



# Multiple-Source Liftgate Charging System

Direct Flex™, Direct Max™, Select-21, -24, -31, -22, -25, -32

These liftgate charging systems allow charging from multiple sources. They improve the charging of liftgate batteries by utilizing a DC/DC converter to boost the voltage for optimal charging. The boost in voltage overcomes the normal voltage drop caused by the extended distance between the liftgate batteries and the vehicle charging system.

In cold temperatures, the DC/DC converter compensates for temperature by providing higher charging voltages. The result is well-charged liftgate batteries that will last longer and have ample power for liftgate operation.

For features and benefits see page 7.



## Specifications:

Maximum Charge Sources .....	3
Designed to Meet SAE J1455 .....	Yes
Designed to Meet SAE J560 (7-way only) .....	Yes

### Electrical

Battery System Voltage .....	12 VDC
Input DC Voltage (operating) .....	8.0-16.0 V
Absolute Maximum Static Input DC Voltage .....	30 V
Nominal Charge Current .....	20 A
Maximum Charge Current .....	30 A
Quiescent Current .....	<5mA
Telematics Signal Output Type .....	Active-High
Telematics Signal Output Voltage .....	5V
Telematics Signal Output Impedance .....	50.1kΩ
Interior Light Switch Signal Type .....	Active-Low
Interior Light Output Type .....	Active-High
Maximum Interior Light Output Current .....	30 Amps
Low Voltage Turn Off Voltage .....	8 V during first 5 minutes 9 V after
Low Voltage Turn Off Time .....	~41 ms
Transients Protection .....	Yes

### Environmental

Operating Temperature Range .....	-40° F to 185° F -40° C to 85° C
Operating Humidity .....	95%
Shock .....	Yes
Vibration .....	Yes
Water Intrusion (Nosebox) .....	IP66
Water Intrusion (Electronics) .....	IP67
Chemical J1455 Section 4.4 .....	Yes

### Physical

Nosebox Weight without Mounting Plate .....	~5 lbs
Nosebox Weight with Mounting Plate .....	~7.2 lbs
Housing Material .....	Glass Reinforced Nylon
Torque specs .....	Lid bolts (1/4"-20)—65 in-lbs 7-way/dual pole receptacle bolts (5/16"-18)—90 in-lbs Severe service connections (1/4"-20)—90 in-lbs Severe service cover screws (#10-32)—20 in-lbs Circuit board terminals (#10-32)—32 in-lbs Circuit board terminals (#8-32)—20 in-lbs Reefer/interior light module screws—5 in-lbs

**Liftgate Charging Harness Cable Specifications:****Wire Gauge:**

Orange..... 14 GA  
 Yellow ..... 16 GA  
 Black.....8 GA  
 White.....8 GA

**Stranding:**

14 GA ..... 19/27  
 16 GA ..... 7/24  
 8 GA ..... 19/21

Overall O.D: ..... .490" O.D

Jacket Type: ..... +80° C and -30° C Black PVC

Wall: ..... .030" ± .05

Wire insulation: ..... GXL

**Part Numbers:**

Part #	Charging Harness Length	Dual Pole receptacle	7-way receptacle	Single pole receptacle	7-way charging harness	Reefer harness	Severe Service	Shipping size	Shipping weight
9102-0005-A-A	50 FEET	X				X		16X16X8	22 LBS
9102-0009-A-A	50 FEET	X			X			16X16X8	22 LBS
9102-0013-A-A	50 FEET	X			X	X		16X16X8	26 LBS
9102-0007-A-A	50 FEET	X		X		X		16X16X8	22 LBS
9102-0011-A-A	50 FEET	X		X	X			16X16X8	24 LBS
9102-0015-A-A	50 FEET	X		X	X	X		16X16X8	26 LBS
FLEX-25-A	25 FEET	X	X					16X16X8	15 LBS
FLEX-50-A	50 FEET	X	X					16X16X8	18 LBS
FLEX-70-A	70 FEET	X	X					16X16X8	21 LBS
MAX-50-A	50 FEET	X	X				X	16X16X8	41 LBS
MAX-25-A	25 FEET	X	X				X	16X16X8	38 LBS
MAX-70-A	70 FEET	X	X				X	16X16X8	44 LBS

Note: Part numbers listed above include nosebox and harness. Kits include nosebox, harness, and DC/DC converter.

