



New

# ASTAT XT

Digital soft starters for 3ph standard induction motors



GE imagination at work



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### Digital soft starters for 3ph standard induction motors

GE's new ASTAT XT solid state soft starter features microprocessor control digital technology. Setup and adjustment is performed through a six-button keypad and parameters or messages are displayed out through a friendly LCD multilanguage interface with two rows, sixteen alphanumeric characters each. The design includes isolated I/O and high level of protection in their circuits to minimize the disturbance effects while working in the hardest industrial environment.

ASTAT XT Soft Starter offers reliable performance and smooth acceleration for a variety of standard AC motors up to 1400A and up to 690V, reducing mechanical shock to the driving system, resulting in extended component and motor life.

ASTAT XT offers many traditional features such a motor overload function, adjustable ramps, current limit, kick start, but also other high end features like Inside-Delta operation, Torque Control, Pump control and a reliable motor and unit set of protections.

### Approvals / Marking



For units up to 820A. "U" type



### Control panel



### Key Features

- Ratings up to 1400Amps and up to 690VAC
- Friendly multilanguage interface with two rows, sixteen characters each
- Built-in with three extra power terminals for external bypass
- In-Line or Inside-Delta operation modes
- Torque control and pump control advanced features
- Motor protection according IEC 10, 20 and NEMA 10, 20, 30, even if ASTAT XT is in By-pass
- Built in communications RS485 port, and ModBus protocol as standard
- ProfibusDP and DeviceNet optional interfaces for communications



## IEC ratings. Recommended motor and type unit ratings

|                             | Light<br>Duty | NORMAL DUTY<br>(IEC Class 10) |                  |      |               |               | HEAVY DUTY<br>(IEC Class 20) |                  |      |               |               | Cat. No.     | Ref. No. |      |
|-----------------------------|---------------|-------------------------------|------------------|------|---------------|---------------|------------------------------|------------------|------|---------------|---------------|--------------|----------|------|
|                             |               | Max<br>Current<br>Rating      | Rated<br>Current | 230V | 400V-<br>415V | 480V-<br>500V | 690V                         | Rated<br>Current | 230V | 400V-<br>415V | 480V-<br>500V |              |          | 690V |
|                             |               |                               |                  |      |               |               |                              |                  |      |               |               |              |          |      |
| Mains voltage<br>230-500VAC | A             | A                             | kW               | kW   | kW            | kW            | A                            | kW               | kW   | kW            | kW            |              |          |      |
|                             | 8             | 8                             | 1,5              | 3    | 4             | -             | 8                            | 1,5              | 3    | 4             | -             | QT10008U21MS | 169075   |      |
|                             | 17            | 17                            | 4                | 7,5  | 7,5           | -             | 12                           | 3                | 5,5  | 5,5           | -             | QT10017U21MS | 169076   |      |
|                             | 34            | 31                            | 7,5              | 15   | 18,5          | -             | 31                           | 7,5              | 15   | 18,5          | -             | QT10031U21MS | 169077   |      |
|                             | 54            | 44                            | 11               | 22   | 30            | -             | 44                           | 11               | 22   | 30            | -             | QT10044U21MS | 169078   |      |
|                             | 65            | 58                            | 15               | 30   | 37            | -             | 55                           | 15               | 30   | 37            | -             | QT10058U21MS | 169079   |      |
|                             | 72            | 72                            | 22               | 37   | 45            | -             | 66                           | 18,5             | 37   | 45            | -             | QT10072U21MS | 169080   |      |
|                             | 104           | 85                            | 22               | 45   | 55            | -             | 80                           | 22               | 45   | 55            | -             | QT10085U21MS | 169081   |      |
|                             | 130           | 105                           | 30               | 55   | 55            | -             | 99                           | 30               | 55   | 55            | -             | QT10105U21MS | 169082   |      |
|                             | 156           | 145                           | 45               | 75   | 90            | -             | 130                          | 37               | 55   | 90            | -             | QT10145U21MS | 169083   |      |
|                             | 170           | 170                           | 55               | 90   | 110           | -             | 134                          | 37               | 75   | 90            | -             | QT10170U21MS | 169084   |      |
|                             | 248           | 210                           | 55               | 110  | 132           | -             | 203                          | 55               | 110  | 132           | -             | QT10210N21MS | 169091   |      |
|                             | 361           | 310                           | 90               | 160  | 200           | -             | 310                          | 75               | 160  | 200           | -             | QT10310N21MS | 169092   |      |
|                             | 390           | 390                           | 110              | 200  | 250           | -             | 344                          | 110              | 160  | 250           | -             | QT10390N21MS | 169093   |      |
|                             | 480           | 460                           | 132              | 250  | 315           | -             | 432                          | 132              | 250  | 315           | -             | QT10460N21MS | 169094   |      |
|                             | 480           | 460                           | 132              | 250  | 315           | -             | 432                          | 132              | 250  | 315           | -             | QT10460U21MS | 169088   |      |
|                             | 610           | 580                           | 160              | 315  | 400           | -             | 488                          | 160              | 250  | 355           | -             | QT10580N21MS | 169095   |      |
|                             | 610           | 580                           | 160              | 315  | 400           | -             | 552                          | 160              | 315  | 400           | -             | QT10580U21MS | 169089   |      |
|                             | 820           | 650                           | 200              | 355  | 400           | -             | 552                          | 160              | 315  | 400           | -             | QT10650N21MS | 169096   |      |
|                             | 820           | 820                           | 250              | 400  | 560           | -             | 690                          | 200              | 400  | 500           | -             | QT10820U21MS | 169090   |      |
| 1180                        | 950           | 315                           | 560              | 630  | -             | 950           | 315                          | 560              | 630  | -             | QT10950N21MS  | 169097       |          |      |
| 1375                        | 1100          | 355                           | 630              | 800  | -             | 1076          | 355                          | 630              | 800  | -             | QT11100N21MS  | 169098       |          |      |
| 1750                        | 1400          | 400                           | 800              | 1000 | -             | 1400          | 400                          | 800              | 1000 | -             | QT11400N21MS  | 169099       |          |      |
| Mains voltage<br>690VAC     | 8             | 8                             | -                | -    | -             | 5,5           | 8                            | -                | -    | -             | 5,5           | QT30008N21MS | 169119   |      |
|                             | 17            | 17                            | -                | -    | -             | 15            | 12                           | -                | -    | -             | 7,5           | QT30017N21MS | 169120   |      |
|                             | 34            | 31                            | -                | -    | -             | 22            | 31                           | -                | -    | -             | 22            | QT30031N21MS | 169121   |      |
|                             | 54            | 44                            | -                | -    | -             | 37            | 44                           | -                | -    | -             | 37            | QT30044N21MS | 169122   |      |
|                             | 65            | 58                            | -                | -    | -             | 55            | 55                           | -                | -    | -             | 45            | QT30058N21MS | 169123   |      |
|                             | 72            | 72                            | -                | -    | -             | 55            | 66                           | -                | -    | -             | 55            | QT30072N21MS | 169124   |      |
|                             | 104           | 85                            | -                | -    | -             | 75            | 80                           | -                | -    | -             | 75            | QT30085N21MS | 169125   |      |
|                             | 130           | 105                           | -                | -    | -             | 90            | 99                           | -                | -    | -             | 90            | QT30105N21MS | 169126   |      |
|                             | 156           | 145                           | -                | -    | -             | 132           | 130                          | -                | -    | -             | 90            | QT30145N21MS | 169127   |      |
|                             | 170           | 170                           | -                | -    | -             | 160           | 134                          | -                | -    | -             | 132           | QT30170N21MS | 169128   |      |
|                             | 248           | 210                           | -                | -    | -             | 200           | 203                          | -                | -    | -             | 200           | QT30210N21MS | 169129   |      |
|                             | 361           | 310                           | -                | -    | -             | 250           | 310                          | -                | -    | -             | 250           | QT30310N21MS | 169130   |      |
|                             | 390           | 390                           | -                | -    | -             | 355           | 344                          | -                | -    | -             | 315           | QT30390N21MS | 169131   |      |
|                             | 480           | 460                           | -                | -    | -             | 400           | 432                          | -                | -    | -             | 400           | QT30460N21MS | 169132   |      |
|                             | 610           | 580                           | -                | -    | -             | 560           | 488                          | -                | -    | -             | 400           | QT30580N21MS | 169133   |      |
|                             | 820           | 650                           | -                | -    | -             | 630           | 552                          | -                | -    | -             | 560           | QT30650N21MS | 169134   |      |
|                             | 1180          | 950                           | -                | -    | -             | 900           | 950                          | -                | -    | -             | 900           | QT30950N21MS | 169135   |      |
|                             | 1375          | 1100                          | -                | -    | -             | 1000          | 1076                         | -                | -    | -             | 1000          | QT31100N21MS | 169136   |      |
|                             | 1750          | 1400                          | -                | -    | -             | -             | 1400                         | -                | -    | -             | -             | QT31400N21MS | 169137   |      |

