3M Science. Applied to Life.™

Powering your projects.

Flexible Connection Solutions for IEC Equipment



3M™ Medium Voltage Separable Connectors and 3M™ Surge Arresters for IEC Applications



Product overview.

3M™ Medium Voltage Separable Connectors for IEC applications are reliable, easy-to-install solutions for demanding applications, and meet IEC 60502-4. Backed by testing and designed for simplicity, our complete portfolio delivers differentiation and versatility—including our range-taking kits; helping in SKU reduction.

3M™ Surge Arresters for IEC applications help protect medium voltage equipment and accessories from overvoltage surges that can cause equipment damage, service interruptions and power failure. 3M Surge Arresters for IEC applications are tested and released according to IEC 60099-4-2014.

Additionally, our hands-on on-site training helps installers minimize their installation errors.
By using our range-taking kits, that help reduce the number of SKUs being ordered, we help our customers improve their lead time for installations and help improve their ordering consistency.



3M Separable Connectors Front and Rear T-Plugs and 3M Surge Arresters for IEC standard applications



High-quality support from start to finish.



3M quality and reliability

3M Separable Connectors and 3M Surge Arresters for IEC applications offer 3M quality and reliability, helping provide consistent performance and durability.

- 3M Separable Connectors for IEC applications meet Cenelec HD 629.1 and IEC 60502-4 standard
- 3M Surge Arresters for IEC applications meet IEC 60099-4-2014
- Complies with REACH and RoHS Regulations

Technical support and on-site training

Hands-on on-site training helps your team be well-equipped to minimize installation errors and maximize efficiency.

- Various training formats (online, virtual, face-to-face) are available to help you enhance your professionalism, reliability and productivity
- We provide comprehensive support to our customers
- 3M provides on-site training for technicians and off-site technical support helping enable successful installations

Competitive and comprehensive product offering

The introduction of 3M Separable Connectors for IEC standard applications meets IEC 60502-4 and helps enhance our comprehensive separable product offering, providing vendor simplification and a solution for diverse electrical applications.

- Range-taking kits help to reduce the number of SKUs and simplify inventory
- 3M Electrical Construction Services assist you in selecting the correct 3M Separable Connector kits for IEC applications and if needed the corresponding 3M Surge Arresters for your project

Application information.

3M Separable Connectors for IEC standard applications are designed to terminate medium voltage cables in dead-front equipment, including transformers, switchgear and other apparatus. They meet the requirements of IEC 60502-4 and HD 629.1, and are compatible with Type “C” bushings according to EN 50180 and EN 50181. Available with mechanical shearbolt lugs, these connectors provide reliable performance for medium voltage installations.

3M Surge Arresters help protect equipment in 12, 24 and 36 kV applications, with current ratings of 630 A and 1250 A. Each 3M Surge Arrester is 100% electrically tested during production and is suitable for both indoor and outdoor applications.

3M Separable Connector key features

- Provides a fully shielded and submersible connection when mated with the proper bushing or plug
- Type “C” 630A and 1250A interfaces
- Kitted with range-taking cable adapters and shearbolt lugs
- Compact installation

3M Surge Arrester key features

- Provides overvoltage protection for medium-voltage networks
- Compatible with front and rear Type “C” 3M Separable Connectors for IEC applications
- Fully shielded design to support operation in demanding applications

3M Separable Connector product ratings

Electrical ratings	Test values	Test values
Max. system voltage	24 kV	36 kV
Impulse	125 kV	170 kV
AC withstand (5 minute)	54 kV	81 kV
Continuous current	630 A	630 A / 1250 A

Not for specification purposes.

Selection guide.

