

# SMART TRACK LIGHTING APPLICATION GUIDE

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## Our Commitment

Altman Lighting continually engages in research related to product improvement. New materials, production methods and design refinements are introduced into existing products without notice as a routine expression of the philosophy. For this reason any current Altman Lighting product may differ in some respect from its published description, but will always equal or exceed the original design specifications unless otherwise noted.

Manual Part Number: **49-0275**

Version as of: **28 July 2017**

Smart Track Lighting Application Guide

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# IMPORTANT INFORMATION

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## Product Safety Notices

When using electrical equipment, basic safety precautions should always be followed including the following:



- a. **READ AND FOLLOW ALL SAFETY INSTRUCTIONS.**
- b. Do not use outdoors unless the product is specified to operate in outdoor environments.
- c. Do not mount near gas or electric heaters.
- d. Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
- e. The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- f. Do not use this equipment for other than intended use.
- g. Refer service to qualified personnel.

**SAVE THIS MANUAL FOR FUTURE REFERENCE.**

## Warnings



**WARNING:** You must have access to a main circuit breaker or other power disconnect device before installing any wiring. Be sure that power is disconnected by removing fuses or turning the main circuit breaker off and install a certified lock out - tag out device before installation. Installing the device with power on may expose you to dangerous voltages and damage the device. A qualified electrician must perform this installation.

**WARNING:** Refer to National Electrical Code® and local codes for cable specifications. Failure to use proper cable can result in damage to equipment or danger to personnel.

**WARNING:** This equipment is intended for installation in accordance with the National Electric Code® and local regulations. It is also intended for installation in indoor applications only. Before any electrical work is performed, disconnect power at the circuit breaker or remove the fuse to avoid shock or damage to the control. It is recommended that a qualified electrician perform this installation.

**WARNING:** This Lighting Track System IS NOT for residential installation or use.

**THIS PRODUCT MUST BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE INSTALLATION CODE BY:**

**A PERSON FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE PRODUCT AND THE HAZARDS INVOLVED.**

**CE PRODUIT DOIT ÊTRE INSTALLÉ SELON LE CODE D'INSTALLATION PERTINENT, PAR UNE PERSONNE**

## Altman Lighting Product Warranty

### Warranty Term

Altman Lighting, Inc., a subsidiary of Altman Stage Lighting Company, Inc., herein referred to as Altman, warrants each new product (except for spare parts or products Altman does not manufacture) for a period of TWO (2) years from date of shipment to correct by repair or replacement any part defect due to faulty material or workmanship. Under these same terms products with an LED light source shall be warranted for a period of THREE (3) years.

Altman warrants for NINETY (90) days any spare part it manufactures. On spare parts or products Altman does not manufacture, including, but not limited to, lamps, sockets, lenses, roundels, electronics, ignitors, ballasts, etc.; Altman will grant the same warranty given Altman by its vendors.

Altman assumes no responsibility for damage or faulty performance caused by misuse, improper installation, careless handling or where repairs have been attempted by others.

This warranty is in lieu of all warranties or guarantees expressed or implied and no representative or person is authorized to assume Altman any other liability with the sale of Altman's products.

For complete warranty terms and conditions, please refer to our web site at [www.altmanlighting.com](http://www.altmanlighting.com).

### Warranty Service

In order to request warranty service, you must receive a Return Material Authorization (RMA) number prior to return.

Return shipments must be visibly marked with the RMA number; the product must be returned (*shipping prepaid*) to the factory at:

***Altman Lighting Inc.***

***Attention: RMA # \_\_\_\_\_***

***57 Alexander Street***

***Yonkers, NY 10701***

The return must be within THIRTY (30) days of receiving the RMA from Altman.

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# PREFACE

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## About this Manual

This document only provides general information for Altman Lighting's Smart Track Lighting system and products. Refer to the product's installation and operation manual for specific product information.

## About Smart Track Lighting

Altman Smart Track Lighting Systems are a revolutionary way to bring DMX control and power to addressable architectural / theatrical luminaires. Smart Track eliminates the need for additional data wiring.

Smart Track Lighting is easy to lay out, install, and offers lighting professionals the opportunity to create and activate new lighting scenes time after time. Smart Track Lighting is a track based lighting system that carries both power and data down the same track system. This system allows for simple installation of "smart luminaires" which when connected to the Smart Track can be controlled via DMX. As with all DMX systems - DMX rules need to be followed for proper fixture control.

The Smart Track Lighting System works in conjunction with numerous Altman luminaires from Incandescent to LED. These fixtures include but are not limited to the Altman Gallery, IQ Series, UV, LED and Micro series products. Luminaries fitted with smart track adapters have an addressable DMX dimmer for quartz units and DMX interface for LED color changing and white lighting units. Units fitted with "Non-Smart" track heads work through direct power and cannot be addressed or controlled via data but can be controlled if the head end of the track is outfitted with a mains dimmer. Note that the fixtures attached to the track must also be suitable for use with a phase cut dimmer.

These unique features and capabilities of Altman Smart Track Lighting System make it the ideal solution for many applications. The system is suitable for retail stores, museums, churches, restaurants, theme parks, night clubs and much more.

Altman Smart Track Lighting System is a comprehensive system of components that offer innovative solutions for transporting control signals as well as power to individual luminaires. The heavy duty extruded aluminum track is ideal for demanding applications where a low profile look is desired and numerous luminaires are required. The Altman Smart Track luminaires retain their identity and programming, even when moved from location to location along the track.

Smart Track Lighting System is compatible with DMX and many are RDM enabled (Remote Device Management) luminaires. It can also be integrated into existing systems to transform into new designs. By incorporating the digital control signal into the track, this system allows dimming and lighting effects to be obtained when using any of the numerous compatible Altman luminaires.

## About DMX512A/RDM Standards and Altman Smart Track

DMX512A (DIGITAL MULTIPLEX) is a standard for digital communication networks that are commonly used to control architectural and stage lighting. The ANSI standard of E1.11 employs a differential signal at its physical layer in conjunction with a variable size packet based communication protocol. The DMX512 standard requirements are:

- Maximum length: 1000 feet
- Wiring type recommended: Belden 9842, 9729, 9829, Proplex, Cat5 UTP/STP (Note: A Network is only as good as its Cable)
- Maximum units per bus: 32 (20 RDM devices) - breaking your DMX512 network links and units per data link into smaller segments is always more desirable
- 120 ohm termination at the end of each run, if a DMX512 network is not terminated, the DMX signal arrives at the far end of the chain and is "reflected" back up the line to the transmitter, also note that "over terminating" a DMX512 network is just as bad as this will overload the driver circuit. See "[Examples of DMX Termination](#)" on page 18 for recommended termination guidelines.

All Devices in a DMX512 system must be connected in a “daisy chain” fashion and should never be run in a “WYE/2-fer” fashion.

Utilization of DMX splitters and networked devices is always recommended when long runs or multiple DMX LANs are needed for One or more DMX networks. DMX splitters Permit a star layout with out breaking the rules. Each output of the splitter is driving a new DMX512 link on the network. These generally have one (1) DMX input and multiple outputs. Please know that a repeater will be needed for each DMX universe.

## Common Data issues with DMX Networks

- Too many devices on the line (Maximum units per bus: 32 DMX or 20 RDM devices)
- Improper termination on the line.
- DMX can “sometimes work” with the Data - (minus) missing.
- If a DMX splitter “cleans up” an issue check the system for ground loops.

### ***XLR-5 Pin Out***

- 1) Signal Common
- 2) Data 1- (Primary Data Link)
- 3) Data 1+ (Primary Data Link)
- 4) Data 2- (Optional Secondary Data Link)
- 5) Data 2+ (Optional Secondary Data Link)

### ***RJ-45 Pin Out***

- 1) Data 1+
- 2) Data 1-
- 3) Data 2+
- 4) Not Assigned
- 5) Not Assigned
- 6) Data 2-
- 7) Signal Common (0 V) for Data 1
- 8) Signal Common (0 V) for Data 2



# ALTMAN SMART TRACK LIGHTING

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## Smart Track Lighting Track

### Smart Track 2-Circuit (120 VAC) and 3-Circuit (230 VAC) Lighting System

The track is available in black or white powder coat or silver anodized. All system components and adapters are available in white, black or silver painted finish. Please refer to the specific luminaire's datasheet for available color choices for your specified Smart Track Luminaire.

<u>Model</u>	<u>Description</u>
ASL-23310*	4-feet, 2-circuit Smart Track, 120 VAC
ASL-23320*	8-feet, 2-circuit Smart Track, 120 VAC
ASL-23330*	12-feet, 2-circuit Smart Track, 120 VAC
ASL-22510*	1-meter, 3-circuit Smart Track, 230 VAC
ASL-22520*	2-meter, 3-circuit Smart Track, 230 VAC
ASL-22530*	3-meter, 3-circuit Smart Track, 230 VAC
ASL-22540*	4-meter, 3-circuit Smart Track, 230 VAC

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**Note:** \* Add one of the following codes for track finish: 3-1 Silver, 2-2 Black, 1-3 White

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**WARNING! FIRE HAZARD!** While 120 VAC track heads will fit in 230 VAC track, they CANNOT be used in this manner. Doing so could result in a fire. 120 VAC track heads MUST only be used with 120 VAC track. Refer to "[120 VAC Versus 230 VAC Track](#)" on page 16 for detailed information.

