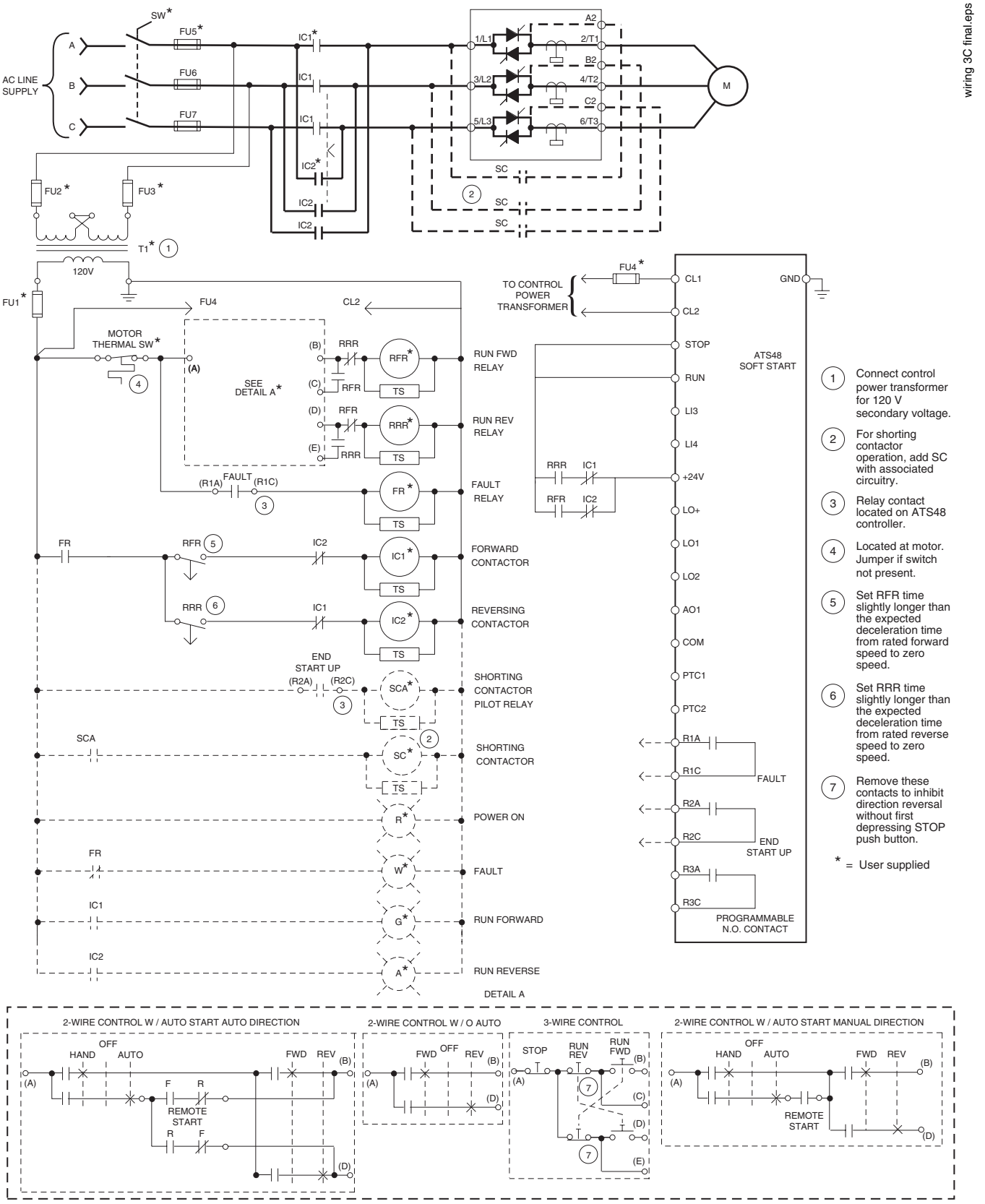
Altistart 48 Panel-Mount Soft Starts
Recommended Wiring Diagrams