### Remark

Motor kW ratings given in above table are for IEC, standard AC four poles motors.  
Always check that motor rated current is less than the specified rated current of the starter, for the specific application (Normal Duty or Heavy Duty)



QT10008U21MS  
ASTAT XT 8A-72A



QT10105U21MS  
ASTAT XT 105A-170A



QT10460N21MS  
ASTAT XT 460A-650A



QT10210N21MS  
ASTAT XT 210A-390A

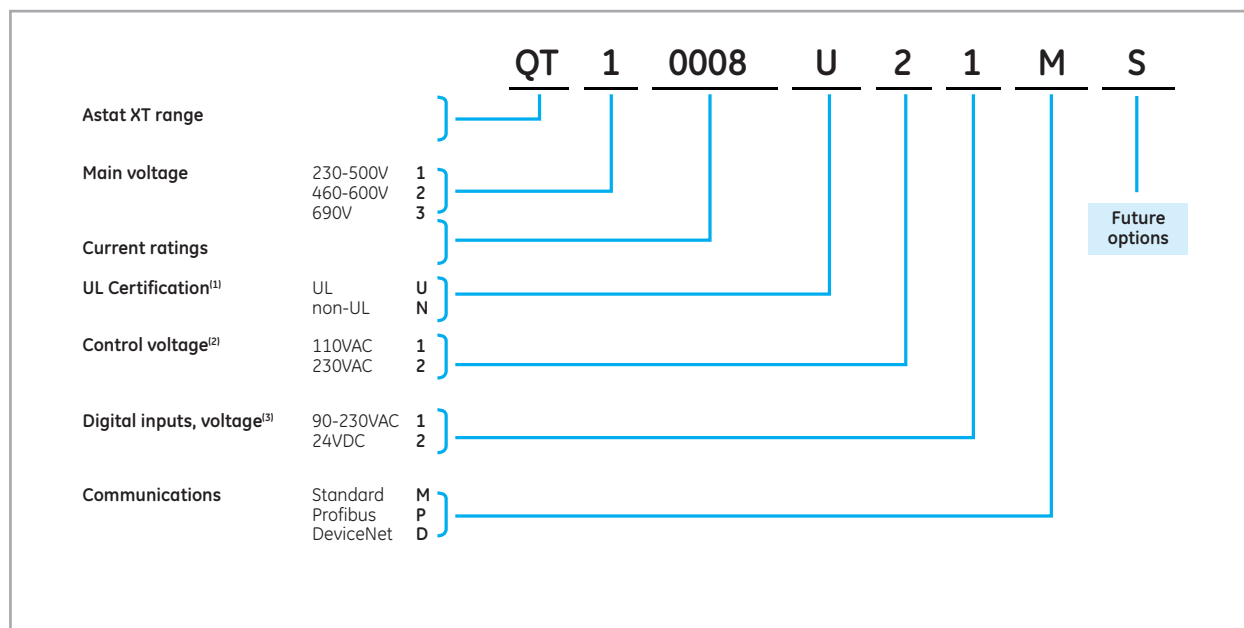
# NEMA ratings. Recommended unit type and motor ratings

