



LOW VOLTAGE AIR CIRCUIT BREAKERS



Company Profile



Sigma Elektrik® located in İstanbul, is one of the leading company, focuses on designing, manufacturing and marketing of low voltage switchgear components such as MCCB, MCB, RCCB, Contactors, Current Transformers, Motor Protection switches e.g since 1993 in Turkey. The key figure of the company's growth strategies are its subsidiaries in Turkey and abroad and close cooperation with selected strategic partners. Its products are being distributed through 5 different continents over the World.

In Sigma Elektrik® considering quality is an indispensable principle at each step of manufacturing, all work processes are completed according to ISO Quality Management System and awarded by ISO 9001:2008, ISO 14001 certificates. All products are manufactured according to applicable EN, IEC, UKRSEPRO, GOST and CE Conformance Certificates from international accredited laboratories.

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Consequence of overachievements of Sigma Elektrik®, it expanded business operation and distribution channel by foreign Joint Venture investment from Netherland in 2009. Currently, %50 of its shares belongs to a Dutch company. Sigma Elektrik® is a leading supplier of solutions and services for low voltage products in residential and commercial buildings as well as for switchgear applications in industrial projects. The quality of the products and services are constantly aimed at achieving customer's satisfaction and corresponding business excellence.

Sigma Elektrik® has a modern moulding room equipped with modern workbenches. We use UniGraphics NX software which is advanced for design, modeling, production, engineering analyse, improvement, integrated with CAD / CAM / CAE applications, and this is one of the most popular software in aviation, automation, defence, mechanical, plastic and moulding industries. We provide you large scale of solution for your LV Electro mechanical component requirements by using these assets and create extra value for solution.

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LV Air Circuit Breakers - Technical Specifications

Type				SDA-2000/ SFA-2000	SDA-3200/ SFA-3200	SDA-4000/ SFA-4000	SDA-6300
Type Of Structure				Draw-Out/Fixed	Draw-Out/Fixed	Draw-Out/Fixed	Draw-Out/Fixed
No of Poles				3/4	3/4	3/4	3/4
Electrical Specifications							
Rated Current (at 40°C)		A		630, 800, 1000, 1250, 1600, 2000	2500, 3200	4000	5000, 6300
Rated Operating Voltage	Ue	V	AC	415	415	415	415
Rated Insulation Voltage	Ui	V		1000	1000	1000	1000
Rated Impulse Withstand Voltage	Uimp	kV		8	8	8	8
Disconnecting Capacity							
Rated Ultimate Short Circuit Breaking Capacity	Icu	kA	690 V AC	50	65	65	65
			415 V AC	80	100	100	100
Rated Service Short Circuit Breaking Capacity	Ics	kA	690 V AC	40	50	50	50
			415 V AC	50	65	65	65
Utilization Category				A, B	A, B	A, B	A, B
Pollution Degree				3	3	3	3
Electrical Life	ON-OFF		415 V	1000	500	500	500
Mechanical Life	ON-OFF			10000	10000	8000	8000
Protection Unit				Electronic	Electronic	Electronic	Electronic
Long Time Delay Current	Ir1	A		(0,4-1)xIn	(0,4-1)xIn	(0,4-1)xIn	(0,4-1)xIn
Long Time Delay Time	t1	sn		0-480	0-480	0-480	0-480
Short Time Delay Current	Ir2	A		(0,4-15)xIn	(0,4-15)xIn	(0,4-15)xIn	(0,4-15)xIn
Short Time Delay Time	t1	sn		0,1-1	0,1-1	0,1-1	0,1-1
Instantaneous Breaking Current	Ir3	A		In...50 kA +OFF	In...50 kA +OFF	In...50 kA +OFF	In...50 kA +OFF
Earth Fault Current	Ir4	A		(0,2-0,8)xIn+OFF	(0,2-0,8)xIn+OFF	(0,2-0,8)xIn.OFF	(0,2-0,8)xIn.OFF
Ambient Temperature							
Max. Operational Ambient Temperature		°C		-25 to +70	-25 to +70	-25 to +70	-25 to +70
Max. Storage Temperature		°C		-40 to +80	-40 to +80	-40 to +80	-40 to +80
Accessories							
Shunt Trip Coil (230 V AC)				On Request	On Request	On Request	On Request
Under Voltage Coil (230 V AC)				On Request	On Request	On Request	On Request
Delay Type Under Voltage Coil (230 V AC)				On Request	On Request	On Request	On Request
Closing Coil (230 V AC)				On Request	On Request	On Request	On Request
Auxiliary Contact (2NO+2NC)				standard	standard	standard	standard
Motor Operator (230 V AC)				On Request	On Request	On Request	On Request
Mechanical Interlock				On Request	On Request	On Request	On Request

Protection Properties for Air Circuit Breakers

Long-Time Delay Overcurrent Protection

Setting Current (Ir1)	Error	Current	Tripping Time (s)						Time Error
(0.4~1)xIn	±%10	1.05xIr1	<2h non-tripping						
		1.30xIr1	<1h trip						
		1.5x Ir1 (t1)	15 sn	30 sn	60 sn	120 sn	240 sn	480 sn	±10%
		2.0xIr1	8.4 sn	16.9 sn	33.7 sn	67.5 sn	135 sn	270 sn	±10%

Short-Time Delay Overcurrent Protection

Setting Current (Ir1)	Error	Current	Tripping Time (s)						Time Error
(0.4~15)xIr2	±%10	≤0.9xIr2	<2h non-tripping						
		>1.1xIr2	<1h trip						
		Delay setting (ts)	0.1sn	0.2 sn	0.3 sn	0.4 sn			±15%
		>8xIr2	0.06 sn	0.14 sn	0.23 sn	0.35 sn			±15%

