ITC

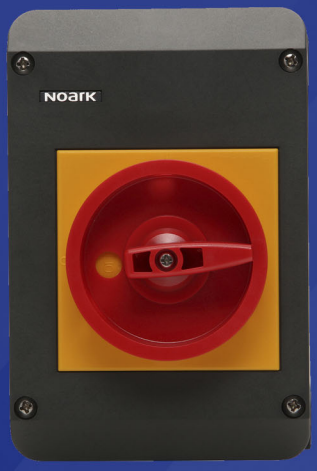
ELECTRICAL
COMPONENTS

Noark

Manual Motor Starters

- 0.1A to 80A
- Full range of accessories
- UL 60947-4-1

Type E and F Applications



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Ex9S Manual Motor Starters - Product Overview

Features

Ex9S Manual Motor Starters provide manual isolation, manual motor control, and overcurrent protection. They are electro-mechanical devices combining the functions below in one unit.

- Disconnect for Motor Branch Circuit
- Manual Motor Control (automatic when used with contactor)
- Branch-Circuit Short Circuit Protection (Magnetic Protection)
- Overload Protection (Thermal Protection) - Trip Class 10

The National Electrical Code requires an individual Motor Branch Circuit to be protected by a UL/CSA Listed Fuse, Circuit breaker or Self-Protected Combination Motor Controller.

Available as:

- Up to 80A @600Vac
- UL 60947-4-1 Type E Self Protection-Ex9S32 and Ex9S80
- UL 60947-4-1 Type F Group Motor Protection-Ex9S32
- Built-in fault indication
- Full range of accessories
- Lockable handle

Certifications

- UL listed
- CCC Certified
- NOM Certified
- RoHs Compliant

Standards Compliance

- UL 60947-1; UL 60947-4-1
- IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1,IEC/EN 60947 -5-1
- GB 14048.1, GB 14048.2, GB14048.4
- CSA 22.2 NO. 60947-1,CSA 22.2 NO. 60947-4-1

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Ex9S Manual Motor Starters - Product Selection

Certifications

IEC/EN 60947-4-1

Ex9S32

Rated Current Amp (Min-Max)	Thermal Magnetic protection	
	Product	Part No.
0.10~0.16	Ex9S32A0.16A	1600046
0.16~0.25	Ex9S32A0.25A	1600047
0.25~0.40	Ex9S32A0.4A	1600048
0.40~0.63	Ex9S32A0.63A	1600049
0.63~1	Ex9S32A1A	1600050
1~1.6	Ex9S32A1.6A	1600051
1.6~2.5	Ex9S32A2.5A	1600052
2.5~4	Ex9S32A4A	1600053
Rated Current Amp (Min-Max)	Thermal Magnetic protection	
	Product Number	Part
4~6.3	Ex9S32A6.3A	1600054
6~10	Ex9S32A10A	1600055
9~14	Ex9S32A14A	1600056
13~18	Ex9S32A18A	1600057
17~23	Ex9S32A23A	1600058
20~25	Ex9S32A25A	1600059
24~32	Ex9S32A32A	1600060

Information subject to change without notice

Ex9S80

Rated Current Amp (Min-Max)	Thermal Magnetic protection	
	Product	Part Number
14~20	Ex9S80A20A	1600170
18~25	Ex9S80A25A	1600171
23~32	Ex9S80A32A	1600172
30~40	Ex9S80A40A	1600173
38~50	Ex9S80A50A	1600174
48~63	Ex9S80A63A	1600175
60~72	Ex9S80A72A	1600176
70~80	Ex9S80A80A	1600177
Rated Current Amp (Min-Max)	Magnetic protection	
	Product	Part Number
14~20	Ex9S80A20AM	1600185
18~25	Ex9S80A25AM	1600186
23~32	Ex9S80A32AM	1600187
30~40	Ex9S80A40AM	1600188
38~50	Ex9S80A50AM	1600189
48~63	Ex9S80A63AM	1600190
60~72	Ex9S80A72AM	1600191
70~80	Ex9S80A80AM	1600192
Rated Current Amp (Min-Max)	Thermal Magnetic protection	
	Product	Part Number
14~20	Ex9S80A20B	1600178
18~25	Ex9S80A25B	1600179
23~32	Ex9S80A32B	1600180
30~40	Ex9S80A40B	1600181
38~50	Ex9S80A50B	1600182
48~63	Ex9S80A63B	1600183
60~72	Ex9S80A72B	1600184
Rated Current Amp (Min-Max)	Magnetic protection	
	Product	Part Number
14~20	Ex9S80A20BM	1600193
18~25	Ex9S80A25BM	1600194
23~32	Ex9S80A32BM	1600195
30~40	Ex9S80A40BM	1600196
38~50	Ex9S80A50BM	1600197
48~63	Ex9S80A63BM	1600198
60~72	Ex9S80A72BM	1600199

