



Installation, Maintenance & Troubleshooting Guide For RAJA⁺ Agriculture Starters & Controllers



SIEMENS



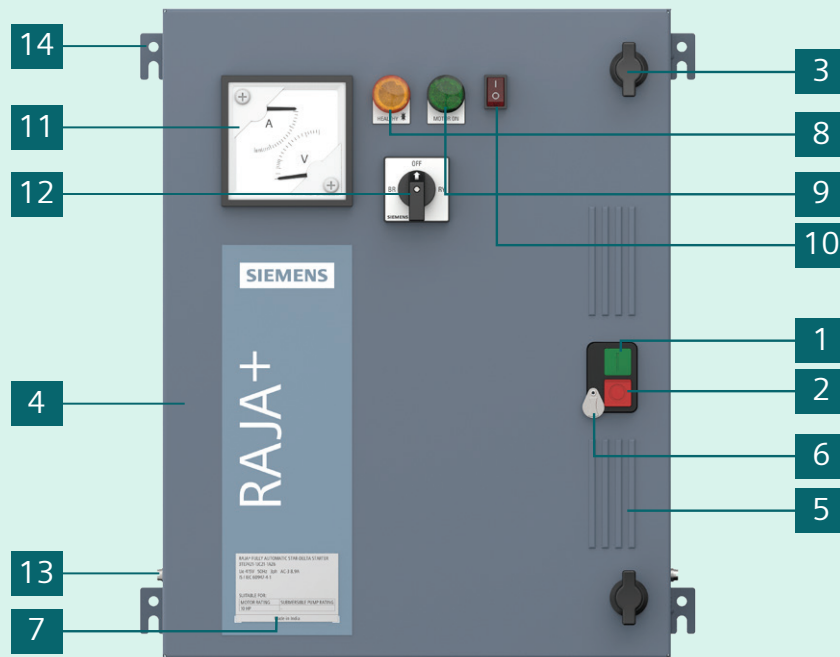
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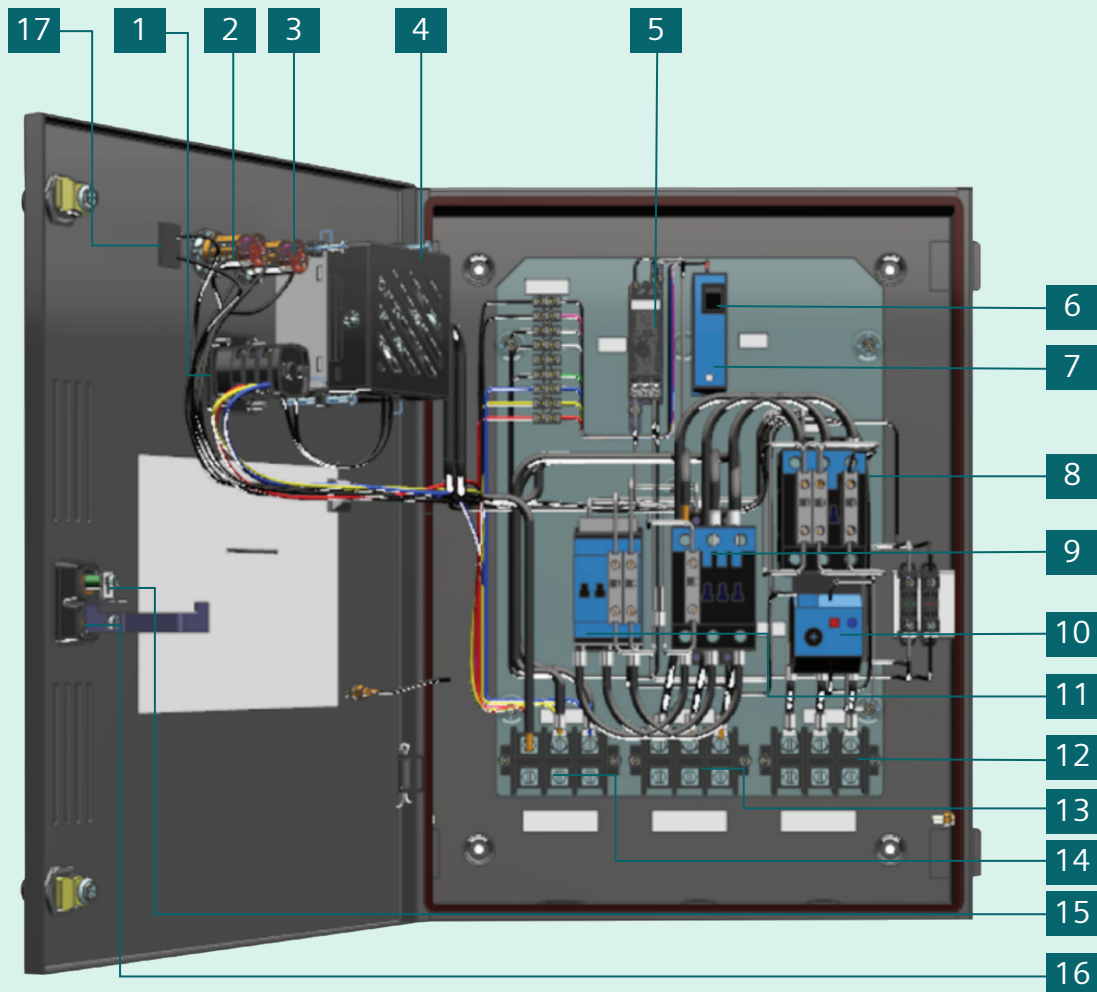
Product Fully Automatic Star Delta Starter

2.1: Product description



1. 'ON' push button (green)
2. 'OFF/RESET' push button (red)
3. Door knob
4. Metal Enclosure
5. Door
6. Mechanical Latch (OFF push button) to be used for preventing undesired ON operation of Starter
7. Name plate
8. LED (amber) to indicate the availability and healthiness of incoming power supply
9. Green LED to indicate Motor ON status
10. Rocker switch (Control ON / OFF)
11. Dual VA meter (For indication)
12. Phase Selector switch
13. Earthing screw
14. Starter Mounting bracket