Instantaneous Tripping Protection

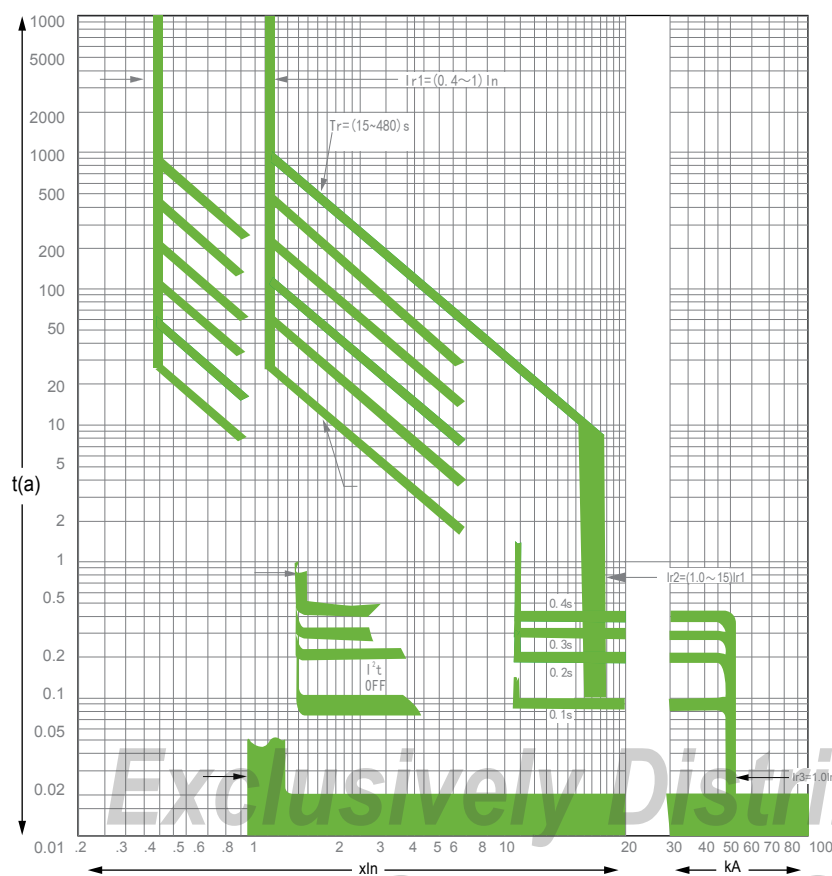
Setting Current (Ir1)	Error	Current	Time Error
1.0 In~50kA	±%15	≤0.85Ir3	non-tripping
		>1.15Ir3	trip

Earthing Fault Protection

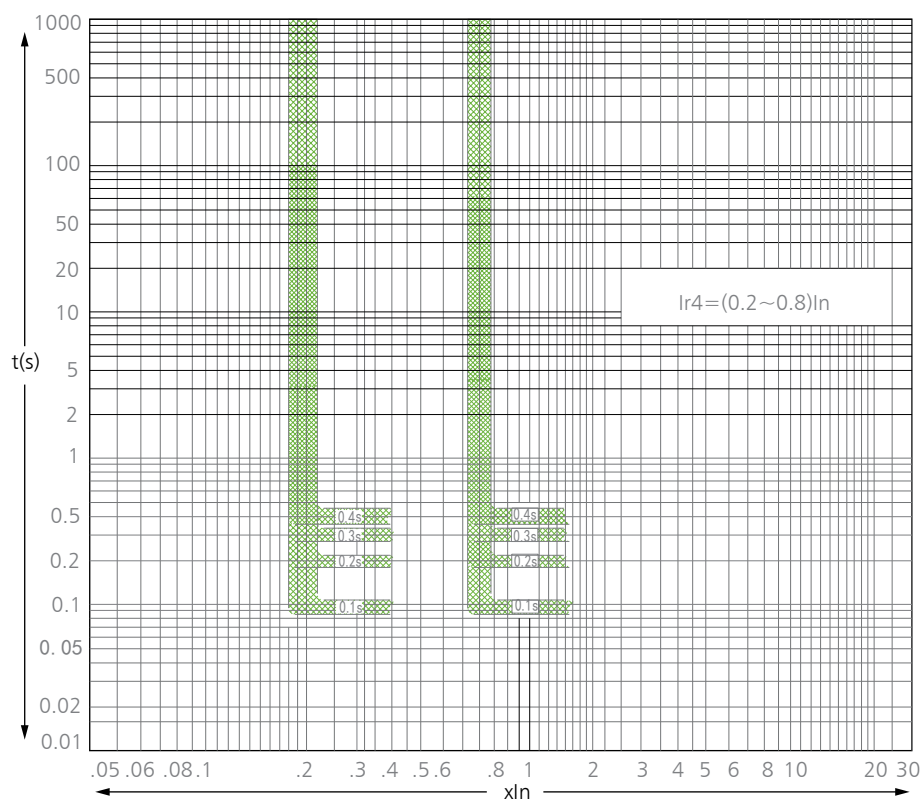
Setting Current (Ir1)	Error	Current	Tripping Time (s)						Time Error
(0.2~0.8)Ir4	±%10	≤0.9xIr4	non-tripping						
		>1.10Ir4	Tripping Time (sec)						
		Tripping time (TG)	0.1 sn	0.2 sn	0.3 sn	0.4 sn			±15%



