

# Schaltplan

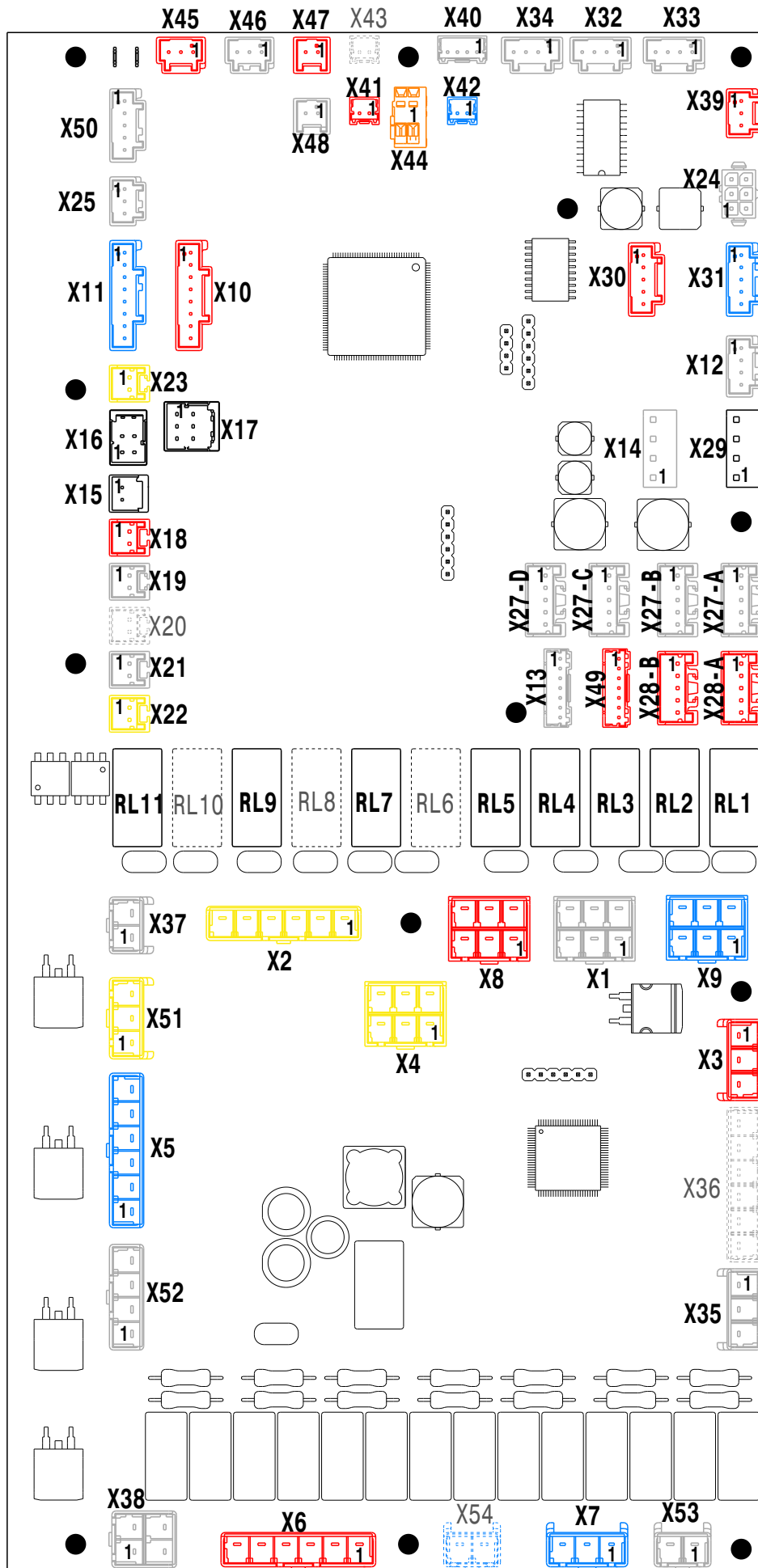
Heißluftdämpfer **MAGISTAR TS**

**MAGISTAR Combi TS 20 x GN1/1-E**

[Art. 406218724]



# MAIN BOARD ACU



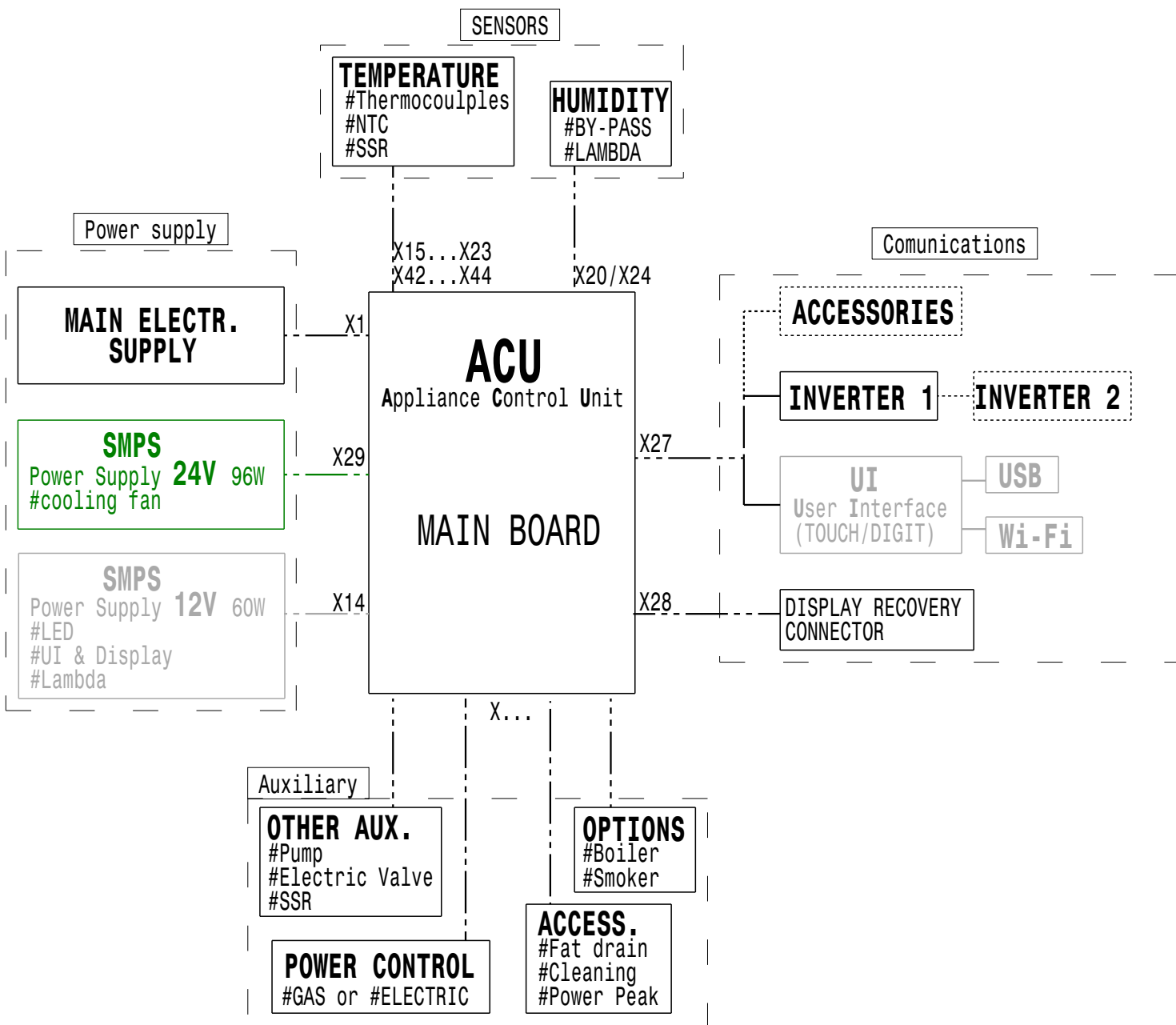
# ACU LEGENDA

| Ref. | Group                        | Pin | Direct. | Function  |
|------|------------------------------|-----|---------|---|
| X1   | Power Supply                 | 1   | IN      | L Power Supply                                  |
|      |                              | 2   | IN      | N Power Supply                                  |
|      |                              | 3   | IN      | L Power Supply                                  |
|      |                              | 4   | IN      | N Power Supply                                  |
|      |                              | 5   | IN      | SW-OFF Auto switch off                          |
|      |                              | 6   | OUT     |   |
| X2   | Water Service                | 1   | OUT     | EV1 Instant steam solenoid valve                |
|      |                              | 2   | OUT     | EV2 Quenching solenoid valve                    |
|      |                              | 3   | OUT     | EV4 Spray unit solenoid valve                   |
|      |                              | 4   | OUT     | BV3 Cavity drain ball valve OPEN                |
|      |                              | 5   | OUT     | BV3 Cavity drain ball valve CLOSE               |
|      |                              | 6   | OUT     | N   |
| X3   | Clean. Syst. Basic           | 1   | OUT     | EV7 Cleaning water fill solenoid valve          |
|      |                              | 2   | OUT     | M8 Cleaning pump                                |
|      |                              | 3   | OUT     | N   |
| X4   | Cleaning System Drawer Rinse | 1   | OUT     | EV11 Drawer fill solenoid valve                 |
|      |                              | 2   | OUT     | EV12 Drawer drain solenoid valve                |
|      |                              | 3   | OUT     |   |
|      |                              | 4   | OUT     |   |
|      |                              | 5   | OUT     |   |
|      |                              | 6   | OUT     | N   |
| X5   | Boiler Fill & Clean          | 1   | OUT     | EV5 Boiler fill solenoid valve                  |
|      |                              | 2   | OUT     |   |
|      |                              | 3   | OUT     | BV6 Boiler drain ball valve OPEN                |
|      |                              | 4   | OUT     | BV6 Boiler drain ball valve CLOSE               |
|      |                              | 5   | OUT     |   |
|      |                              | 6   | OUT     | N   |
| X6   | Sensing                      | 1   | IN      | TSC Cavity safety thermostat                    |
|      |                              | 2   | IN      | BBC1 Cavity gas blower burner UP                |
|      |                              | 3   | IN      | BBC2 Cavity gas blower burner DOWN              |
|      |                              | 4   | IN      | HV14 Motor drive fuse UP                        |
|      |                              | 5   | IN      | HV15 Motor drive fuse DOWN                      |
|      |                              | 6   | IN      |   |
| X7   | Sensing                      | 1   | IN      | TSB Boiler safety thermostat                    |
|      |                              | 2   | IN      | BBB1 Boiler gas blower burner                   |
|      |                              | 3   | IN      |   |
| X8   | Cavity GAS burner            | 1   | OUT     | N   |
|      |                              | 2   | OUT     | FCU Cavity flame control unit reset UP          |
|      |                              | 3   | OUT     | FCU Cavity flame control unit reset DOWN        |
|      |                              | 4   | IN      | FCU Cavity flame control units power supply IN  |
|      |                              | 5   | OUT     | FCU Cavity flame control unit power supply UP   |
|      |                              | 6   | OUT     | FCU Cavity flame control unit power supply DOWN |
| X9   | Boiler GAS burner            | 1   | OUT     | N   |
|      |                              | 2   | OUT     | FBU Boiler flame control unit reset             |
|      |                              | 3   | OUT     |   |
|      |                              | 4   | IN      | FBU Boiler flame control unit power supply IN   |
|      |                              | 5   | OUT     | FBU Boiler flame control unit power supply OUT  |
|      |                              | 6   | OUT     |   |
| X10  | Cavity GAS blower            | 1   | OUT     | VTCU Cavity blower control Power supply         |
|      |                              | 2   | IN      | VTCU Cavity blower control Tachometer UP        |
|      |                              | 3   | IN      |   |
|      |                              | 4   | OUT     | VTCU Cavity blower control Speed UP             |
|      |                              | 5   | IN      | VTCU Cavity blower control Tachometer DOWN      |
|      |                              | 6   | IN      |   |
|      |                              | 7   | OUT     | VTCU Cavity blower control Speed DOWN           |
|      |                              | 8   | OUT     | VTCU Boiler blower control GND                  |
| X11  | Boiler GAS blower            | 1   | OUT     | VTBU Boiler blower control Power supply         |
|      |                              | 2   | IN      | VTBU Boiler blower control Tachometer           |
|      |                              | 3   | IN      |   |
|      |                              | 4   | OUT     | VTBU Boiler blower control Speed control        |
|      |                              | 5   | IN      |   |
|      |                              | 6   | IN      |   |
|      |                              | 7   | OUT     |   |
|      |                              | 8   | OUT     | VTBU Boiler blower control GND                  |