|                             | Mains voltage 230-500VAC |      |      |      |                        |      |      |      |                       |      |      |              | Cat. No.     | Ref. No. |
|-----------------------------|--------------------------|------|------|------|------------------------|------|------|------|-----------------------|------|------|--------------|--------------|----------|
|                             | LIGHT DUTY<br>Nema 10    |      |      |      | NORMAL DUTY<br>Nema 20 |      |      |      | HEAVY DUTY<br>Nema 30 |      |      |              |              |          |
|                             | Current<br>Rating        | 230V | 460V | 575V | Current<br>Rating      | 230V | 460V | 575V | Current<br>Rating     | 230V | 460V | 575V         |              |          |
| Mains voltage<br>230-500VAC | A                        | HP   | HP   | HP   | A                      | HP   | HP   | HP   | A                     | HP   | HP   | HP           |              |          |
|                             | 8                        | 2    | 5    | -    | 8                      | 2    | 5    | -    | 8                     | 2    | 5    | -            | QT10008U21MS | 169075   |
|                             | 17                       | 5    | 10   | -    | 17                     | 5    | 10   | -    | 12                    | 3    | 7,5  | -            | QT10017U21MS | 169076   |
|                             | 34                       | 10   | 25   | -    | 31                     | 10   | 20   | -    | 31                    | 10   | 20   | -            | QT10031U21MS | 169077   |
|                             | 54                       | 20   | 40   | -    | 44                     | 15   | 30   | -    | 44                    | 15   | 30   | -            | QT10044U21MS | 169078   |
|                             | 65                       | 20   | 50   | -    | 58                     | 20   | 40   | -    | 55                    | 20   | 40   | -            | QT10058U21MS | 169079   |
|                             | 72                       | 25   | 50   | -    | 72                     | 25   | 50   | -    | 66                    | 20   | 50   | -            | QT10072U21MS | 169080   |
|                             | 104                      | 40   | 75   | -    | 85                     | 30   | 60   | -    | 80                    | 30   | 60   | -            | QT10085U21MS | 169081   |
|                             | 130                      | 50   | 100  | -    | 105                    | 40   | 75   | -    | 99                    | 40   | 75   | -            | QT10105U21MS | 169082   |
|                             | 156                      | 60   | 125  | -    | 145                    | 50   | 100  | -    | 130                   | 50   | 100  | -            | QT10145U21MS | 169083   |
|                             | 170                      | 60   | 125  | -    | 170                    | 60   | 125  | -    | 134                   | 50   | 100  | -            | QT10170U21MS | 169084   |
|                             | 262                      | 100  | 200  | -    | 210                    | 75   | 150  | -    | 203                   | 75   | 150  | -            | QT10210U21MS | 169085   |
|                             | 387                      | 150  | 300  | -    | 310                    | 100  | 250  | -    | 310                   | 100  | 250  | -            | QT10310U21MS | 169086   |
|                             | 414                      | 150  | 350  | -    | 390                    | 150  | 300  | -    | 361                   | 150  | 300  | -            | QT10390U21MS | 169087   |
|                             | 480                      | 200  | 400  | -    | 460                    | 150  | 350  | -    | 432                   | 150  | 350  | -            | QT10460U21MS | 169088   |
|                             | 610                      | 250  | 500  | -    | 580                    | 200  | 400  | -    | 552                   | 200  | 400  | -            | QT10580U21MS | 169089   |
| 820                         | -                        | -    | -    | 820  | 250                    | 500  | -    | 690  | 250                   | 500  | -    | QT10820U21MS | 169090       |          |
| Mains voltage<br>460-600VAC | 8                        | -    | 5    | 5    | 8                      | -    | 5    | 5    | 8                     | -    | 5    | 5            | QT20008U21MS | 169100   |
|                             | 17                       | -    | 10   | 15   | 17                     | -    | 10   | 15   | 12                    | -    | 7,5  | 10           | QT20017U21MS | 169101   |
|                             | 34                       | -    | 25   | 30   | 31                     | -    | 20   | 25   | 31                    | -    | 20   | 25           | QT20031U21MS | 169102   |
|                             | 54                       | -    | 40   | 50   | 44                     | -    | 30   | 40   | 44                    | -    | 30   | 40           | QT20044U21MS | 169103   |
|                             | 65                       | -    | 50   | 60   | 58                     | -    | 40   | 50   | 55                    | -    | 40   | 50           | QT20058U21MS | 169104   |
|                             | 72                       | -    | 50   | 60   | 72                     | -    | 50   | 60   | 66                    | -    | 50   | 60           | QT20072U21MS | 169105   |
|                             | 104                      | -    | 75   | 100  | 85                     | -    | 60   | 75   | 80                    | -    | 60   | 75           | QT20085U21MS | 169106   |
|                             | 130                      | -    | 100  | 125  | 105                    | -    | 75   | 100  | 99                    | -    | 75   | 100          | QT20105U21MS | 169107   |
|                             | 156                      | -    | 125  | 150  | 145                    | -    | 100  | 150  | 130                   | -    | 100  | 125          | QT20145U21MS | 169108   |
|                             | 170                      | -    | 125  | 150  | 170                    | -    | 125  | 150  | 134                   | -    | 100  | 125          | QT20170U21MS | 169109   |
|                             | 262                      | -    | 200  | 250  | 210                    | -    | 150  | 200  | 203                   | -    | 150  | 200          | QT20210U21MS | 169110   |
|                             | 387                      | -    | 300  | 400  | 310                    | -    | 250  | 300  | 310                   | -    | 250  | 300          | QT20310U21MS | 169111   |
|                             | 414                      | -    | 350  | 400  | 390                    | -    | 300  | 400  | 361                   | -    | 300  | 300          | QT20390U21MS | 169112   |
|                             | 480                      | -    | 400  | 500  | 460                    | -    | 350  | 400  | 432                   | -    | 350  | 400          | QT20460U21MS | 169113   |
|                             | 610                      | -    | 500  | -    | 580                    | -    | 400  | 400  | 552                   | -    | 400  | 500          | QT20580U21MS | 169114   |
|                             | 820                      | -    | -    | -    | 820                    | -    | 500  | 500  | 690                   | -    | 500  | -            | QT20820U21MS | 169115   |

## Remark

Motor HP ratings given in above table are for NEMA, standard AC four poles motors.  
Always check that motor rated current is less than the specified rated current of the starter, for the specific application (Light duty, Normal duty or Heavy duty)

## Unit configuration



(1) - ASTAT XT up to 600V, and up to 170A (Cat Numbers up to QT10170\_ or up to QT20170) are always cUL certified. Option "N" not available

- Units QT2, from QT20008\_, up to QT20820\_ are always cUL certified. Option "N" not available.

- Units QT1, or QT2 from QTx0950\_ up to QTx1400 are not UL certified. Option "U" not available.

- Units QT3\_, rated to 690V, are not UL certified. Option "U" not available

(2) ASTAT XT standard Control Voltage configuration is option 2, Voltage 230VAC, +10%, -15%

(3) ASTAT XT standard configuration for Inputs is option 1, Voltage 90-230VAC, +10%, -15%

## Technical Data

### Ratings

|                        |                           |                                                                                                                              |
|------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Main voltage           | 3Ph AC supply             | 230 to 500VAC +10%, -15% for QT1xxx units<br>460 to 600VAC +10%, -15% for QT2xxx units<br>690VAC +10%, -15% for QT3xxx units |
| Starter current rating | for 3Ph AC motors         | From 8A up to 1400A.                                                                                                         |
| Motor current rating   | 3 phases Induction motors | Motor rated current from 50% to 100% of starter current                                                                      |
| Control voltage        | 1ph AC supply             | 230VAC, +10, -15%, 50/60Hz, or<br>110VAC, +10, -15%, 50/60Hz (optional)                                                      |
| Frequency range        | 50/60Hz systems           | Wide from 45Hz to 65Hz. Auto-tracking frequency range                                                                        |