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## Smart Track Accessories

<u>Model</u>	<u>Description</u>
ASL-99802*	Live End with Ground Contact Right
ASL-99803*	Live End with Ground Contact Left
ASL-99874*	Straight Coupler (for Data)
ASL-99806*	Straight Coupler (with Data and Power Input)
ASL-99809*	L-Coupler with Ground Contact Inside
ASL-99810*	L-Coupler with Ground Contact Outside
ASL-99813*	T-Coupler with Ground Contact Right
ASL-99814*	T-Coupler with Ground Contact Left
ASL-985812*	2 Circuit Flexible Straight Coupler
ASL-99816*	X-Coupler
ASL-1986000060*	J-Box Cover
ASL-99780*	Multi Adapter with DMX Terminator
ASL-99900*	End Cap for covering the end of the track
ASL-99507*	Mechanical Universal Adapter (1/2-inch) for loads up to 22 lbs.
61-0265	RAD (Remote Authorization Device) for Addressing Fixtures via RDM

TLA-CAT5DMX-*	CAT5 Data port for feeding DMX512 in or out of Smart Track
ST-PTO	Eutrac to PowerCon - Power Only Adapter (Black Only)
ST-PDTO	Smart Track to PowerCon / 5-Pin XLR - Power and DMX Adapter (Black Only)

**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White. Some items are only available in color noted in their description.

## Smart Track Suspension Devices

<u>Model</u>	<u>Description</u>
99-19810000900W	5-inch Ceiling Canopy Kit for Pendant Stem Suspension
99-19810002301W	24-inch Length Pendant Stem
99-19810002401W	48-inch Length Pendant Stem
99-198000001*	2-inch Pendant Mounting Clip
99-198000002*	4-inch Pendant Mounting Clip (required at every Straight Coupler joint)
99-1980000380*	6-inch Pendant Mounting Clip (required for suspension of Live End Feeds)
ASL-000004-01	T-Bar Clip (Silver Only)

**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White. Some items are only available in color noted in their description. For colors other than white, consult factory before ordering.

## Spackle Flange Recessed Mount

<u>Model</u>	<u>Description</u>
ASL-19850001000	Spackle Flange Profile for Recessed Track - 12.5 Feet (Can be Field Cut to Length)
ASL-19800003600	End Cap for Spackle Flange Profile
ASL-19800003300	Mechanical Straight Coupler for Spackle Flange Profile (3) couplers required at each coupling
ASL-19800003700	Suspension Hanger for Spackle Flange Profile (1) hanger required every 3 feet - (2) hangers required at each coupling.
ASL-19800003400	Feed Fitting for Spackle Flange Profile
ASL-19850001600	L-Coupler for Spackle Flange Profile
ASL-19850001700	T-Coupler for Spackle Flange Profile
ASL-19850001800	X-Coupler for Spackle Flange Profile
ASL-19813000700	M4x4, Set Screw - Knurled Cup PT, Stainless Steel
ASL-19813000800	M5x16, Screw PH Pan HD, Stainless Steel

**Note:** All Spackle Flange parts and accessories are provided in natural finish. Refer to **Figure 1 on page 10** for additional information on Spackle Flange Recessed Mount hardware.

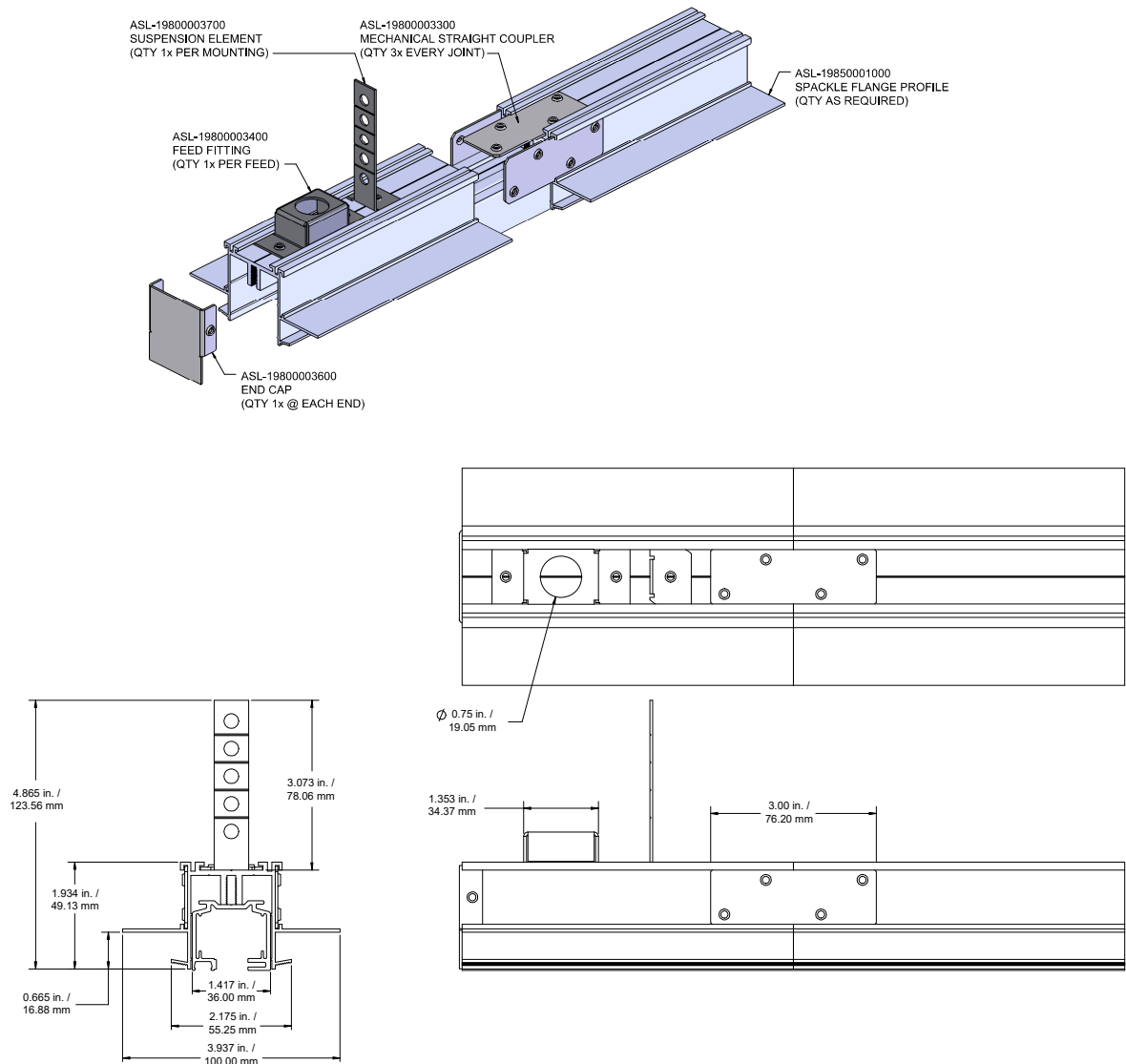


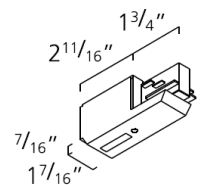
Figure 1: Spackle Flange for 2-Circuit Track (120V)

### Smart Track Live End Feeds

Live end feeds are utilized in the track system to bring both power and data to the “feed” or beginning of the track. These live feeds are wired to the input power and data and make contact with the appropriate bus ways in the track to transfer power and data to the luminaires.

With gold plated DMX / data bus contacts and nickel plated line voltage springs for feeding AC and DMX in or out.

Model	Description
ASL-99802-*	DMX Contacts - Inside
ASL-99803-*	DMX Contacts - Outside

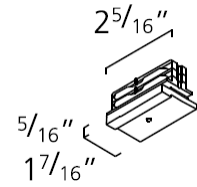


**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White. Some items are only available in color noted in their description.

## Electrical Straight Coupler (Data and Power)

Recessed, for butt joint of two pieces of Smart Track with DMX / data contacts. For feeding through DMX / data only. This part is comprised of two (2) parts. one internal power pass through (must be installed at time of track install) and one external data pass through.

<u>Model</u>	<u>Description</u>
ASL-99874-*	Straight Coupler with Data

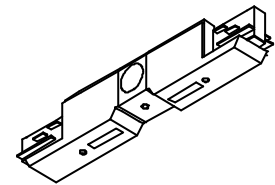


**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

## Smart Track Straight Coupler (Data and Power)

Straight coupler for joining two pieces of Smart Track. Can be used as a feed for either DMX / data and AC. Note: DMX / data must run linear.

<u>Model</u>	<u>Description</u>
ASL-99806-*	Straight Coupler with Data and Power Inputs

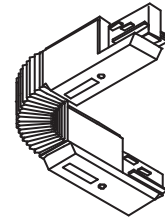


**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

## Smart Track Flexible Coupler

The flexible connector can be used from 30° to 330°. Can be used as a DMX/ data & AC feed or as a pass through. Note: DMX/ data must be run linear.

<u>Model</u>	<u>Description</u>
ASL-985812-*	Flexible Coupler

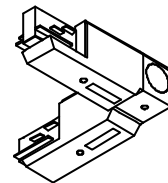


**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

## Smart Track L-Coupler

L-Coupler with DMX / data contacts. Can be used as a feed for either DMX / data or AC. Note: DMX / data must be run linear.

