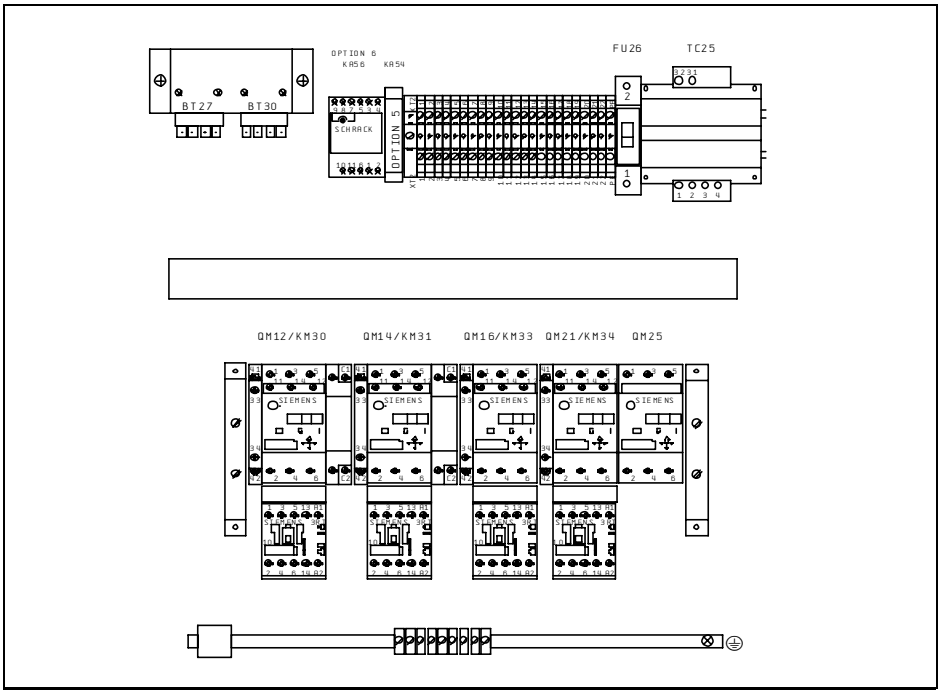
Supplement

ML/MLT



Circuit Diagrams
ML180-MLT1400

Effective for units manufactured from week 46, 2002

190MGB-5191

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Munters

Contents

1 ML180 & MLT350

1.1 List of Components and Component Layout Diagram 4
1.2 Circuit Diagrams 6
1.3 Connection Diagram 8

2 ML270

2.1 List of Components and Component Layout Diagram 9
2.2 Circuit Diagrams 10
2.3 Connection Diagram 12

3 ML420

3.1 List of Components and Component Layout Diagram 13
3.2 Circuit Diagrams 14
3.3 Connection Diagram 19

4 ML690-MLT1400

4.1 ML690 - List of Components and Component Layout Diagram 20
4.2 MLT800 - List of Components and Component Layout Diagram 21
4.3 ML1100 - List of Components and Component Layout Diagram 22
4.4 MLT1400 - List of Components and Component Layout Diagram 24
4.5 Circuit Diagrams ML690-MLT1400 25
4.6 Connection Diagrams ML690-MLT1400 30

5 ML1350

5.1 List of Components and Component Layout Diagram 31
5.2 Circuit Diagrams 32
5.3 Connection Diagram 38

1 ML180 & MLT350

1.1 List of Components and Component Layout Diagram

Component Ref.	Description	ML180	MLT350
		115V, 50/60Hz	115V, 50/60Hz
QM12	Circuit Breaker	19039019	19039019
QM12	Auxillary Contact	19039029	19039029
QM17	Circuit Breaker	19039150	19039150
KM24	Contactor	19039039	19039038
KM25	Contactor	19039039	19039038
FU18	Main Circuit Breaker	19039074	19039074
TC18	Transformer	19039149	19039149

Table 1-1. List of Components: 115V, 50/60Hz

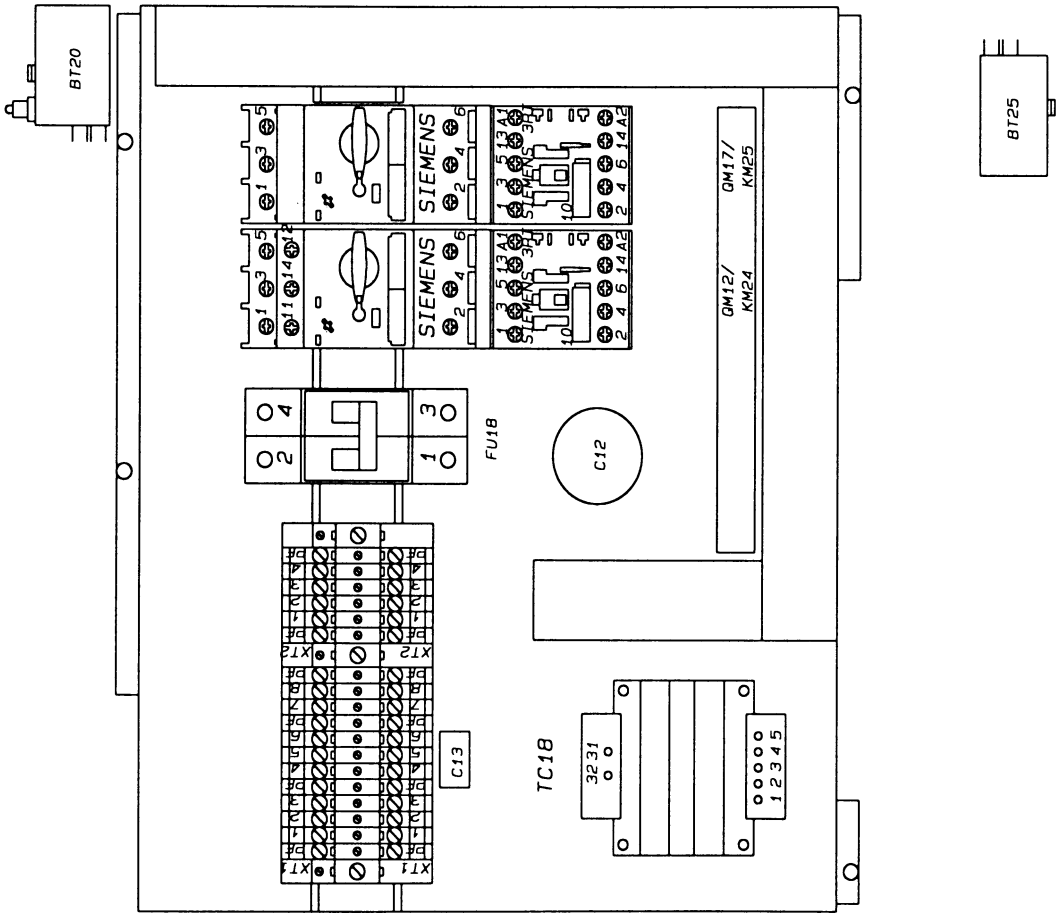

Figure 1-1. Assembly Drawing: 115V, 50/60Hz

Component Ref.	Description	ML180	MLT350
		220-240V, 50/60Hz	220-240V, 50/60Hz
QM12	Circuit Breaker	19039016	19039016
QM12	Auxillary Contact	19039029	19039029
QM17	Circuit Breaker	19039004	19039004
KM24	Contactor	19039038	19039038
KM25	Contactor	19039038	19039038
FU18	Main Circuit Breaker	19039074	19039074
TC18	Transformer	19039059	19039059

Table 1-2. List of Components: 220-240V, 50/60Hz

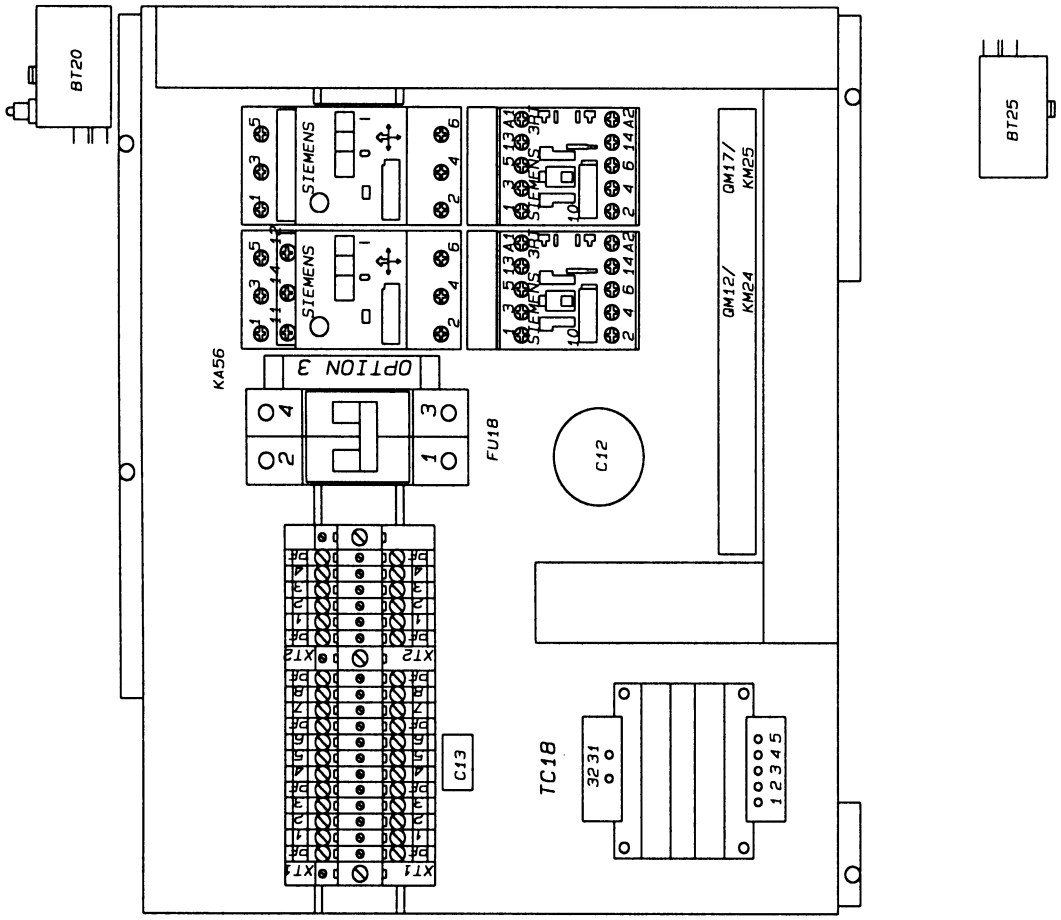

Figure 1-2. Assembly Drawing: 220-240V, 50/60Hz

1.2 Circuit Diagrams

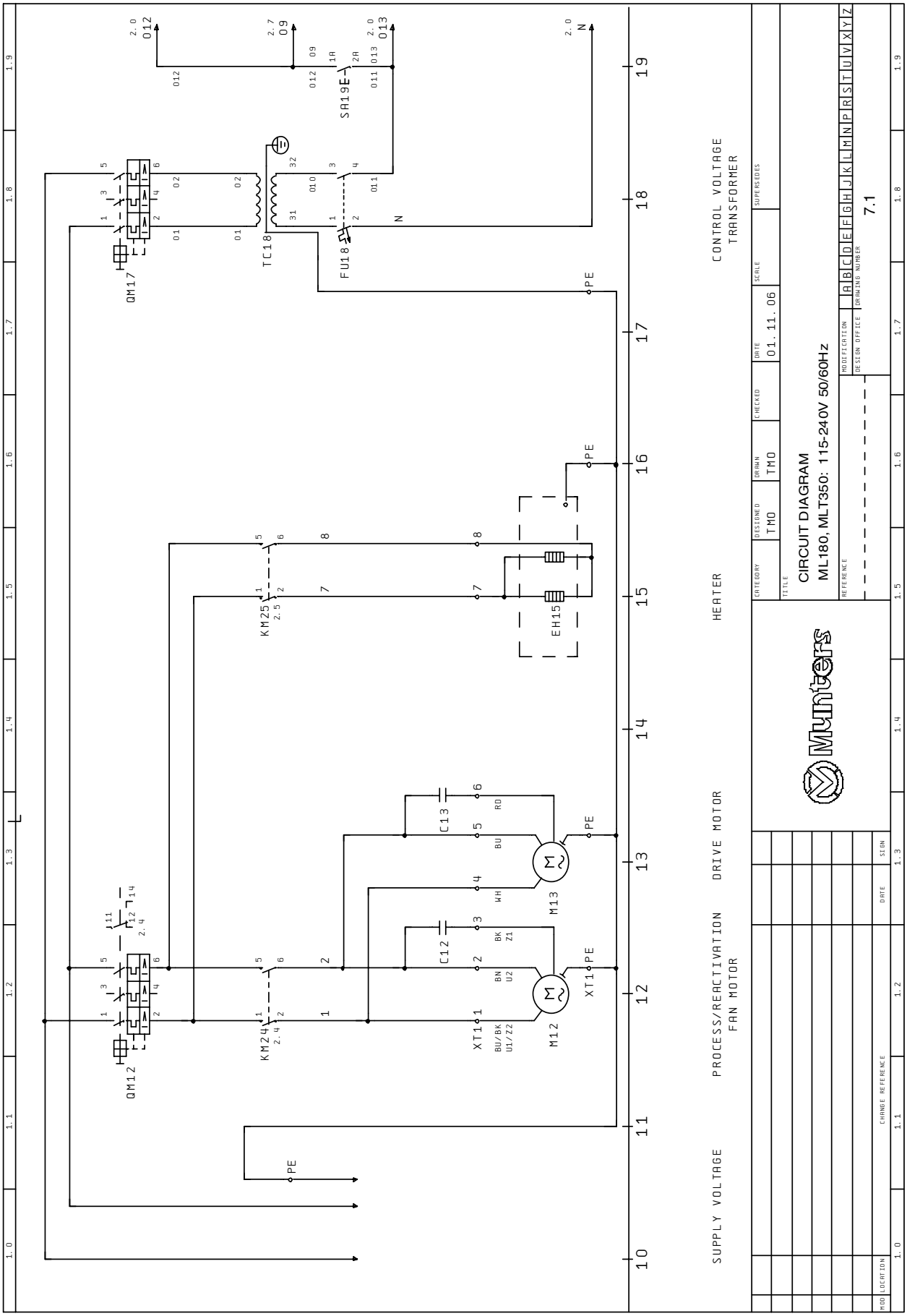

Figure 1-3. Circuit Diagram: 115-240V, 50/60Hz (1 of 2)

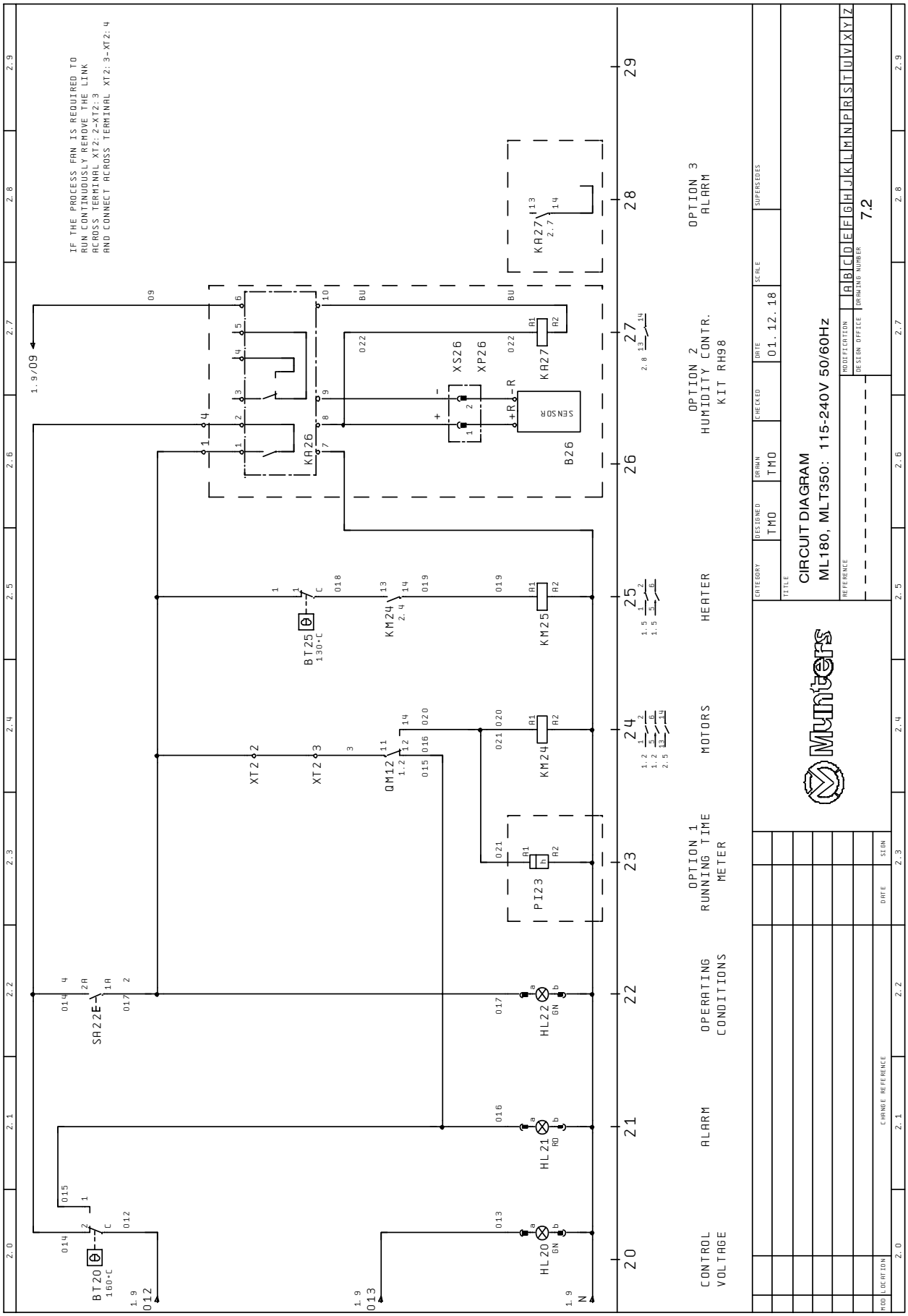

Figure 1-4. Circuit Diagram: 115-240V, 50/60Hz (2 of 2)

