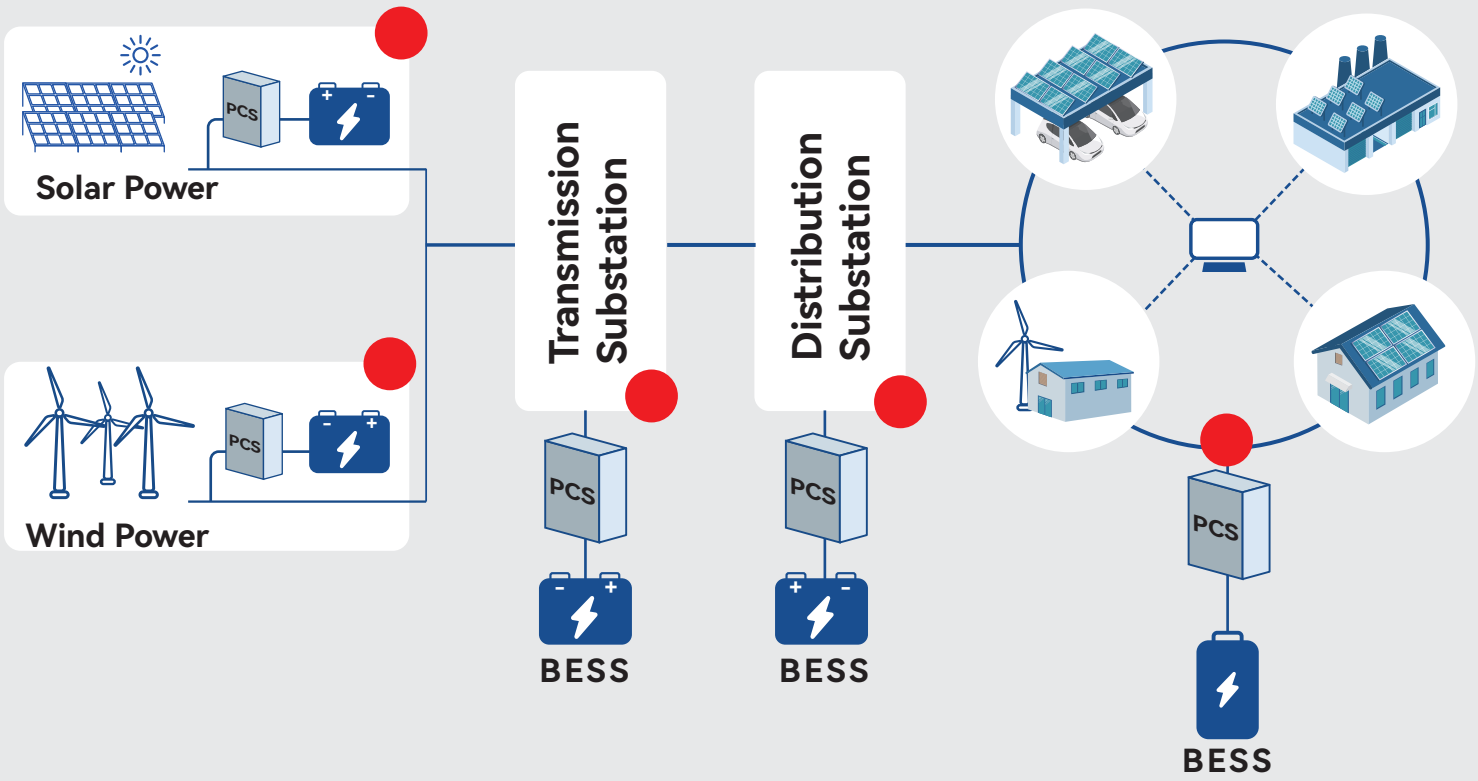
New Energy System Circuit Protection

SETsafe | SETfuse Solution

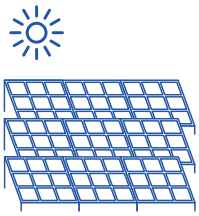


SETsafe | SETfuse

Providing a Total Solution for High Standard Safety Circuit Protection

Solar Power

Solar Energy Storage



Commercial

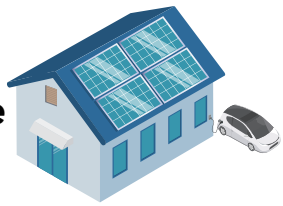
Central Inverter System

- Solar Panels
- Combiner Box
- DC Combiner Box
- Central Inverter
- BESS
- Low-voltage AC Cabinet
- Transformer
- High-voltage AC Cabinet
- Grid

String Inverter System

- Solar Panels
- String Inverter
- BESS
- AC Combiner Box
- Low-voltage AC Cabinet
- Transformer
- High-voltage AC Cabinet
- Grid

Home



String Inverter System

- Solar Panel / PV
- Charge Controller
- Energy Storage
- String Inverter
- AC Distribution Box
- Loads
- EV Charging

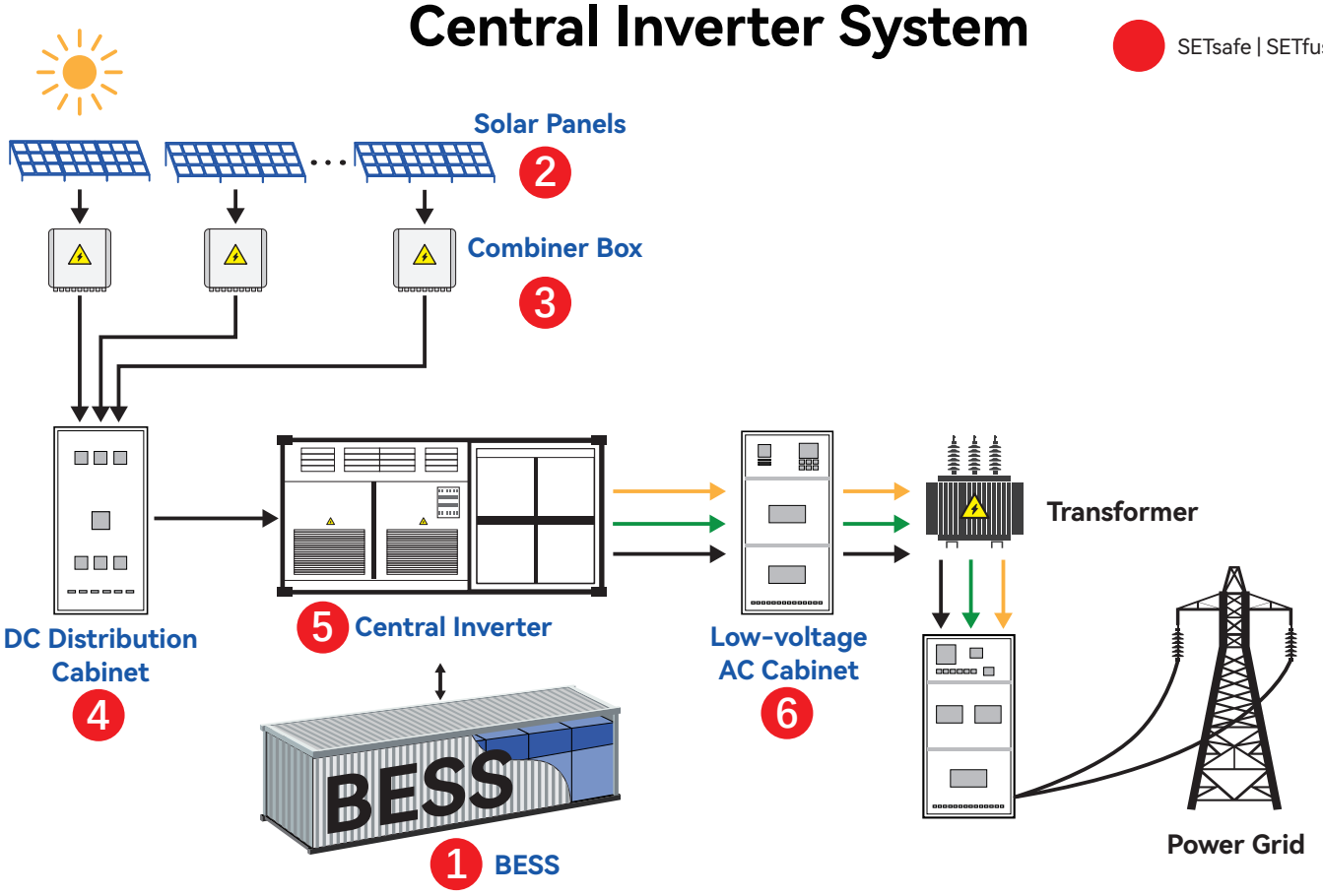
Micro Inverter System

- Solar Panel / PV
- Charge Controller
- Energy Storage
- Micro Inverter
- AC Distribution Box
- Loads
- EV Charging

