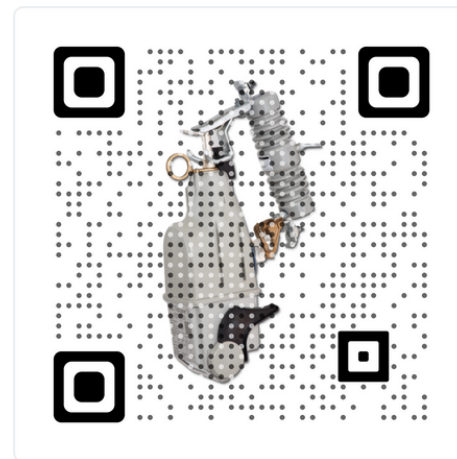




*Enova Integration Co., Ltd is an
Authorized Distributor*

ENOVA

TRIPSAVER II



QR CODE

Document
Download

www.enova.co.th

Enova Integration Co., Ltd., is authorized to resell Switching and Automation
Products to purchasers for use in Thailand

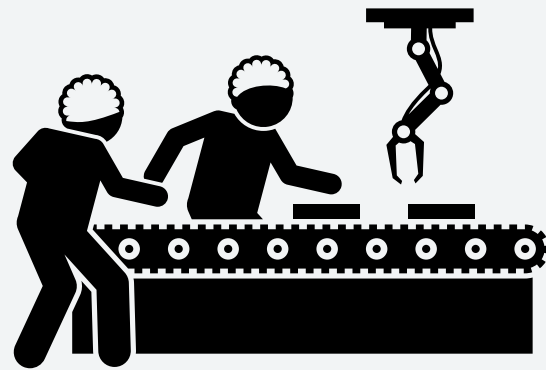


Electric Company History

ENOVA



Founded 1911



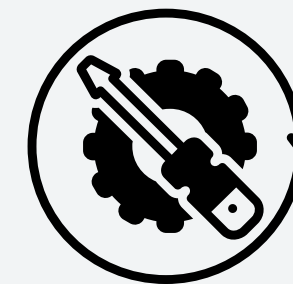
US engineering offices and manufacturing facilities:

- **Chicago, Illinois (HQ)**



Global manufacturing and operations facilities:

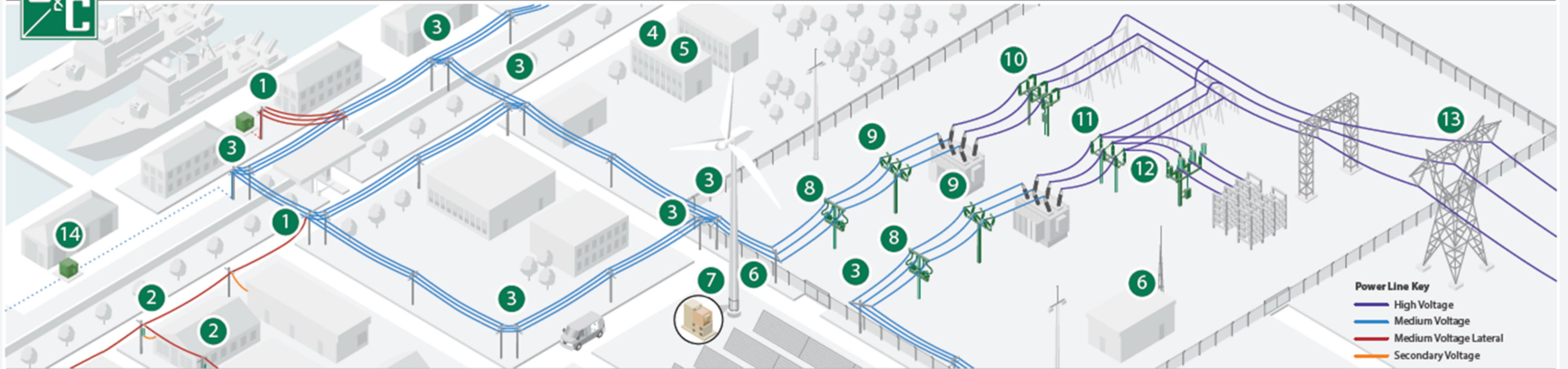
- **Melbourne, Australia (APAC)**



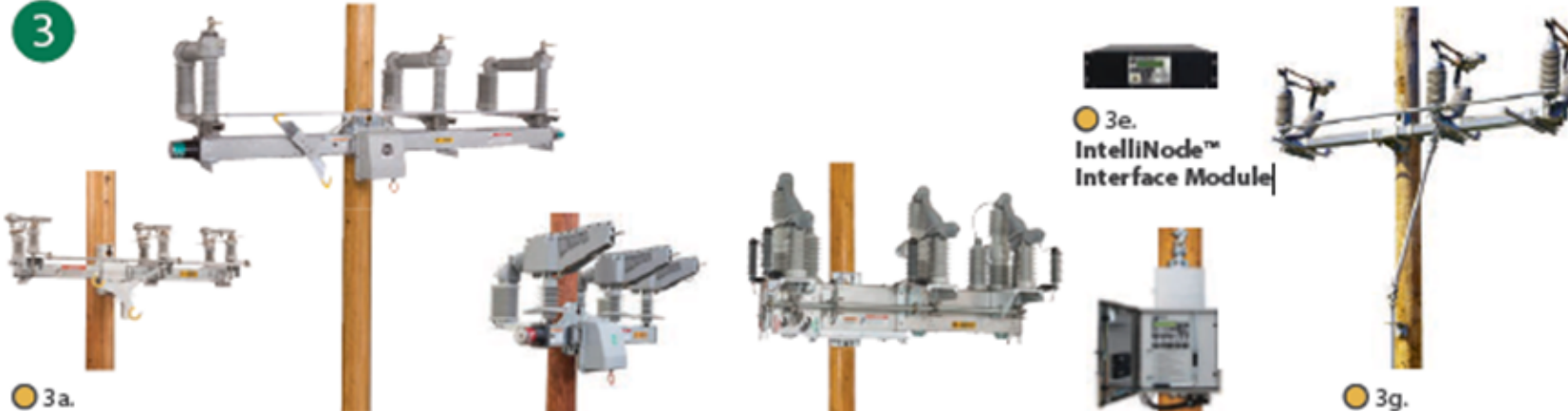



















OVERHEAD

Additional product, software, and fuse options available. Learn more at sandc.com • 1-888-762-1100