## Add-ons: Direct Flex and Max

Part #	Description
NB00052	SINGLE POLE ADD-ON FOR FLEX or MAX
H-00521	INTERIOR LIGHT POWER HARNESS ADD-ON, 25 FT, FOR FLEX or MAX
H-00522	INTERIOR LIGHT POWER HARNESS ADD-ON, 50 FT, FOR FLEX or MAX
H-00523	INTERIOR LIGHT POWER HARNESS ADD-ON, 70 FT, FOR FLEX or MAX
H-00289	REEFER HARNESS ADD-ON FOR FLEX OR MAX

## Interior Light Controller

Turn on/off from nosebox or from switch in trailer

Turn off after timeout (includes settings for 15, 30, 60, and 90 minutes; default is 60 minutes)

Detects when truck is started and turns off lights

Blinks lights three times three minutes before turning off, two times two minutes before turning off, and once one minute before turning off



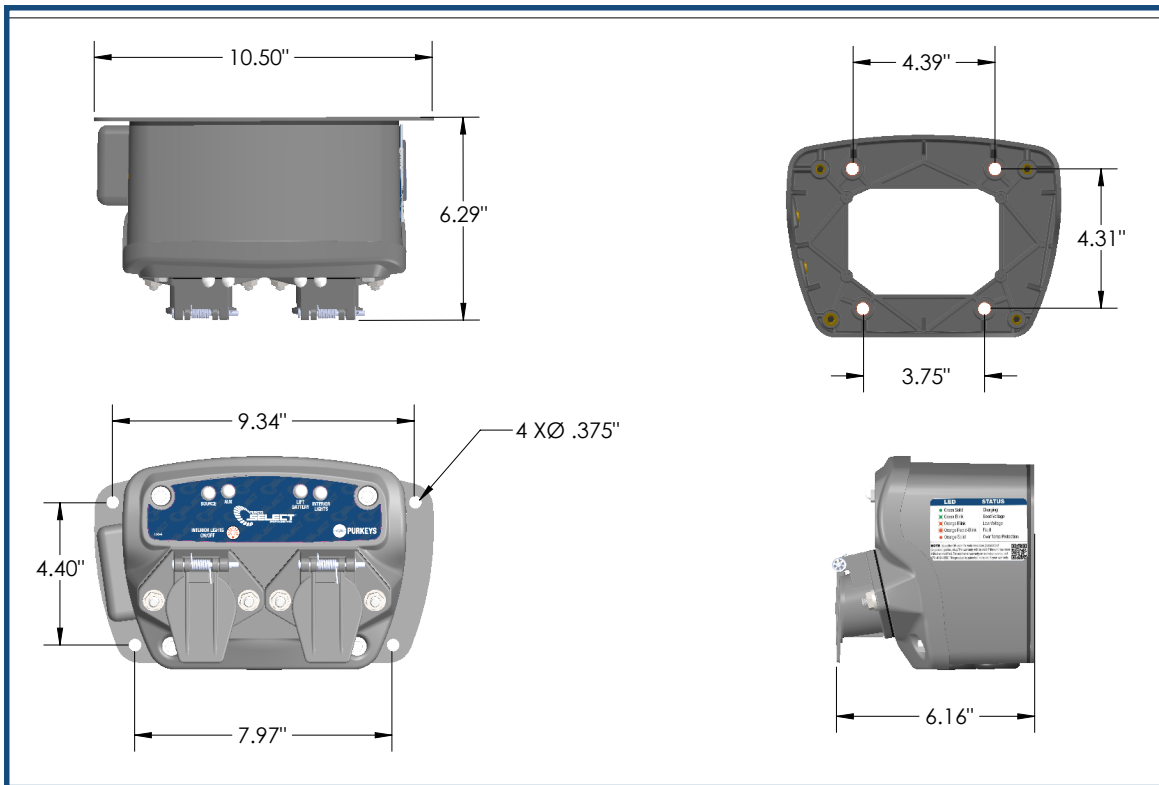
## LED Logic

LED	STATUS
Green solid	Charging
Green blink	Good voltage
Orange blink	Low voltage
Orange rapid-blink	Fault