### Control specifications

|                        |                                                                                                                                                                                                                                                                                                                                         |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control system         | Digital control with microcontroller.<br>Starting ramp, with progressive increase in voltage and current limitation                                                                                                                                                                                                                     |
| Operation mode         | In-Line (three wires) or Inside-Delta (six wires) of the motor                                                                                                                                                                                                                                                                          |
| Run operation          | Soft Start and Soft stop by multiple choices, including torque control both at start or Stop phases                                                                                                                                                                                                                                     |
| Operator interface     | By LCD display, keypad and Indication LEDs<br>Display: LCD with two rows, 16 characters each<br>Type: Multilanguage, dip-switch selectable for English, Italian, Spanish and German<br>Keys: Six keys, Mode, reset, Set, Select and Up / Down<br>LEDs: ON, Start, Run, Soft Stop, Stop, Save / Slow Speed, Dual Set / Reverse and Fault |
| Initial voltage        | 10-50% Un. Up to 80% with expanded settings function                                                                                                                                                                                                                                                                                    |
| Starting current       | 100-400% In. Can be extended up to 500%, by using extended settings                                                                                                                                                                                                                                                                     |
| Acceleration ramp time | 1-30 sec. Can be extended up to 90sec, by using extended settings                                                                                                                                                                                                                                                                       |
| Deceleration ramp time | 1-30 sec. Can be extended up to 90sec, by using extended settings                                                                                                                                                                                                                                                                       |
| Current limitation     | 100-400% of motor rated current. Can be extended up to 500% by using extended settings                                                                                                                                                                                                                                                  |
| Bypass                 | By external contactor while motor is full protected by ASTAT XT.                                                                                                                                                                                                                                                                        |
| Monitoring             | Motor Current, Line Voltage, motor thermistor resistance, Test & Maintenance and Statistics                                                                                                                                                                                                                                             |

### Environmental conditions

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Operating temperature | -10 up to 50°C, with current derating by 2,5% per °C, from 40°C     |
| Storage temperature   | -20°C up to 70°C                                                    |
| Maximum altitude      | Up to 1000 mts. Ask your dealer for installation at higher altitude |
| Humidity              | 95% at 50°C or 98% at 45°C                                          |
| Protection degree     | IP20 for units up to 72A, IP00 for units from 85A up to 1400A       |
| Pollution degree      | Class 3                                                             |

### Standards

|                  |                                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------|
| Global standards | CE for the full range. UL, cUL for specified units up to 820A                                                             |
| EMC emissions    | EN 61000-6-4 CISPR 11 Class A                                                                                             |
| Immunity         | EN 61000-6-2 ESD 8KV air, IEC 801-2;<br>Electric RF field 10 V/m, 20-1000Mhz, IEC 801-3<br>Fast transients 2KV, IEC 801-4 |
| Safety           | EN 600947-1 Related to safety requirements. UL508C                                                                        |





## Functions

### Available standard functions

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soft start and soft stop | ASTAT XT is provided with a soft start and soft stop features, including five independent acceleration and deceleration curve models.<br>The factory default curve is used for general purpose, other three are used for pump control and the last one for torque control.                                                                                                                                            |
| Pump control             | Specific function for pump control, that avoids overpressure in the system at the end of acceleration phase and suppresses the hammering at stopping phase.                                                                                                                                                                                                                                                           |
| Torque control           | Provides a smooth time controlled torque ramp acceleration and deceleration, with linear deceleration of the torque resulting in a close to linear speed deceleration, thus eliminating stall conditions                                                                                                                                                                                                              |
| In line / Inside delta   | ASTAT XT allows either traditional Line operation or Inside Delta operation.<br>When the ASTAT XT is installed to operate Inside Delta, the individual phases of the starter are connected in series with the individual motor windings (six wiring connections like the Start-Delta starters), thus reducing the current x1,73, and allowing the use of a much smaller starter (x1,5 less than motor rated current). |
| Bypass                   | ASTAT XT allows bypass operation using an external contactor, controlled ON/OFF by starter function EOR (End Of Ramp).<br>The starter is provided with three dedicated power terminals to facilitate wirings to the bypass contactor.<br>ASTAT XT protections to motor are enabled, even in bypass.                                                                                                                   |
| Kick start               | This function allows to start high friction loads that require high starting torque for a short period of time. When this function is enabled, a pulse of 80% Un during an adjustable time from 0 to 1sec is given to the motor. After this pulse the output voltage is ramping down to Starting Voltage setting, before ramping up again to full voltage.                                                            |
| End of ramp              | Detects end of acceleration and outputs a signal by an dry relay contact. This signal can be delayed by an adjustable timer from 0-120 sec.                                                                                                                                                                                                                                                                           |
| Lock-Out                 | Allows to control the number of startings into a period of time, then protecting both motor and ASTAT.                                                                                                                                                                                                                                                                                                                |
| Dual settings            | By this function, ASTAT XT is able to control a secondary motor Dual setting of Starting Voltage, Starting Current, Current Limit, Ramp Up, Ramp Down and Motor current parameters can be selected by using one of the programmable ASTAT XT's inputs                                                                                                                                                                 |
| Energy saving            | Activated when the motor has a light load for extended periods of time, then reducing the output voltage level and decreasing the reactive current and motor copper/iron losses.<br>This function can be enabled or disabled by dedicated parameters in ASTAT XT.                                                                                                                                                     |
| Slow speed               | Function that allows the motor to run at 1/6 constant rated speed, for a short period of time of maximum 30sec. This function supports forward and reverse operation.                                                                                                                                                                                                                                                 |
| Auto reset               | This function allows the ASTAT XT automatic recover after a fault caused by Undervoltage, Undercurrent or Phase lost. Auto-Reset can be programmed up to maximum 10 attempts.                                                                                                                                                                                                                                         |
| Cooling fan control      | Allows three methods of control for the ASTAT's built-in cooling fans.<br>- Continuous Operation<br>- Controlled by an external Input<br>- Automatically OFF controlled, after five minutes ASTAT XT is stopped                                                                                                                                                                                                       |
| Generator supply         | This is a specific function useful when the Starter is powered from a diesel generator rather than from commercial power supply. The function is enabled by an internal Dip Switch, and helps to minimize the negative effects caused by the generator's voltage fluctuations during starting.                                                                                                                        |
| Keypad lock              | This function is enabled by means of starter's internal dipswitch, then locking the keypad.<br>This is useful to prevent undesired parameter modifications.                                                                                                                                                                                                                                                           |
| Built-in communications  | ASTAT XT includes a ModBus RTU communications protocol. Communications are carried out through a half duplex RS485 port, with maximum baudrate of 9600, supporting up to 247 stations.                                                                                                                                                                                                                                |
| Statistic data           | ASTAT XT records useful data for maintenance and start up<br>- Last 10 trip events<br>- Statistical data like number of starts, number of trip events and elapsed RUN time.<br>- Last trip data information of Motor current, Starting current and acceleration time.                                                                                                                                                 |