Overload Current Time-Current Characteristic for ACB

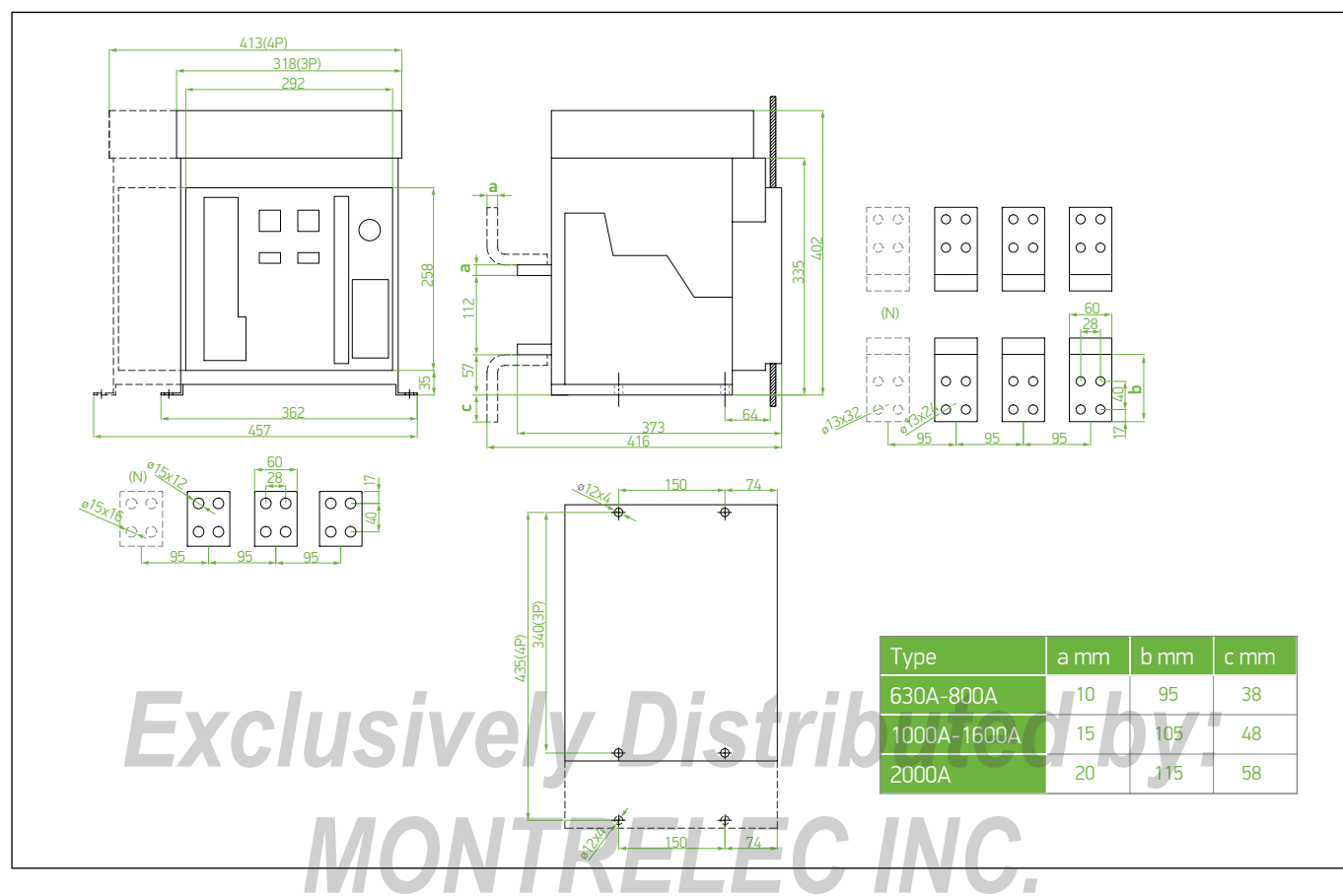


Earth Fault Protection Time-Current Characteristic for ACB