Asymmetrical T-Plug 3M Separable Connectors for IEC medium voltage applications:

By lug			24 kV Class	36 kV Class	36 kV Class
			Conductor size range (AWG and kcmil)		
	Kit number	Cable insulation OD range inches (mm)	15 kV	25 kV	35 kV
630A	EE-24-CW1-T-C1-A1-S1	0.492–0.737 (12.5–18.7)	#2	–	–
	EE-24-CW1-T-C1-A2-S1	0.669–0.949 (17.0–24.1)	#1–3/0	–	–
	EE-36-CW1-T-C1-A3-S1	0.827–1.134 (21.0–28.8)	–	#1–3/0	1/0
	EE-36-CW1-T-C1-B3-S1	1.075–1.455 (27.3–36.9)	–	–	2/0–3/0
	EE-36-CW1-T-C1-A3-S2	0.827–1.134 (21.0–28.8)	–	4/0	–
	EE-24-CW1-T-C1-B1-S2	0.748–1.096 (19.0–27.8)	4/0–250	–	–
	EE-24-CW1-T-C1-B2-S2	0.929–1.308 (23.6–33.2)	250–500	–	–
	EE-36-CW1-T-C1-B3-S2	1.075–1.455 (27.3–36.9)	–	4/0–500	4/0–250
1250A	EE-36-CW1-T-C2-C2-S2	1.339–1.701 (34.0–43.2)	–	–	350–500
	EE-36-CW1-T-C2-C1-S3	1.181–1.455 (30.0–36.9)	750	–	–
	EE-36-CW1-T-C2-C2-S3	1.339–1.701 (34.0–43.2)	1000	750	–
	EE-36-CW1-T-C2-D1-S3	1.516–1.890 (38.5–48.0)	1250	1000	750–1000
	EE-36-CW1-T-C2-D2-S3	1.732–2.117 (44.0–53.8)	–	1250	1000–1250

Selection guide.

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630A	EE-24-CW1-R-C1-A1-S1	0.492–0.737 (12.5–18.7)	#2	–	–
	EE-24-CW1-R-C1-A2-S1	0.669–0.949 (17.0–24.1)	#1–3/0	–	–
	EE-36-CW1-R-C1-A3-S1	0.827–1.134 (21.0–28.8)	–	#1–3/0	1/0
	EE-36-CW1-R-C1-B3-S1	1.075–1.455 (27.3–36.9)	–	–	2/0–3/0
	EE-36-CW1-R-C1-A3-S2	0.827–1.134 (21.0–28.8)	–	4/0	–
	EE-24-CW1-R-C1-B1-S2	0.748–1.096 (19.0–27.8)	4/0–250	–	–
	EE-24-CW1-R-C1-B2-S2	0.929–1.308 (23.6–33.2)	250–500	–	–
	EE-36-CW1-R-C1-B3-S2	1.075–1.455 (27.3–36.9)	–	4/0–500	4/0–250
1250A	EE-36-CW1-R-C2-C2-S2	1.339–1.701 (34.0–43.2)	–	–	350–500
	EE-36-CW1-R-C2-C1-S3	1.181–1.455 (30.0–36.9)	750	–	–
	EE-36-CW1-R-C2-C2-S3	1.339–1.701 (34.0–43.2)	1000	750	–
	EE-36-CW1-R-C2-D1-S3	1.516–1.890 (38.5–48.0)	1250	1000	750–1000
	EE-36-CW1-R-C2-D2-S3	1.732–2.117 (44.0–53.8)	–	1250	1000–1250

Selection guide.

T-Plugs with 3M Surge Arresters for IEC medium voltage applications:

Description	Rated voltage Ur (kV)	Nominal discharge current In (kA)	MCOV (max. continuous current voltage)	Total length inches (mm)
EE-10-10-SA 1-Phase 1/CV	10	10	8	13.19 (335)
EE-12-10-SA 1-Phase 1/CV	12	10	9.6	13.19 (335)
EE-15-10-SA 1-Phase 1/CV	15	10	12	14.96 (380)
EE-18-10-SA 1-Phase 1/CV	18	10	14.4	14.96 (380)
EE-22-10-SA 1-Phase 1/CV	22	10	17.6	14.96 (380)
EE-24-10-SA 1-Phase 1/CV	24	10	19.2	14.96 (380)
EE-30-10-SA 1-Phase 1/CV	30	10	24	18.90 (480)
EE-33-10-SA 1-Phase 1/CV	33	10	26.4	18.90 (480)
EE-36-10-SA 1-Phase 1/CV	36	10	28.8	18.90 (480)
EE-37,5-10-SA 1-Phase 1/CV	37.5	10	30	18.90 (480)
EE-45-10-SA 1-Phase 1/CV	45	10	36	21.65 (550)



How the 3M™ Insulating Plug Voltage Sensor integrates with your IEC separables.

3M combines high-accuracy voltage and current sensors with industry-standard medium voltage separable connector accessories or build-in sensor technology in the form of 3M™ Sensored Cable Accessories. For advanced applications, 3M sensors measure voltage and current within 0.5% accuracy class and capture higher order harmonics. The small and lightweight 3M™ Insulating Plug Voltage Sensor and the 3M™ Current Coil Split Core are easily installed into the existing switchgears compartments to quickly turn the substation into an intelligent substation. Through IEC 61869-10 and IEC 61869-11, they interface with bi-directional sensitive short circuit and power flow indicators, power quality monitoring devices, modern protection relays or substation RTUs to setup remote communication and control, through IEC 60870, IEC 61850 or other protocols.

3M™ Insulating Plug Voltage Sensor (3M IPVS)



- The multi-contour design is compatible with leading separable suppliers including the adjustment to M12 and M16 threads. Helping end users to streamline the overall installation process
- Meets the accuracy class of 0.5 per IEC 61869-11 within the temperature range of -20°C to +60°C
- 3M IPVS, as part of the Separable Termination, complies to the test standard CENELEC HD 629.1 S3 Sequence D1 and also to IEC 61869-11
- Output meets the IEC 61869-11 requirements for capacitive voltage divider sensors
- Compatible with the IEC voltage classes of 12 kV and 24 kV Umax
- The 3M IPVS is based on a capacitive divider that has a galvanic isolation, thus reducing the size of the 3M IPVS, that easily fits into compact switchgears, potentially avoiding height constraint issues, if any

3M™ Current Coil Split Core (3M CCS)



- Rogowski coil technology has a 0.5S accuracy class per IEC 61869-10
- Wide dynamic range and high linearity from 1 A to 50 kA
- Lightweight and split core current coils are easily inserted around the cables
- Dangerous voltages of open-circuited secondary of traditional current transformers eliminated by use of Rogowski coil technology which uses an air core instead of an iron core
- Excellent degree of rejection to the external current conductors





3M™ Sensored Cable Accessories.

3M IPVS

- Multi-contoured design compatible with most asymmetrical T-Plugs
- Compact design fits into most compact switchgears
- Up to 24 kV voltage class
- Highly accurate, low-power passive capacitive voltage divider
- Applicable IEC standards and helps enable a precise measurement without calibration on site



3M CCS

- 600A/225 mV, Rogowski, Open-End
- 600A/225 mV, Rogowski, RJ45



3M™ Sensored Cable Accessories are factory calibrated.

Custom project support, on us.

Provide your medium voltage project single line drawings (SLDs) and cable schedule, and we'll offer you a total solution. You'll get high-quality support from start to finish, at no additional cost.



Direct on-site shipping

No need to pick anything up. No matter the project, we'll ship your kits directly to your jobsite.



Complimentary on-site installation support and training

You can't beat 3M's combination of industry expertise and product knowledge. Our experienced professionals will help you ensure your installation is done correctly the first time.



On-going technical support

Got questions or a tough application? Our team of knowledgeable engineers will provide you with solutions quickly and easily, so you can make sure your job stays on track, on time, and on budget.

Discover more, explore today:
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