Inside view of FASD-1 Starter



1: Phase selector switch

2: Green LED

3: Amber LED

4: AV Meter

5: Star Delta Timer,

6: Starter operating mode

7: Line Monitoring relay

8: Line Contactor

9: Delta contactor

10: Thermal overload relay

11: Star contactor

12: Terminal block TB3

13: Terminal block TB2

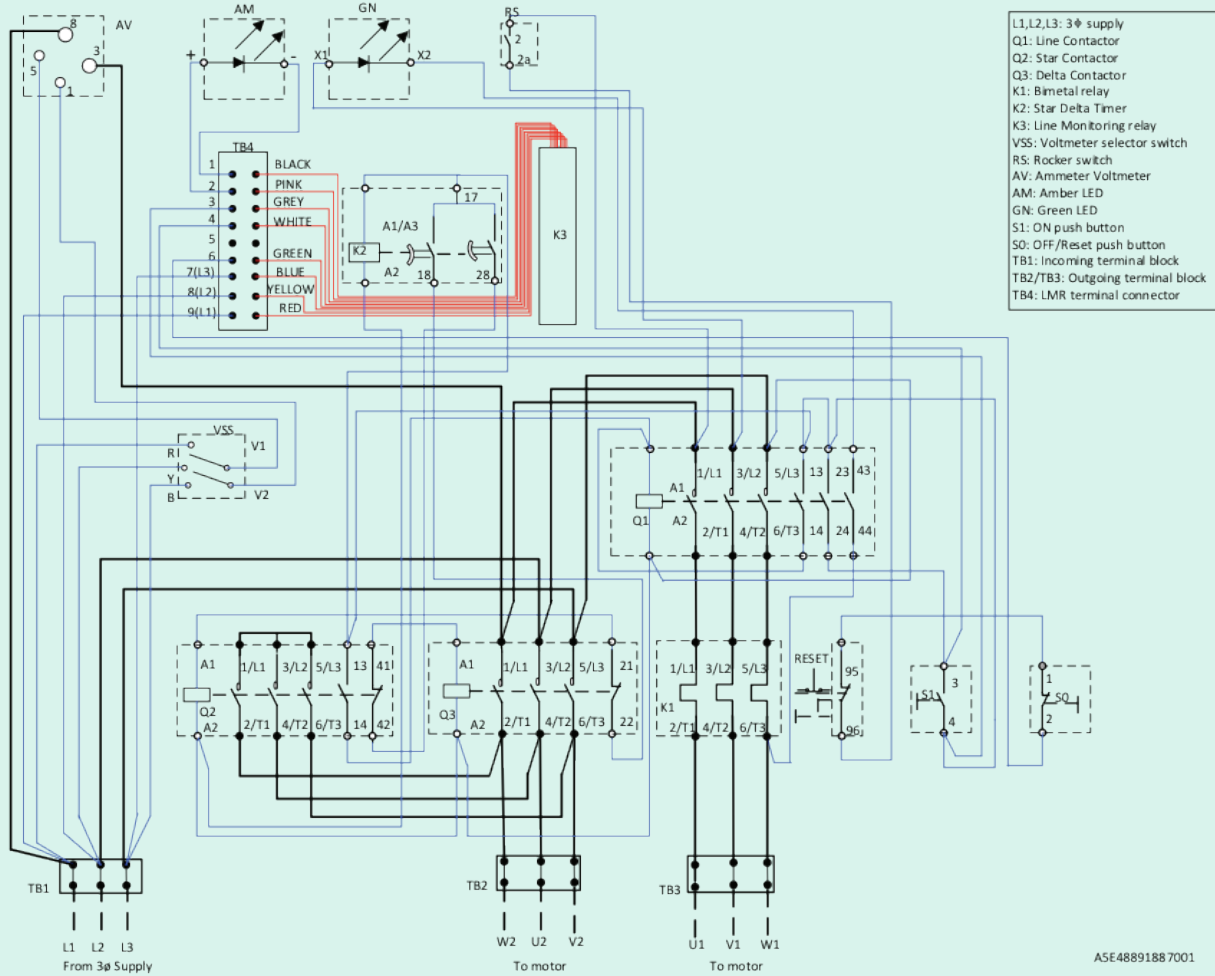