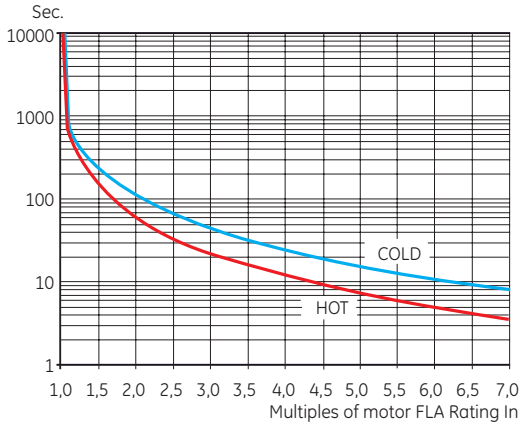
### Motor and starter protection

|                  |                                                                                                                                                                                                                                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overload         | Trips the ASTAT-XT when current exceeds the Overload Trip level according IEC Class 10, 20 or NEMA 10, 20, 30                                                                                                                                                                                       |
| Motor thermistor | Trips when motor thermistor resistance decreases below trip level set ASTAT XT allows both PTC or NTC sensors, with adjustable trip level                                                                                                                                                           |
| Too many starts  | Trips if the number of starts, during Duty Cycle Time exceeds the preset number                                                                                                                                                                                                                     |
| Long start time  | Trips if output voltage does not reach rated voltage at the preset Max. Start time                                                                                                                                                                                                                  |
| O/C JAM fault    | Trips under the following conditions:<br>- Instantaneously when current exceeds 8,5 x ASTAT-XT Current<br>- During starting when current exceeds 8,5 x Motor Current<br>- During running when current exceeds 200-850% of Motor Current<br>O/C JAM has a programmable tripping delay of 0-5 seconds |
| Undercurrent     | Trips when line current drops below the preset level for the preset time.                                                                                                                                                                                                                           |
| Undervoltage     | Trips when line voltage drops below the preset level for the preset time.                                                                                                                                                                                                                           |
| Overvoltage      | Trips when line voltage increases above a preset level for a preset time                                                                                                                                                                                                                            |
| Phase loss       | Trips if 1 or 2 phases are lost                                                                                                                                                                                                                                                                     |
| Frequency loss   | Trips if frequency is not in the range of 40-66.6Hz                                                                                                                                                                                                                                                 |
| Phase sequence   | Trips if line phase sequence is wrong                                                                                                                                                                                                                                                               |
| Slow speed time  | Trips when operating at slow speed for extended periods                                                                                                                                                                                                                                             |
| Wrong connection | Trips the ASTAT-XT when one or more motor phases is not properly connected to ASTAT-XT's load terminals or if there is an internal disconnection in the motor winding                                                                                                                               |
| Shorted SCR      | Trips and prevents starting if any SCR is short-circuited or when motor windings are shorted                                                                                                                                                                                                        |
| Over temperature | Heat-sink over-temperature. Trips the ASTAT-XT when the heat-sink temperature rises above 85°C                                                                                                                                                                                                      |
| External fault   | Trips the ASTAT-XT when a N.O. contact between terminals 19-21 closes for over two seconds                                                                                                                                                                                                          |
| Wrong parameters | Parameters not transferred from RAM to EEPROM or vice versa                                                                                                                                                                                                                                         |
| OC or wrong CON  | Trips when the ASTAT-XT is connected Inside Delta and Wrong connection or overcurrent is detected                                                                                                                                                                                                   |

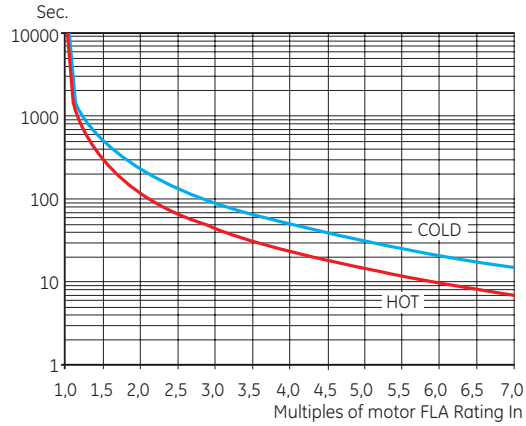
## Overload protections - Thermal characteristics

The ASTAT XT allows motor protection according IEC Class 10 or Class 20 and NEMA 10, 20 or 30, user free selectable by ASTAT internal dedicated parameter.