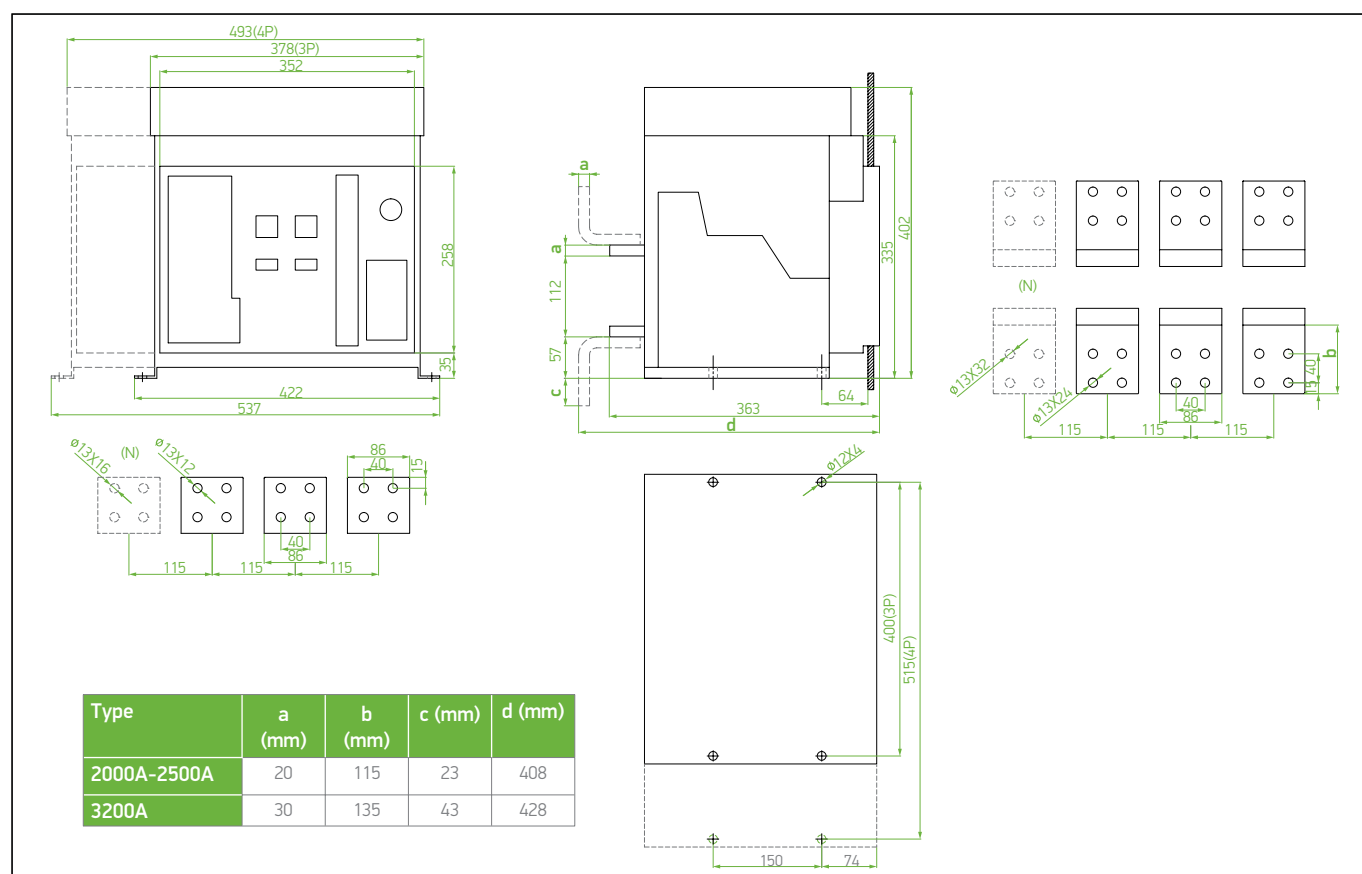


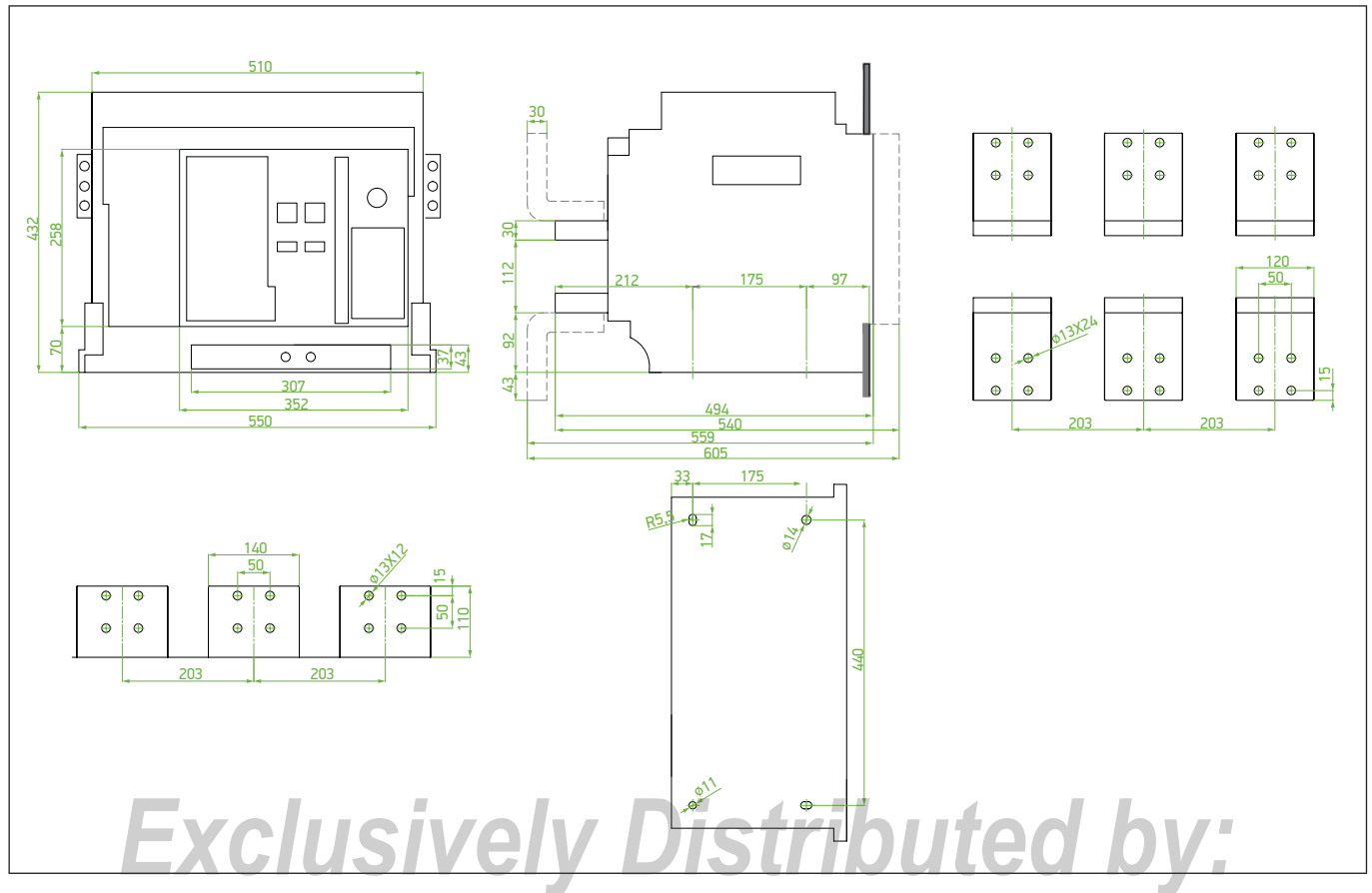
Dimensions

SFA-2000 SFA-2000(N)