14: Terminal block TB1

15: ON push button

16: OFF push button

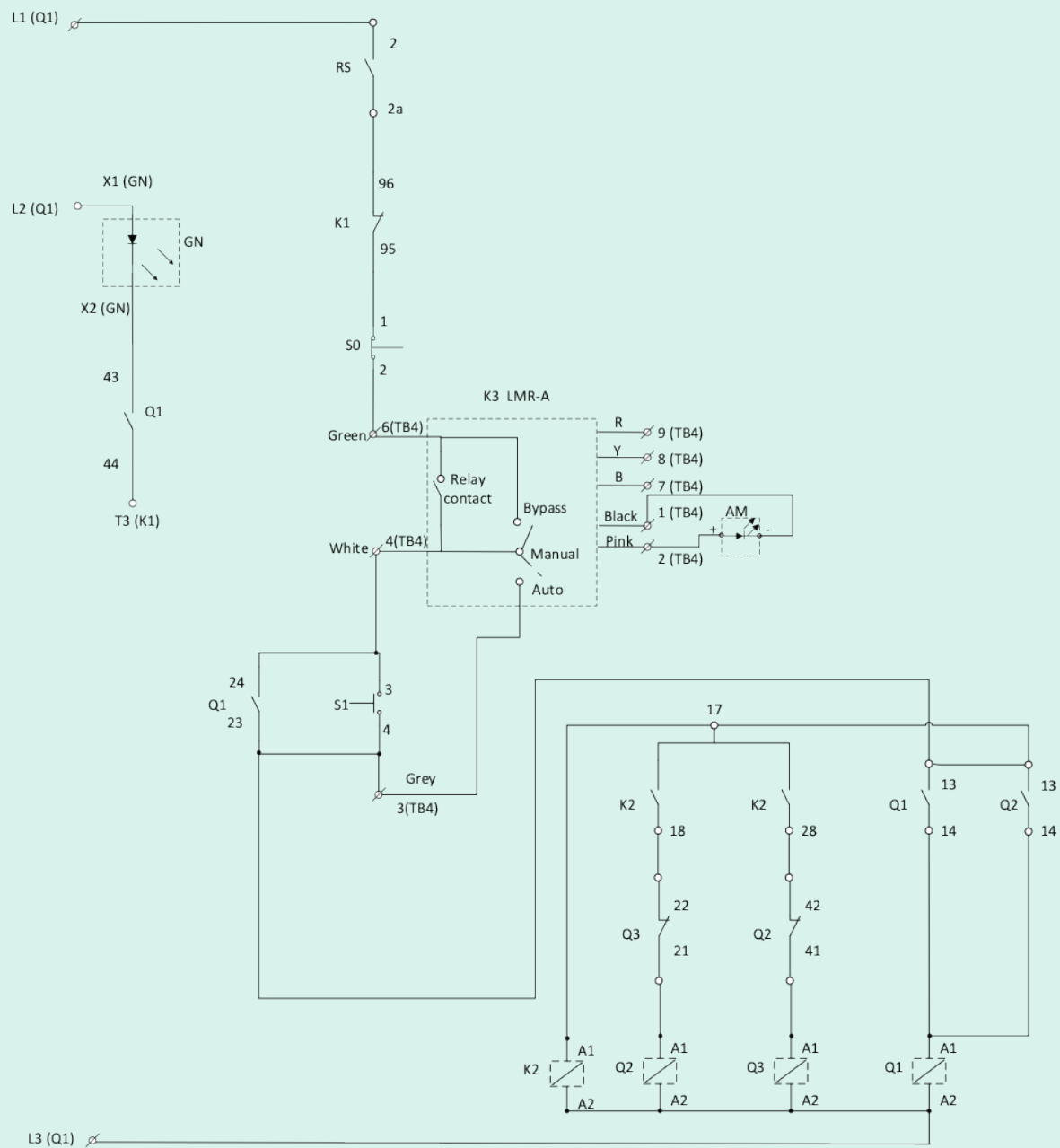
17: Rocker switch

2.2: Wiring Diagram: FASD-1

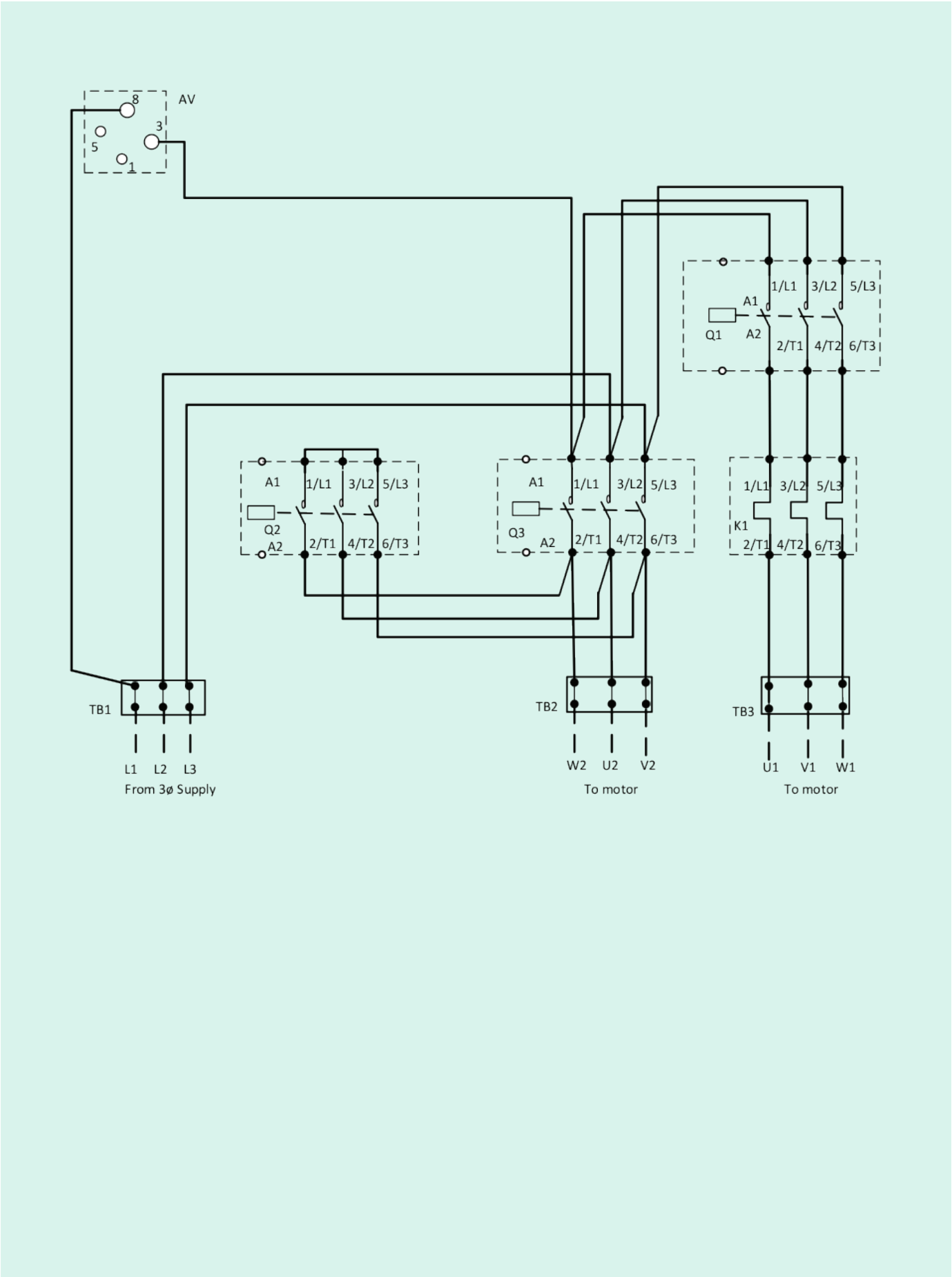


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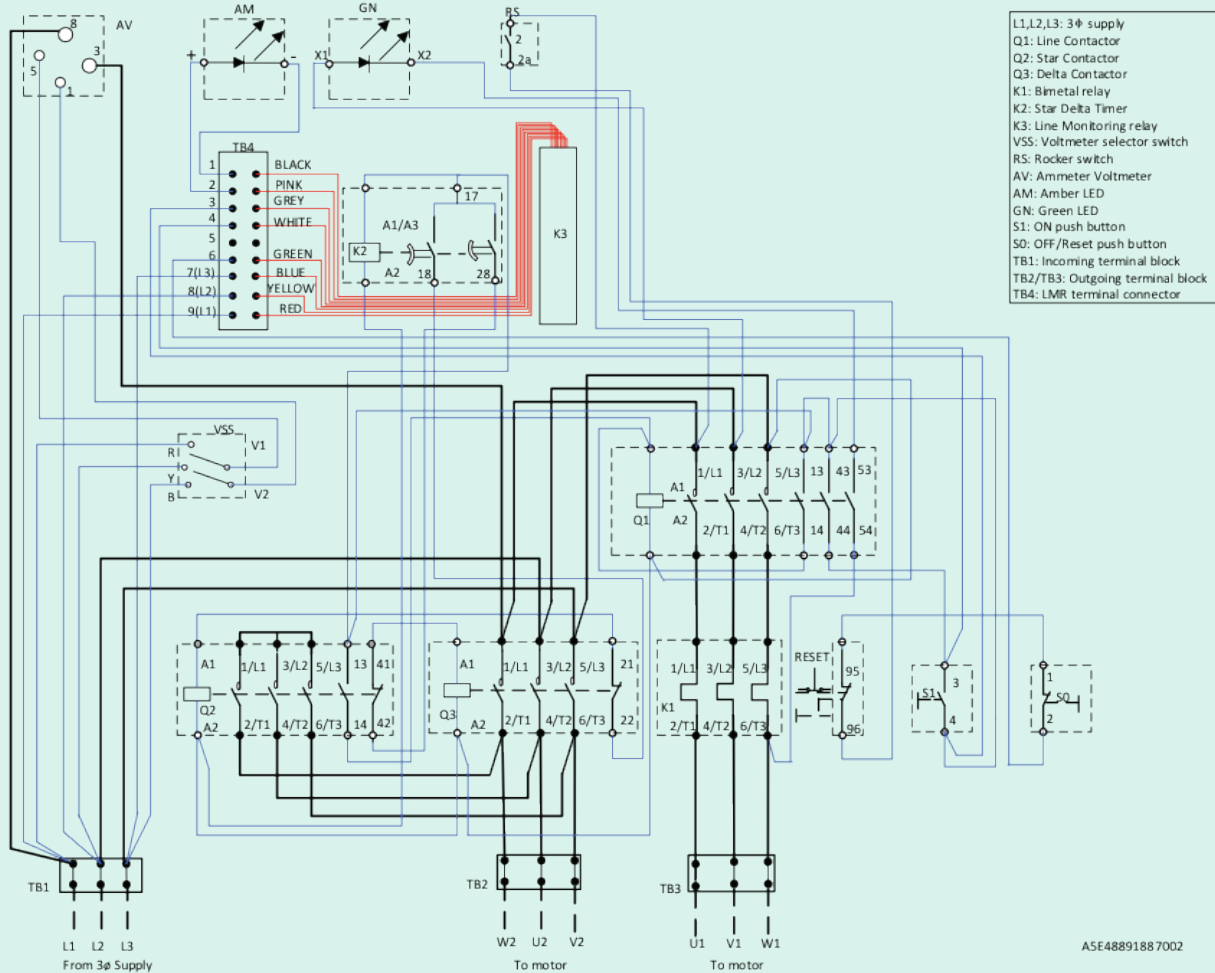
Control logic diagram