1.3 Connection Diagram

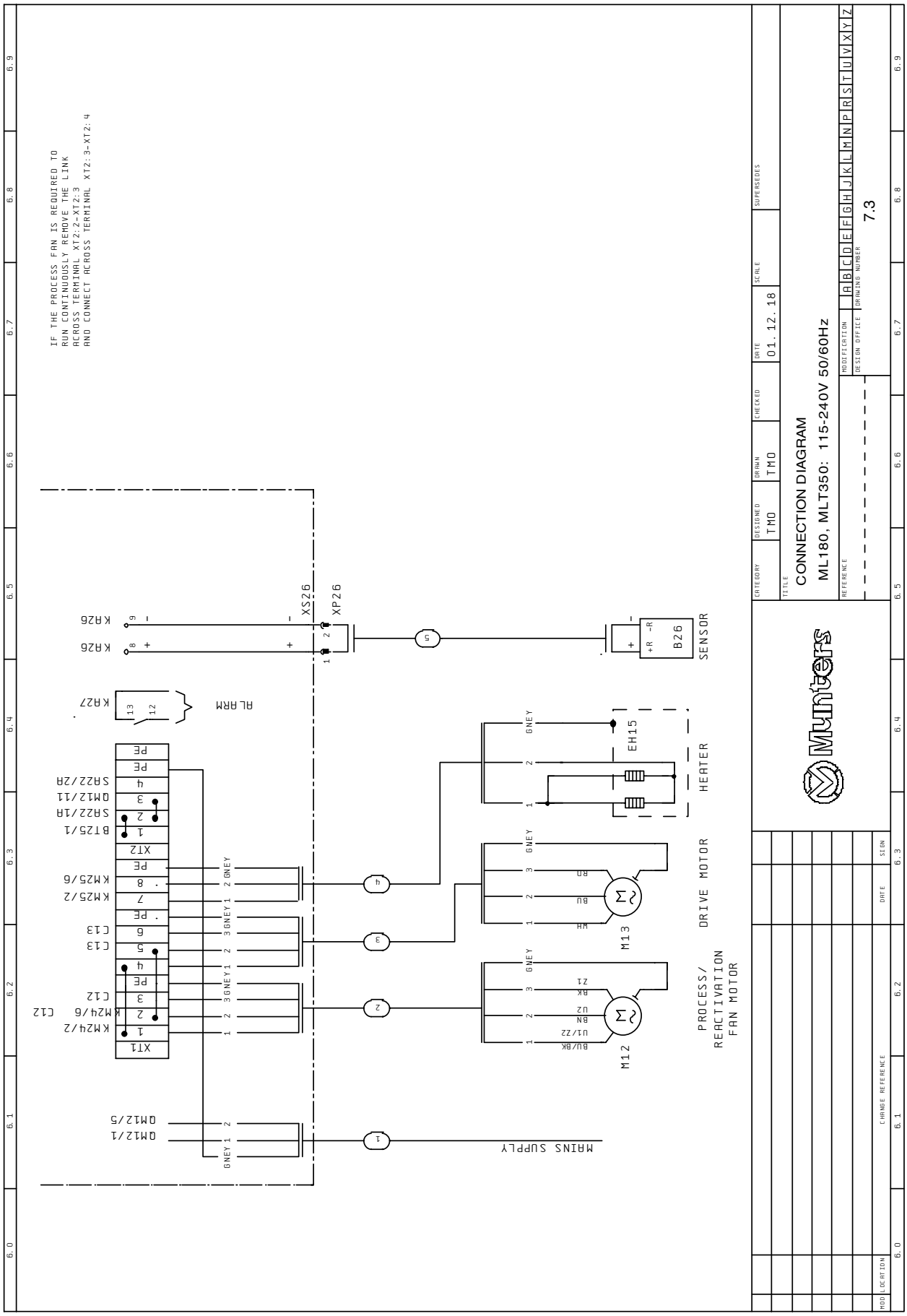

Figure 1-5. Connection Diagram: 115-240V 50/60Hz

2 ML270

2.1 List of Components and Component Layout Diagram

Component Ref.	Description	ML270	
		220-230V, 50/60Hz	380-500V, 50/60Hz
QM12	Circuit Breaker	19039007	19039005
QM15	Circuit Contact	19039015	19039013
QM12/QM15	Auxillary Breaker	19039029	19039029
QM17	Circuit Breaker	19039004	19039003
KM24	Contactor	19039038	19039038
KM25	Contactor	19039038	19039038
FU18	Main Circuit Breaker	19039073	19039073
TC18	Transformer	19039077	19039077

Table 2-1. List of Components: 220-500V, 50/60Hz

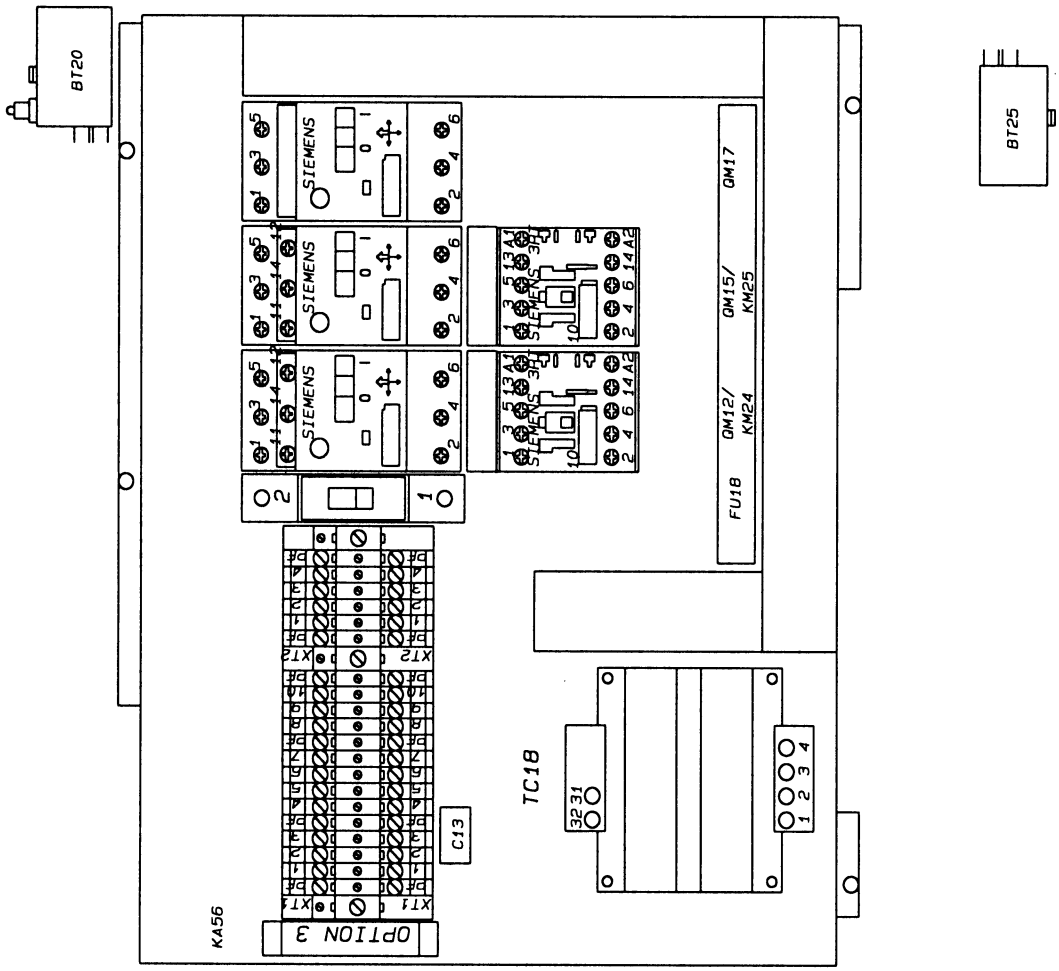

Figure 2-1. Assembly Drawing: 220-500V, 50/60Hz

2.2 Circuit Diagrams

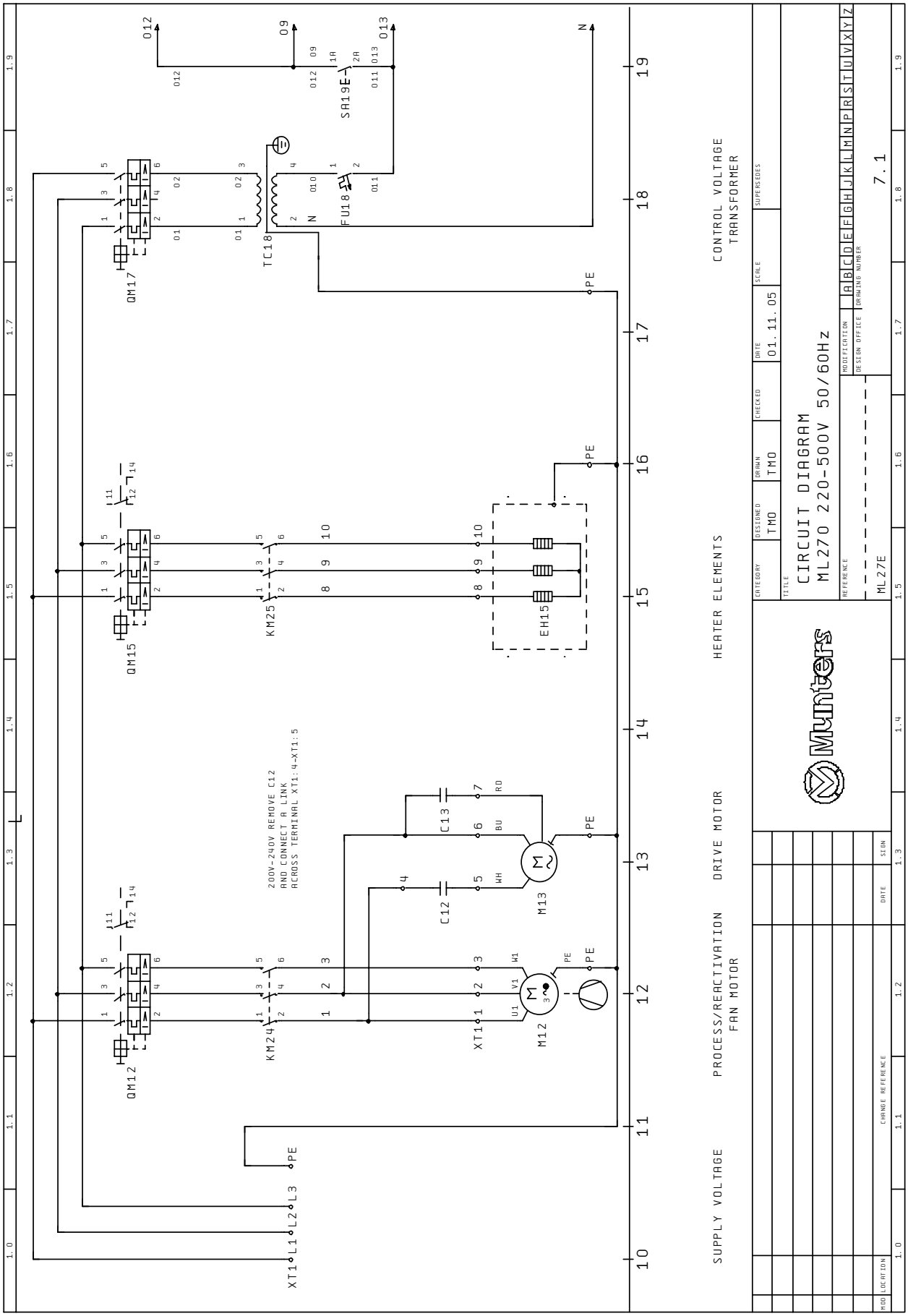

Figure 2-2. Circuit Diagram: 220-500V, 50/60Hz (1 of 2)

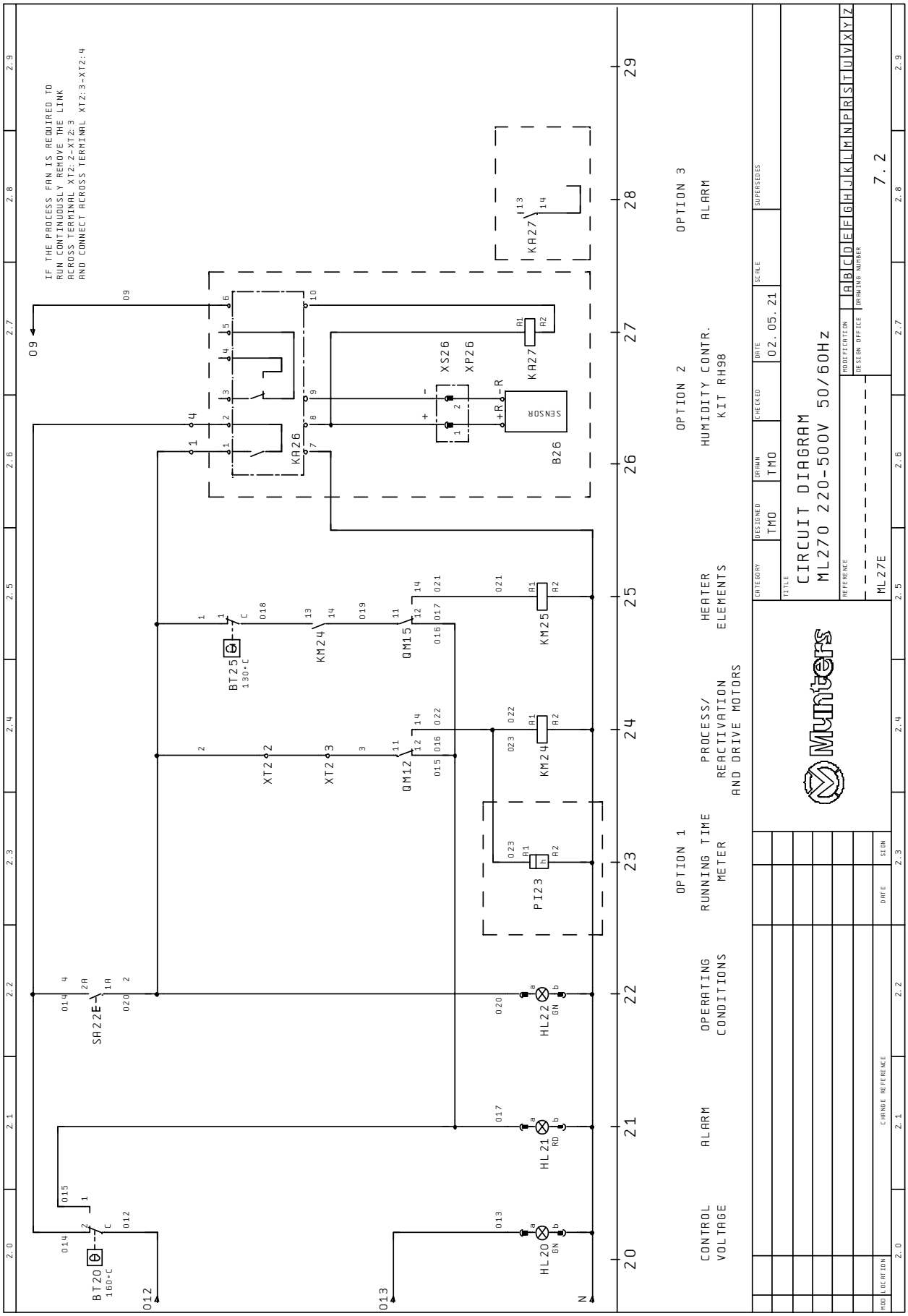

Figure 2-3. Circuit Diagram: 220-500V, 50/60Hz (2 of 2)