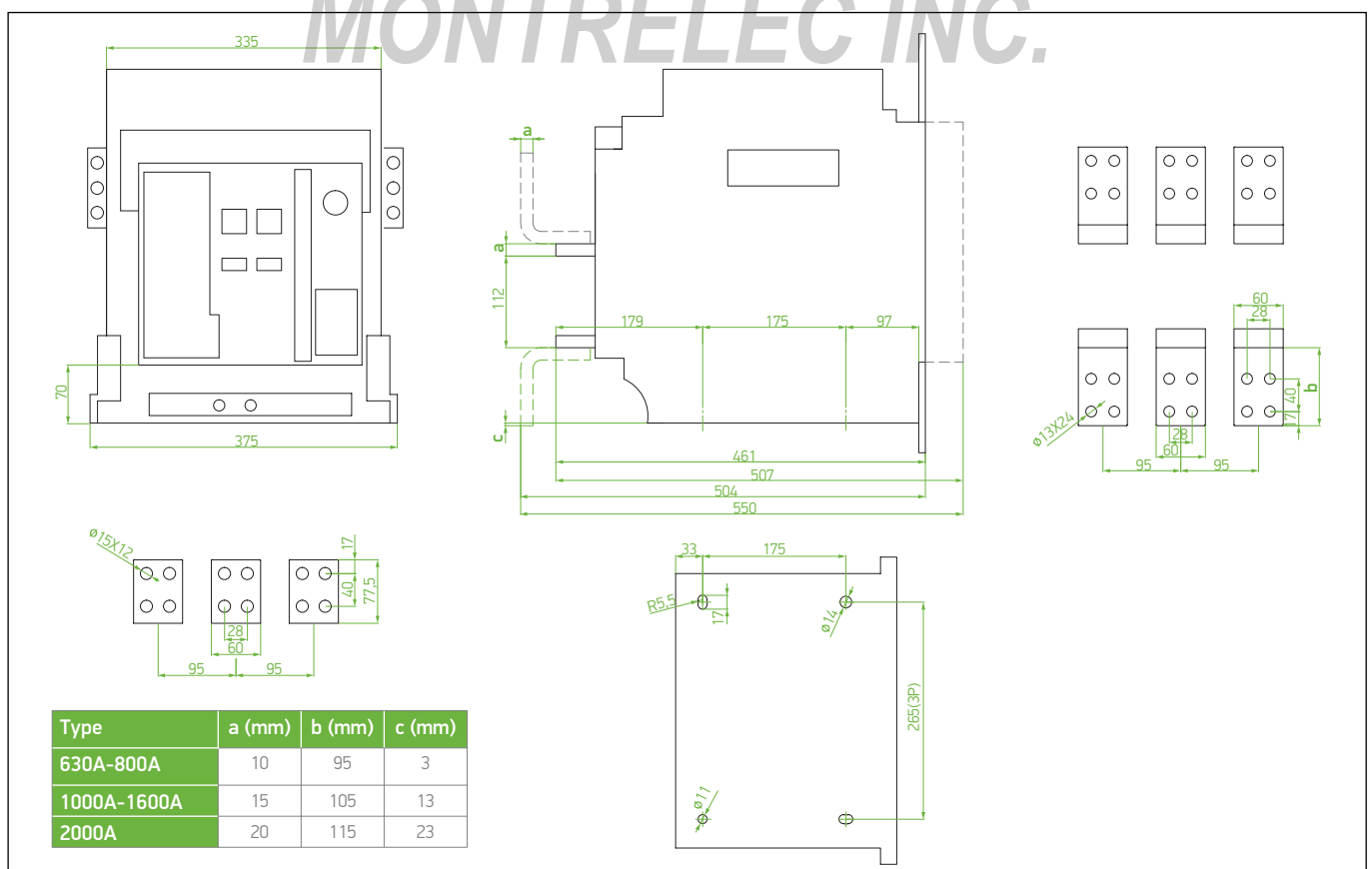


SFA-3200 SFA-3200(N)