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Additional products, accessories, and higher ratings available.

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Ex9S - Ratings

"Manual Self- Protected Starter"	Overload Trip Range(A)	UL Motor Power (hp) @50/60 Hertz							Short Circuit Rating (SCCR) kA						UL 60947-4-1 Type F Components			
		1 Phase		3 Phase					Stand Alone		UL 508 Type E		UL 508 Type F		UL 60947-4-1 Type E Components	Contactor	DIN rail Base Plate	Manual Motor Starter Connector
		110/ 120V	220/ 240V	200V	208V	220/ 240V	460/ 480V	575/ 600V	240V or 480/ 277V	600/ 347V	240V or 480/ 277V	600/ 347V	240V or 480/ 277V	600/ 347V	Fault Contact & Terminal Cover			
Ex9S32A0.16A	0.1-0.16	-	-	-	-	-	-	-	65	5	65	10	65	10	CCE51 and AL5111	Ex9CS09 or Ex9C12	DRA51	CC51 (Mini Contactor) or CC52 (Standard Contactor)
Ex9S32A0.25A	0.16-0.25	-	-	-	-	-	-	-										
Ex9S32A0.4A	0.25-0.4	-	-	-	-	-	-	-										
Ex9S32A0.63A	0.4-.63	-	-	-	-	-	-	-										
Ex9S32A1A	0.63-1	-	-	-	-	-	-	0.5										
Ex9S32A1.6A	1-1.6	-	0.1	-	-	-	0.75	0.75										
Ex9S32A2.5A	1.6-2.5	-	0.167	0.50	0.5	0.5	1	1.5										
Ex9S32A4A	2.5-4	0.125	0.333	0.75	0.75	0.75	2	3										
Ex9S32A6.3A	4-6.3	0.25	0.5	1	1	1.5	3	5										
Ex9S32A10A	6-10	0.5	1.5	2	2	3	5	7.5										
Ex9S32A14A	9-14	0.75	2	3	3	3	10	10								Ex9C18		CC52
Ex9S32A18A	13-18	1	3	5	5	5	10	15*	42	5	42	-	42	-		Ex9C25		CC53
Ex9S32A23A	17-23	1.5	3	5	-	7.5	15	20*										
Ex9S32A25A	20-25	2	-	-	-	7.5	15	20*								Ex9C38		
Ex9S32A32A	24-32	2	5	7.5	7.5	10	20	25*										
Ex9S80A20A/B(M)	14- 20A	1	3	5	5	5	10	15	42	5	42	30	-	-	AL5111	-		
Ex9S80A25A/B(M)	18- 25A	2	-	-	7.5	7.5	15	20										
Ex9S80A32A/B(M)	23- 32A	2	5	7.5	7.5	10	20	25										
Ex9S80A40A/B(M)	30- 40A	3	-	10	10	-	25	30				18						
Ex9S80A50A/B(M)	38- 50A	-	-	15	15	15	30	40										
Ex9S80A63A/B(M)	48- 63A	5	10	15	20	20	40	50				10						
Ex9S80A72A/B(M)	60- 72A	-	-	20	-	25	50	60										
Ex9S80A80A(M)	70- 80A	-	-	25	25	-	60	75	10		10							