2.3 Connection Diagram

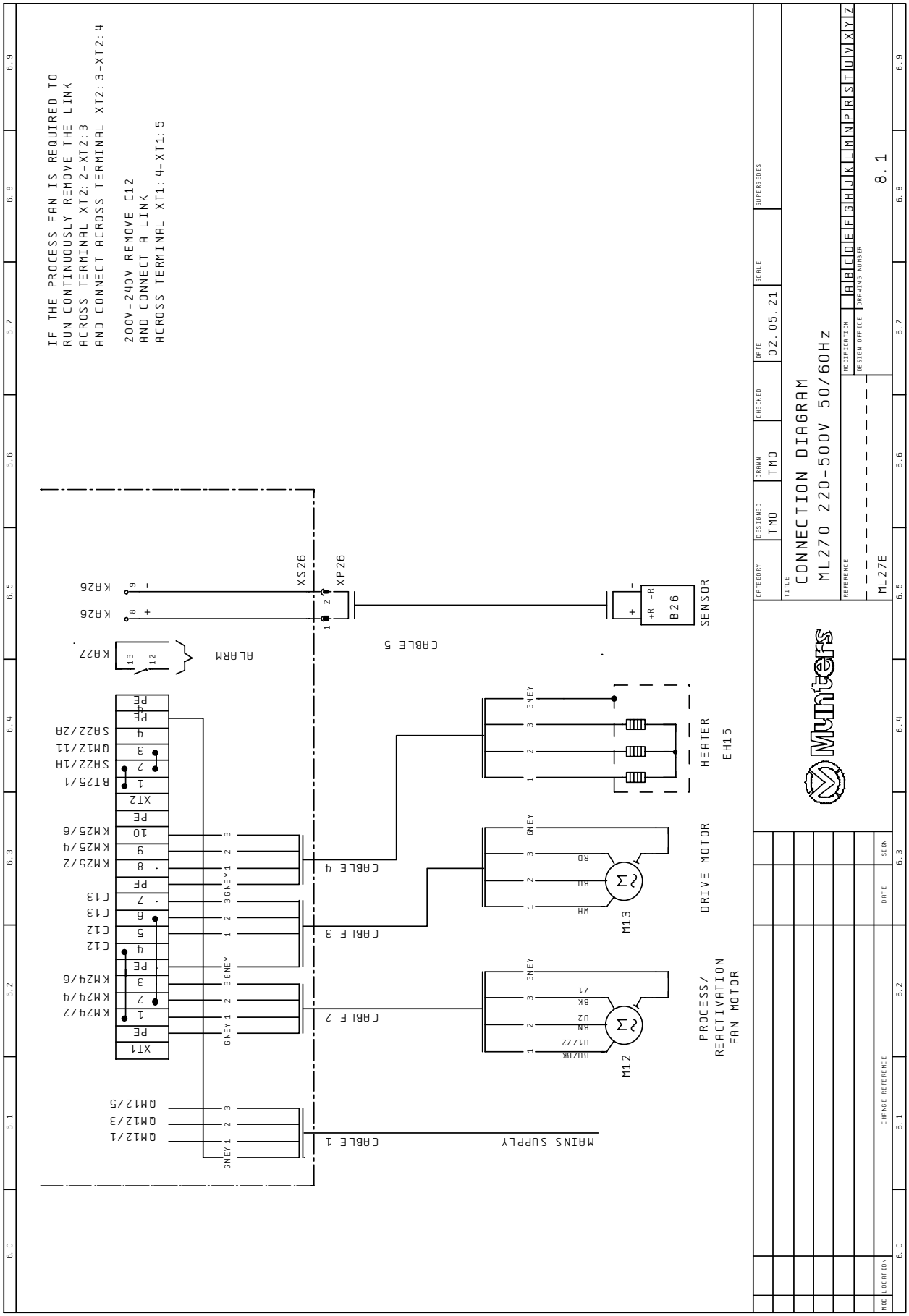

Figure 2-4. Connection Diagram: 220-500V 50/60Hz

3 ML420

3.1 List of Components and Component Layout Diagram

Component Ref.	Description	ML420								
		220V	230V	380V	400V	415V	440V	460V	480V	500V
		50/60Hz								
QS10	Switch Disconnector	39093	39093	39093	39093	39093	39093	39093	39093	39093
QM12-14	Circuit Breaker	39014	39014	39012	39012	39012	39012	39012	39012	39012
QM16	Circuit Breaker	39008	39008	39005	39005	39005	39005	39005	39005	39005
QM25	Circuit Breaker	39004	39004	39003	39003	39003	39003	39003	39003	39003
QM-12-16	Auxiliary Contact	39029	39029	39029	39029	39029	39029	39029	39029	39029
KL27-28	Trip Coil	39032	39032	39032	39032	39032	39032	39032	39032	39032
FU26	Mini Circuit Breaker	39073	39073	39073	39073	39073	39073	39073	39073	39073
KM30-31	Contactor	39038	39038	39038	39038	39038	39038	39038	39038	39038
KM34	Auxiliary Contact	43496	43496	43496	43496	43496	43496	43496	43496	43496
TC25	Transformer	39077	39077	39077	39077	39077	39077	39077	39077	39077
NOTE!	*All article numbers are prefixed with "190", e.g.* ***190****39077*									

Table 3-1. List of Components: 220-500V, 50/60Hz

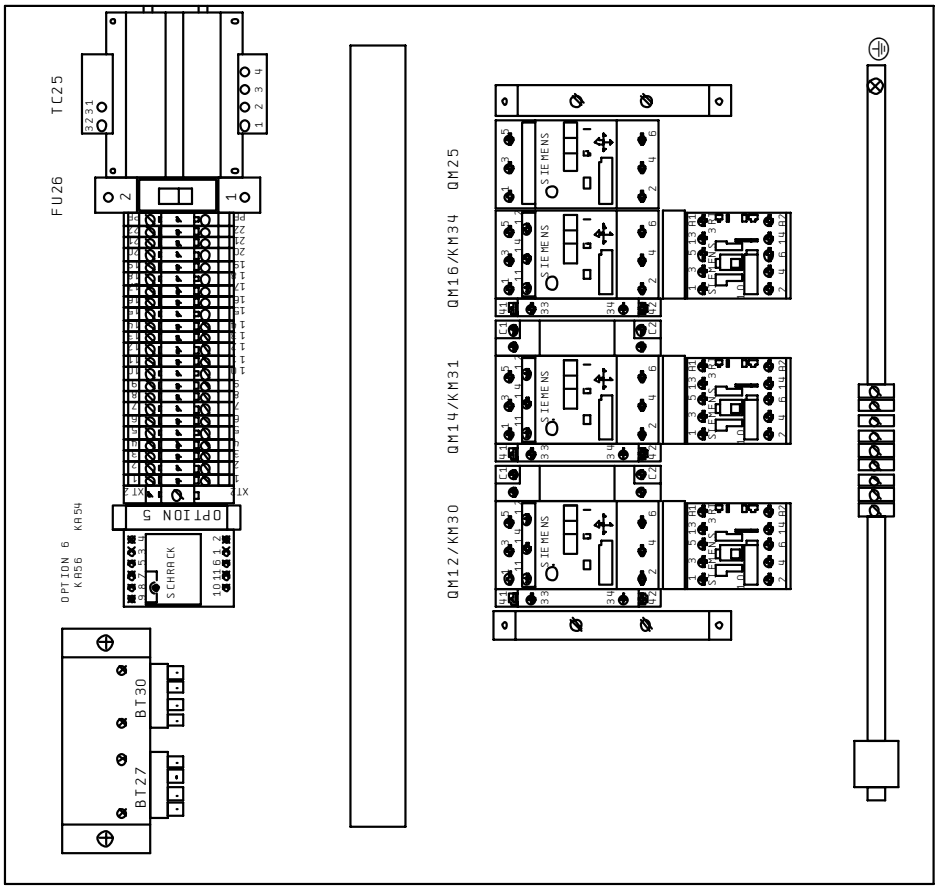

Figure 3-1. Assembly Drawing: 220-500V, 50/60Hz

3.2 Circuit Diagrams

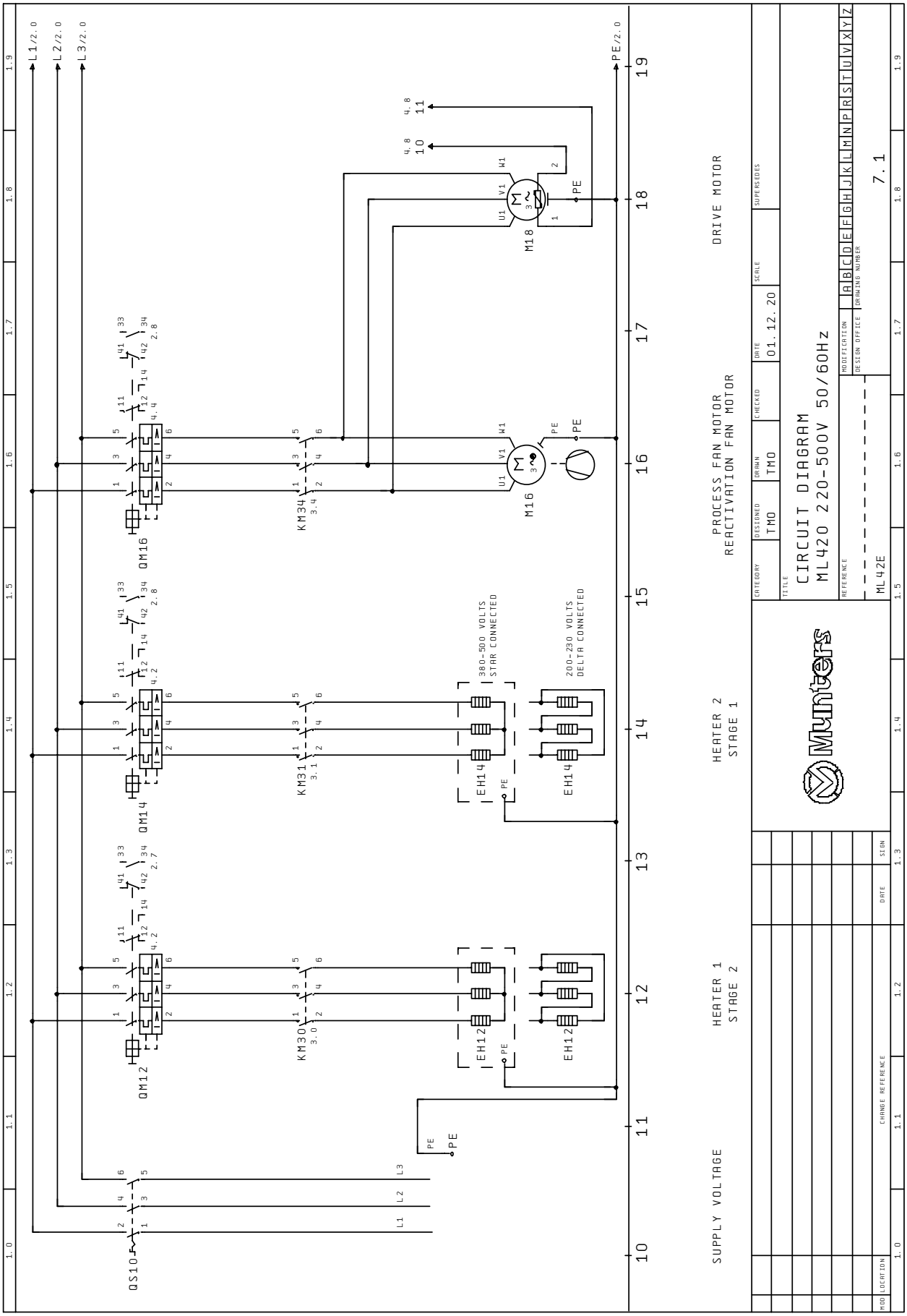

Figure 3-2. Circuit Diagram: 220-500V, 50/60Hz (1 of 5)

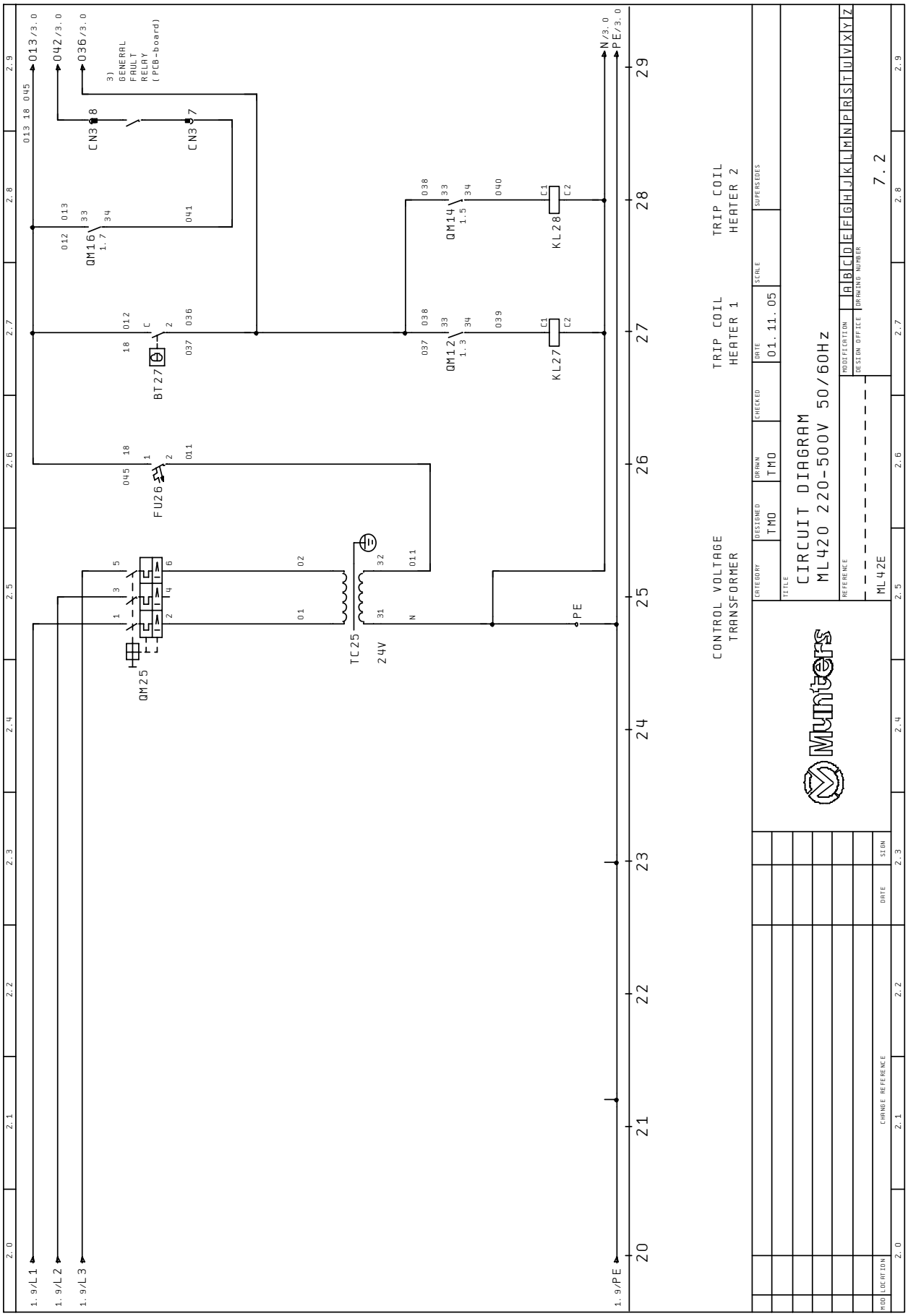

Figure 3-3. Circuit Diagram: 220-500V, 50/60Hz (2 of 5)

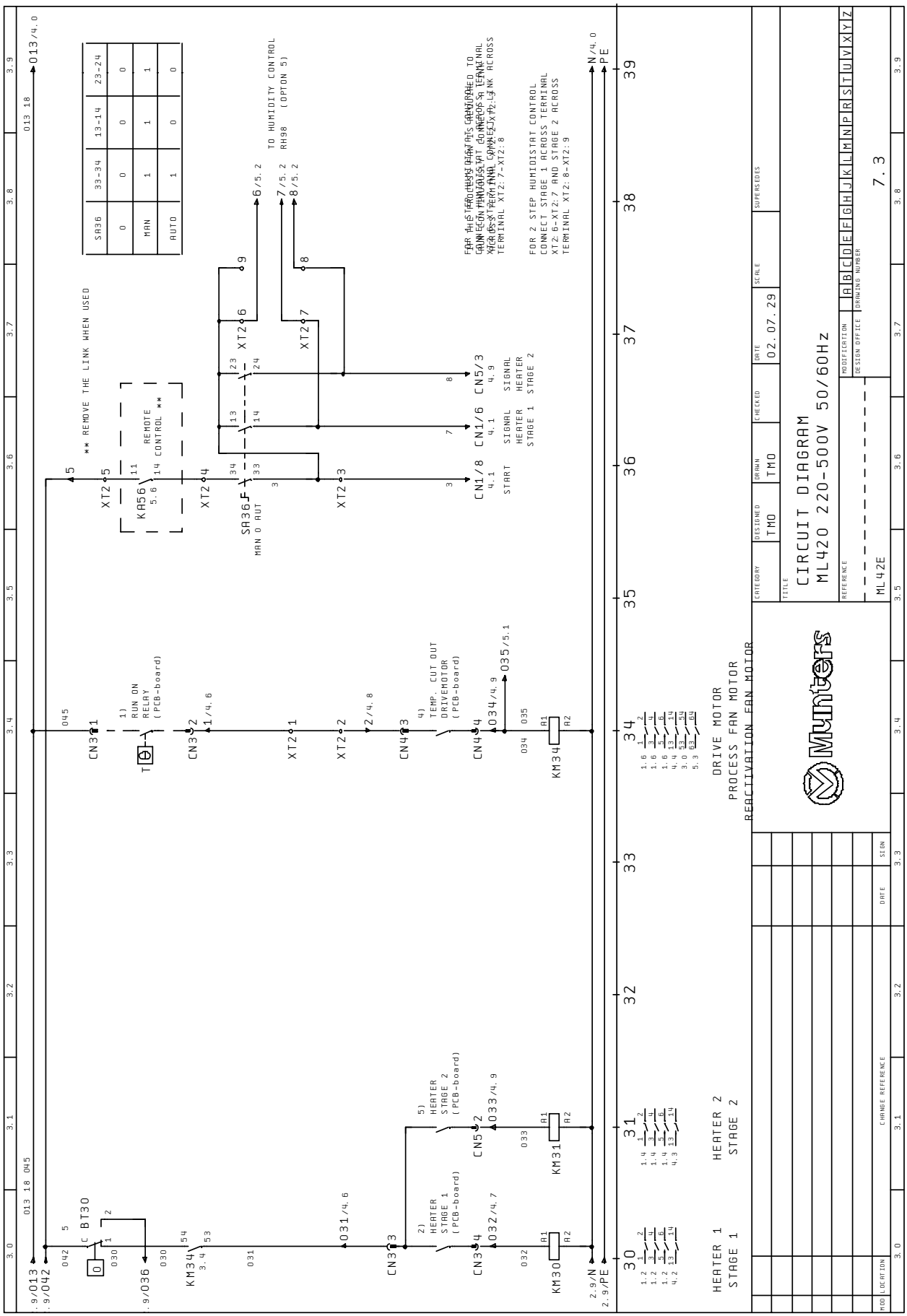

Figure 3-4. Circuit Diagram: 220-500V, 50/60Hz (3 of 5)