<u>Model</u>	<u>Description</u>
ASL-99809-*	L-Coupler with DMX Contacts - Inside
ASL-99810-*	L-Coupler with DMX Contacts - Outside



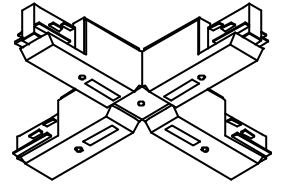
**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

### Smart Track X-Coupler

Four-way, 90° track joiner. Can be used as a DMX / data and AC feed or as a pass through.



**IMPORTANT!** Special care must be taken when laying out and wiring DMX / data in and out of the X-Coupler to keep the DMX running linear. This means breaks inside the X-coupler on the control signal may be necessary. More than one DMX / data line may need to be run.



<u>Model</u>	<u>Description</u>
ASL-99816-*	X-Coupler

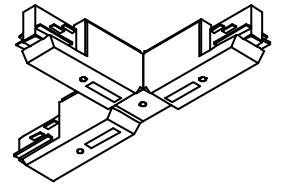
**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

### Smart Track T-Coupler

T-Coupler for joining three track sections. Can be used as a DMX / data and AC feed or as a pass through.



**IMPORTANT!** Special care must be taken when laying out and wiring DMX / data in and out of the T-Coupler to keep the DMX running linear. This means breaks inside the T-Coupler on the control signal may be necessary. If more than one DMX/ data line is necessitated for the control wiring layout.



<u>Model</u>	<u>Description</u>
ASL-99813*	T-Coupler with Ground Contact Right
ASL-99814*	T-Coupler with Ground Contact Left

**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

### Smart Track Dead End Cap

End cap for end of track run.

<u>Model</u>	<u>Description</u>
ASL-99900-*	Dead End Cap

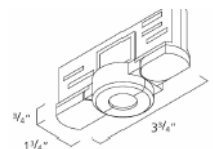


**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

### Smart Track DMX Track Terminator

Smart Track adapter with 120 ohm resistor wired across data positive and data negative for ending a single DMX / data run. Must be used at the opposite end of the DMX / data feed.

**Note:** Please follow ESTA USITT 512a ANSI E1.11 wiring standard for all DMX control systems. E1.11 states a 120 ohm termination device must be used at the end of each DMX LAN.



<u>Model</u>	<u>Description</u>
ASL-99780-*	DMX Track Terminator

**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

## Smart Track J-Box Cover

The J-Box cover can be used with any AC feed component.

<u>Model</u>	<u>Description</u>
ASL-198600006*	J-Box Cover

**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

## Smart Track Mounting Clip

Attaches to upper groove of track and can be used with 3/8-18 threaded pipe (stem) or 1/4-inch through 3/8-inch threaded rod with contractor supplied hardware. Stem and canopy kits below (refer to "[Smart Track Stem Mounting](#)" on page 13).

<u>Model</u>	<u>Description</u>
99-198000001-*	2-Inch Mounting Clip (recommended for general use)
99-198000002-*	4-Inch Mounting Clip (recommended for every straight coupling point)
99-198000003-*	6-Inch Mounting Clip (recommended for every feed point)

**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

## Smart Track T-Bar Clip

For surface mounting with 15/16-inch T-Grid systems with support independent of ceiling. The T-Bar Clip is available in silver only

<u>Model</u>	<u>Description</u>
ASL-000004-01	T-Bar Clip (Silver finish only)

## Smart Track Stem Mounting

<u>Model</u>	<u>Description</u>
99-19810000900W-*	5-inch Diameter Canopy Kit for stem suspension. Required for attaching stem to J-Box or other structures.
99-19810002301W-*	3/8-inch Pendant Stem, 24-inches Long
99-19810002401W-*	3/8-inch Pendant Stem, 48-inches Long



**IMPORTANT!** Stems cannot be cut in the field unless the cut stem can be re-threaded on site.

**Note:** \* Add one of the following codes for finish: 3-1 Silver, 2-2 Black, 1-3 White.

## Smart Track Pendant H-Profile

Housing for Smart Track for aircraft cable or stem mounting where a wire way may be needed or a strengthened support. Available in Silver Anodized only.

<u>Model</u>	<u>Description</u>
ASL-459-403	Pendant H-Profile, 160-inch Length (can be field cut)

## Smart Track H-Profile Joiner

Mechanical straight coupler for connecting two Pendant H-Profiles. Hardware by others.

<u>Model</u>	<u>Description</u>
--------------	--------------------

ASL-99-688-0            H-Profile Joiner (available in silver only)

### Smart Track H-Profile Clip

Clip for mounting aircraft cable, stem, or threaded rod to H-Profile. Slides into top groove in H-Profile.

<u>Model</u>	<u>Description</u>
ASL-198-000009-0	H-Profile Clip (available in silver only)

### Smart Track H-Profile End Plate

For capping the ends of the H-Profile. Available in silver only. Can be custom powder coated. Consult factory for custom colors.

<u>Model</u>	<u>Description</u>
ASL-99-687-3	H-Profile End Plate (available in silver only)

# PLANNING AND DESIGN

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## General Product Information

Before you begin planning, this section contains some basic product specification and precautions when planning, designing, and installing a Smart Track Lighting system.

### Smart Track Lighting 2-Circuit Specification

The Track Lighting System shall consist of high quality aluminum extruded lighting track with integral data distribution, rugged multi adapters to support fixtures & transfer power/ data from the track to controllable devices such as lighting fixtures. It shall be possible to field cut Track Sections to necessary lengths for each project and location. The top of the track shall have an extruded profile to allow for the mounting a manufacturer supplied bracket/ hanging supports for connecting with contractor supplied stem, cable or threaded rod. Track Sections shall distribute two 20 Amp, 120 VAC power circuits with independent neutrals and shall include integral distribution of DMX-512A (ANSI E.1.11-2004) and RDM (ANSI E1.20-2006) control signals to lighting fixtures and controllable devices mounted on the Smart Track.

Connection points shall be available for both wired and wireless connection of controls to the Lighting System. The Lighting System shall have a complete line of components to join data and electrify separate track pieces, including: Live End Feeds, Dead End Caps, In-Line Couplers, Feed Thru Connectors, L Turns (left and right), Flexible Couplers, X-Connectors, T-Connectors, and Data Terminators.

All components of the Lighting System shall be UL or ETL listed.

### Smart Track Luminaire Specification

Fixtures for use on the DMX track system shall include an on-board DMX interface and an installed Multi-Adapter designed to mechanically hang, power and feed data. Fixtures compatible with the Lighting System shall include incandescent, low voltage, CDM, and LED sources. Luminaires shall be compatible with DMX-512A (ANSI E.1.11-2004) and RDM (ANSI E1.20-2006) control protocols. LED fixtures shall feature integral power supplies, drivers, pre-programmed modes and DMX interface. Quartz fixtures shall have an integral, on-board DMX controlled phase-forward (leading edge) dimmer compatible with incandescent, low voltage, and certain phase-dimmable LED loads. Metal Halide (CDM) fixtures shall have an on-board DMX on/off relay rated for a maximum of 70 Watts.

DMX addressing for all system fixtures shall be conducted via either (a) manual setting of the rotary dials for Dimmer & CDM luminaires (b) push button display for LED or (c) RDM from a remote location by a compatible hand held programmer or personal computer. Luminaires shall retain their identity and programming, even when moved to a new location. Data input on all fixtures shall have high voltage protection circuitry. Fixtures may be connected to the system at any point along the track. All fixtures shall be UL or ETL listed.

## Warning and Notices

When installing or using the Altman Smart Track Lighting System, basic safety precautions should always be followed.

### *Including:*

- 1) Read and understand all of these installation instructions before installing the Smart Track fixtures and lighting track. Also refer to **"Important Information" on page 2.**
- 2) Only a qualified electrician in accordance with the National Electrical Code and all local codes and ordinances should perform installation of the Smart Track system.
- 3) Do not install the track in damp or wet locations.
- 4) Do not install any parts of the track system less than five (5) feet above the floor.
- 5) Do not install any fixtures closer than six inches from combustible materials.
- 6) Do not use this track with a power supply cord or convenience receptacle adapter.



- 7) The Altman Smart Track System is intended for use only with Altman Smart Track components and fixtures marked for use with the Altman Smart Track System. To reduce the risk of fire and electric shock, do not use other components as part of this system.
- 8) Data Cable shall be suitable for transport of USITT DMX-512A (ANSI E1.11-2004) and RDM (ANSI E1.20-2006) control information between Smart Track Sections and the Lighting Control System (example: Belden 9842) or CAT-5 Ethernet cable (Example: Belden 1583A) can be used.
- 9) Do not connect DMX Pin 1 / Digital Common directly to earth AC ground at the track power / data feeds.
- 10) DMX/ Data Digital Common is allowed to float at track Power / Data feeds and remains un-terminated.
- 11) The 2-circuit track contains 2 hot circuits and 2 neutral conductors, allowing a maximum load of two 20 Amp circuits at 120 VAC.
- 12) Insure that ALL lighting branch circuits for the Smart Track are dedicated and NOT connected to an in-line dimmer (unless the Smart Track lighting fixtures are Mains Dimmable models. Do not mix Mains Dimmable models and non-Mains Dimmable models on the same track).
- 13) Do not attempt to energize anything other than Lighting Track Fixtures on the lighting track. To reduce the risk of fire and electrical shock, do not attempt to connect power tools, extension cords, appliances, and the like to the lighting track.
- 14) Data Control Wires (+/-) on the 2-circuit adapters and track are to be used for DMX or RDM control signals only, rated max. 5 volts, 1 Amp.
- 15) During installation, do not connect data control cables to the lighting track with electric power connected. Power off the lighting track first, insert the data control cable, and then turn power back onto the lighting track. Voltage spikes can damage the fixtures.
- 16) Keep the data rail control circuits on the lighting track as clean as possible. Use a clean lint-free cloth with isopropyl alcohol to clean the data rail control circuits in the event of dirt and dust collection. The data control lines have to be absolutely clean and free of dirt and dust for a reliable connection with the data contacts of the fixture control adapter.