Commercial Solar Energy Storage

Central Inverter System

SETsafe | SETfuse Solution



SETsafe | SETfuse Products

2 Over Temperature Protection

2.1 Thermal-Link (DC-ATCO)-DC Alloy Type

3 Over Voltage Protection

3.1 Surge Protective Device (SPD)

4 Over Voltage Protection

4.1 Surge Protective Device (SPD)

Over Current Protection

4.2 Low Voltage Fuses (LV Fuses)

5 Over Voltage Protection

5.1 Surge Protective Device (SPD)

Over Current Protection

5.2 Low Voltage Fuses (LV Fuses)

6 Over Voltage Protection

6.1 Surge Protective Device (SPD)

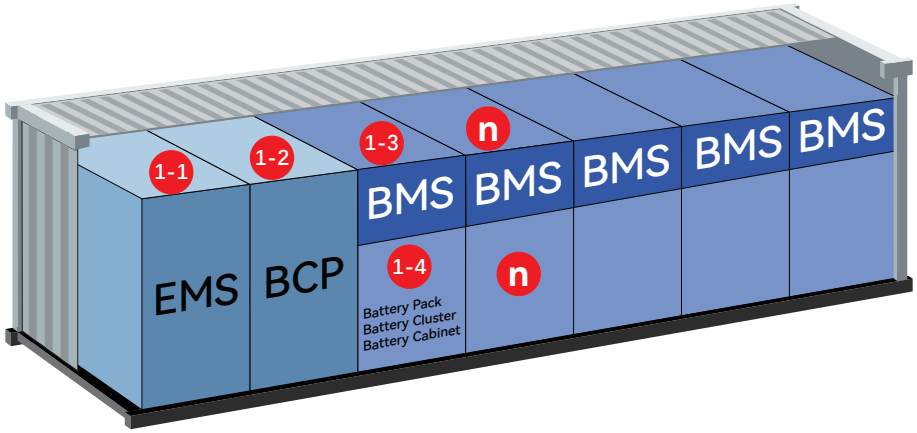
Over Current Protection

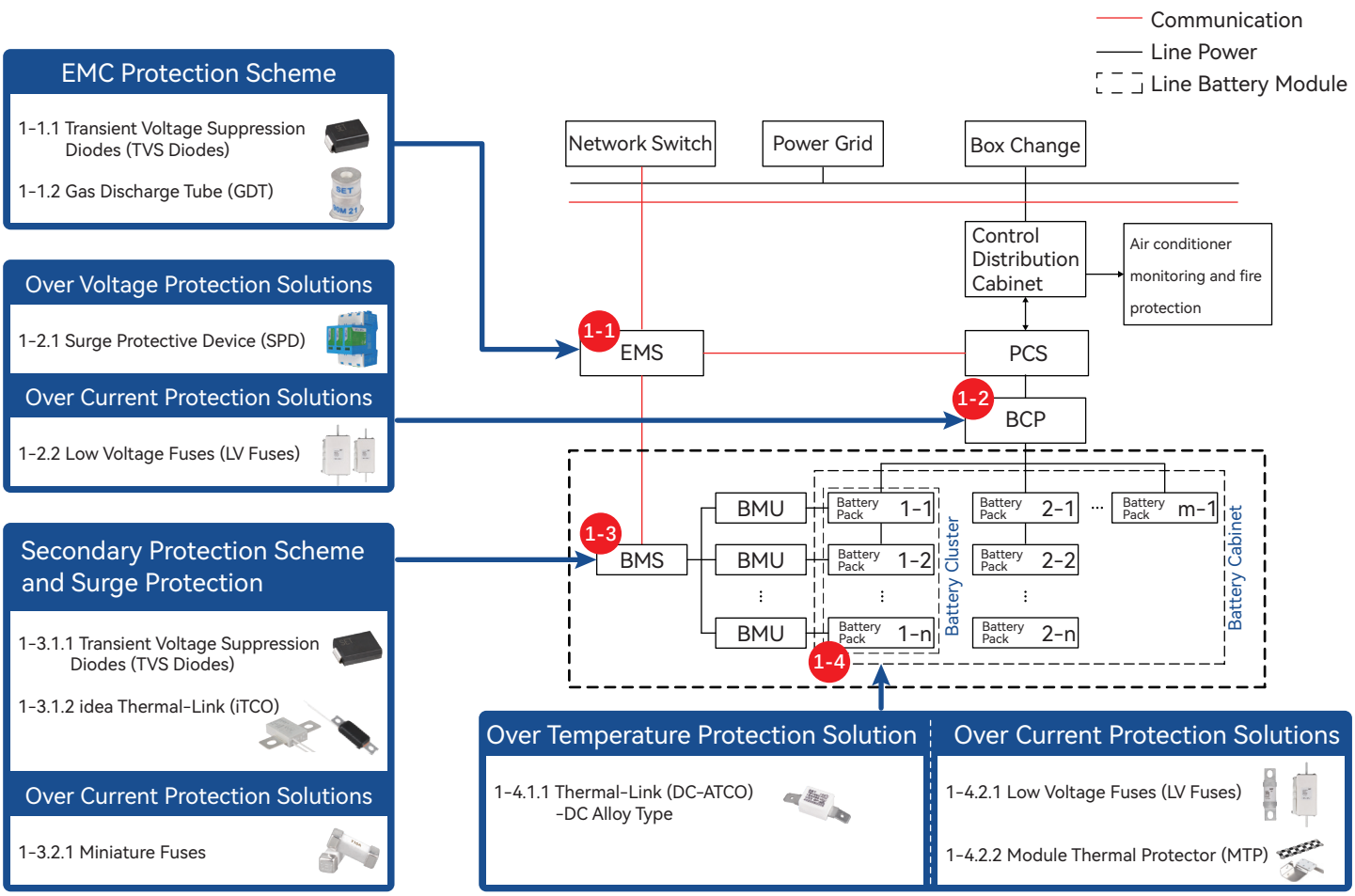
6.2 Low Voltage Fuses (LV Fuses)

SETsafe | SETfuse

SETsafe | SETfuse Solutions of Commercial Solar Energy Storage

1 BESS





Features and Benefits of SETsafe | SETfuse Solutions

Central Inverter System

Code	Products	Series	Benefits	Features
1-1	TVS	• SMCJ • SMDJ • SP0080TBLC	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	GDT	• TZ091A • TZ231A • SX091	• Overvoltage protection for dataline • Comply with IEC61000-4-5 • SMD mount, compact size	• Surge rating 1 ~ 5 kA at 8/20 μs • 1210 SMD packing • Voltage rating 90 ~ 230 V
1-2	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15 690 VAC	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
1-3	TVS	• SMBJ • SMCJ • SMDJ • 0.5SMDJ	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	iTCO	• TKT150 • TRR150 • THU145 • TKS150	• Low impedance • Low power consumption • One time function, no resettable • Active over-temperature protection • Comply with UL1973, IEC62619 active protection • As redundant protection	• Main circuit fusing time ≤ 60 s • Main circuit impedance ≤ 0.1 mΩ • Surge withstanding capacity up to 40kA • Patented
	Minifuse	• SCF1032 • SCF6125	• Pb free • Available for AC and DC system	• SMD mount • One time function, no resettable • Available for reflow soldering up to 300 ℃ • Fast response
1-4	DC-ATCO	• TG125C • RSK140	• High DC interrupting capacity • Low impedance • Low power consumption • One time function, no resettable • Vibration resistance	• Rated current 10 ~ 200 A • Rated voltage 60 ~ 850 VDC • Rated functioning temperature 76 ~ 230 ℃ • Unique design
	LV Fuses	• LFR15XL2 • LFR15XL3 • LFR15	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
	MTP	• MTP1560	• Combine thermal fuse and busbar • One time function, no resettable • Thermal and electric separated protection is available • Compact size • Customized	• Thickness less than ≤ 3 mm • Rated current 15 A • Rated voltage 60 VDC • Rated functioning temperature 86 ~ 102 ℃
		• ALW125	• Flat design, can be installed inside of battery module • Copper bar with over temperature protection • Thermal and electric separated protection is available • One time function, no resettable	• Rated current 300 A • Rated voltage 100 VDC • Transient current impact 1200 A/ 3ms
2	DC-ATCO	• AYH	• Solar cable connector overheating protection	• Unique design
3	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment

Features and Benefits of SETsafe | SETfuse Solutions

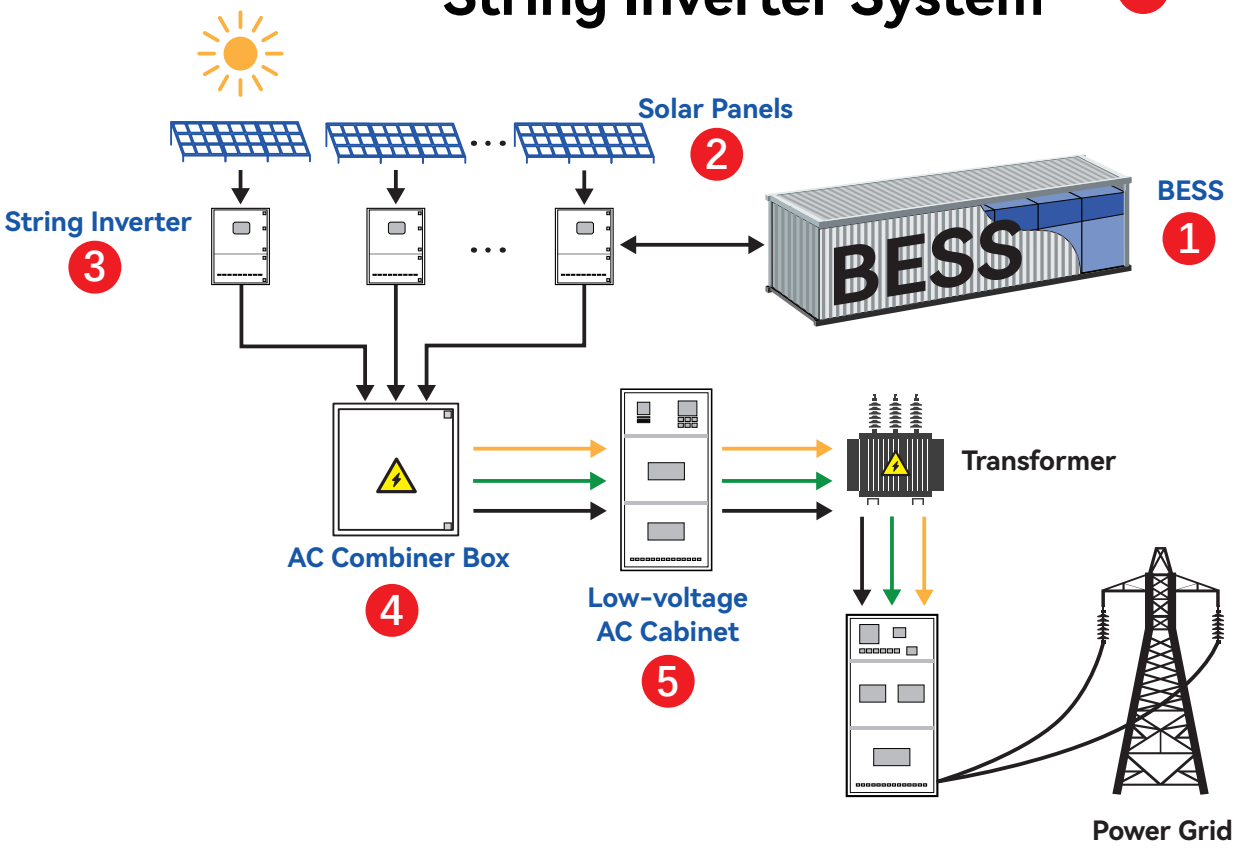
Central Inverter System

Code	Products	Series	Benefits	Features
4	DinRail SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15XL2 • LFR15XL3 • LFR15	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
5	DinRail SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15XL2	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
6	DinRail SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15 690 VAC	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability

Commercial Solar Energy Storage

String Inverter System

SETsafe | SETfuse Solution



SETsafe | SETfuse Products

2 Over Temperature Protection

2.1 Thermal-Link (DC-ATCO)-DC Alloy Type

3 Over Voltage Protection

3.1 Gas Discharge Tube (GDT)
3.2 Metal Oxide Varistor (MOV)
3.3 Thermally Protected Varistors (TFMOV)

4 Over Voltage Protection

4.1 Surge Protective Device (SPD)

Over Current Protection

4.2 Low Voltage Fuses (LV Fuses)

5 Over Voltage Protection

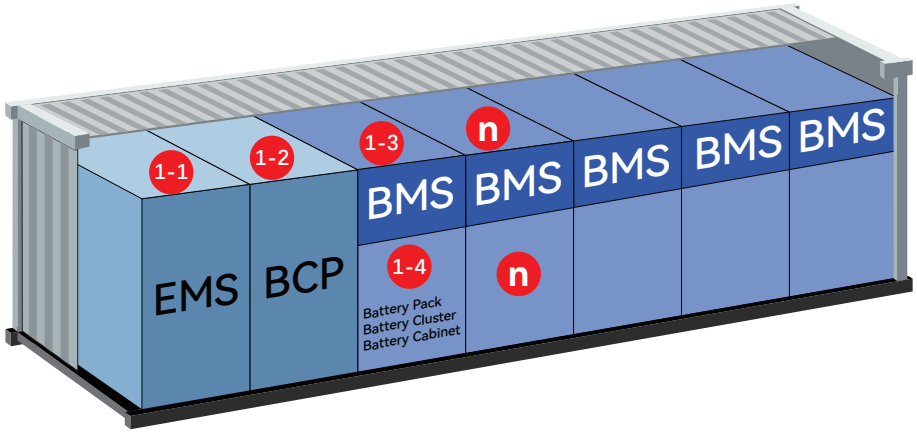
5.1 Surge Protective Device (SPD)

Over Current Protection

5.2 Low Voltage Fuses (LV Fuses)

SETsafe | SETfuse Solutions of Commercial Solar Energy Storage

1 BESS



EMC Protection Scheme

1-1.1 Gas Discharge Tube (GDT)

1-1.2 Transient Voltage Suppression Diodes (TVS Diodes)

Over Voltage Protection Solutions

1-2.1 Surge Protective Device (SPD)

Over Current Protection Solutions

1-2.2 Low Voltage Fuses (LV Fuses)

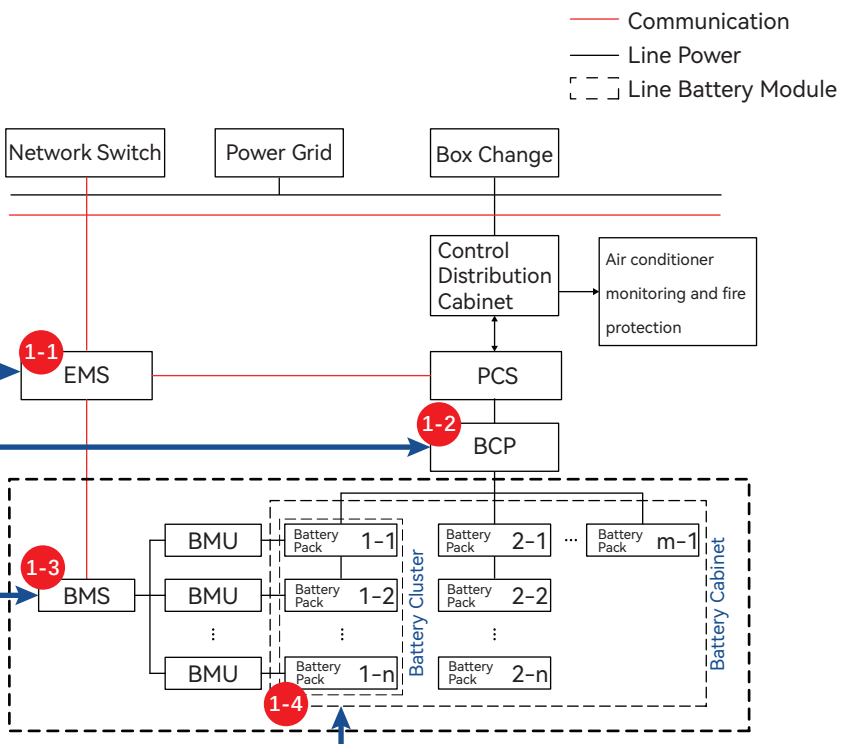
Secondary Protection Scheme and Surge Protection

1-3.1.1 Transient Voltage Suppression Diodes (TVS Diodes)

1-3.1.2 idea Thermal-Link (iTCO)

Over Current Protection Solutions

1-3.2.1 Miniature Fuses



Over Temperature Protection Solution

1-4.1.1 Thermal-Link (DC-ATCO) -DC Alloy Type

Over Current Protection Solutions

1-4.2.1 Low Voltage Fuses (LV Fuses)

1-4.2.2 Module Thermal Protector (MTP)