Power circuit diagram

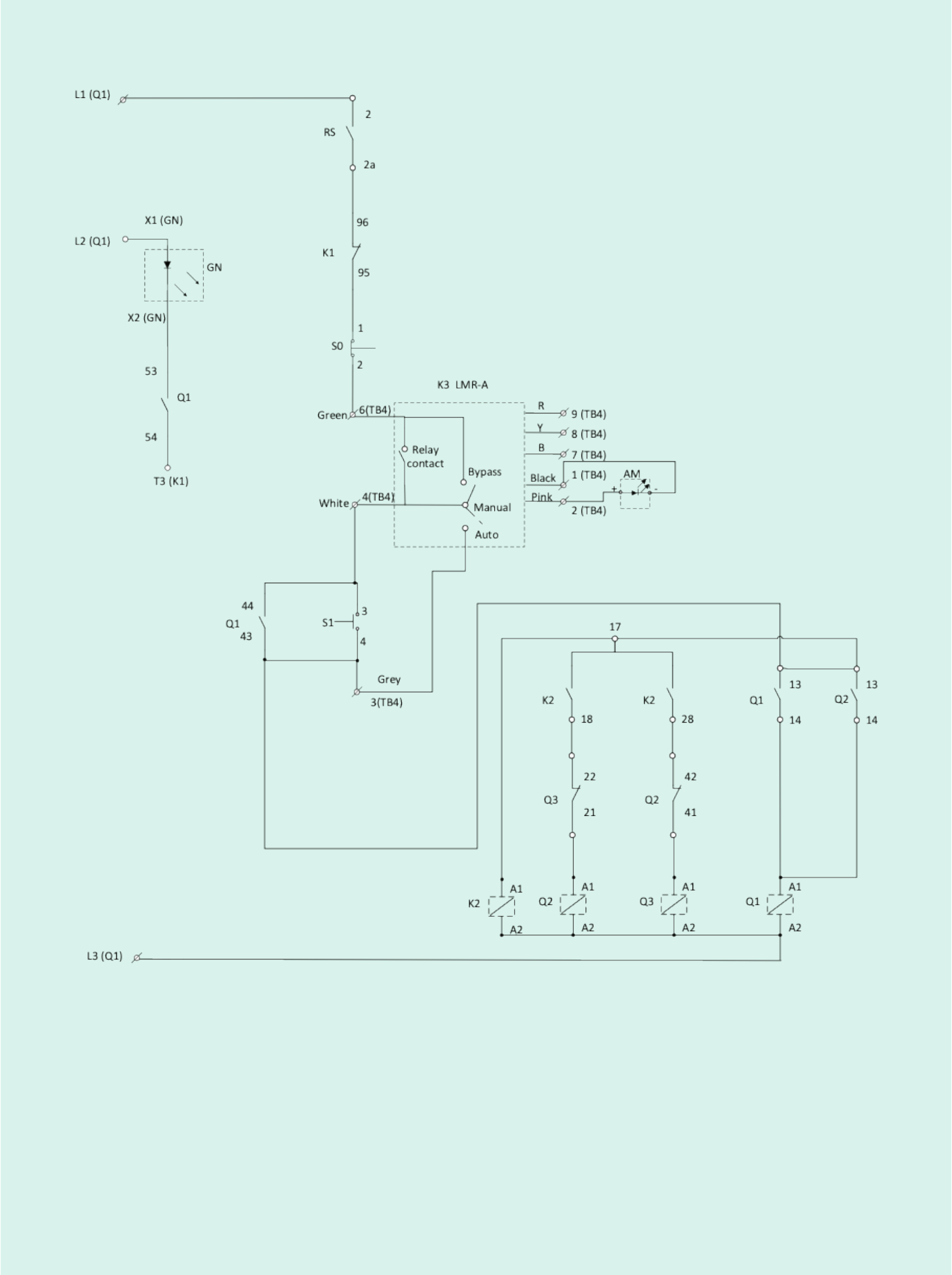


Wiring Diagram: FASD-2

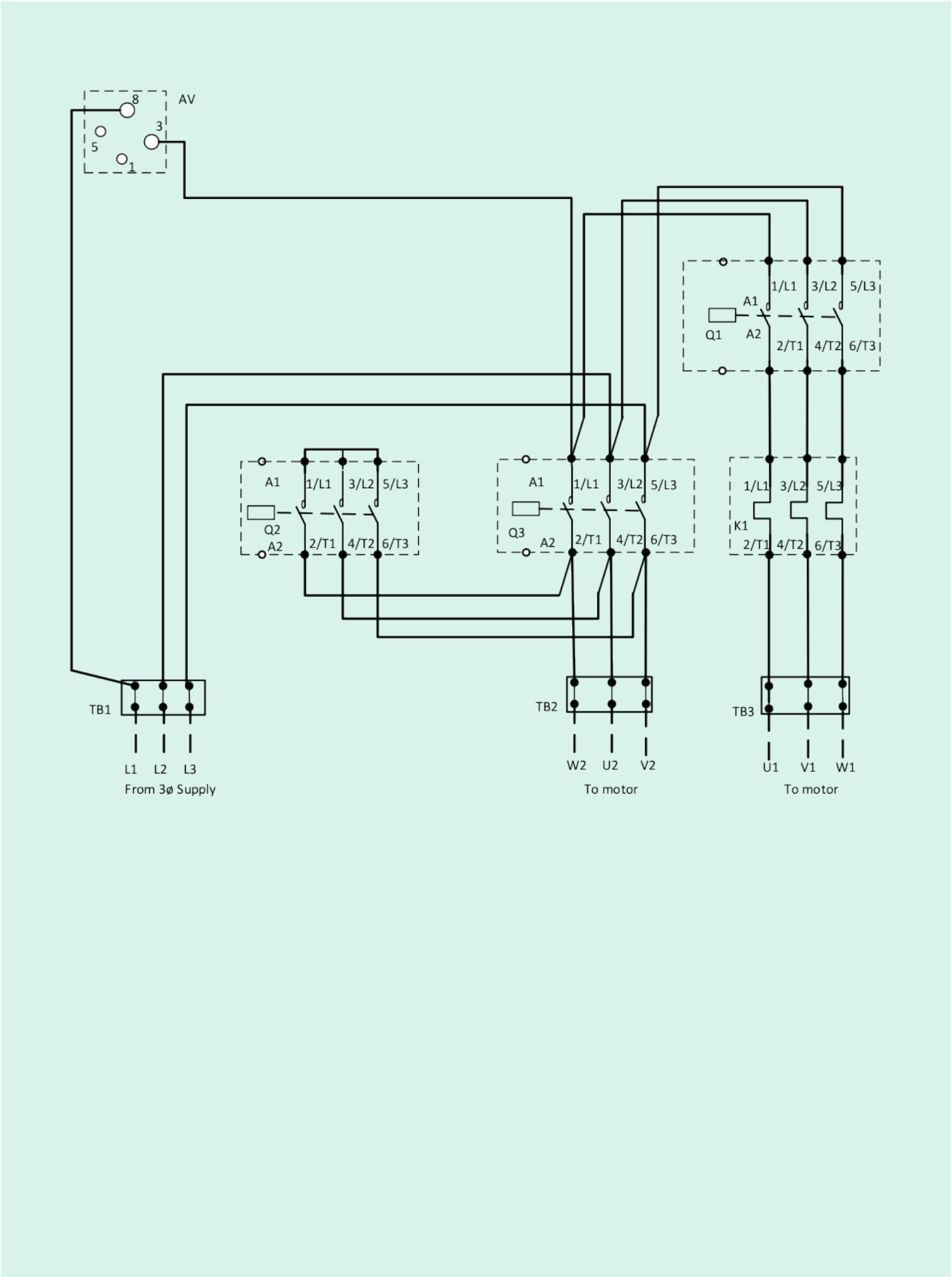


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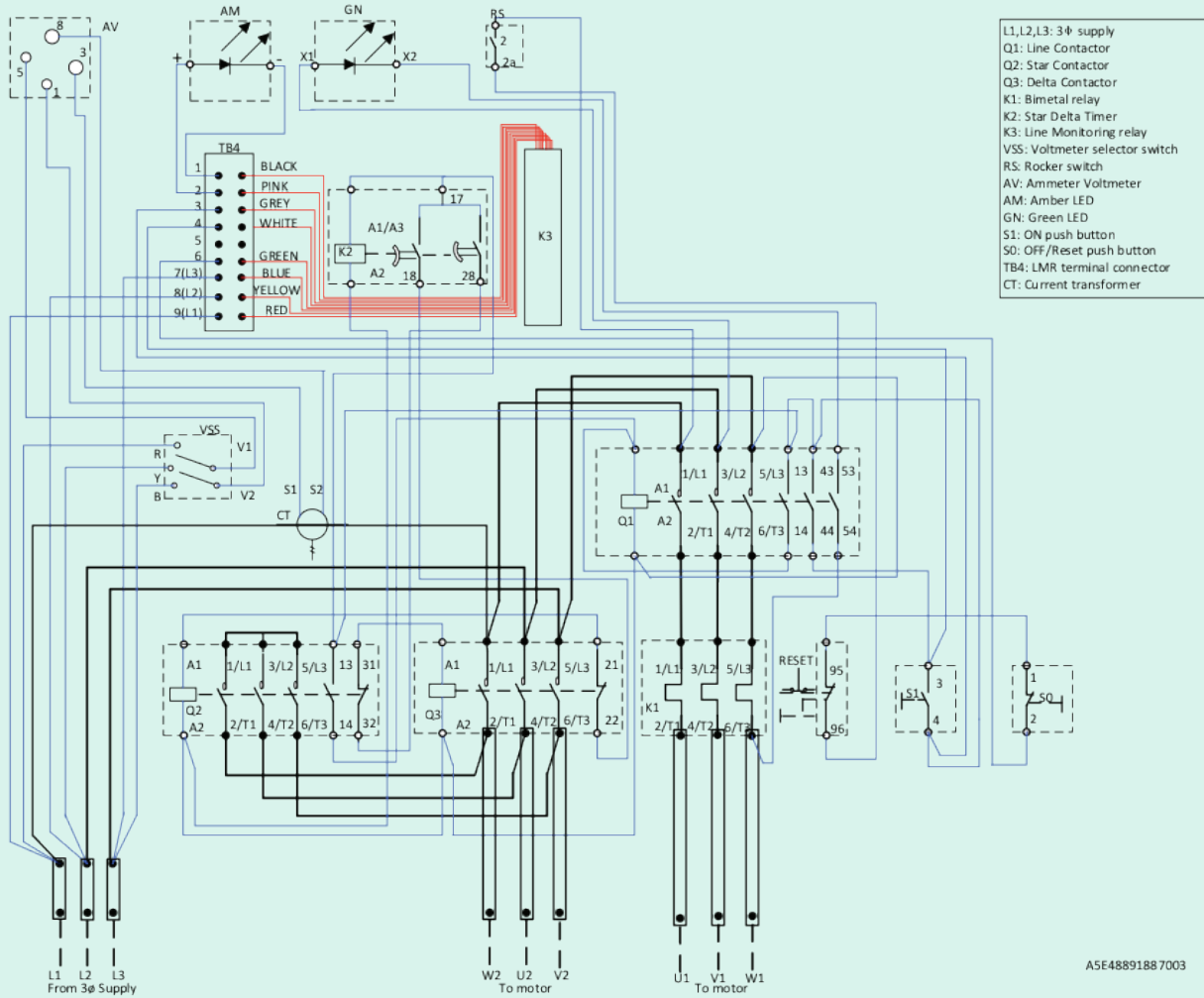
Control logic diagram