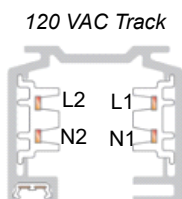
## 120 VAC Versus 230 VAC Track

It is extremely important to understand the differences between 120 VAC track and 230 VAC track. **Figure 2** shows the wiring differences.

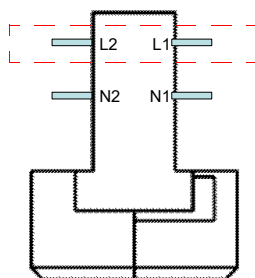


**WARNING! FIRE HAZARD!** While 120 VAC track heads will fit in 230 VAC track, they CANNOT be used in this manner. Doing so could result in a fire. 120 VAC track heads MUST only be used with 120 VAC track.

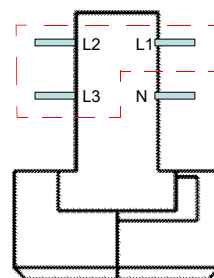
The 120 VAC two-circuit head uses two Hots and two Neutrals - selectable.  
120 VAC, two-circuit track heads are:  
TLA-99779 and TLA-997802



120 VAC Track Head



230 VAC Track Head



The 230 VAC three circuit head uses three Hots and one Neutral - selectable.  
230VAC two-circuit track heads are:  
TLA-997591, TLA-997592, and TLA-997593

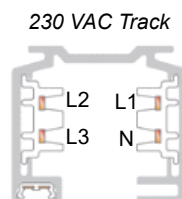


Figure 2: 120 VAC versus 230 VAC Track


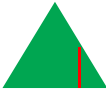
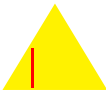
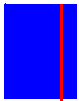




## Track, Components, and DMX Contacts


The Altman Lighting two circuit Smart Track incorporates a two contact DMX/track bus running along the inside of the track profile.



**IMPORTANT!** When planning the layout make sure the course of the DMX/Data Bus is continuous without change or intersection. Please take special care when changing linear direction of the track to ensure that the proper DMX connector is chosen. For example, if you have an inside DMX track with a right hand turn to another make sure that you pick the L coupler with an inside DMX contact.

The positions of the Data buses are defined when looking at the track opening. The necessary live ends and connecting parts are to be selected from the symbols key below.

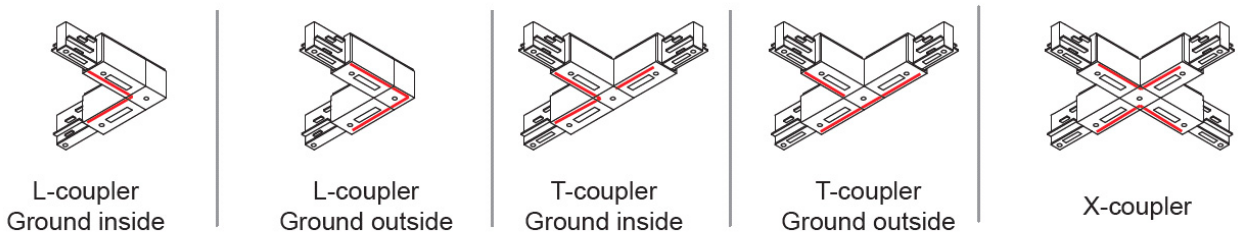
Symbol	Model	Description
	ASL-22310-*	4-foot Smart Track
	ASL-23320-*	8-foot Smart Track
	ASL-23330-*	12-foot Smart Track
	ASL-99802-*	Live End with DMX / Data Contact Inside
	ASL-99803-*	Live End with DMX / Data Contact Outside
	ASL-99874-*	Straight Coupler
	ASL-99809-*	L-Coupler with DMX Data Contact Inside
	ASL-99810-*	L-Coupler with DMX Data Contact Outside
	ASL-985812-*	Flex Connector
	ASL-99780-*	DMX Terminator

Symbol	Model	Description
	ASL-99900-*	Dead End Cap

**Note:** For all available track components and accessories, refer to ["Altman Smart Track Lighting" on page 8.](#)

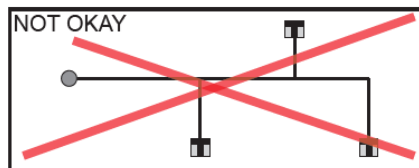
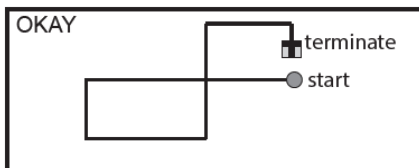
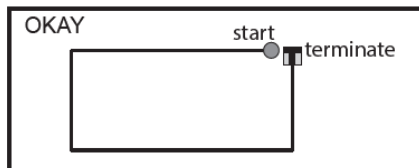
### Coupler Examples

Below are a few examples of the couplers available for Smart Track Lighting. Also to refer to ["Smart Track Accessories" on page 8.](#)



### Examples of DMX Termination

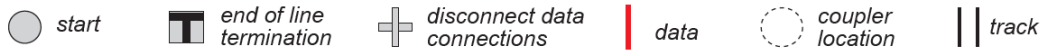
There are a variety of configurations that can be assembled using the available Smart Track couplers. It is recommended that you layout the DMX cable path to ensure that no loops, stars or Y's are created within the data line. Also refer to ["Common Data issues with DMX Networks" on page 7.](#)



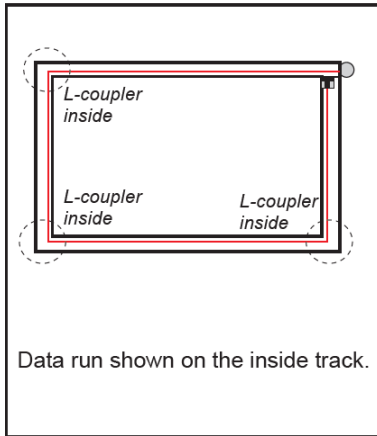
**IMPORTANT!** Data transmission will become unreliable if DMX is not installed according to standard protocols. it is highly recommended to lay out the data path for your track configuration BEFORE ordering all track and couplers.

## Examples of System Layouts

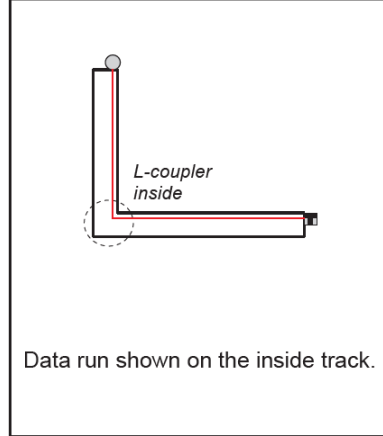
### KEY OF SYMBOLS



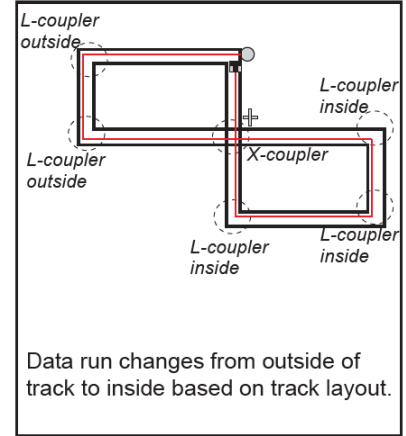
### SQUARE CONFIGURATION



### L CONFIGURATION



### X CONFIGURATION



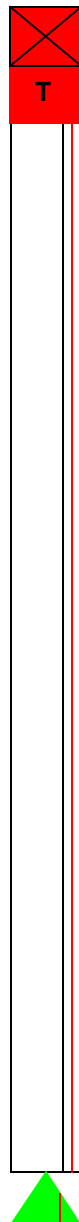
## Planning Aid - Track/Components/DMX Contacts

Below are some examples to assist in planning a Smart Track Lighting System.

**Note:** The layout examples in this guide shows dead end caps at the end of the run. Altman Lighting recommends the use of live end data feeds at the end of the track. This will allow for an easy additions to the system - for data daisy-chain connections from the track.