Features and Benefits of SETsafe | SETfuse Solutions

String Inverter System

Code	Products	Series	Benefits	Features
1-1	TVS	• SMCJ • SMDJ • SP0080TBLC	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	GDT	• TZ091A • TZ231A • SX091	• Overvoltage protection for dataline • Comply with IEC61000-4-5 • SMD mount, compact size	• Surge rating 1 ~ 5 kA at 8/20 μs • 1210 SMD packing • Voltage rating 90 ~ 230 V
1-2	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15 690 VAC	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
1-3	TVS	• SMBJ • SMCJ • SMDJ • 0.5SMDJ	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	iTCO	• TKT150 • TRR150 • THU145 • TKS150	• Low impedance • Low power consumption • One time function, no resettable • Active over-temperature protection • Comply with UL1973, IEC62619 active protection • As redundant protection	• Main circuit fusing time ≤ 60 s • Main circuit impedance ≤ 0.1 mΩ • Surge withstanding capacity up to 40kA • Patented
	Minifuse	• SCF1032 • SCF6125	• Pb free • Available for AC and DC system	• SMD mount • One time function, no resettable • Available for reflow soldering up to 300 ℃ • Fast response
1-4	DC-ATCO	• TG125C • RSK140	• High DC interrupting capacity • Low impedance • Low power consumption • One time function, no resettable • Vibration resistance	• Rated current 10 ~ 200 A • Rated voltage 60 ~ 850 VDC • Rated functioning temperature 76 ~ 230 ℃ • Unique design
	LV Fuses	• LFR15XL2 • LFR15XL3 • LFR15	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
	MTP	• MTP1560	• Combine thermal fuse and busbar • One time function, no resettable • Thermal and electric separated protection is available • Compact size • Customized	• Thickness less than ≤ 3 mm • Rated current 15 A • Rated voltage 60 VDC • Rated functioning temperature 86 ~ 102 ℃
		• ALW125	• Flat design, can be installed inside of battery module • Copper bar with over temperature protection • Thermal and electric separated protection is available • One time function, no resettable	• Rated current 300 A • Rated voltage 100 VDC • Transient current impact 1200 A/ 3ms
2	DC-ATCO	• AYH	• Solar cable connector overheating protection	• Unique design

Features and Benefits of SETsafe | SETfuse Solutions

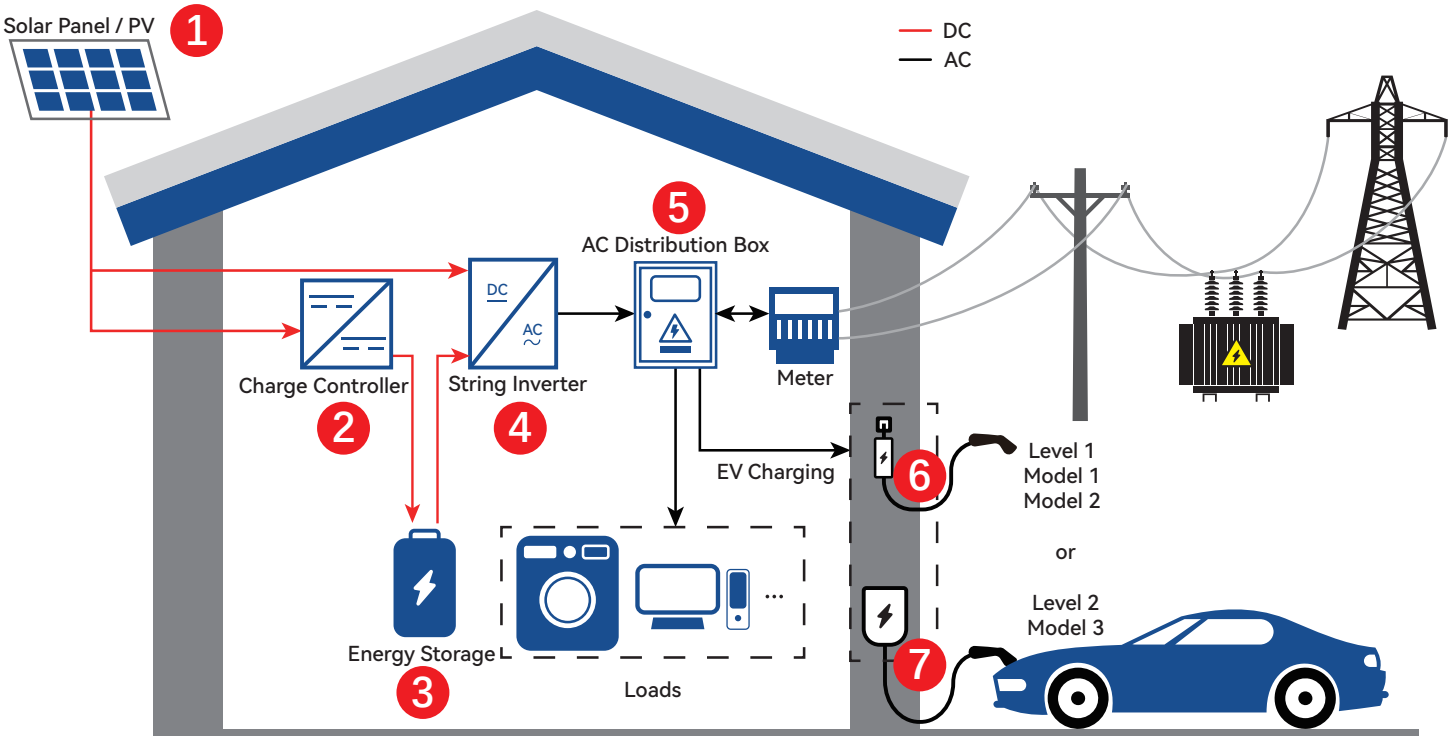
String Inverter System

Code	Products	Series	Benefits	Features
3	TFMOV	• TFMOV10M • TFMOV20M • TFMOV25M	• Over-temperature Protection • No arc risk • Different size for options • Mechanical tripping, fast response • Reliable function	• Nanosecond response time • V0 Flame retardant housing • I_n 10 kA, 20 kA, 25 kA optional • I_{max} 25 kA, 40 kA, 50 kA optional
	MOV+GDT	• SFV20D + SD	• No leakage current, no follow current, longer lifespan • Small size	• I_n 5 kA • I_{max} 10 kA
4	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15 690 VAC	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
5	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15 690 VAC	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability

Home Solar Energy Storage

String Inverter System

SETsafe | SETfuse Solution



SETsafe | SETfuse Products

1 Over Temperature Protection

1.1 Thermal-Link (DC-ATCO)-DC Alloy Type

2 Over Voltage Protection

2.1 Transient Voltage Suppression Diodes (TVS)

3 Over Voltage Protection

3.1 Transient Voltage Suppression Diodes (TVS)

Over Current Protection

3.2 Low Voltage Fuses (LV Fuses)

Active Protection

3.3 idea Thermal-Link (iTCO)

4 Over Voltage Protection

4.1 Metal Oxide Varistor (MOV)
4.2 Gas Discharge Tube (GDT)
4.3 Thermally Protected Varistors (TFMOV)

5 Over Voltage Protection

5.1 Surge Protective Device (SPD)

Over Current Protection

5.2 Low Voltage Fuses (LV Fuses)

6 Over Voltage Protection

6.1Metal Oxide Varistor (MOV)
6.2 Gas Discharge Tube (GDT)
6.3 Thermally Protected Varistors (TFMOV)

7 Over Voltage Protection

7.1 Metal Oxide Varistor (MOV)
7.2 Gas Discharge Tube (GDT)
7.3 Thermally Protected Varistors (TFMOV)
7.4 Surge Protective Device (SPD)

