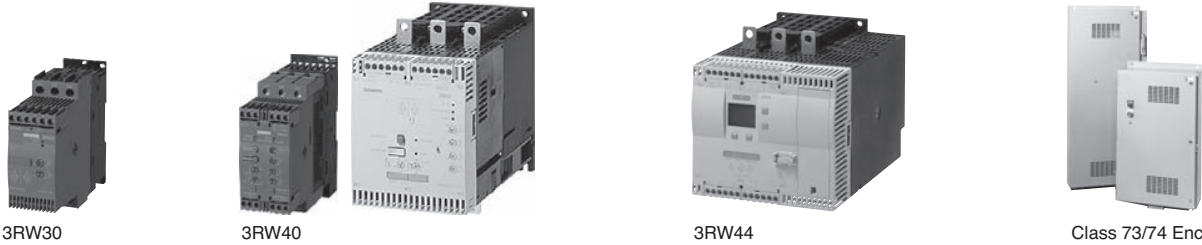


# Motor Starters, Soft Starters and Load Feeders

## Introduction

### Overview



3RW30

3RW40

3RW44

Class 73/74 Enclosed

**Order No.**      **Page**

#### For operation in the control cabinet

##### 3RW soft starters for standard applications

- Application areas
  - Fans
  - Building/construction machines
  - Escalators
  - Air conditioning systems
  - Assembly lines
  - Operating mechanisms
- Pumps
- Presses
- Transport systems
- Fans
- Compressors and coolers

##### 3RW30 soft starters

- SIRIUS 3RW30 soft starters for soft starting and smooth ramp-down of three-phase asynchronous motors
- Performance range of up to 75 Hp (at 460 V)

**3RW30**      7/4

##### 3RW40 soft starters

- SIRIUS 3RW40 soft starters with the integral functions
  - Solid-state motor overload and intrinsic device protection and
  - Adjustable current limiting
- for the soft starting and stopping of three-phase asynchronous motors
- Performance range of up to 300 Hp (at 460 V)

**3RW40**      7/8

##### 3RW soft starters for high-feature applications

- Application areas
  - Pumps
  - Compressors
  - Industrial refrigerating systems
  - Conveying systems
  - Machine tools
- Fans
- Cooling systems
- Water transport
- Hydraulics
- Mills

##### 3RW44 soft starters

- In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements
- Performance range
  - Up to 900 Hp (at 460 V) in inline circuit and
  - Up to 1600 Hp (at 460 V) in inside-delta circuit

**3RW44**      7/16

#### For enclosed applications

##### Enclosures in NEMA 1, 3, 4, & 12 types UL/CSA listed

- Complete starter includes 3RW40 or 3RW44 and CPT
- Performance Range of up to 600 Hp (at 460 V)
- Combination options include circuit breaker or fusible disconnect

**Class 73/74**      7/83

- Application areas:
  - Compressors
  - Pumps
  - Stamping presses
  - Cooling towers
  - Molding and extruding
  - Chippers and debarkers
- Lumber processing
- Pulp & paper processing
- Conveyors
- Textiles
- HVAC

# For Operation in the Control Cabinet

## 3RW Soft Starters

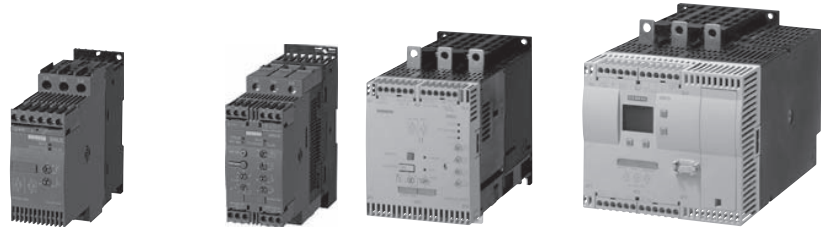
### General Data

#### Overview

The advantages of the SIRIUS soft starters at a glance:

- Soft starting and smooth ramp-down<sup>1)</sup>
- Stepless starting
- Reduction of current peaks
- Avoidance of mains voltage fluctuations during starting
- Reduced load on the power supply network

- Reduction of the mechanical load in the operating mechanism
- Considerable space savings and reduced wiring compared with conventional starters
- Maintenance-free switching
- Very easy handling
- Fits perfectly in the SIRIUS modular system



