

Crimp Terminal - Official Commercial BESS Technical Overview & Datasheet

CRIMP TERMINAL PRODUCT OVERVIEW AND DATASHEET

EXECUTIVE SUMMARY

The Crimp Terminal series represents a foundational electrical interconnection component engineered specifically for demanding Battery Energy Storage System (BESS) environments. Designed to exceed UL 486A-486B and IEC 61238-1 requirements, these terminals provide the critical low-resistance, high-vibration-resistant junctions necessary for safe, long-duration energy storage operation. Rated for continuous service from -40°C to $+125^{\circ}\text{C}$, each terminal delivers consistent mechanical pull-out force and voltage drop performance across the full lifetime of the asset.



SYSTEM ARCHITECTURE & SAFETY

The crimp terminal architecture utilizes a seamless oxygen-free copper barrel with selective tin or silver plating, combined with a precision-machined inspection window to verify conductor insertion depth. Double-indent crimp geometry ensures uniform radial compression without strand deformation or necking. Safety features include flared barrel entry to prevent strand damage, radiused edges to avoid insulation abrasion, and color-coded nylon or polycarbonate insulation sleeves offering finger-safe protection up to 1000 V DC. Each terminal lot undergoes 100% electrical continuity and dielectric withstand testing before release.

KEY FEATURES

- Low Contact Resistance: Achieves ≤ 0.1 mOhm contact resistance after accelerated thermal cycling (1000 hours at 125 °C), minimizing I^2R losses in high-current DC busbars.
- High Tinned Copper Corrosion Protection: Compliant with ASTM B33 and SAE AS7928, salt spray tested to 500 hours minimum without red rust or surface degradation.

- Vibration Resistance: Validated to SAE J1378 and IEC 61373 Class B for railway and stationary storage vibration profiles; no measurable resistance increase after 1e6 mechanical cycles.
- Inspection Window Feature: 180-degree transparent nylon insulator or open-barrel window provides positive visual confirmation of full conductor seating prior to crimping.
- Temperature Rise Compliance: Delta-T rise $\leq 45^{\circ}\text{C}$ above ambient at 125% rated current per UL 486A-486B section 22.

COMPLIANCE & STANDARDS

All Crimp Terminal models comply with or exceed the following regulatory frameworks:

- UL 486A-486B (Wire Connectors and Soldering Lugs)
- CSA C22.2 No. 65 (Canadian Electrical Code)
- IEC 61238-1 (Electrical connectors for copper and aluminium conductors)
- RoHS 2011/65/EU (Restriction of Hazardous Substances)
- REACH EC 1907/2006 (Chemical registration)
- NFPA 70 (National Electrical Code, Article 110.14)

TECHNICAL SPECIFICATIONS

Parameter	Specification
Conductor Material	Oxygen-free copper (Cu-ETP, 99.9% min), tin-plated or silver-plated
Wire Range (AWG/kcmil)	6 AWG to 750 kcmil (copper, stranded/compressed)
Voltage Rating	1000 V DC (insulated); 1500 V DC (bare barrel, derated clearance)
Temperature Range	-40 ° C to +125 ° C (continuous operating)
Contact Resistance (max)	0.10 mOhm (after thermal cycle conditioning)
Pull-out Force (min)	75% of conductor rated breaking strength per UL 486A
Insulation Material	Nylon 6/6 or polycarbonate, UL 94 V-0, color-coded
Certifications	UL Listed, CSA Certified, IEC 61238-1 Class A

INDUSTRIAL DEPLOYMENT

Within a utility-scale or C&I BESS, Crimp Terminals are positioned at four critical interfaces: battery module to pack busbars, pack to rack combiner, rack to DC disconnect, and PCS DC input terminals. For 1500 V DC nominal systems, the terminals support cable sizes from 6 AWG to 750 kcmil copper. Maximum short-circuit current withstand is 25 kA for 1 second without barrel deformation. The terminals are compatible with standard hexagonal and quad-point crimp tools from industry manufacturers (Burndy, Greenlee, Klauke, Cembre). For liquid-cooled racks, the terminal insulation material is rated UL 94 V-0, self-extinguishing within 10 seconds.