Power circuit diagram

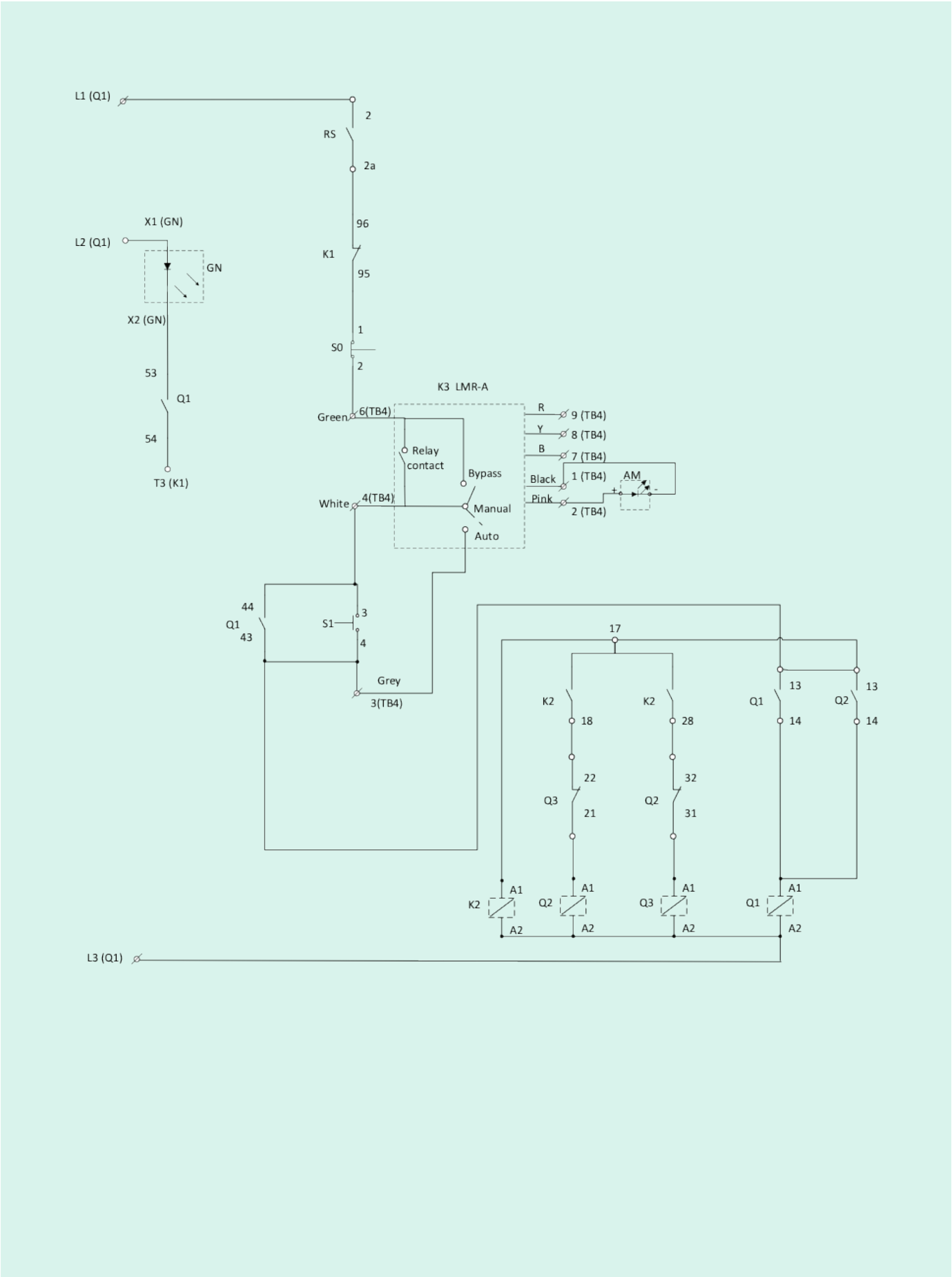


Wiring Diagram: FASD-3

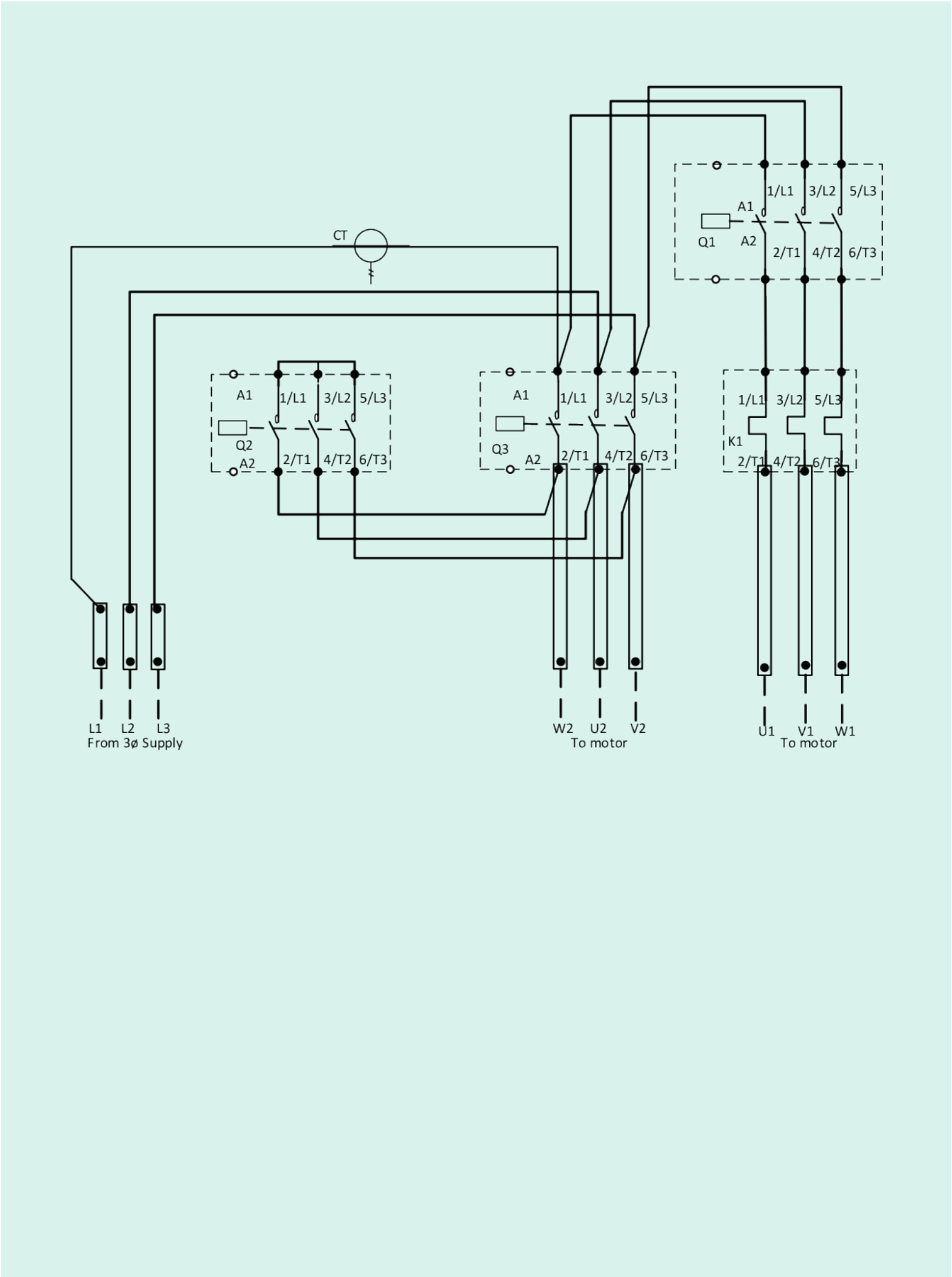


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Control logic diagram



Power circuit diagram



2.3: Technical details

Table: 8 Technical details-FASD starter

Type	(HP / kW)	IL/ Iph (A)	Line & Delta Contactor Type	Star contactor Type	Overload Relay	Range (A)	Line Monitoring Relay^	Nominal HRC fuses rating Type 3NA7 500V*	Max. Recommended Cu cable size (sq:mm) Incoming / outgoing
3TE7421-1JC21-1Axx^	10/7.5	15.4/8.9	3TS31	3TS30	3UW5102-1J	6.3-10	7UG0613-0yy20	25A	2.5/1.5
3TE7421-1KC21-1Axx	10/7.5	19.5/11.2	3TS32	3TS30	3UW5102-1K	8-12.5	7UG0613-0yy20	25A	2.5/1.5
3TE7421-2AC24-1Axx	15/11	23/13.3	3TS33	3TS31	3UW5202-2A	10-16	7UG0613-0yy20	32A	4.0/2.5
3TE7421-2BC24-1Axx	15/11	29/16.7	3TS33	3TS31	3UW5202-2B	12.5-20	7UG0613-0yy20	32A	6.0/2.5
	17.5/13	2 /15	3TS33	3TS31	3UW5202-2B	12.5-20	7UG0613-0yy20		
3TE7421-2BC26-1Axx	20/15	32/18.5	3TS33	3TS31	3UW5202-2B	12.5-20	7UG0613-0yy20	40A	6.0/2.5
3TE7421- 2CC27-1AZ8	25/18.5	36/20.8	3TS35	3TS48	3US5600-2C8K	16-25	7UG0613-0yy20	63A	10/4.0
3TE7421-2DC26-1AZ8	20/15	39/22.5	3TS35	3TS32	3US5600-2D8K	20-32	7UG0613-0yy20	63A	10/6.0
	30/22	45/26	3TS35	3TS33	3US5600-2D8K	20-32	7UG0613-0yy20		
3TE7421-2RC28-1AZ8	30/22	57/32.9	3TS35	3TS34	3US5600-2R8K	32-40	7UG0613-0yy20	80A	16/10
	40/30	59/34.1	3TS35	3TS34	3US5600-2R8K	32-40	7UG0613-0yy20	80A	
3TE7421-8MC33-1AZ8	50/37	71/41	3TS47	3TS35	3US5600-8M8K	36-45	7UG0613-0yy20	160A	25/10
3TE7421-2TC31-1AR0	40/30	76/43.9	3TS47	3TS35	3US5800-2T8K	40-57	7UG0613-0yy20	160A	25/10
3TE7421-2TC33-1AQ0	50/37	85/49.1	3TS47	3TS36	3US5800-2T8K	40-57	7UG0613-0yy20	160A	25/10
3TE7421-2PC35-1AQ0	75/55	104.4/60.3	3TS48	3TS47	3US5800-2P8K	50-63	7UG0613-0yy20	160A	35/16
3TE7421-5CC35-1AR0	75/55	158/91.2	3TS51	3TS48	3US5800-5C8K	85-105	7UG0613-0yy20	200A	70/35

^Note: xx: Coil voltage; Z6:200-400V AC; Z8: 260-460V AC; R0: 323-457V AC; Q0: 304-418V AC
yy: Coil voltage; FE:200-400V AC; FF: 260-460V AC; FH: 323-457V AC; FG: 304-418V AC

*Type 1 coordination as per IS/IEC 60947-4-1.



2.4: Installation

- Open the door by rotating the door lock anticlockwise.
 - Mount the starter on a vertical wall/ plate free from vibrations with proper nuts and bolts. Refer operating instruction for mounting dimensions.
 - Remove the rubber grommets for the incoming and outgoing cable connections. (Refer Fig. 4)
 - Connect incoming and outgoing cables as follows (Refer Fig. 4):
 - Use proper cable glands to ensure dust proofing. For conduit entry use packed washers.
 - Select correct size of cables from Table 8
 - Connect line and motor leads exactly as per wiring diagram pasted inside the cover of the starter.
 - Terminate the incoming supply cables on terminal block TB1 & outgoing cables to motor on terminal block TB2, TB3 except for FASD3 (Tightening torque -Refer table 10)
- For FASD3 all connections are terminated on incoming & outgoing links.
NOTE: LMRA is set in Manual mode (Factory setting)
- Connect the earthing conductor to terminals marked (earth) on the starter body with torque 1.2 to 1.6Nm.

The Starter is now ready for commissioning.

- Initially set the overload relay to 0.58 times the rated motor current.