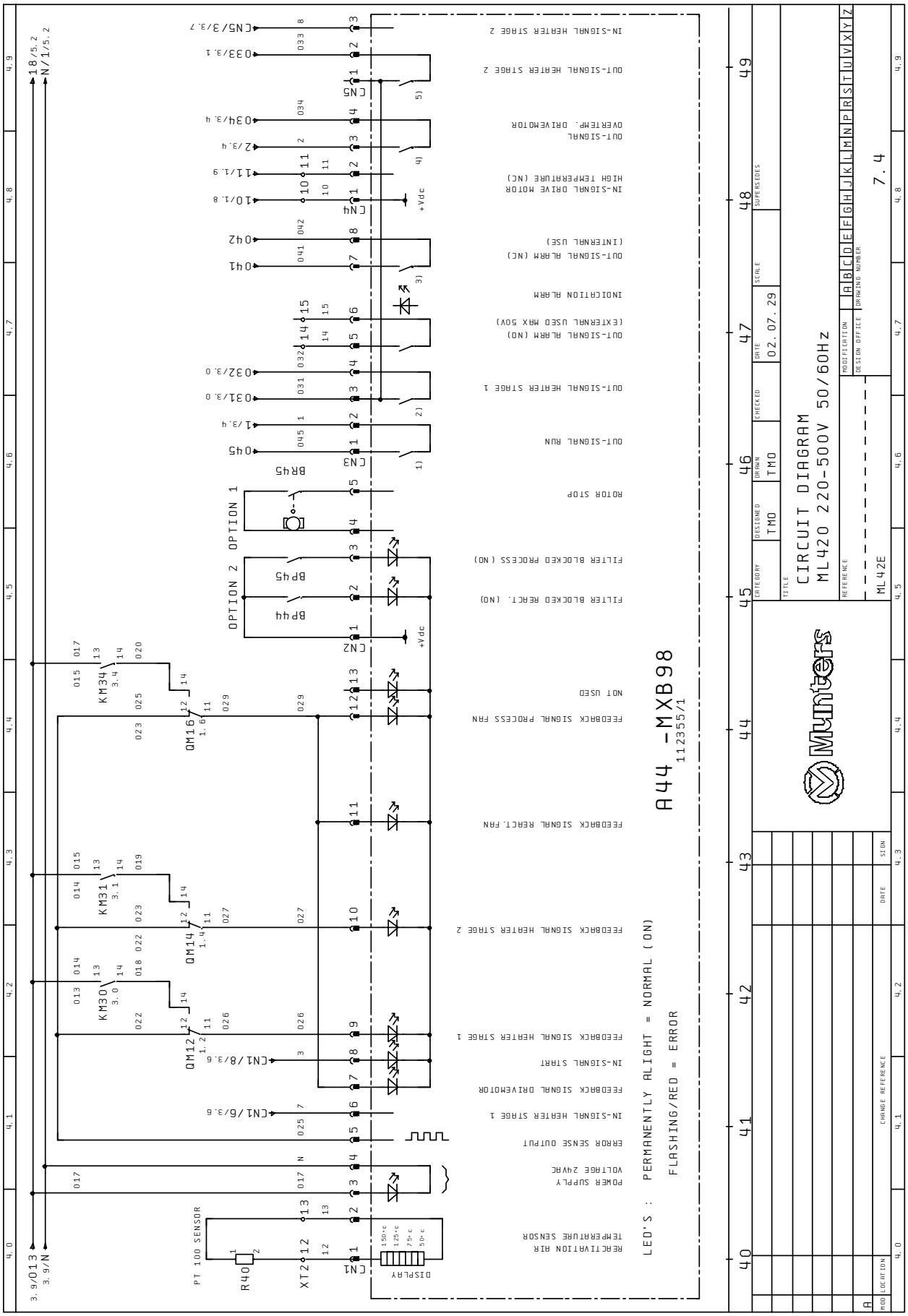

Figure 3-5. Circuit Diagram: 220-500V, 50/60Hz (4 of 5)

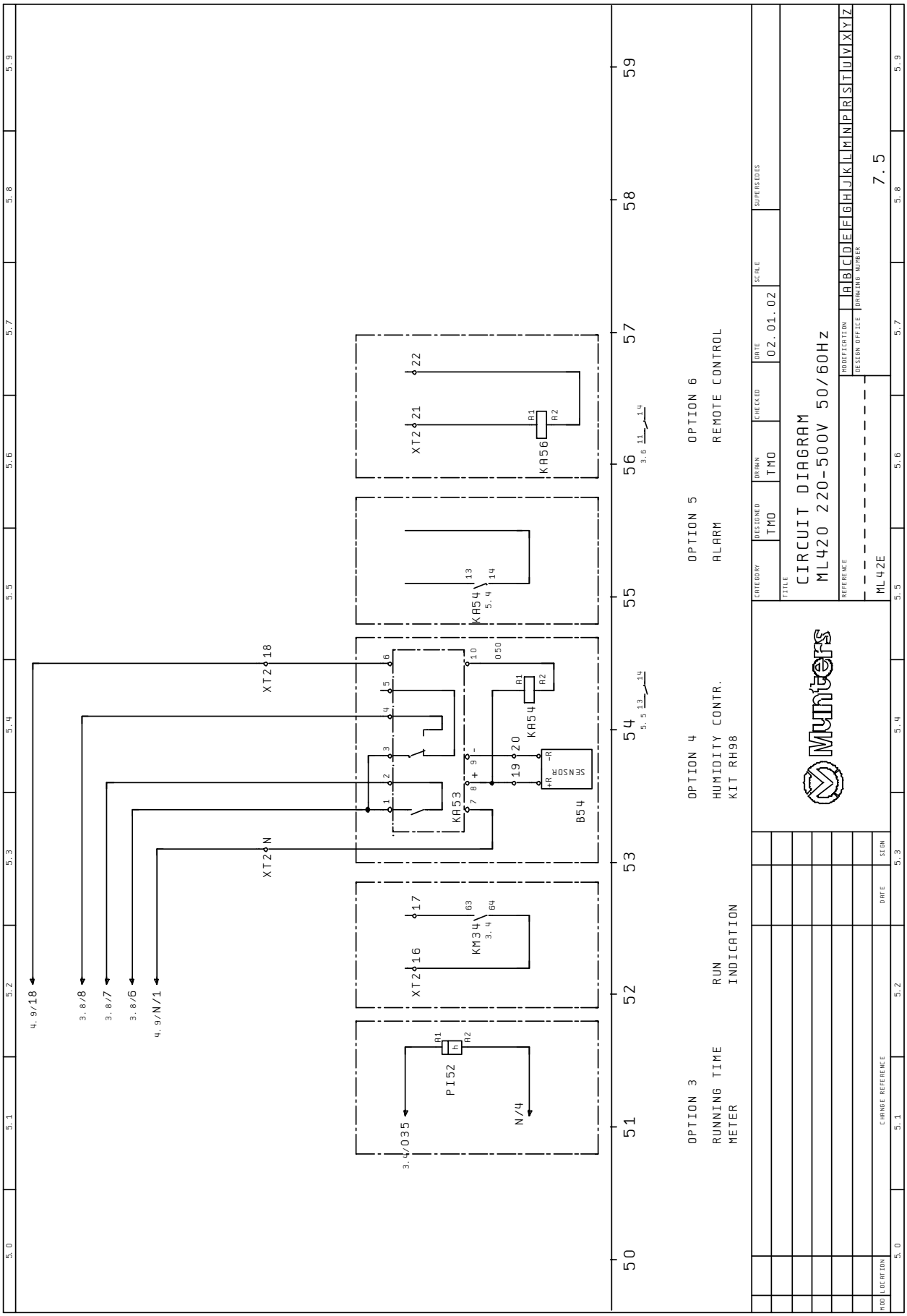

Figure 3-6. Circuit Diagram: 220-500V, 50/60Hz (5 of 5)

3.3 Connection Diagram

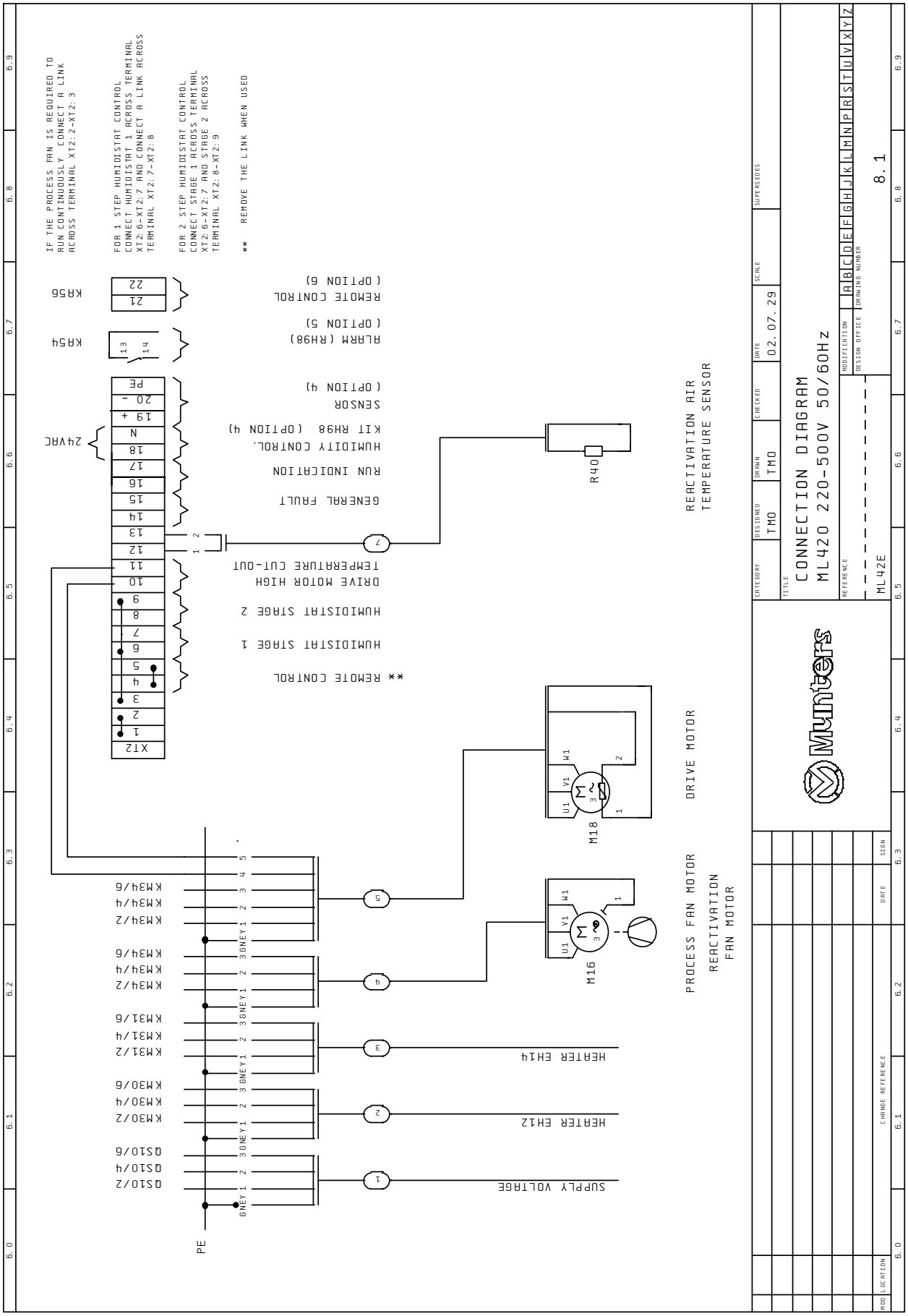

Figure 3-7. Connection Diagram: 220-500V, 50/60Hz

4 ML690-MLT1400

4.1 ML690 - List of Components and Component Layout Diagram

Component Ref.	Description	ML690								
		220V	230V	380V	400V	415V	440V	460V	480V	500V
		50/60Hz								
QS10	Switch Disconnector	39093	39093	39093	39093	39093	39093	39093	39093	39093
QM12-14	Circuit Breaker	39016	39016	39014	39014	39013	39013	39013	39013	39013
QM16	Circuit Breaker	39008	39008	39006	39006	39006	39005	39005	39005	39005
QM21	Circuit Breaker	39010	39010	39008	39007	39007	39007	39007	39007	39007
QM25	Circuit Breaker	39005	39005	39003	39003	39003	39003	39003	39003	39003
QM-12-21	Auxiliary Contact	39029	39029	39029	39029	39029	39029	39029	39029	39029
QM12-21	Auxiliary Contact	39030	39030	39030	39030	39030	39030	39030	39030	39030
KL27-28	Trip Coil	39032	39032	39032	39032	39032	39032	39032	39032	39032
FU26	Mini Circuit Breaker	39073	39073	39073	39073	39073	39073	39073	39073	39073
KM30-34	Contactor	39038	39038	39038	39038	39038	39038	39038	39038	39038
KM33-34	Auxiliary Contact	39045	39045	39045	39045	39046	39045	39045	39045	39045
TC25	Transformer	39077	39077	39077	39077	39077	39077	39077	39077	39077
NOTE!	*All article numbers are prefixed with "190", e.g.* ***190****39077*									

Table 4-1. ML690 List of Components: 220-500V, 50/60Hz

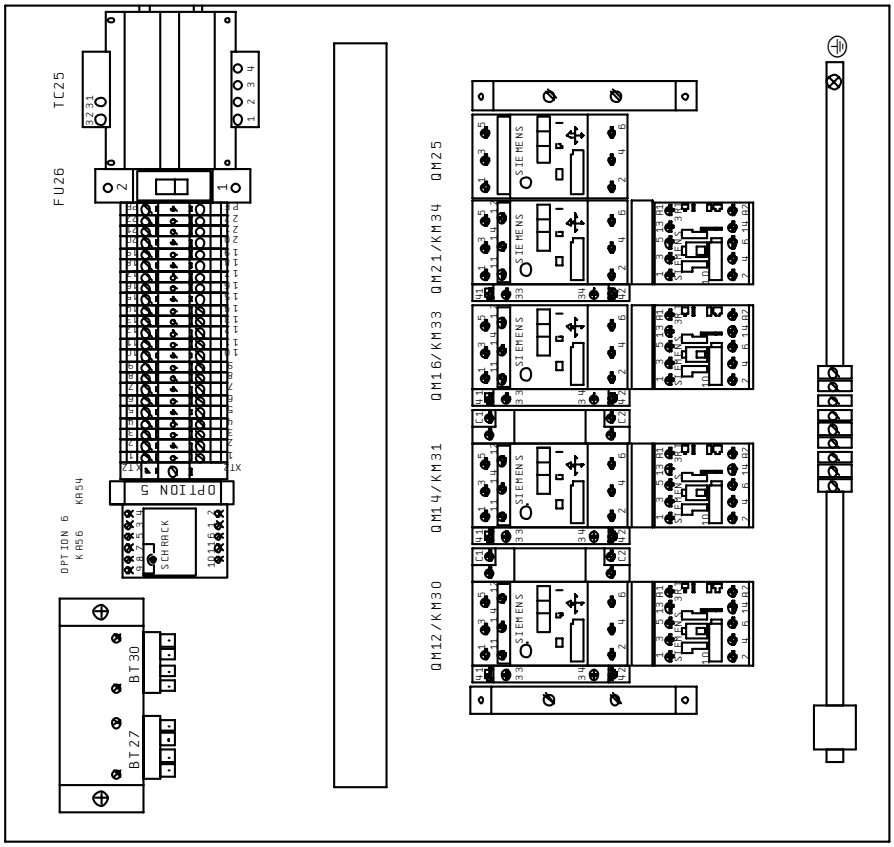

Figure 4-1. ML690 Assembly Drawing: 240-500V, 50/60Hz

4.2 MLT800 - List of Components and Component Layout Diagram

Component Ref.	Description	MLT800								
		220V	230V	380V	400V	415V	440V	460V	480V	500V
		50/60Hz								
QS10	Switch Disconnector	39093	39093	39093	39093	39093	39093	39093	39093	39093
QM12-14	Circuit Breaker	39014	39014	39012	39012	39012	39012	39012	39012	39012
QM16	Circuit Breaker	39008	39008	39006	39006	39006	39005	39005	39005	39005
QM21	Circuit Breaker	39010	39010	39008	39007	39007	39007	39007	39007	39007
QM25	Circuit Breaker	39005	39005	39003	39003	39003	39003	39003	39003	39003
QM-12-21	Auxiliary Contact	39029	39029	39029	39029	39029	39029	39029	39029	39029
QM12-21	Auxiliary Contact	39030	39030	39030	39030	39030	39030	39030	39030	39030
KL27-28	Trip Coil	39032	39032	39032	39032	39032	39032	39032	39032	39032
FU26	Mini Circuit Breaker	39073	39073	39073	39073	39073	39073	39073	39073	39073
KM30-34	Contactor	39038	39038	39038	39038	39038	39038	39038	39038	39038
KM33-34	Auxiliary Contact	39045	39045	39045	39045	39046	39045	39045	39045	39045
TC25	Transformer	39077	39077	39077	39077	39077	39077	39077	39077	39077
NOTE!	*All article numbers are prefixed with "190", e.g.* ***190****39077*									

