

SIRIUS/SIKOSTART Soft Starters

For Advanced Applications

SIKOSTART soft starters

Technical specifications

Control electronics			
Rated control supply voltage (terminal 12 - 15)	V		380 ... 415, 200 ... 240, 100 ... 120 (+10 %/-15 %)
Rated frequency	Hz		50/60, operating range 45 ... 66
Rated control supply current			
at 380 V ... 415 V	mA		approx. 40
at 200 V ... 240 V	mA		approx. 75
at 100 V ... 120 V	mA		approx. 100
Short-circuit protection, control circuit			built-in fuse 250 mA slow, 6.3 mm x 32 mm
Operating times			
ON-delay	ms		≤ 50 controlled separately when the control supply voltage is applied and voltage is present in the control circuit
ON-delay	s		≤ 1 contactor operation, ON/OFF by switching the control supply voltage
ON-delay	s		≤ 1.1 automatic mode
Recovery time	ms		≤ 440 after DC braking
Power failure			
Bridging time	control supply voltage	ms	≤ 80
Response time	load current circuit	ms	≤ 100
Operating indications (continuous light)	LED 1 LED 2 LED 3 LED 4 LED 5		Ready starting or slowing down starting ended energy save mode active braking
Fault indications (flashing light)	LED 1 LED 2 LED 3 LED 4 LED 5		Mains fault (phase failure, missing voltage/load, control supply voltage too low) Thyristor defective (one or several thyristor(s) alloyed) Excess temperature or overload deactivation Unit malfunction Unit gets too hot; new starting is inhibited; however, unit continues to operate
Control inputs on versions with serial interface, the input assignments are dependent on the number of parameter sets selected via the COM-SIKOSTART PC communication program (up to 3 parameter sets can be selected)			
	• Standard application: with one motor		
Input 1			ON
Input 2			OFF
Input 3			Reset
	• Serial starting of several motors or of reversible pole motors		
Input 1			ON/OFF parameter set 1
Input 2			ON/OFF parameter set 2
Input 3			Reset or ON/OFF parameter set 3
Rated operating current	mA		approx. 10 according to DIN 19 240
Rated voltage	V		DC 24 V from built-in power supply unit via DC +24 V terminal
Relay outputs			
Output 1			Group fault signal (changeover contact)
Output 2			Starting terminated; motor connected to full mains voltage (NO contact)
Output 3			DC brakes active; for control of the braking contactor (NO contact)
Rated operating current	A		3 AC-15/AC-14 at 240 V
	A		0.1 DC-13 at 240 V
	A		0.5 DC-13 at 24 V
Short-circuit protection			4 A utilization category gL/gG; 6 A fast (fuse is not included in scope of supply)
Max. conductor cross-sections			
• Solid	mm ²		0.5 ... 2.5
• Finely stranded with end sleeve	mm ²		0.5 ... 1.5
• Tightening torque	Nm		0.8 ... 1.4

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Power electronics			
Continuous operation (% of I_e)	%		115
Max. starting time			
• cold (40 °C or 55 °C)/warm	Starting current		
	600 % I_e	s	2/1
	450 % I_e	s	10/5
	300 % I_e	s	60/30
	250 % I_e	s	120/60
	200 % I_e	s	200/100
Minimum load ¹⁾ (% of I_e)	%		20
Permissible ambient temperature			
• in operation	°C		0 ... +40 or +55 (switchable)
• when stored	°C		-25 ... +80
Operating range			
	• Rated operating voltage	V	200 (-15 %) ... 500 (+10 %) for 3RW22 ...-0DB15, 200 (-15 %) ... 415 (+10 %) for 3RW22 ...-0DB14, 500 (-15 %) ... 690 (+10 %) for 3RW22 ...-0DB16, 1000 (-20 %; +25 %) for 3RW22 ...-0DB18
	• Frequency	Hz	45 ... 66
Degree of protection acc. to IEC 60947-1/IEC 60529	RW22 21 ... RW22 31 RW22 34 ... RW22 50		IP20 IP00
Overload protection			
Thermal sensor on the heatsink, solid-state protection with thermal image			
Permissible installation altitude			
up to 3 000 m above sea level; over 1000 m above sea level linear reduction of I_e , thus at 2 000 m above sea level $0.87 \times I_e$ and at 3 000 m above sea level $0.77 \times I_e$			
Fans			
	• Rated control supply voltage	V	230 ±10%
	• Frequency	Hz	45 ... 66
Maximum conductor length between soft starter and motor	m		200 ²⁾

1) The rated motor current (specified on the motor's rating plate) should amount to at least 20 % of the SIKOSTART unit's rated current I_e .

