. Ensure that Daylight Saving time operation is active (YES).

Step 9: Press the Next key. Program the day that daylight saving time begins for your zone.

**Note:** *The control defaults to the **1**st Sunday in April. At 2:00 AM on this day, the control's time will advance 1 hour.*

Step 10: Press the Next key. Program the day that daylight saving time ends for your zone.

**Note:** *The control defaults to the **L**AST Sunday in October. At 2:00 AM on this day, the control's time will go back one hour.*

Step 11: Press the Next key, TIME menu will display.

Step 12: Press Program key to step through the headers until ASTR (astro header) is reached.

Step 13: Press the Next key to continue, Sun**Rise** time is displayed with hours flashing.

**Note:** *To determine the Sunrise and Sunset time for your particular location refer to the following web site http://aa.usno.navy.mil/ or your local newspaper.*

*If the customer requires an **offset**, meaning the luminaires need to come on 30 minutes (or any desired time) before astronomical sunset, you must reduce your astronimical Sunset time by this 30 minutes (or desired time). This method works for both Sunset and Sunrise.*

Step 14: Use the +/- keys to set today's sunrise hour.

Step 15: Press the Next key, Sunrise minutes are flashing.

Step 16: +/- Set to today's sunrise minutes.

Step 17: Press the Next key, Sun**Set** time is displayed with hours flashing.

Step 18: +/- Set to today's sunset hour.

Step 19: Press the Next key, Sunset minutes are flashing.

Step 20: +/- Set to today's sunset minutes.

Step 21: NEXT LATT N-10o is displayed (latitude 10° north), use the +/- to scroll to the desired latitude for your location.

**Note:** *To determine Latitude for your particular location, refer to the following web site (FOR US) http://www.bcca.org/misc/qiblih/latlong_us.html (OTHER Countries) http://www.bcca.org/misc/qiblih/latlong_oc.html or refer to your ATLAS.*

Step 22: Press the Next key, CHAN 1 NO will display flashing.

Step 23: Press the + key and change NO to YES to assign astro to Channel 1.

Step 24: Press the Next key, CHAN 2 NO will display flashing.

Step 25: Press the Next key, (without changing the defaults for CHAN 2) ASTR will display.

Step 26: Press PROGRAM key to step through headers until EVNT (event header) is reached.

Step 27: Press the Next key, the first event is shown with event # 1 flashing.

Step 28: Press the Next key, Event type is flashing.

Step 29: Press the + key and select ON.

Step 30: Press the Next key, Channel #1 is flashing.

Step 31: Press the Next key, Hours are flashing.

Step 32: Press the + key to roll hours to your desired ON time.

Step 33: Press the Next key, Minutes are flashing.

Step 34: Press the +/- key to roll minutes to your minutes value.

Step 35: Press the Next key, SUN is flashing and NO is displayed.

Step 36: Press the + key, change NO to YES to assign this ON event to Sunday.

Step 37: Press the Next key, Repeat steps 35-36 for Monday through Saturday.

Step 38: Following Saturday, continue to press Next disregarding Holiday A, Holiday B and Holiday C.

Step 39: Event #2 is flashing, press the Next key.

Step 40: Use the + key to select OFF

Step 41: Repeat steps 30- 38 above to program your OFF time.

**Note:** *On and Off times must be assigned to channel #1 in the ATC as described above even though the Astro function will supersede.*

Step 42: Press RUN, the control will perform a status update before going into the RUN mode.

Programming of the ATC is complete, additional programming by Composer Software is required. Refer to the Composer Software User Guide for instructions to program your system. The ATC will be recognized in Composer Software as closure #1 within the station address that was assigned at installation.

# *Appendix D*
# DMX Addressing

This Appendix details information regarding the addressing of Irideon automated luminaires in a DMX Interpreter Control System.

This appendix contains the following sections:

# Luminaire addressing via a DMX512 Console

The first data channel of any luminaire can be calculated by following:

$$\text{DMX Interpreter starting address} + \left( \left( \text{Luminaire fixture address} - 1 \right) \times \left( \frac{\text{\# of Channels}}{\text{per luminaire}} \right) \right)$$

As an example, if the DMX Interpreter starting address is set at "001" and the eight bit Standard mode utilizing six data channels is selected (SA 8-6), then the first channel of data for the luminaire with fixture address "14" would be 1+(14-1) x (6) or 1+(13X6) = 70.

Eight or Sixteen bit mode operation is user selectable. Finer control of pan and tilt can be achieved with Sixteen-bit mode operation. In the Sixteen-bit mode, two channels are utilized for course and fine adjustment of pan/tilt movements thereby increasing step resolution to 512 steps and allowing greater position accuracy.

Standard mode contains no timing provisions. Command execution time is controlled by the DMX control console.