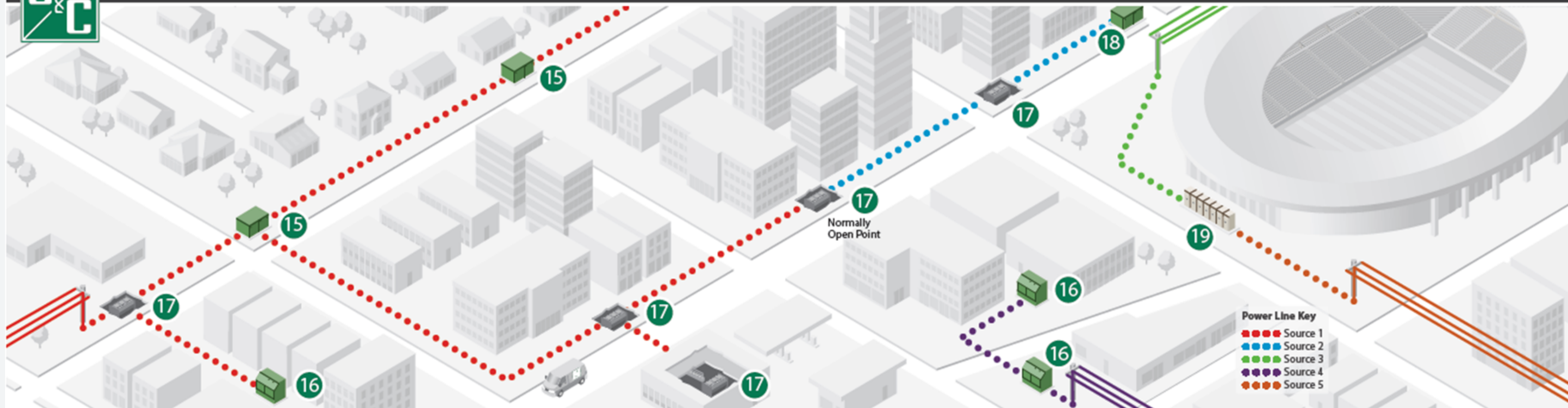


<p>1</p> <p>● 1a. TripSaver® II Cutout-Mounted Recloser</p> 	<p>2</p> <p>● 2a. VacuFuse™ Self-Resetting Interrupter</p> 	<p>3</p> <p>● 3a. Omni-Rupter® Switch (communicates when paired with 6801M Automatic Switch Operator)</p> <p>● 3b. Scada-Mate® Switching System</p> <p>● 3c. Scada-Mate® SD Switching System</p> <p>● 3d. IntelliRupter® PulseCloser® Fault Interrupter</p> <p>● 3e. IntelliNode™ Interface Module</p> <p>● 3f. 6801M Automatic Switch Operator</p> <p>● 3g. Alduti-Rupter® Switch (communicates when paired with 6801M Automatic Switch Operator)</p> 				<p>4</p> <p>● 4. IntelliTeam® FMS Feeder Management System</p> 	<p>5</p> <p>● 5. IntelliTeam® CNMS Communication Network Management System</p> 		
<p>● 1 & 2 b. Positrol® Fuse Link with Distribution Cutout</p> 	<p>● 1 & 2 c. Fault Tamer® Fuse Limiter</p> 	<p>● 1 & 2 d. SMD-20/40 Power Fuse Various options available</p> 	<p>● 1 & 2 e. Loadbuster Disconnect Switch</p> 					<p>6</p> <p>● 6. GridMaster® Microgrid Control System</p> 	<p>7</p> <p>● 7. Wind Turbine Style Vista® Underground Distribution Switchgear</p> 
<p>8</p> <p>● 8. IntelliRupter® PulseCloser® Fault Interrupter</p> 	<p>9</p> <p>● 9. Alduti-Rupter® Switch (communicates when paired with 6801M Automatic Switch Operator)</p> 	<p>10</p> <p>● 10a. Trans-Rupter II® Transformer Protector</p> <p>● 10b. Series 2000 Circuit-Switcher</p> 	<p>11</p> <p>● 11. SMD® Power Fuse Transmission Fuse</p> 	<p>12</p> <p>● 12a. Mark VI Circuit-Switcher</p> <p>● 12b. Mark V Circuit-Switcher</p> 	<p>13</p> <p>● 13. Line-Rupter™ Switch</p> 	<p>14</p> <p>● 14. Pad-Mounted IntelliRupter® PulseCloser® Fault Interrupter</p> 			



UNDERGROUND

Additional product, software, and fuse options available. Learn more at sandc.com • 1-888-762-1100



Power Line Key

- Source 1
- Source 2
- Source 3
- Source 4
- Source 5



15a. PME Pad-Mounted Gear (Communicates when Remote Supervisory)



15b. PMH Pad-Mounted Gear (Communicates when Remote Supervisory)



16a. Pad Mount Style Vista[®] Underground Distribution Switchgear (Communicates when Remote Supervisory)



16b. Vista[®] SD Underground Distribution Switchgear (Communicates when Remote Supervisory)

OVERHEAD AND UNDERGROUND COMMUNICATION



17a. UnderCover[™] Style Vista[®] Underground Distribution Switchgear (Communicates when Remote Supervisory)



17b. Vault Style Vista[®] SD Underground Distribution Switchgear (Communicates when Remote Supervisory)



17c. Vault Style Vista[®] Underground Distribution Switchgear (Communicates when Remote Supervisory)



18. Vista[®] SD Underground Distribution Switchgear PMH or PME Configuration (Communicates when Remote Supervisory)



19a. Custom Metal-Enclosed Switchgear with Micro AT[®] Source-Transfer Control



19b. System VI[™] Switchgear

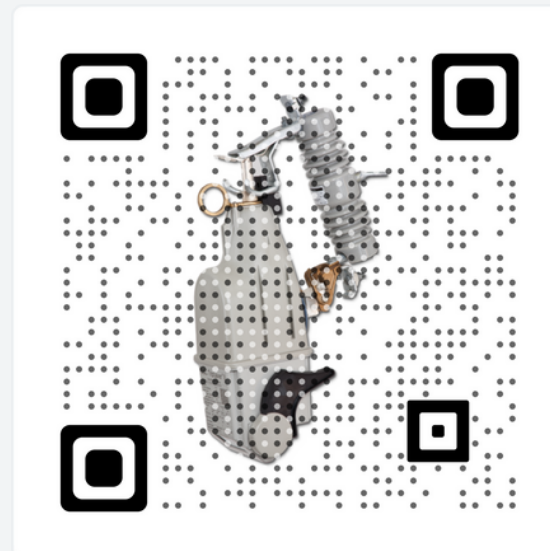
TRIPSAVER II



TripSaver® II Cutout-Mounted Recloser

S&C's TripSaver® II Cutout-Mounted Recloser is a lateral protection strategy that can dramatically improve the wa...

 sandc.com



QR CODE

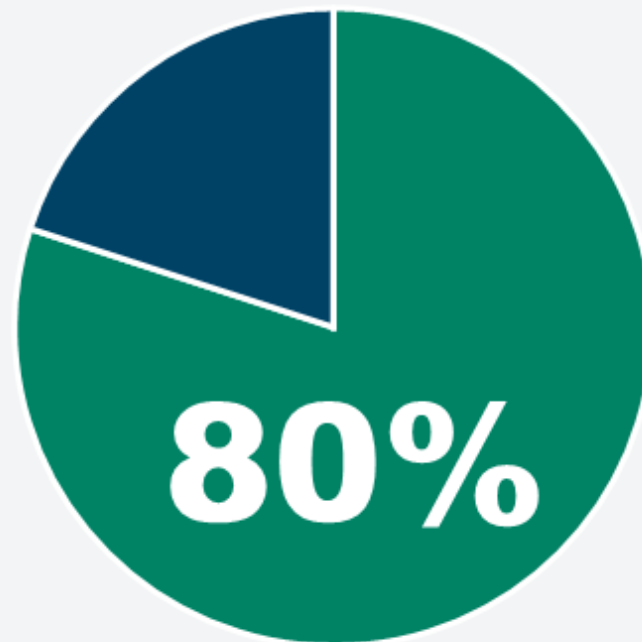
Document
Download



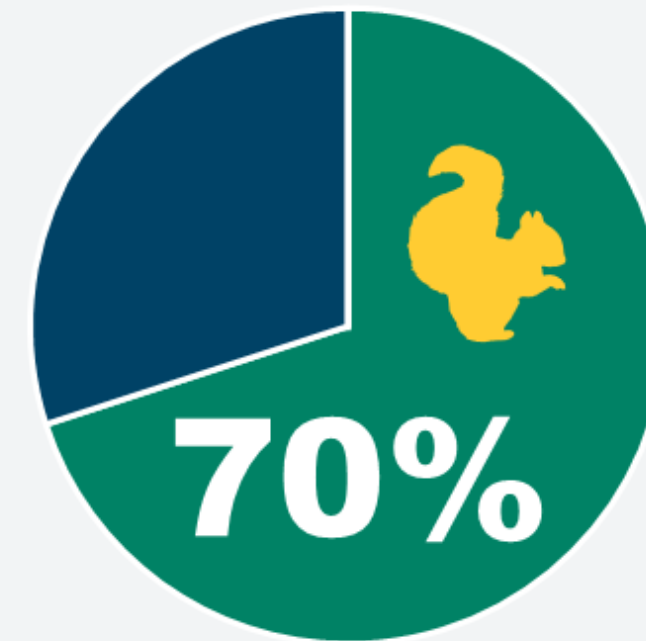
CHALLENGE



Did you know more than 80% of faults on overhead distribution circuits occur on laterals?



Of **faults** are on laterals/ branch.



Of lateral fuse operations
ate due to **Temporary faults**
unnecessary sustained outages.



TRIPSAVER II



• Self-powered



• Electronically controlled

• Vacuum interrupter (VI)