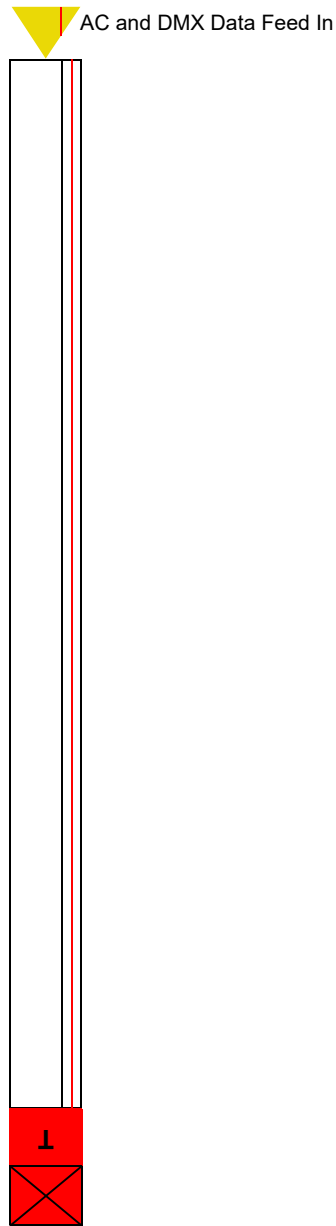
### Examples

*Example 1 - Single Smart Track, Straight Run-Feed Right*

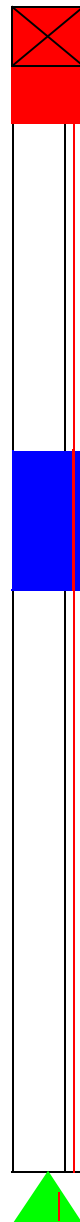


AC and DMX Data Feed In

*Example 2 - Single Smart Track Straight Run-Feed Left*



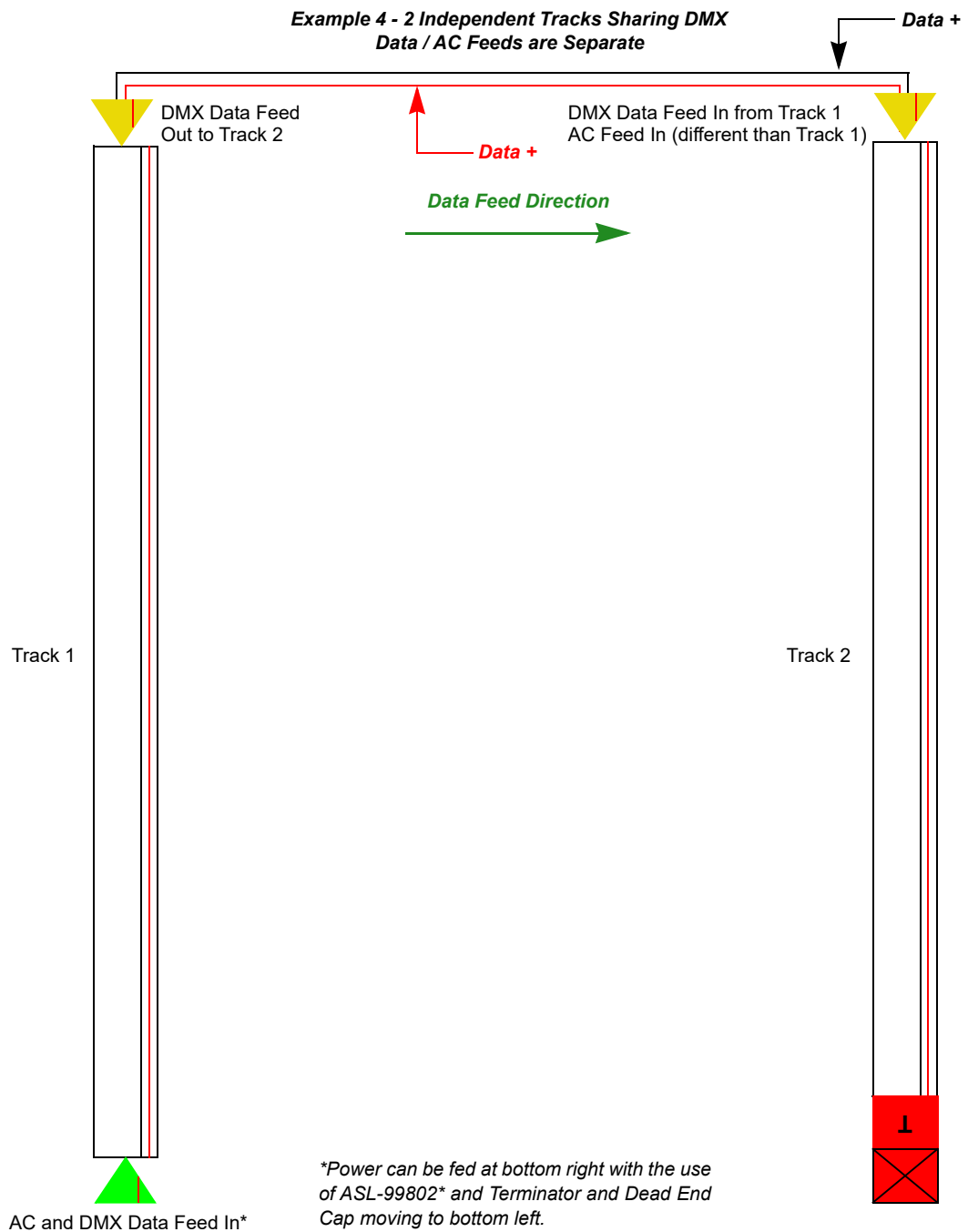
*Example 3 - Straight Run with 2 Tracks and Middle Joiner*



AC and DMX Data Feed In

**Note:** The examples show track seen from above. The opening of the track shows downwards.

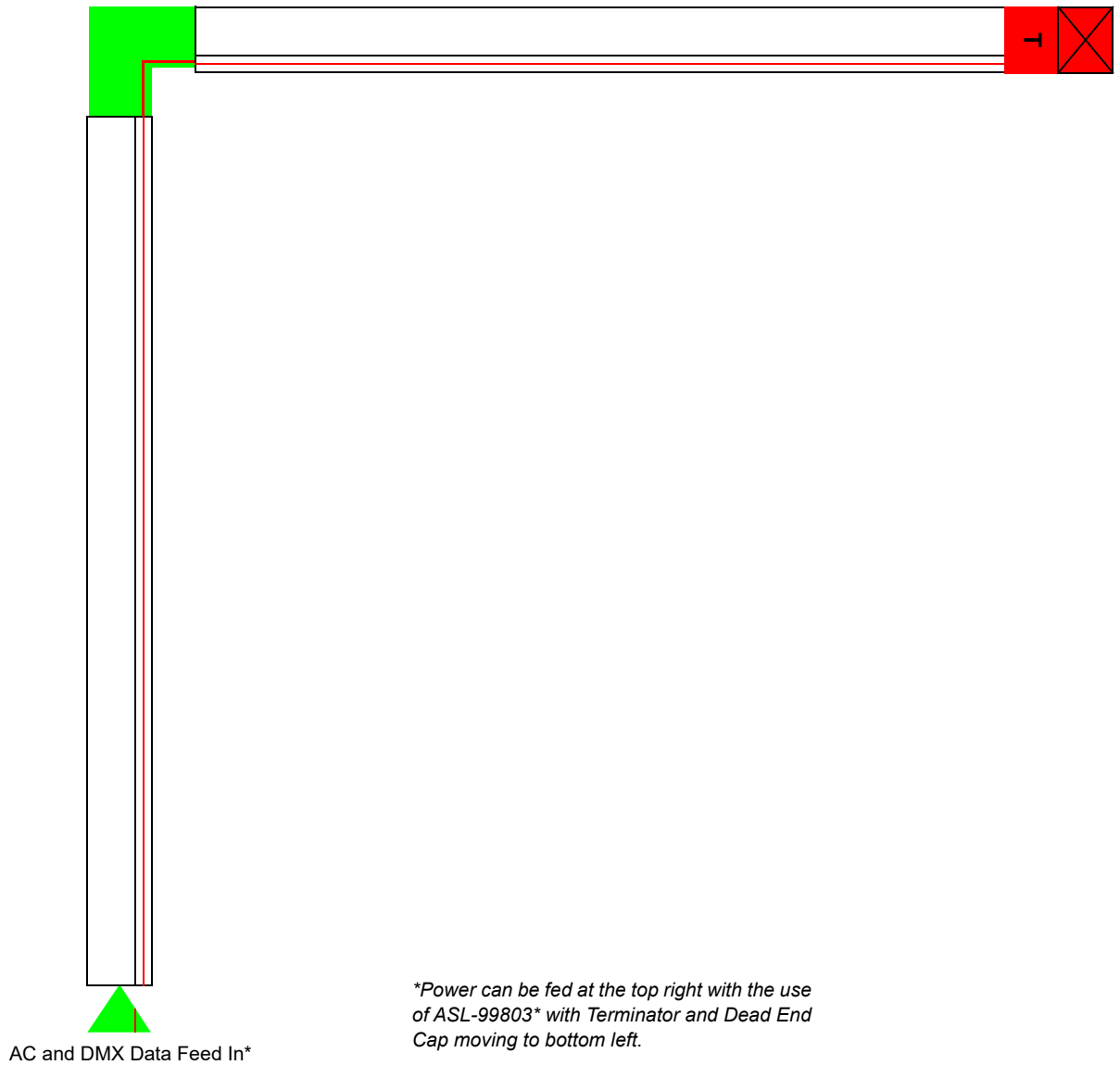
Examples (continued)



