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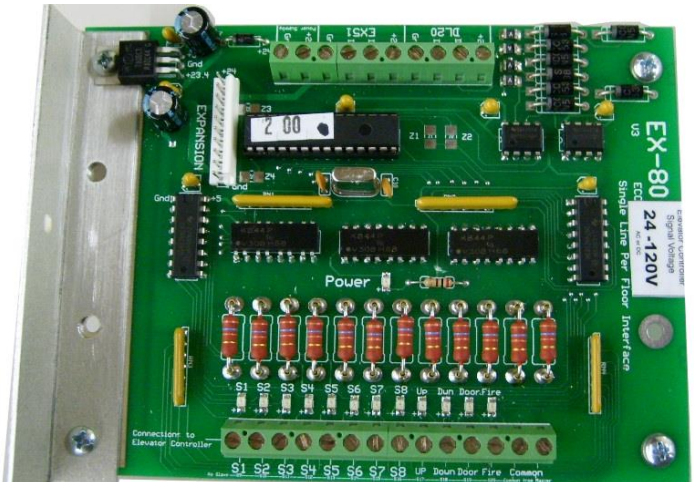
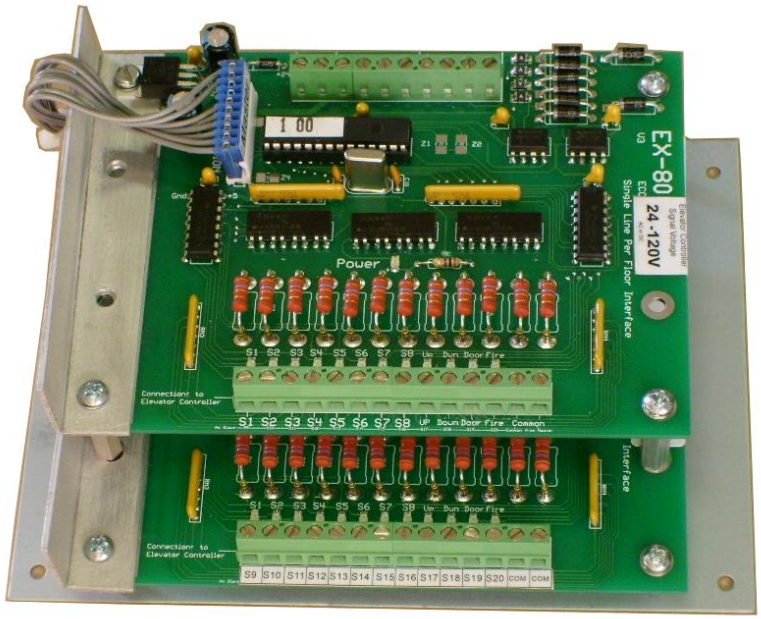
Elevator Products
(818) 753-5669