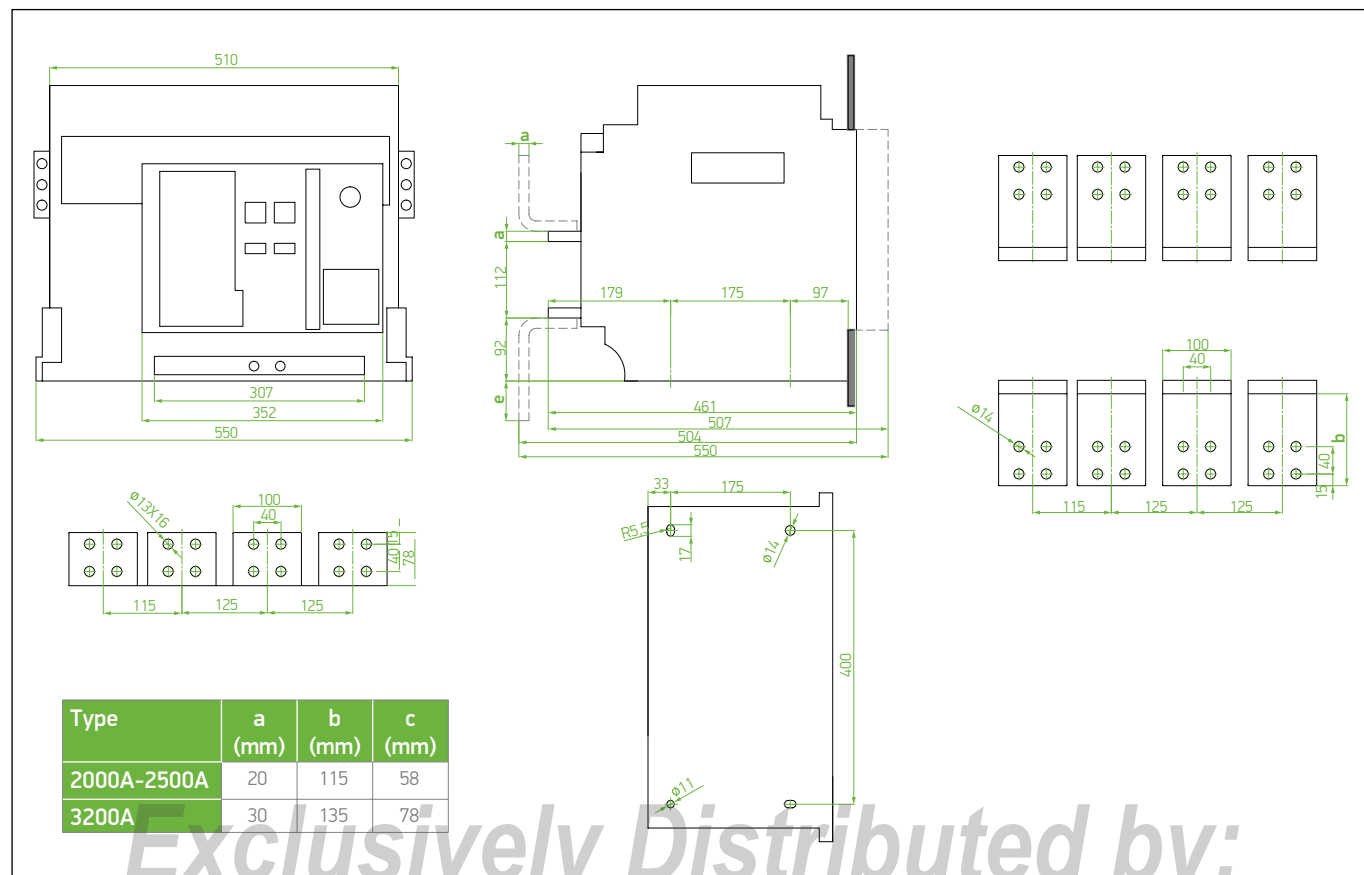


SFA-4000

SDA-2000

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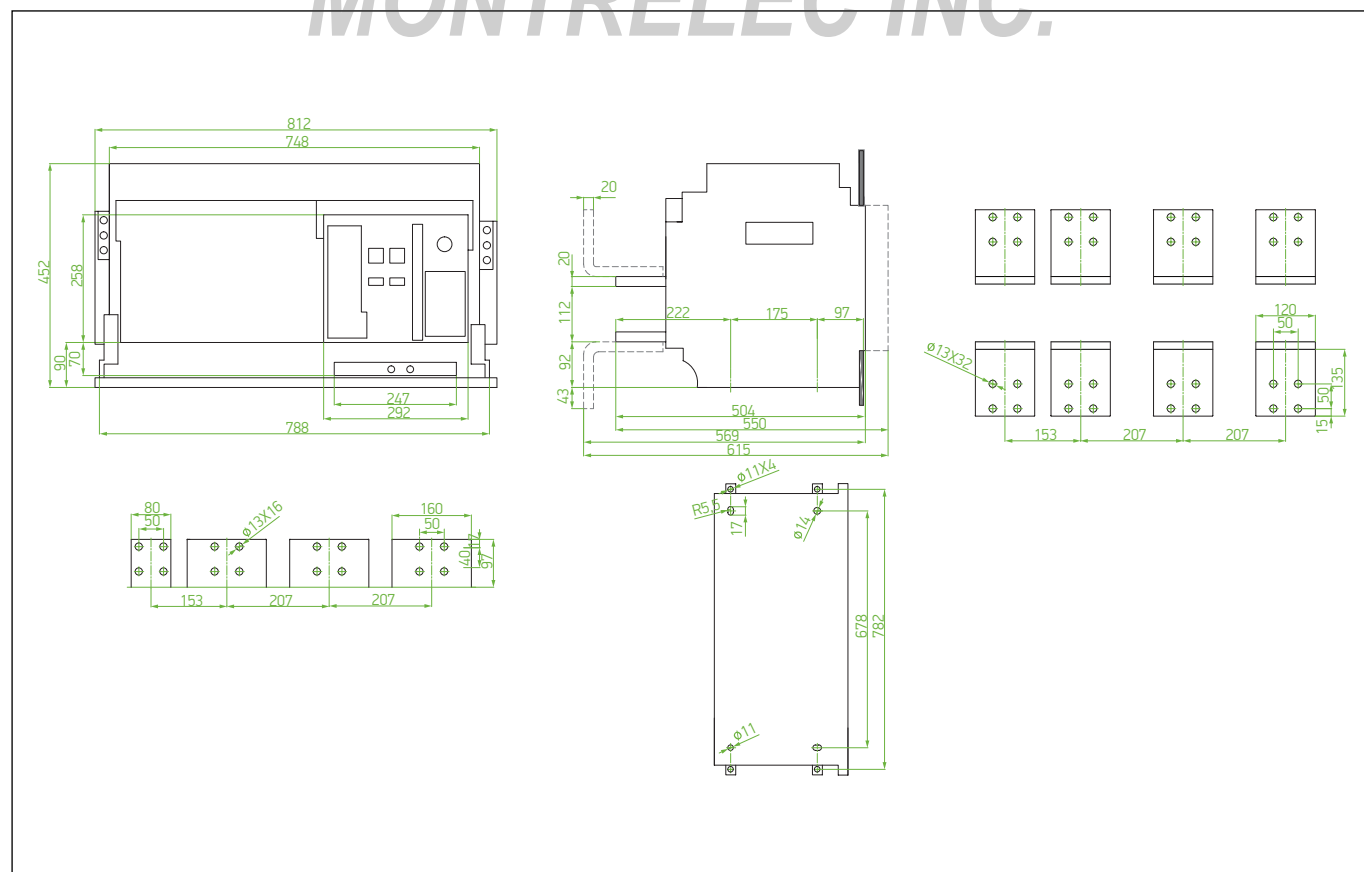
SDA-3000



