



800 V AC Fusegear

Fusegear for string inverter protection



- Enhanced performance
- Convenience and ease
- Safety and protection

ABB's fusegear with improved performance is ready for the trend towards higher voltages up to 1000 V AC in photovoltaic installations.

InLinell, EasyLine XLP and SlimLine XRG offer high performance, safety, convenience and ease for AC combiners and switchboards.

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Fusegear for string inverter protection

1000 V AC photovoltaic installations

The use of string inverters for large photovoltaic systems with 20MW or less of installed power is set to increase. Operating at higher voltages reduces the transmission losses and cabling costs of these plants, while limiting the impact of any faults, reducing downtime and maximizing productivity.

Higher voltage ratings are often combined with multi MPPT string inverters that require fewer DC combiner boxes and less wiring complexity. Those Inverters are smaller, lighter and easier to handle, making installations and replacements manageable with less staff.

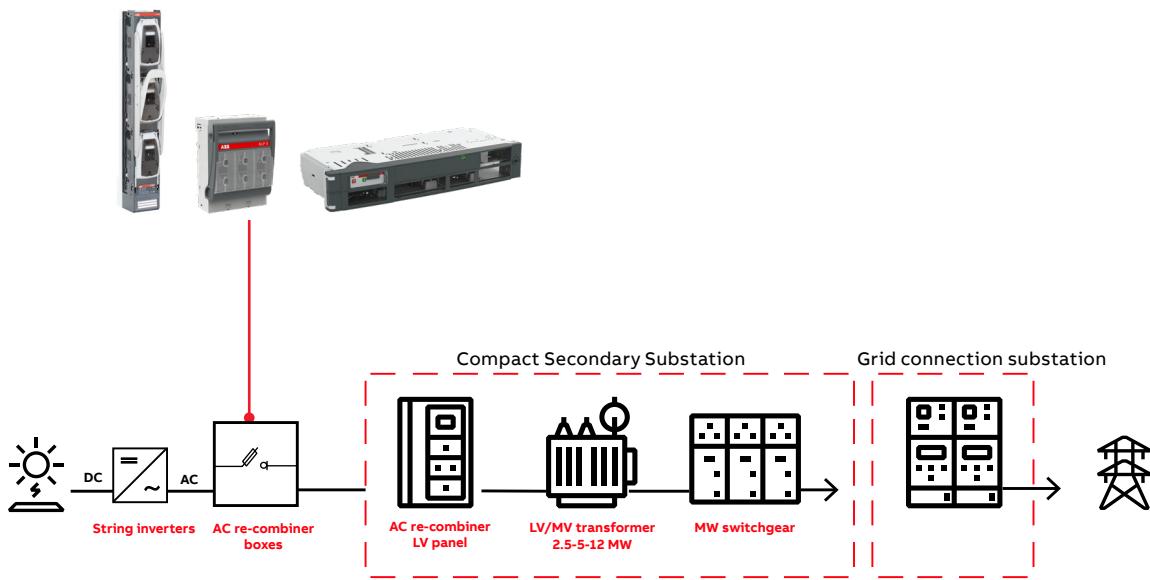
Higher voltage also helps photovoltaic plants to increase the power density inside inverters. This brings benefits like easier logistics, installation times are shorter and wiring costs are lower, leading to significant overall savings of up to 20 percent.

ABB's fusegear with improved performance is ready for the future trend towards higher voltages, up to 1000 V AC and reduces power losses between the inverter at the low voltage side and medium voltage side. InLinell, EasyLine XLP and SlimLine XRG are compact and easy to install solutions for AC combiners and switchboards.