Features and Benefits of SETsafe | SETfuse Solutions

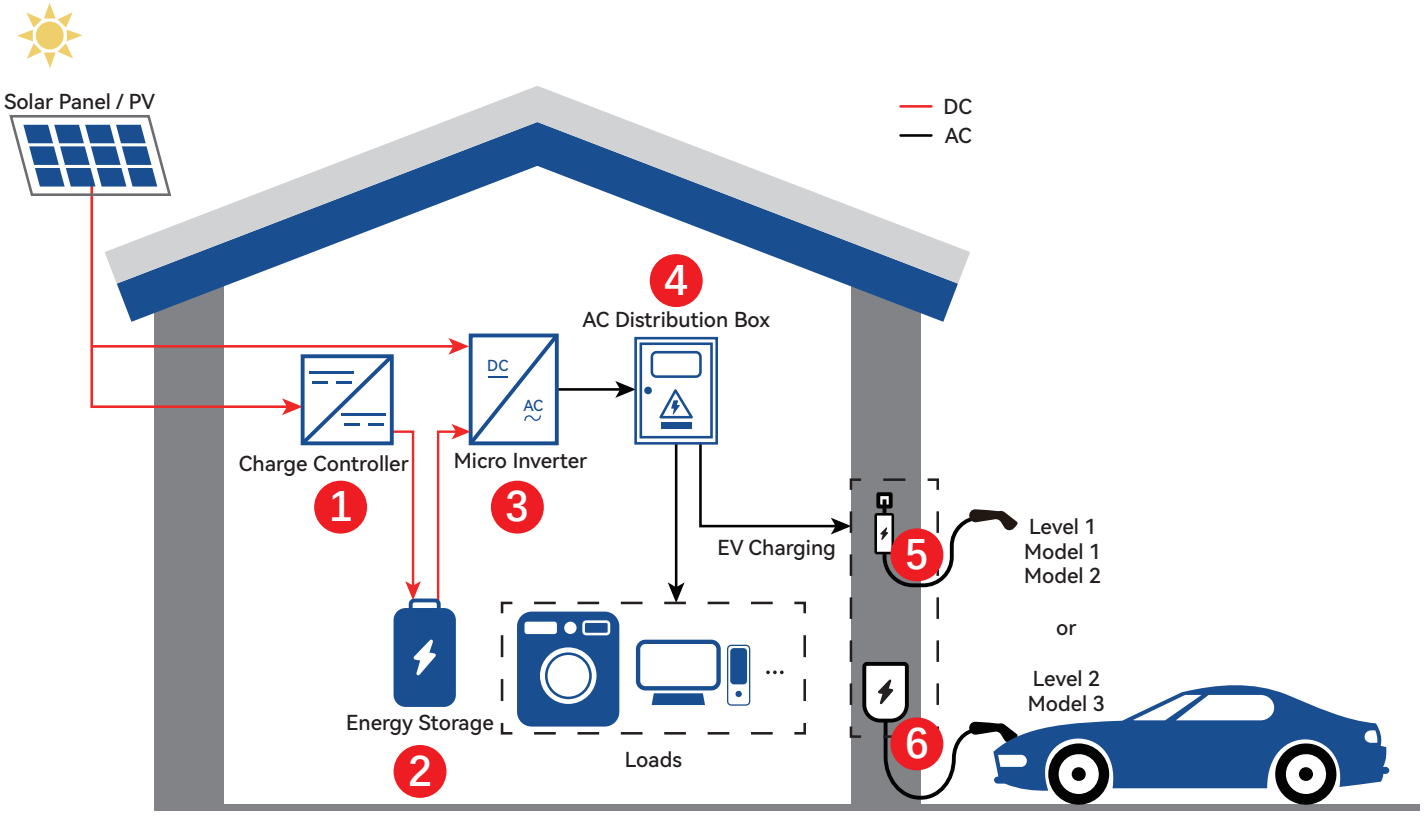
String Inverter System

Code	Products	Series	Benefits	Features
1	DC-ATCO	• AYH	• Solar cable connector overheating protection	• Unique design
2	TVS	• SMCJ	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
3	iTCO	• TKS150	• Low impedance • Low power consumption • One time function, no resettable • Active over-temperature protection • Comply with UL1973, IEC62619 active protection • As redundant protection	• Main circuit fusing time ≤ 60 s • Main circuit impedance ≤ 0.1 mΩ • Surge withstanding capacity up to 40kA • Patented
	TVS	• SMCJ	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	LV Fuses	• 10X38	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Fusing at mimisecond • Fast response • High reliability
4	TFMOV	• TFMOV10M • TFMOV20M	• Over-temperature Protection • No arc risk • Different size for options • Mechanical tripping, fast response • Reliable function	• Nanosecond response time • V0 Flame retardant housing • I_n 10 kA, 20 kA, optional • I_{max} 25 kA, 40 kA, optional
	MOV+GDT	• SFV20D + SE	• No leakage current, no follow current, longer lifespan • Small size	• I_n 5 kA • I_{max} 10 kA
5	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15 690 VAC	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
6	TFMOV	• TFMOV10M • TFMOV20M	• Over-temperature Protection • No arc risk • Different size for options • Mechanical tripping, fast response • Reliable function	• Nanosecond response time • V0 Flame retardant housing • I_n 20 kA • I_{max} 40 kA
	MOV+GDT	• SFV20D + SE	• No leakage current, no follow current, longer lifespan • Small size	• I_n 5 kA • I_{max} 10 kA
7	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	TFMOV	• TFMOV10M • TFMOV20M	• Over-temperature Protection • No arc risk • Different size for options • Mechanical tripping, fast response • Reliable function	• Nanosecond response time • V0 Flame retardant housing • I_n 20 kA • I_{max} 40 kA
	MOV+GDT	• SFV20D + SE	• No leakage current, no follow current, longer lifespan • Small size	• I_n 5 kA • I_{max} 10 kA

Home Solar Energy Storage

Micro Inverter System

SETsafe | SETfuse Solution



SETsafe | SETfuse Products

1 Over Voltage Protection

1.1 Transient Voltage Suppression Diodes (TVS)

2 Over Voltage Protection

2.1 Transient Voltage Suppression Diodes (TVS)

Over Current Protection

2.2 Low Voltage Fuses (LV Fuses)

Active Protection

2.3 idea Thermal-Link (iTCO)

3 Over Voltage Protection

3.1 Surge Protective Device (SPD)
3.2 Metal Oxide Varistor (MOV)
3.3 Thermally Protected Varistors (TFMOV)

Over Current Protection

3.2 Miniature Fuses (Mini Fuses)

4 Over Voltage Protection

4.1 Surge Protective Device (SPD)

Over Current Protection

4.2 Low Voltage Fuses (LV Fuses)

5 Over Voltage Protection

5.1 Gas Discharge Tube (GDT)
5.2 Metal Oxide Varistor (MOV)
5.3 Thermally Protected Varistors (TFMOV)

6 Over Voltage Protection

6.1 Gas Discharge Tube (GDT)
6.2 Metal Oxide Varistor (MOV)
6.3 Thermally Protected Varistors (TFMOV)
6.4 Surge Protective Device (SPD)

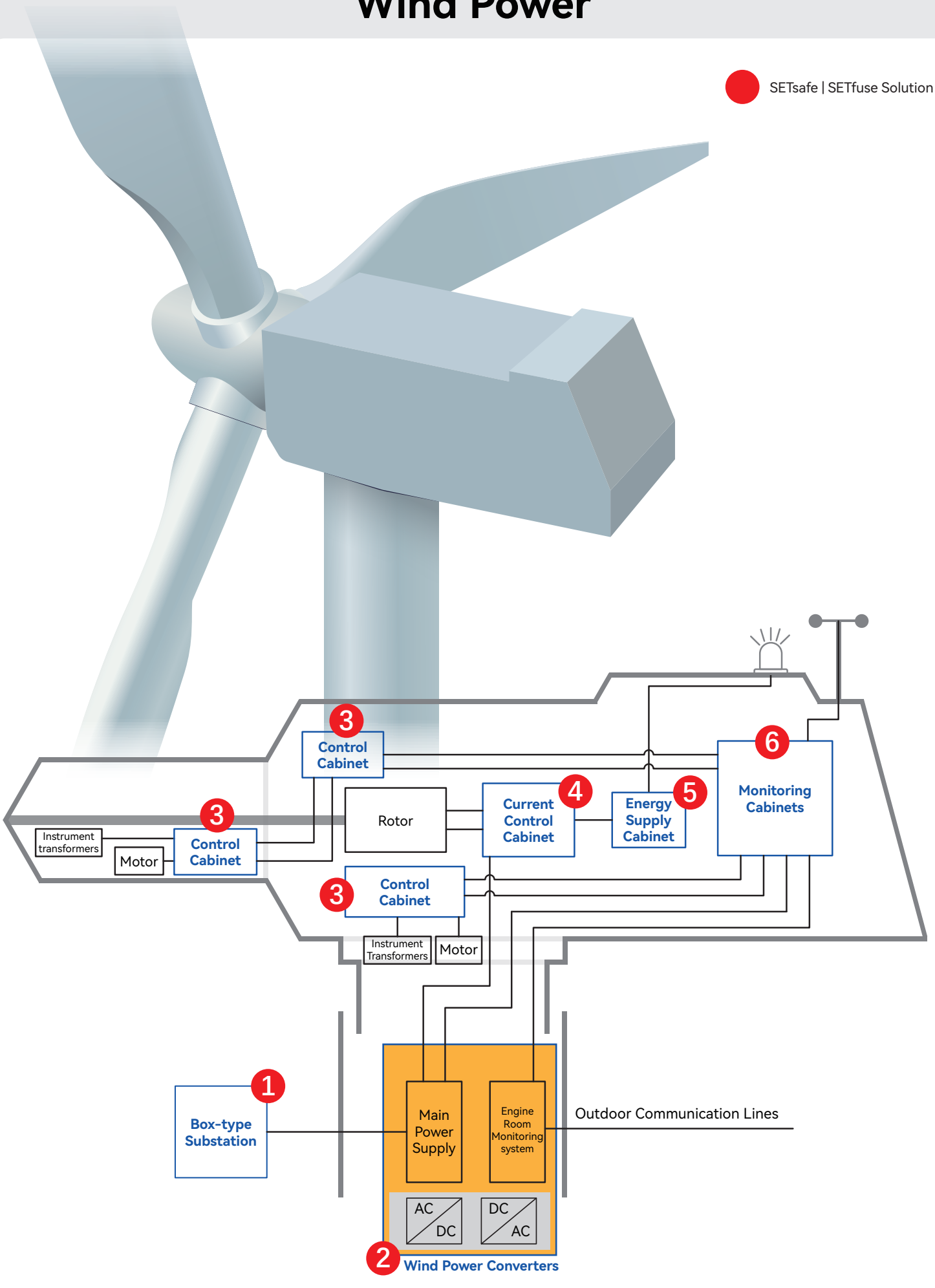
Features and Benefits of SETsafe | SETfuse Solutions