* Manual Motor Control and Motor Disconnect only, not applied in Combination Motor Control

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Ex9S32

Manual self-protected starter	Setting Current (A)		Magnetic Trip Rating (A) A
	Min.	Max.	
Ex9S32A0.16A	0.1	0.16	2.1
Ex9S32A0.25A	0.16	0.25	3.2
Ex9S32A0.4A	0.25	4	4.8
Ex9S32A0.63A	0.4	0.63	7.2
Ex9S32A1A	0.63	1	11
Ex9S32A1.6A	1	1.6	20
Ex9S32A2.5A	1.6	2.5	30
Ex9S32A4A	2.5	4	50
Ex9S32A6.3A	4	6.3	72.5
Ex9S32A10A	6	10	130
Ex9S32A14A	9	14	175
Ex9S32A18A	13	18	230
Ex9S32A23A	17	23	280
Ex9S32A25A	20	25	322
Ex9S32A32A	24	32	416

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Ex9S80

Manual self-protected starter	Setting Current (A)		Magnetic Trip Rating (A)	
	Min.	Max.	A	B
Ex9S80A20A/B(M)	14	20	310	400
Ex9S80A25A/B(M)	18	25	375	500
Ex9S80A32A/B(M)	23	32	445	680
Ex9S80A40A/B(M)	30	40	560	800
Ex9S80A50A/B(M)	38	50	700	960
Ex9S80A63A/B(M)	48	63	950	1150
Ex9S80A72A/B(M)	60	72	1000	1150
Ex9S80A80A(M)	70	80	1150	-

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Ex9S - Technical Data

Description		Ex9S32	Ex9S80
Rated operational current I_e (A)		32A	80A
Conventional rated thermal current Ith (A)		0.16~32A	14-80A
Tripping Class		10	
Rated insulation voltage U_i (Vac)		690/IEC; 600/UL, CSA	
Rated operational voltage U_e (AC)		230/240, 400/415, 460/480, 575/600	
Rated impulse withstand voltage U_{imp} (AC)		6,000V	
Rated Operational Frequency (Hz)		50/60Hz	
Resistance to shock		30 gn -11 ms	
Resistance to vibrations		5gn (5 -150Hz)	
Enviornmental Temperature	Transportation or Storage	-40˚F to 176˚F (-40˚C to 80˚C)[1]	
	Working at	-4˚F to 140˚F (-20˚C to 60˚C)[2]	
	Testing at	59˚F to 77˚F (15˚C to 25˚C)	
	Instantaneous limit	-31˚F to 158˚F (-35˚C to 70˚C)	
Altitude ft (m)		Not to exceed 6,562 (2,000)	
Ambient Conditions		At mounting site, relative humidity not exceed 90% at the temperature 104˚F (40˚C), higher relative humidity is allowable under lower temperature	
Pollution Grade		III	
Mounting Conditions		The inclination between the mounting plane and the vertical plane shall not exceed 30˚; The product shall be installed and operated at a place without obvious shock, impact and vibration.	
Service life* (cycles)	Electrical	50,000	50,000 (up to 63A) ;30,000(72A&80A)
	Mechanical	100,000	50,000 (up to 72A) ;30,000(80A)
Duty Class (cycles/hr)		30, max. operating rate	
Degree of Protection		IP 20	

1: 24 hours max. at the ultimated temperature 2: with temperature reduction factor
*: close/open operation, and 30 cycles/hr for AC-3 Duty@400/415Vac
Information subject to change without notice

	Auxiliary contacts AX51	Auxiliary contacts AX52	Auxiliary contacts AX53	Auxiliary contacts AX51
Rated operational voltage Ue	300V	600V	60VAC, 24VDC	600V
Rated frequency	50/60Hz	50/60Hz	-	50/60Hz
Rated impulse withstand voltage Uimp	2500V	6000V	800V	6000V
Conventional rated thermal current (Ith)"	2.5A	5A	1A	5A
Mechanical life (C-O operations)	100000	100000	100000	100000
Electrical Rating	C300,Q300	B600,Q300	AC-12:60V/0.1A DC-12:24V/1A	B600,Q300
Minimum connection Load	5mA @24VAC/DC	8mA @24VAC/DC	2mA @12VAC/DC or 3mA @5VDC	8mA @24VAC/DC