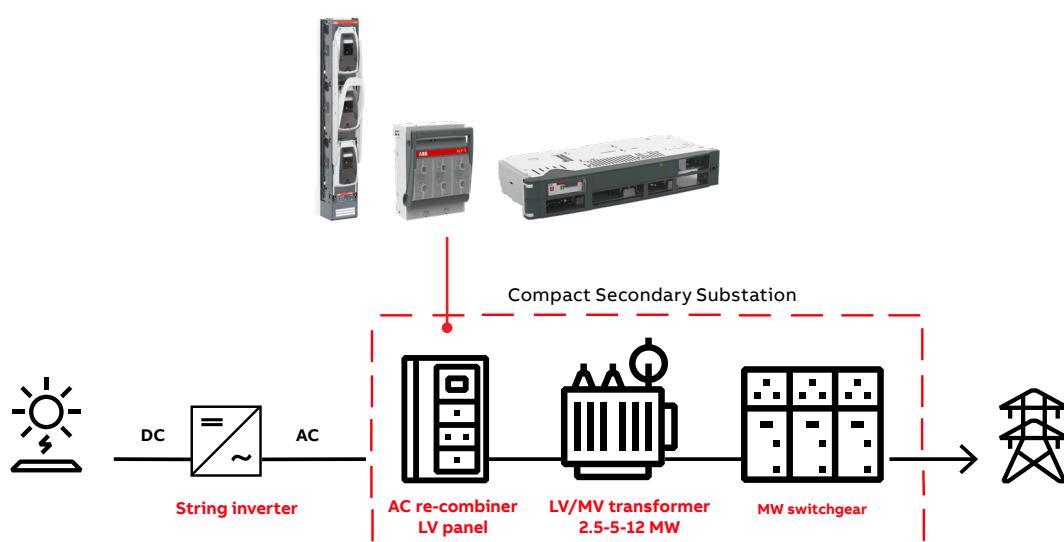


Fusegear for string inverter protection

Application examples



01 Example of a photovoltaic installation, where fusegear could be used as protection device in AC combiners



02 Inverter connected to protective devices (fusegear) inside the Compact Secondary Substation (CSS)

Fusegear for string inverter protection

Ready for current and future requirements

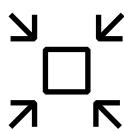
ABB fusegear is ready to meet current and future requirements for safe and reliable switching and protection in photovoltaic installations.



High performance

- 800/1000 V AC rated
- AC-22B utilization categories with a rated operational current of up to 630 A
- Short circuit protection up to 120 kA

**800/1000 V AC
ratings, utilization
category AC-22B**



Convenience and ease

- Solutions for 50 mm, 60 mm, 100 mm and 185 mm busbar distance available
- Wide variety of cable terminals enables a flexible installation

**Short circuit
capacity up to
120 kA**



Safety and protection

- Two versions available: essential and enhanced safety with EFM
- Electronic Fuse Monitoring (EFM) functionality available up to 800 V AC
- High degree of protection from the front, starting from IP30 in closed position

**Electronic Fuse
Monitoring
available up to
800 V AC**



Fusegear for string inverter protection

Product overview



InLine II fuse switch disconnectors

- Suitable in AC combiner boxes, typically used in non-segregated panels
- Allows reduced dimension installations especially in vertical installations
- Rated operational current up to 1000 V AC
- AC-22B utilization category, with a rated operational current of up to 630 A
- Short circuit protection up to 120 kA
- Available in essential configuration and enhanced configuration with factory mounted electronic fuse monitoring



EasyLine XLP fuse switch disconnectors

- Suitable for power distribution panels and in AC combiner boxes, typically used in segregated panels
- Mounted in horizontal position, allows to realize easy segregation
- Rated up to operational current up to 1000 V AC
- AC-22B utilization categories with a rated operational current of up to 400 A
- Short circuit protection up to 120 kA
- Available in essential configuration and enhanced configuration, with EFM accessories or factory mounted EFM



SlimLine XRG switch disconnector fuses

- Suitable for AC combiner boxes and switchboards
- Integrated motor operation unit allows remote operation
- Rated up to operational current up to 800 V AC
- AC-22B utilization categories with a rated operational current of up to 250 A
- Short circuit protection up to 100 kA
- Available in essential configuration and enhanced configuration with factory mounted electronic fuse monitoring



OFAZ -HV fuse bases

- The OFAZ-HV plastic fuse bases fulfill the highest requirements with a total safety concept and now are available with Ui and Ue 1000 V AC/DC
- Meet market requirements, no added niche features
- Simple, reliable and functional

Enhanced configurations

Electronic Fuse Monitoring (EFM)

ABB Fusegear products with enhanced configuration include EFM functionality for additional safety, serviceability and continuous operation.



Receive alarm and locate fault quickly



Ease serviceability



Minimize downtime

The Electronic Fuse Monitor (EFM) gives a remote alarm at any fault conditions if a fuse is blown and allows faults to be located quickly.