EX-80

"Single Line Per Floor" interface board

Operation Manual V1.1 9/16/14





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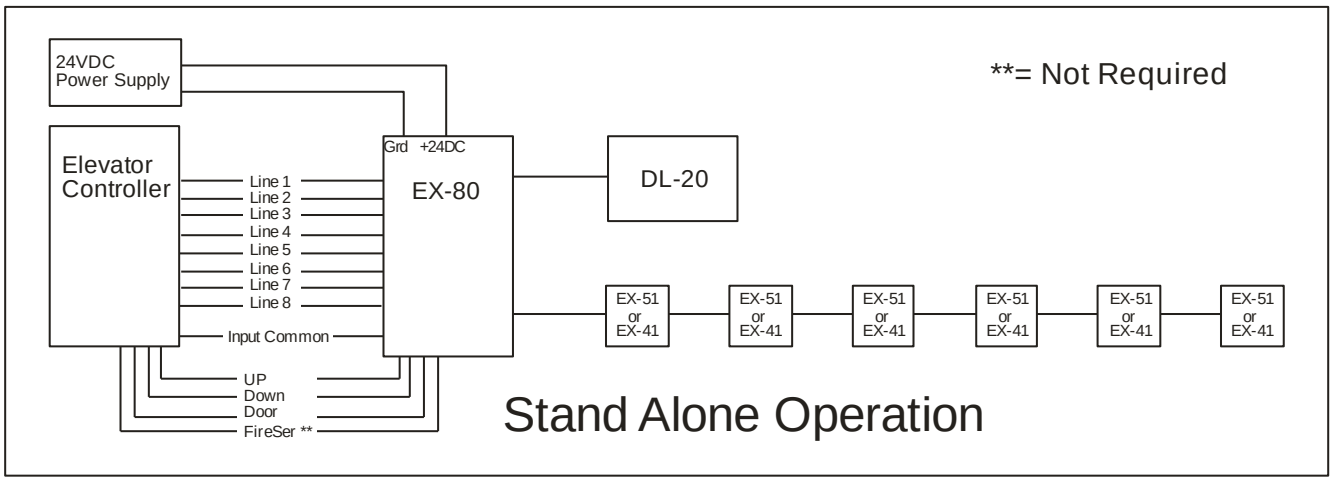
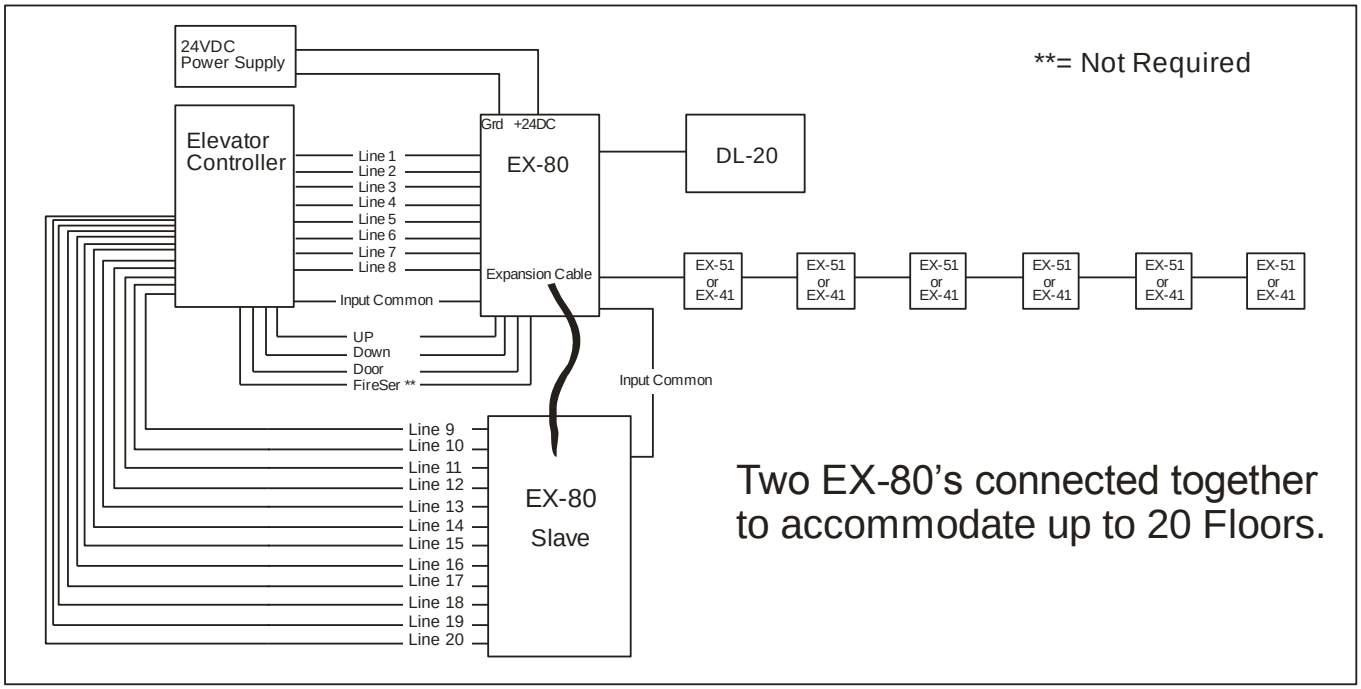




Introduction:

The EX-80 is an interface board that allows Elevator Controllers that have "Single Line Per Floor" output capabilities, to drive either, or both, the DL-20, EX-51, and or EX-41 units. A single EX-80 can accommodate up to 8 stops. Two EX-80 can be connected together to accommodate a maximum of 20 Stops. The standard EX-80 will operate with Elevator Controllers that have either 24V to 120VAC control voltages. The EX-80-220 will operate with 220V AC control voltages.

Features:

1. Allows Elevator Controllers that have "Line Per Floor" outputs to work with DL-20. EX-41, and EX-51 units.
2. Works with either AC or DC control voltages from Elevator Controller, from 24 to 115V. For DC applications, works with either polarity, but all Lines MUST be the same. (220VAC Version Available EX-80-220)
3. Can accommodate up to 20 floors.
4. On Board Active LED for each INPUT shows when INPUTS are active to make installation easy.