**Note:** The examples show track seen from above. The opening of the track shows downwards.

Examples (continued)

*Example 5 - 2 Straight Runs of Smart Track with 1 "L" Coupler*



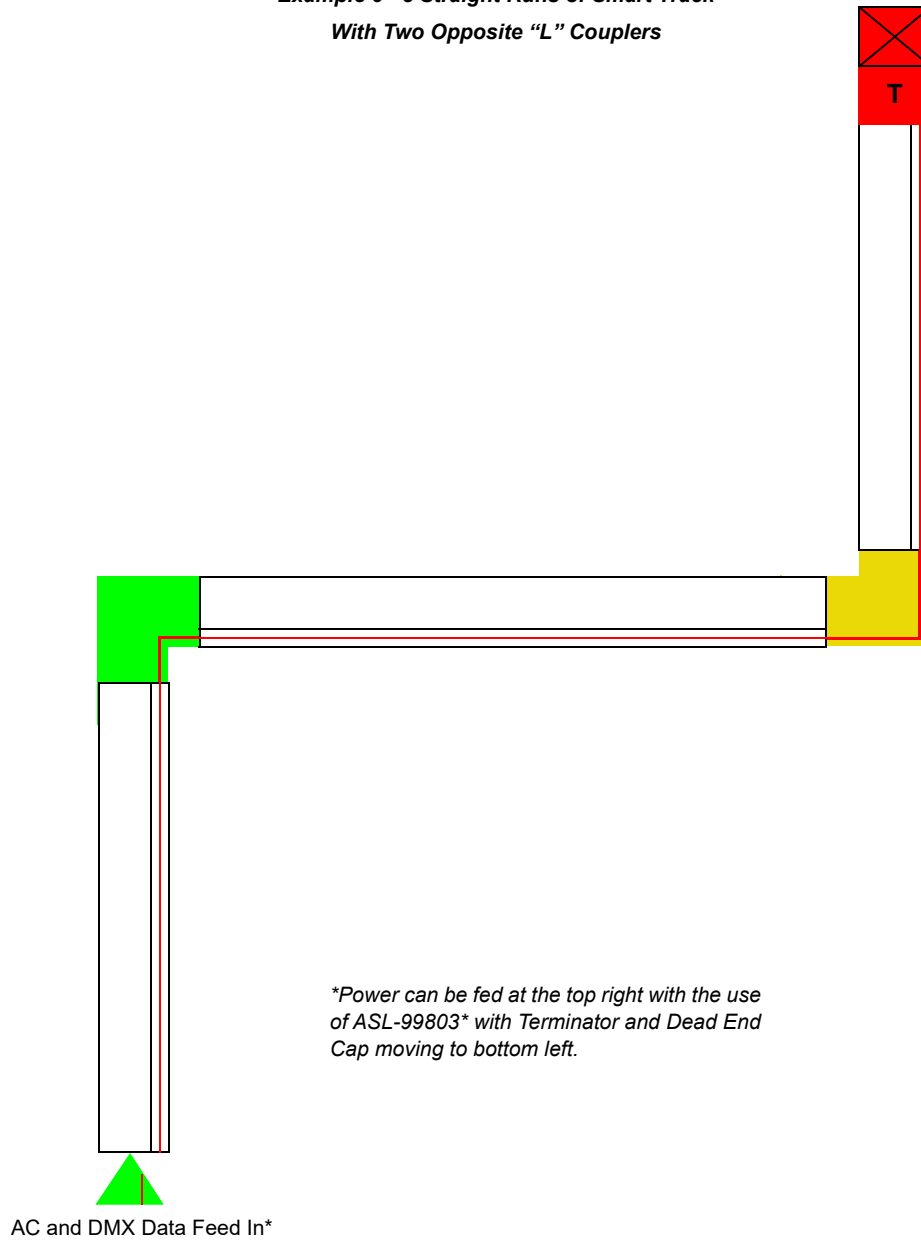
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**Note:** The examples show track seen from above. The opening of the track shows downwards.

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Examples (continued)

*Example 6 - 3 Straight Runs of Smart Track  
With Two Opposite "L" Couplers*




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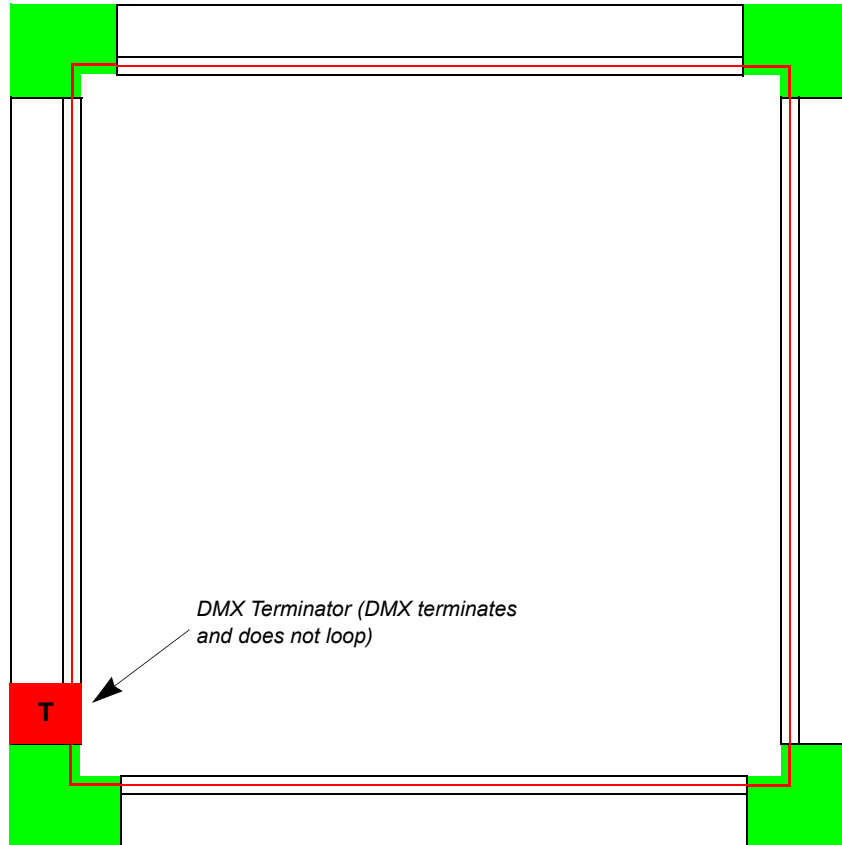
**Note:** The examples show track seen from above. The opening of the track shows downwards.

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Examples (continued)

*Example 7 - Closed Square or Rectangle Grip (comprised of four straight tracks and four "L" Couplers)*



*DMX Terminator (DMX terminates and does not loop)*

**T**

*Break DMX jumper inside the L Coupler to be fed DMX.  
DMX needs to run linear on Smart Track.  
AC can be fed at any of the four L Couplers.  
DMX can be fed at any of the L Couplers and the terminator placed at the opposite side.*

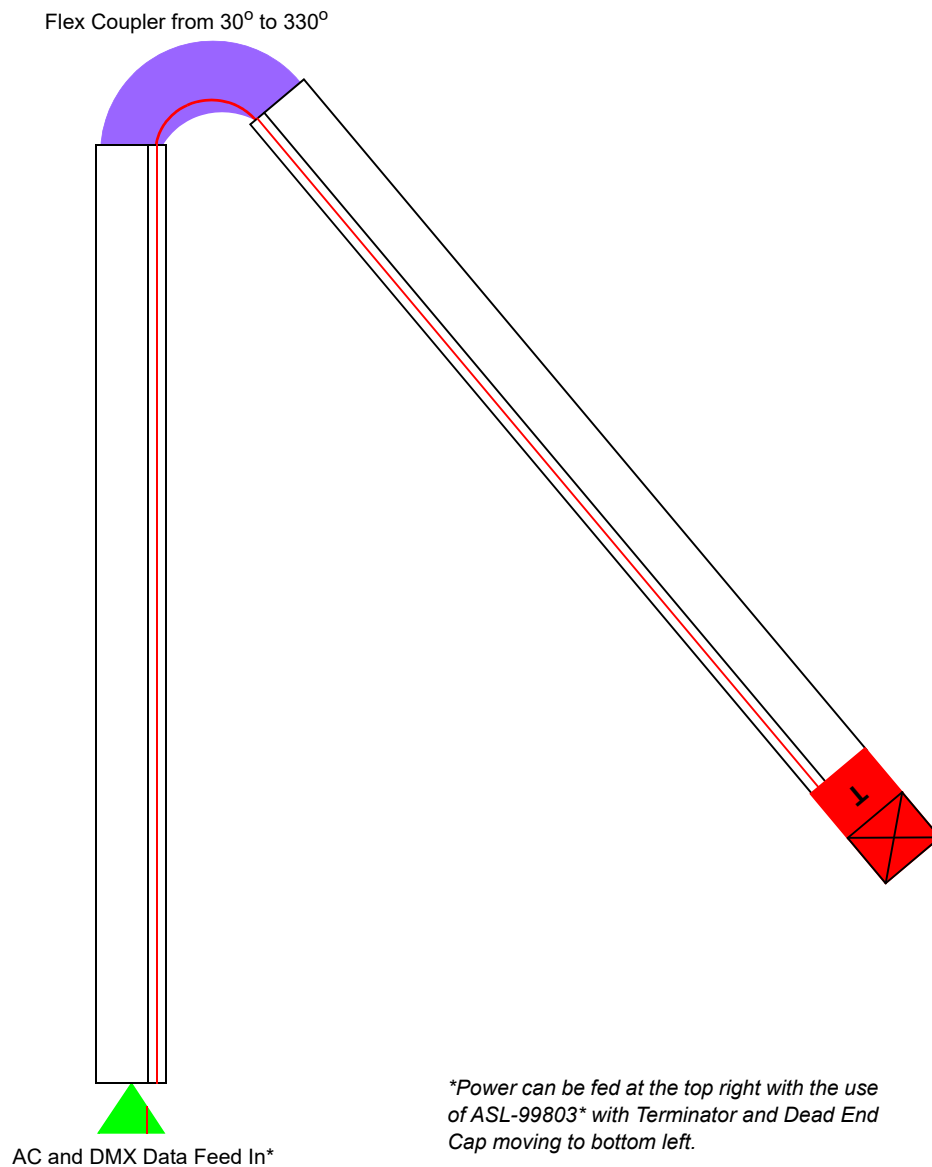
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**Note:** The examples show track seen from above. The opening of the track shows downwards.