		SIRIUS 3RW30 Standard applications	SIRIUS 3RW40 Standard applications	SIRIUS 3RW44 High-Feature applications
Rated current up to 50 °C	A	3 ... 98	11 ... 385	26 ... 1076
Rated operational voltage	V	200 ... 480	200 ... 600	200 ... 690
Motor rating at 460 V				
• Inline circuit	Hp	1.5 ... 75	7.5 ... 300	15 ... 900
• Inside-delta circuit	Hp	--	--	22 ... 1600
Ambient temperature	°C	-25 ... +60	-25 ... +60	0 ... +60
Soft starting/ramp-down		✓ <sup>1)</sup>	✓	✓
Voltage ramp		✓	✓	✓
Starting/stopping voltage	%	40 ... 100	40 ... 100	20 ... 100
Starting and ramp-down time <sup>7)</sup>	s	0 ... 20	0 ... 20	1 ... 360
Torque control		--	--	✓
Starting/stopping torque	%	--	--	20 ... 100
Torque limit	%	--	--	20 ... 200
Ramp time	s	--	--	1 ... 360
Integral bypass contact system		✓	✓	✓
Intrinsic device protection		--	✓	✓
Motor overload protection		--	✓	✓
Thermistor motor protection		--	✓ <sup>2)</sup>	✓
Integrated remote RESET		--	✓ <sup>3)</sup>	✓
Adjustable current limiting		--	✓	✓
Inside-delta circuit		--	--	✓
Breakaway pulse		--	--	✓
Creep speed in both directions of rotation		--	--	✓
Pump ramp-down		--	--	✓ <sup>4)</sup>
DC braking		--	--	✓ <sup>4)</sup> 5)
Combined braking		--	--	✓ <sup>4)</sup> 5)
Motor heating		--	--	✓
Communication		--	--	With PROFIBUS DP (optional)
External display and operator module		--	--	(optional)
Operating measured value display		--	--	✓
Error logbook		--	--	✓
Event list		--	--	✓
Slave pointer function		--	--	✓
Trace function		--	--	✓ <sup>6)</sup>
Programmable control inputs and outputs		--	--	✓
Number of parameter sets		1	1	3
Parameterization software (Soft Starter ES)		--	--	✓
Power semiconductors (thyristors)		2 controlled phases	2 controlled phases	3 controlled phases
Screw terminals		✓	✓	✓
Spring-type terminals		✓	✓	✓
UL/CSA		✓	✓	✓
CE marking		✓	✓	✓
Soft starting under heavy starting conditions		--	--	✓ <sup>4)</sup>

#### Configuring support

Win-Soft Starter, Electronic Application Selector, Technical Assistance Tel.: 1-800-333-7421

✓ Function is available; -- Function is not available.

<sup>1)</sup> Only soft starting available for 3RW30.

<sup>2)</sup> Optional up to size S3 (device variant).

<sup>3)</sup> Available for 3RW40 2. to 3RW40 4., optional for 3RW40 5. and 3RW40 7..

<sup>4)</sup> Calculate soft starter and motor with size allowance where required.

<sup>5)</sup> Not possible in inside-delta circuit.

<sup>6)</sup> Trace function with Soft Starter ES software.

<sup>7)</sup> Actual motor start times are load dependent.

You can find further information on the Internet at:

[www.usa.siemens.com/softstarters](http://www.usa.siemens.com/softstarters)