2) If this value is exceeded, problems with line capacities may arise, which can result in false firing.

Power electronics				3RW22 21-1AB15	3RW22 23-1AB15	3RW22 25-1AB15	3RW22 26-1AB15
Type (200 ... 500 V)							
Load rating							
Rated operating current I_e	at 40/55 °C, AC-3	A	7/5.5	10.5/9	22/16	28/22	
Motor output (400 V) approx.	at 40/55 °C, AC-3	kW	3/2.2	4/4	11/7.5	15/11	
Permissible starts per hour							
for intermittent duty S4, $T_u = 40$ °C	350 % $\times I_e$ for 5 s	1/h	80	90	30	20	
ON-period = 30 %	300 % $\times I_e$ for 10 s	1/h	50	60	20	10	
	250 % $\times I_e$ for 15 s	1/h	50	50	20	10	
Power loss at rated operating current (40 °C) approx.		W	30	40	70	80	
Max. conductor cross-sections							
	• Solid	mm ²	1 ... 16	1 ... 16	1 ... 16	1 ... 16	
	• Finely stranded without end sleeve	mm ²	2.5 ... 16	2.5 ... 16	2.5 ... 16	2.5 ... 16	
	• Finely stranded with end sleeve	mm ²	1 ... 16	1 ... 16	1 ... 16	1 ... 16	
	• Stranded	mm ²	2.5 ... 25	2.5 ... 25	2.5 ... 25	2.5 ... 25	
Bridging contactor							
for AC-1				3RT10 15	3RT10 15	3RT10 24	3RT10 24
(if required, as a main contactor to AC-3)				3RT10 16	3RT10 17	3RT10 26	3RT10 34
Recommended braking contactor				3RT15 1.	3RT15 26	3RT15 26	3RT15 26
Type (200 ... 500 V)				3RW22 27-1AB15	3RW22 28-1AB15	3RW22 30-1AB15	3RW22 31-1AB15
Load rating							
Rated operating current I_e	at 40/55 °C, AC-3	A	35/32	45/37	50/45	70/63	
Motor output (400 V)	at 40/55 °C, AC-3	kW	18.5/15	22/18.5	25/22	37/30	
Permissible starts per hour							
for intermittent duty S4, $T_u = 40$ °C	350 % $\times I_e$ for 5 s	1/h	50	30	20	40	
ON-period = 30 %	300 % $\times I_e$ for 10 s	1/h	30	20	20	30	
	250 % $\times I_e$ for 15 s	1/h	30	20	20	30	
Power loss at rated operating current (40 °C) approx.		W	105	130	140	220	
Max. conductor cross-sections							
	• Solid	mm ²	1/16	1/16	1/16	1/16	
	• Finely stranded without end sleeve	mm ²	2.5 ... 16	2.5 ... 16	2.5 ... 16	2.5 ... 16	
	• Finely stranded with end sleeve	mm ²	1/16	1/16	1/16	1/16	
	• Stranded	mm ²	2.5/25	2.5/25	2.5/25	2.5/25	
Bridging contactor							
for AC-1				3RT10 24	3RT10 34	3RT10 35	3RT10 44
(if required, as a main contactor to AC-3)				3RT10 35	3RT10 36	3RT10 44	3RT10 45
Recommended braking contactor				3RT15 26	3RT15 26	3RT15 35	3RT15 35