Required Inputs from Elevator Controller

1. One Controller Line for each STOP.
2. UP Controller Line
3. DOWN Controller Line.
4. Open Door Controller Line.
5. Fire Service Controller Line (Optional)
6. Common Lead. This is common to all Inputs.

Power Supply Requirements

The EX-80 requires an external +24VDC Regulated Power Supply capable of delivering enough current to drive both the EX-80 and all of the EX41/EX51 Hall PIs. The DL-20 does NOT use power from this power supply. The EX-80 requires 250mA of current and each EX51/EX41 requires 100mA of current. The following is the specifications for the required power supply.

1- +24VDC Regulated Output.
2- Output Voltage Tolerance = + – 3%(+-1V) MAX
3- Output Ripple = 1% or 240mV p-p MAX
4- The Power Supply should be UL Listed
5- Output Current Requirements:

500mA = Will power an EX80 and DL-20

1A =Will power an EX80, DL20, and (2) EX51/EX41 units

2A = Will power an EX80,DL20, and (7) EX51/EX41 units

3A = Will power an EX80,DL20, and (12)EX51/EX41 units

5A = Will power an EX80,DL20, and (22)EX51/EX41 units

An 18 AWG wire pair is required for each group of 10 EX41/EX51 units. If over 10 units are used, you MUST run a separate 18 AWG pair directly from the EX-80 (home run). The data cable, (D+,D-, and signal Ground), can be daisy chained between all units.

Functional DL-20 Features with EX-080

1. Position Indicator (PI) Indication.
2. Direction Indication.
3. Passing Chime
4. Floor Enunciation.
5. Emergency Light Unit
6. Emergency Bell Operation
7. Emergency Telephone Operation with up to eight DL-20 units sharing one phone line.
8. Battery monitoring.
9. Phone Line Verification
10. Display SLEEP Mode.
11. No Communications with Controller indication.

Non-Functional DL-20 Features with EX-80

1. Clock Display does NOT Function.
2. Fire Service Indication per code. Provides STEADY, but not Flashing mode.
3. Remote Monitoring of Elevator Controller Faults and Alarms.
4. Does NOT display INSPECTION, EARTHQUAKE, HOSPITAL, or OVERLOAD MODES.
5. Load Test DUE monitoring
6. Nudging Alarm.
7. No OUT OF SERVICE display.

Functional EX-51 Features with EX-80

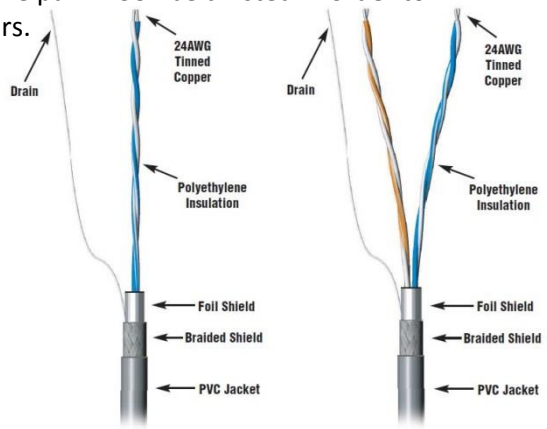
1. Position Indicator (PI) Indication, Travelling and Arrival (External).
2. Direction Indication, Travelling and Arrival (External).
3. Arrival Gong (External)
4. Landing Floor Indication.
5. Display SLEEP Mode.
6. No Communications with Controller inication.

Non-Functional EX-51 Features with EX-80

1. Fire Service Indication. Provides STEADY, but not Flashing mode.
2. Does NOT display INSPECTION, EARTHQUAKE, HOSPITAL, or OVERLOAD MODES.
3. Clock Control for Display SLEEP DISABLE MODE.
4. No OUT OF SERVICE Display.

Use Proper DATA Cable for D+ and D-

The DL-20/EX-51/EX-41 units communicate via a high speed RS-422/485 Serial Communications Port. In order to maintain signal integrity, it is important that the proper cable be used to communicate between the EX-80 and DL20/EX41/EX51 units on the D+, D- connections. Proper cable type will reduce communication problems between units and will save you a lot of potential headaches. For short length runs under 10 feet, standard straight cable will work properly. Longer runs are more susceptible to noise, thus the more important it is to use the proper cable. The pair MUST be twisted in order to maintain data integrity. All CAT5/CAT6 cables have twisted pairs.