# For Operation in the Control Cabinet

## 3RW Soft Starters

**3RW40**  
for standard applications

1

2

3

4

5

6

7

### Selection and ordering data



3RW40 28-1BB14



3RW40 38-1BB14



3RW40 47-1BB14

Ambient temperature 50 °C					Size	Order No.	List Price \$ per PU	PS*	Weight per PU approx.
Rated operational current $I_e^{1)}$	Rated power of induction motors for rated operational voltage $U_e$								
	200 V	230 V	460 V	575 V					
A	hp	hp	hp	hp					kg
<b>Rated operational voltage <math>U_e</math> 200 ... 480 V</b>									
• With screw terminals									
11	3	3	7.5	--	S0	3RW40 24-1BB□4		1 unit	0.770
23	5	5	15	--	S0	3RW40 26-1BB□4		1 unit	0.770
29	7.5	7.5	20	--	S0	3RW40 27-1BB□4		1 unit	0.770
34	10	10	25	--	S0	3RW40 28-1BB□4		1 unit	0.770
• With spring-type terminals									
11	3	3	7.5	--	S0	3RW40 24-2BB□4		1 unit	0.770
23	5	5	15	--	S0	3RW40 26-2BB□4		1 unit	0.770
29	7.5	7.5	20	--	S0	3RW40 27-2BB□4		1 unit	0.770
34	10	10	25	--	S0	3RW40 28-2BB□4		1 unit	0.770
• With screw or spring-type terminals									
42	10	15	30	--	S2	3RW40 36-□BB□4		1 unit	1.350
58	15	20	40	--	S2	3RW40 37-□BB□4		1 unit	1.350
62	20	20	40	--	S2	3RW40 38-□BB□4		1 unit	1.350
• With screw or spring-type terminals									
73	20	25	50	--	S3	3RW40 46-□BB□4		1 unit	1.900
98	30	30	75	--	S3	3RW40 47-□BB□4		1 unit	1.900
<b>Rated operational voltage <math>U_e</math> 400 ... 600 V</b>									
• With screw terminals									
11	--	--	7.5	10	S0	3RW40 24-1BB□5		1 unit	0.770
23	--	--	15	20	S0	3RW40 26-1BB□5		1 unit	0.770
29	--	--	20	25	S0	3RW40 27-1BB□5		1 unit	0.770
34	--	--	25	30	S0	3RW40 28-1BB□5		1 unit	0.770
• With spring-type terminals									
11	--	--	7.5	10	S0	3RW40 24-2BB□5		1 unit	0.770
23	--	--	15	20	S0	3RW40 26-2BB□5		1 unit	0.770
29	--	--	20	25	S0	3RW40 27-2BB□5		1 unit	0.770
34	--	--	25	30	S0	3RW40 28-2BB□5		1 unit	0.770
• With screw or spring-type terminals									
42	--	--	30	40	S2	3RW40 36-□BB□5		1 unit	1.350
58	--	--	40	50	S2	3RW40 37-□BB□5		1 unit	1.350
62	--	--	40	60	S2	3RW40 38-□BB□5		1 unit	1.350
• With screw or spring-type terminals									
73	--	--	50	60	S3	3RW40 46-□BB□5		1 unit	1.900
98	--	--	75	75	S3	3RW40 47-□BB□5		1 unit	1.900

#### Order No. supplement for connection types

- With screw terminals
- With spring-type terminals<sup>2)</sup>

#### Order No. supplement for rated control supply voltage $U_s$

- 24 V AC/DC
- 110 ... 230 V AC/DC

<sup>1)</sup> Stand-alone installation without auxiliary fan.

<sup>2)</sup> Power connection: screw terminals.

1  
2

0  
1

#### Note:

*Selection of the soft starter depends on the rated motor current. The SIRIUS 3RW40 solid-state soft starters are designed for easy starting conditions.  $J_{Load} < 10 \times J_{Motor}$ . In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures other than 50°C, see technical information on page 7/56*