Table 4-2. MLT800 List of Components: 220-500V, 50/60Hz

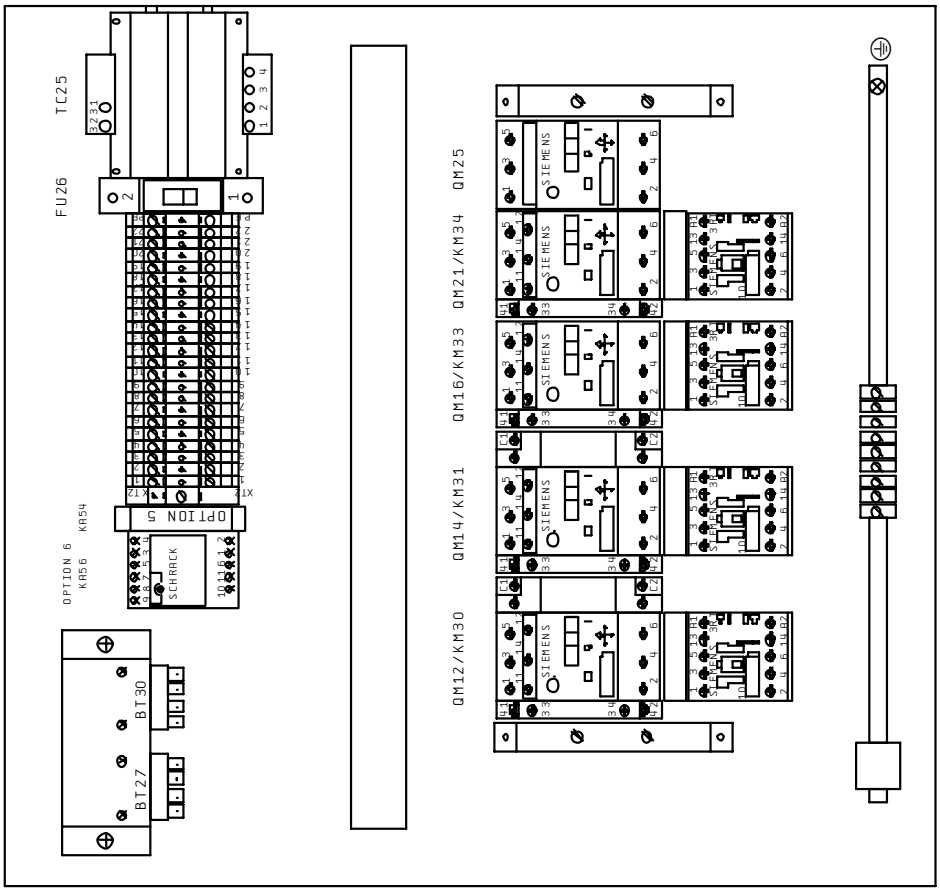

Figure 4-2. MLT800 Assembly Drawing: 240-500V, 50/60Hz

4.3 ML1100 - List of Components and Component Layout Diagram

Component Ref.	Description	ML1100	
		220V, 50/60Hz	230V, 50/60Hz
QS10	Switch Disconnector	19043695	19043695
QM12	Circuit Breaker	19039018	19039018
QM14	Circuit Breaker	19039018	19039017
QM16	Circuit Breaker	19039010	19039010
QM21	Circuit Breaker	19039013	19039013
QM25	Circuit Breaker	19039005	19039005
QM-12-21	Auxiliary Contact	19039029	19039029
QM12-21	Auxiliary Contact	19039030	19039030
KL27-28	Trip Coil	19039032	19039032
FU26	Mini Circuit Breaker	19039073	19039073
KM30-31	Contactor	19039039	19039039
KM33-34	Contactor	19039038	19039038
KM30-31	Auxiliary Contact	19039046	19039046
KM33-34	Auxiliary Contact	19039045	19039045
TC25	Transformer	19039077	19039077

Table 4-3. ML1100 List of Components: 220-230V, 50/60Hz

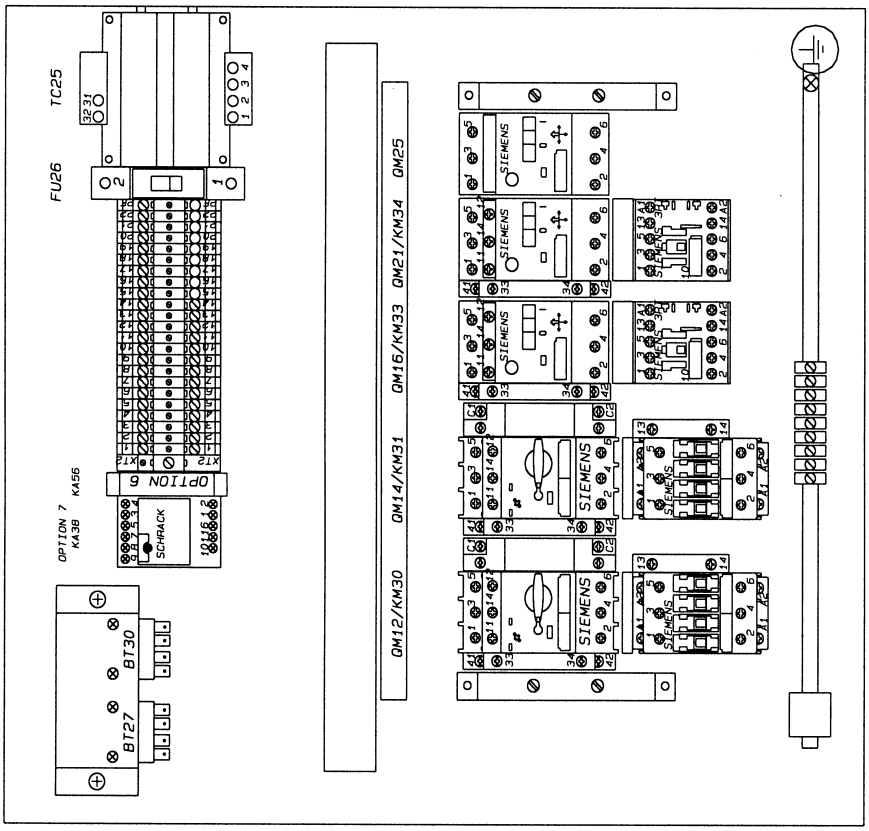

Figure 4-3. ML1100 Assembly Drawing: 220-230V, 50/60Hz

Component Ref.	Description	ML1100						
		380V	400V	415V	440V	460V	480V	500V
		50/60Hz						
QS10	Switch Disconnector	43693	43693	43693	43693	43693	43693	43693
QM12	Circuit Breaker	39016	39016	39016	39016	39016	39016	39016
QM14	Circuit Breaker	39016	39016	39016	39016	39016	39016	39016
QM16	Circuit Breaker	39007	39007	39007	39007	39007	39007	39007
QM21	Circuit Breaker	39010	39010	39010	39010	39010	39010	39009
QM25	Circuit Breaker	39003	39003	39003	39003	39003	39003	39003
QM-12-21	Auxiliary Contact	39029	39029	39029	39029	39029	39029	39029
QM12-21	Auxiliary Contact	39030	39030	39030	39030	39030	39030	39030
KL27-28	Trip Coil	39032	39032	39032	39032	39032	39032	39032
FU26	Mini Circuit Breaker	39073	39073	39073	39073	39073	39073	39073
KM30-31	Contactor	39038	39038	39038	39038	39038	39038	39038
KM33-34	Contactor	39038	39038	39038	39038	39038	39038	39038
KM33-34	Auxiliary Contact	39045	39045	39045	39045	39045	39045	39045
TC25	Transformer	39077	39077	39077	39077	39077	39077	39077
NOTE! *All article numbers are prefixed with "190", e.g.* ***190****39077*								

Table 4-4. ML1100 List of Components: 380-500V, 50/60Hz

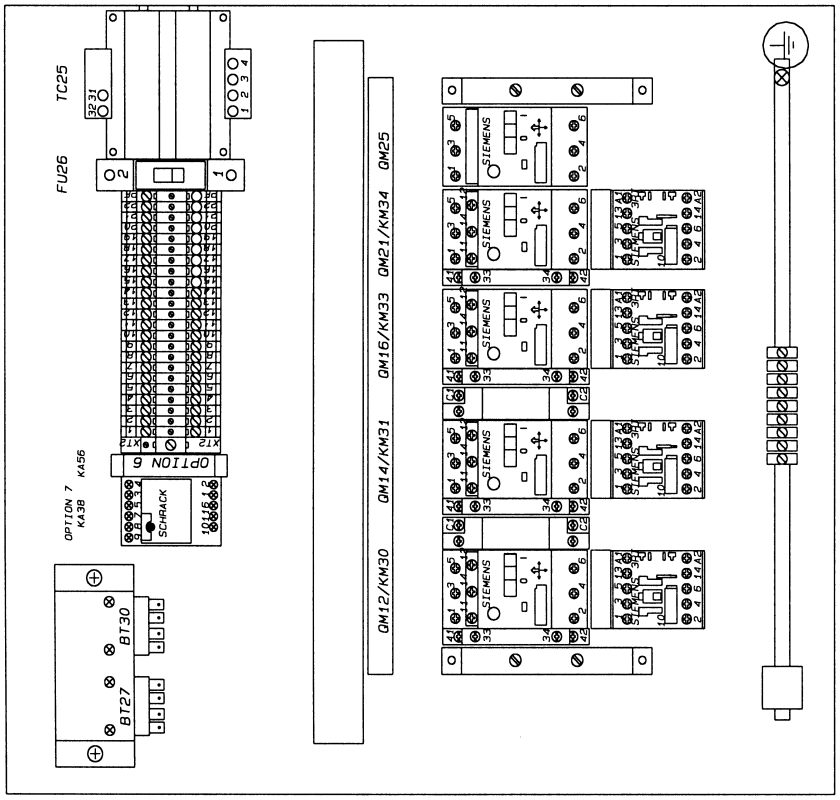

Figure 4-4. ML1100 Assembly Drawing: 380-500V, 50/60Hz

4.4 MLT1400 - List of Components and Component Layout Diagram

Component Ref.	Description	MLT1400								
		220V	230V	380V	400V	415V	440V	460V	480V	500V
		50/60Hz								
QS10	Switch Disconnector	43693	43693	43693	43693	43693	43693	43693	43693	43693
QM12-14	Circuit Breaker	39016	39016	39014	39014	39013	39013	39013	39013	39013
QM16	Circuit Breaker	39008	39008	39006	39006	39006	39005	39005	39005	39005
QM21	Circuit Breaker	39012	39012	39010	39010	39010	39010	39010	39010	39009
QM25	Circuit Breaker	39005	39005	39003	39003	39003	39003	39003	39003	39003
QM-12-21	Auxiliary Contact	39029	39029	39029	39029	39029	39029	39029	39029	39029
QM12-21	Auxiliary Contact	39030	39030	39030	39030	39030	39030	39030	39030	39030
KL27-28	Trip Coil	39032	39032	39032	39032	39032	39032	39032	39032	39032
FU26	Mini Circuit Breaker	39073	39073	39073	39073	39073	39073	39073	39073	39073
KM30-34	Contactor	39038	39038	39038	39038	39038	39038	39038	39038	39038
KM33-34	Auxiliary Contact	39045	39045	39045	39045	39046	39045	39045	39045	39045
TC25	Transformer	39077	39077	39077	39077	39077	39077	39077	39077	39077
NOTE!	*All article numbers are prefixed with "190", e.g.* ***190****39077*									

Table 4-5. MLT1400 List of Components: 220-500V, 50/60Hz

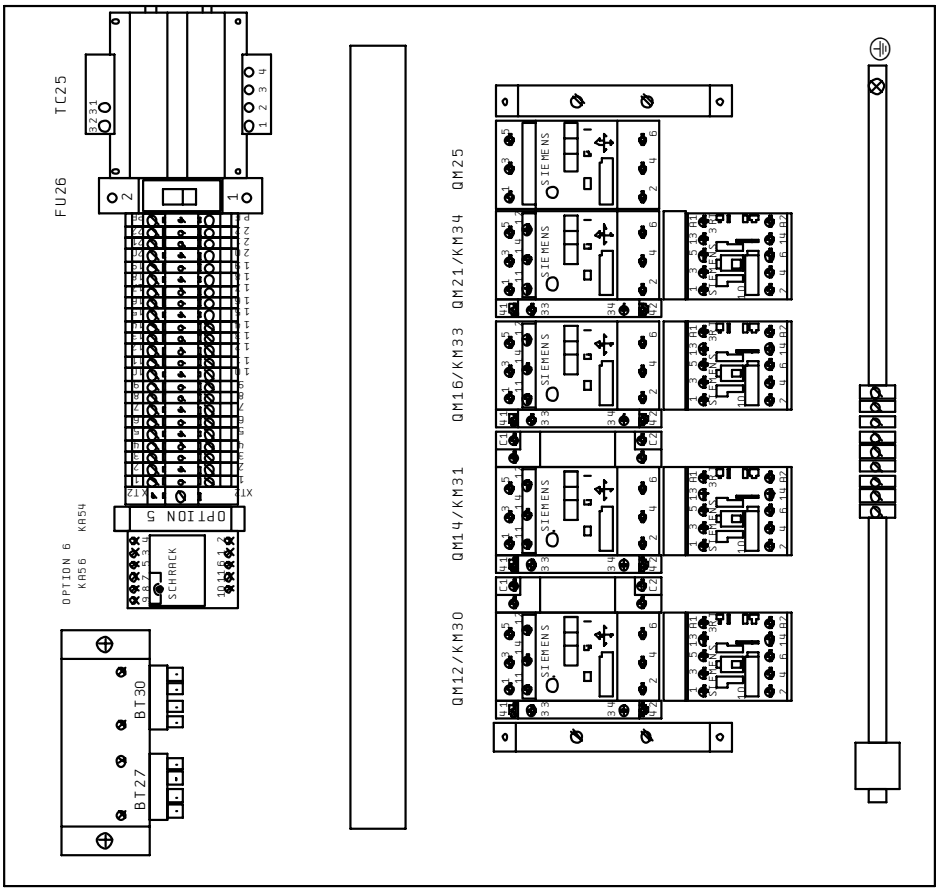

Figure 4-5. MLT1400 Assembly Drawing: 220-500V, 50/60Hz

4.5 Circuit Diagrams ML690-MLT1400

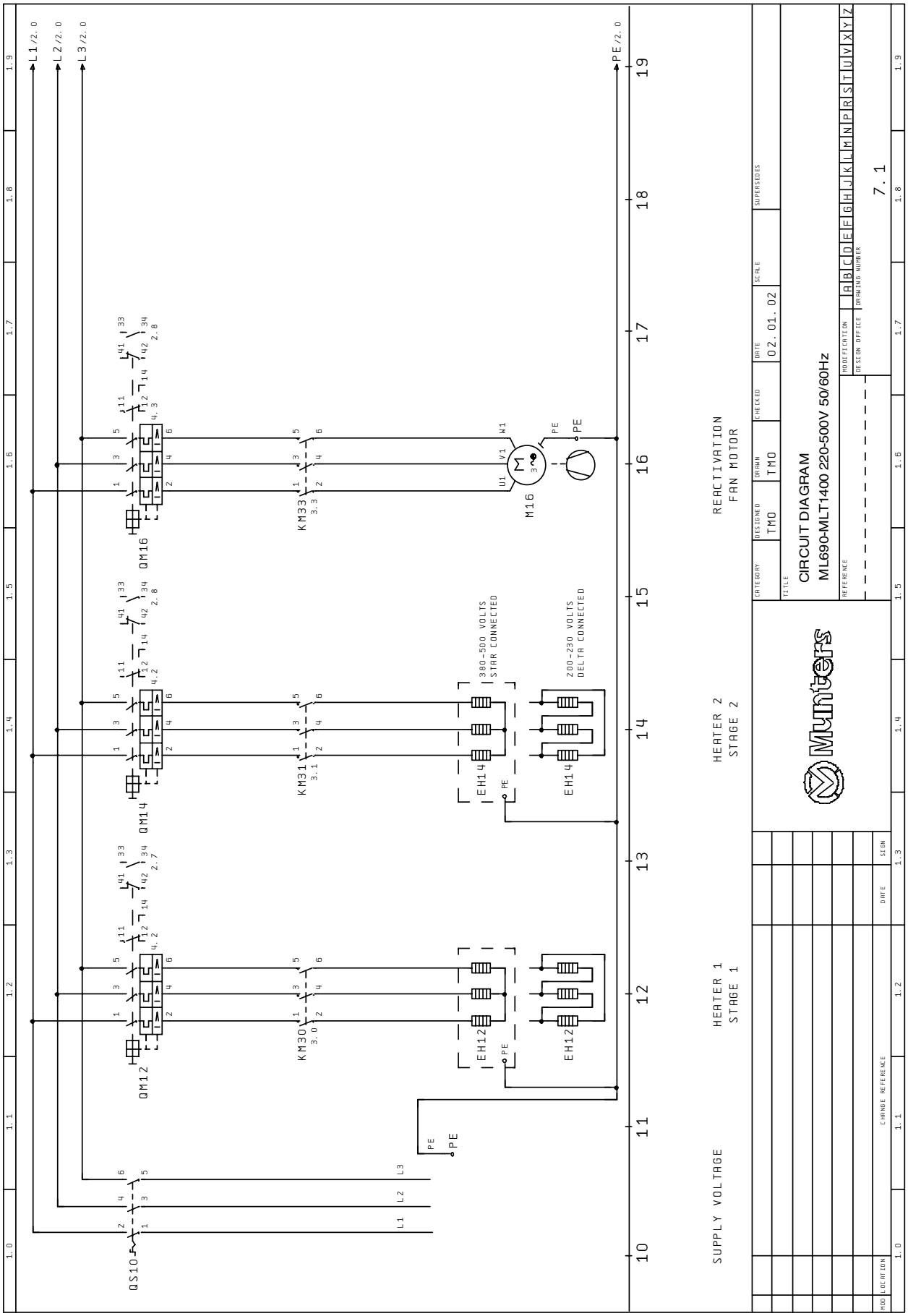

Figure 4-6. Circuit Diagram: 220-500V, 50/60Hz (1 of 5)