The DATA cable should meet the following Specs:

1. Meets EIA RS-232/422 Specs
2. Minimum of 1 Twisted pair (4.3 to 12 Twist/Ft)
3. 24 AWG, stranded
4. Shielded

Examples of approved wire are as follows:
Beldon 8102/9729, Alpha 66222C, Carol C0515A
Allied 1030, Pronto 5402, Delco 30702
AutomationDirect.com L1987/L19954

Connecting to a DL-20

If the DL-20 is located within 10' of the EX-80 simply take a standard CAT5 cable, and cut off one of the ends and use the following diagram to wire to the EX-80:

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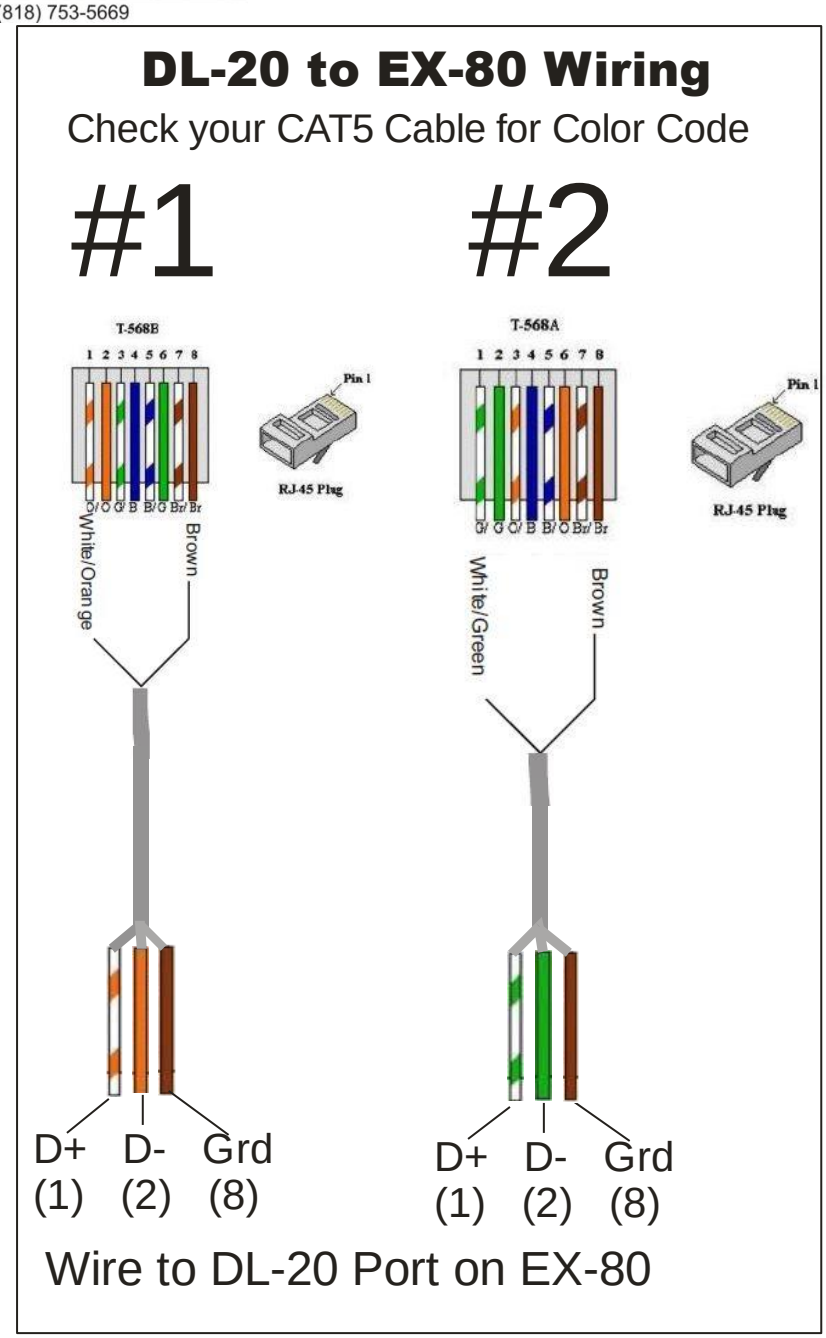

The connections are as follows:

EX-80----------DL-20 (CAT5 Connector)

D+	#1 (White/Orange) or (White Green) Depends on Cable
D-	#2 (Orange) or (Green) Depends on Cable
Ground	#8 (Brown)

Connecting EX-41/EX-51

The EX-51/EX-41 requires two different type of cables for installation. Cable #1, A proper DATA cable MUST be used between the D+ and D- data lines, and #2, an 18 AWG, pair MUST be used for the +24VDC and Power Ground Wires. Both cables are Daisy Chained between units.