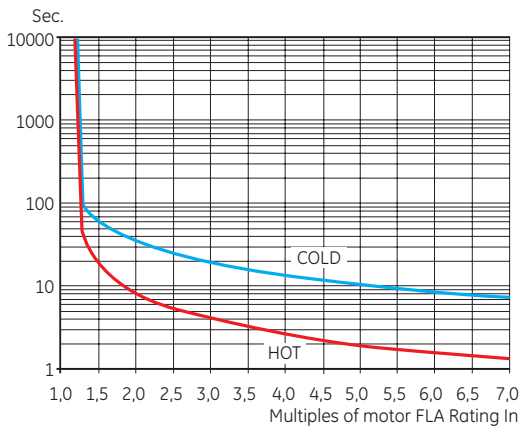
IEC Class 10



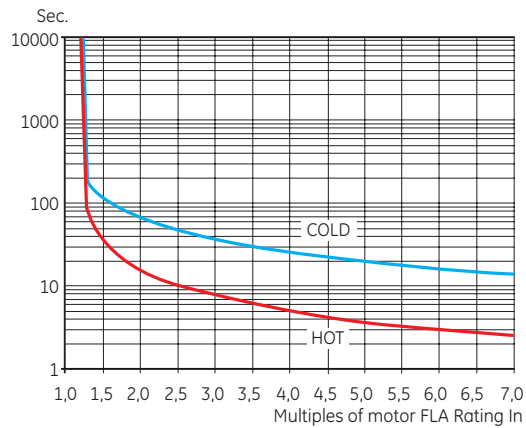
IEC Class 20



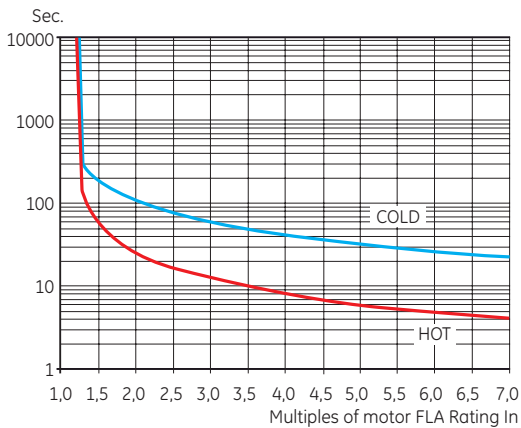
NEMA 10 Light duty



NEMA 20



NEMA 30



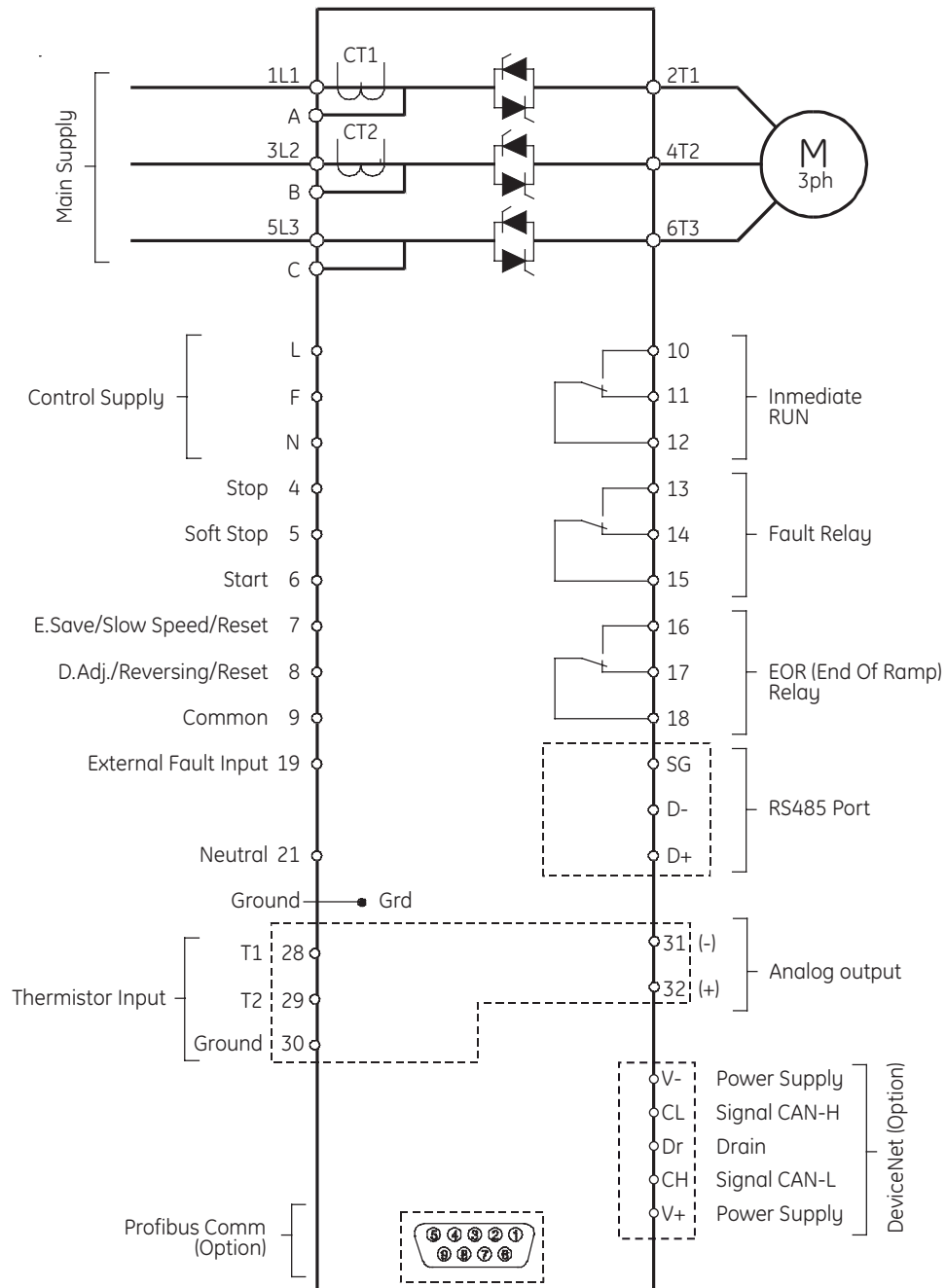
### Maximum number starting /hour

|                                      |   | Ramp time |     |     |
|--------------------------------------|---|-----------|-----|-----|
|                                      |   | 10s       | 20s | 30s |
| Starting current I/In <sup>(1)</sup> | 2 | 24        | 12  | 8   |
|                                      | 3 | 16        | 8   | 5   |
|                                      | 4 | 12        | 6   | 4   |

(1) In= rated current of ASTAT XT in the specified class IEC/Nema



## I/O Wiring, Basic scheme



## I/O terminal board specifications

### Power I/O terminals

| Terminals     | Function        | Description                                                                                                                                                                                                       |
|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1L1, 3L2, 5L3 | Mains Input     | 3ph Input voltage according Astat XT Main Voltage Option rating<br>(Option 1, QT1_) 230-500VAC, +10%/-15% 50/60Hz<br>(Option 2, QT2_) 460-600VAC, +10%/-15% 50/60Hz<br>(Option 3, QT3_) 690VAC, +10%/-15% 50/60Hz |
| 2T1, 4T2, 6T3 | Output to motor | Power Output terminals to 3ph AC motor                                                                                                                                                                            |
| A, B, C       | By-pass         | Bypass terminals for external by-pass contactor                                                                                                                                                                   |
| G             | Ground          | ASTAT XT, ground connection                                                                                                                                                                                       |

### Control power supply

|      |                 |                                                                                                                                                                                                                                                                                                                                                       |
|------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L, N | Control. Supply | a110VAC or 220VAC, according Astat XT Control Voltage rating                                                                                                                                                                                                                                                                                          |
| F    | Fan control     | Cooling fan external control, together with jumper J1                                                                                                                                                                                                                                                                                                 |
|      |                 | <b>Control Voltage &amp; Fan consumption VA:</b><br>QTx0008 to QTx0031: No fan. Total consumption: 150VA<br>QTx0044 to QTx0072: Fan 35 VA. Total consumption 185VA<br>QTx0085 to QTx0170: Fan 60 VA. Total consumption 210VA<br>QTx0210 to QTx0390: Fans 105VA. Total consumption 255VA<br>QTx0390 to QTx 1400A : Fans 150VA. Total consumption 300VA |

### Digital inputs

|   |                     |                                                                                                                                                                                                                                                |
|---|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | Stop                | Dedicated input to Stop                                                                                                                                                                                                                        |
| 5 | Soft Stop           | Dedicated input to Soft Stop                                                                                                                                                                                                                   |
| 6 | Start               | Dedicated input to Start                                                                                                                                                                                                                       |
| 7 | Programmable Inputs | Programmable to functions Energy Saving, Slow Speed and Reset                                                                                                                                                                                  |
| 8 | Programmable Inputs | Programmable to functions Dual Set, Reverse and Reset                                                                                                                                                                                          |
| 9 | Common              | Common terminal for digital inputs from 4, 5, 6, 7 and 8                                                                                                                                                                                       |
|   |                     | <b>Operating Voltage of digital inputs from 4 to 9</b><br>Digital Input hardware is operated according either of below ordered voltage ratings<br>(Option 1, standard) From 90 to 230VAC +10%, 50/60Hz<br>(Option 2, Optional) 24VDC +10%/-15% |

### Other inputs

|        |                  |                                                                                                                                                        |
|--------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19, 21 | External fault   | Requires a free voltage relay contact, to detect external fault                                                                                        |
| 21     | Neutral          | This terminal may be connected to Mains Neutral when available                                                                                         |
| 28, 29 | Motor thermistor | PTC or NTC programmable input for motor thermistor protection<br>The input can be enabled or disabled, and programmed at desired trip level resistance |

### Digital outputs

|            |       |                                                                    |
|------------|-------|--------------------------------------------------------------------|
| 10, 11, 12 | RUN   | Run Relay with NO & NC dry contact. Programmable ON delay          |
| 13, 14, 15 | FAULT | Fault to ON or Fault to OFF programmable function                  |
| 16, 17, 18 | EOR   | End Of Ramp relay. Programmable ON delay                           |
|            |       | <b>Relay Outputs Ratings</b><br>Max rating: 8A, 250VAC, 2000VA max |