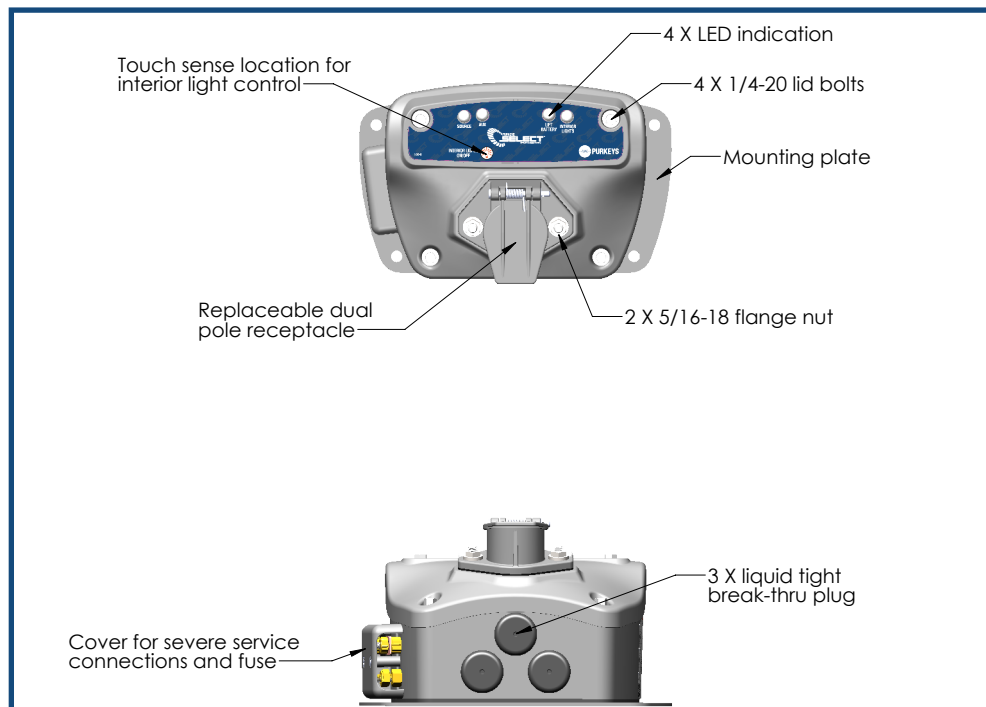
## Dimensions:

Note: All noseboxes have the same dimensions, regardless of number or type of receptacles.