Cable #1-Data-

Data Cable--Single Pair CAT5 or EIA RS-232/422 Cable for these. Daisy Chaine ALL units. No separate RUNS required. Must be Twisted Pair (CAT5 type) for runs over 10 feet.

EX-80----------	EX41/EX51
D+	R+
D-	R-
Grd to Shield	No Connection (Gets Ground from Power Ground)

Cable #2-Power-

Power Cable--- Use 18 AWG wire for these two. Use a separate HOME RUN for each group of 10 units. Does NOT have to be a twisted Pair.

EX-80----------	EX41/EX51
+24V	(+)24 (Max 10 Units/Run)
Grd	(-) 24

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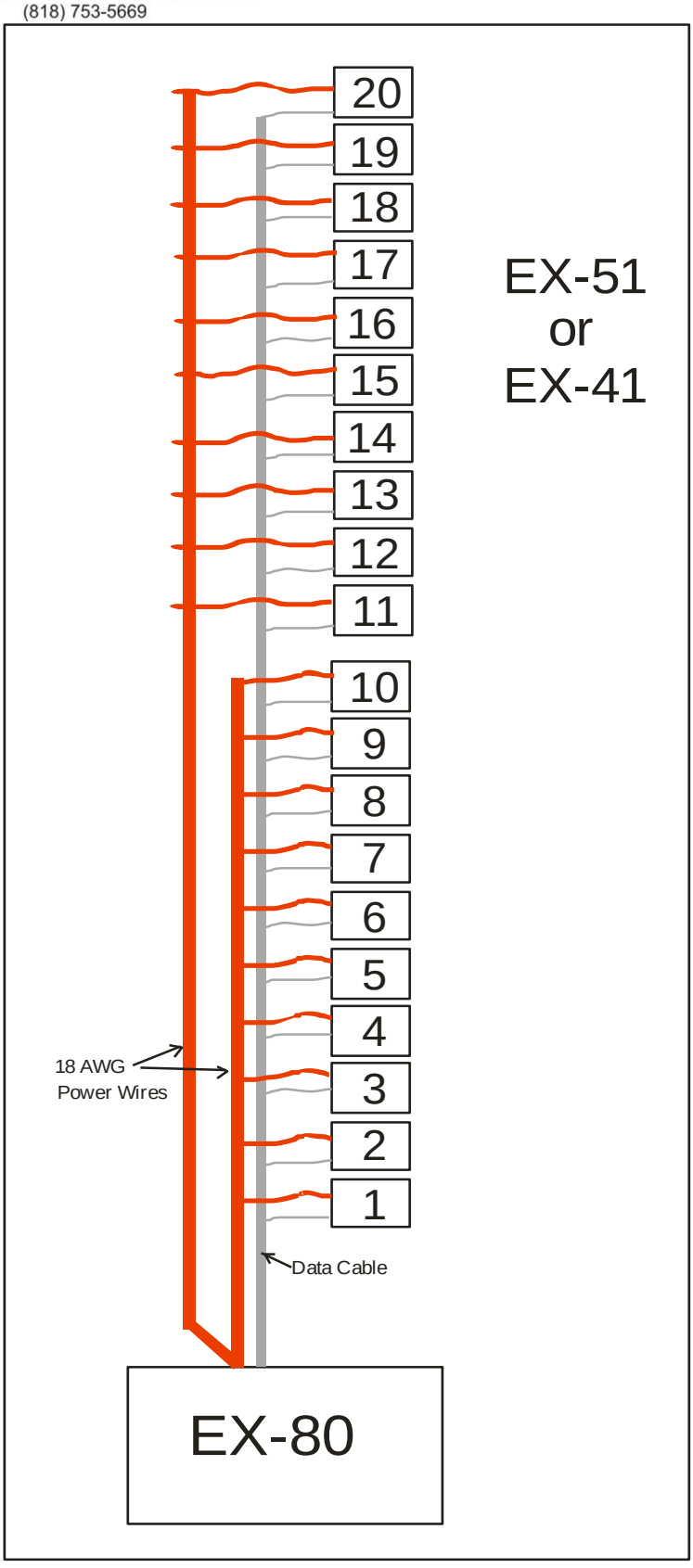
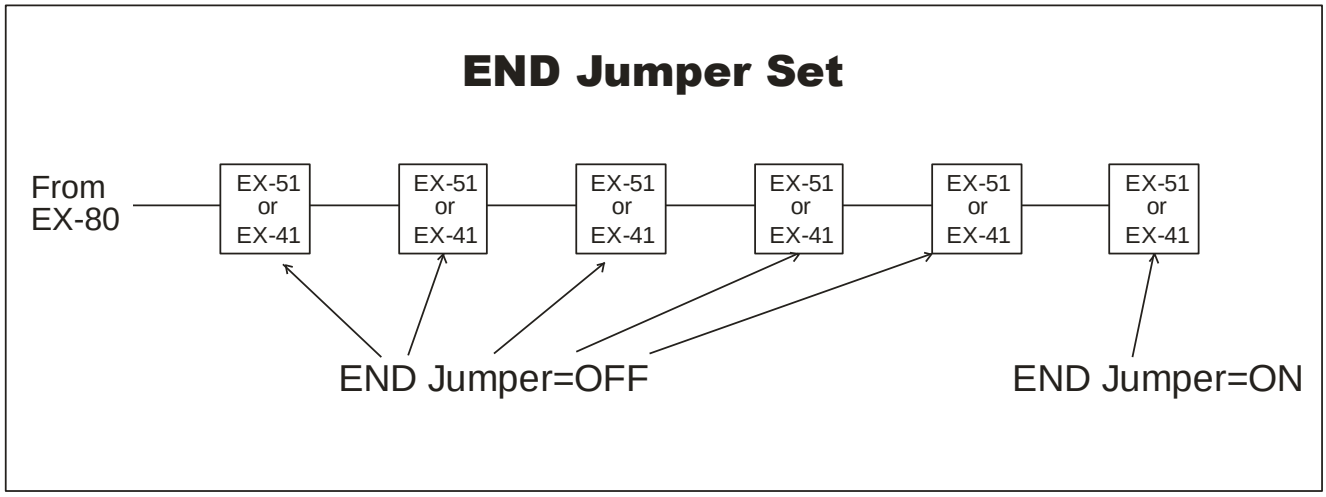