### Analogue output

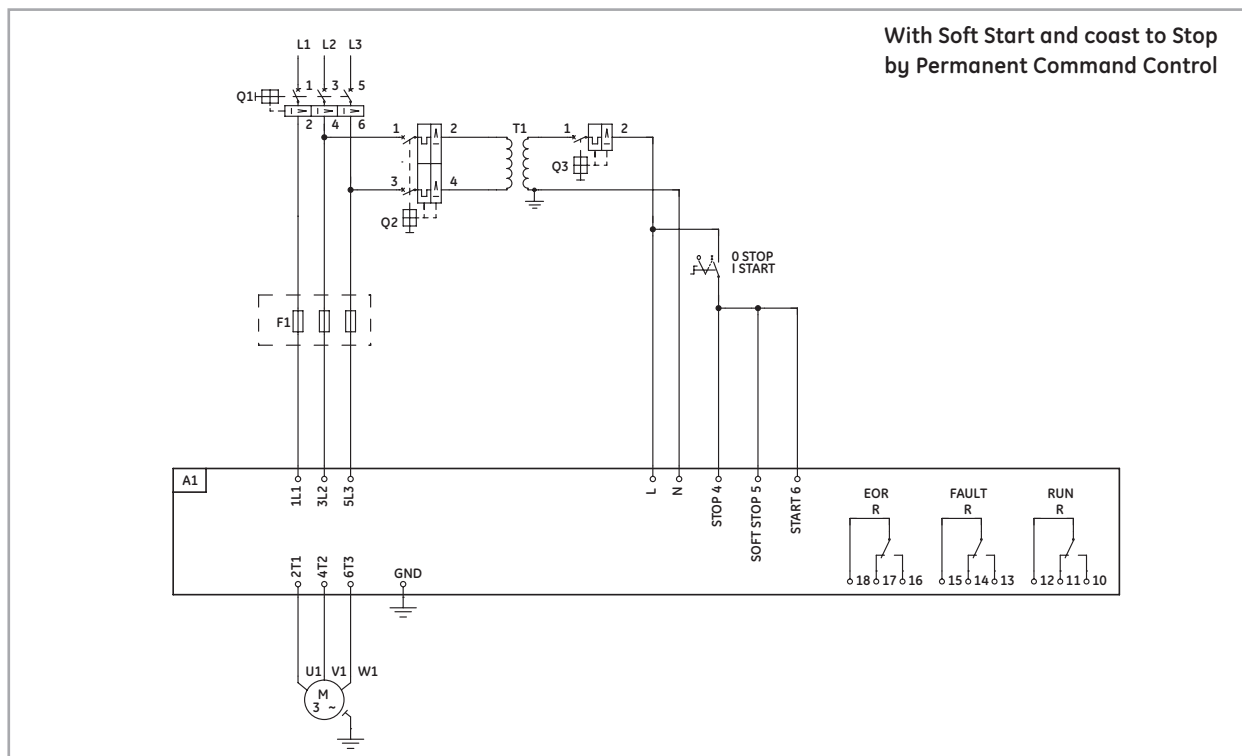
|        |                |                                                          |
|--------|----------------|----------------------------------------------------------|
| 31, 32 | Current output | Range 0 to 2xIn. Programmable 0-10VDC, 0-20mA or 4-20mA. |
| 30     | Ground         | Ground terminal for Analog Output                        |

### Communications

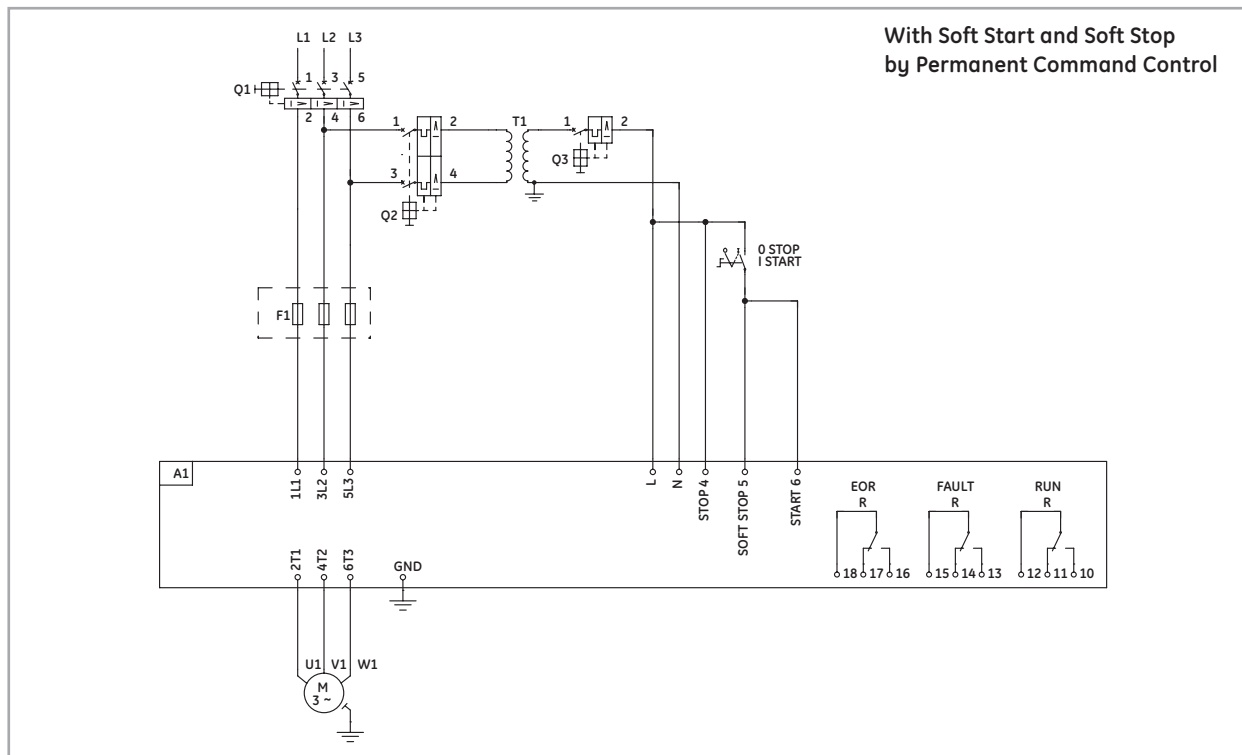
|                    |                     |                                                                                                  |
|--------------------|---------------------|--------------------------------------------------------------------------------------------------|
| D+, D-, SG         | RS485 terminals     | RS485 Communication port, half duplex for ModBus protocol<br>Baudrate 1200, 2400, 4800, 9600 BPS |
| D-9 connector      | Profibus port       | Optional Profibus Communications port                                                            |
| V+, CL, Dr, CH, V- | DeviceNet terminals | Optional Devicenet Communications port                                                           |