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Power electronics				3RW22 34-0DB15	3RW22 35-0DB15	3RW22 36-0DB15	3RW22 38-0DB15
Type (200 ... 500 V)							
Load rating							
Rated operating current I_e	at 40/55 °C, AC-3	A		100/85	135/110	160/140	235/205
Motor output (400 V)	at 40/55 °C, AC-3	kW		55/45	75/55	90/75	132/110
Permissible starts per hour	350 % x I_e for 5 s	1/h		120	100	90	90
	for intermittent duty S4, $T_u = 40$ °C, 300 % x I_e for 10 s	1/h		80	60	60	60
	ON-period = 30 % 250 % x I_e for 15 s	1/h		70	50	50	50
Power loss at rated operating current (40 °C) approx.		W		260	370	435	640
Fans	Number			1	1	1	1
	Ratings	W		18	18	18	18
Max. conductor cross-sections	Stranded	mm ²		95	120	150	240
Bridging contactor	for AC-1			3RT10 45	3RT14 46	3RT14 56	3RT14 56
(if required, as a main contactor to AC-3)				3RT10 54	3RT10 55	3RT10 56	3RT10 65
Recommended braking contactor combination				3RT10 34 +	3RT10 35 +	3RT10 44 +	3RT10 44 +
(opening + closing contactor)				3RT10 34	3RT10 44	3RT10 44	3RT10 46

Type (200 ... 500 V)				3RW22 40-0DB15	3RW22 41-0DB15	3RW22 42-0DB15
Load rating						
Rated operating current I_e	at 40/55 °C, AC-3	A		300/250	355/300	430/355
Motor output (400 V)	at 40/55 °C, AC-3	kW		160/132	200/160	250/200
Permissible starts per hour	350 % x I_e for 5 s	1/h		20	40	180
	for intermittent duty S4, $T_u = 40$ °C, 300 % x I_e for 10 s	1/h		10	20	100
	ON-period = 30 % 250 % x I_e for 15 s	1/h		10	20	70
Power loss at rated operating current (40 °C) approx.		W		810	970	1560
Fans	Number			2	2	3
	Ratings	W		36	36	54
Max. conductor cross-sections	Stranded	mm ²		240	240	-
	Connecting bar	mm		-	-	40 x 10
Bridging contactor	for AC-1			3RT14 56	3RT14 66	3RT14 76
(if required, as a main contactor to AC-3)				3RT10 66	3RT10 75	3RT14 76
Recommended braking contactor combination				3RT10 54 +	3RT10 56 +	3RT10 56 +
(opening + closing contactor)				3RT10 55	3RT10 65	3RT10 65

Type (200 ... 500 V)				3RW22 43-0DB15	3RW22 45-0DB15	3RW22 47-0DB15	3RW22 50-0DB15
Load rating							
Rated operating current I_e	at 40/55 °C, AC-3	A		560/450	700/500	865/700	1200/1000
Motor output (400 V)	at 40/55 °C, AC-3	kW		315/250	400/315	500/400	710/560
Permissible starts per hour	350 % x I_e for 5 s	1/h		90	100	120	60
	for intermittent duty S4, $T_u = 40$ °C, 300 % x I_e for 10 s	1/h		60	60	80	40
	individual mounting, 250 % x I_e for 15 s	1/h		50	60	70	40
Power loss at rated operating current (40 °C) approx.		W		1950	2060	2440	3550
Fans	Number			3	3	3	3
	Ratings	W		135	135	78	78
Max. conductor cross-sections ¹⁾	Connecting bar	mm		40 x 10		50 x 20	60 x 20
Bridging contactor	for AC-1			3RT14 76	3TF68	3TF69	2 x 3TF68
(if required, also suitable for occasional direct start at $I_a \leq 6 \times I_e$)				3TF68	3TF68	3TF69	2 x 3TF68 ²⁾
Recommended braking contactor				3RT10 65 +	3RT10 65 +	3RT10 75 +	3RT14 76 +
(opening + closing contactor)				3RT10 66	3RT10 75	3RT10 76	3TF68

1) Due to thermal expansion of the bars, flexible links must be used for connecting the busbars.

2) Suitable as emergency contactor in occasional starts with $I_a \leq 6 \times I_e$.