- Set the timer dial to the nearest value of starting time available on motor nameplate
- If it is not available, then set the dial to approximately 6-8secs.

Commissioning :

For exact setting of timer and overload relay, follow the instruction given below:

Before switching ON recheck all external connections.

- **Star-Delta Timer setting for FASD3:**
 - First Switch ON the Rocker switch.
 - Start the motor by pressing the 'ON' button shown in Fig. 3
 - Measure the time taken by the motor to nearly reach rated speed or steady state current condition (indicated when the motor reaches a steady hum).
 - Stop the motor. Set the timer to this measured value by rotating the dial shown in Fig. 5.

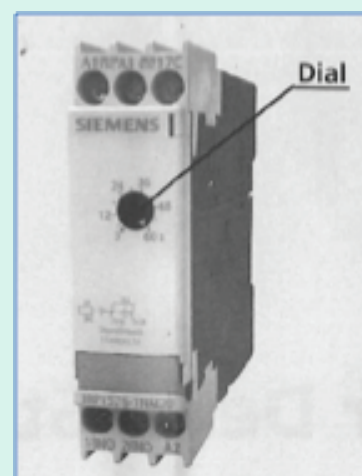


Fig. 5: Timer Adjustment

- **Overload relay setting:**
 - For closer protection set the overload relay to actual phase current as measured by an ammeter. In the absence of an ammeter, use the procedure given below:
 - Start the motor and let it run for 30 mins. Then gradually reduce the relay settings till it trips. Set the relay at a slightly higher value than this setting. Overload relay characteristics shown in Fig. 6 can be used to estimate the average tripping time at different multiples of set current.
 - Allow a reset time of approx. 4 min. before pressing the blue knob on the relay to reset it.
 - Restart the motor after some time. If the relay does not trip then consider it to be properly set. If the relay trips, set at a little higher value than before and recheck.
- **Close the front door.**

Caution

- During commissioning or maintenance always ensure that the main supply is disconnected by switching off the main switch & Rocker switch.
- In the case of FASD starters under no circumstances should the relay be set higher than the phase current i.e. 0.58 times the rated current on the motor nameplate.
- If the relay trips even when set at rated motor current the suitability of the starter/relay for the particular application should be checked with the nearest Siemens office.

Operating Characteristics:

The given characteristics (Fig. 6) are average values of all ranges and sizes of bimetal relays and are mainly intended to indicate the inverse time current characteristics & tripping times of the same. The tripping times shown are for relays starting from the cold state. At operating temperatures (heated at rated current) these are reduced to about 25% of the value obtained from the characteristics.

Operation:

- Ensure the door is closed.
- Rotate the Latch away from OFF push button
- Switch On the rocker switch.
- Check the status of amber LED. Wait till amber LED is continuously ON then only proceed.
- Depending upon Selector switch knob position for phase selection, Indication of incoming power supply voltage can be seen on Dual VA meter.
- For starting the motor, press Green push button marked 'I' (Fig. 3)
- Line current of R phase is indicated by Dual VA meter.
Note :For FASD3 starter, current indication in AV meter needs to be multiplied by 40.
- Indication of Motor ON can be seen on starter door through green LED.
- For stopping the motor press Red push button marked 'O' (Fig. 3)

Reset Operation

- If the overload relay trips, Reset manually.
(Allow a reset time of approx. 4 min.)