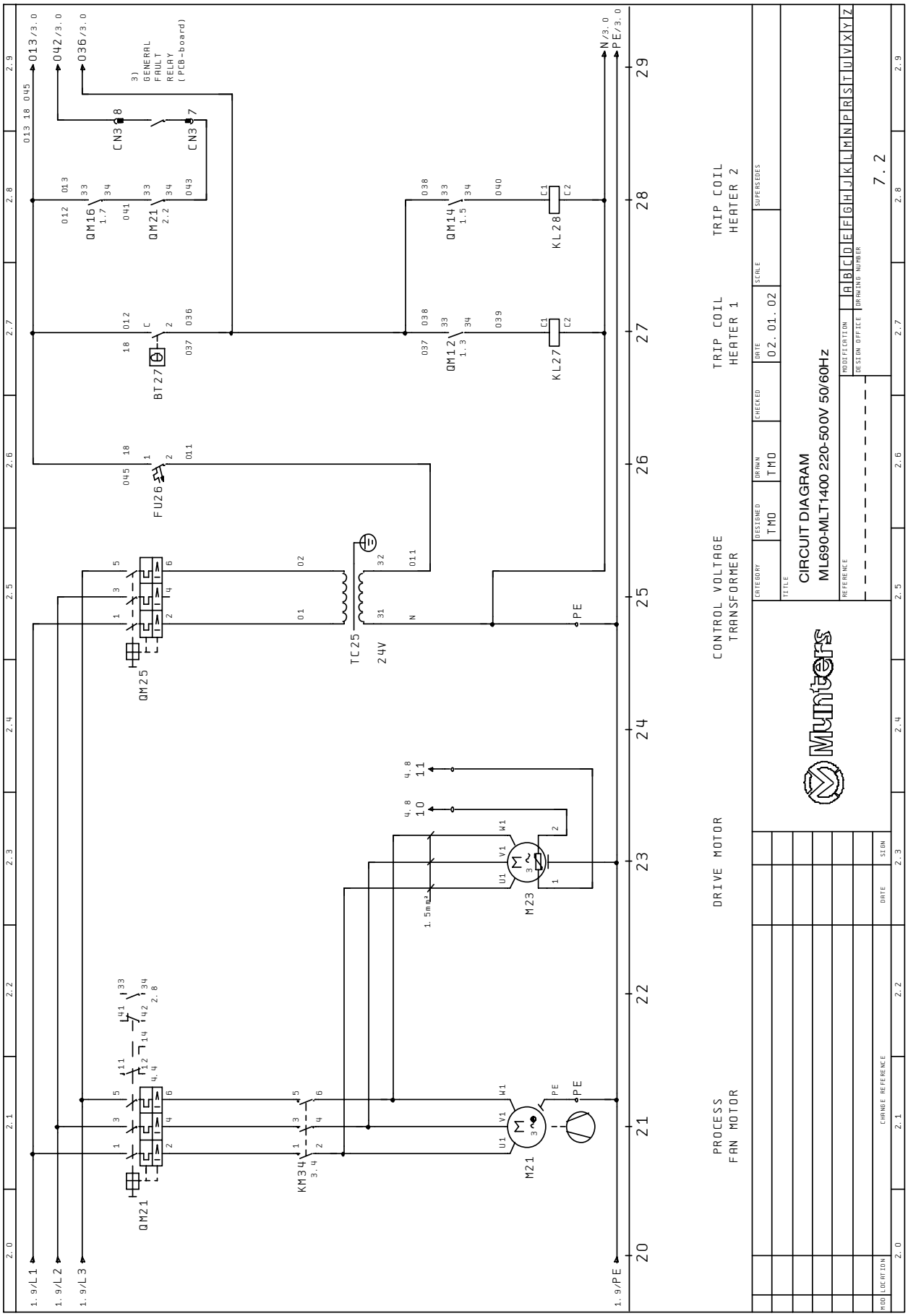

Figure 4-7. Circuit Diagram: 220-500V, 50/60Hz (2 of 5)

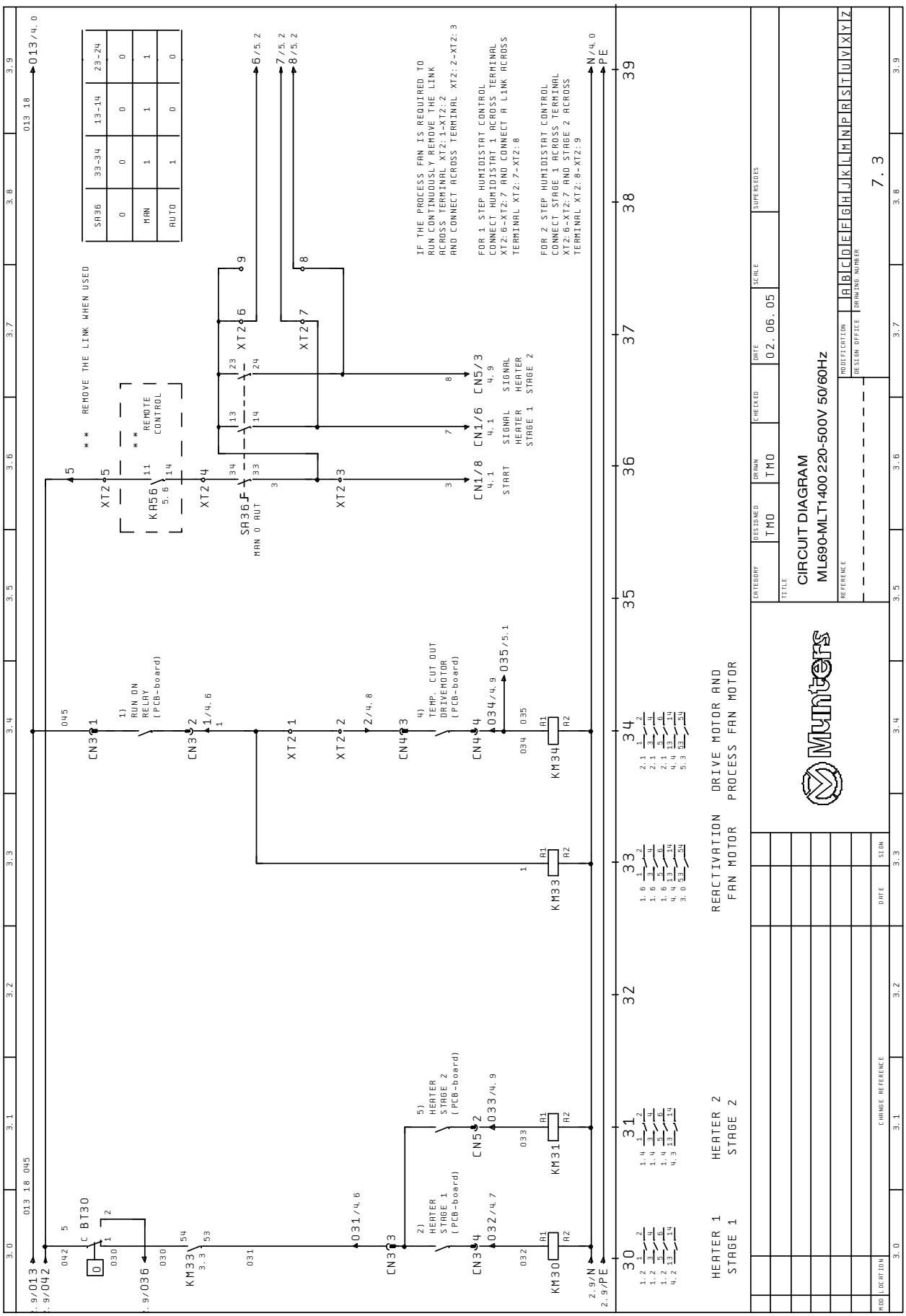

Figure 4-8. Circuit Diagram: 220-500V, 50/60Hz (3 of 5)

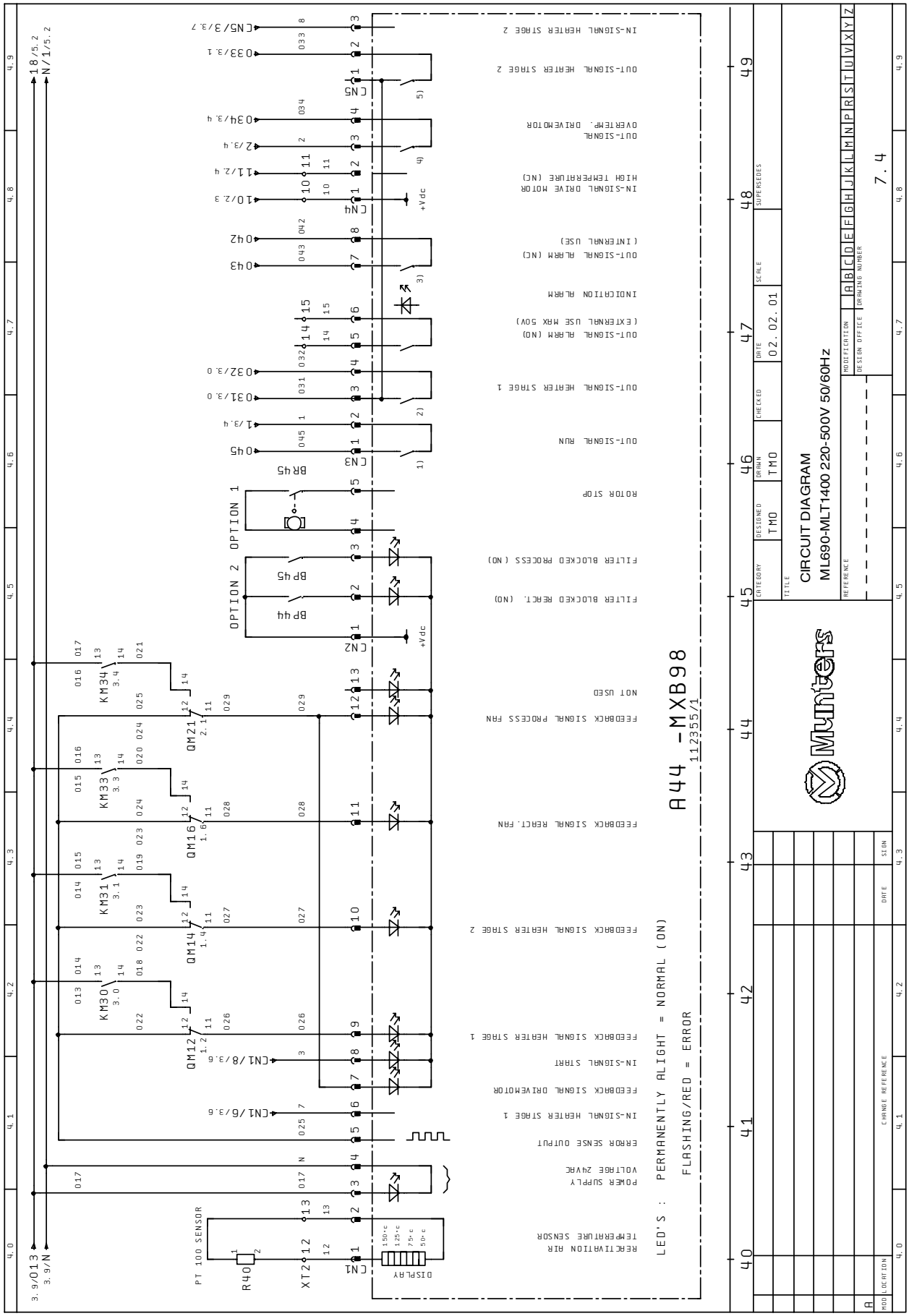

Figure 4-9. Circuit Diagram: 220-500V, 50/60Hz (4 of 5)

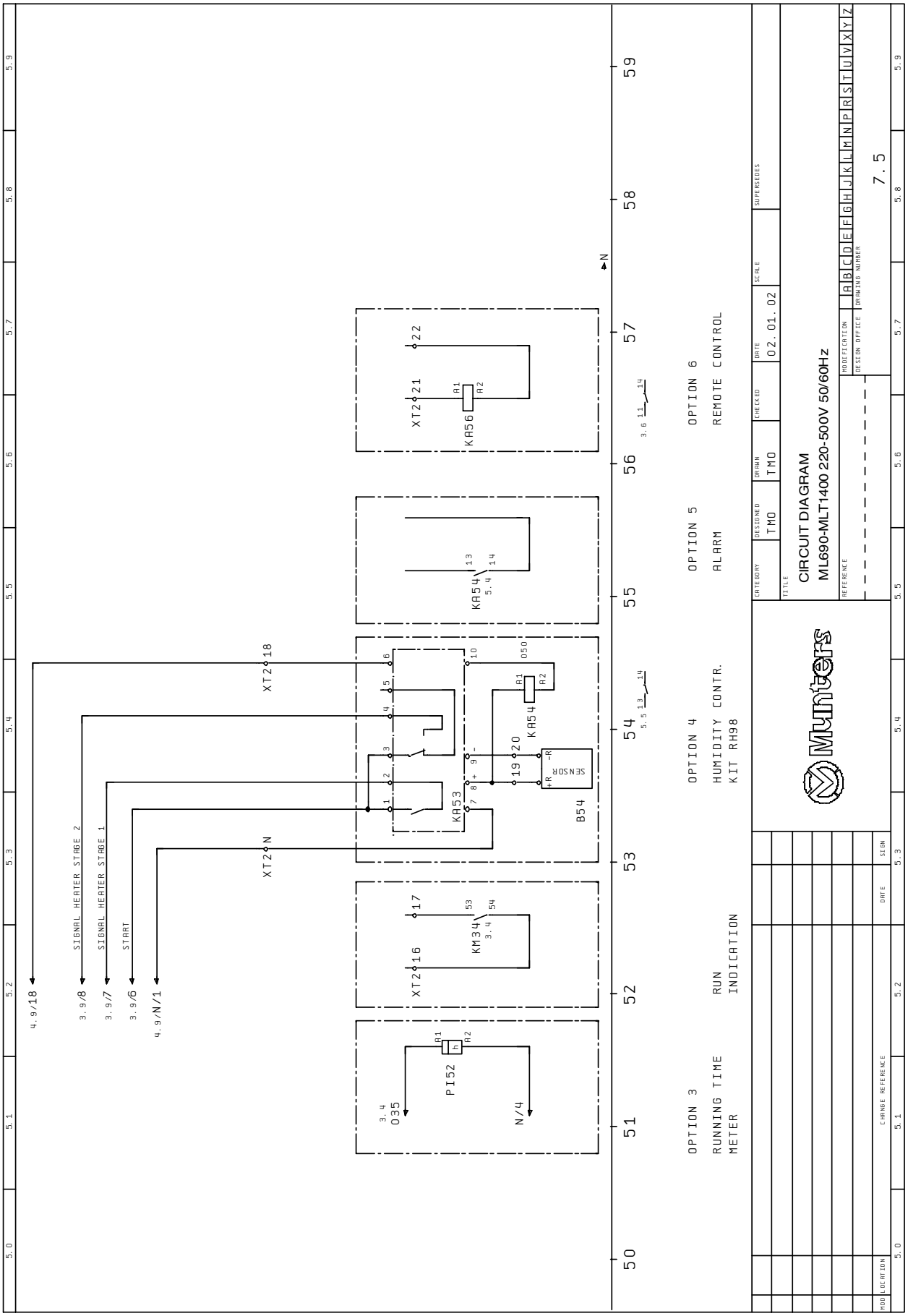

Figure 4-10. Circuit Diagram: 220-500V, 50/60Hz (5 of 5)