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Power electronics				3RW22 36-0DB16	3RW22 38-0DB16	3RW22 40-0DB16	3RW22 42-0DB16
Type (500 ... 690 V)							
Load rating							
Rated operating current I_e	at 40/55 °C, AC-3	A	160/140	235/205	300/250	450/355	
Motor output (690 V)	at 40/55 °C, AC-3	kW	160/132	250/200	315/250	450/355	
Permissible starts per hour	350 % x I_e for 5 s	1/h	90	90	20	180	
	Intermittent duty S4, $T_u = 40$ °C	1/h	60	60	10	100	
	ON-period = 30 %	1/h	50	50	10	70	
Short-circuit protection	SITOR	A	500	630	2 x 500	2 x 560	
	Fuse links	Type	3NE3 334-0B	3NE3 336	2 x 3NE3 334-0B	2 x 3NE3 335	
	Fuse switch disconnecter	Type	3NP44 7 3NP54 (3NP44 76)	3NP44 7 3NP54 (3NP44 76)	2 x 3NP44 7 2 x 3NP54 (2 x 3NP44 76)	2 x 3NP44 7 2 x 3NP54 (2 x 3NP44 76)	
	Switch disconnecter for fuses	Type	3KL61 3KM57	3KL61 3KM57	2 x 3KL61 2 x 3KM57	2 x 3KL61 2 x 3KM57	
Power loss at rated operating current (40 °C) approx.		W	490	700	810	1550	
Fans	Number		1	1	2	3	
	Ratings	W	18	18	36	54	
Max. conductor cross-sections ¹⁾	Stranded	mm ²	150	240	240	–	
	Connecting bar	mm	–	–	–	40 x 10	
Bridging contactor	for AC-1		3RT14 56	3RT10 56	3RT14 56	3RT10 75	
Recommended braking contactor combination (opening + closing contactor)			3RT10 36 + 3RT10 54	3RT10 44 + 3RT10 46	3RT10 54 + 3RT10 56	3RT10 56 + 3RT10 65	

1) Due to thermal expansion of the bars, flexible links must be used for connecting the busbars.

Type (500 ... 690 V)				3RW22 43-0DB16	3RW22 47-0DB16	3RW22 50-0DB16
Load rating						
Rated operating current I_e	at 40/55 °C, AC-3	A	560/450	865/700	1200/1000	
Motor output (690 V)	at 40/55 °C, AC-3	kW	560/450	850/710	1200/1000	
Permissible starts per hour	350 % x I_e for 5 s	1/h	90	100	60	
	for intermittent duty S4, $T_u = 40$ °C,	1/h	60	80	40	
	ON-period = 30 %	1/h	50	70	40	
Short-circuit protection	SITOR	A	2 x 560	3 x 800	4 x 800	
	Fuse links	Type	2 x 3NE3 335	3 x 3NE3 338-8	4 x 3NE3 338-8	
	Fuse switch disconnecter	Type	2 x 3NP44 7 2 x 3NP54 2 x (3NP44 76)	3 x 3NP44 7 3 x 3NP54 3 x (3NP44 76)	4 x 3NP44 7 4 x 3NP54 4 x (3NP44 76)	
	Switch disconnecter for fuses	Type	2 x 3KL61 2 x 3KM57	3 x 3KL61 3 x 3KM57	4 x 3KL61 4 x 3KM57	
Power loss at rated operating current (40 °C) approx.		W	1950	2660	3560	
Fans	Number		3	3	3	
	Ratings	W	135	78	78	
Max. conductor cross-sections ¹⁾	Connecting bar	mm	40 x 10	60 x 20	60 x 20	
Bridging contactor	for AC-1		3RT14 76	3TF69	2 x 3TF68 ²⁾	
Recommended braking contactor combination (opening + closing contactor)			3RT10 65 + 3RT10 75	3RT10 75 + 3RT10 76	3RT14 76 + 3TF68	

1) Due to thermal expansion of the bars, flexible links must be used for connecting the busbars.

2) Suitable as emergency contactor in occasional starts with $I_a \leq 6 \times I_e$.