---

## Examples (continued)

*Example 8 - 2 Straight Runs of Smart Track with 1 Flex Coupler*




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**Note:** The examples show track seen from above. The opening of the track shows downwards.

---

**Note:** The layout examples in this guide shows dead end caps at the end of the run. Altman Lighting recommends the use of live end data feeds at the end of the track. This will allow for an easy additions to the system - for data daisy-chain connections from the track.

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# SAMPLE INSTALLATION & GUIDELINES

## Easy to Cut on Site

Any given profile can be easily cut to length on site. It is not necessary to cut back and bend back copper wire.



## Smart Track Mounting

### Pre-Punch Mounting Holes

The track has pre-punched holes 1/4-inch (6mm) x 3/8-inch (35mm) for surface mounting. The holes are spaced 8-inches on center and can be easily pushed out using a screwdriver. When using the pre-punched mounting holes, you must use flathead screws (by others) to allow free movement of the track-mounted fixtures.

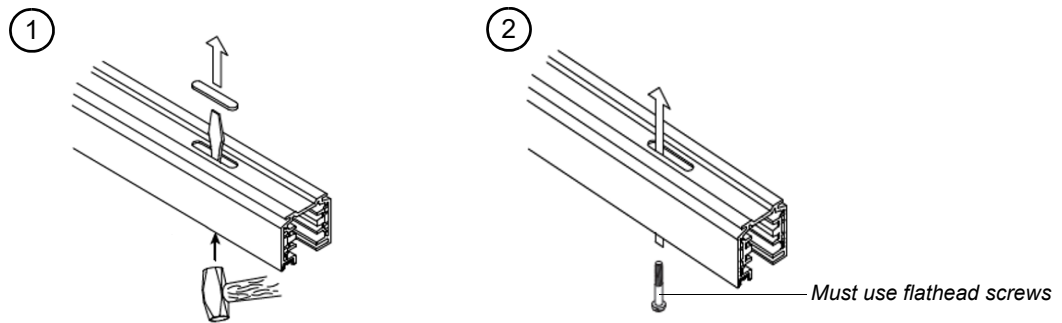


Figure 3: Pre-Punched Mounting Holes

### Mounting Holes Spacing

If drilling mounting holes are needed to accommodate installation, the Smart Track can be drilled following the guidelines in Figure 4.

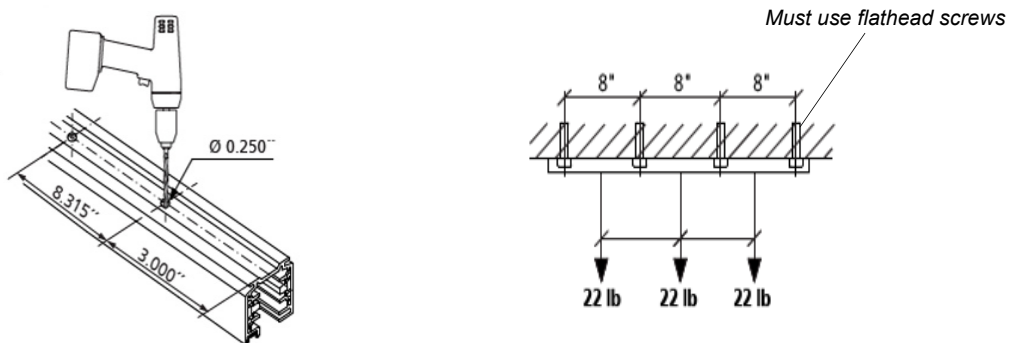
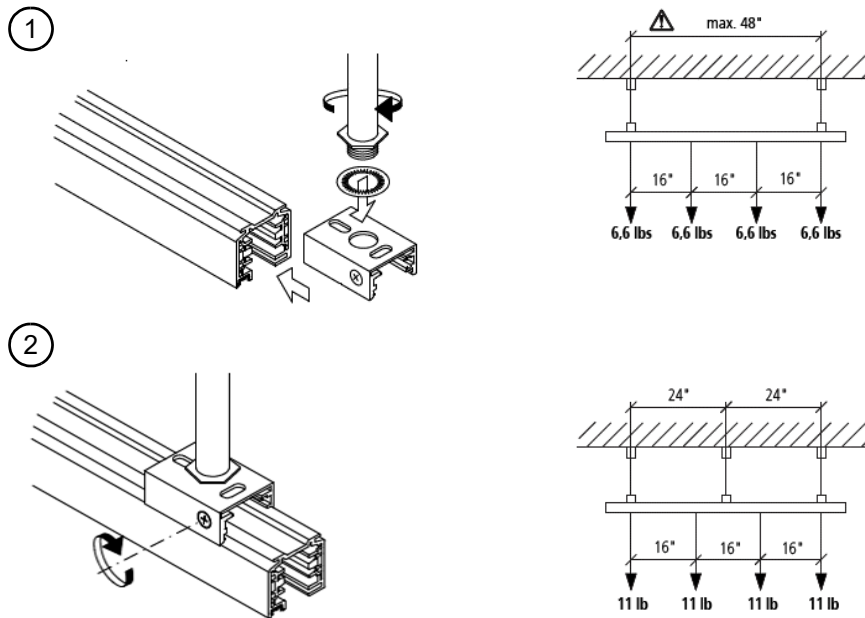


Figure 4: Drilling Mounting Holes

### Pendant Style Mounting

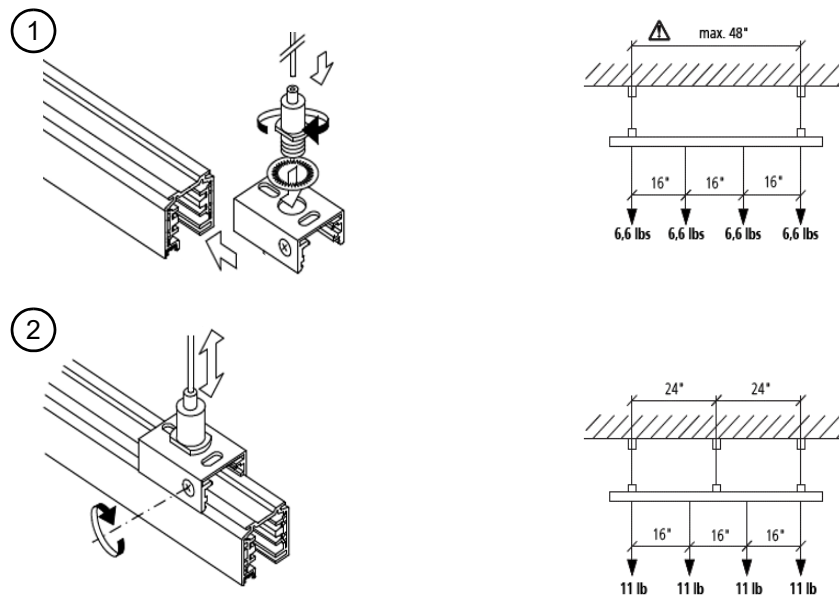
If using pendant-style mounting, there are accessories (sold separately) available to accommodate this method of installation. Follow the spacing and weight information in **Figure 5** when using pendant-style mounting.