• IP65 Rating

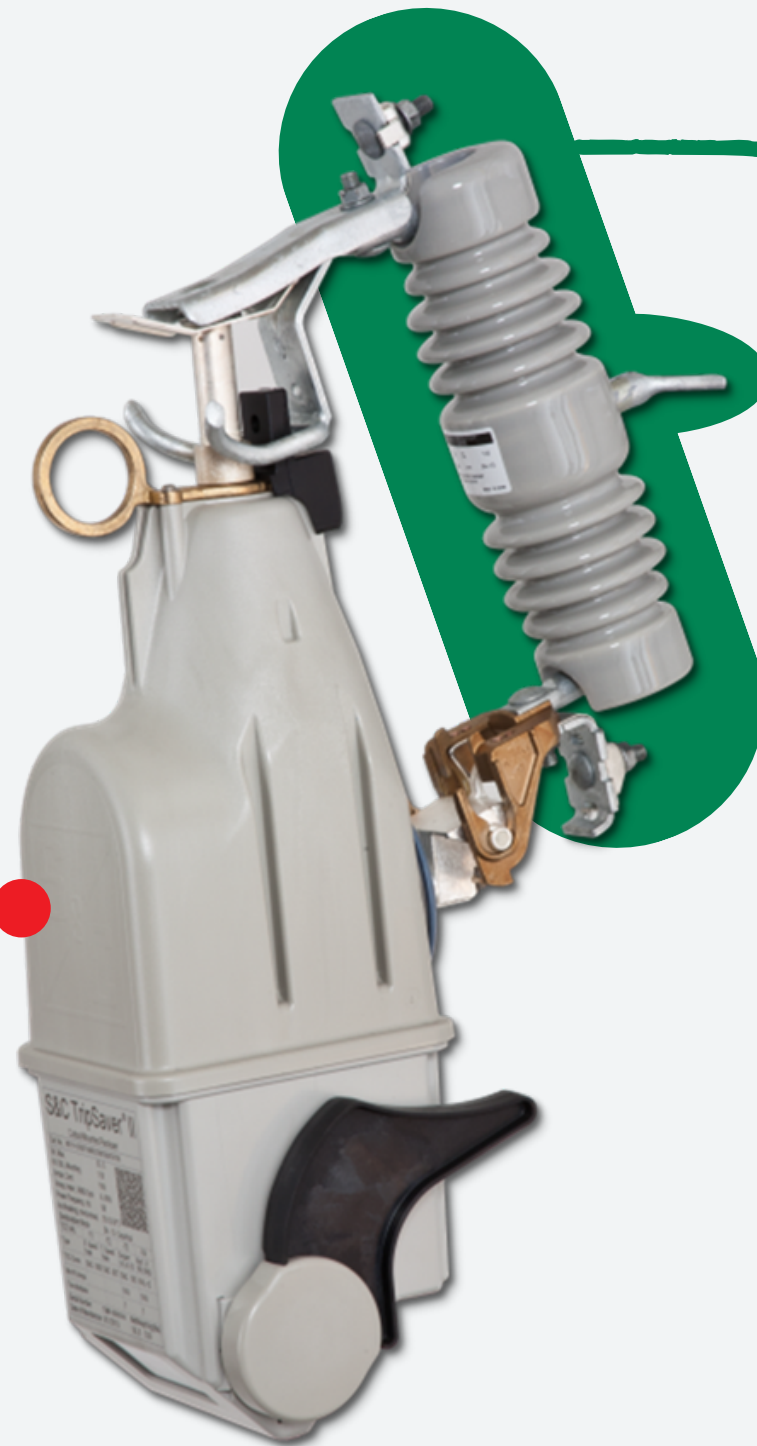


• No batteries required



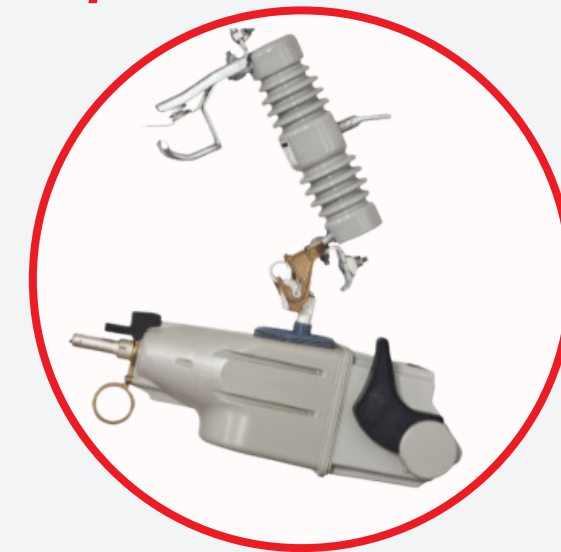
Capacitor

• No replaceable parts / No maintenance



Mounted in a standard S&C cutout

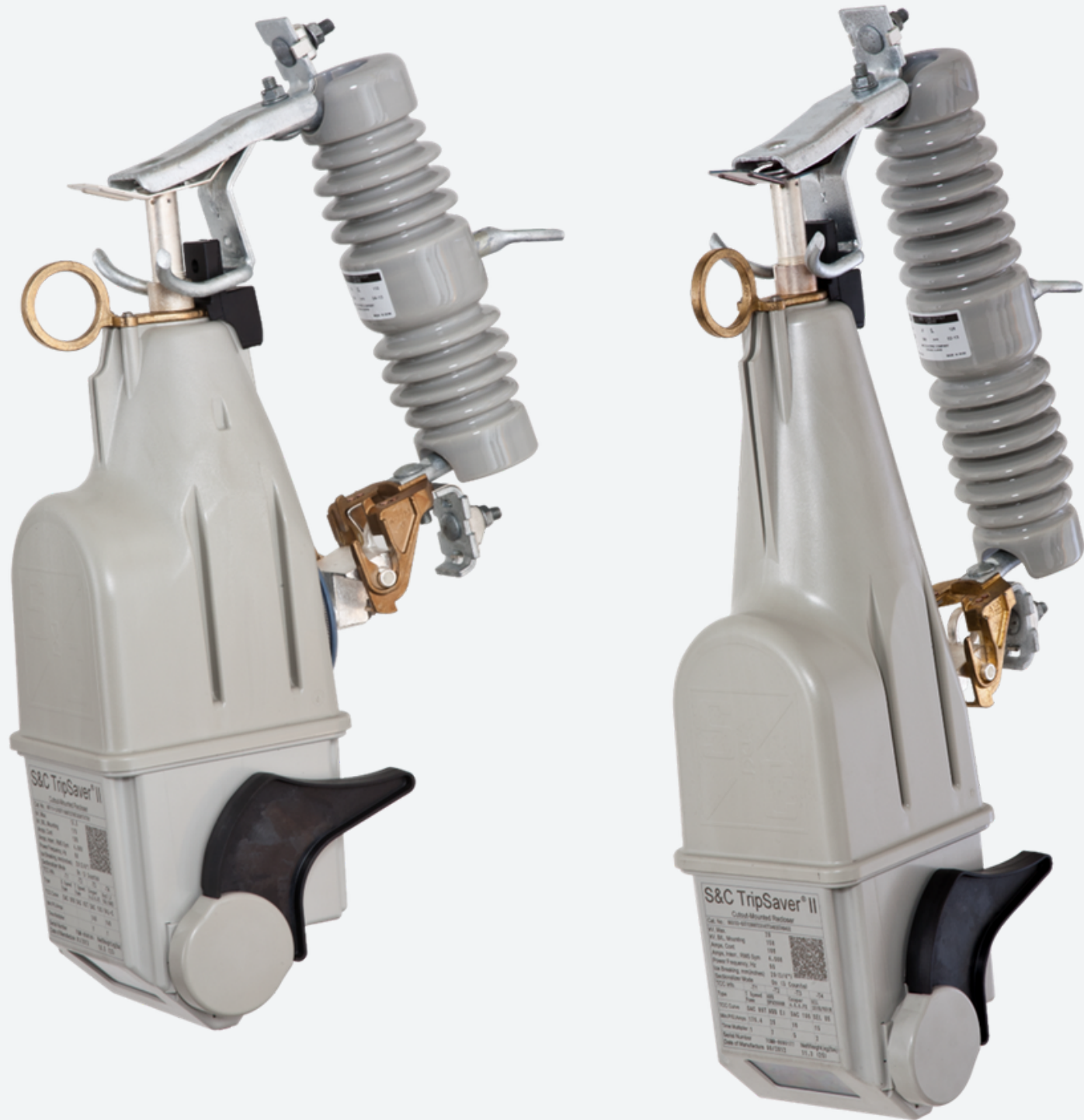
Drops open (for permanent faults)