Type (1000 V)				3RW22 36-0DB18	3RW22 40-0DB18	3RW22 42-0DB18
Load rating						
Rated operating current I_e	at 40/55 °C, AC-3	A	160/140	300/250	450/355	
Motor output (1000 V)	at 40/55 °C, AC-3	kW	200/160	400/315	630/450	
Permissible starts per hour	350 % x I_e for 5 s	1/h	60	120	110	
	for intermittent duty S4, $T_u = 40$ °C,	1/h	40	80	70	
	ON-period = 30 %	1/h	40	70	70	
Short-circuit protection	SITOR	A				
	Fuse links	Type	3NE3230-0B	3NE3335	2 x 3NE3233	
Power loss at rated operating current (40 °C) approx.		W	550	1100	1190	
Fans	Number		1	3	3	
	Ratings	W	36	54	135	
Max. conductor cross-sections ¹⁾	Connecting bar	mm	150	40 x 10	40 x 10	
Bridging contactor	for AC-1 for AC-3		3RT10 65 3RT10 75	3TF68 3TF68	3TF68 3TF68	

1) Due to thermal expansion of the bars, flexible links must be used for connecting the busbars.

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Short-circuit protection for semiconductors and leads with SITOR all-range fuses, type 3NE1

SIKOSTART ($T_U = 40^\circ\text{C}$) (200 ... 500 V)	Rated current I_N of motor at 400 V	Rated output P_N of motor at 400 V	Protection for full utilization of the SIKOSTART parameters e.g. starting current $3 \times I_N$ for 60 s				
			SITOR fuse (operational class gR)	Rated current	Conductor protection per fuse ¹⁾ for Cu cable	3NP fuse switch disconnector	Switch disconnectors for fuses 3KL, 3KM
A	kW		Quantity per phase/type	A	$\geq \text{mm}^2$		
3RW22 21-1AB15	6.8	3	1 x 3NE1 814-0	20	2.5	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 23-1AB15²⁾	11.4	5.5	1 x 3NE1 815-0	25	4	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 25-1AB15	21.4	11	1 x 3NE1 817-0	50	10	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 26-1AB15	28.5	15	1 x 3NE1 818-0	63	16	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 27-1AB15	35	18.5	1 x 3NE1 820-0	80	25	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL52 30, 3KM52 30
3RW22 28-1AB15	41	22	1 x 3NE1 820-0	80	25	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL52 30, 3KM52 30
3RW22 30-1AB15²⁾	55	30	1 x 3NE1 820-0	80	25	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL52 30, 3KM52 30
3RW22 31-1AB15²⁾	80	45	1 x 3NE1 022-0	125	-	3NP50, 3NP40 7	3KL52 30, 3KM52 30
3RW22 34-0DB15	97	55	1 x 3NE1 225-0	200	95	3NP52, 3NP42 7	3KL55 30, 3KM55 30
3RW22 35-0DB15	134	75	1 x 3NE1 227-0 ³⁾	250	120	3NP52, 3NP42 7	3KL55 30, 3KM55 30
3RW22 36-0DB15	160	90	1 x 3NE1 230-0	315	2 x 70	3NP53, 3NP43 7	3KL57 30, 3KM57 30
3RW22 38-0DB15	194	110	1 x 3NE1 333-0	450	2 x 120	3NP54, 3NP44 7, 3NP4 76	3KL61 30, 3KM57 30
3RW22 38-0DB15	228	132	1 x 3NE1 334-0	500	2 x 120	3NP54, 3NP44 7, 3NP4 76	3KL61 30, 3KM57 30
3RW22 40-0DB15	280	160	1 x 3NE1 334-0	500	2 x 120	3NP54, 3NP44 7, 3NP4 76	3KL61 30, 3KM57 30
3RW22 41-0DB15	345	200	1 x 3NE1 436-0	630	2 x 185	3NP54, 3NP44 70, 3NP4 76	3KL61 30
3RW22 42-0DB1.4¹⁾	430	250	2 x 3NE1 331-0	350	(2 x) 2 x 95	2 x 3NP53, 2 x 3NP43 7	2 x 3KL57 30, 2 x 3KL61 30
3RW22 43-0DB1.2⁴⁾	610	355	2 x 3NE1 334-0	500	(2 x) 2 x 120	2 x 3NP54, 2 x 3NP44 7, 2 x 3NP4 76	2 x 3KM57 30
3RW22 45-0DB1.4¹⁾	690	400	2 x 3NE1 435-0 ³⁾	560	(2 x) 2 x 150	2 x 3NP54, 2 x 3NP44 70, 2 x 3NP4 76	2 x 3KL61 30
3RW22 47-0DB1.4¹⁾	850	500	2 x 3NE1 436-0 ³⁾	630	(2 x) 2 x 185	2 x 3NP54, 2 x 3NP44 70, 2 x 3NP4 76	2 x 3KL61 30
3RW22 50-0DB1.4¹⁾	1060	630	3 x 3NE1 436-0 ³⁾	630	(3 x) 2 x 185	3 x 3NP54, 3 x 3NP44 70, 3 x 3NP4 76	2 x 3KL61 30