| Ref.  | Group                  | Pin    | Direct.                          | Function   |
|-------|------------------------|--------|----------------------------------|--|
| X12   | Led                    | 1      | OUT                              | H1 LED lighting 1 anode                          |
|       |                        | 2      | IN                               | H1 LED lighting 1 catode                         |
|       |                        | 3      | IN                               | H2 LED lighting 2 catode                         |
|       |                        | 4      | OUT                              | H2 LED lighting 2 anode                          |
| X13   |                        |        | Adress                           |  |
| X14   | 12V                    | 1      | IN                               | +12V dc  |
|       |                        | 2      | IN                               |  |
|       |                        | 3      | IN                               | 0V dc  |
|       |                        | 4      | IN                               |  |
| X15   | Food probe temperature | A1     | IN                               | TFP 1 <sup>st</sup> point food probe temperature |
|       |                        | A2     | IN                               |  |
| X16   | Food probe temperature | B1     | IN                               | TFP 2 <sup>nd</sup> point food probe temperature |
|       |                        | A2     | IN                               | TFP 3 <sup>rd</sup> point food probe temperature |
| X17   | Food probe temperature | B2     | IN                               | TFP 4 <sup>th</sup> point food probe temperature |
|       |                        | A1     | IN                               | TFP 5 <sup>th</sup> point food probe temperature |
|       |                        | A2     | IN                               |  |
|       |                        | B2     | IN                               |  |
|       |                        | A3     | IN                               | TFP 6 <sup>th</sup> point food probe temperature |
|       |                        | B3     | IN                               |  |
| X18   | Temper.                | 1      | IN                               | TCAV Cavity Thermocouple UP                      |
|       |                        | 2      | IN                               |  |
| X19   | Temper.                | 1      | IN                               | TBOI Boiler Thermocouple                         |
|       |                        | 2      | IN                               |  |
| X20   | Temper.                |        |                                  | -- NOT USE --                                    |
| X21   | Temper.                | 1      | IN                               | TCAV Cavity Thermocouple DOWN                    |
|       |                        | 2      | IN                               |  |
| X22   | Temper.                | 1      | IN                               | TQS Quenching System Thermocouple                |
|       |                        | 2      | IN                               |  |
| X23   | Temper.                | 1      | IN                               | TAR Aromatizer Thermocouple                      |
|       |                        | 2      | IN                               |  |
| X24   |                        |        |                                  | Lambda sensor                                    |
| X25   | Boiler level           | 1      | IN/OUT                           | SL Boiler safety level dection probe             |
|       |                        | 2      | IN/OUT                           | WL Boiler working level dection probe            |
|       |                        | 3      | IN                               | REF Boiler level detection probes reference      |
| X27-A |                        | IN/OUT | PMACS communication BUS          |  |
| X27-B |                        | IN/OUT | PMACS communication BUS          |  |
| X27-C |                        | IN/OUT | PMACS communication BUS          |  |
| X27-D |                        | IN/OUT | PMACS communication BUS          |  |
| X28-A |                        | IN/OUT | PMACS Recovery communication BUS |  |
| X28-B |                        | IN/OUT | PMACS Recovery communication BUS |  |
| X29   | 24V                    | 1      | IN                               | +24V dc  |
|       |                        | 2      | IN                               |  |
|       |                        | 3      | IN                               | 0V dc  |
|       |                        | 4      | IN                               |  |
| X30   | Cavity SSR             | 1      | OUT                              | KC1 Cavity 1 solid state relay UP                |
|       |                        | 2      | OUT                              | KC2 Cavity 2 solid state relay UP                |
|       |                        | 3      | OUT                              | KC3 Cavity 1 solid state relay DOWN              |
|       |                        | 4      | OUT                              | KC4 Cavity 2 solid state relay DOWN              |
|       |                        | 5      | OUT                              | 0V dc  |
| X31   | Boiler SSR             | 1      | OUT                              | KB1 Boiler 1 solid state relay UP                |
|       |                        | 2      | OUT                              | KB2 Boiler 2 solid state relay UP                |
|       |                        | 3      | OUT                              | KB3 Boiler 1 solid state relay DOWN              |
|       |                        | 4      | OUT                              | KB4 Boiler 2 solid state relay DOWN              |
|       |                        | 5      | OUT                              | 0V dc  |

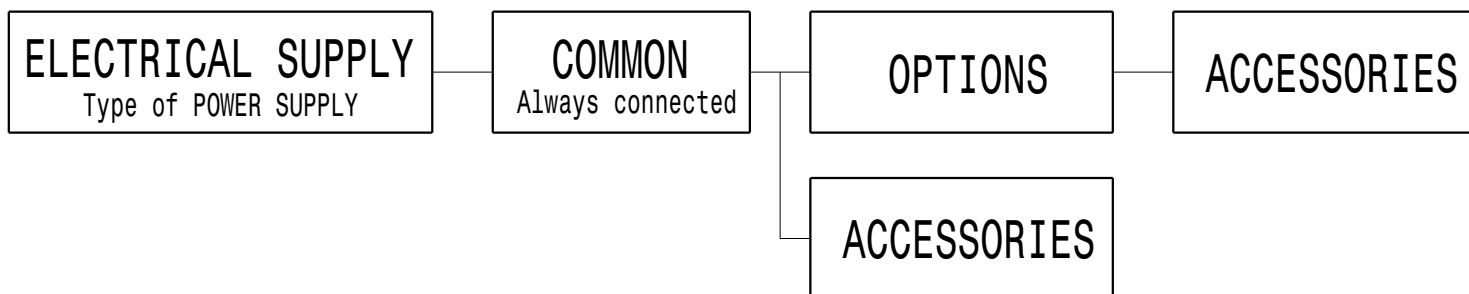
| Ref. | Group              | Pin | Direct. | Function                              |
|------|--------------------|-----|---------|---------------------------------------|
| X32  | Cooling Fan 1      | 1   | OUT     | FAN1 Cooling fan 1 power supply 24Vdc |
|      |                    | 2   | IN      | FAN1 Cooling fan 1 tachometer sensor  |
|      |                    | 3   | OUT     | FAN1 Cooling fan 1 speed control      |
|      |                    | 4   | OUT     | FAN1 Cooling fan 1 power supply 0Vdc  |
| X33  | Cooling Fan 2      | 1   | OUT     | FAN2 Cooling fan 2 power supply 24Vdc |
|      |                    | 2   | IN      | FAN2 Cooling fan 2 tachometer sensor  |
|      |                    | 3   | OUT     | FAN2 Cooling fan 2 speed control      |
|      |                    | 4   | OUT     | FAN2 Cooling fan 2 power supply 0Vdc  |
| X34  | Cooling Fan 3      | 1   | OUT     | FAN3 Cooling fan 3 power supply 24Vdc |
|      |                    | 2   | IN      | FAN3 Cooling fan 3 tachometer sensor  |
|      |                    | 3   | OUT     | FAN3 Cooling fan 3 speed control      |
|      |                    | 4   | OUT     | FAN3 Cooling fan 3 power supply 0Vdc  |
| X35  | Vent. Valve        | 1   | OUT     | VV1 Venting valve 1 cw rotation       |
|      |                    | 2   | OUT     | N                                     |
|      |                    | 3   | OUT     | VV1 Venting valve 1 ccw rotation      |
| X36  |                    |     |         | -- NOT USE --                         |
| X37  | KS                 | 1   | OUT     | KS Safety contactor                   |
|      |                    | 2   |         |                                       |
| X38  | Smoker             | 1   | OUT     | N                                     |
|      |                    | 2   | OUT     | R1 (Smoker heating element)           |
|      |                    | 3   | OUT     |                                       |
|      |                    | 4   | IN      |                                       |
| X39  | Flow meter         | 1   |         |                                       |
|      |                    | 2   | OUT     | FM Flow meter reference               |
|      |                    | 3   | IN      | FM Flow meter feedback                |
| X40  | Temper.            | 1   | OUT     | NCC NTC cabinet components            |
|      |                    | 2   | IN      |                                       |
|      |                    | 3   | OUT     | NM8 NTC pump I48                      |
|      |                    | 4   | IN      |                                       |
| X41  | Temper.            | 1   | OUT     | NHSC NTC Cavity SSR heatsink          |
|      |                    | 2   | IN      |                                       |
| X42  | Temper.            | 1   | OUT     | NHSB NTC Boiler SSR heatsink          |
|      |                    | 2   | IN      |                                       |
| X43  | Temper.            |     |         | -- NOT USE --                         |
| X44  | Softner            | 1   | OUT     | SSW1 Softner interface                |
|      |                    | 2   | IN      |                                       |
| X45  | Switch             | 1   | OUT     | 24V Reference                         |
|      |                    | 2   | IN      | DS Door switch                        |
|      |                    | 3   | IN      | AFS Air filter switch                 |
| X46  | switch             | 1   | OUT     | 24V Reference                         |
|      |                    | 2   | IN      | SVV1 Venting valve CLOSE switch       |
|      |                    | 3   | IN      | SVV1 Venting valve OPEN switch        |
| X47  |                    | 1   | OUT     | 24V Reference                         |
|      |                    | 2   | IN      | SF Fat drain valve status switch      |
| X48  | Switch             | 1   | OUT     | 24V Reference                         |
|      |                    | 2   | IN      | DRS Cleaning drawer switch            |
| X49  |                    |     |         | Recovery Adress                       |
| X50  |                    | 1   | OUT     | 24V Reference                         |
|      |                    | 2   | IN      | HER Hood error                        |
|      |                    | 3   | IN      |                                       |
|      |                    | 4   | IN      |                                       |
|      |                    | 5   | IN      |                                       |
| X51  | Liquid Clean Syst. | 1   | OUT     | P1 Liquid dergent pump                |
|      |                    | 2   | OUT     | P2 Liquid rinse pump                  |
|      |                    | 3   | OUT     | N                                     |
| X52  |                    | 1   | OUT     | HS2 Hood speed 2                      |
|      |                    | 2   | OUT     | HS1 Hood speed 1                      |
|      |                    | 3   | OUT     | HON Hood ON                           |
|      |                    | 4   | OUT     | N Neutral                             |
| X53  |                    | 1   | IN      | PPM1 Peak power managment 1           |
|      |                    | 2   | IN      | PPM2 Peak power managment 2           |
| X54  |                    |     |         | -- NOT USE --                         |