**Figure 5: Pendant-Style Mounting**

### Aircraft Cable Mounting

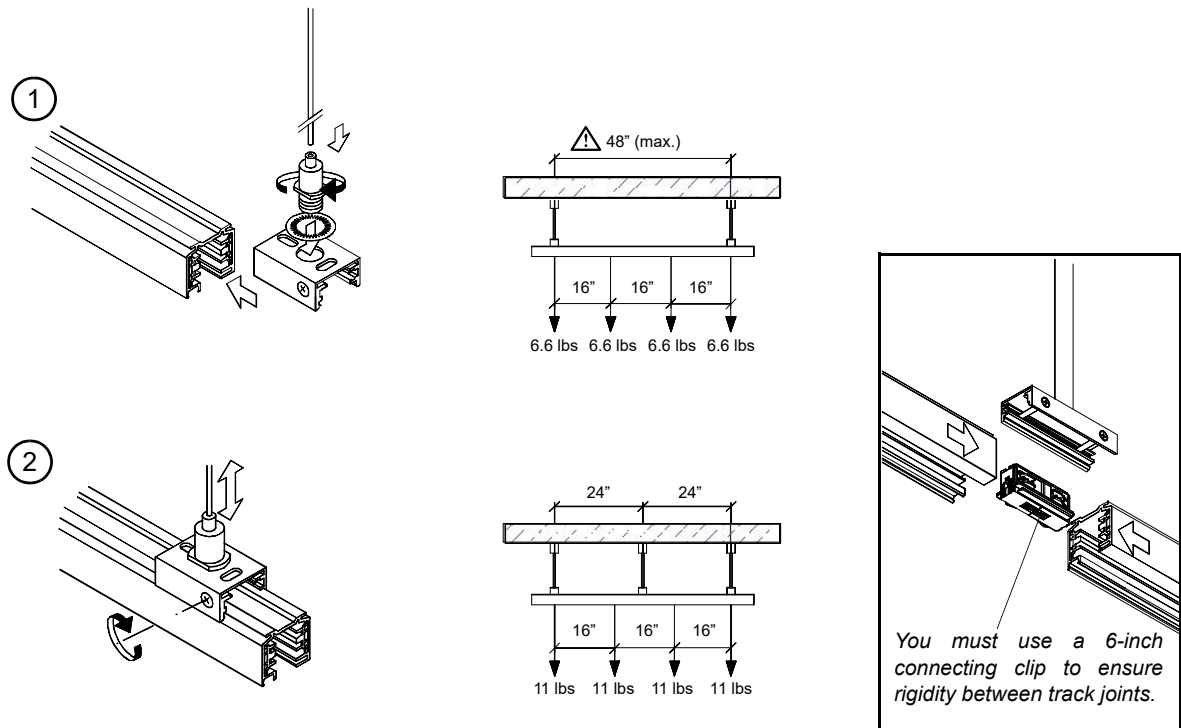
If using aircraft cable to mount the track, there are accessories (sold separately) available to accommodate this method of installation. Follow the spacing and weight information in **Figure 6** when using aircraft cable to mount the track system.



**Figure 6: Aircraft Cable Mounting**

**Track-to-Track Connections**

When making track-to-track connections using pendant-style or aircraft cable mounting methods, a Pendant Clip (refer to **"Smart Track Accessories"** on page 8 for available clips) must be used between track joints as illustrated in **Figure 7**.



**Figure 7: Pendant Clips for Track-to-Track Connections**

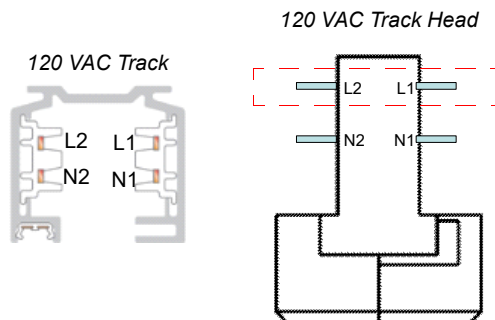
**Power Wiring**

120 VAC Smart Track can be wired with two different circuits (two hots and two neutrals) allowing for added power flexibility. 230 VAC is wired with three hots and a shared neutral.

Refer to the information and warnings outlined in **"Important Information"** on page 2 and **"General Product Information"** on page 15.

**120 VAC Wiring**

120VAC power wiring is very straightforward. Two 20 Amp, 120 VAC circuit and they neutrals can reside on the same track. Fixture track heads are designed to select one or the other circuit by simply turning the fixture selection knob located on the track head. See **Figure 8** and **Figure 9** on page 29



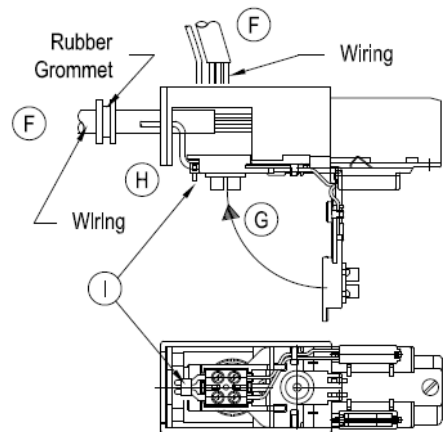
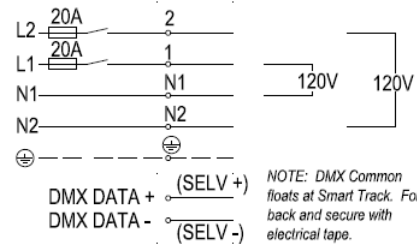
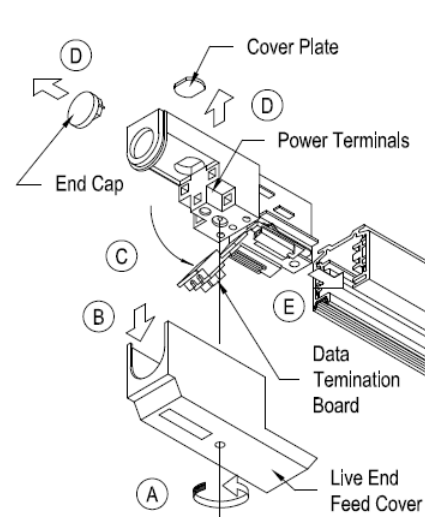
**Figure 8: 120 VAC Track Power**

## Wiring 120VAC System

ASL-99802\*: Live End with Ground Contact Right

ASL-99803\*: Live End with Ground Contact Left

- (A) Remove Live Feed End cover by turning screw counter clockwise and removing.
- (B) Carefully remove Live End Feed End Cover
- (C) Gently swing Data Termination board down to access power Feed Terminations.
- (D) Select Entry for power & data wiring into Feed End via removable *end cap* or top *cover plate*. Remove burrs.
  - a. From the Top: Snap off top cover plate.
  - b. From the Slide: Remove end cap and replace with rubber grommet
- (E) Connect Live End Feed and Smart Track section by aligning groves in the track with the flange on the Live End Feed. Push Track Section and Live End Feed together.
- (F) Route power & data wiring Into Live End Feed via top or slide. Terminate power feed on terminals provided.



- (G) Gently Swing Data Termination board back into place and snap into keepers provided.
- (H) Terminate data wiring on terminals provided.
- (I) Secure Data Termination Board and data cable with a small cable tie.
- (J) Carefully replace Live End Feed cover and secure with screw. Turn screw clockwise to lock cover in place.
- (K) Tighten set screw clockwise to secure track to Live End Feed.

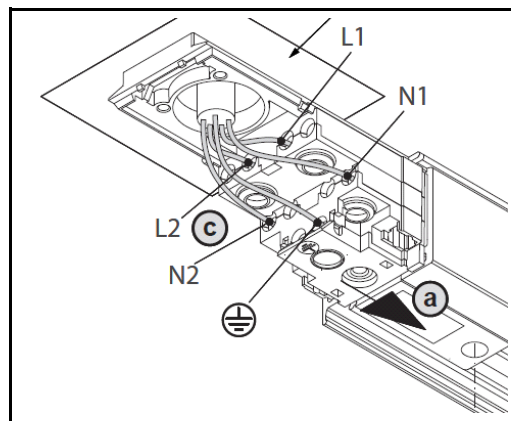
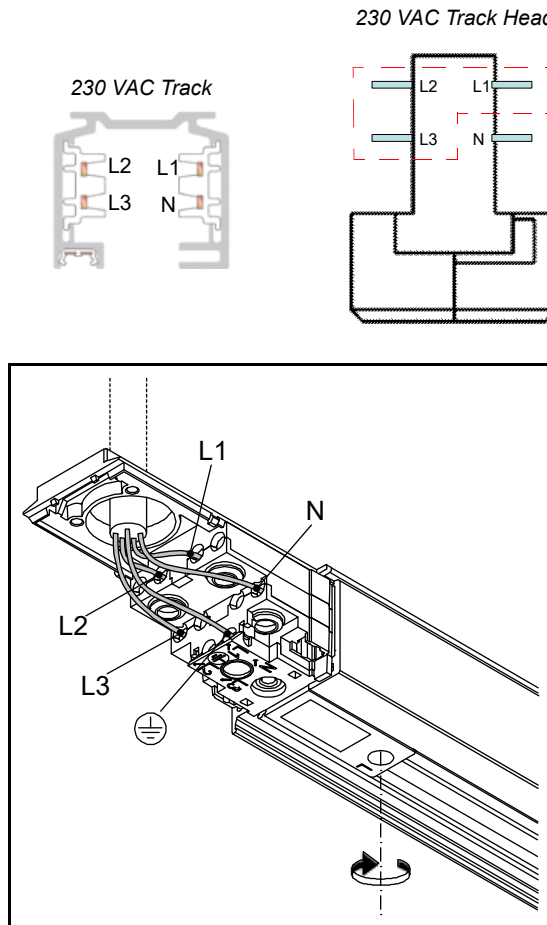


Figure 9: Wiring 120VAC System

**230 VAC Wiring**

Like 120 VAC, 230 VAC power wiring is very straightforward. The track is powered by three hots and one neutral as illustrated in **Figure 10**. Circuit section is achieved by turning the fixture selection knob on the track head.



**Figure 10: 230 VAC Track Power**



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