Micro Inverter System

Code	Products	Series	Benefits	Features
1	TVS	• SMCJ	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
2	iTCO	• TKS150	• Low impedance • Low power consumption • One time function, no resettable • Active over-temperature protection • Comply with UL1973, IEC62619 active protection • As redundant protection	• Main circuit fusing time ≤ 60 s • Main circuit impedance ≤ 0.1 mΩ • Surge withstanding capacity up to 40kA • Patented
	TVS	• SMCJ	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	LV Fuses	• 10X38	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Fusing at mimisecond • Fast response • High reliability
3	TVS	• SPCL15-380C	• Fast response • Low clamping voltage • Big surge rating 15 kA	• Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	MOV+GDT	• SFV20D + SD	• No leakage current, no follow current, longer lifespan • Small size	• I_n 5 kA • I_{max} 10 kA
	Minifuse	• SCF1032 • SCF6125	• Pb free • Available for AC and DC system	• SMD mount • One time function, no resettable • Available for reflow soldering up to 300 ℃ • Fast response
4	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15 690 VAC	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
5	TFMOV	• TFMOV10M • TFMOV20M	• Over-temperature Protection • No arc risk • Different size for options • Mechanical tripping, fast response • Reliable function	• Nanosecond response time • V0 Flame retardant housing • I_n 20 kA • I_{max} 40 kA
	MOV+GDT	• SFV20D + SD	• No leakage current, no follow current, longer lifespan • Small size	• I_n 5 kA • I_{max} 10 kA
6	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	TFMOV	• TFMOV10M • TFMOV20M	• Over-temperature Protection • No arc risk • Different size for options • Mechanical tripping, fast response • Reliable function	• Nanosecond response time • V0 Flame retardant housing • I_n 20 kA • I_{max} 40 kA
	MOV+GDT	• SFV20D + SD	• No leakage current, no follow current, longer lifespan • Small size	• I_n 5 kA • I_{max} 10 kA

Wind Power

SETsafe | SETfuse Solution



Features and Benefits of SETsafe | SETfuse Solutions

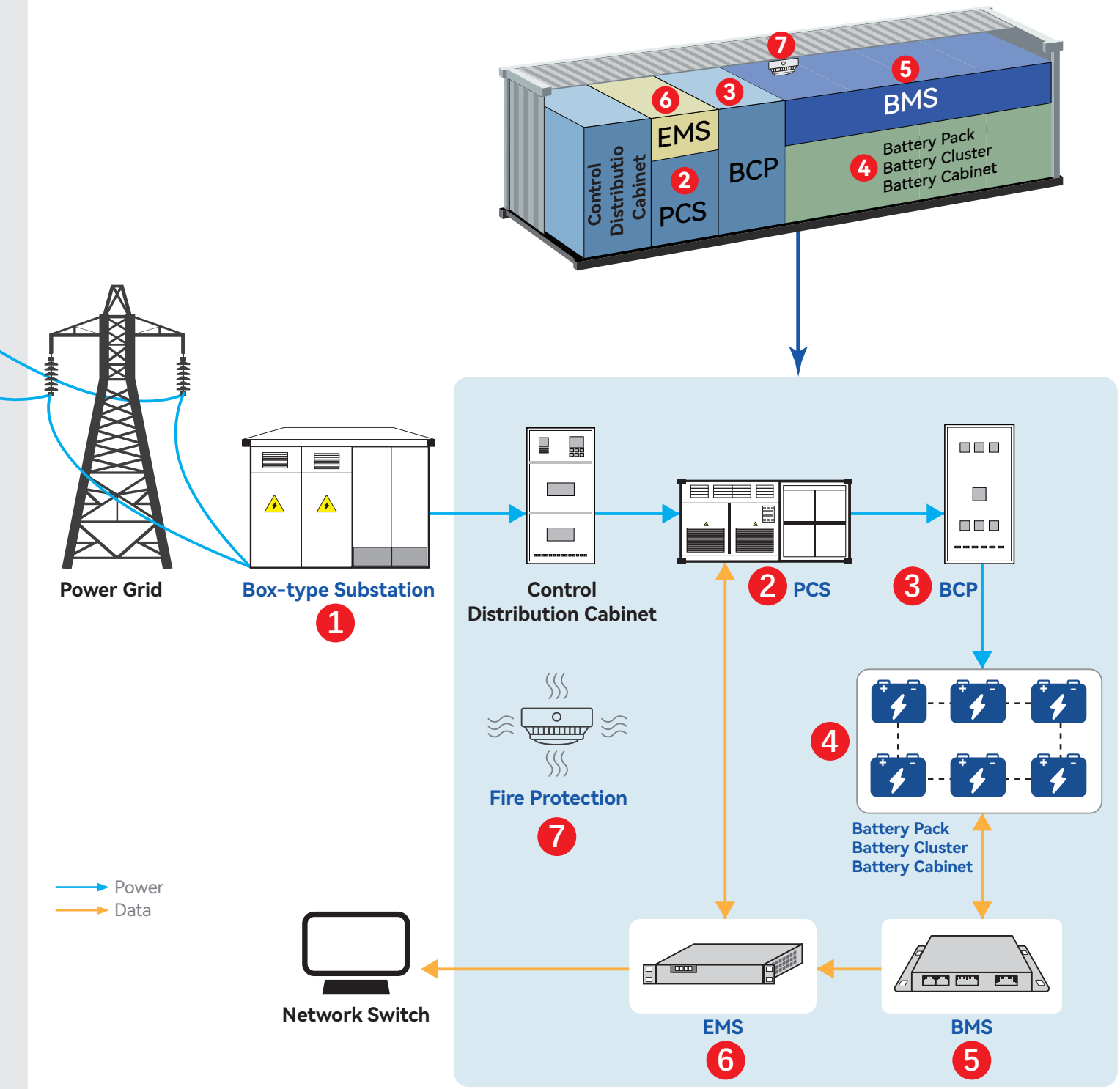
Wind Power System

Code	Products	Series	Benefits	Features
1 2 3 4 5	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15XL3	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
6	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment

Transmission & Distribution Substation

Energy Storage

SETsafe | SETfuse Solution



Energy Storage

SETsafe | SETfuse Products

1 Over Voltage Protection

1.1 Surge Protective Device (SPD) 

2 Over Voltage Protection

2.1 Thermally Protected Varistors (TFMOV)
2.2 Surge Protective Device (SPD) 

Over Current Protection

2.3 Low Voltage Fuses (LV Fuses) 

3 Over Voltage Protection

3.1 Surge Protective Device (SPD) 

Over Current Protection

3.2 Low Voltage Fuses (LV Fuses) 

4 Over Temperature Protection

4.1 Thermal-Link (DC-ATCO)-DC Alloy Type 

Over Current Protection

4.2 Low Voltage Fuses (LV Fuses) 
4.3 Module Thermal Protector (MTP) 

5 Over Voltage Protection

5.1 Transient Voltage Suppression Diodes (TVS) 

Over Current Protection

5.2 Low Voltage Fuses (LV Fuses) 

Active Protection

5.3 idea Thermal-Link (iTCO) 

6 Over Voltage Protection

6.1 Transient Voltage Suppression Diodes (TVS) 
6.2 Gas Discharge Tube (GDT) 

7 Over Temperature Protection

6.1 Thermal-Link (OTCO)-Organic Type 

Features and Benefits of SETsafe | SETfuse Solutions

Energy Storage

Code	Products	Series	Benefits	Features
1	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
2	TFMOV	• TFMOV10M • TFMOV20M	• Over-temperature Protection • No arc risk • Different size for options • Mechanical tripping, fast response • Reliable function	• Nanosecond response time • V0 Flame retardant housing • I_n 20 kA • I_{max} 40 kA
	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15XL2 • LFR15XL3 • LFR15	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
3	DINRAIL SPD	• SD25T	• Over-temperature Protection • Plug Modules, easy replace • I_{max} up to 50 kA for single mode • Suit for hazardous environment • IEC/EN 61643-11, T1 and T2 certificated • U / Y construction options	• I_n 25 kA • I_{max} 5.0 ~ 12.5 kA • MCOV 180 ~ 1500 VDC Optional • IP20 Enclosure Protection • 0 ~ 5000 M altitude working environment
	LV Fuses	• LFR15XL2 • LFR15XL3	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
4	DC-ATCO	• TG125C • RSK140	• High DC interrupting capacity • Low impedance • Low power consumption • One time function, no resettable • Vibration resistance	• Rated current 10 ~ 200 A • Rated voltage 60 ~ 850 VDC • Rated functioning temperature 76 ~ 230 ℃ • Unique design
	LV Fuses	• LFR15XL2 • LFR15XL3 • LFR15	• Low temperature rise • Low power consumption • Low I^2t • Outstanding current limiting capacity	• Interrupting capacity up to 100 kA • Fusing at mimisecond • Fast response • High reliability
	MTP	• MTP1560	• Combine thermal fuse and busbar • One time function, no resettable • Thermal and electric separated protection is available • Compact size • Customized	• Thickness less than ≤ 3 mm • Rated current 15 A • Rated voltage 60 VDC • Rated functioning temperature 86 ~ 102 ℃
		• ALW125	• Flat design, can be installed inside of battery module • Copper bar with over temperature protection • Thermal and electric separated protection is available • One time function, no resettable	• Rated current 300 A • Rated voltage 100 VDC • Transient current impact 1200 A/ 3ms
5	TVS	• SMBJ • SMCJ • SMDJ • 0.5SMDJ	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	Minifuse	• SCF1032 • SCF6125	• Pb free • Available for AC and DC system	• SMD mount • One time function, no resettable • Available for reflow soldering up to 300 ℃ • Fast response