4.6 Connection Diagrams ML690-MLT1400

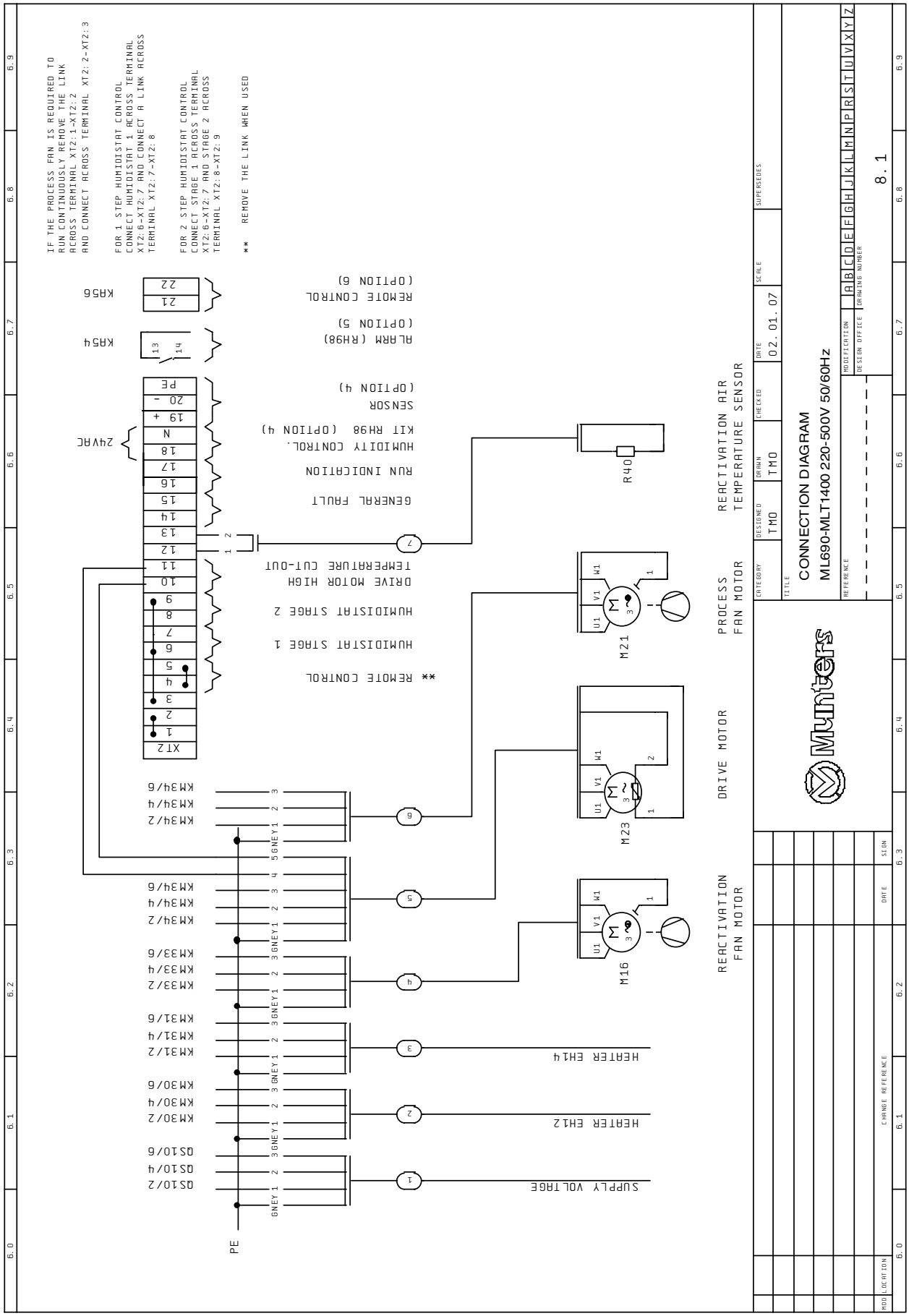

Figure 4-11. Connection Diagram: 220-500V, 50/60Hz

5 ML1350

5.1 List of Components and Component Layout Diagram

Component Ref.	Description	ML1350							
		380V 50Hz	380V 60Hz	400V 50Hz	415V 50Hz	440V 60Hz	460V 60Hz	480V 60Hz	500V 50Hz
QS10	Switch Disconnector	43693	43693	43693	43693	43693	43693	43693	43693
QM12	Circuit Breaker	39017	39017	39017	39016	39017	39017	39017	39017
QM14	Circuit Breaker	39143	39143	39143	39016	39143	39143	39143	39143
QM16	Circuit Breaker	39012	39009	39009	39012	39009	39009	39009	39009
QM21	Circuit Breaker	39010	39010	39010	39010	39010	39010	39010	39009
QM25	Circuit Breaker	39003	39003	39003	39003	39003	39003	39003	39003
QM12-21	Auxiliary Contact	39029	39029	39029	39029	39029	39029	39029	39029
QM12-21	Auxiliary Contact	39030	39030	39030	39030	39030	39030	39030	39030
KL27-28	Trip Coil	39032	39032	39032	39032	39032	39032	39032	39032
FU26	Mini Circuit Breaker	39073	39073	39073	39073	39073	39073	39073	39073
KM33-34	Contactor	39038	39038	39038	39038	39038	39038	39038	39038
KM33-34	Auxiliary Contact	39045	39045	39045	39045	39045	39045	39045	39045
KM30-31	Contactor	39038	39038	39038	39038	39038	39038	39038	39038
TC25	Transformer	39077	39077	39077	39077	39077	39077	39077	39077
A16	Frequency Converter	101478/400	-	101478/400	101478/400	-	-	-	101478/400
A16A	Filter	101478/1	-	101478/1	101478/1	-	-	-	101478/1
NOTE!	*All article numbers are prefixed with "190", e.g.* ***190****39077*								

Table 5-1. ML1350 List of Components: 380-500V, 50/60Hz

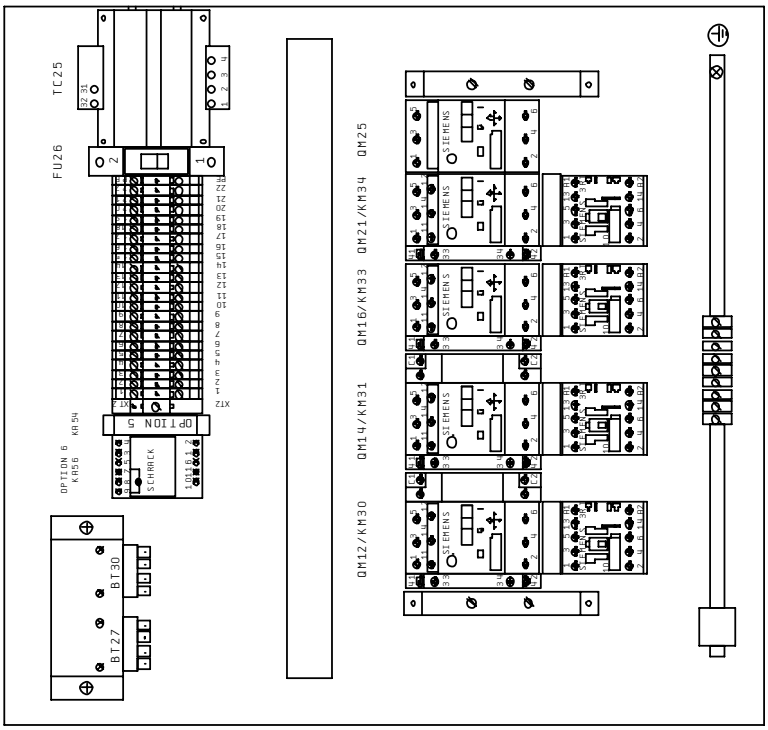

Figure 5-1. ML1350 Assembly Drawing: 380-500V, 50/60Hz

5.2 Circuit Diagrams

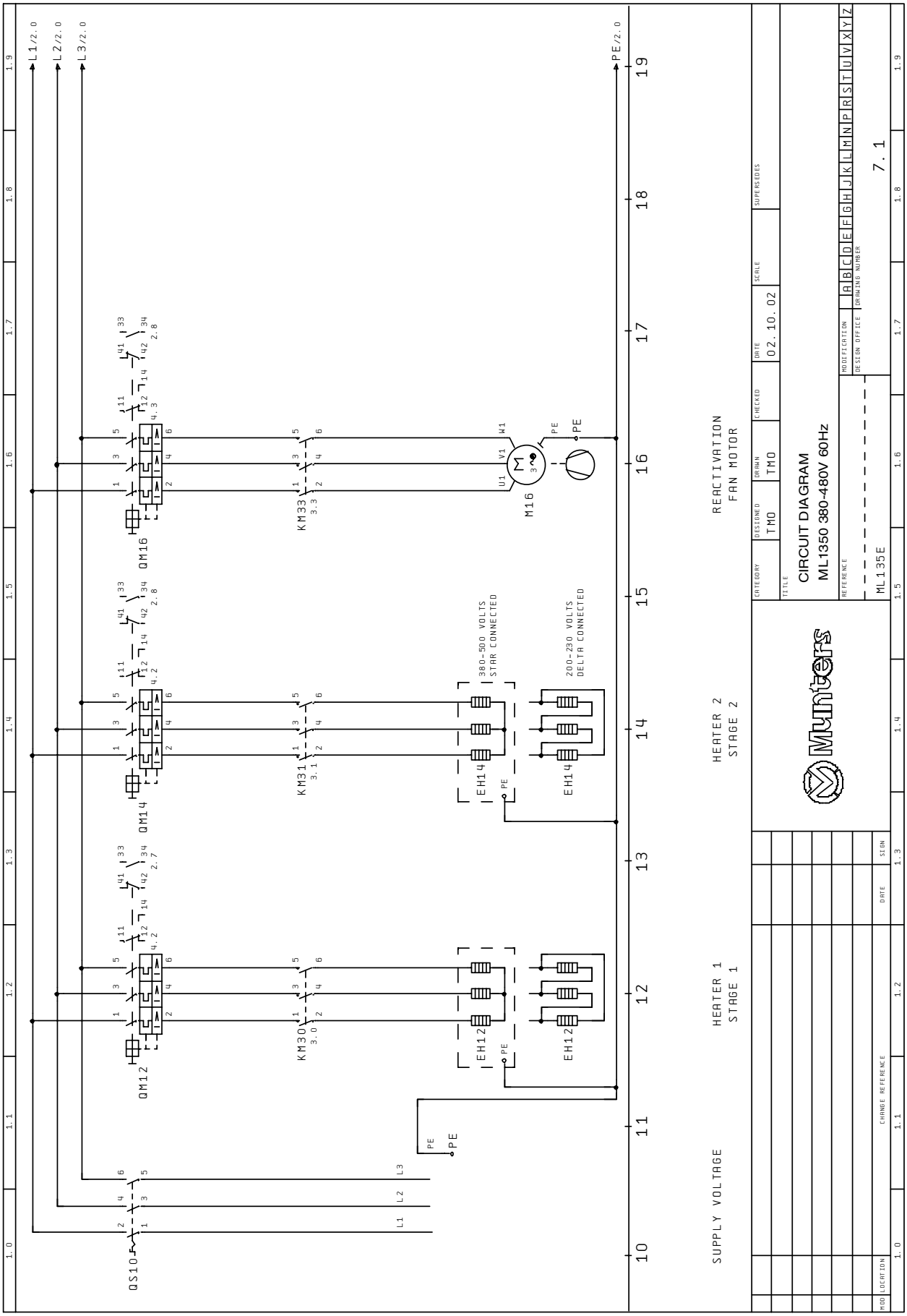

Figure 5-2. Circuit Diagram: 380-500V, 60Hz (1 of 1)

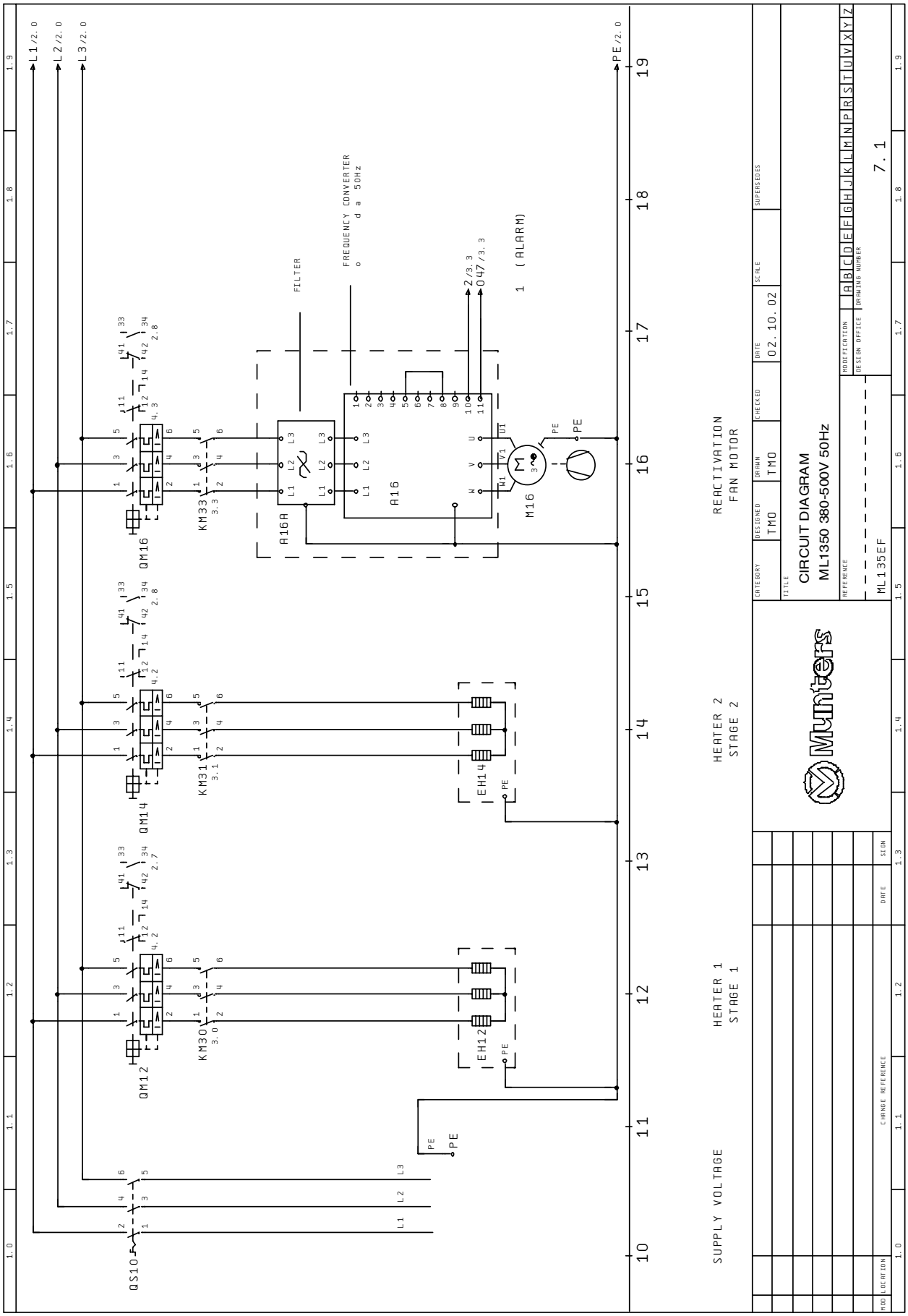

Figure 5-3. Circuit Diagram: 380-500V, 50Hz (1 of 1)

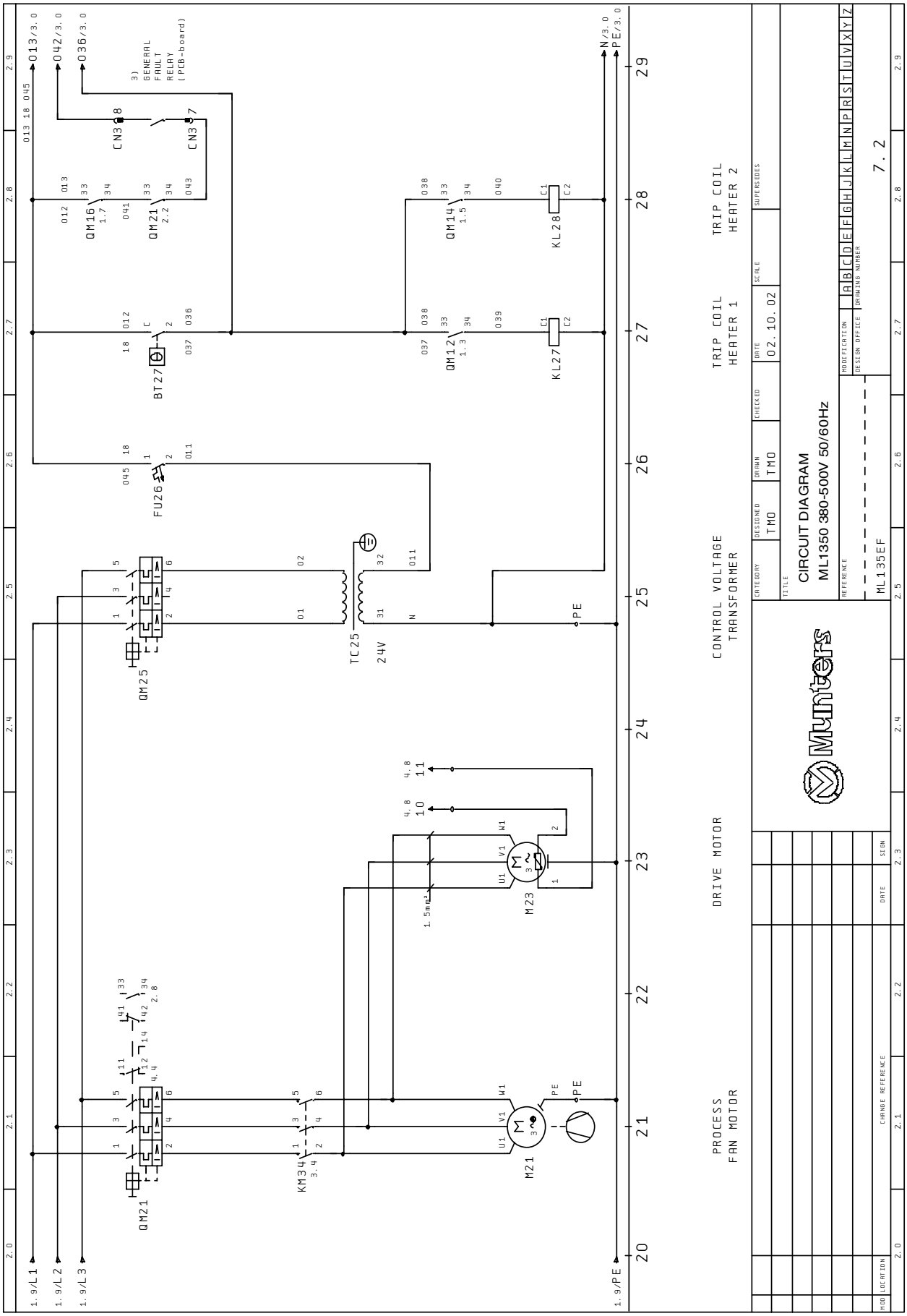

Figure 5-4. Circuit Diagram: 380-500V, 50/60Hz (1 of 4)