The EFM increases the ease of serviceability, minimizes downtime and provides additional safety.

The EFM unit is self supplied, which means no additional power supply is required.

The EFM functionality is available up to 800 V AC. The fuse status is also visible on the product, with red and green LEDs.



—
SlimLine XRG switch disconnectors,
enhanced configuration with EFM



—
EasyLine XLP fuse switch disconnectors,
enhanced configuration with EFM

More information is available in the product catalogues:



[SlimLine XRG - product catalogue](#)



[EasyLine XLP - product catalogue](#)



[InLinell - product catalogue](#)

Technical data

InLinell, EasyLine XLP, SlimLine XRG

Type	InLinell					EasyLine			SlimLine
	ZLBM 00-100	ZLBM 00 / ZHBM 00	ZLBM / ZHBM 1	ZLBM/ ZHBM 2	ZLBM / ZHBM 3	XLP00	XLP1	XLP2	XRG1
NH/HRC fuse link size acc. to IEC60269-2-and IEC60269-1	0	0	1	2	3	0	1	2	1
Rated operational voltage Ue [V AC]	500 / 690 / 800	400 / 500 / 690 / 800 / 1000	400 / 500 / 690 / 800 / 1000	400 / 500 / 690 / 800 / 1000	400 / 500 / 690 / 800 / 1000	400 / 500 / 690 / 800 / 1000	500 / 690 / 800	500 / 690 / 800	500 / 690 / 800
Rated operational current Ie [A]	160 / 125 / 125	160 / 160 / 125 / 125	250 / 250 / 250 / 250	400 / 400 / 400 / 400	630 / 630 / 630 / 630	125 / 160 / 125 / 125	250 / 200 / 250	400 / 315 / 400	250 / 250 / 250
Rated insulation voltage Ui [V AC]	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage Uimp [kV]	8	8	8	8	8	8	8	8	8
Fuse protected short circuit withstand current [kArms]	100 / 100 / 120	100 / 100 / 100 / 120	100 / 100 / 100 / 120	100 / 100 / 100 / 120	100 / 100 / 100 / 120	50 / 100 / 80 / 50 / 120	100/80/120	100 / 80 / 120	120 / 100 / 100
Fuse protected short circuit making [kArms]	100 / 100 / 120	100 / 100 / 100 / 120	100 / 100 / 100 / 120	100 / 100 / 100 / 120	100 / 100 / 100 / 120	50 / 100 / 80 / 50 / 120	100/80/120	100 / 80 / 120	120 / 100 / 100
Rated making breaking capacity	400 V	-	AC-23B	AC-23B	AC-23B	AC-23B	-	-	-
	500 V	AC-23B	AC-22B	AC-22B	AC-22B	AC-22B	AC-22B	AC-22B	AC-23A
	690 V	AC-22B	AC-21B	AC-21B	AC-21B	AC-21B	AC-21B	AC-21B	AC-23A
	800 V*	AC-22B	AC-22B	AC-22B	AC-22B	AC-22B	AC-22B	AC-22B	AC-22B
	1000 V**	-	AC-22B	AC-22B	AC-22B	AC-22B	-	-	-
Rated frequency (Hz)	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 61	50/60	50 / 60
Total power loss at Ith without fuses [W]	33,4	30,8 / 33,6	36,20 / 37,8		52,20 / 55,50	91,30 / 97,20	3,5	7,5	13
Max permis. power loss per fuse link Pv [W]	12 / 12 / 13	12	18 / 23 / 32	28 / 34 / 45	40 / 48 / 60	12	23	30	23 / 32 / 22
Degree of protection from the front acc. to IEC / EN 60529	Open	IP20	IP20	IP20	IP20	IP20	IP20	IP20	-
Degree of protection from the front acc. to IEC / EN 60529	Closed	IP30	IP30	IP30	IP30	IP30	IP 30	IP 30	IP41
Electrical durability, operating cycles	200	200	200	200	200	200	200	200	1000 / 1000 / 200
Mechanical durability, operating cycles	1400	1400	1400	800	800	1400	1400	800	7000 / 7000 / 1400