Enhanced mode however, provides the user with three or four separate timing controls:

- Intensity (Douser/Diffuser) timing

- Focus (Pan/Tilt) timing

- Color transition timing

- Beam transition timing

Timing resolution is one second per step from 0 to 256 seconds.

## *Recalibration*

The DMX Interpreter has a remote control feature that allows the user to remotely reset all Irideon luminaires on Port # 1. This feature also turns lamps on Port # 1 - ON or OFF by utilizing DMX channel 512. To implement this command DMX channel 512 must set at the following levels for 3 seconds each and then returned to zero:

- 33% (or 84 out of 256) for Reset

- 66% (or 168 out of 256) for Douse

- 99% (or 252 out of 256) for Start

These settings affect all luminaires (on Port # 1) simultaneously and does not require any additional channels per fitting.

**N o t e :** *This software feature was implemented in version 2.0 and later of the DMX Interpreter operating system. The hardware feature is implemented in all Irideon luminaires except for early versions of AR500 and AR5 luminaires.*

# DMX Channel Maps

These modes are compatible with DMX Interpreter operating software version 3.0.
Standard 8-Bit AR500 (Only) Mode (SA8-4)-4 channels per luminaire

| Channel | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| AR500 | Dim/Diff | Cyan | Amber | Magenta |

Standard 8-Bit AR50 Mode (SA8-6)-6 channels per luminaire

| Channel | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| AR500 | Dim/Diff | - | - | Cyan | Amber | Magenta |
| AR50 | Dim/Diff | Pan | Tilt | Cyan | Amber | Magenta |

Standard 8-Bit AR6 Mode (SA8-7)-7 channels per luminaire

| Channel | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| AR500 | Dim/Diff | - | - | Cyan | Amber | Magenta | - |
| AR50 | Dim/Diff | Pan | Tilt | Cyan | Amber | Magenta | - |
| AR6 | Intensity | Pan | Tilt | Wheel 1 | Wheel 2 | Gobo Index | Lens |

Standard 16-Bit AR50 Mode (SA16-8)-8 channels per luminaire

| Channel | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| AR500 | Dim/Diff | - | - | - | - | Cyan | Amber | Magenta |
| AR50 | Dim/Diff | Course Pan | Fine Pan | Course Tilt | Fine Tilt | Cyan | Amber | Magenta |

Standard 16-Bit AR6 Mode (SA16-9)-9 channels per luminaire

| Channel | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| AR500 | Dim/Diff | - | - | - | - | Cyan | Amber | Magenta | - |
| AR50 | Dim/Diff | Course Pan | Fine Pan | Course Tilt | Fine Tilt | Cyan | Amber | Magenta | - |
| AR6 | Intensity | Course Pan | Fine Pan | Course Tilt | Fine Tilt | Wheel 1 | Wheel 2 | Gobo Index | Lens |

Enhanced 8-Bit AR50 Mode (EA8-9)-9 channels per luminaire

| Channel | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| AR500 | Dim/Diff | - | - | Cyan | Amber | Magenta | - | Color Time | Beam Time |
| AR50 | Dim/Diff | Pan | Tilt | Cyan | Amber | Magenta | - | Color Time | Beam Time |

## Enhanced 8-Bit AR6 Mode (EA8-11)-11 channels per luminaire

| Channel | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AR500 | Dim/Diff | - | - | Cyan | Amber | Magenta | - | Intensity Time | Focus Time | Color Time | Beam Time |
| AR50 | Dim/Diff | Pan | Tilt | Cyan | Amber | Magenta | - | Intensity Time | Focus Time | Color Time | Beam Time |
| AR6 | Intensity | Pan | Tilt | Wheel 1 | Wheel 2 | Gobo Index | Lens | Intensity Time | Focus Time | Color Time | Beam Time |

## Enhanced 16-Bit AR50 Mode (EA16-11)-11 channels per luminaire

| Channel | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AR500 | Dim/Diff | - | - | - | - | Cyan | Amber | Magenta | Focus Time | Color Time | Beam Time |
| AR50 | Dim/Diff | Course Pan | Fine Pan | Course Tilt | Fine Tilt | Cyan | Amber | Magenta | Focus Time | Color Time | Beam Time |

## Enhanced 16-Bit AR6 Mode (EA16-13)-13 channels per luminaire

| Channel | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AR500 | Dim/Diff | - | - | - | - | Cyan | Amber | Magenta | - | Intensity Time | Focus Time | Color Time | Beam Time |
| AR50 | Dim/Diff | Course Pan | Fine Pan | Course Tilt | Fine Tilt | Cyan | Amber | Magenta | - | Intensity Time | Focus Time | Color Time | Beam Time |
| AR6 | Intensity | Course Pan | Fine Pan | Course Tilt | Fine Tilt | Wheel 1 | Wheel 2 | Gobo Index | Lens | Intensity Time | Focus Time | Color Time | Beam Time |

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