END Jumper

The END Jumper MUST be set to “ON” ONLY on the last unit in the communication daisy chain. All other units MUST have their END jumper set to “OFF”.



Connecting EX-80 to Elevator Controller

The EX-80 was designed to operate with Elevator Controllers that have "Single Line Per Floor" outputs. The Elevator Controller Output voltage can be in the range of 24V to 120V. It can be either AC or DC voltage, and is NOT polarity sensitive. The **EX-80-220** MUST be ordered if you require 220VAC.

All outputs MUST share a COMMON lead. This lead MUST be connected to the EX-80 COMMON Input. If two EX-80 units are connected together, the COMMON MUST be wired to both EX-80 units.

The following are the required outputs from the Elevator Controller.

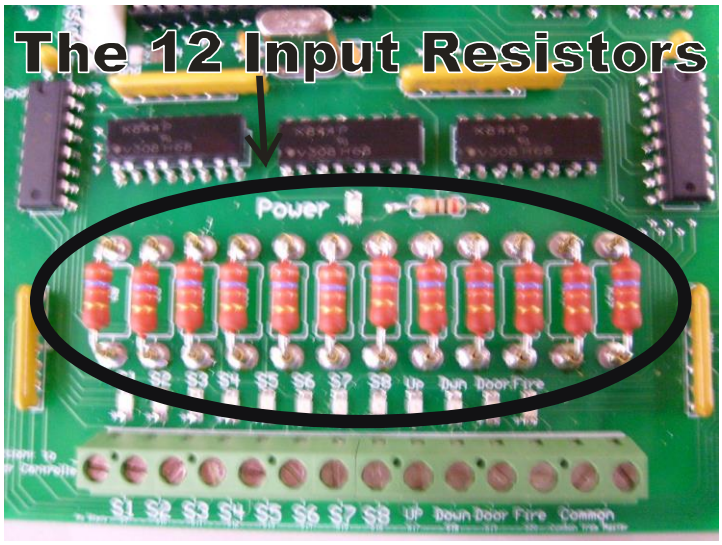
1. One Controller Line for each STOP. Active when stop is selected.
2. UP Controller Line. Active when going UP.
3. DOWN Controller Line. Active when going DOWN.
4. Open Door Controller Line. Active when DOOR is NOT Closed.
5. Fire Service Controller Line (Not Required). Active when in Fire Service Mode. Displays NON Flashing Fire Hat.
6. Common Lead. This MUST be common to all Inputs.