After 3 times Temporary faults



TRIPSAVER II

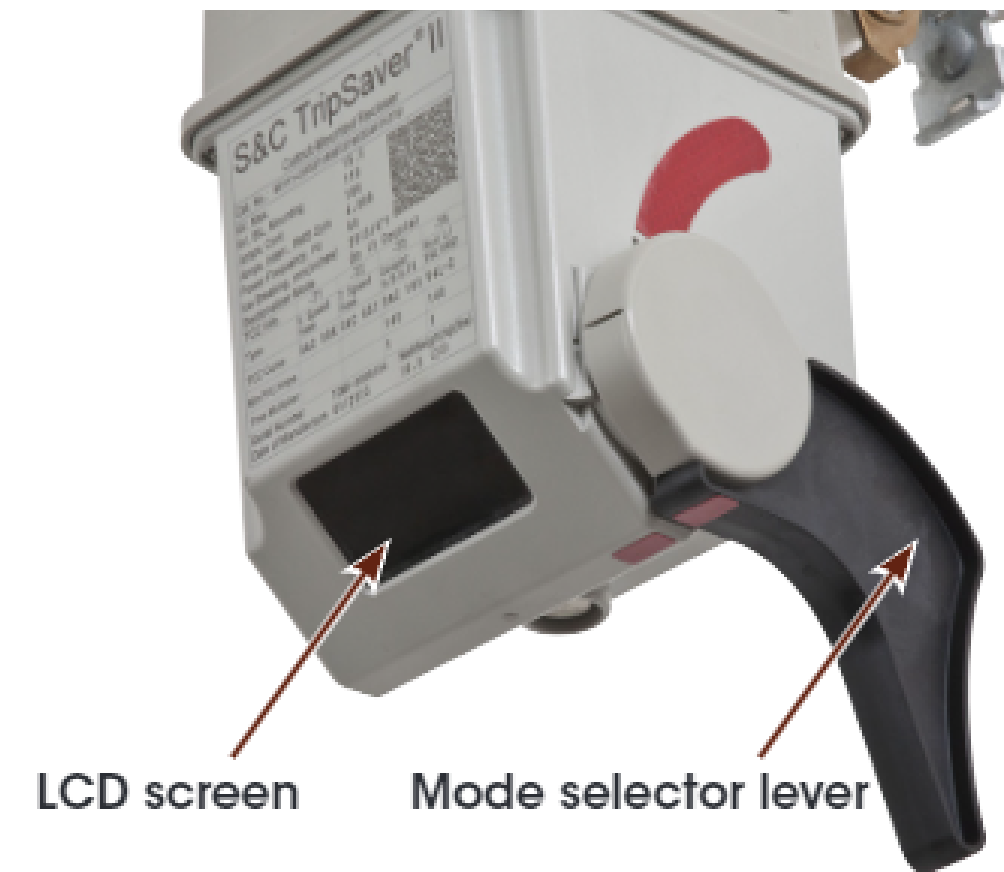
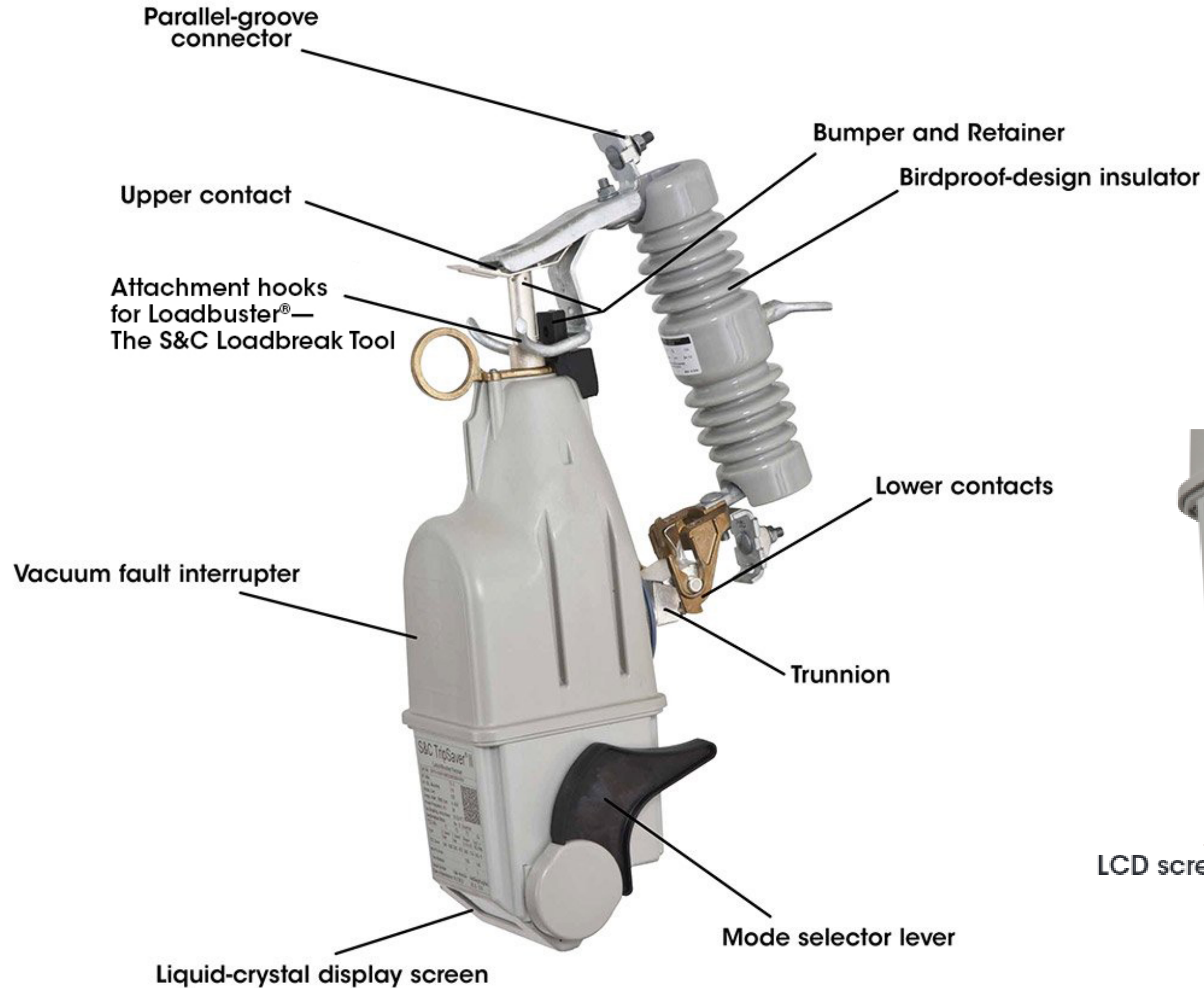


System Class	Continuous Current	Interrupting Current
15 kV 25 kV	40 A	4 kA 6.3 kA
	100 A	
	200 A	

TripSaver® II Model	Wakeup Current	“Stay-On” Threshold
40 A	1 A	0.5 A
100 A	4 A	1.5 A
200 A	8 A	3 A



CONSTRUCTION





TRIPSAVER II ADVANTAGES



Helps to avoid unnecessary truck rolls and O&M expenses

Benefits the environment



Improves reliability by preventing outages from temporary faults

Improves customer satisfaction

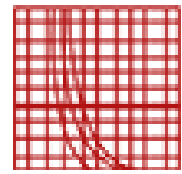


TripSaver® II Cutout-Mounted Recloser
S&C's TripSaver® II Cutout-Mounted Recloser is a lateral protection strategy that can dramatically...

 sandc.com



TRIPSAVER II ADVANTAGES



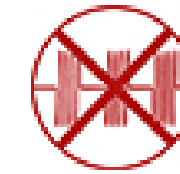
TCC Curve Variety

Excellent coordination with other devices.



Local Manual Open

Breaks the load without a loadbreaking tool.



Non-Reclose Mode

Disable the programmed automatic reclosing of the protective device.



Fewer Momentary Interruptions

Cuts momentary interruptions and improves MAIFI performance.



Remote Communications

Communications with back-office system via gateway box option.



Fewer Sustained Interruptions

Cuts sustained service interruptions. Improves SAIFI and SAIDI.



Reclosing Operations

Up to three reclosings before it drops open with a visible open gap.



Restraint Feature

In-rush restraint feature always on. Will not nuisance trip on in-rush.



Operational Status

LCD screens display real-time device status with information scrolling.



TRIPSAVER II ADVANTAGES



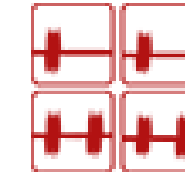
Ice Breaking

Capability for device to break $\frac{3}{4}$ " (20mm) of ice.



Gang Operation

All reclosers drop open on three-phase laterals.



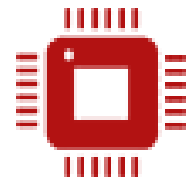
Sectionalizing Mode

Can operate as a sectionalizer over a range of fault currents.



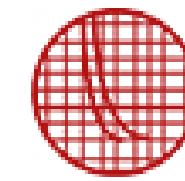
Service Center

Service center configurable. Can reconfigure operating sequence.



Microprocessor Control

Line-powered microprocessor control with no batteries needed.



Sequence Coordination

Improves coordination between upstream and downstream reclosers to prevent nuisance momentary outages.



Auto Detect

With version 1.8, single click automatic entry of Transceiver ID eliminates manual entry



ACTUAL SITE DATA



Helps to avoid unnecessary truck rolls and O&M expenses

YEAR	TL Permanent	TR Temporary
BEFORE 2020	25	0
AFTER 2021	0	22

Data collected shows that transient faults percentage vary between 75% to 94%, and even 100% in one of the installed location where no permanent outages were recorded.

YEAR	TL Permanent	TR Temporary
BEFORE 2020	46	0
AFTER 2021	12	36

Client have estimated the costs below for 1 fault event:

Petrol : USD 30

Staff : USD 30

Equipment : USD 30

Revenue : USD 70

TOTAL : USD 160

YEAR	TL Permanent	TR Temporary
BEFORE 2020	34	0
AFTER 2021	3	47

Example site #1, total 22 saved trips = ROI in < 1 year



TRIPSAVER II AVAILABLE TCC CURVES



Microprocessor Recloser

Cooper Microprocessor Form 4,5,6,FX	
Inverse Segment	Definition
S&C 101	Cooper 101
S&C 102	Cooper 102
S&C 103	Cooper 103
S&C 104	Cooper 104
S&C 105	Cooper 105
S&C 106	Cooper 106
S&C 107	Cooper 107
S&C 111	Cooper 111
S&C 112	Cooper 112
S&C 113	Cooper 113
S&C 115	Cooper 115
S&C 116	Cooper 116
S&C 117	Cooper 117
S&C 118	Cooper 118
S&C 119	Cooper 119
S&C 120	Cooper 120
S&C 132	Cooper 132
S&C 133	Cooper 133
S&C 134	Cooper 134
S&C 135	Cooper 135
S&C 137	Cooper 137
S&C 138	Cooper 138
S&C 142	Cooper 142
S&C 151	Cooper 151
S&C 161	Cooper 161
S&C 162	Cooper 162
S&C 163	Cooper 163
S&C 165	Cooper 165
S&C 201	Cooper 201
S&C 202	Cooper 202

SEL 351R/651R Recloser Control	
Inverse Segment	Definition
SEL U1	SEL U1 Moderately Inverse
SEL U2	SEL U2 Inverse
SEL U3	SEL U3 Very Inverse
SEL U4	SEL U4 Extremely Inverse
SEL U5	SEL U5 Short-Time Inverse
SEL C1	SEL C1 Standard Inverse
SEL C2	SEL C2 Very Inverse
SEL C3	SEL C3 Extremely Inverse
SEL C4	SEL C4 Long-Time Inverse
SEL C5	SEL C5 Short-Time Inverse

ABB DPU 2000R Recloser Control	
Inverse Segment	Definition
ABB INV	ABB Inverse
ABB VI	ABB Very Inverse
ABB EI	ABB Extremely Inverse
ABB STI	ABB Short-Time Inverse
ABB STEI	ABB Short-Time Extremely Inverse

IEC Standard Curve	
Inverse Segment	Definition
IEC SI	IEC Standard Inverse
IEC VI	IEC Very Inverse
IEC EI	IEC Extremely Inverse

