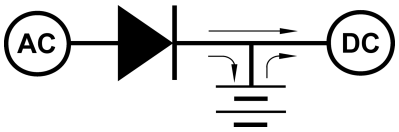
Staticon **Rail Locomotive Chargers** are the most functionally advance, durable, field serviceable and proven of their type. Over 40 years of similar applications to electric plant vehicles and mine locomotives is testimony to their reliability.



Features

Reliability by Design

- Robust industrial duty
- Electronic + magnetic V regulation
- Failsafe electronic control module
- AC input breaker, DC fuse
- Transformer isolation
- Soft-switching, low noise
- Tropical / Humidity Proofing

Optimum Battery Charging

- For lead acid or lithium batteries
- For flooded or sealed batteries
- Constant I high + V finish charge
- Diagnostic auto equalize
- Battery V sensing / monitoring
- Battery end V (gassing pt) selection
- Low battery charging temperature
- Reduced battery water consumption

User Friendly

- Simple, no special training
- Automatic battery charging
- Switchable normal-boost charge
- Switchable battery charge V
- Auto shut-off when battery charged
- Friendly diagnostic display
- Battery V meter jacks
- Front access for service

Environment Friendly

- Soft-walk-in AC startup
- Energy efficient (85 - 95%)
- CSA / UL EMI compliant
- Quiet, convection cooling (no fans)
- Stackable cabinets
- Drip Shield (NEMA 2, IP22)

Versatile Options

- X 50 Hz AC Input Voltages
- M Digital V Meter (1% accuracy)
- U AC input delayed start timer
- P Input PF Correction (≥ 0.90)
- N Charge V Temp. Compensation
- L Low V Startup PB
- B DC Output Breaker
- S Special Cables & Plugs

Nom V_{dc}	Batt. Cells	I_{dc} Amps	AC In	Cab Style	Mass kg (lbs)
32	16	50-100	3Ø	B	180 (396)
32	16	75-150	3Ø	B	200 (440)
32	16	100-200	3Ø	B	230 (506)
64	32	50-100	3Ø	B	220 (484)
64	32	75-150	3Ø	B	270 (594)
64	32	100-200	3Ø	B	290 (638)
80	40	50-100	3Ø	B	300 (660)

B Style: 762 (30) H x 559 (22) W x 508 (20) D mm (in)

Charger Model Numbers

SPL 16 _ 50-100 B _

- Options (see above)
- B Cabinet style
- Output current range (Amperes)
- AC input voltage code (table at right)
- Number of battery cells

Warranty & Service

- 5 year comprehensive warranty
- 20 year parts / service availability
- 25 year design life

AC Voltage	Phase	Code
208	3	E
380-400-415	3	LX (50 Hz)
480	3	F
600	3	K

- Dead battery boost + engine start capability
- Auto IEi for long battery life
- Low battery temperature rise
- Auto shut-off when battery charged
- Good for lead acid & lithium batteries
- Good for old & new batteries
- Good for flooded & sealed batteries
- No battery discharge when AC off

Contents

Charger Specs

Power Conversion Design

- Transformer input (60 or 50 Hz)
- Full-wave, silicon diode rectifier
  6 pulse I, V, 3 phase
- Soft switching, low noise
- Dual rate switch (Normal & Boost)

Output Control

- Closed loop, negative feedback control
- Analog circuitry (no digital electronics)
- High speed electronic V sensing
- FET based voltage-to-current control
- Failsafe, magnetic shunt regulation

Steady-State DC V Regulation

- ±3% (full load, ±10% AC V)

Output Ripple Voltage

- ≤ 2% rms (on resistive load)
- ≤ 1% rms (on typical battery)

Parallel Charger Operation

- Load sharing within 10% unit I_{DC}

Charge Function

- High rate constant I initial charge
- Finish rate constant V finish charger

Annunciation & Meters

- Standard annunciation:

Start delay	1 yellow LED
High rate	5 red LEDs
Finish rate	5 green LEDs
100% Charged	1 yellow LED
Battery fault	1 red LED

- Optional Meter

  V meter digital, 1% accuracy

Protection

- AC breaker rated I ≈ 1.5 x full load I_{AC}
- DC fuse / breaker rated I ≈ full load I_{DC}
- Input transformer, electrical isolation
- I^2t coordinated diode stacks
- Failsafe I limit set at 120% of rated IDC

Surge Tolerance

- Inherent, inductive surge tolerance is 4 kV (1Ø) & 6 kV (3Ø) peak for 8 ms
- Withstands ANSI / IEEE C62.41 (IEC 6080-4) standard surge V waveforms

Electromagnetic Interference

- Conducted / radiated EMI within CSA C108.8 & FCC Part 15 Class B limits

In-Rush & Input power Factor

- In-rush I ≈ 3x full load A for 1-3 cycles
- Input PF ≈ 0.80 (PF ≥ 0.90 optional)

Audible Noise

- 55-65 dBA (at 1 m, rating dependent)

Cabinets

- NEMA type 2, IEC 60529 IP 22
- Front accessible, side / top cable entry
- 14 / 10 gage steel panels / mounts
- Powder coated, baked enamel finish

Environmental Requirements

- Natural convection cooled
- 20°C to +40°C continuous operation
- RH < 95% non-condensing

Design & Test Standards

- CSA SPE-1000 inspected & approved
- Built to CSA C22.2 No. 107.2
- Magnetics designed for Class H, 180°C

Single-Line Diagram with Control Functions