1) The minimum conductor cross-section applies to 40 °C ambient temperature, 79 °C limit temperature. Single laying at a distance and with one fuse per phase. If there is more than one fuse per phase, a larger cross-section must be selected (see factors in parentheses). It may be necessary to lay different cross-sections in the event of deviating conditions (see DIN VDE 0298-4).

2) For these units, the service factor ($I_b \times 1.15$) was used!

3) These fuses do not provide semiconductor protection for voltages > 450 V.

4) All-range fuses can only be used for the 415 V and 500 V types (-0DB14 and -0DB15). For the 600 V and 1000 V types (-0DB16 and -0DB18), conductor protection and semiconductor protection fuses must be used, otherwise the soft starter is not sufficiently protected.

Short-circuit protection for semiconductors and leads with SITOR all-range fuses, type 3NE1

SIKOSTART ($T_U = 40^\circ\text{C}$) (200 ... 500 V)	Rated current I_N for the motor at 400 V	Rated output P_N of motor at 400 V	Fuse for reduced load : Starting current $3 \times I_N$ for 5 s and 2 starts/h				
			SITOR fuse (operational class gR)	Rated current	Conductor protection per fuse ¹⁾ for Cu cable	3NP fuse switch disconnector	Switch disconnectors for 3KL, 3KM fuses
A	kW		Quantity per phase/type	A	$\geq \text{mm}^2$		
3RW22 21-1AB15	6.8	3	1 x 3NE1 813-0	16	1.5	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 23-1AB15²⁾	11.4	5.5	1 x 3NE1 814-0	20	2.5	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 25-1AB15	15.4	7.5	1 x 3NE1 815-0	25	4	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 25-1AB15	21.4	11	1 x 3NE1 803-0	35	6	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 26-1AB15⁵⁾	28.5	15	1 x 3NE1 817-0	50	10	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 27-1AB15	35	18.5	1 x 3NE1 818-0	63	16	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL50 30, 3KM50 30
3RW22 28-1AB15	41	22	1 x 3NE1 818-0	63	16	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL52 30, 3KM52 30
3RW22 30-1AB15²⁾	55	30	1 x 3NE1 820-0	80	25	3NP35, 3NP50, 3NP40 1, 3NP40 7	3KL52 30, 3KM52 30
3RW22 31-1AB15	67	37	1 x 3NE1 821-0	100	35 ³⁾	3NP50, 3NP40 7	3KL52 30, 3KM52 30
3RW23 31-1AB15²⁾	80	45	1 x 3NE1 821-0	100	35 ³⁾	3NP50, 3NP40 7	3KL52 30, 3KM52 30
3RW22 34-0DB15	97	55	1 x 3NE1 022-0	125	50	3NP50, 3NP40 7	3KL52 30, 3KM52 30
3RW22 35-0DB15	134	75	1 x 3NE1 224-0	160	70	3NP52, 3NP42 7	3KL55 30, 3KM55 30
3RW22 36-0DB15	160	90	1 x 3NE1 225-0	200	95	3NP52, 3NP42 7	3KL55 30, 3KM55 30
3RW22 38-0DB15	194	110	1 x 3NE1 227-0	250	120	3NP52, 3NP42 7	3KL55 30, 3KM55 30
3RW22 38-0DB15	228	132	1 x 3NE1 230-0	315	2 x 70	3NP53, 3NP43 7	3KL57 30, 3KM57 30
3RW22 40-0DB15	280	160	1 x 3NE1 331-0	350	2 x 95	3NP53, 3NP43 7	3KL57, 3KL61 30, 3KM57 30
3RW22 41-0DB15	345	200	1 x 3NE1 332-0	400	2 x 95	3NP53, 3NP43 7	3KL57, 3KL61 30, 3KM57 30
3RW22 42-0DB1.4¹⁾	430	250	1 x 3NE1 334-0	500	2 x 120	3NP54, 3NP44 7, 3NP4 76	3KL61 30, 3KM57 30
3RW22 43-0DB1.2⁴⁾	610	355	2 x 3NE1 331-0	350	(2 x) 2 x 95	2 x 3NP53, 2 x 3NP43 7	2 x 3KL57, 2 x 3KL61 30
3RW22 45-0DB1.4¹⁾	690	400	2 x 3NE1 332-0	400	(2 x) 2 x 95	2 x 3NP53, 2 x 3NP43 7	2 x 3KM57 30
3RW22 47-0DB1.4¹⁾	850	500	2 x 3NE1 334-0	500	(2 x) 2 x 120	2 x 3NP54, 2 x 3NP44 7, 2 x 3NP4 76	2 x 3KL61 30, 2 x 3KM57 30
3RW22 50-0DB1.4¹⁾	1060	630	2 x 3NE1 436-0	630	(2 x) 2 x 185	2 x 3NP54, 2 x 3NP44 70, 2 x 3NP4 76	2 x 3KL61 30