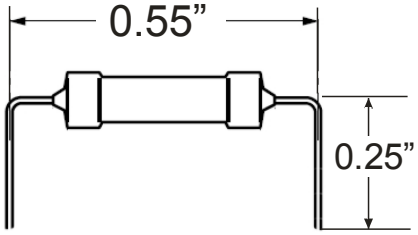
Input LEDs

There is a green "ACTIVE" LED for each input on the EX-80. When lit, it verifies that the associated input is ACTIVE. This is a great aid during the installation process. If an input is not detected, make sure that you have NOT tightened down on the wire's insulation on the screw terminal!

Input Resistor Values

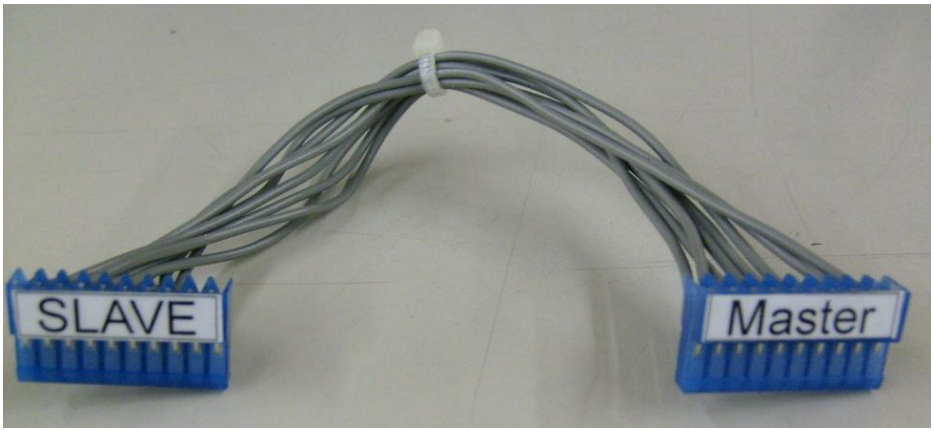
There are two versions of EX-80 units. The standard unit, EX-80, will operate on Elevator Control Voltages of 24 to 120V AC or DC, which has input resistors of 36K ohms at 2W, 5% (Orange-Blue-Orange) (Mouser P/N 594-5083NW36K00J). If an input voltage of 220VAC is required, the EX-80-220 can be ordered which has input resistors of 130K ohms at 2W, 5% (Brown-Orange-Yellow) (Mouser P/N 594-5083NW130K0J)800-346-6873.





Connecting Two EX-80 Units together (MASTER/SLAVE)

The power to the EX-80 MUST be removed before installing the "EX80 EXPANSION CABLE".



Two EX-80 units can be connected together via an "EX-80 EXPANSION KIT". This KIT includes the Expansion Cable and Hardware needed to mout two EX-80 units together. When this is done, one unit is the "MASTER", and the other is the "SLAVE". MASTER/SLAVE is determined by the direction that the EXPANSION cable is installed. One side of the cable is labeled, "MASTER" while the other side is labeled "SLAVE". The Power LED on the SLAVE will continually FLASH to indicate that it is the SLAVE, while the POWER LED on the MASTER will be steady ON.

On the "SLAVE UNIT" the inputs are now as follows:

S1 = S9
S2 = S10
S3 = S11
S4 = S12
S5 = S13
S6 = S14
S7 = S15
S8 = S16
UP = S17
DWN = S18
DOOR = S19
FIRE = S20

The POWER SUPPLY, DL20, and EX51 connection are NOT used on the SLAVE unit.