Information subject to change without notice

Terminal Wiring

Model		Wire Ranges(AWG)	Torques lb·in (N.m)	Screw Type	Pull wire length inch (mm)
Phil-Hex head	Ex9S80	14~3	53 (6)	M8	0.59 (15)
Phil-Slot Head	Ex9S32	(1)x14-(2)x8	22 (2.5)	M4	0.4 (10)
	AX51	(1)x18-(2)x12	7 (0.8)	M3	-
	AX52	(1)x18-(2)x12	7 (0.8)	M3	-
	AX53	(1)x18-(2)x14	7 (0.8)	M3	-
	AL51	(1)x18-(2)x12	7 (0.8)	M3	-
	UVT51	(1)x18-(2)x12	15 (1.7)	M3.5	-
	SHT51	(1)x18-(2)x12	15 (1.7)	M3.5	-

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UL 60947-4-1 (formerly UL 508) Type E Application

The National Electrical Code (NEC) requires the following when controlling a motor:

- A means of disconnecting power from the circuit
- Short circuit protection for the cables
- A way to start and stop the motor (typically a contactor)
- Overload protection for the motor (typically an overload relay)

The EX9S32 can provide (self protected) UL 60947-4-1 (formerly UL 508) Type E protection when used in conjunction with a terminal extension and an alarm contact. The Ex9S80 also provide Type E protection when used with an Alarm contact (does not require the use of terminal extension).

Type E:
9S32+CCE51+AL5111 OR 9S80 + AL5111

TYPE E

Components	Catalog Number	Product
Manual Motor Starter: 0.10-32 Amps 14-80 Amps	EX9S32 Ex9S80	
Fault Signaling/Alarm Contact	AL5111	
Terminal cover/extension: Ex9S32 only	CCE51	

Information subject to change without notice

Disclaimer: Proper Sizing of an overcurrent protection device is the responsibility of the customer and should be determined using the application standards of the NEC*, CEC**, or other applicable standards
*NEC-National Electrical Code
** CEC-Canadian Electrical Code

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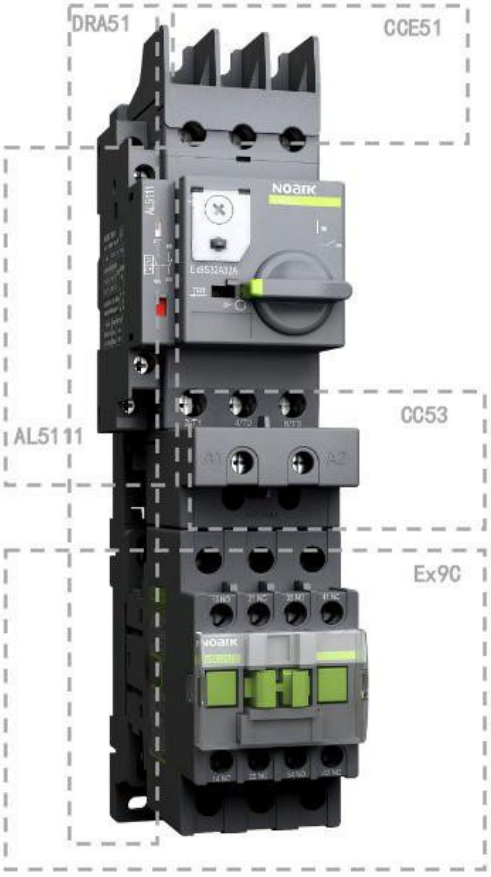
UL 60947-4-1 (formerly UL 508) Type F Application

The EX9S32* can provide (group motor) UL 60947-4-1 (formerly UL 508) Type F protection when used in conjunction with a contactor, terminal extension and an alarm contact.