# For Operation in the Control Cabinet

## 3RW Soft Starters

### 3RW40

#### for standard applications

Type		3RW40 36	3RW40 37	3RW40 38	3RW40 46	3RW40 47
<b>Power electronics</b>		40 °C/50 °C/60 °C				
<b>Load rating with rated operational current <math>I_e</math></b>						
• Acc. to IEC and UL/CSA <sup>1)</sup> , for individual mounting at 40/50/60 °C, AC-53a	A	45/42/39	63/58/53	72/63/60	80/73/66	106/98/90
<b>Smallest adjustable rated motor current <math>I_M</math></b>						
For the motor overload protection	A	23	26	35	43	46
<b>Power loss</b>						
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	6	12	15	12	21
• During starting with 300 % $I_M$ (40°C)	W	79	111	125	144	192
<b>Permissible rated motor current and starts per hour</b>						
<b>• Normal starting (Class 10)</b>						
- Rated motor current $I_M^{(2)}$ , starting time 3 s	A	45/42/39	63/58/53	72/63/60	80/73/66	106/98/90
- Starts per hour <sup>3)</sup>	1/h	38	23	22	22	15
- Rated motor current $I_M^{(2)(4)}$ , starting time 4 s	A	45/42/39	63/58/53	72/63/60	80/73/66	106/98/90
- Starts per hour <sup>3)</sup>	1/h	26	15	15	15	10
<b>• Normal starting (Class 15)</b>						
- Rated motor current $I_M^{(2)}$ , starting time 4.5 s	A	42/38/34	50/46/42	56/52/46	70/64/58	84/77/70
- Starts per hour <sup>3)</sup>	1/h	30	34	34	24	23
- Rated motor current $I_M^{(2)(4)}$ , starting time 6 s	A	42/38/34	50/46/42	56/52/46	70/64/58	84/77/70
- Starts per hour <sup>3)</sup>	1/h	21	24	24	16	17
<b>• Normal starting (Class 20)</b>						
- Rated motor current $I_M^{(2)}$ , starting time 6 s	A	38/34/30	46/42/38	50/46/42	64/58/52	77/70/63
- Starts per hour <sup>3)</sup>	1/h	30	31	34	23	23
- Rated motor current $I_M^{(2)(4)}$ , starting time 8 s	A	38/34/30	46/42/38	50/46/42	64/58/52	77/70/63
- Starts per hour <sup>3)</sup>	1/h	21	22	24	16	16

1) Measurement at 60 °C according to UL/CSA not required.

2) With 300 %  $I_M$ .

3) For intermittent duty S4 with ON period = 30 %,  $T_U = 40$  °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

4) Maximum adjustable rated motor current  $I_M$ , dependent on CLASS setting.

Type		3RW40 55	3RW40 56	3RW40 73	3RW40 74	3RW40 75	3RW40 76
<b>Power electronics</b>		40 °C/50 °C/60 °C					
<b>Load rating with rated operational current <math>I_e</math></b>							
• Acc. to IEC and UL/CSA <sup>1)</sup> , for individual mounting at 40/50/60 °C, AC-53a	A	134/117/100	162/145/125	230/205/180	280/248/215	356/315/280	432/385/335
<b>Smallest adjustable rated motor current <math>I_M</math></b>							
For the motor overload protection	A	59	87	80	130	131	207
<b>Power loss</b>							
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	60	75	75	90	125	165
• During starting with 300 % <sup>2)</sup> $I_M$ (40°C)	W	1043	1355	2448	3257	3277	3600
<b>Permissible rated motor current and starts per hour</b>							
<b>• Normal starting (Class 10)</b>							
- Rated motor current $I_M^{(2)}$ , starting time 10 s	A	134/117/100	162/145/125	230/205/180	280/248/215	356/315/280	432/385/335
- Starts per hour <sup>3)</sup>	1/h	20	8	20	20	16	17
- Rated motor current $I_M^{(2)(4)}$ , starting time 20 s	A	134/117/100	162/145/125	230/205/180	280/248/215	356/315/280	432/385/335
- Starts per hour <sup>3)</sup>	1/h	7	1.4	9	8	5	5
<b>• Normal starting (Class 15)</b>							
- Rated motor current $I_M^{(2)}$ , starting time 15 s	A	134/117/100	152/140/125	210/200/180	250/220/190	341/315/280	402/385/335
- Starts per hour <sup>3)</sup>	1/h	11	8	11	13	11	12
- Rated motor current $I_M^{(2)(4)}$ , starting time 30 s	A	134/117/100	152/140/125	210/200/180	250/220/190	341/315/280	402/385/335
- Starts per hour <sup>3)</sup>	1/h	1.2	1.7	1	6	2	2
<b>• Normal starting (Class 20)</b>							
- Rated motor current $I_M^{(2)}$ , starting time 20 s	A	124/112/100	142/132/120	200/185/168	230/205/180	311/280/250	372/340/305
- Starts per hour <sup>3)</sup>	1/h	12	9	10	10	10	10
- Rated motor current $I_M^{(2)(4)}$ , starting time 40 s	A	124/112/100	142/132/120	200/185/168	230/205/180	311/280/250	372/340/305
- Starts per hour <sup>3)</sup>	1/h	3	3	1	5	1	1

1) Measurement at 60 °C according to UL/CSA not required.

2) With 300 %  $I_M$ .

3) For intermittent duty S4 with ON period = 30 %,  $T_U = 40$  °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

4) Maximum adjustable rated motor current  $I_M$ , dependent on CLASS setting.