Power LED Operation

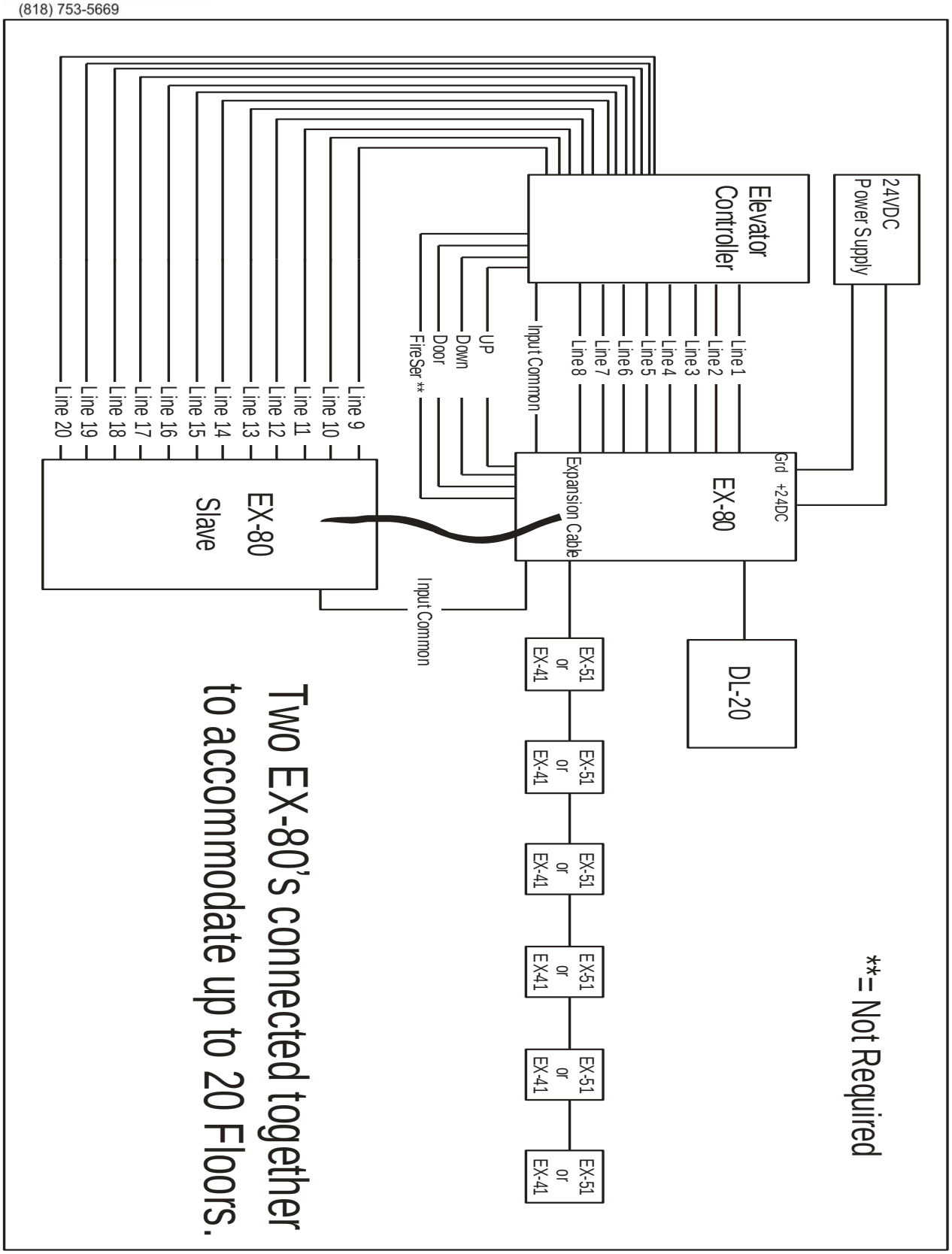
1. **Fast Flash for 2 seconds**	Reset or Power Up
2. **Steady ON**	Operating Normally in STANDALONE or MASTER Mode.
3. **Slow Steady Flash**	Operating Normally in SLAVE Mode.
4. **OFF**	No Power.

Priority of Inputs

On a "Single Line Per Floor" Elevator Controller, only one output Floor can be active at any time. If any more than one OUTPUT is "ACTIVE", the lowest always takes priority. If Both UP and Down inputs should be active at any time, the UP Input will take priority.

Connecting EX-80 to +24VDC Power Supply

The EX-80 MUST be connected to an external +24VDC power supply. Use ONLY 18 AWG wire to make these connections.


Two EX-80's connected together
to accommodate up to 20 Floors.
**= Not Required
24VDC
Power Supply
Elevator
Controller
EX-80
EX-80
Slave
Expansion Cable
Input Common
Input Common
Line1
Line2
Line3
Line4
Line5
Line6
Line7
Line8
Line 9
Line 10
Line 11
Line 12
Line 13
Line 14
Line 15
Line 16
Line 17
Line 18
Line 19
Line 20
UP
Down
Door
FireSer **
Grd
+24DC
DL-20
EX-51
or
EX-41
EX-51
or
EX-41
EX-51
or
EX-41
EX-51
or
EX-41
EX-51
or
EX-41
EX-51
or
EX-41

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