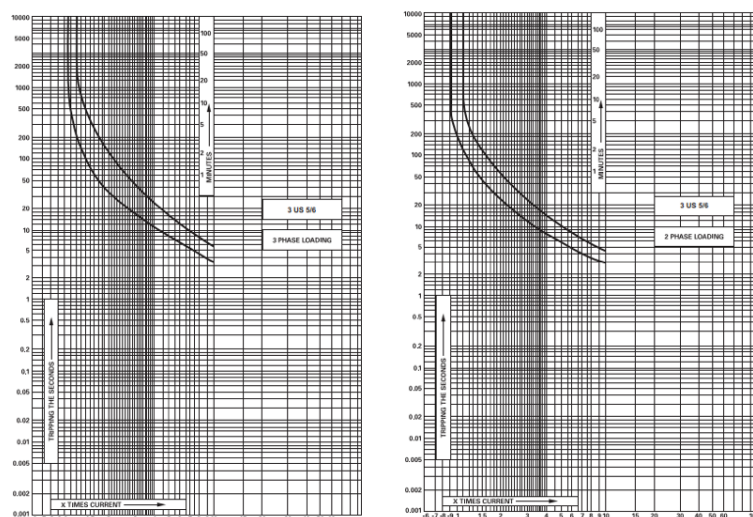


Fig. 6: Operating characteristics of 3UW/3UA/3US relays

Table: 9 Mounting torque values

Sr. No	Location	Size	Torque
1	LMR-A	M4	0.8-1.1Nm
2	Contactors 3TS30...36	M4	0.8-1.1Nm
3	Contactors 3TS 47/48	M4	0.8-1.1Nm
4	Contactors 3TS 50 /51	M4	1.5-2.0Nm
5	Terminal block 30A	M4	0.8-1.1Nm
6	Terminal block 60A	M4	0.8-1.1Nm
7	Terminal block 100A	M4	0.8-1.1Nm
8	3RP Timer	M4	0.8-1.1Nm
9	Multiway strip	M3	0.4-0.6Nm
10	Dual VA Meter	M4	0.2-0.3 Nm
11	Customer Earthing	M5	1.2-1.6 Nm
12	Earthing screw (cover to body)	M5	1.2-1.6 Nm
13	Self tapping screw	ST4.2X9.5	0.8-1.2Nm
14	Selector Switch 3LD4	M4	0.8-1.1Nm
15	FASD1 Door Knob	-	4-4.4 Nm
16	FASD2 Door Knob	-	4-4.4 Nm
17	FASD3 Door Knob	-	4-4.4 Nm
19	Base Plate FASD-1	M5	1.4-1.8Nm
20	Base Plate FASD-2	M6	2.0-2.5Nm
21	Base Plate FASD-3	M6	2.4-2.6Nm
22	CT 200/5A	M4	0.8-1.1Nm
23	Insulator M6X40	M6	6.0 to 8.0Nm
24	Power link mounting (On Insulator)	M6	6.0 to 8.0Nm

Table: 10 Terminal torque values

Sr. No	Type	Size	Torque
1	3TS30..32	M4	0.8-1.4Nm
2	3TS33/34	M4	1.0-1.5Nm
3	3TS35/36	M4	2.5-3.0Nm
4	3TS47/48	M6	4-6Nm
5	3TS49/50	M6	4-6Nm
6	3TS51	M6	6-8Nm
7	Terminal block 30A	M4	0.8-1.4Nm
8	Terminal block 60A	M5	1.5-2.1Nm
9	Terminal block 100A	M6	2.5-3.0Nm
10	Contact block 3SB5	M3.5	0.8-1.2Nm
11	Aux terminal (side add on) of 3TS47/48, 3TS50/51	M3.5	0.8-1.4Nm
12	3TX4010-2A	M3.5	0.8-1.4Nm
13	3TY7561-1A	M3.5	0.8-1.4Nm
14	Coil Terminals A1/A2	M3.5	0.8-1.2Nm
15	Aux. terminals of all Relays	M3.5	0.8-1.2Nm
16	3UW51/52	M4	1.0-1.5Nm
17	3US56	M5	2.5-3.0Nm
18	3US58	M6	2.5-3.0Nm
19	Dual VA Meter 5A – Current terminals	M4	1.2Nm
20	Dual VA Meter 30A – Current terminals	M4	1.2Nm
21	Dual VA Meter 60A – Current terminals	M6	2.5Nm
22	Dual VA Meter 100A – Current terminals	M8	5.0Nm
23	Dual VA Meter5/30/60/100A – Voltage terminals	M4	1.2Nm
24	CT 200/5A	M3.5	0.9Nm
25	Selector Switch 3LD4	M3	0.5Nm
26	Indicating light – Amber/Green	M3	0.8Nm
27	Multiway strips	M3	0.4 to 0.6 Nm
28	Timer	M4	0.8 to 1.2Nm
29	Power Link	M6	4-6Nm

2.5: Operating procedure in normal condition

Table: 11 FASD starter operating sequence in normal condition

4A	4B	4C	4D	4E	4F	4G	4H	4I
LMR-A Mode	3 ϕ main supply	Rocker switch	Amber LED	On-Delay	Amber LED	'ON' Push button	Starter Operation	Starter Operation
Manual	ON	ON	Blink (On-delay duration)	0.5-5min	ON	ON	ON	ON
Auto	ON	ON	Blink (On-delay duration)	0.5-5min	ON	NA	ON	ON
Bypass	ON	ON*	Blink (On-delay duration)	0.5-5min	ON	ON	ON	ON
ON operation								

4J	4K	4L	4M	4N	4O
'OFF' Push button	Starter Operation	Green LED	Amber LED	3 ϕ main supply	Amber LED indication
OFF	OFF	OFF	ON	OFF	OFF
Lock	OFF	OFF	ON	OFF	OFF
OFF	OFF	OFF	ON	OFF	OFF
OFF operation					

Starter operation:

LMR-A: Manual mode

4A : Keep the LMR-A in Manual mode.

4B : Switch ON the 3-Phase incoming main supply.

4C : Switch ON the rocker switch.

4D : Amber LED will start blinking for a period of min 30sec.

4E : 30sec is the default setting which can vary from min 0.5min to max.5min.

4F : After the ON delay duration, amber LED will ON continuously indicating that the incoming supply is healthy.

4G : Press the green push button for switching ON the starter.

4H : Starter gets switched ON. Star & Line contactor switch ON simultaneously.

4I : Green LED turns ON indicating that the motor is ON.

Then after preset time of Star delta Timer, Star contactor switches OFF and Delta contactor switch ON

4J : Switch OFF the red push button for switching OFF the starter.

4K : Starter gets switched OFF.

4L : Green LED turns OFF indicating that the motor is OFF.

4M : Amber LED indication remains continuous ON.

4N : Switch OFF the 3-phase incoming main supply.

4O : Amber LED indication gets turned OFF indicating that there is no incoming main supply.

LMR-A: Auto mode

- 4B : Switch ON the 3-Phase incoming main supply.
- 4C : Switch ON the rocker switch.
- 4D : Amber LED will start blinking for a period of min 30sec.
- 4E : 30sec is the default setting which can vary from min 0.5min to max.5min.
- 4F : After the ON delay duration, amber LED will ON continuously indicating that the incoming supply is healthy.
- 4G : Not applicable (No need to press ON push button)
- 4H : Starter gets switched ON. Star & Line contactor switches ON together initially, then after 6sec (depending upon the time setting of star delta timer), star contactor switches OFF and Delta contactor switches ON.
- 4I : Green LED turns ON indicating that the motor is ON.
- 4J : Press the red push button and lock for switching OFF the starter or Switch OFF Rocker switch to switch OFF the Starter directly.
- 4K : Starter gets switched OFF.
- 4L : Green LED turns OFF indicating that the motor is OFF.
- 4M : Amber LED indication remains continuous ON.
- 4N : Switch OFF the 3-phase incoming main supply.
- 4O : Amber LED indication gets turned OFF indicating that there is no incoming main supply.

LMR-A: Bypass mode

- 4A : Keep the LMR-A in Bypass mode.
- 4B : Switch ON the 3-Phase incoming main supply.
- 4C : Switch ON the rocker switch.
(*Customer may switch ON the starter directly after switching ON the 3 phase incoming supply irrespective of Blinking status as there is only indication for incoming supply faults and no Protection in Bypass mode.)
- 4D : Amber LED will start blinking for a period of 30sec.
- 4E : 30sec is the default setting which can vary from min 0.5min to max.5min.
- 4F : After the ON delay duration, amber LED will ON continuously indicating that the incoming supply is healthy.
- 4G : Press the green push button for switching ON the starter.
- 4H : Starter gets switched ON. Star & Line contactor switches ON together initially, then after 6sec (depending upon the time setting of star delta timer), star contactor switches OFF and Delta Contactor switches ON.
- 4I : Green LED turns ON indicating that the motor is ON.
- 4J : Press red push button for switching OFF the starter. Or Switch OFF Rocker switch to switch OFF the Starter directly.
- 4K : Starter gets switched OFF.
- 4L : Green LED turns OFF indicating that the Starter is OFF.
- 4M : Amber LED indication remains continuous ON.
- 4N : Switch OFF the 3-phase incoming main supply.
- 4O : Amber LED indication gets turned OFF indicating that there is no incoming main supply.

