PRECISION ELR TROUBLE SHOOTING
Typical ELR Application for Simultaneous Retraction:

Pressing the push button retracts the latches on each exit device. When both exit devices have retracted latches, the control modules in the power supply signals the door operators to open the doors. The doors will remain open until released by the Time Delay feature on the Control Module.

4 CONDUCTOR (28 GAGE MIN.) POWER TRANSFER REQUIRED. EPT-5 CONCEALED POWER TRANSFER (see page 29), DOOR CORD OR HINGE (FURNISHED BY OTHERS)
Typical ELR Application for Independent Pair of Simultaneous Retraction:

*Two Independent Pairs of Doors*

Each pair of doors are operated by pressing a push button which retracts latch(es) on each exit device. When both exit devices have retracted latches the control modules in the power supply signal the door operators to open the doors. The doors will remain open until released by the Time Delay feature on the Control Module.

4 CONDUCTOR (28 GAGE MIN.) POWER TRANSFER REQUIRED. EPT-5 CONCEALED POWER TRANSFER (see page 29), DOOR CORD OR HINGE (FURNISHED BY OTHERS)
Typical Applications:
The ELR - Electric Latch Retraction option is most often used for a means of security and convenience

– Single or paired openings provide free unimpeded egress and/or ingress when the latch electronically retracts and a auto-operator opens the door

– Since the exit device controls the locking point, simple electronic retraction can provide AUTHORIZED entry via a card swipe, proximity reader, key-pad, etc……..

– Fire Rated openings prevent the use of mechanical dogging. With the use of an ELR option, the latch may be held retracted (unlocked) intermittently or 24/7. Connection to the fire alarm system maintains proper fire code.

– The ELR option may be used in conjunction with all Apex Precision 2000 Series exit devices for openings 2’7” - 4’0”
Application Components:

1. PHI Apex ELR Exit Device (page 21 Apex brochure)
2. PHI ELR-150 Power Supply (page 21 Apex brochure)
3. CM-150-08 Control Module, Plugs in the power supply One module per exit device (page 22 Apex brochure)
4. Power Transfer, Hinge, Flex Cord, etc…. (PHI models page 29 Apex brochure)
5. Wire-Run (wire run vs. wire gage limitations page 23 Apex brochure)
6. Card Reader, Proximity Reader, Push Button, etc…..

To obtain the most current Apex brochure and CM-150-08 Control Module instruction sheets please visit www.precisionhardware.com
PHI ELR Application Components:

- ELR Exit Device Assy.
- ELR150 Series Power Supply
- CM150-08 Control Module
- EPT-5 Power Transfer
- EPT-2 Power Transfer
1. Triggered input at Terminal blocks TB1-1 & TB1-2 - switched or TB1-7 & TB1-8 - voltage, will initiate an inrush of 5-Amps @ 24VDC through the two white solenoid wires. A successful input will illuminate LED-1 solid green.

LED 1 (solid green indicates a successful input)

TB1-1 & TB1-2 Triggered Input

TB1-7 & TB1-8 OPTIONAL Voltage Input

TB2-1 & TB2-2 Solenoid wires (White)

Terminal Block 1 (input)

Terminal Block 2 (output)
Basic ELR Operation

2. The exit device solenoids will slide in tandem retracting the latch tripping the feedback switch on the touchbar sub-assembly. The feedback switch closure completes the circuit at the power supply. Doing so will cause LED-2 to illuminate solid **green** and drop the inrush to 1.5-Amps @ 5VDC of holding. If an Auto Operator is connected to TB2-6 & TB2-7 it will then receive signal to initiate the open cycle. **The operator should only receive a signal if the latch retracts**

**LED 2 Solid Green** indicates a successful latch retraction
Basic ELR Operation

3. The time of latch retraction is dependant on how long the switch remains closed at TB1-1 & TB1-2 or continuous voltage to TB1-7 & TB1-8. Another method for extended latch retraction would be to set the time delay jumper across SW - Switched input or V for voltage input. (See page 4 of the electrical instructions Drawing 02131-11) If the time delay jumper is used, up to four minutes of continuous retraction can be achieved by turning the adjusting screw on the respective control module.

- **Time Delay Terminal**
  - No jumper = no delay
  - Jumper Across SW = Switched Input Delay
  - Jumper V = Voltage Input Delay

- **Time Delay Adjustment Screw**
  Clockwise increases delay up to 4 minutes

- **Terminal Block 1** (input)
- **Terminal Block 2** (output)
Basic ELR Operation

4. If the Power Supply is not wired to the Fire Alarm System, a jumper must be terminated across TB1-3 & TB1-4 of the control.

LED 3 Solid Red indicates fire alarm jumper is present. Blinking red means jumper is missing or the fire alarm termination is open, latch will not retract.
Basic ELR Operation

5. Independent or paired openings

LED 2 Solid Green indicates a successful latch retraction. Double blink - Sequential mode. Single blink - Independent mode

A jumper must be present for the module to function. Two options are available.
1. Jumper across C I is for Independent operation. I.e. Single door or master card of a paired application
2. Jumper across A C is for paired openings. A C is the sequential or number 2 module
Basic ELR Operation

6. Recap of LED Status indicators

**LED 1** Solid Green indicates a successful input.

**LED 2** Solid Green indicates a successful latch retraction. Double blink - Sequential mode. Single blink - Independent mode.

**LED 3** Solid Red indicates fire alarm jumper is present. Blinking red means jumper is missing or the fire alarm termination is open latch will not retract.