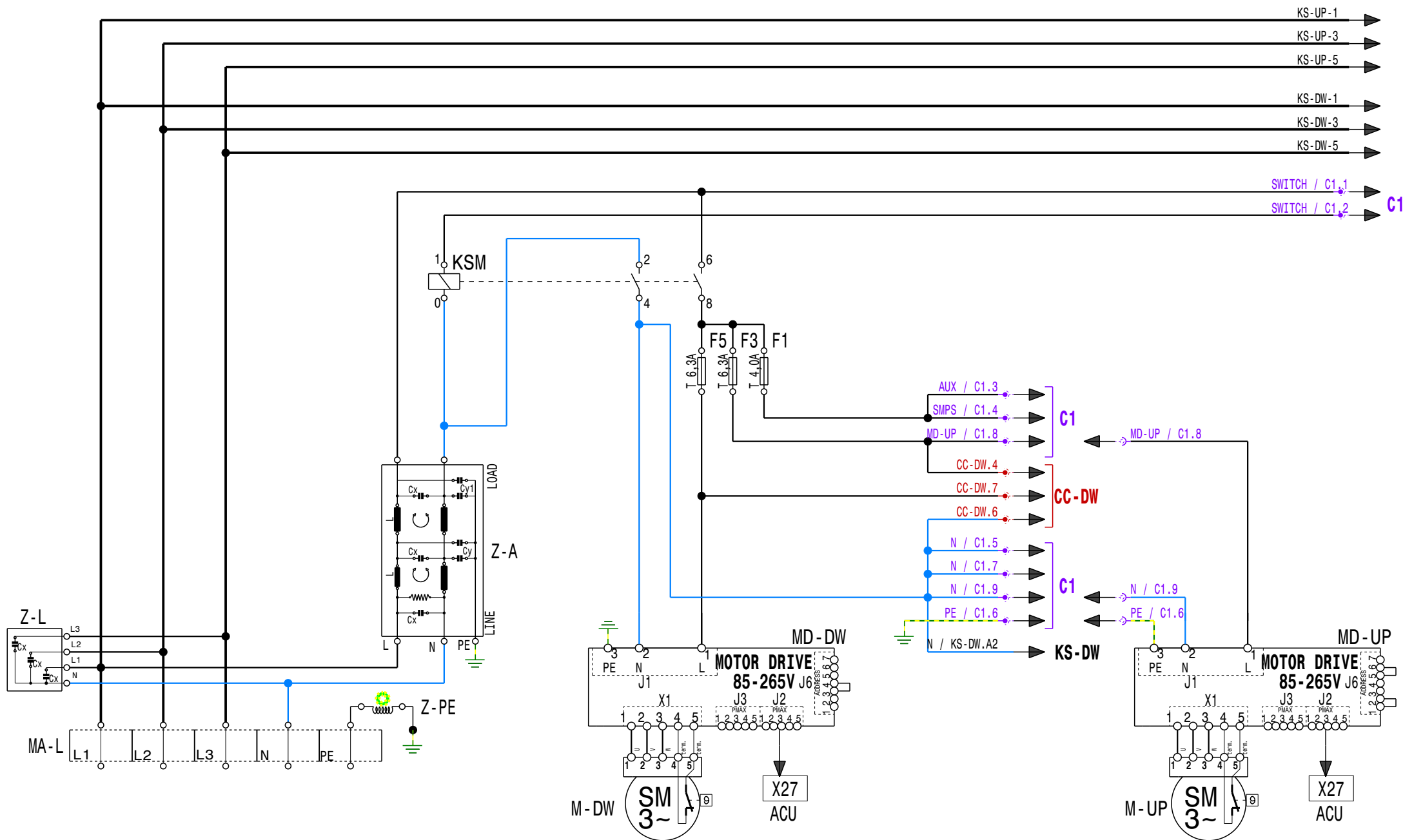
# LOGIC DIAGRAM



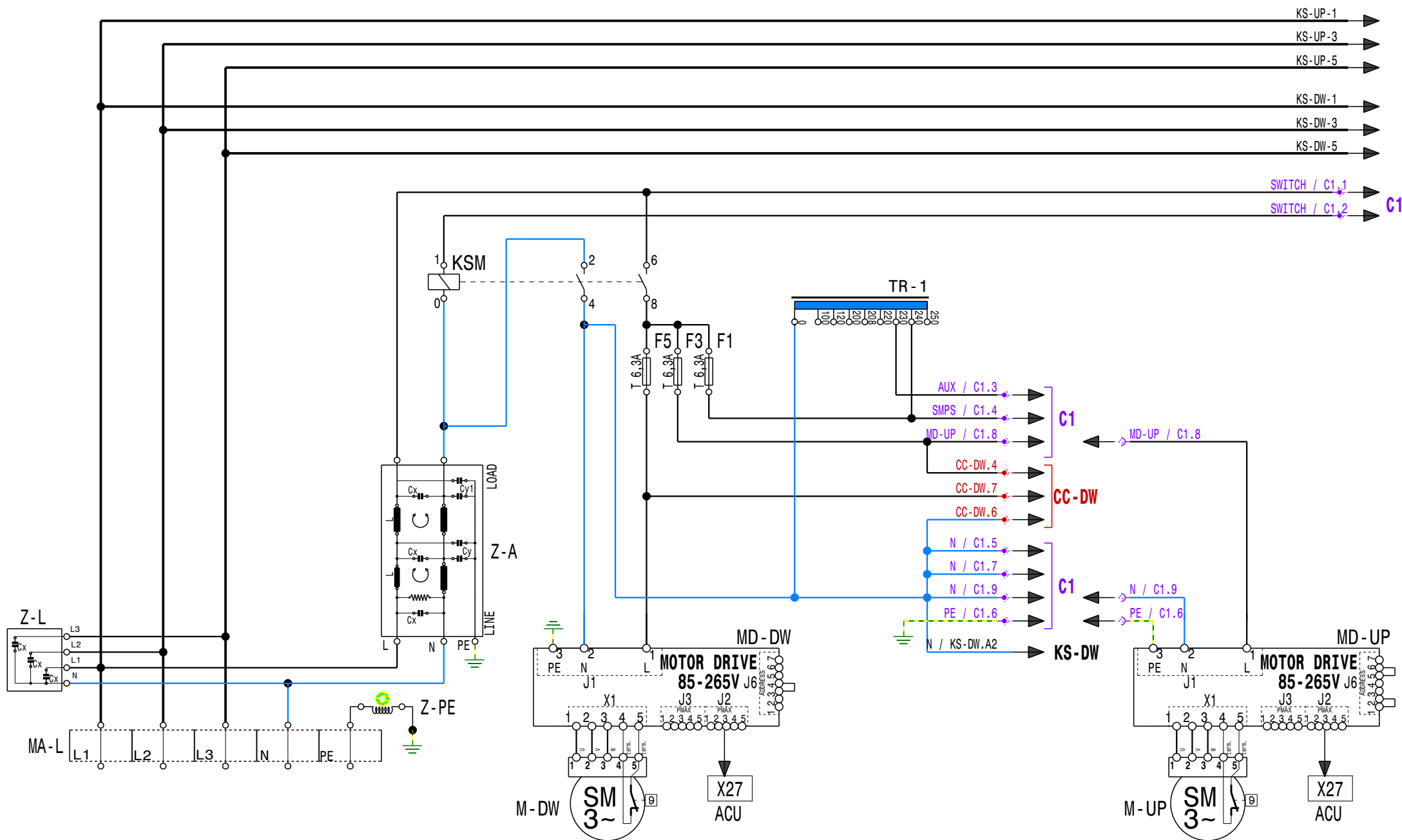
# HARNES DIAGRAM

Factory Customizations



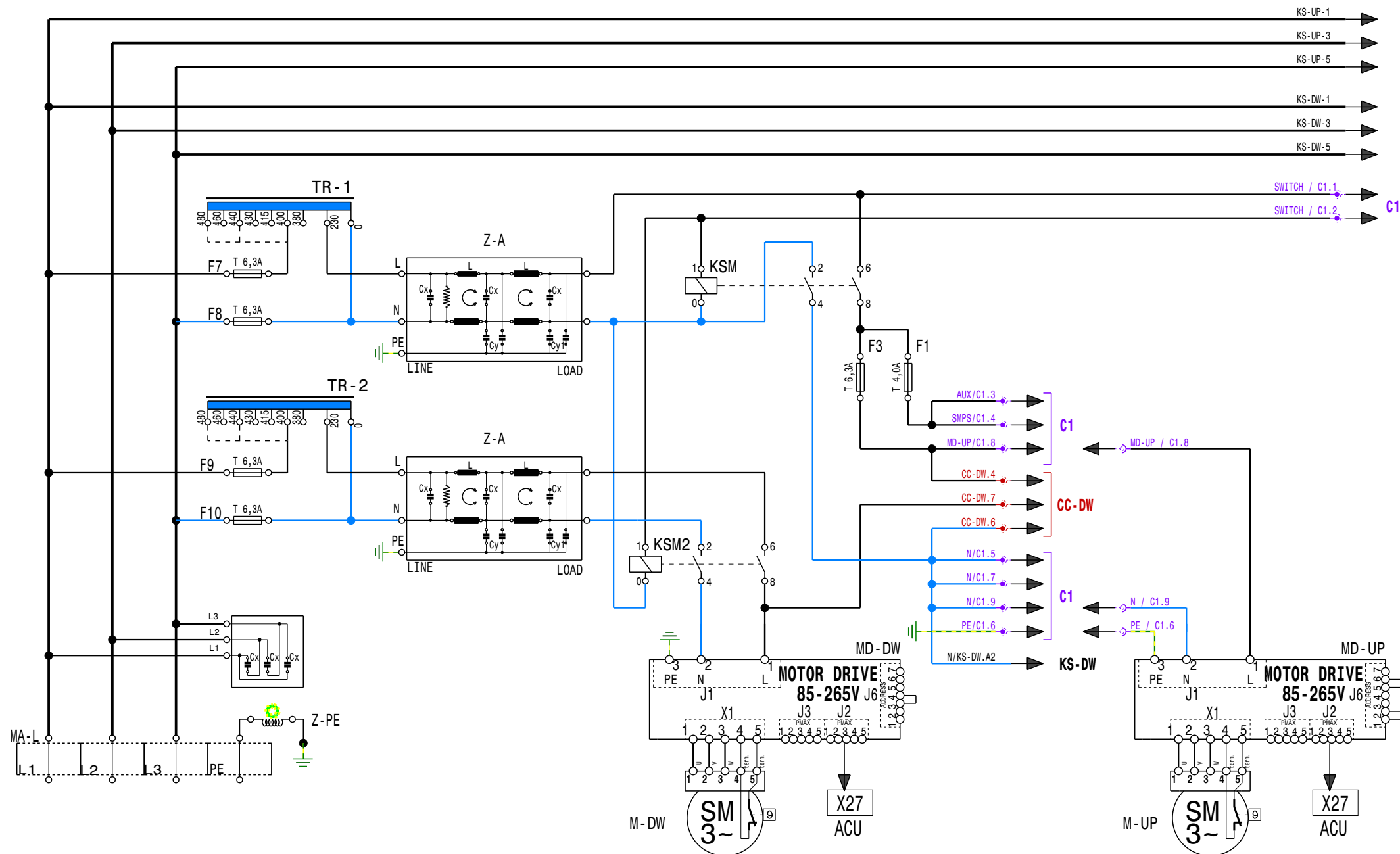


|      |                   |     |                  |    |                |       |                |   |                |
|------|-------------------|-----|------------------|----|----------------|-------|----------------|---|----------------|
| MA-L | TERMINAL BLOCK    | Z-A | AUXILIARY FILTER | F1 | AUXILIARY FUSE | MD-UP | MOTOR DRIVE UP | MD-DW   | MOTOR DRIVE DW |
| Z-L  | CAPACITIVE FILTER | KSM | ON/OFF RELAY     | F3 | MD-UP FUSE     | M-UP  | MOTOR UP       | M-DW  | MOTOR DW       |
| Z-PE | GROUND FILTER     | KS  | SAFETY CONTACTOR | F5 | MD-DW FUSE     |       |                | COD 602402L01 ELECTRIC DIAGRAM 20 "ELT" 380-480V 3-3N CKM |                |