2.6: Troubleshooting Guidelines in case any incoming supply fault is present before switching ON the Starter

Table: 12 FASD starter operating sequence in fault condition

5A	5B	5C	5D	5E	5F	5G	5H	5I	5J	5K	5L
LMR-A Mode	3 ϕ main supply	Rocker switch	Amber LED	On-Delay	Amber LED	Possible causes of fault	Corrective action	Amber LED	'ON' Push button	Starter Operation	Green LED
Manual	ON	ON	Blink (On-delay duration)	0.5-5min	Blink	#	1)	ON	ON	ON	ON
Auto	ON	ON	Blink (On-delay duration)	0.5-5min	Blink	#	2)	ON	NA	ON	ON
Bypass	ON	ON*	Blink (On-delay duration)	0.5-5min	Blink	NA	NA	ON	ON	ON	ON
ON operation											

#: Phase loss¹, Phase reversal², Under voltage³, Over voltage⁴, Phase unbalance⁵ NA – Starter is unprotected from incoming power supply faults, only protection from load side faults. In this mode, amber LED will continuously ON if incoming power supply is healthy and will blink if the incoming power supply is unhealthy – Refer 2.8

Starter Fault condition:

1) LMR-A: Manual mode

5A : Check the mode of LMR-A, if it is manual mode, please follow the below steps.

5B : Switches ON the 3-Phase incoming main supply.

5C : Switch ON the rocker switch

5D : Amber LED will start blinking

5E : Amber LED will blink for a duration of min.30sec.

5F : After the ON delay duration, amber LED remains blinking indicating that the 3phase incoming supply is unhealthy.

¹5G :- Check the rated operational voltage of the starter in incoming terminal block (TB1) between L1- L2 L2-L3, L1-L3 with suitable equipment e.g. multimeter.

- Check for the phase loss in any phase (L1,L2,L3) with suitable equipment e.g. multimeter.

¹5H: - After resuming incoming main supply to normal condition,

- Repeat the steps from 5A to 5E and then go to step no.5I

If fault still exists, then

²5G :- Check the phase sequence of all the phases of incoming main supply.

- Identify the wrong sequence of phase connected in any of the incoming terminal.

²5H: - Connect the phase sequence of all the phases correctly (R phase to L1 , Y phase to L2, B phase to L3) to the incoming main supply terminals of Terminal block TB1.

- Repeat the steps from 5A to 5E and then go to step no.5I

If fault still exists, then

³5G :- Check the rated operational voltage of the starter in incoming terminal block (TB1) between L1-L2, L2-L3, L1-L3 with suitable equipment e.g. multimeter.

- Check whether the 3-phase voltage in the incoming terminals of terminal block TB1 is <minimum required voltage (Refer table no.13).

³5H :- Keep the 3-phase voltage to the incoming terminals of terminal block TB1 to a voltage between min.required voltage & Max.voltage allowed (Refer table no.13).

- Repeat the steps from 5A to 5E and then go to step no.5I

If fault still exists, then

- ⁴5G :- Check the rated operational voltage of the starter in incoming terminal block (TB1) between L1-L2, L2-L3, L1-L3 with suitable equipment e.g. multimeter.
- Check whether the 3-phase voltage in the incoming terminals of terminal block TB1 is >Maximum voltage allowed. (Refer table no.13).
- ⁴5H :- Keep the 3-phase voltage to the incoming terminals of terminal block TB1 to a voltage between min.required voltage & Max.voltage allowed (Refer table no.13).
- Repeat the steps from 5A to 5E and then go to step no.5I

If fault still exists, then

- ⁵5G :- Check the rated operational voltage of the starter in incoming terminal block (TB1) between L1-L2, L2-L3, L1-L3.
- Check whether the operational line voltage difference between any 2 phase in the incoming. terminals of terminal block TB1 is >50V.
- ⁵5H :- Starter will be operational only if the incoming supply voltage difference between any 2 phase in the incoming terminal block TB1 of the starter is <=50V.
- Repeat the steps from 5A to 5E and then go to step no.5I
- 5I : Amber LED will remain ON continuously indicating that the fault is cleared
- 5J : Press the Green ON push button to switch ON the starter.
- 5K : Motor gets switched ON. Star & Line contactor switches ON together initially, then after 6sec (depending upon the time setting of star delta timer), star contactor switches OFF and Delta contactor switches ON.
- 5L : Green LED turns ON indicating that the motor is ON.

Table: 13 Range of Under voltage & Over voltage

Starter Voltage Range (V)	Undervoltage fault		Overvoltage fault	
	Trip voltage for undervoltage fault (V)	Healthy voltage (V)	Trip voltage for Overvoltage fault (V)	Healthy voltage (V)
(Z6) 200-400	≤ 195	205	≥ 400	390
(Z8) 260-460	≤ 250	260	≥ 455	445
(R0) 323-457	≤ 313	323	≥ 457	447
(Q0) 304-418	≤ 294	304	≥ 418	408

2) LMR-A: Auto mode

- 5A : Check the mode of LMR-A, if it is Auto mode. Repeat steps from 5B to 5H.
- 5I : Amber LED will remain ON continuously indicating that the fault is cleared
- 5J : No need to press ON push button
- 5K : Starter gets switched ON. Star & Line contactor switches ON together initially, then after 6sec (depending upon the time setting of star delta timer), star contactor switches OFF and Delta contactor switches ON.
- 5L : Green LED turns ON indicating that the motor is ON.

3) LMR-A: Bypass mode

As in Bypass mode there is no protection from the incoming supply faults, however there may some conditions, example mentioned below where Starter may not ON –

1. Phase loss
2. Incoming supply voltage less than the minimum required operational voltage of the Starter.
3. Incoming supply voltage is very high etc.....

In the above conditions check the Starters as explained in Auto & Manual Mode.

2.7: Troubleshooting Guidelines in fault condition when motor stops while it is in running condition

Table: 14 FASD starter operating sequence in fault condition

6A	6B	6C	6D	6E	6F	6G	6H	6I	6J	6K	6L	6M
Motor condition	LMR Mode	Amber LED	Possible causes of fault	Corrective action	3 ϕ main supply	Amber LED	On-Delay	Amber LED	'ON' Push button	Starter operation	Green LED	Motor condition
Not Running	Manual	Blink	#	1)	ON	Blink (On-delay duration)	0.5-5min	ON	ON	ON	ON	Running
Not Running	Auto	Blink	#	2)	ON	Blink (On-delay duration)	0.5-5min	ON	NA	ON	ON	Running
Not Running	Bypass	Blink	NA	NA	ON	Blink (On-delay duration)	0.5-5min	ON	ON	ON	ON	Running

#: Phase loss¹, Phase reversal², Under voltage³, Over voltage⁴, Phase unbalance⁵

NA – Starter is unprotected from incoming power supply faults, only protection from load side faults. In this mode, amber LED will continuously ON if incoming power supply is healthy and will blink if the incoming power supply is unhealthy – Refer 2.8

Starter Fault condition:

1) LMR-A: Manual mode

- 6A : Motor suddenly stops after running for some time.
 6B : Check the mode of LMR-A, if it is Manual mode.
 6C : Amber LED will start blinking
 6D, 6E : Follow steps from 5G to 5H of manual mode (Refer Table no.12; Corrective action 1)
 6F to 6L : Follow steps from 4B to 4I of manual mode (Refer Table no.11)
 6M : Motor starts running again.

2) LMR-A: Auto mode

- 6A : Motor suddenly stops after running for some time.
 6B : Check the mode of LMR-A, if it is Auto mode.
 6C : Amber LED will start blinking
 6D, 6E : Follow steps from 5G to 5H of Auto mode (Refer Table no.12; Corrective action 2)
 6F to 6L : Follow steps from 4B to 4I of Auto mode (Refer Table no.11)
 6M : Motor starts running again

3) LMR-A: Bypass mode

As in Bypass mode there is no protection from the incoming supply faults, however there may be some conditions, example mentioned below where Starter may not ON –

1. Phase loss
 2. Incoming supply voltage less than the minimum required operational voltage of the Starter.
 3. Incoming supply voltage is very high
- etc.....

In the above conditions check the Starters as explained in Auto & Manual Mode.

2.8: Troubleshooting Guidelines in case any fault is at load side

Steps to be followed

Thermal overload relay provide protection from:

- a) overload condition at Motor
- b) single phasing at load side
 - a) overload condition at Motor: check the suitable Motor current rating and adjust the overload relay setting dial as per the requirement.
 - b) Single phasing at load side – Overload relay tripped as inbuilt feature to protect from single phase faults. Check the single phasing condition at Motor side terminal TB2,TB3 to Motor.

For both conditions restart the Starter after proper reset time of approx. 4 min.



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