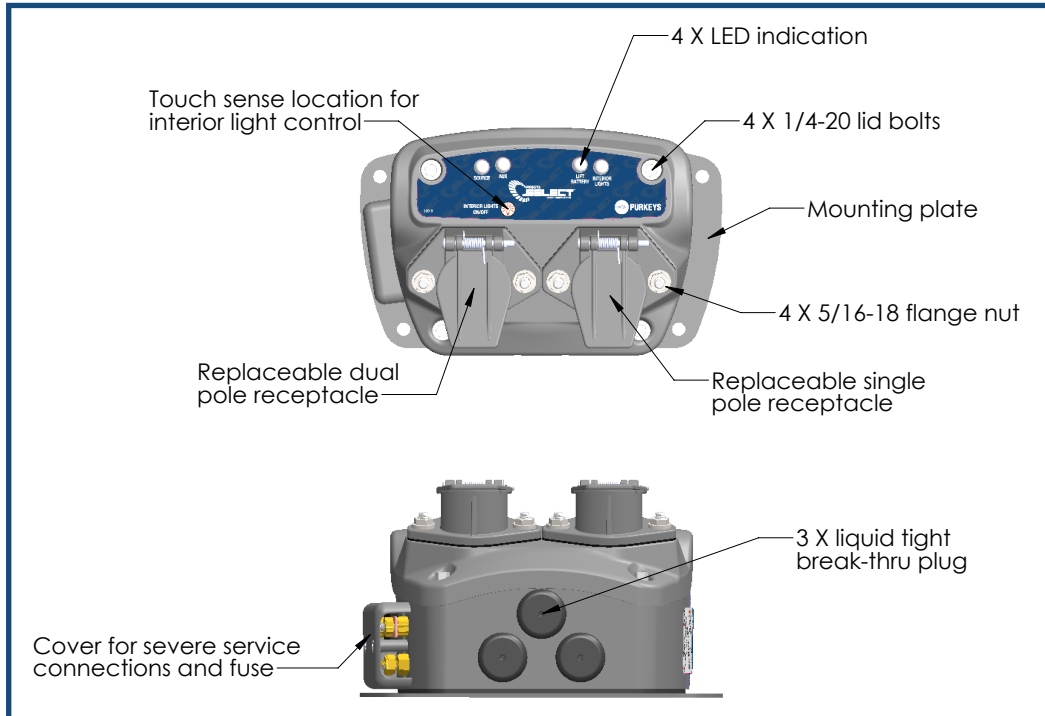
## Call-Outs: Exterior, One Receptacle

### Dual Pole Receptacle: Select-21, -24, -31

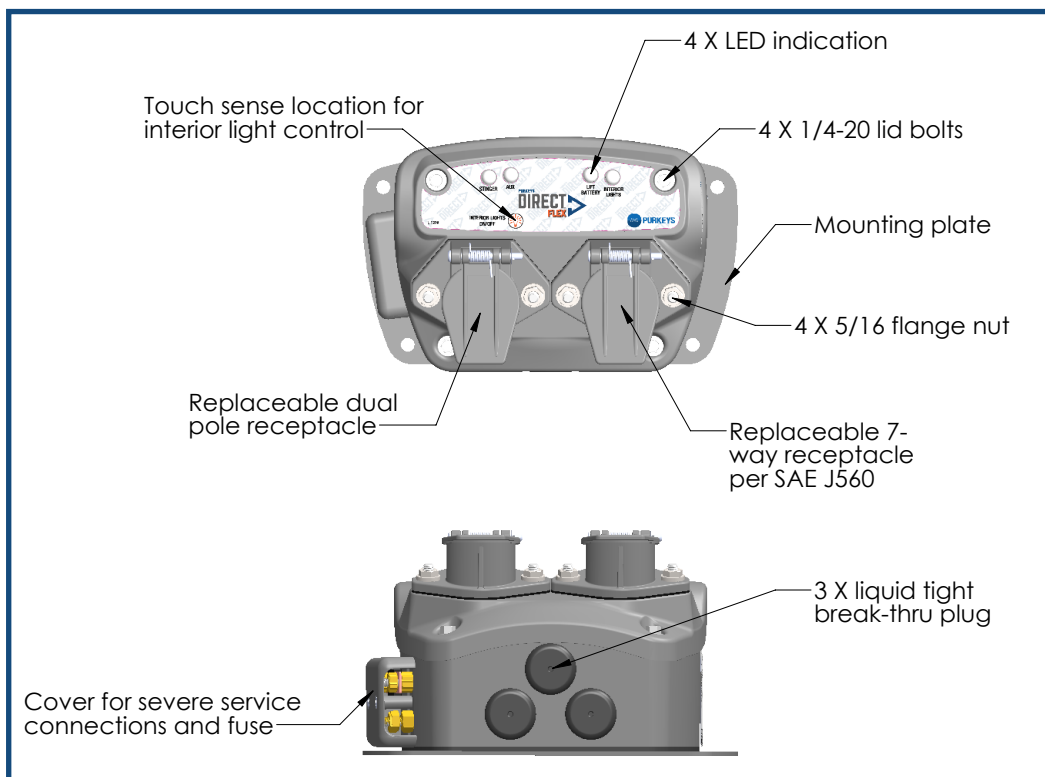


## Call-Outs: Exterior, Two Receptacles

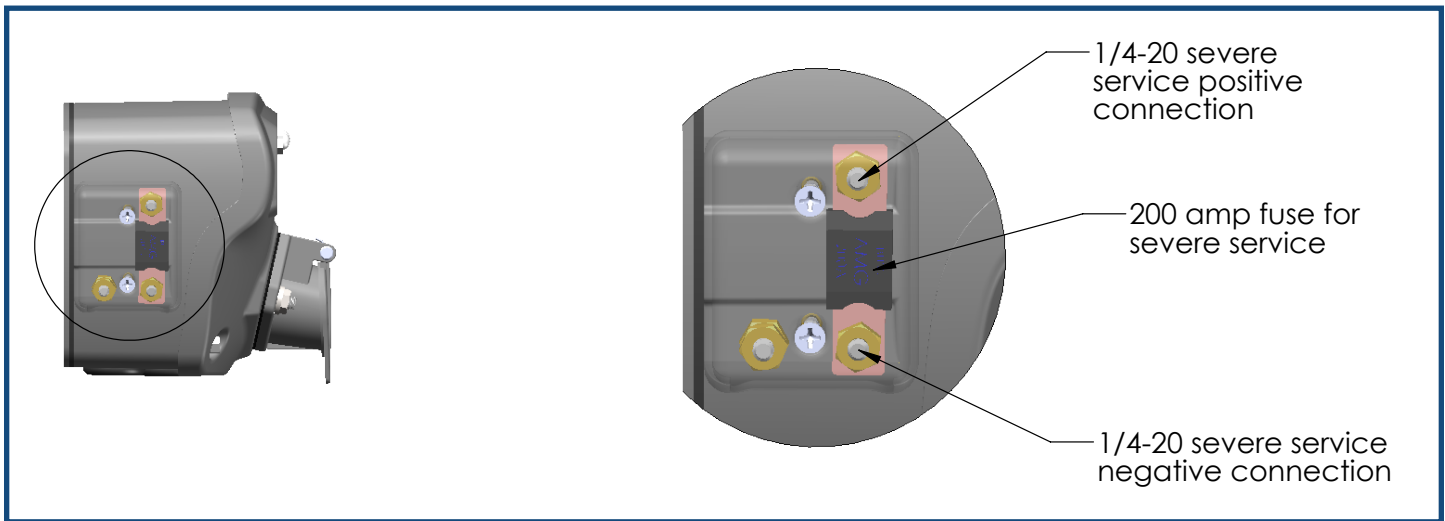
### Dual Pole and Single Pole: Select-22, -25, -32



### Dual Pole and 7-Way: Direct Flex and Max



## Call-Outs: Side Panels for External Connections



**Features:**

All-in-One Enclosure.....	
Extend Function .....	
Nylon-66 Glass Reinforced Enclosure.....	
Multiple Charge Sources .....	
DC/DC Converter Based - Utilizes Voltage Drop Compensation to Provide Faster Recharge.....	
Monitors Input Power.....	
Telematics Signal .....	
Downward Angled Sockets .....	
Sealed Nylon Receptacles .....	
Replaceable Sockets.....	
Easy to Read LED Indication.....	
Interior Dome Light Controller.....	
Fused Dual Pole Power Studs.....	
Pre-attached Mounting Plate .....	
GXL Wiring.....	
Intelligent Electronic Controller .....	
Powers Interior Dome Lights from the Liftgate Battery (Optional Harness Required) .....	
Optimal Severe Service.....	

**Benefits:**

Saves space on the front of trailer by combining liftgate charging system into single/dual pole nosebox
Intelligently continues to charge liftgate batteries after the truck is turned off (function varies by model)
Durable and long lasting
Maximizes energy transfer to liftgate batteries
Maintains and protects batteries, maximizes battery life, and reduces downtime
Gives priority to ABS, Stability, and roll-over devices by turning off within 1/20th of a second if the voltage drops below 9.5 volts.
Alerts the “back office” when liftgate batteries are critically low
Reduce moisture on terminals so connections remain good longer
Prevents moisture intrusion through receptacle connection
Makes repairs easier
Alerts drivers and technicians of system status, so they can work faster with confidence
Allows for interior light control
Easily connect to Severe Service cables
Easily attach the nosebox to the trailer
Able to withstand extreme temperatures
Automatically chooses best charge source: aux, dual pole, or reefer (with optional reefer harness)
Powers interior lights even when truck is off or when trailer is disconnected from truck
Increases energy transfer to liftgate batteries

**Other:**

Patented (patent #s 8,004,242 and 9,725,000; additional patents pending)

3-year warranty