IEEE Standard Curve	
Inverse Segment	Definition
IEEE EI	IEEE Extremely Inverse
IEEE MI	IEEE Moderately Inverse
IEEE VI	IEEE Very Inverse

Fuse Link

Ampere Rating			
K-Speed	T-Speed	QR	KS
6K	6T	3QR	65KS
8K	8T	8QR	
10K	10T	10QR	
12K	12T	12QR	
15K	15T	15QR	
20K	20T	20QR	
25K	25T	25QR	
30K	30T	30QR	
40K	40T	40QR	
50K	50T	50QR	
65K	65T	65QR	
80K	80T	80QR	
100K	100T	100QR	

Cooper (McGraw-Edison) Hydraulic Recloser

Type H		
Inverse Segment	Definition	Coil Rating
H-A	Type H, A curve	5A, 10A, 15A, 25A, 35A, 50A
H-B	Type H, B curve	5A, 10A, 15A, 25A, 35A, 50A
H-C	Type H, C curve	5A, 10A, 15A, 25A, 35A, 50A

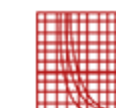
Type 4H, V4H		
Inverse Segment	Definition	Coil Rating
(V)4H-A	Type 4H or Type V4H, A curve	5A, 10A, 15A, 25A, 35A, 50A, 70A, 100A
(V)4H-B	Type 4H or Type V4H, B curve	5A, 10A, 15A, 25A, 35A, 50A, 70A, 100A
(V)4H-C	Type 4H or Type V4H, C curve	5A, 10A, 15A, 25A, 35A, 50A, 70A, 100A

Type L		
Inverse Segment	Definition	Coil Rating
L-A	Type L, A curve	25A, 35A, 50A, 70A, 100A
L-B	Type L, B curve	25A, 35A, 50A, 70A, 100A
L-C	Type L, C curve	25A, 35A, 50A, 70A, 100A
L-D	Type L, D curve	25A, 35A, 50A, 70A, 100A

Type V4L, V4E		
Inverse Segment	Definition	Coil Rating
V4L(E)-A	Type V4L or Type V4E, A curve	15A, 25A, 35A, 50A, 70A, 100A
V4L(E)-B	Type V4L or Type V4E, B curve	15A, 25A, 35A, 50A, 70A, 100A
V4L(E)-C	Type V4L or Type V4E, C curve	15A, 25A, 35A, 50A, 70A, 100A
V4L(E)-D	Type V4L or Type V4E, D curve	15A, 25A, 35A, 50A, 70A, 100A

Type E		
Inverse Segment	Definition	Coil Rating
E-A	Type E, A curve	5A, 10A, 15A, 25A, 35A, 50A, 70A, 100A
E-B	Type E, B curve	5A, 10A, 15A, 25A, 35A, 50A, 70A, 100A
E-C	Type E, C curve	5A, 10A, 15A, 25A, 35A, 50A, 70A, 100A
E-D	Type E, D curve	5A, 10A, 15A, 25A, 35A, 50A, 70A, 100A

Type 4E		
Inverse Segment	Definition	Coil Rating
4E-D	Type 4E, D curve	50A, 70A, 100A



TCC Curve Variety

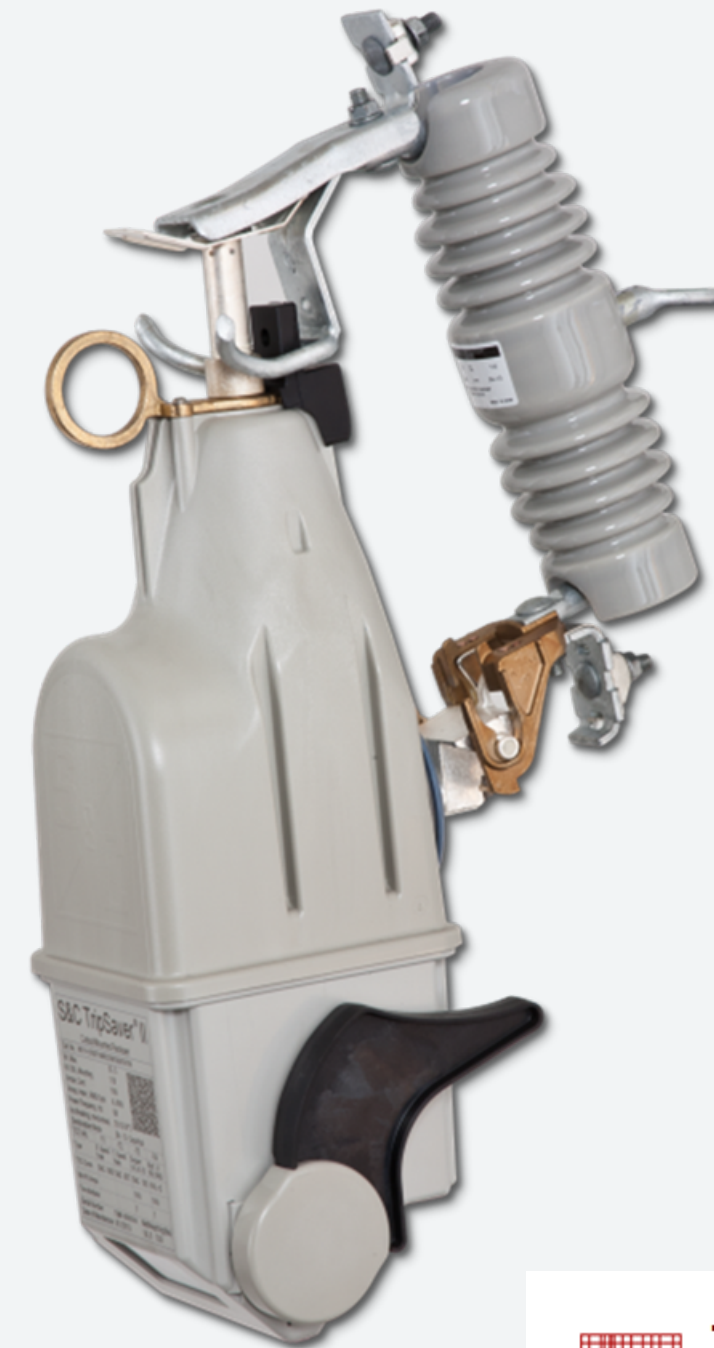
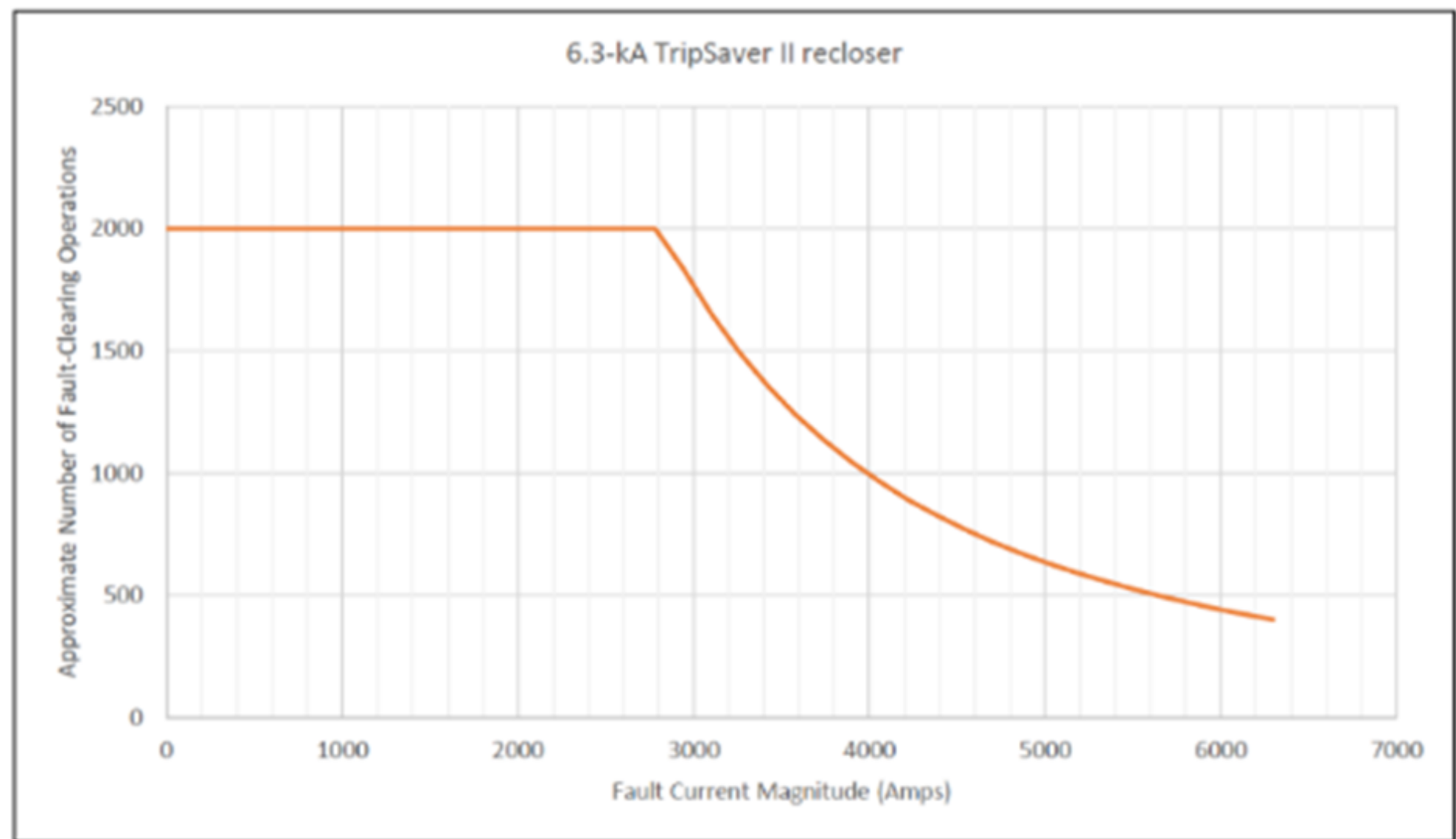
Excellent coordination with other devices.