|      |                   |     |                  |    |                |       |                |   | From S/N :     |

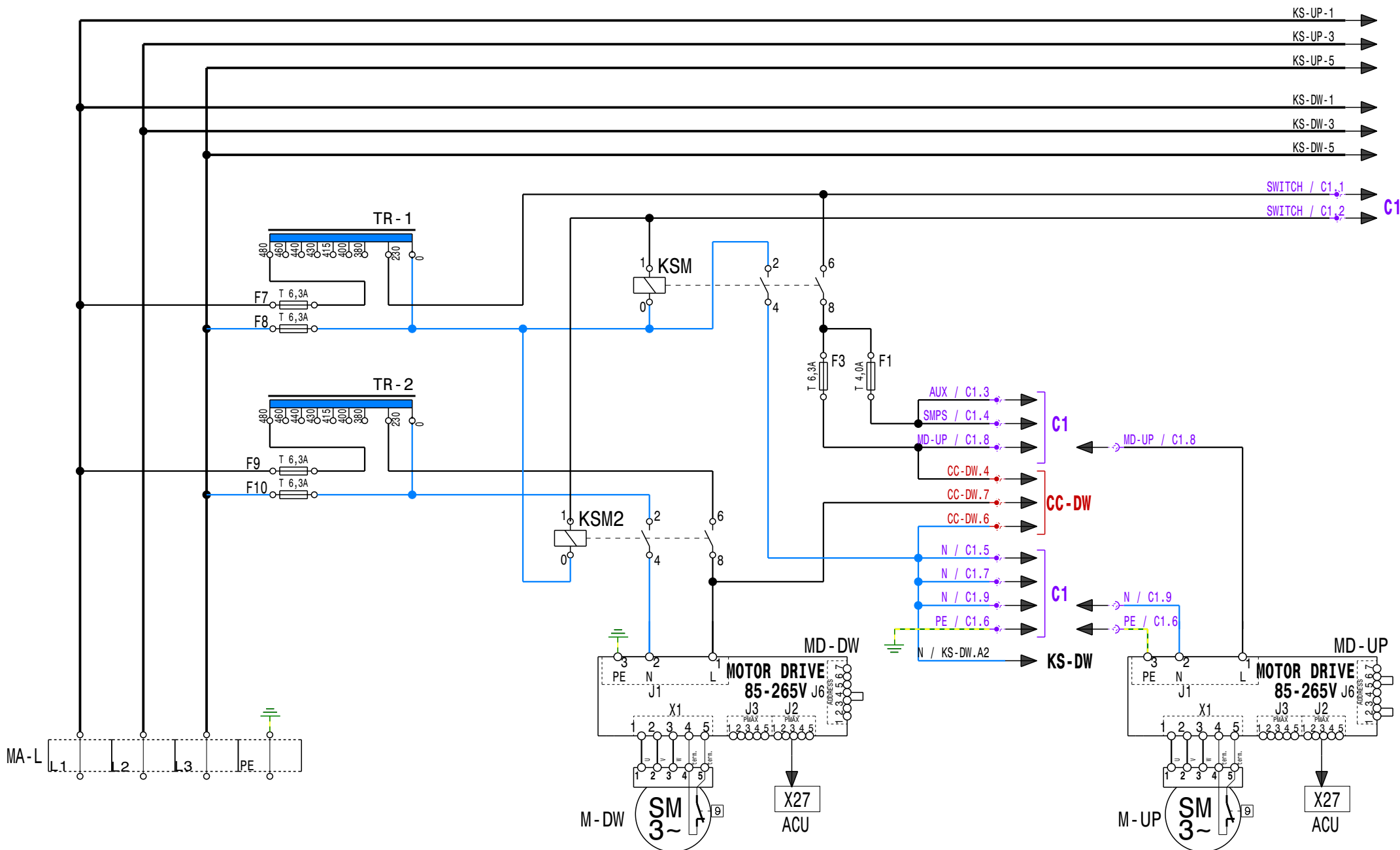


|      |                   |     |                  |    |                |       |                |       |                |      |             |
|------|-------------------|-----|------------------|----|----------------|-------|----------------|-------|----------------|------|-------------|
| MA-L | TERMINAL BLOCK    | Z-A | AUXILIARY FILTER | F1 | AUXILIARY FUSE | MD-UP | MOTOR DRIVE UP | MD-DW | MOTOR DRIVE DW | TR-1 | TRANSFORMER |
| Z-L  | CAPACITIVE FILTER | KSM | ON/OFF RELAY     | F3 | MD-UP FUSE     | M-UP  | MOTOR UP       | M-DW  | MOTOR DW       |      |             |
| Z-PE | GROUND FILTER     | KS  | SAFETY CONTACTOR | F5 | MD-DW FUSE     |       |                |       |                |      |             |

cod 602402L01 ELECTRIC DIAGRAM 20 "ELT" 380-480V 3-3N CKM From S/N :