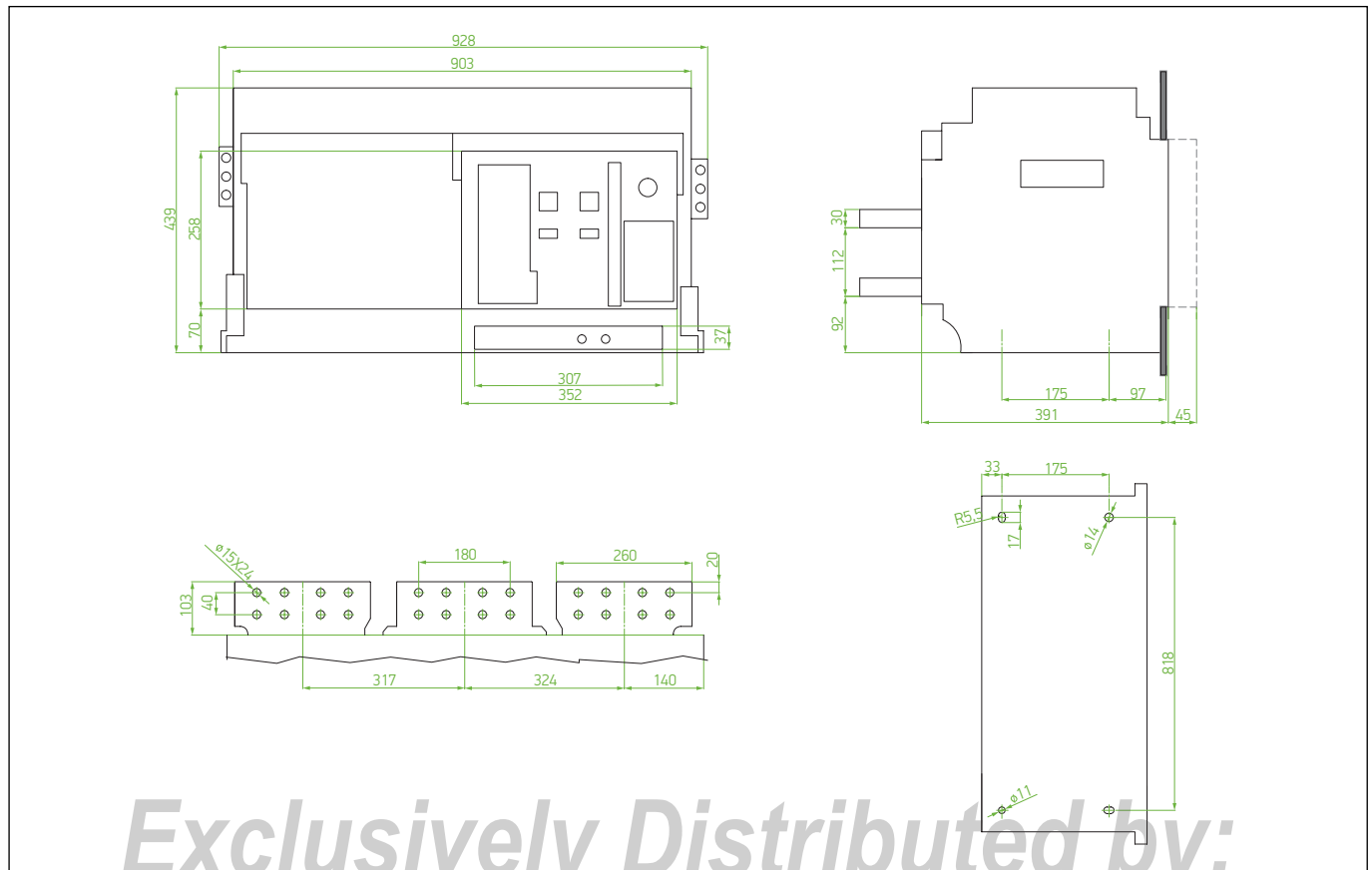
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SDA-4000



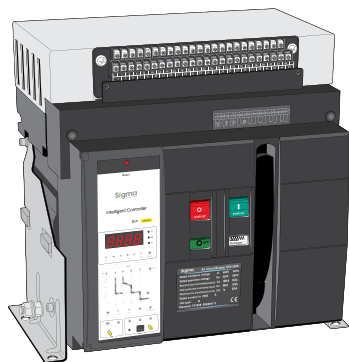
SDA-6300



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3 Poles, Fixed Type, Air Circuit Breakers