Features and Benefits of SETsafe | SETfuse Solutions

Energy Storage

Code	Products	Series	Benefits	Features
5	iTCO	• TKT150 • TRR150 • THU145 • TKS150	• Low impedance • Low power consumption • One time function, no resettable • Active over-temperature protection • Comply with UL1973, IEC62619 active protection • As redundant protection	• Main circuit fusing time ≤ 60 s • Main circuit impedance ≤ 0.1 mΩ • Surge withstanding capacity up to 40kA • Patented
6	TVS	• SMCJ • SMDJ • SP0080TBLC	• Fast response • Low clamping voltage • SMD mount, compact size	• Power surge 600 ~ 5000 W • Operating temperature (-55 ~ 150) ℃ • Low clamping ratio less than 1.3
	GDT	• TZ091A • TZ231A • SX091	• Overvoltage protection for dataline • Comply with IEC61000-4-5 • SMD mount, compact size	• Surge rating 1 ~ 5 kA at 8/20 μs • 1210 SMD packing • Voltage rating 90 ~ 230 V
7	OTCO	• RJ	• Normally open to normally close	• Temperature accuracy ±2℃ • One time function, no resettable • Compact size • Metal case

What

can do for you

MISSION

PROVIDING A TOTAL SOLUTION FOR HIGH STANDARD SAFETY CIRCUIT PROTECTION.

SETsafe | SETfuse was established in 2000 in Xiamen, China. We have a presence in more than 40 countries and regions recognising our products. Some of the world's 500 fortune companies are our valuable customers. We have pioneered, innovated & developed several products exclusively. Products are compliance with CCC, UL, cUL, VDE, TUV, PSE, KC, IATF16949, ISO9001, ISO14001, ISO45001, GB/T29490 certificates. We are in one of the core participating teams for revising and setting several national & international standards in the field of Circuit Protection.

SETsafe | SETfuse Key Markets: Telecom, Surge Protector, Power, New Energy, Lighting, Home Appliances, Mobile Devices, Medical, etc.

SETsafe | SETfuse


PV System in SETsafe | SETfuse Industrial Park

SETsafe | SETfuse Benefits

20+

Over 20 years of DESIGNING, MANUFACTURING AND SELLING of circuit protection components

40+

Sold to more than 40 countries and regions

Automatic

Automatic process production

500

A brand chosen by fortune 500 companies

Test Center

Safety, Accuracy, Equity, Efficiency

1000+

More than 1000 testing items

300+

More than 300 sets of specialized testing equipment

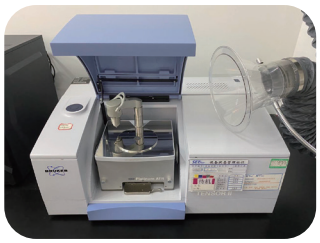
Standards

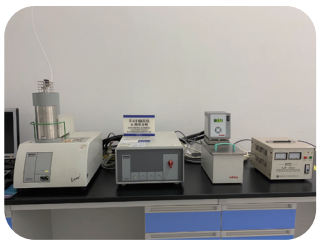
The laboratory has the testing capabilities of IEC international standards, EN European standards, UL standards, and national and industry standards

WTDP

The laboratory has obtained the qualification of UL under Witnessed Test Data Program(WTDP) and the accreditation qualification by TUV Rheinland

Some Test Equipment





The testing focus of the laboratory covers material analysis class, temperature test class, environmental test class, electrical test class, lightning current test class, with more than 1000 testing items.

The laboratory has the testing capabilities of IEC international standards, EN European standards, UL standards, and national and industry standards.

Test items include Marking test, Tensile test, Thrust test, Creepage distances and clearances, Dielectric strength, Insulation resistance, Holding temperature, Functioning temperature, Maximum temperature limit, Ageing, Varistor voltage, Leakage current, Voltage proof.....

WTDP

SETsafe | SETfuse Obtained Permanent Authorization:

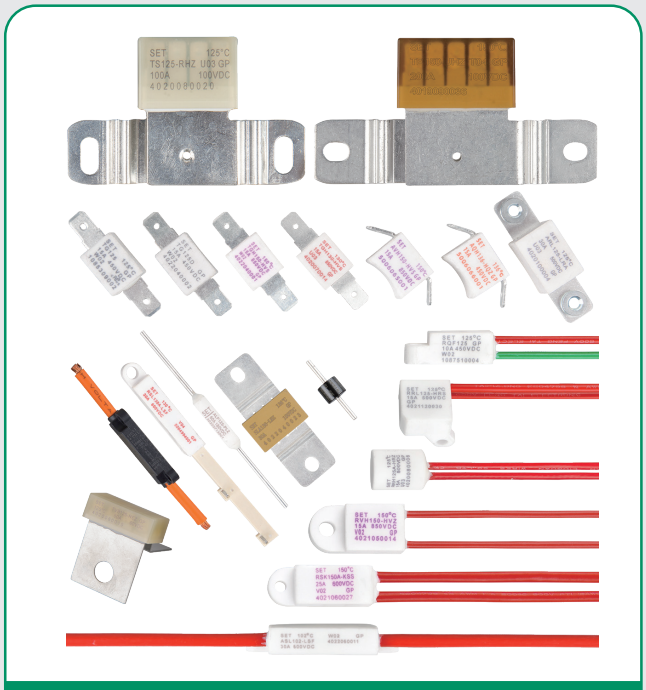
- IEC 60691:2015+A1
- EN 60691:2016+A1
- IEC 61051-1:2018
- EN IEC 61051-1:2018
- IEC 61051-2:1991+A1
- IEC 61051-2-2:1991
- IEC 62368-1:2020 Annex G.8
- EN IEC 62368-1:2020 Annex G.8
- EN 50539-11:2013+A1
- IEC 61643-11:2011
- EN 61643-11:2012+A11
- IEC 61643-21:2012
- EN 61643-21:2001+A1+A2
- IEC 61643-31:2018
- EN 61643-31:2018

SETsafe | SETfuse Obtained Permanent Authorization:

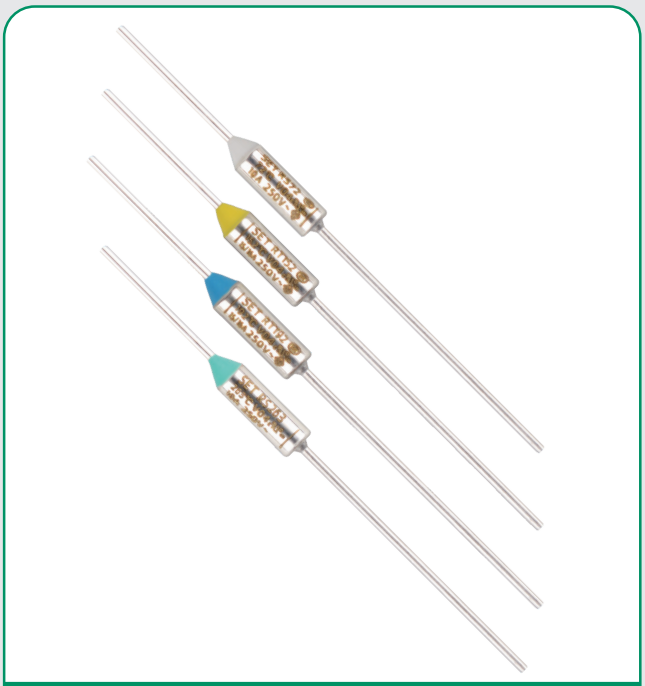
- UL 60691,CSA C22.2 NO.60691:19.
- UL 1449, EDITION 5, ISSUE DATE 01/08/2021 (Surge Protective Devices).
- UL 1434, EDTION 1, REVISION DATE 05/18/2020 (THERMISTOR-TYPE DEVICES).
- CSA Component Acceptance Service, T.I.L, Class No.9073-31, ISSUE DATE 07/09/1991.
- CSA C22.2 No.269.5, EDITION 2, ISSUE, DATE 09/2017 (Surge Protective Devices – Type 5 - Components).
- CSA C22.2 No.269.4, EDITION 2, ISSUE, DATE 03/2017 (Surge Protective Devices – Type 4 - Component Assemblies).