**LED 4** Solid Green indicates power is available to the Control Module.
Trouble Shooting:

NOTE: Before troubleshooting a specific section, PLEASE ensure the wiring instructions have been followed. Additionally make sure the proper wire run and gage has been incorporated.

**PHI ELR Exit Device Sub-Assembly**

- **ELR - Feedback Switch**
  - (2 - Black wires)

- **Solenoids**
  - (2-White wires)
Trouble Shooting: Triggered Input

**NOTE:** The following tips are based on prior application experiences. Before troubleshooting a specific section, PLEASE ensure the wiring instructions have been followed. Additionally make sure the proper wire run and gage has been used.

- **PHI Apex ELR Exit Device**

  - When the card swipe, proximity reader, push button or any other signaling unit is activated, LED 1 should illuminate solid green. If no solid LED 1 is present, please check the signaling device. Additionally, you may want to jumper TB1-1 & TB1-2. Doing so will ensure a positive switch closure has occurred.
Trouble Shooting: Solenoid & Feedback Switch Testing

**NOTE: The following tips are based on prior application experiences. Before troubleshooting a specific section, PLEASE ensure the wiring instructions have been followed. Additionally make sure the proper wire run and gage has been used.**

➢ PHI Apex ELR Exit Device

– All Precision ELR exit devices incorporate two solenoids with 4 wire leads colored in white and black (2 white leads for the solenoids, 2 black leads for the ELR feedback switch)

– Testing the solenoids to ensure they are functional. Disconnect Power and apply an Ohm meter across both solenoid wires at the power supply. (Terminals TB2-1, TB2-2) Doing so will measure the Complete Wire Run, Power Transfer and both Solenoids. A good reading will show a range of 3.5 - 5 Ohms of resistance.

– As an added measure to ensure the transfer isn’t at fault, it is beneficial to swing the door while taking the Ohm measurement. Doing so may highlight a possible short in the hinge or transfer. (Improper wiring, Wire gage, Distance between the Power Supply - exit device and shorts are the most common causes for failure to the ELR system)
Trouble Shooting: Solenoid & Feedback Switch Testing Cont’d.

NOTE: The following tips are based on prior application experiences. Before troubleshooting a specific section, PLEASE ensure the wiring instructions have been followed. Additionally make sure the proper wire run and gage has been used.

➢ PHI Apex ELR Exit Device

– If LED-2 does not light solid green when the latch retracts, it is possible the two black feedback switch wires are not connected at TB2-3 & TB2-4. If a connection is present it may also possible the switch could be damaged. Perform a continuity check with a meter.

ELR - feedback switch
Trouble Shooting: Control Module Output

NOTE: The following tips are based on prior application experiences. Before troubleshooting a specific section, PLEASE ensure the wiring instructions have been followed. Additionally make sure the proper wire run and gage has been used.

➢ CM150-08 Control Module

– As mentioned on a previous slide, the control provides a 24VDC @ 5Amp output to the exit device solenoids. The subsequent holding power is 5VDC @ 1.5Amp.
– To test the Control Module for proper performance, take an Amp reading IN-LINE with one of the two wires coming out of terminals TB2-1 or TB2-2.
– After receiving an input measure the inrush and holding amperage for the proper reading.
– A weak performing control module will display a lower holding amperage. Low amperage holding can significantly reduce the performance of vertical rod applications.
Trouble Shooting: Paired Opening W/Operator

SINGLE OR PAIR OF DOORS TYPICAL APPLICATION

Pressing the push button retracts the latch(es). When the latch(es) have retracted, the door operators activate. The door(s) will remain open until the time delay on card #1 releases the exit devices. (Shown without fire override and a normally open contact for the door operator)

SINGLE DOOR

PAIR OF DOORS

PUSH PULL APPLICATION

The exit device latch(es) remain retracted at all times. Pressing the push button cycles the door operator(s). When fire alarm removes the closed contact, the exit device relatches and the push button input is removed from the door operator. (Shown with a normally open contact for the door operator)
Trouble Shooting: Paired Opening W/Operator

**DOOR OPERATOR NOTES**

A) Check the adjustment of the vertical rods; they MUST BE adjusted correctly for proper ELR operation. (see exit device installation instructions for adjustment procedures)

B) Wire the door operator to TB2-6 and TB2-7 for normally OPEN contact OR TB2-6 and TB2-8 for a normally CLOSED contact for the operator. (consult door operator’s installation instructions)

C) Use the time delay when interfacing with operators.

**EXAMPLES:**

Diagram A shows two cards controlling two independent operators.

Diagram B shows two cards controlling one integrated operator.

**TROUBLE SHOOTING GUIDE**

**CONTROL LIGHTS** (see page 4); Used for trouble shooting.

D 4: POWER LIGHT; Lights green when the power is available to the Control Module.

D 3: FIRE LIGHT; Lights red when ready for input, will flash when in the fire override mode.
Trouble Shooting: Paired Opening W/Operator

Card Slots to be used in numerical sequence for paired openings requiring integrated functionality
Trouble Shooting: **Paired Opening W/Operator**

Cards for a paired opening using an integrated operator i.e. One Operator opening both doors
Trouble Shooting: Paired Opening W/Operator

1. Green reflects input signal Via a Card Swipe. Switch, Sensor, etc....
2. Red Jumper reflects the Fire input

1. Black & Whites reflect the Exit Device connection White – Solenoids, Black – Switch Wires
2. Yellow is for signaling the operator
3. Gray is to ensure both latches retract before the operator receives the signal
Precision Hardware Product Support
(800) 392-5209 - Option 1
Thank You