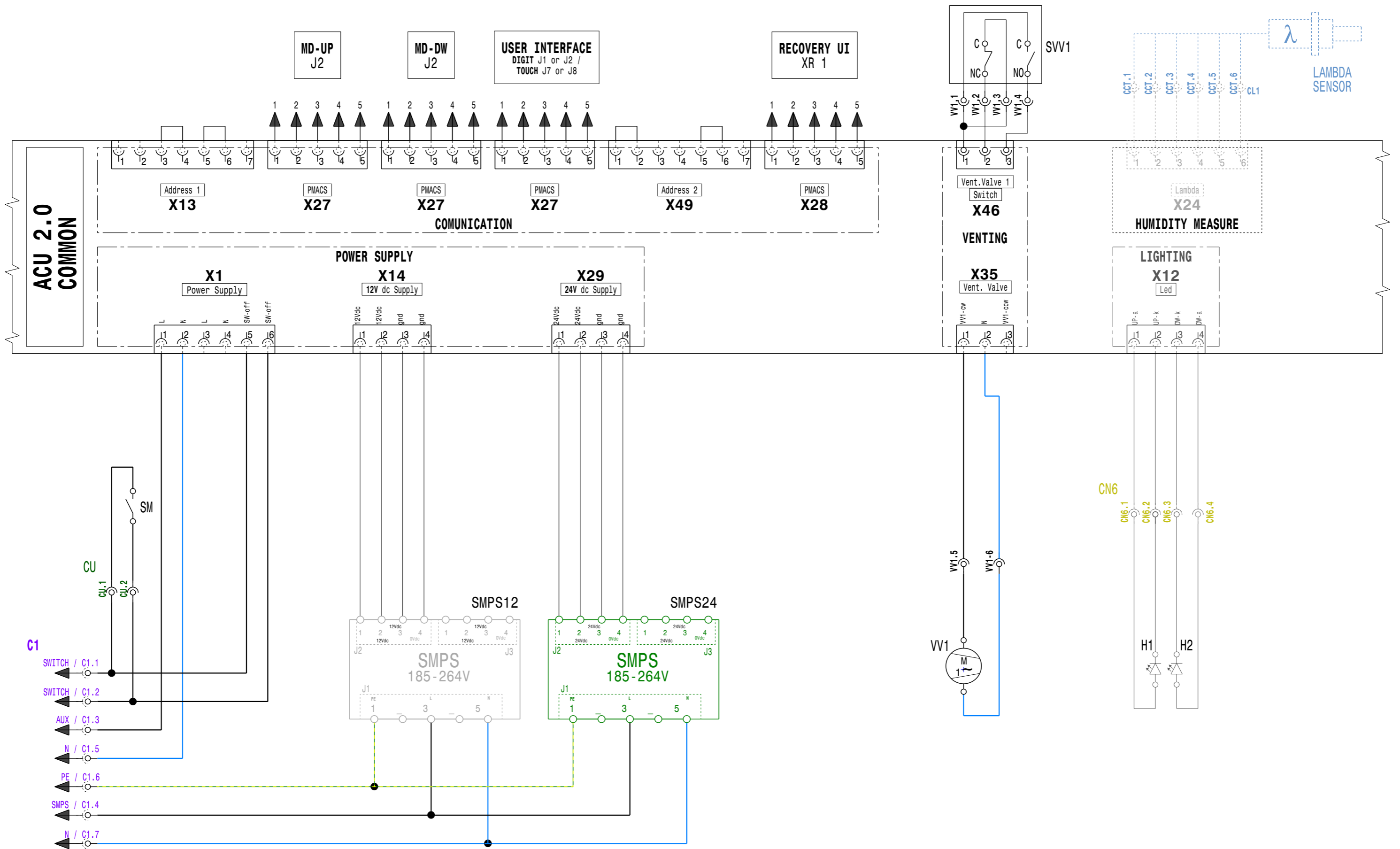


|      |                   |      |               |        |                    |   |                |            |                |       |                |
|------|-------------------|------|---------------|--------|--------------------|---|----------------|------------|----------------|-------|----------------|
| MA-L | TERMINAL BLOCK    | KSM  | ON/OFF RELAY  | KSM2   | ON/OFF RELAY 2     | F1  | AUXILIARY FUSE | MD-DW      | MOTOR DRIVE DW | MD-UP | MOTOR DRIVE UP |
| Z-L  | CAPACITIVE FILTER | TR-1 | TRANSFORMER 1 | F7-F8  | TRANSFORMER 1 FUSE | F3  | MD-UP FUSE     | M-UP       | MOTOR UP       | M-DW  | MOTOR DW       |
| Z-PE | GROUND FILTER     | TR-2 | TRANSFORMER 2 | F9-F10 | TRANSFORMER 2 FUSE | COD 602402L01 ELECTRIC DIAGRAM 20 "ELT" 380-480V 3-3N CKM |                | From S/N : |                |       |                |
| Z-A  | AUXILIARY FILTER  |      |               |        |                    |   |                |            |                |       |                |

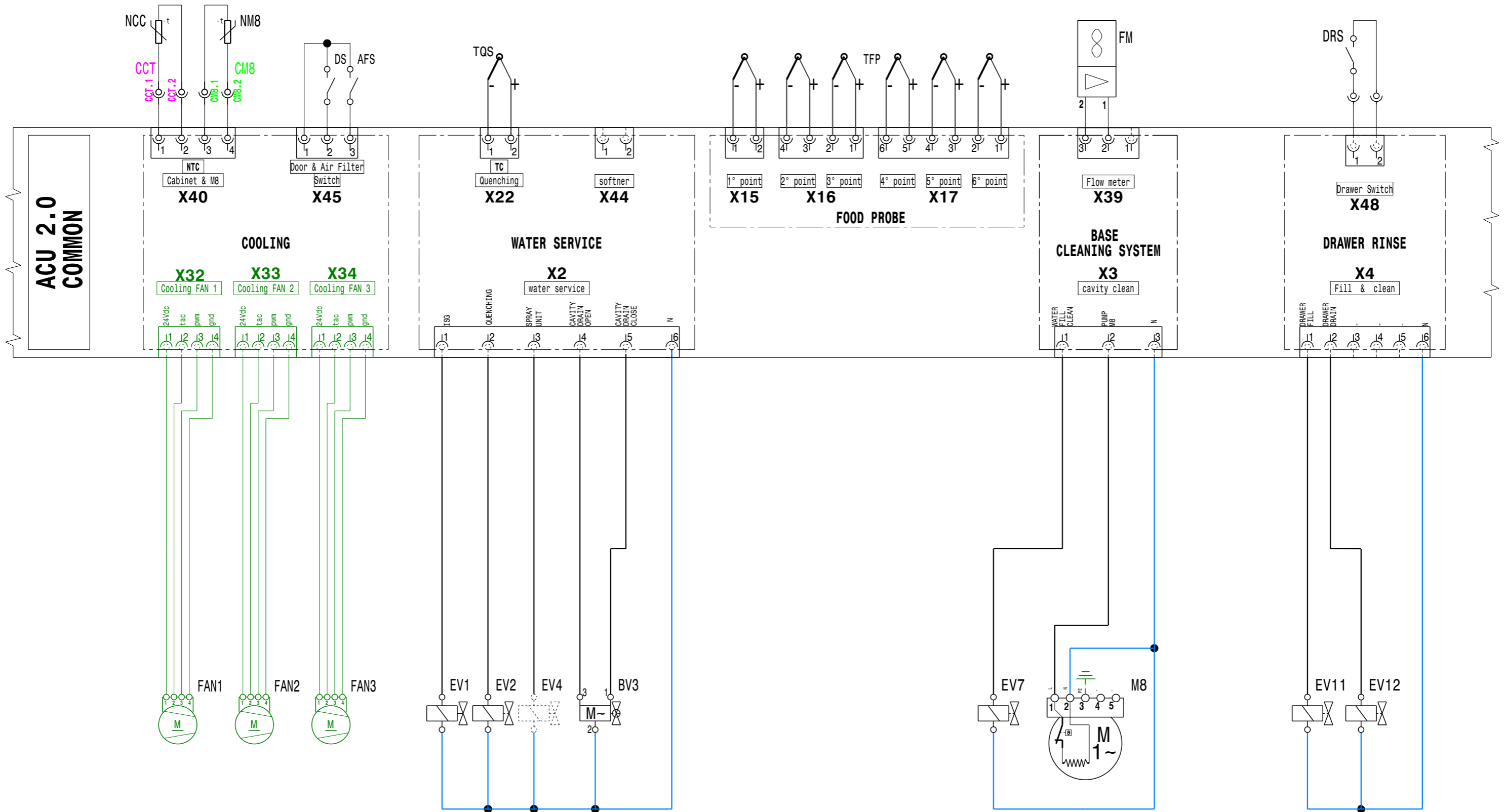


|        |                    |      |               |      |                |    |                |       |                |       |                |
|--------|--------------------|------|---------------|------|----------------|----|----------------|-------|----------------|-------|----------------|
| MA-L   | TERMINAL BLOCK     | TR-1 | TRANSFORMER 1 | KSM  | ON/OFF RELAY   | F1 | AUXILIARY FUSE | MD-DW | MOTOR DRIVE DW | MD-UP | MOTOR DRIVE UP |
| F7-F8  | TRANSFORMER 1 FUSE | TR-2 | TRANSFORMER 2 | KSM2 | ON/OFF RELAY 2 | F3 | MD-UP FUSE     | M-UP  | MOTOR DW       | M-DW  | MOTOR UP       |
| F9-F10 | TRANSFORMER 2 FUSE |      |               |      |                |    |                |       |                |       |                |





|    |             |   |   |        |          |      |                        |    |                |  |   |
|----|-------------|---|---|--------|----------|------|------------------------|----|----------------|--|---|
| SM | MAIN SWITCH | - | - | SMPS12 | SMPS 12V | VV1  | VENTING VALVE 1        | H1 | LED LIGHTING 1 | -  | - |
| -  | -           | - | - | SMPS24 | SMPS 24V | SVV1 | VENTING VALVE SWITCHES | H2 | LED LIGHTING 2 | -  | - |
| -  | -           | - | - | -      | -        | -    | -                      | -  | -              | COD 602402L01   ELECTRIC DIAGRAM 20 "ELT" 380-480V 3-3N CKM   From S/N : |   |