Over Temperature Protection

Thermal-Link (ATCO) | Alloy Type



Thermal-Link (DC-ATCO) | DC Alloy Type

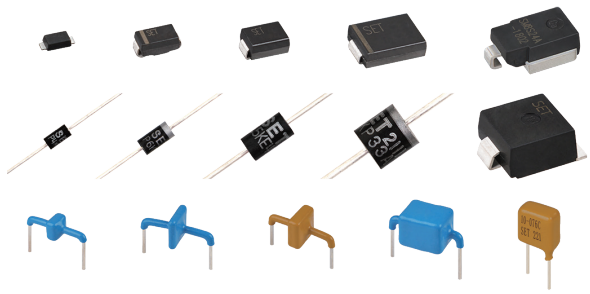


Thermal-Link (OTCO) | Organic Type

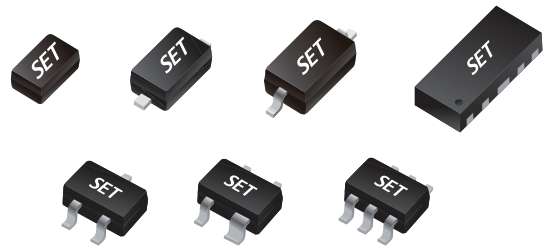
Thermal Protector (TMS) | Resettable Type

SETsafe | SETfuse Circuit Protection Components Main Products

Over Voltage Protection



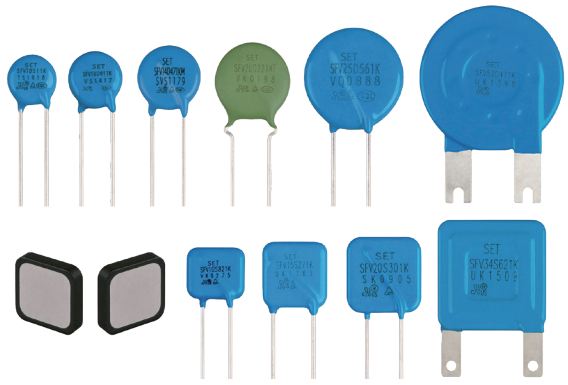
Transient Voltage Suppression Diodes
(TVS Diodes)



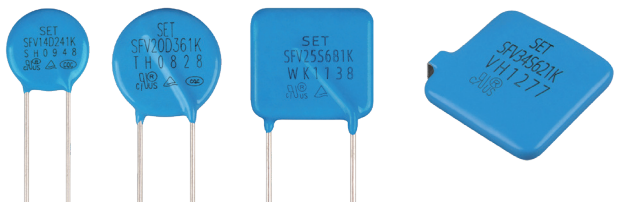
ESD TVS Diode Arrays
(ESD TVS)

Thyristor Surge Suppressor
(TSS)

Gas Discharge Tube
(GDT)



MOV Metal Oxide Varistor & MOV Disk | **Standard** Type

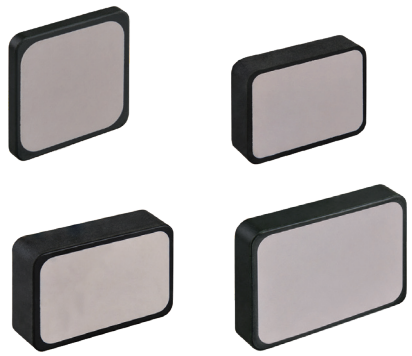


MOV Metal Oxide Varistor | **High Surge** Type

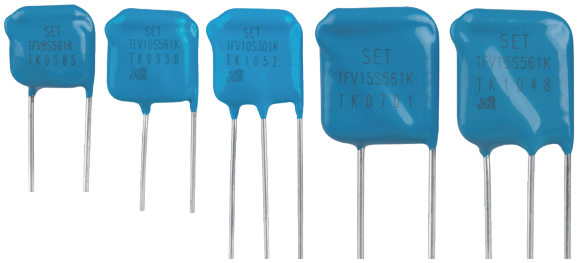
SETsafe | SETfuse

SETsafe | SETfuse Circuit Protection Components Main Products

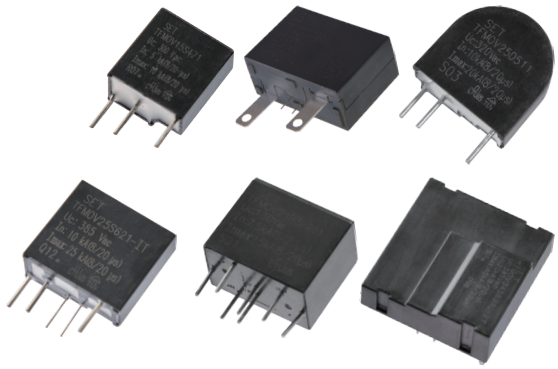
Over Voltage Protection



MOV Disk | **T1**
Lightning Protection Type



Thermal Fuse Varistor
(TFV)



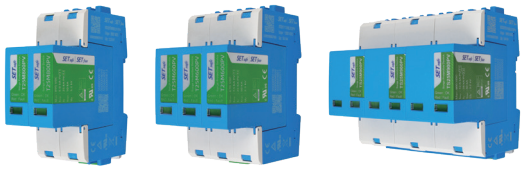
Thermal Fuse & MOV
(TFMOV)

Thermally Protected Varistors
(TFMOV)

Surge Protective Devices Module
(SPD-M)

SPD (Low-voltage Power Systems)

Over Voltage Protection



SPD (PV System)

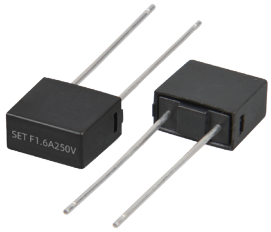
SPD (Outdoor Lighting)

SPD (Signaling Networks)

SETsafe | SETfuse Circuit Protection Components Main Products

Over Current Protection

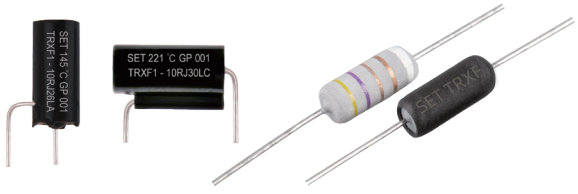
Mini Fuses | **CFL**
Cartridge Fuse-links



Mini Fuses | **SFL**
Sub-miniature Fuse-links

Mini Fuses | **SMFL**
Surface Mount Fuse-links

Fusible Wire wound Resistor
(RXF)



Thermal-Link & Fusing Resistor
(TRXF)

Thermally Protected Resistor
(TPR)

SETsafe | SETfuse

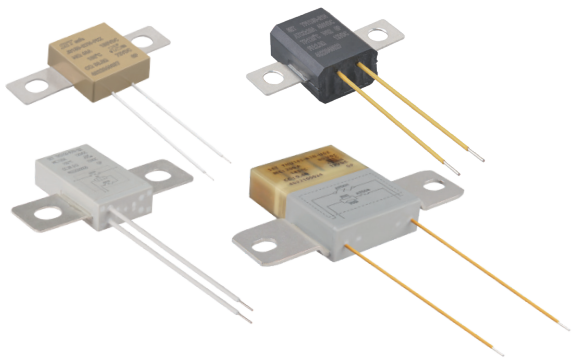
SETsafe | SETfuse Circuit Protection Components Main Products

Over Current Protection

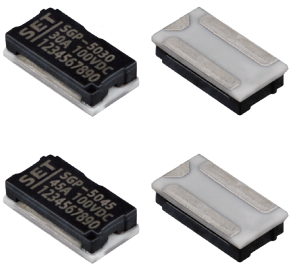
Inrush Current Limiting NTC Thermistor
(NTC)

Low Voltage Fuses
(LV Fuses)

Active Protection



idea Thermal-Link
(iTCO)



Thermal Break Protector
(TBP)

.END.

Providing a Total Solution for High Standard Safety Circuit Protection

Websites

Additional information can be found on
www.SETsafe.com
www.SETfuse.com

Products E-Catalogs

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https://www.setsafe.com/Catalog/mobile/index.html

Products Category Links

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Over Voltage Protection
https://setsafe.com/Product/Over-Voltage-Protection.html

Over Current Protection
https://setsafe.com/Product/Over-Current-Protection.html

Active Protection
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Product Catalog & Datasheet Download Link

https://setsafe.com/Support/Datasheet-Download.html

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