1) The minimum conductor cross-section applies to 40 °C ambient temperature, 79 °C limit temperature. Single laying at a distance and with one fuse per phase. If there is more than one fuse per phase, these fuses must be connected in parallel and a larger cross-section must be selected (see factors in parentheses). It may be necessary to lay different cross-sections in the event of deviating conditions (see DIN VDE 0298-4).

2) For these units, the service factor ($I_b \times 1.15$) was used!

3) To connect the unit to 35 mm² cables, they must be converted to 2 x 16 mm² using a terminal block.

4) All-range fuses can only be used for the 415 V and 500 V types (-0DB14 and -0DB15). For the 600 V and 1000 V types (-0DB16 and -0DB18), conductor protection and semiconductor protection fuses must be used otherwise the soft starter is not sufficiently protected.

SIRIUS/SIKOSTART Soft Starters

For Advanced Applications

SIKOSTART soft starters

Radio interference suppression

The 3RW22.. units fulfill the requirements for limit value Class A (industrial applications) as standard.
To achieve limit value Class B, a radio interference filter is required.

Climatic conditions		SN 29 070 Part 1, climate CLASS J2
Mechanical conditions	Vibration resistance Shock resistance	SN 29 010, severity 13 acc. to IEC 60068-2-27
Noise immunity		
Electrostatic discharge acc. to IEC 60801-2	Test severity Air discharge Contact discharge (direct and indirect)	kV kV III ± 8 ± 4
Noise immunity Induced RF fields acc. to IEC 60801-6	V	10 V; 0.15 MHz ... 230 MHz; 80 % AM modulated: 1 kHz
Burst acc. to IEC 60801-4	Test severity	IV 4
Surge acc. to IEC 60801-5	Load and supply voltage Control circuit	kV kV 4/2 2/1
Voltage dips acc. to IEC 60947-4-2	Test	A, B, C
Emitted interference		
Conducted interference voltage acc. to IEC 60947-4-2	Limit CLASS Limit CLASS with single-stage filter	A B
Noise field intensity acc. to IEC 60947-4-2	Limit curve	A

To reach limit value class B, the following filters¹⁾ are required:

Soft starter type	Rated operating current	Voltage range 200 ... 500 V			Voltage range 200 ... 415 V			Voltage range 500 ... 690 V		
		Filter type B84143	Rated current filter A	Connection terminals mm ²	Filter type B84143	Rated current filter A	Connection terminals mm ²	Filter type B84143	Rated current filter A	Connection terminals mm ²
Soft starter										
A										
3RW22 21	7	G8-R112	8	4						
3RW22 23	10.5	G20-R112	20	4						
3RW22 25	22	G36-R112	36	6						
3RW22 26	28	G36-R112	36	6						
3RW22 27	35	G36-R112	36	6						
3RW22 28	45	G50-R112	50	16						
3RW22 30	50	G50-R112	50	16						
3RW22 31	70	G66-R112	66	25						
3RW22 34	100	G120-R112	120	50						
3RW22 35	135	G150-R112	150	50						
3RW22 36	160	G150-R112	150	50						
3RW22 38	235	G220-R112	220	95						
3RW22 40	300	B320-S20	320	40 x 25 x 5 ¹⁾						
3RW22 41	355	B400-S20	400	40 x 25 x 5 ¹⁾						
3RW22 42	450	B600-S20	600	40 x 30 x 5 ¹⁾	B600-S20	600	40 x 25 x 5 ¹⁾	B600-S21	600	40 x 25 x 5 ²⁾
3RW22 43	560	B600-S20	600	40 x 30 x 5 ¹⁾	B600-S20	600	40 x 25 x 5 ¹⁾	B600-S21	600	40 x 25 x 5 ²⁾
3RW22 45	700	B1000-S20	1000	50 x 40 x 8 ¹⁾	B1000-S20	1000	40 x 25 x 5 ¹⁾	B1000-S21	1000	40 x 25 x 5 ²⁾
3RW22 47	865	B1000-S20	1000	50 x 40 x 8 ¹⁾	B1000-S20	1000	40 x 25 x 5 ¹⁾	B1000-S21	1000	40 x 25 x 5 ²⁾
3RW22 50	1200	B1600-S20	1600	50 x 40 x 8 ¹⁾	B1600-S20	1600	40 x 25 x 5 ¹⁾	B1600-S21	1600	40 x 25 x 5 ²⁾

1) Contact address: The suppression filters mentioned above can be ordered from EPCOS AG (see Appendix → External Partners).

2) Busbar connection: L x W x H.

SIRIUS/SIKOSTART Soft Starters For Advanced Applications

SIKOSTART soft starters

Type		3RW22 ...-B1.			
Version		With solid-state device protection and RS 232 serial PC interface			
Adjustability of functions in the various device versions		on the unit, with potentiometers		via a PC, with COM SIKOSTART	
Start-up	Breakaway pulse	Amplitude	%	20 ... 100 x U_n	21 ... 100 x U_n
		Duration	ms	50 ... 1000	100 ... 1000
Start ramp	Starting voltage	Starting voltage	%	20 ... 100 x U_n	
		Duration	s	0.3 ... 180	0 ... 1000
Current limiting	Amplitude	Amplitude		50 % ... 600 % x I_e (I_e : rated operating current)	Numerical value in ampere, from 1 A to max. 6553 A or max. 6 x I_e (I_e : rated operating current)
		Duration		until starting is detected	
Voltage limiting	Amplitude	Amplitude	%	-	20 ... 100 x U_n
		Duration	s	-	0 ... 1000
Start-up detection	Function	Function		Automatic increase of the motor terminal voltage to 100 % x U_n on reaching the rated speed through p.f. and current detection.	
		p.f. detection can be deactivated		x	
Emergency start (only start ramp active)				x	
Operation	Energy saving mode			x	
	Bridging contactor operation			x	
	Continuous operation at max. 115 % I_e (full control of the thyristors)			x	
Starting	Ramp-down			x	
	Smooth ramp-down	Starting voltage of the stop ramp	%	fixed 90 x U_n	20 ... 100 x U_n
		Switch-off voltage of the stop ramp	%	85 of the starting voltage of the start ramp	20 ... 100 x U_n
		Ramp-down time	s	1 ... 20	0 ... 1000
	Pump ramp-down	Switch-off voltage of pump ramp-down	%	-	20 ... 90 x U_n
		Ramp-down time	s	5 ... 90	5 ... 200
	DC braking	Braking torque	Braking torque		Inversely proportional to the braking time, 20 % ... 85 % of the max. possible braking torque
Braking time			s	3 ... 18	1 ... 18

U_n = mains voltage