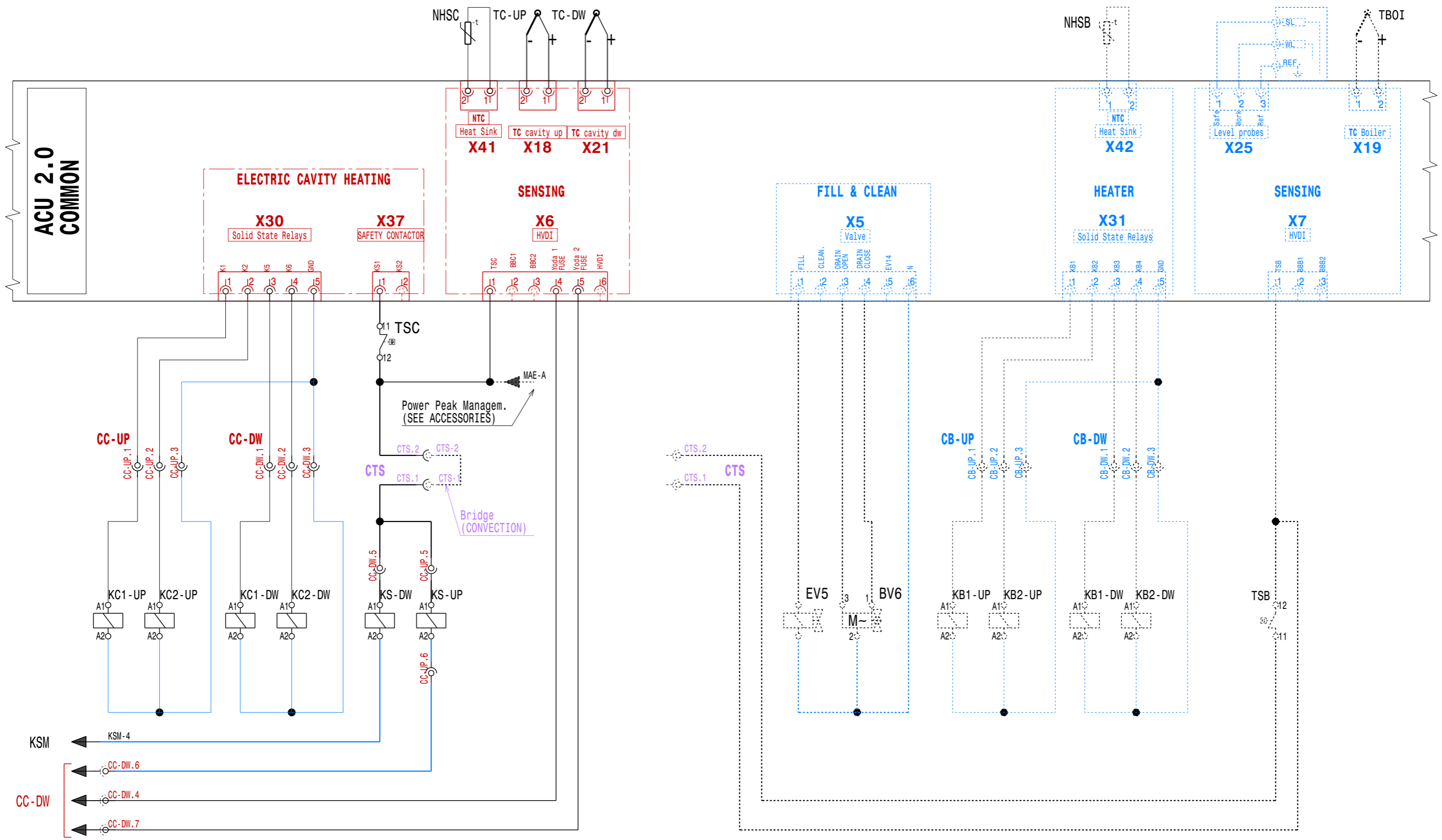
|                                   |                               |   |  |                                   |
|-----------------------------------|-------------------------------|---|--|-----------------------------------|
| <b>FAN1-2-3 COOLING FANS</b>      | <b>DS</b> DOOR SWITCH         | <b>TFP</b> FOOD PROBE TEMPERATURE       | <b>FM</b> FLOW METER   | <b>DRS</b> DRAWER SWITCH          |
| <b>NCC</b> NTC CABINET COMPONENTS | <b>AFS</b> AIR FILTER SWITCH  | <b>EV1</b> INSTANT STEAM SOLENOID VALVE | <b>EV7</b> CLEANING WATER FILL S. VALVE                                  | <b>EV11</b> DRAWER FILL S. VALVE  |
| <b>NM8</b> NTC PUMP M8            | <b>TQS</b> QUENCHING THERMOC. | <b>EV2</b> QUENCHING SOL.VALVE          | <b>M8</b> CLEANING PUMP  | <b>EV12</b> DRAWER DRAIN S. VALVE |
| -                                 | -                             | <b>BV3</b> CAVITY DRAIN BALL VALVE      | COD 602402L01   ELECTRIC DIAGRAM 20 "ELT" 380-480V 3-3N CKM   From S/N : |                                   |

# SPECIFIC

# "ELECTRIC"

## ELECTRIC CONVECTION

## ELECTRIC BOILER (OPTION)

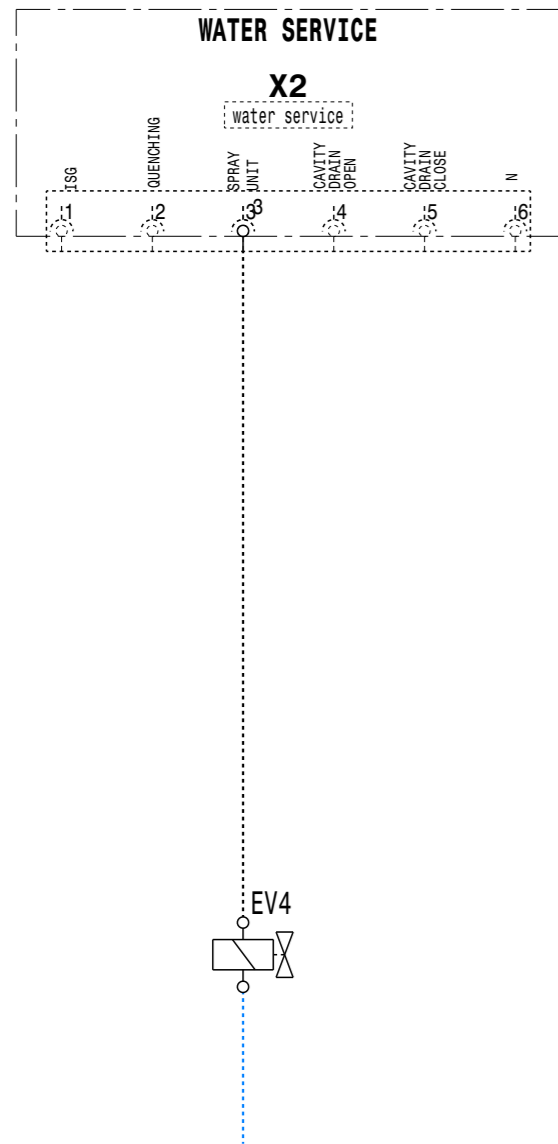


|               |                               |               |                                 |              |                       |  |                          |
|---------------|-------------------------------|---------------|---------------------------------|--------------|-----------------------|--|--------------------------|
| <b>KC1-UP</b> | CAVITY SOLID STATE RELAY 1 UP | <b>KC1-DW</b> | CAVITY SOLID STATE RELAY 1 DOWN | <b>KS-UP</b> | SAFETY CONTACTOR UP   | <b>TC-UP</b>   | CAVITY UP THERMOCOUPLE   |
| <b>KC2-UP</b> | CAVITY SOLID STATE RELAY 2 UP | <b>KC2-DW</b> | CAVITY SOLID STATE RELAY 2 DOWN | <b>KS-DW</b> | SAFETY CONTACTOR DOWN | <b>TC-DW</b>   | CAVITY DOWN THERMOCOUPLE |
| <b>TSC</b>    | CAVITY SAFETY THERMOSTAT      | <b>NHSC</b>   | NTC CAVITY SSR HEAT SINK        | -            | -                     | COD 602402L01   ELECTRIC DIAGRAM 20 "ELT" 380-480V 3-3N CKM   From S/N : |                          |

