



Feature / Aspect	DDCE (Dynamic Dissipation Charge Eliminator)	Franklin Rod (Conventional)	ESE (Early Streamer Emission)
Operating Principle	Dissipation (charge reduction)	Attraction (direct strike)	Early emission (enhanced attraction)
Protection Radius	Wider coverage (up to 100 m radius)	Limited coverage (typically 20 m)	Moderate coverage (up to ~60 m radius)
Maintenance Requirements	Low	Moderate	Moderate
Visual Impact	Minimal (smaller profile)	High (tall rods and cables)	Moderate (slim but taller)
Risk of Lightning Strike	Reduced due to charge dissipation	High (actively attracts)	High (actively attracts early discharge)
Installation Complexity	Moderate	High (multiple rods needed)	Moderate
Grounding Requirements	Standard grounding	Extensive grounding	Enhanced grounding required
Compliance Standards	NFPA 780, IEC 62305	NFPA 780, UL96A, IEC 62305	NF C 17-102, IEC 62305
Reliability & Performance	High	Proven, reliable	Good but debated effectiveness
Initial Installation Cost	Higher initial cost	Lower initial cost	Moderate cost
Lifetime Cost of Ownership	Lower due to minimal maintenance	Higher due to maintenance	Moderate due to periodic maintenance
Environmental Impact	Low	Moderate	Moderate
Typical Applications	Critical infrastructure, sensitive electronics	Residential, general buildings	Industrial, commercial, taller structures