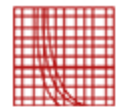


TRIPSAVER II AVAILABLE TCC CURVES



TripSaver II Models	Approximate total operations before @ 100% Interrupting Rating
15 kV @ 6.3 kA	400
25 kV @ 6.3 kA	400
TripSaver II	Approximate total operations
Mechanical Operation	2000



 **TCC Curve Variety**
Excellent coordination with other devices.



NON-RECLOSE TCC CURVE

ENOVA

Allows the user to configure three Non-Reclose TCC curves:

- *Standard NR*
- *Post Fault Wakeup NR*
- *Cold Wakeup NR*



Local Manual Open

Breaks the load without a loadbreaking tool.



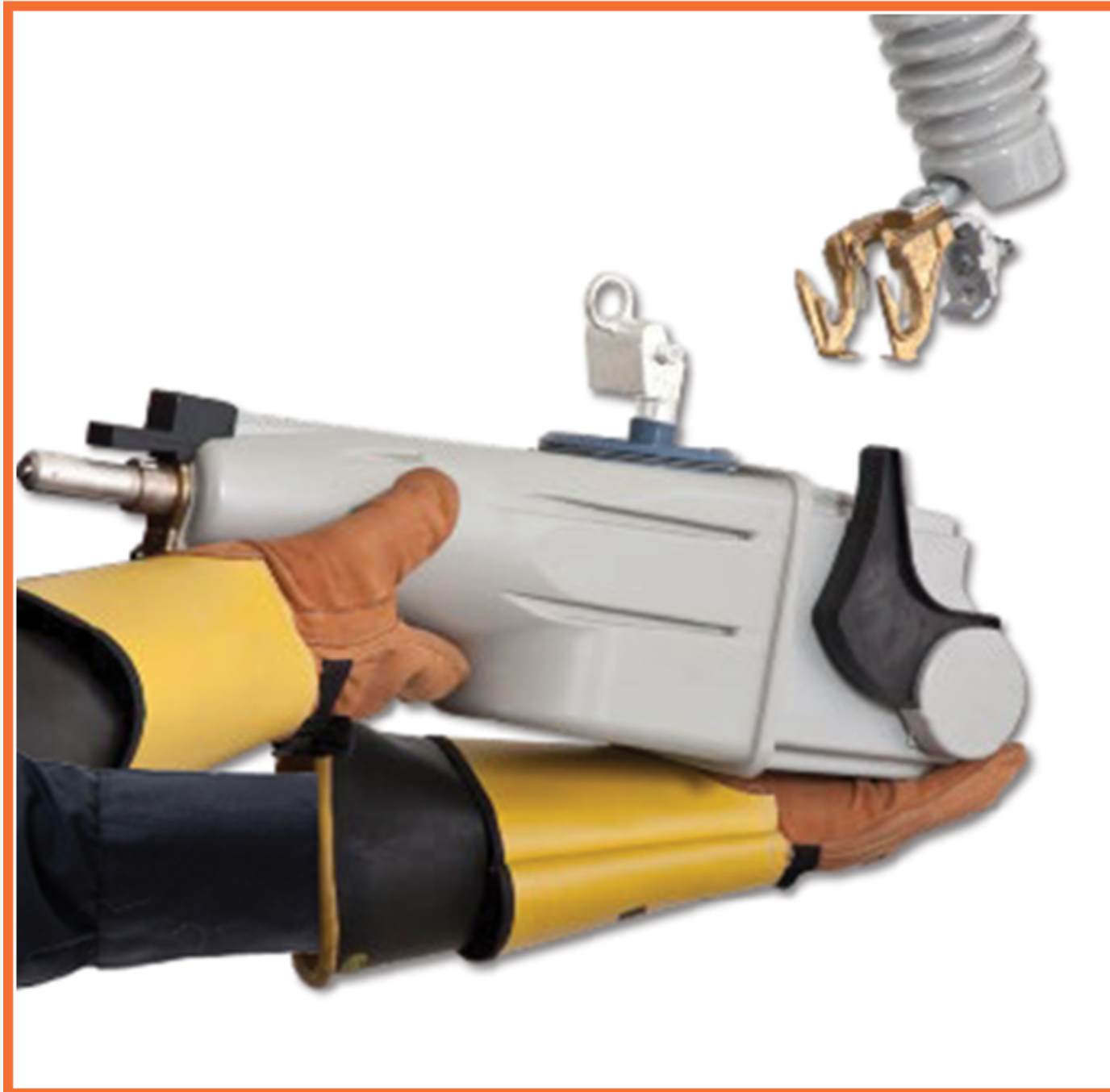
Non-Reclose Mode

Disable the programmed automatic reclosing of the protective device.