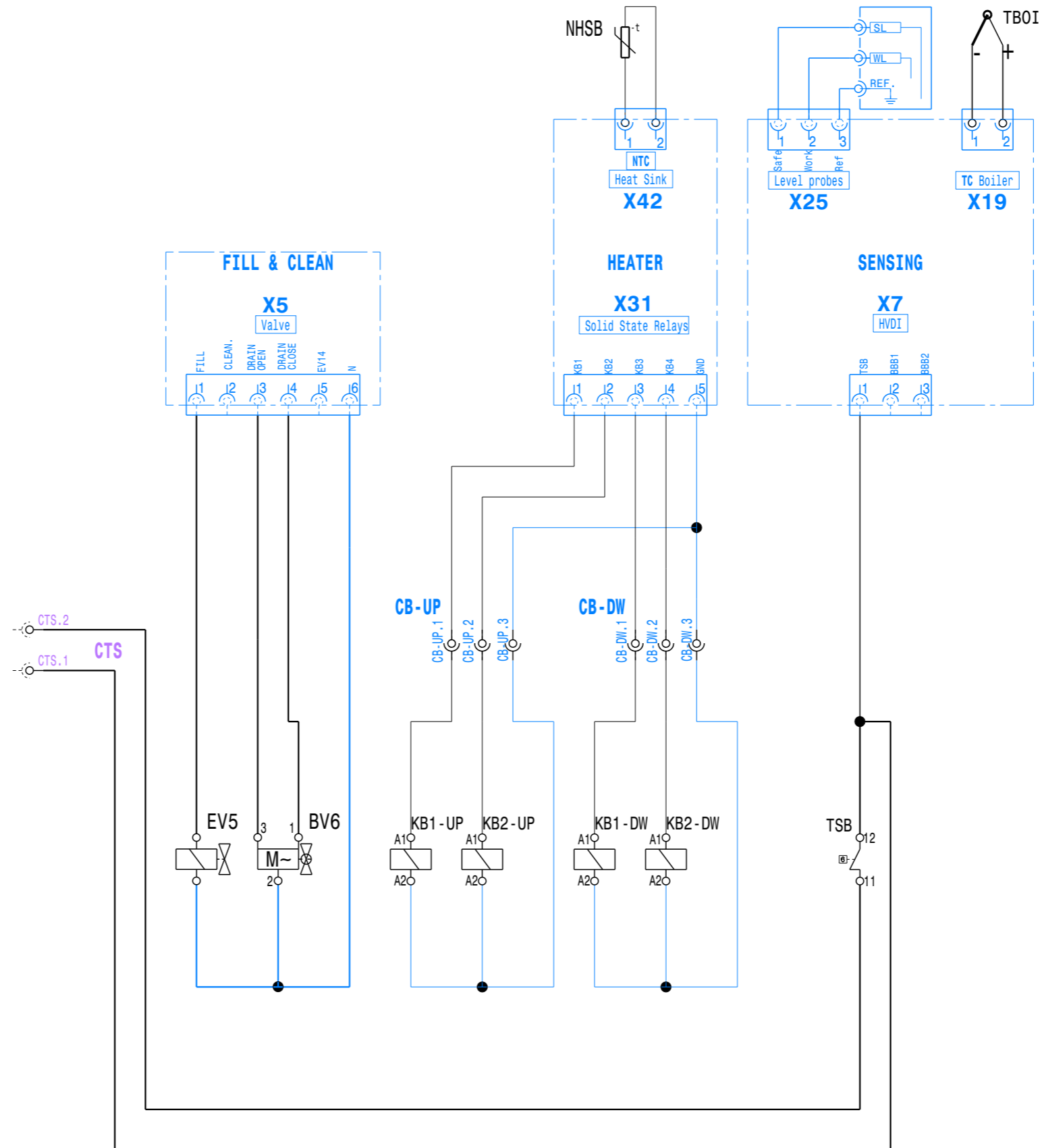
# OPTIONS

# "ELECTRIC"

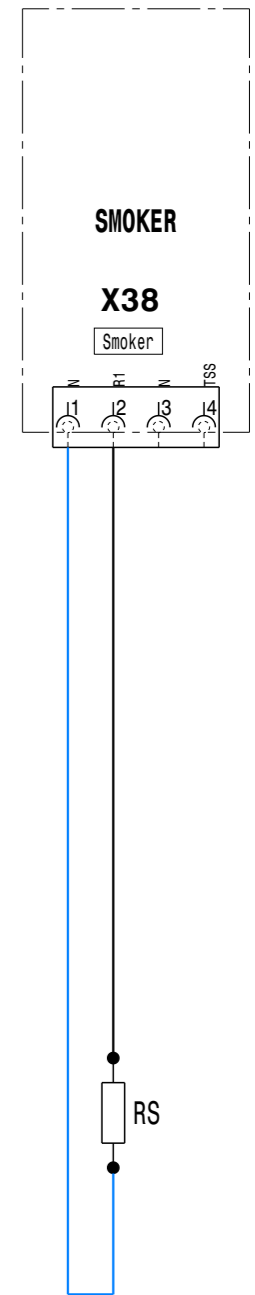
## SPRAY UNIT



## ELECTRIC BOILER (OPTION)

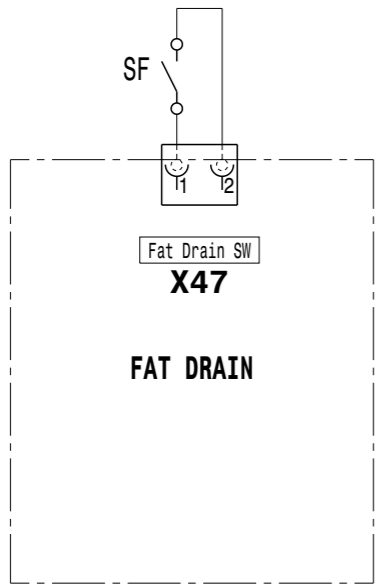


## SMOKER

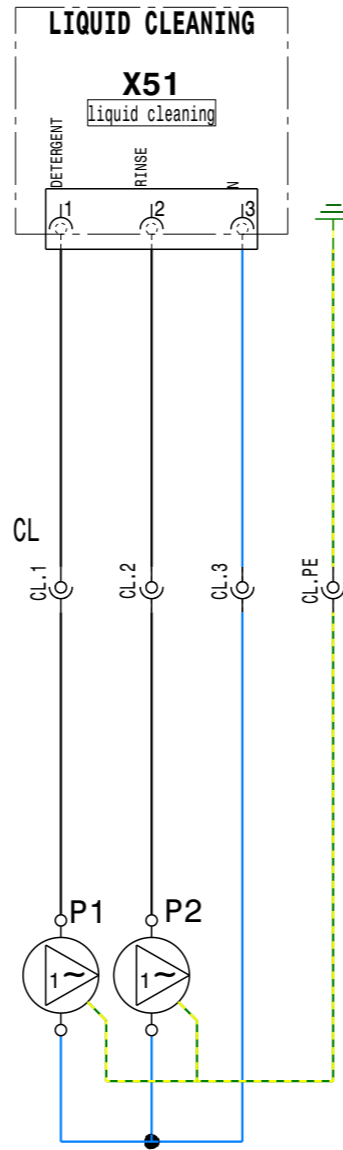


|            |            |            |                         |               |                          |               |                 |   |                          |            |               |
|------------|------------|------------|-------------------------|---------------|--------------------------|---------------|-----------------|---|--------------------------|------------|---------------|
| <b>EV4</b> | SPRAY UNIT | <b>EV5</b> | BOILER FILL VALVE       | <b>KB1-UP</b> | BOILER SSR 1 UP          | <b>KB1-DW</b> | BOILER SSR 1 DW | <b>TSB</b>  | BOILER SAFETY THERMOSTAT | <b>RS</b>  | SMOKER HEATER |
| -          | -          | <b>BV6</b> | BOILER DRAIN BALL VALVE | <b>KB2-UP</b> | BOILER SSR 2 UP          | <b>KB2-DW</b> | BOILER SSR 2 DW | <b>TBOI</b>   | BOILER THERMOCOUPLE      | -          | -             |
| -          | -          | -          | -                       | <b>NHSB</b>   | NTC BOILER SSR HEAT SINK | -             | -               | COD 602402L01   ELECTRIC DIAGRAM 20 "ELT" 380-480V 3-3N CKM |                          | From S/N : |               |

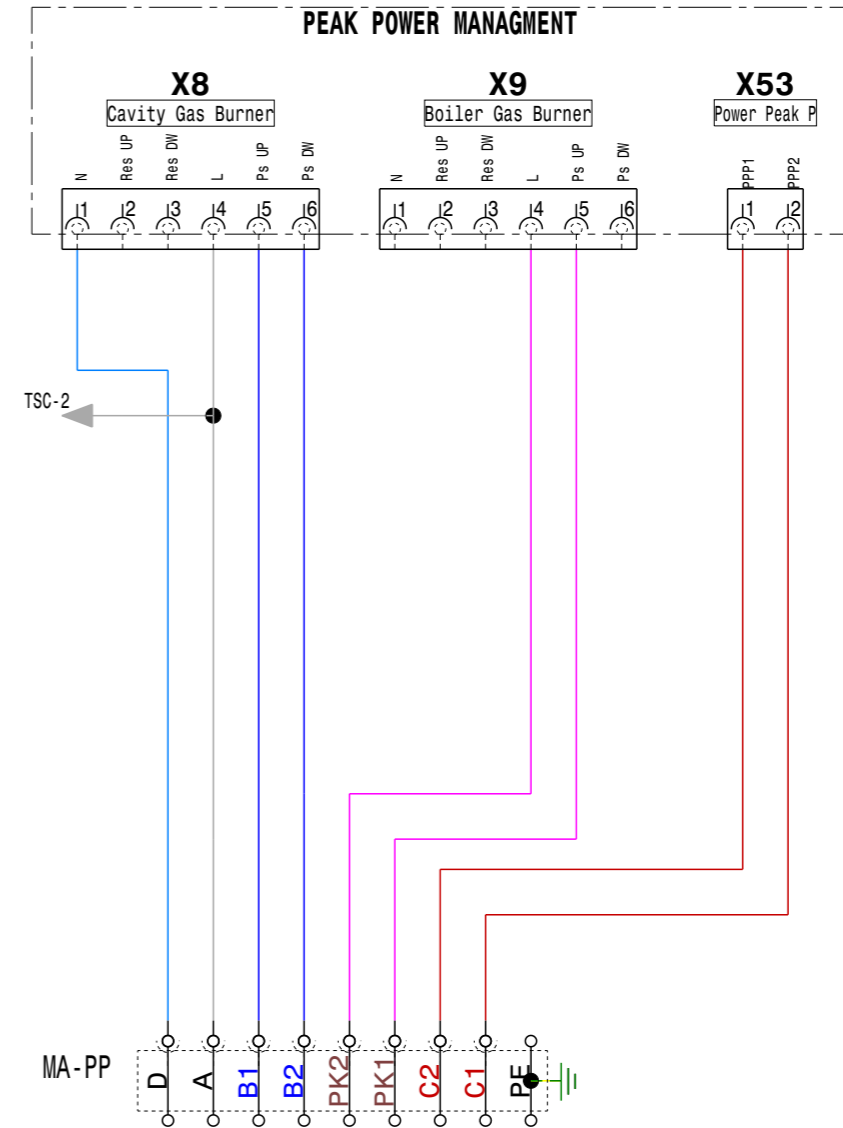
## FAT DRAIN SYSTEM



## LIQUID CLEANING

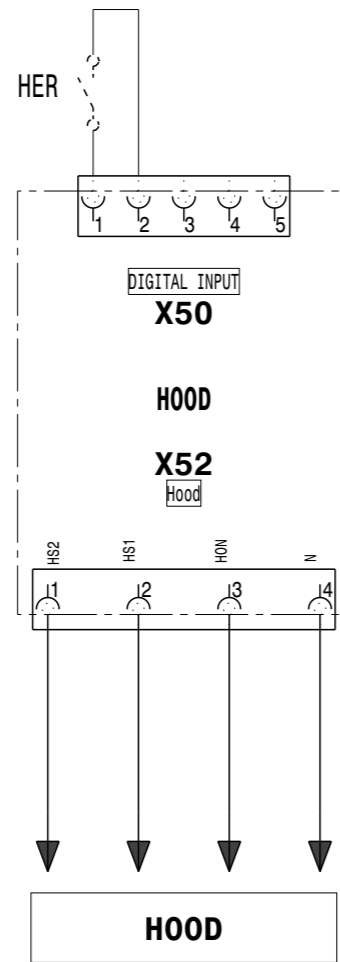


## PEAK POWER MANAGEMENT

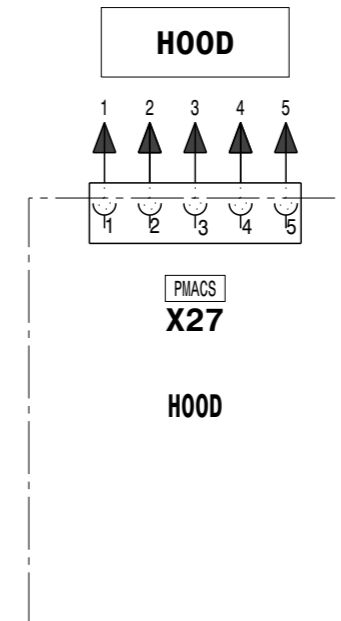


|    |                  |   |   |    |                |   |   |               |   |
|----|------------------|---|---|----|----------------|---|---|---------------|---|
| SF | FAT DRAIN SWITCH | - | - | P1 | RINSE PUMP     | - | - | MA-PP         | TERMINAL BLOCK PEAK POWER MANAGEMENT        |
| -  | -                | - | - | P2 | DETERGENT PUMP | - | - | -             | -   |
| -  | -                | - | - | -  | -              | - | - | COD 602402L01 | ELECTRIC DIAGRAM 20 "ELT" 380-480V 3-3N CKM |
|    |                  |   |   |    |                |   |   |               | From S/N :                                  |