Type tested according to EN/IEC 60947-3

* Tested with gS or aR fuse

** Tested with aR fuse

Technical data

OFAZ-HV fuse bases

	OFAZ00_	OFAZ1_	OFAZ2_	OFAZ3_
For NH fuse links acc. to IEC60269-2	00/000	0/1	1/2	2/3
Rated operational voltage Ue* [VAC / V DC]	1000	1000	1000	1000
Rated operational current Ie [A]	160	250	400	630
Rated insulation voltage Ui * [VAC / V DC]	1000	1000	1000	1000
Conv. free air thermal current with fuse links Ith [A]	160	250	400	630
Conv. free air thermal current with solid links Ith [A]	200	320	500	800
Rated frequency [Hz]	50/60	50/60	50/60	50/60
Max. permis. power dissipation per fuse link Pa [W]	12	32	45	60
Current derating factors for max. temperature ¹⁾	35 °C 40 °C 50 °C	1 0,95 0,85	1 0,95 0,85	1 0,95 0,85
Ambient temperature range T amb [°C]	-25 ...+55	-25 ...+55	-25 ...+55	-25 ...+55
Rated operating mode	Uninterrupted	Uninterrupted	Uninterrupted	Uninterrupted
Mounting position	Vertical, horizontal	Vertical, horizontal	Vertical, horizontal	Vertical, horizontal
Pollution degree	3	3	3	3
Overvoltage category	III	III	III	III
Degree of protection	IP00 without covers, IP20 with covers			
Standards	IEC60269-2, DIN VDE 0636, DIN 43620			

¹⁾ OFAZ_ and OFAZ4_ types fuse bases derating needed as follows, please contact us for further information.

* According to IEC 60269-2 the designation of voltage by standard is AC and DC

For more information about OFAZ fuse bases, check the catalogue:



[OFAZ Fuse bases -
catalogue](#)





Order information

InLine II

Essential configuration

Type	Order number	NH fuse size	I _{th/le} @ 800 V AC-22B [A]	I _{th/le} @ 1000 V AC-22B [A]	I _p @ 800 V [kA]	I _p @ 1000 V [kA]
ZLBM00-3P-M8	1SEP620010R3000	00	-	125	-	120
ZLBM00-3P-V	1SEP620010R3020	00	-	125	-	120
ZLBM00-100-3P-M8	1SEP620150R3000	00	125		120	
ZLBM1-3P-M12	1SEP620011R3000	1	200	250	100	120
ZLBM1-3P-V	1SEP620011R3020	1	200	250	100	120
ZLBM2-3P-M12	1SEP620012R3000	1/2	400	400	100	120
ZLBM2-3P-V	1SEP620012R3020	1/2	400	400	100	120
ZLBM3-3P-M12	1SEP620013R3000	2*/3	400	630	100	120
ZLBM3-3P-V	1SEP620013R3020	2*/3	400	630	100	120
ZHBM1-3P-M12	1SEP620021R3000	1	200	250	100	120
ZHBM1-3P-V	1SEP620021R3020	1	200	250	100	120
ZHBM2-3P-M12	1SEP620022R3000	1/2	400	400	100	120
ZHBM2-3P-V	1SEP620022R3020	1/2	400	400	100	120
ZHBM3-3P-M12	1SEP620023R3000	2*/3	400	630	100	120
ZHBM3-3P-V	1SEP620023R3020	2*/3	400	630	100	120

* With dedicated adapter only 1SEP621288R0001 - ZLBM3 NH2 fuse adapter

Enhanced configuration - with factory mounted Electronic Fuse Monitor (EFM)

Type	Order number	NH fuse size	I _{th/le} @ 800 V AC-22B [A]	I _p @ 800 V [kA]
ZLBM1-3P-M12-EFM	1SEP620011R3001	1	200	100
ZLBM1-3P-V-EFM	1SEP620011R3021	1	200	100
ZLBM2-3P-M12-EFM	1SEP620012R3001	1/2	400	100
ZLBM2-3P-V-EFM	1SEP620012R3021	1/2	400	100
ZLBM3-3P-M12-EFM	1SEP620013R3001	2*/3	400	100
ZLBM3-3P-V-EFM	1SEP620013R3021	2*/3	400	100
ZHBM1-3P-M12-EFM	1SEP620021R3001	1	200	100
ZHBM1-3P-V-EFM	1SEP620021R3021	1	200	100
ZHBM2-3P-M12-EFM	1SEP620022R3001	1/2	400	100
ZHBM3-3P-M12-EFM	1SEP620023R3001	2*/3	400	100
ZHBM2-3P-V-EFM	1SEP620022R3021	1/2	400	100