Reversing with Isolation Contactors



Description of Logic for Recommended Wiring Diagrams

Item	Name	Description
IC1 IC1A	Isolation Contactor (Fwd)	The isolation contactor logic closes IC1 upon a start command and opens IC1 after the stop is complete. The RCR (or RFR and RRR for reversing) are timed contacts that must have a time delay greater than the deceleration ramp time or the braking time. When a coast stop is selected, the time delay must be set for a time that will allow a complete decay of the motor residual voltage. The isolation contactor will open immediately upon a fault. The pilot relay (IC1A) is required when the IC1 contactor coil exceeds the ATS48 relay output ratings.
IC2 IC2A	Isolation Contactor (Rev)	Used for reversing applications only, the IC2 must be mechanically interlocked to IC1. A reversing contactor may be used for the combination of IC1 and IC2. In general, the operation of IC2 is identical to IC1. The pilot relay (IC1A) is required when the IC1 contactor coil exceeds the ATS48 relay output ratings
SC SCA	Shorting Contactor & Pilot Relay	The shorting contactor is used to reduce the heat dissipated by the soft start when the motor is operating at full speed and voltage. The soft start provides proper sequencing of this contactor by the “end-start-up” relay. When the start is completed, the shorting contactor will be commanded to close. The soft start will continue to monitor the motor thermal state and provide motor overload protection. Upon a stop command, the SC contactor will open, transferring the motor current to the ATS48 soft start to allow for controlled deceleration if desired. The pilot relay (SCA) is required when the SC contactor coil exceeds the ATS48 relay output ratings.
TS	Transient Suppressors	Transient suppression of all relay and contactor coils (except ST) is recommended to minimize the possibility of electrical interference with the soft start electronics and to increase relay contact life.
RCR	Run Command Relay	Used in shunt trip fault isolation installations only if 120 V control of the ATS48 soft start is required. Used in non-reversing installations with a isolation contactor for proper sequencing of contactor logic. When energized, RCR initiates the start sequence. When de-energized, stopping is initiated. Operator controls can be either on/off selector switch, HOA selector switch or start/stop push buttons. RCR remains energized during a fault. Once the fault condition has been cleared, RCR must be de-energized by a “stop” command then re-energized to restart the soft start.
RFR	Run Forward Relay	Used for reversing applications only, this coil duplicates the functionality of RCR for the forward direction and is interlocked with the RFR relay.
RRR	Run Reverse Relay	Used for reversing applications only, this coil duplicates the functionality of RCR for the reverse direction and is interlocked with the RRR relay.
ST	Shunt Trip Coil	This coil is attached to the shunt trip coil on the disconnect and will energize 2 seconds after a soft start fault by the TR timer contact. The time delay is to prevent nuisance tripping of the circuit breaker during soft start power-up or during line undervoltage conditions.
TR	Trip Relay	Used in shunt trip circuit breaker logic only; coil energized upon a soft start fault.
FR	Fault Relay	The fault relay is energized during normal operation and deenergizes if the soft start fault contacts open or if the motor thermal switch (if supplied) opens. FR also provides additional contacts for the soft start fault output.

Suggested Components for Standard Duty Applications

Induction Motor				ATS48 Soft Start		FU4	
Rated hp (1)				ATS48 Soft Start	Device Rated Current	ATS Control	Class CC 600 V Time Delay
208 V	230 V	460 V	575 V	Model	@ 40 °C (104 °F)(2)	Power Burden (W)	@115 V
3	5	10	15	**ATS48D17Y**	17	25	0.5 A
5	7.5	15	20	**ATS48D22Y**	22	25	0.5 A
7.5	10	20	25	**ATS48D32Y**	32	30	0.6 A
10	—	25	30	**ATS48D38Y**	38	30	0.6 A
—	15	30	40	**ATS48D47Y**	47	30	0.6 A
15	20	40	50	**ATS48D62Y**	62	30	0.6 A
20	25	50	60	**ATS48D75Y**	75	30	0.6 A
25	30	60	75	**ATS48D88Y**	88	30	0.6 A
30	40	75	100	**ATS48C11Y**	110	30	0.6 A
40	50	100	125	**ATS48C14Y**	145	30	0.6 A
50	60	125	150	**ATS48C17Y**	170	30	0.6 A
60	75	150	200	**ATS48C21Y**	210	50	1 A
75	100	200	250	**ATS48C25Y**	250	50	1 A
100	125	250	300	**ATS48C32Y**	320	50	1 A
125	150	300	350	**ATS48C41Y**	410	80	1.5 A
150	—	350	400	**ATS48C48Y**	480	80	1.5 A
—	200	400	500	**ATS48C59Y**	590	80	1.5 A
200	250	500	600	**ATS48C66Y**	660	80	1.5 A
250	300	600	800	**ATS48C79Y**	790	80	1.5 A
350	350	800	1000	**ATS48M10Y**	1000	80	1.5 A
400	450	1000	1200	**ATS48M12Y**	1200	80	1.5 A

(1) Motor full load currents through 500 hp @ 460/575 V, 250 hp @ 230 V, and 200 hp @ 208 V are taken from the National Electric Code (NFPA 70-2002, Table 430.150). Above these ratings, motor full load currents are calculated based upon 1.2 A/hp for 460 V and 2.4 A/hp for 230 V. Motors listed are for standard duty applications. For severe duty applications, select the next larger soft start size.

(2) The ambient temperature indicated in the table represents the temperature of the air surrounding the ATS48 soft start. Any additional temperature factors associated with the enclosure system or actual installation ambient temperature must be considered when determining the actual rated current (I_{CL}) of the soft start. For operating ambient above 40 °C (104 °F) without a shorting/bypass contactor and 50 °C (122 °F) with a shorting/bypass contactor but not exceeding 60 °C (140 °F) , the rated current (I_{CL}) of the soft start must be de-rated by 2% per °C.

NOTE: To select control operators (push buttons, pilot lamps, and selector switches), control power transformers, and wire management devices (control and power terminal strips, wire terminations) indicated on the recommended wiring diagram configurations, visit www.us.squared.com.