## EXTRACTION HOOD CONDENSATION HOOD

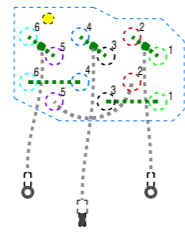


## ODOURLESS HOOD

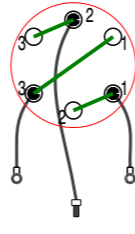


|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| ▪ | - | ▪ | - | ▪ | - | ▪ | - | ▪ | - |
| ▪ | - | ▪ | - | ▪ | - | ▪ | - | ▪ | - |
| ▪ | - | ▪ | - | ▪ | - | ▪ | - | ▪ | - |

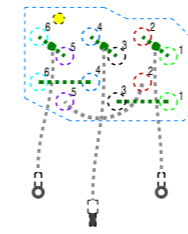
BOILER UP



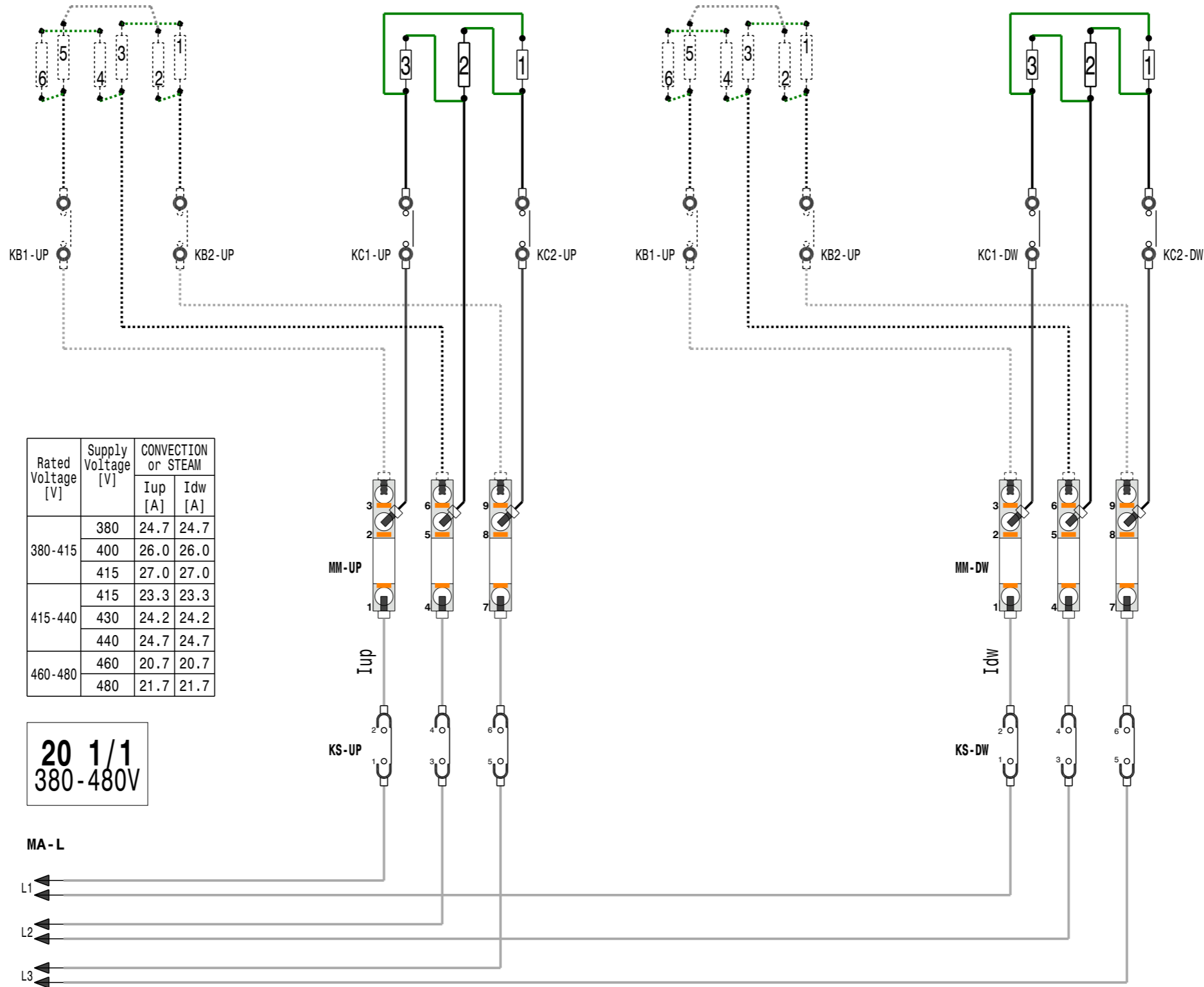
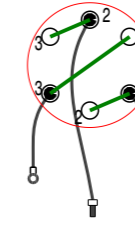
CAVITY UP



BOILER DOWN



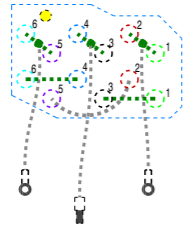
CAVITY DOWN



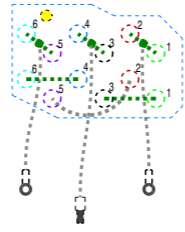
# ELECTRICAL POWER WIRING

# "ELECTRIC"

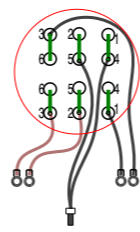
BOILER UP



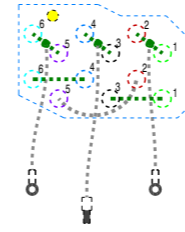
BOILER MIDDLE



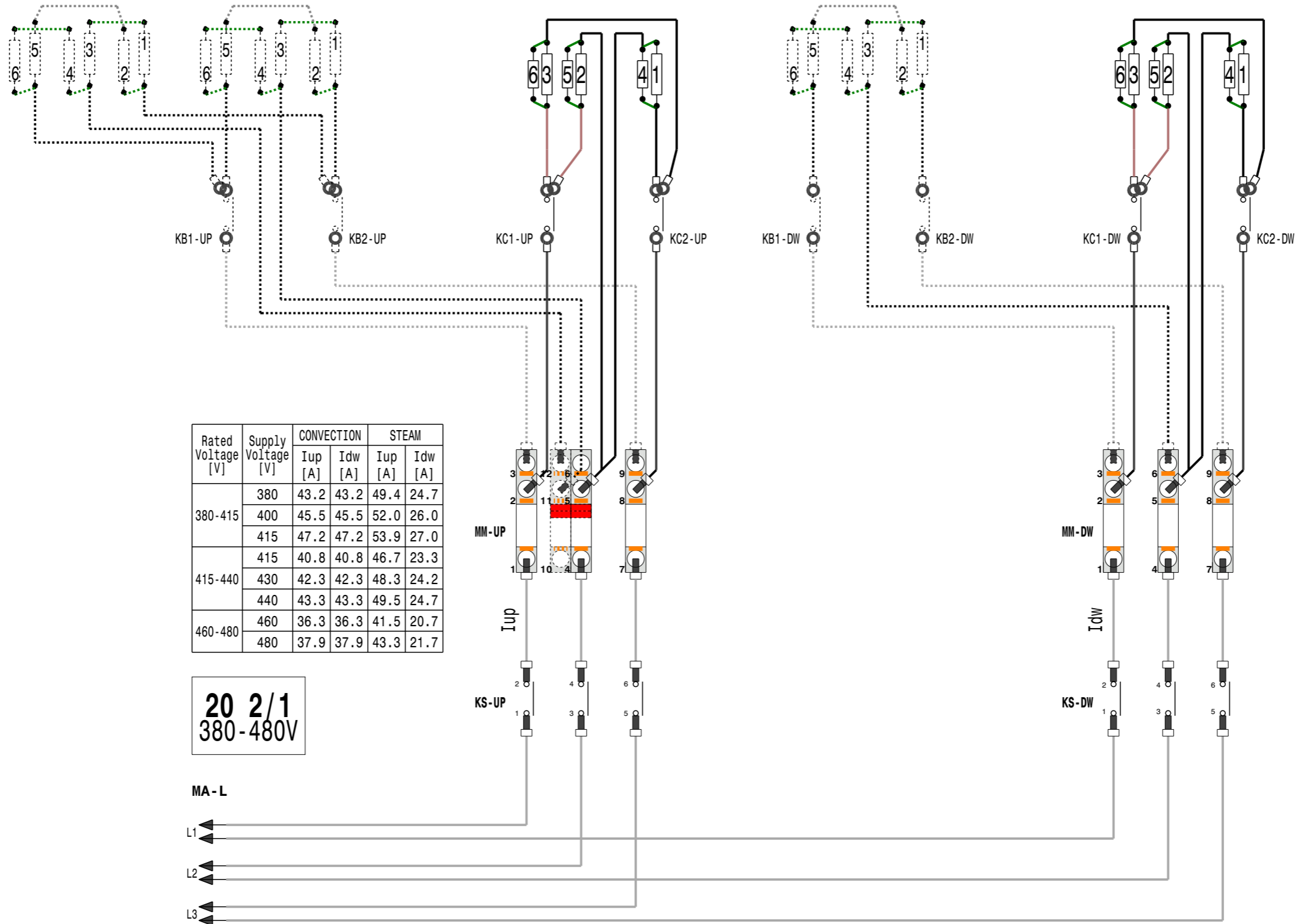
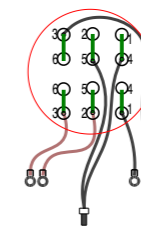
CAVITY UP



BOILER DOWN



CAVITY DOWN



| Rated Voltage [V] | Supply Voltage [V] | CONVECTION          |                     | STEAM               |                     |
|-------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
|                   |                    | I <sub>up</sub> [A] | I <sub>dw</sub> [A] | I <sub>up</sub> [A] | I <sub>dw</sub> [A] |
| 380-415           | 380                | 43.2                | 43.2                | 49.4                | 24.7                |
|                   | 400                | 45.5                | 45.5                | 52.0                | 26.0                |
|                   | 415                | 47.2                | 47.2                | 53.9                | 27.0                |
| 415-440           | 415                | 40.8                | 40.8                | 46.7                | 23.3                |
|                   | 430                | 42.3                | 42.3                | 48.3                | 24.2                |
|                   | 440                | 43.3                | 43.3                | 49.5                | 24.7                |
| 460-480           | 460                | 36.3                | 36.3                | 41.5                | 20.7                |
|                   | 480                | 37.9                | 37.9                | 43.3                | 21.7                |

**20 2/1**  
380-480V

MA-L

L1  
L2  
L3





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