* With dedicated adapter only 1SEP621288R0001 - ZLBM3 NH2 fuse adapter

Order information

InLine II accessories

Auxiliary contacts

Type	Order number	Description
ZLBM00-100 Auxiliary switch NO/ NC	1SEP621097R0001	Normally closed/ normally open
ZLBM Auxiliary switch NC	1SEP619554R0001	Normally closed, ZLBM/ZHBM 00: 1 Aux. Switch per phase. ZLBM/ZHBM 123: 2 Aux. Switches per phase
ZLBM Auxiliary switch NO	1SEP619555R0001	Normally open, ZLBM/ZHBM 00: 1 Aux. Switch per phase. ZLBM/ZHBM 123: 2 Aux. Switches per phase

Cable shrouds

Type	Order number	Description
ZLBM00 Cable shroud L86	1SEP619690R0001	Cable shroud with total length 86 mm
ZLBM00 Cable shroud L177	1SEP619207R0001	Cable shroud with total length 177 mm
ZLBM123 Cable shroud L86	1SEP619211R0001	Cable shroud with total length of 86 mm, for single switch
ZLBM123 Cable shroud L177	1SEP619210R0001	Cable shroud with total length of 77 mm, for single switch

For more accessories, please consult the Inlinell catalogue:



[Inlinell - product catalogue](#)

Order information

EasyLine XLP

Essential configuration

Type	Order number	NH fuse size	I _{th/le} @ 800V AC-22B [A]	I _{th/le} @ 1000V AC-22B [A]	I _p @ 800V [kA]	I _p @ 1000V [kA]
XLP00	1SEP101890R0001	00	63	125	50	120
XLP00-6BC	1SEP101890R0002	00	63	125	50	120
XLP00-6M8	1SEP101890R0004	00	63	125	50	120
XLP00-A60/60-B-3BC-below	1SEP101916R0002	00	63	125	50	120
XLP00-A60/60-A-3BC-above	1SEP101917R0001	00	63	125	50	120
XLP1-A60/85-B-3BC-below	1SEP101918R0001	1	250	-	120	-
XLP1-A60/85-A-3BC-above	1SEP101919R0001	1	250	-	120	-
XLP1	1SEP101891R0001	1	250	-	120	-
XLP1-6BC	1SEP101891R0002	1	250	-	120	-
XLP1-6M10	1SEP101891R0004	1	250	-	120	-
XLP1-A60/85-B-3BC-below	1SEP101918R0001	1	250	-	120	-
XLP1-A60/85-A-3BC-above	1SEP101919R0001	1	250	-	120	-
XLP2	1SEP101892R0001	2	400	-	120	-
XLP2-6BC	1SEP101892R0002	2	400	-	120	-
XLP2-A60/120-A-above	1SEP102285R0001	2	400	-	120	-
XLP2-A60/120-B-below	1SEP102286R0001	2	400	-	120	-



Enhanced configuration - with factory mounted Electronic Fuse Monitor (EFM)

Type	Order number	NH fuse size	I _{th/le} @ 800V AC-22B [A]	I _p @ 800 V [kA]
XLP00-EFM-6BC	1SEP101890R0012	00	63	50
XLP1-EFM-6BC	1SEP101891R0012	1	250	120
XLP2-EFM-6BC	1SEP101892R0012	2	400	120



Order information

EasyLine XLP accessories

Auxiliary contacts

Type	Order number	Description
	MS-XLP00123	1SEP407742R0001 Micro auxiliary switch (not for XLP000)
	AUX-NC-XLP00123	1SEP407742R0002 NormAuxiliary switch NC (Red)

Cable shrouds

Type	Order number	Description
	CS-XLP1-3P	1SEP407793R0002 XLP1 Cable shroud
	CS-XLP00-3P	1SEP407793R0001 XLP00 Cable shroud

Padlock Device

Type	Order number	Description
	PLD-XLP00123	1SEP407786R0001 Access padlock device for all XLP sizes

Front cover with Electronic Fuse Monitoring (EFM)