Type F:

9S+CCE51+AL5111+9C +CC53+DRA51

TYPE F

Components	Catalog Number	Product
Manual Motor Starter 0.10-32 Amps	EX9S32*	
Terminal cover/extension for Ex9S32	CCE51	
Contactor	EX9C or EX9CS	
Fault Signaling/Alarm Contact	AL5111	
Mounting Bracket for mounting a Ex9S32 to a Ex9C Standard Type Contactor, 9-38A	DRA51	
Connection Block between Ex9S32 and Ex9CS Mini Type Contactor 9-12A	CC51	
	or	
Connection Block between Ex9S32 and Ex9C Standard Type Contactor 9-18A	CC52	
	or	
Connection Block between Ex9S32 and Ex9C Standard Type Contactor 25-38A	CC53	

Information subject to change without notice

*Type F protection is not available in Ex9S80

Disclaimer: Proper Sizing of an overcurrent protection device is the responsibility of the customer and should be determined using the application standards of the NEC*, CEC**, or other applicable standards.

*NEC-National Electrical Code** CEC-Canadian Electrical Code

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Ex9S Accessories

Auxiliary Contact Blocks Applies to Ex9S32 and Ex9S80

Description	Mounting Location	Max. No. of Blocks	Contact Type	SKU
Instantaneous auxiliary contacts	Front		NO+NC	AX5111
			NO+NO	AX5120
			NO+NC	AX5311
	Left Side	2	NO+NC	AX5211
			NO+NO	AX5220
			NC+NC	AX5202
Fault Signaling Contact		1	NO+NC	AL5111

Electrical Trip Unit Applies to Ex9S32 and Ex9S80

Description	Mounting Location	Voltage	Hz	SKU
Undervoltage Release	Right Side	110-120V	60	UVT51A
		127V	60	UVT51B
		110-120V	50	UVT51B
		208V	60	UVT51C
		240V	60	UVT51D
		480V	60	UVT51E
		600V	60	UVT51F
		220-240V	50	UVT51G
		380-415V	50	UVT51H
Shunt Release	Right Side	100-130V	50/60	SHT51A
		190-330V	50/60	SHT51B
		330-440V	50/60	SHT51C
		480-500V	50/60	SHT51D
		575-600V	50/60	SHT51E

Busbars Applies to Ex9S32

Description	No. of Ex9S32 Starter	No. of Side- Mounted Aux Contact on each Ex9S32 starter	Busbar Pitch (mm)	SKU
Sets of 3-pole, 63A Busbar	2	None	45	BBUM 245
		1 of AX52, AL51	54	BBUM 254
		2 of AX52 or 1 UVT51, SHT51	63	BBUM 263
	3	None	45	BBUM 345
		1 of AX52, AL51	54	BBUM 354
		2 of AX52 or 1 UVT51, SHT51	63	BBUM 363
	4	None	45	BBUM 445
		1 of AX52, AL51	54	BBUM 454
		2 of AX52 or 1 UVT51, SHT51	63	BBUM 463
	5	None	45	BBUM 545
		1 of AX52, AL51	54	BBUM 554
		2 of AX52 or 1 UVT51, SHT51	63	BBUM 563


BBUM 454

Enclosures Applies to Ex9S32

Description	Type	Color	Rating	SKU
Waterproof Enclosure; Ex9S32 Protectors	Operation by rotary handle	Black/ Gray	NEMA 4X/4, IP 65	WPB51B
		Yellow/ Red		WPB51Y

Operation Handle Applies to Ex9S32 and Ex9S80

Description	Type	Colour	Rating	SKU
Extended Rotary Handle	9 inch (230mm) shaft, with bracket	Black/ Gray	NEMA 4X/4, IP65	ERH51B
		Yellow/ Red		ERH51Y


ERH51B

Wiring Accessories Applies to Ex9S32

Description	Application	SKU
Input Terminal for CBB51 Busbar	Terminal block for power supply to one or more CBB51 bus bar	FD51
Protective end cover	For unused busbar outlets	PC51
Terminal Cover	Terminal cover for Ex9S32 for use in type E application	CCE51


CCE51

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