EASY TO INSTALL USING CUTOTS

ENOVA





TRIPSAVER II INSTALLATION ON LIVE 21 MINS



**Start 11:10am
(Install mounting)**



20221209_111004(START).jpg



20221209_111010.jpg



20221209_111014.jpg



20221209_111442.jpg



20221209_111630.jpg



20221209_111632.jpg



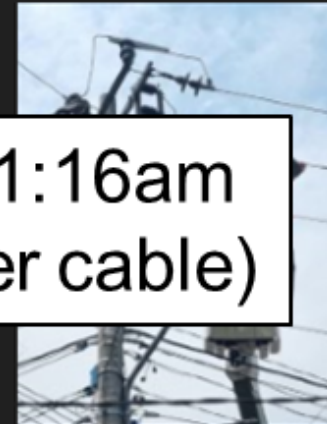
20221209_111633.jpg



20221209_111638.jpg



20221209_111650.jpg



20221209_111656.jpg

**Progress 11:16am
(New jumper cable)**



20221209_112420.jpg



20221209_112715.jpg



20221209_112729.jpg



20221209_113020.jpg



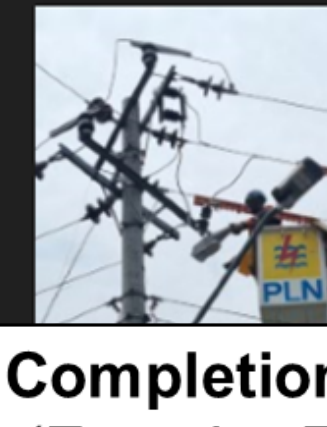
20221209_113026.jpg



20221209_113033.jpg



20221209_113157
(END).jpg



**Completion 11:31am
(Energize TripSaver)**



EASY TO CLOSING TRIPSAVER II BACK INTO MOUNTING

ENOVA



**TripSaver II
in dropped-open position**



**Closing TripSaver II
back into mounting**



**Opening TripSaver II with
Loadbuster®**



ENOVA

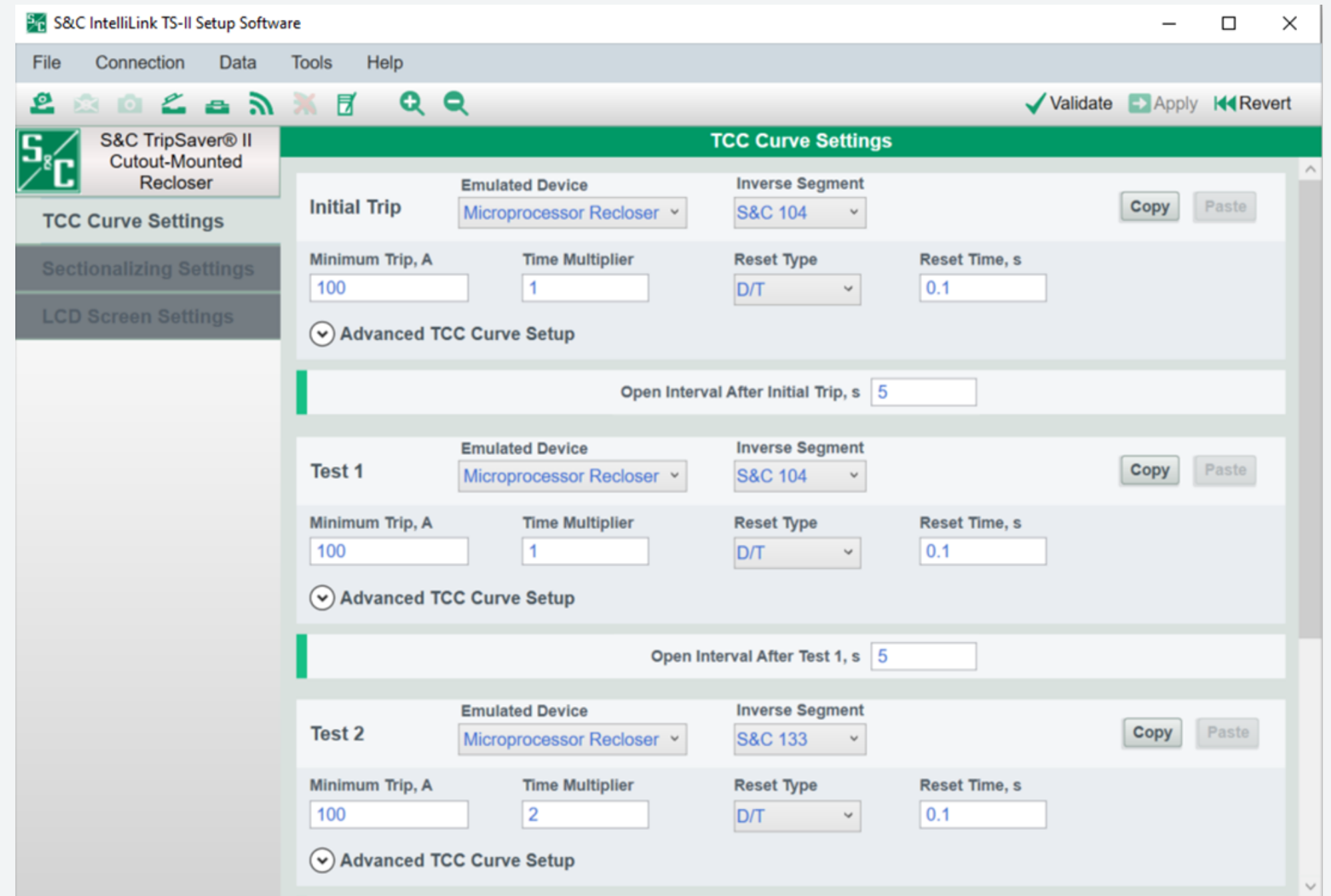
CONFIGURATION



EASY CONFIGURATION



- *Intuitive GUI of software makes the configuration process quick and easy.*
- *The software also allows users to view status-related information, read event logs, and perform functional tests.*
- *Not limited to number any number of devices and users*



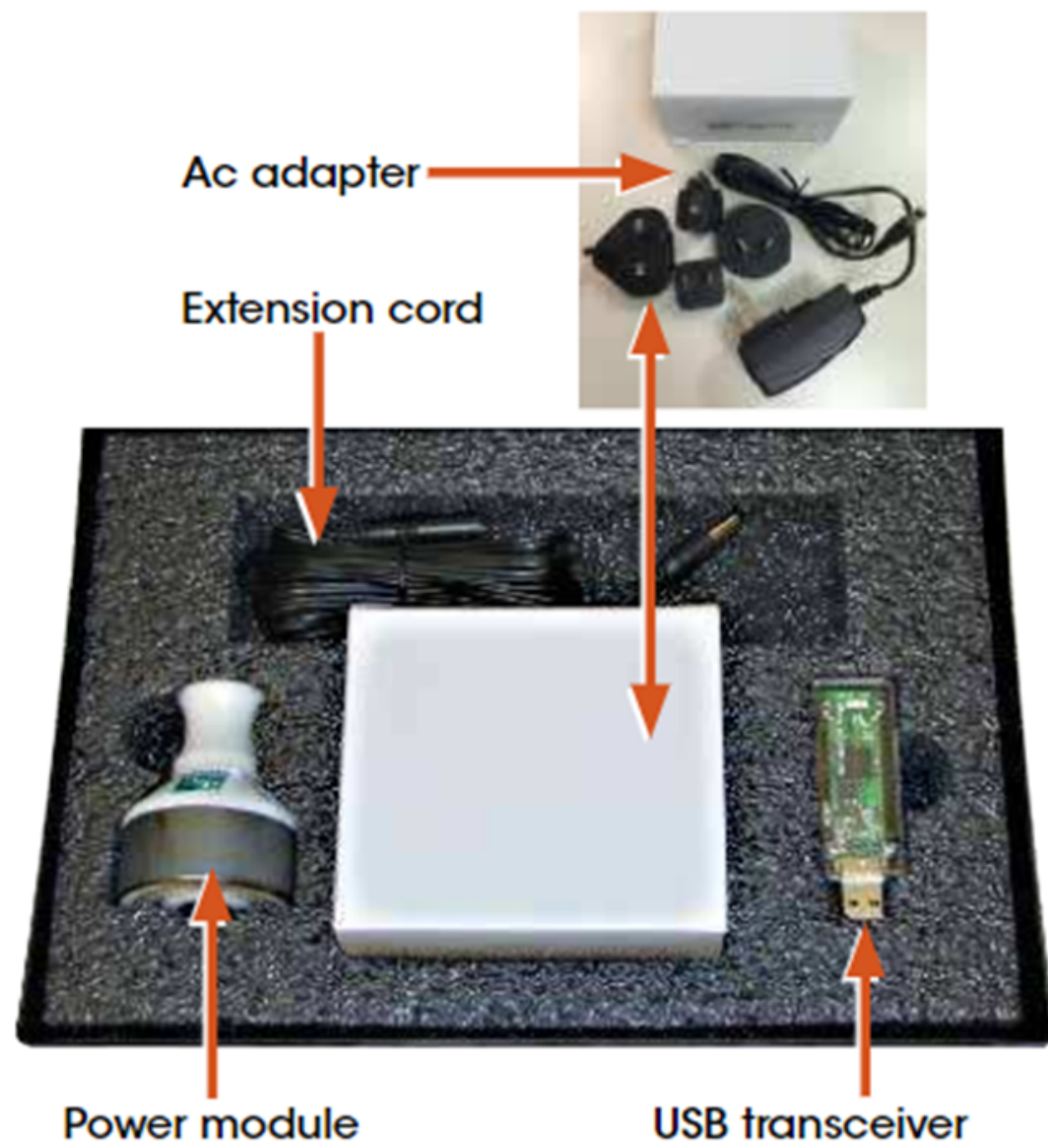


PORTABLE KIT FOR CONFIGURATION



Cordless Power Module

*If line current is off/low, this allows:
LCD info display
Local Manual Open (LMO)
Wireless communication*