Type	Order number	Description
	FC-XLP00-3P-EFM	1SEP101873R0007 XLP00 Front cover with EFM (Electronic Fuse Monitoring)
	FC-XLP1-3P-EFM	1SEP101883R0007 XLP1 Front cover with EFM (Electronic Fuse Monitoring)

Order information

EasyLine XLP

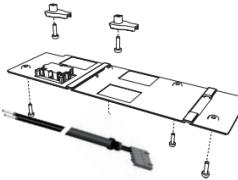
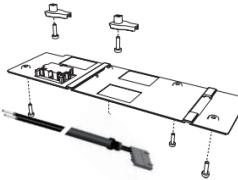
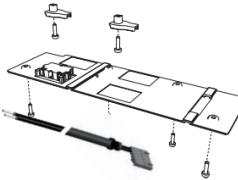
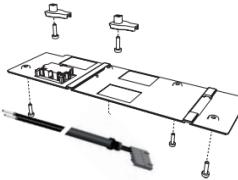
Essential configuration

Type	Order number	NH fuse size	I _{th} /I _e @ 800 V AC-22B [A]	I _p @ 800 V [kA]
 XRG1-50/5-3P	1SEP204481R1500	1	250	100
XRG1-50/5-3P-MOT	1SEP204481R1502	1	250	100
XRG1-185/10-3P	1SEP204481R3500	1	250	100
XRG1-185/10-3P-MOT	1SEP204481R3502	1	250	100

Enhanced configuration - with factory mounted Electronic Fuse Monitor (EFM)

Type	Order number	NH fuse size	I _{th} /I _e @800V AC-22B [A]	I _p @ 800 V [kA]
 XRG1-50/5-3P-EFM	1SEP204481R1501	1	250	100
XRG1-50/5-3P-MOT-EFM	1SEP204481R1502	1	250	100
XRG1-185/10-3P-EFM	1SEP204481R3501	1	250	100
XRG1-185/10-3P-MOT-EFM	1SEP204481R3503	1	250	100

Accessories - auxiliary contacts for SlimLine XRG

Type	Order number	Description
	NO-XR1-KIT	Aux. switch 1NO kit, with wires and connector
	NC-XR1-KIT	Aux. switch 1NC kit, with wires and connector
	NO-XR00/1-W	Additional auxiliary switches include 1 auxiliary switch and 2 wires
	NC-XR00/1-W	Additional auxiliary switches include 1 auxiliary switch and 2 wires

Order information

OFAZ-HV fuse bases



Type	Order number	NH fuse size	Rated current [A]
OFАЗ1S2-HV	1SCA161628R1001	0 / 1	250
OFАЗ1S3-HV	1SCA161629R1001	0 / 1	250
OFАЗ2P1-HV	1SCA161630R1001	1/2	400
OFАЗ2P3-HV	1SCA161631R1001	1/2	400
OFАЗ2S1-HV	1SCA161632R1001	1/2	400
OFАЗ3A3-HV	1SCA161636R1001	2/3	630
OFАЗ2S2-HV	1SCA161633R1001	1/2	400
OFАЗ00P3L-HV	1SCA161616R1001	00 / 000	160
OFАЗ2S3-HV	1SCA161634R1001	1/2	400
OFАЗ1P1-HV	1SCA161625R1001	0 / 1	250
OFАЗ1P3-HV	1SCA161626R1001	0 / 1	250
OFАЗ3S1-HV	1SCA161661R1001	2/3	630
OFАЗ3S2-HV	1SCA161662R1001	2/3	630
OFАЗ00P1L-HV	1SCA161614R1001	00 / 000	160
OFАЗ3P3-HV	1SCA161660R1001	2/3	630
OFАЗ00S1L-HV	1SCA161618R1001	00 / 000	160
OFАЗ00S3L-HV	1SCA161622R1001	00 / 000	160
OFАЗ3P1-HV	1SCA161659R1001	2/3	630
OFАЗ3A1-HV	1SCA161635R1001	2/3	630
OFАЗ3S3-HV	1SCA161663R1001	2/3	630
OFАЗ1S1-HV	1SCA161627R1001	0 / 1	250
OFАЗ00S2L-HV	1SCA161620R1001	00 / 000	160



ABB Electrification

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800 V AC Fusegear