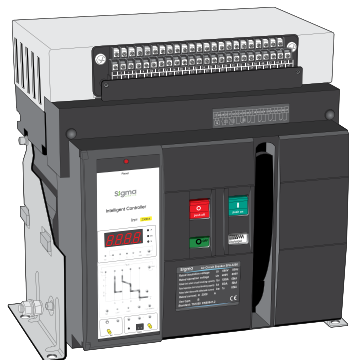


Type Code	Rated Current In (A)	Rated Current Adjustment (Ir1)	Breaking Capacity Icu (kA)	Operation Mechanism	Order Code
SFA-1600	630	252-630	80	Manuel	SFA0630H3
	800	320-800	80	Manuel	SFA0800H3
	1000	400-1000	80	Manuel	SFA1000H3
	1250	500-1250	80	Manuel	SFA1250H3
	1600	640-1600	80	Manuel	SFA1600H3
SFA-2000	2000	1200-2000	80	Manuel	SFA2000H3
SFA-2500	2500	1000-2500	100	Manuel	SFA2500H3
SFA-3200	3200	1280-3200	100	Manuel	SFA3200H3
SFA-4000	4000	1600-4000	100	Manuel	SFA4000H3
SFA-1600	630	252-630	80	Motorized	SFA0630M3
	800	320-800	80	Motorized	SFA0800M3
	1000	400-1000	80	Motorized	SFA1000M3
	1250	500-1250	80	Motorized	SFA1250M3
	1600	640-1600	80	Motorized	SFA1600M3
SFA-2000	2000	1200-2000	80	Motorized	SFA2000M3
SFA-2500	2500	1000-2500	100	Motorized	SFA2500M3
SFA-3200	3200	1280-3200	100	Motorized	SFA3200M3
SFA-4000	4000	1600-4000	100	Motorized	SFA4000M3

Note: All Acbs have 4NO+4NC auxiliary contacts as standard product.

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4 Poles, Fixed Type, Air Circuit Breakers



Type Code	Rated Current In (A)	Breaking Capacity Icu (kA)	Operation Mechanism	Order Code
SFA-1600	400-1000	80	Manuel	SFA1000H4
	500-1250	80	Manuel	SFA1250H4
	640-1600	80	Manuel	SFA1600H4
SFA-2000	1200-2000	80	Manuel	SFA2000H4
SFA-2500	1000-2500	100	Manuel	SFA2500H4
SFA-3200	1280-3200	100	Manuel	SFA3200H4
(*)SDA-4000	1600-4000	100	Manuel	SDA4000H4
SFA-1600	400-1000	80	Motorized	SFA1000M4
	500-1250	80	Motorized	SFA1250M4
	640-1600	80	Motorized	SFA1600M4
SFA-2000	1200-2000	80	Motorized	SFA2000M4
SFA-3200	1000-2500	100	Motorized	SFA2500M4
SFA-3200	1280-3200	100	Motorized	SFA3200M4
(**)SDA-4000	1600-4000	100	Motorized	SDA4000M4

Note: (*) All Acbs have 4NO+4NC auxiliary contacts as standard product.

(**) 4 Poles 4000 A ACBs are Draw Out Type.

3 Poles Draw-Out Type Air Circuit Breakers

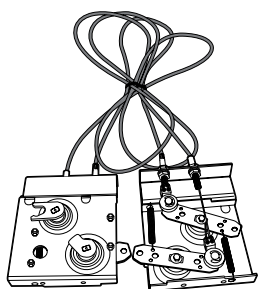


Type Code	Rated Current In (A)	Rated Current Adjustment (Ir1)	Breaking Capacity Icu (kA)	Operation Mechanism	Order Code
SDA-1000	1000	400-1000	80	Manuel	SDA1000H3
SDA-1250	1250	500-1250	80	Manuel	SDA1250H3
SDA-1600	1600	640-1600	80	Manuel	SDA1600H3
SDA-2000	2000	1200-2000	80	Manuel	SDA2000H3
SDA-2500	2500	1000-2500	100	Manuel	SDA2500H3
SDA-3200	3200	1280-3200	100	Manuel	SDA3200H3
SDA-4000	4000	1600-4000	100	Manuel	SDA4000H3
SDA-5000	5000	2000-5000	100	Manuel	SDA5000H3
SDA-6300	6300	2560-6300	100	Manuel	SDA6300H3
SDA-1000	1000	400-1000	80	Motorized	SDA1000M3
SDA-1250	1250	500-1250	80	Motorized	SDA1250M3
SDA-1600	1600	640-1600	80	Motorized	SDA1600M3
SDA-2000	2000	1200-2000	80	Motorized	SDA2000M3
SDA-2500	2500	1000-2500	100	Motorized	SDA2500M3
SDA-3200	3200	1280-3200	100	Motorized	SDA3200M3
SDA-4000	4000	1600-4000	100	Motorized	SDA4000M3
SDA-5000	5000	2000-5000	100	Motorized	SDA5000M3
SDA-6300	6300	2560-6300	100	Motorized	SDA6300M3

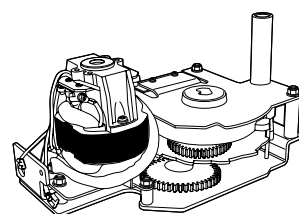
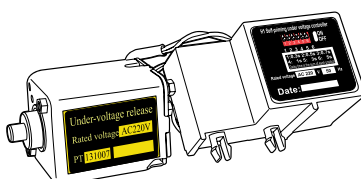
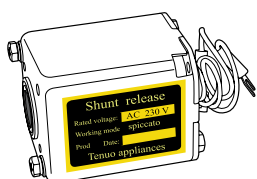
Note: (*) All Acbs have 4NO+4NC auxiliary contacts as standard product.

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Accessories for Air Circuit Breakers



Type Code	Description	Features	Order Code
SADG	Under Voltage Release - Without Delay	230 V AC	SADG230
	Under Voltage Release - Without Delay	380 V AC	SADG380
SAGDG	Under Voltage Release - With Delay	230 V AC	SAGDG230
	Under Voltage Release - With Delay	380 V AC	SAGDG380
SAAB	Shunt Trip Coil	230 V AC	SAAB
SAKB	Closing Coil	230 V AC	SAKB
SAMM-1	Motor Operator (630...2000 A)	230 V AC	SAM1
SAMM-2	Motor Operator (2500..6300 A)	230 V AC	SAM2
SAMK	Mechanical Interlock	Wire Type	SAMK



ISO 9001

ISO 14001

OHSAS 18001

ASTA Certificates



RoHS Certificates

TÜV Certificates



TSE Certificates



CE Certificate of Conformity







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