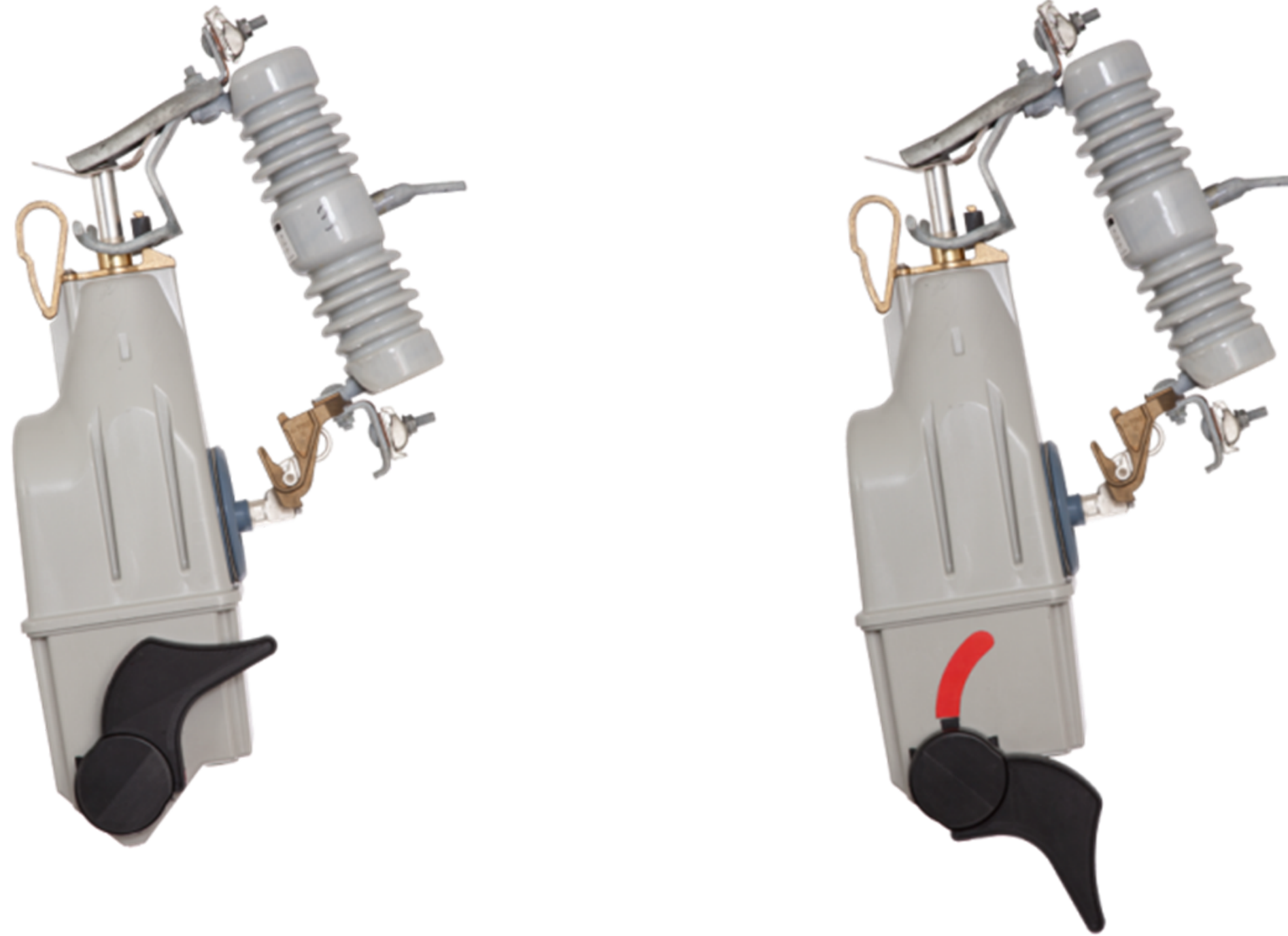
ENOVA

OPERATIONAL OVERVIEW



TRIPSAVER II MODE SELECTOR

ENOVA

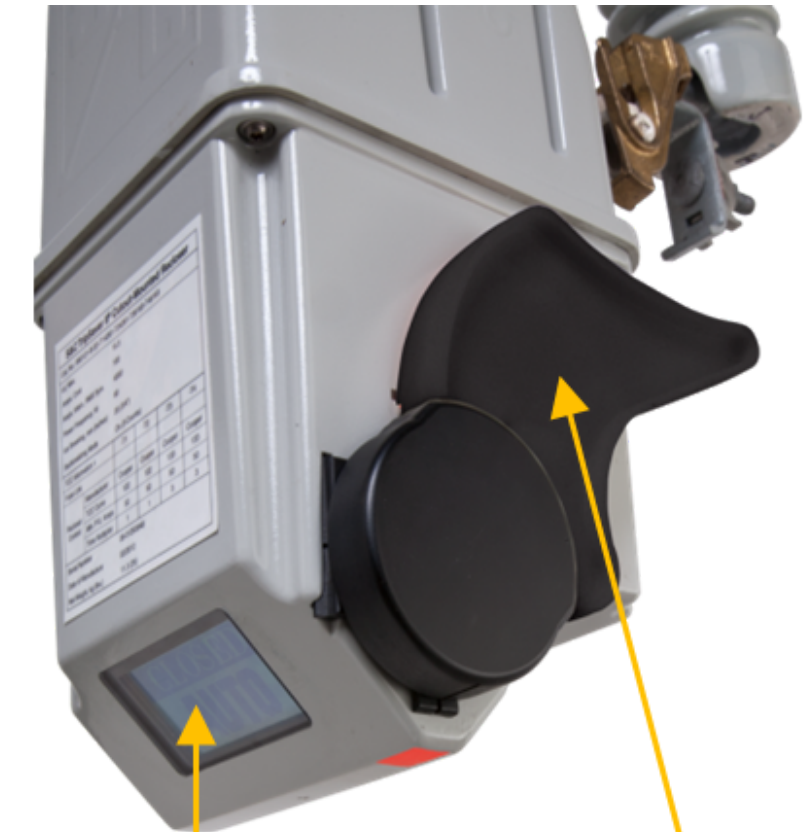


Note: Red label is covered completely when in AUTO mode



HUMAN MACHINE INTERFACE WITH LCD SCREEN

ENOVA



LCD
screen

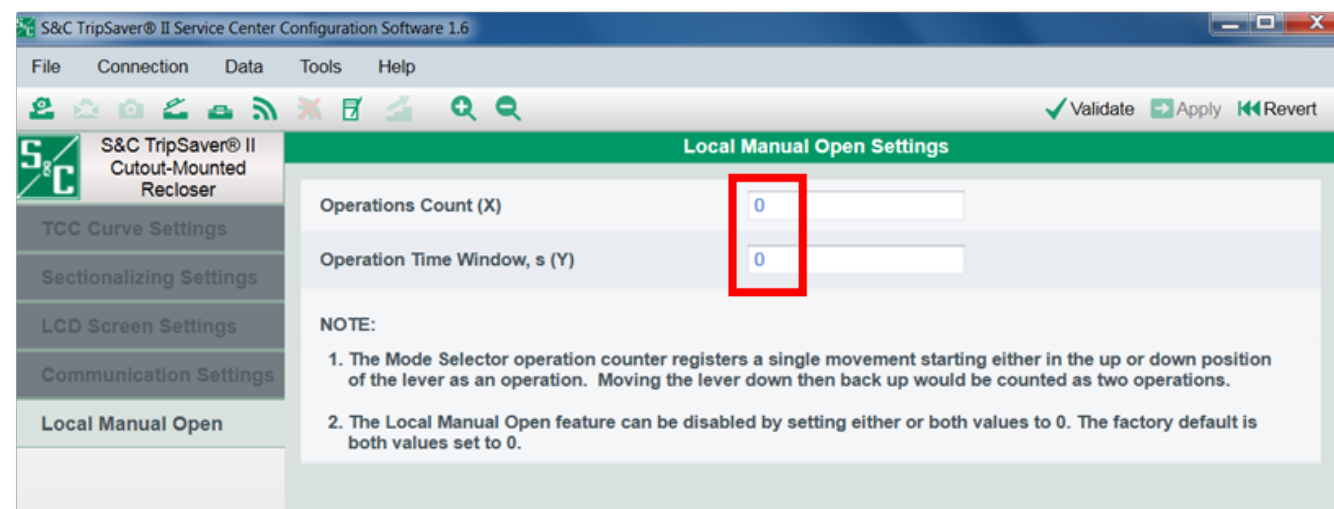
Mode
selector
lever



LOCAL MANUAL OPEN (LOAD BREAK)



Operate lever X times within Y seconds





ENOVA

REFERENCE



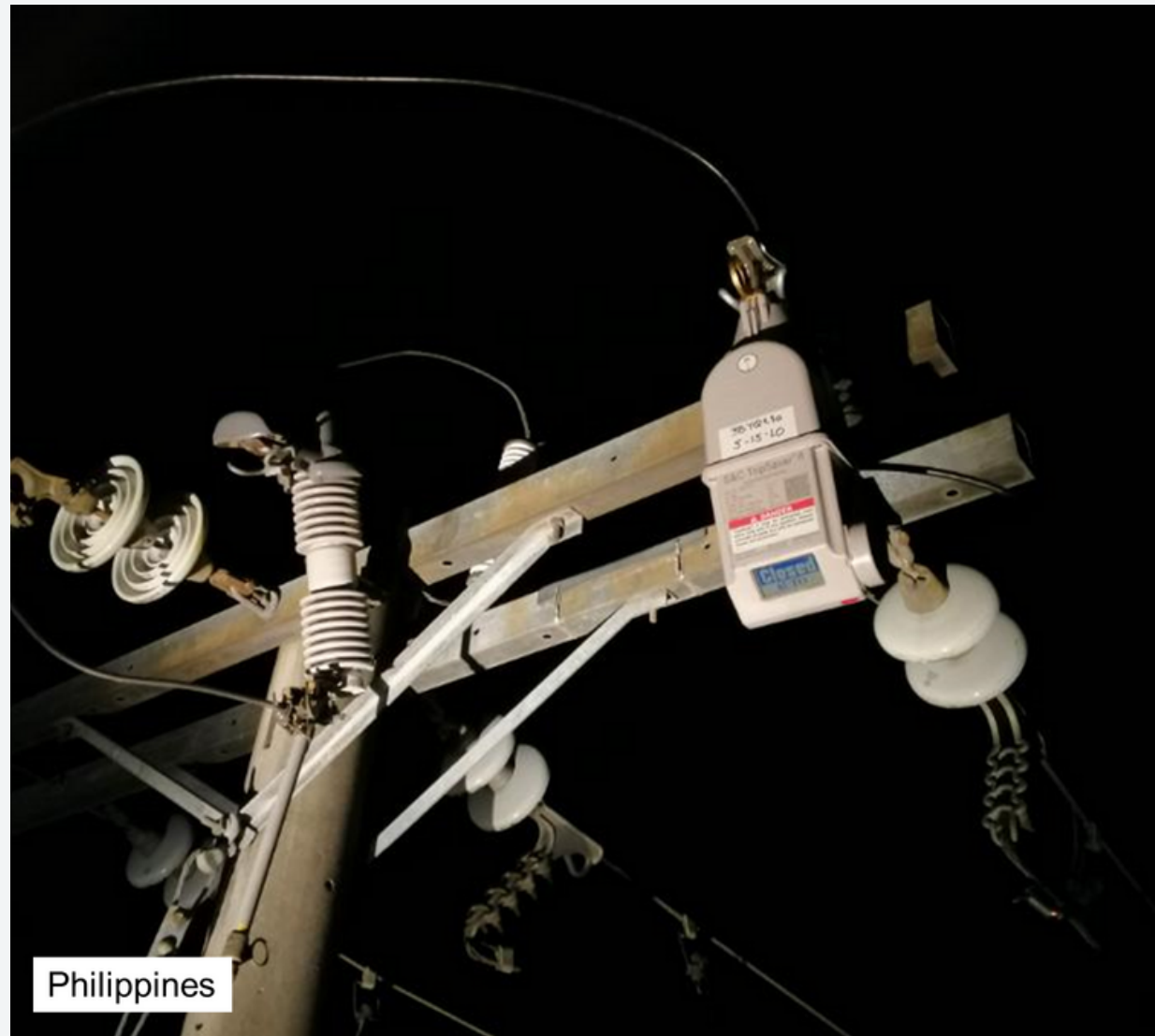
Philippines



Indonesia



Indonesia



Philippines



Thailand



Malaysia