Additional Suggested Components for Standard Duty Applications

ATS48 Soft Start	Contactors (1), (2), (3)				Disconnect (4)			
	IC1	IC2		SC	Fusible Disconnect			Circuit Breaker
ATS48 Model	Isolation Contactor	Reversing Contactor (5)	Mechanical Interlock	Shorting Contactor (AC1)	Power Fuses Class/Rating	Fuse Block (6)	Molded Case Switch (7)	Thermal Magnetic (7)
D17Y	LC1D09	LC1D09	**(8)**	LC1D09	J / 25	60308J	FHL36000M	FAL36030
D22Y	LC1D18	LC1D18	**(8)**	LC1D18	J / 30	60308J	FHL36000M	FAL36040
D32Y	LC1D25	LC1D25	**(8)**	LC1D25	J / 40	60608J	FHL36000M	FAL36050
D38Y	LC1D32	LC1D32	**(8)**	LC1D32	J / 50	60608J	FHL36000M	FAL36060
D47Y	LC1D40	LC1D40	**(8)**	LC1D40	J / 60	60608J	FHL36000M	FAL36080
D62Y	LC1D50	LC1D50	**(8)**	LC1D50	J / 80	61038J	FHL36000M	FAL36090
D75Y	LC1D80	LC1D80	**(8)**	LC1D80	J / 100	61038J	FHL36000M	FAL36100
D88Y	LC1D80	LC1D80	**(8)**	LC1D80	J / 120	62003J	KHL36000M	KAL36110
C11Y	LC1D115	LC1D115	**(8)**	LC1D115	J / 150	62003J	KHL36000M	KAL36150
C14Y	LC1D115	LC1D115	**(8)**	LC1D115	J / 200	62003J	KHL36000M	KAL36200
C17Y	LC1F150	LC1F150	LA9FF970	LC1F150	J / 225	64033J	LHL36000M	LAL36225
C21Y	LC1F185	LC1F185	LA9FG970	LC1F185	J / 300	64033J	LHL36000M	LAL36250
C25Y	LC1F225	LC1F225	LA9FJ970	LC1F225	J / 350	64033J	LHL36000M	LAL36350
C32Y	LC1F330	LC1F330	LA9FJ970	LC1F330	J / 400	64033J	LHL36000M	LAL36400
C41Y	LC1F400	LC1F400	LA9FJ970	LC1F400	J / 500	6633J	MHL36000M	MAL36500
C48Y	LC1F500	LC1F500	LA9FJ970	LC1F500	J / 600	6633J	MHL360006M	MAL36600
C59Y	LC1F500	LC1F500	LA9FJ970	LC1F500	L / 700	**(6)**	MHL360008M	MAL36800
C66Y	LC1F630	LC1F630	LA9FJ970	LC1F630	L / 900	**(6)**	MHL360008M	MAL36900
C79Y	LC1F630	LC1F630	LA9FL970	LC1F630	L / 1100	**(6)**	MHL36000M	**(9)**
M10Y	LC1F780	LC1F780	LA9FL970	LC1F780	L / 1350	**(6)**	MHL36000M	**(9)**
M12Y	LC1F780	LC1F780	LA9FX970	LC1F780	L / 1600	**(6)**	NCL3600012M	**(9)**

(1) All coils are selected for 120 V, 60 Hz operation. Refer to the *Digest* for additional coil voltages or auxiliary contact configurations. One block may be added to each contactor.

(2) Power terminals are not included with LC1-F contactors. For additional ordering information visit www.us.SquareD.com.

(3) The use of transient suppressors across all contactor coils is recommended. Refer to the latest editions of Schneider Electric's full line product catalogs for selection of transient suppressors.

(4) According to the National Electric Code, branch circuit overcurrent protection must be provided for each soft start. Short circuit protective devices recommended in this table are within NEC requirements for Type 1 coordination.

(5) Reversing contactors for C11 through M12 soft starts must be assembled from components. Parts quantities for a basic contactor assembly, minus the power connection links and terminals, are indicated before each part number. Refer to the latest editions of Schneider Electric's full line product catalogs for power connector link and terminal kits. Reversing contactor interlock units used for the C79 through M12 soft starts are designed for vertical interlocking of the individual contactors. Horizontally interlocked contactors are used for D17 through C59 soft starts.

(6) Fuse holder part number references are for Class J fuses only based on Ferraz Shawmut spring reinforced with box type connectors acceptable for Al/Cu wiring. Class L fuses require bolt-on connections to user-supplied power bus work.

(7) The molded case switches and circuit breakers selected require the addition of operator mechanisms to allow operation from the exterior of an enclosure. Refer to the latest editions of Schneider Electric's full line product catalogs for operator mechanism information. When using a shunt trip relay for SCR fault isolation, order a disconnect switch with suffix -1021 for addition of shunt trip coil.

(8) The D Line contactor is available as a reversing configuration. For these applications, change the IC1 part number prefix from LC1- to LC2- to order the IC1 and IC2 combination complete with mechanical interlocks.

(9) Devices rated above 660 A have not been coordinated with circuit breakers. You must use a Class L fuse for overcurrent protection with ATS48 soft start models C79, M10, and M12.

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