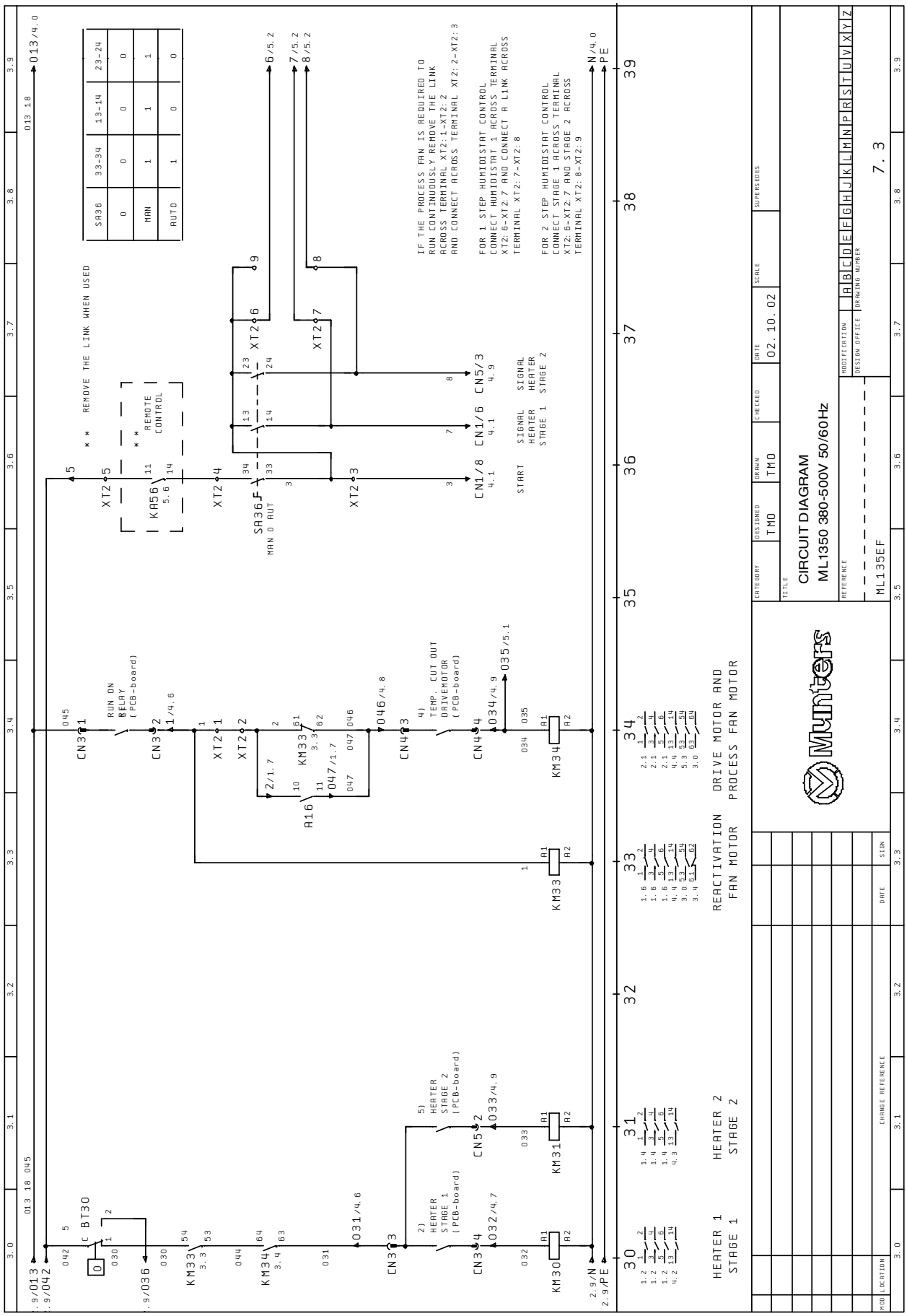

Figure 5-5. Circuit Diagram: 380-500V, 50Hz (2 of 4)

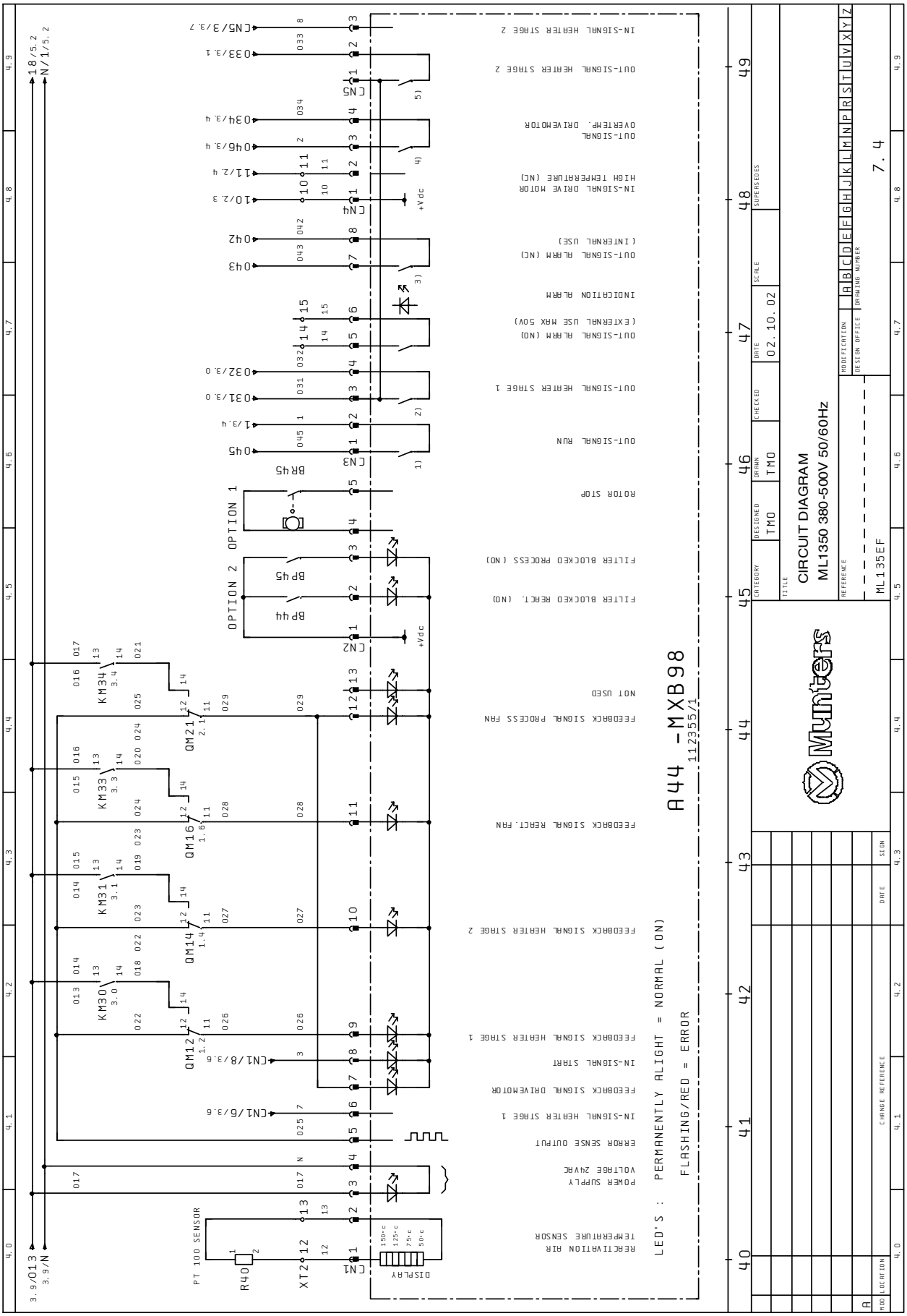

Figure 5-6. Circuit Diagram: 380-500V, 50Hz (3 of 4)

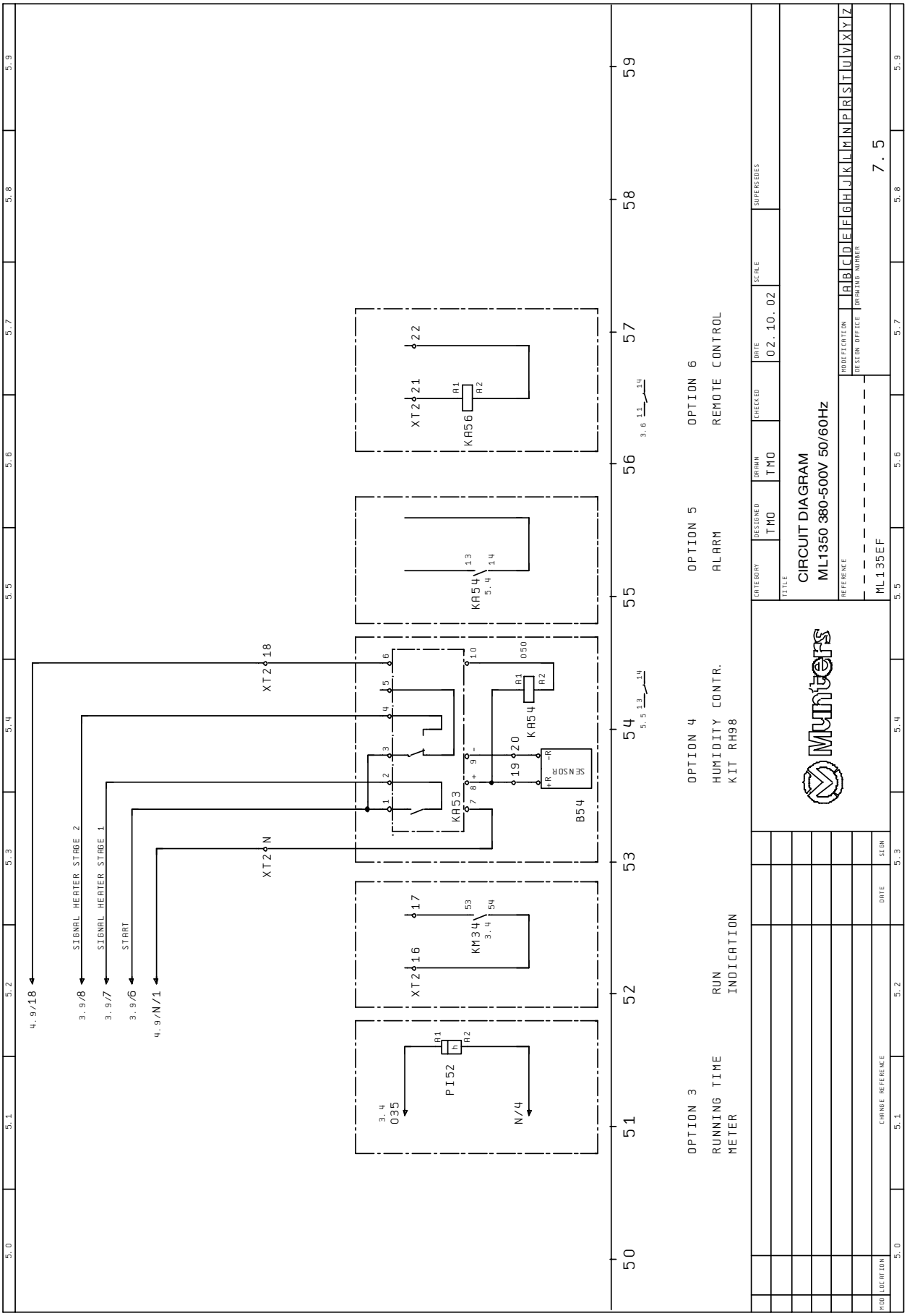

Figure 5-7. Circuit Diagram: 380-500V, 50Hz (4 of 4)

5.3 Connection Diagram

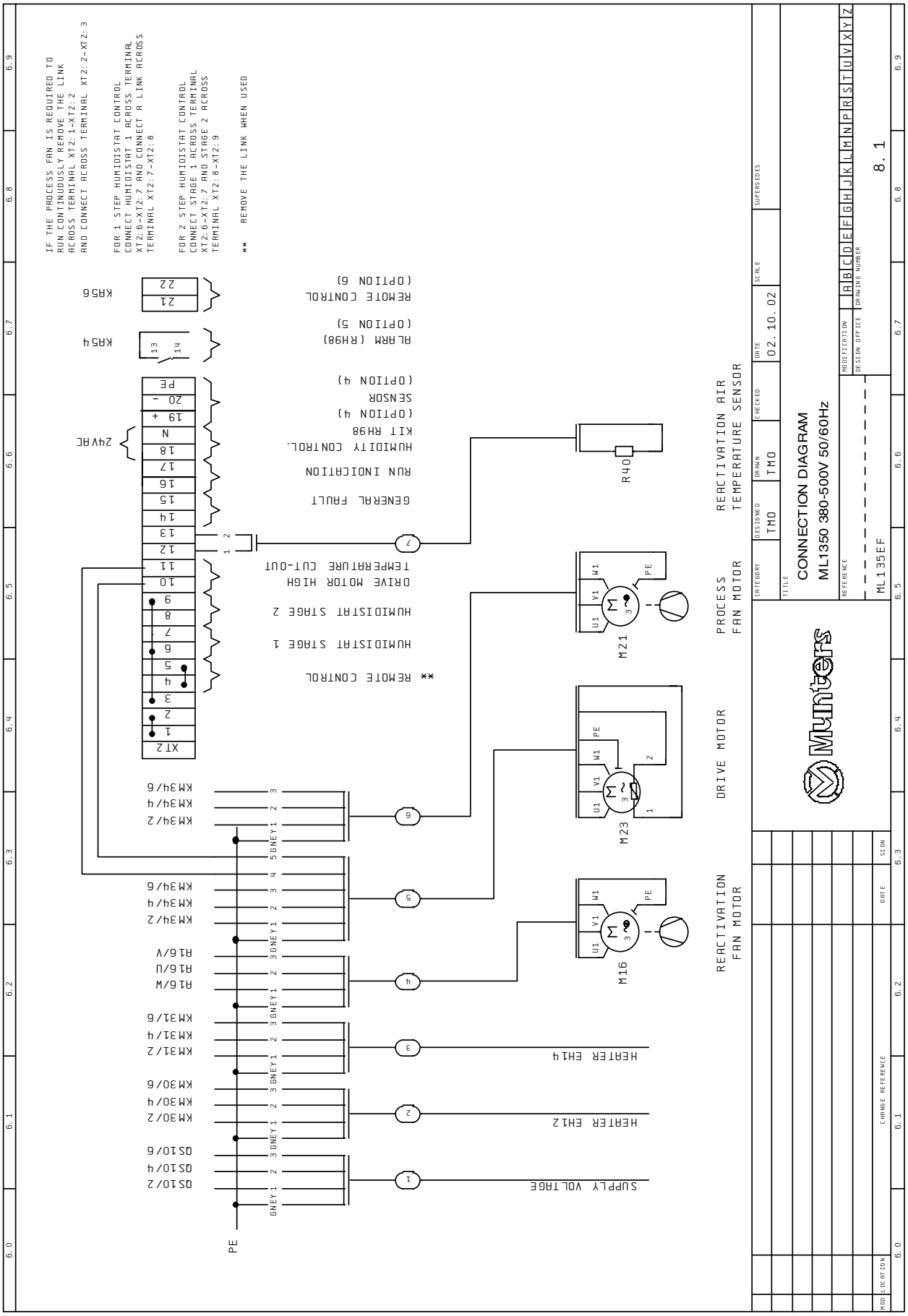

Figure 5-8. Connection Diagram: 380-500V 50/60Hz

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