## Application wiring diagrams

### Basic diagram without line contactor<sup>(1)</sup>



### Basic diagram without line contactor<sup>(1)</sup>



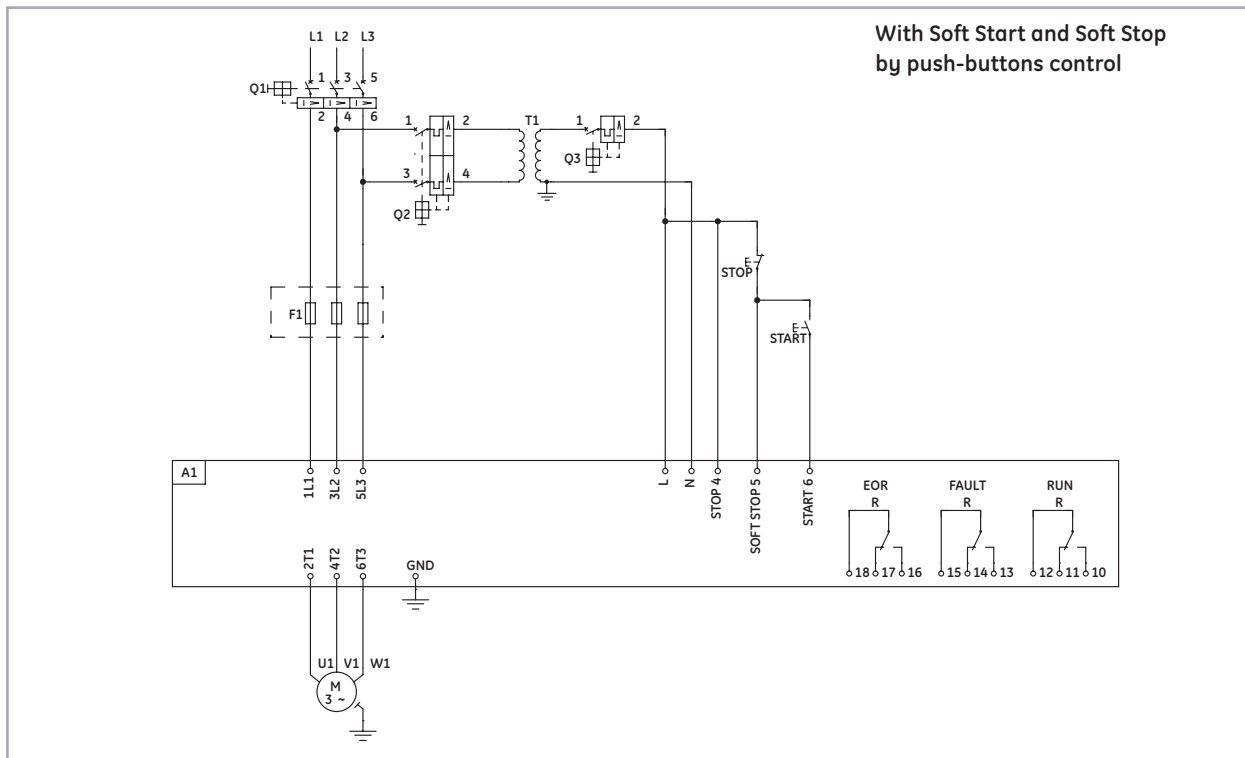
(1) Schemes are given for information purposes. Add additional emergency safety stop, if it is required for your application.

#### Remarks

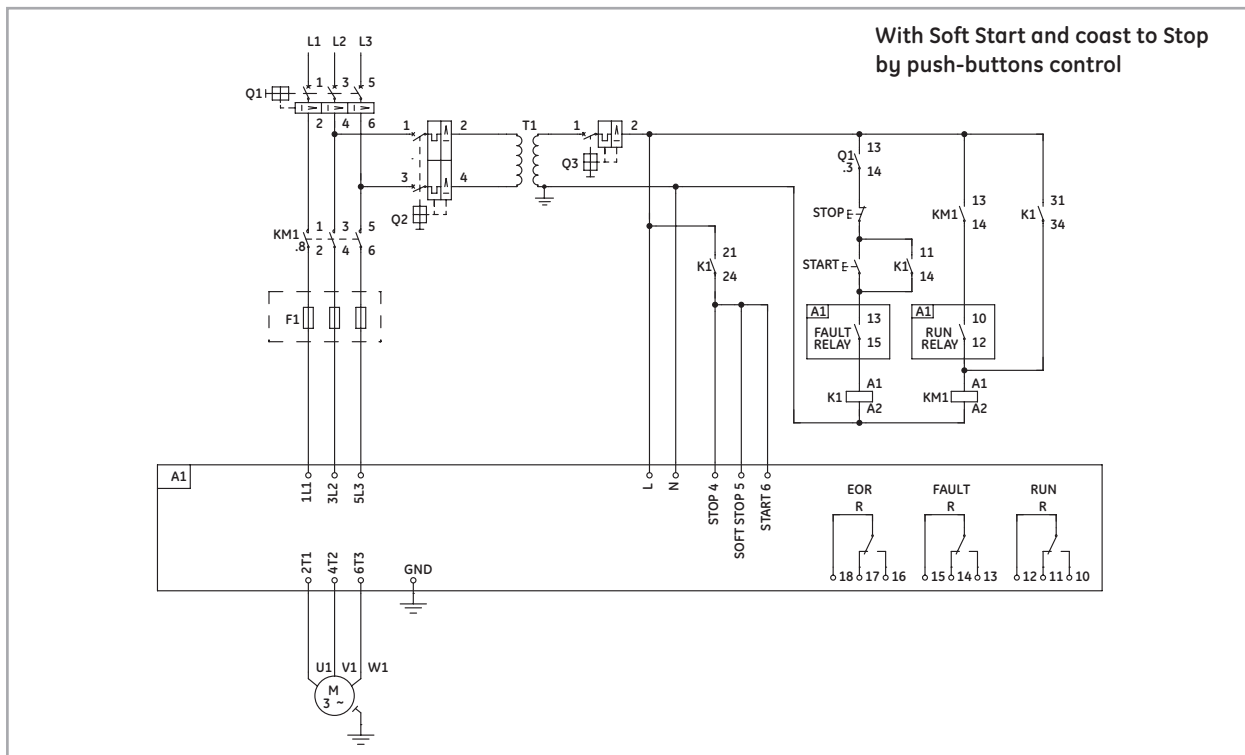
1. Check coordination tables for proper selection of Breaker and Line contactor.
2. Control Voltage and Control Input voltage are from same source in above example. Please check manuals if you have different sources for Control Voltage and Control input Voltage.
3. Semiconductor Fuses "F" are only required for Type 2 coordination. Please check coordination tables
4. In spite of ASTAT XT can operate without line contactor, the use of a line contactor will increase the operation safety. Anyway provide a way to switch off the Breaker in case of an emergency.

## Application wiring diagrams

### Basic diagram without line contactor<sup>(1)</sup>



### Basic diagram with line contactor<sup>(1)</sup>



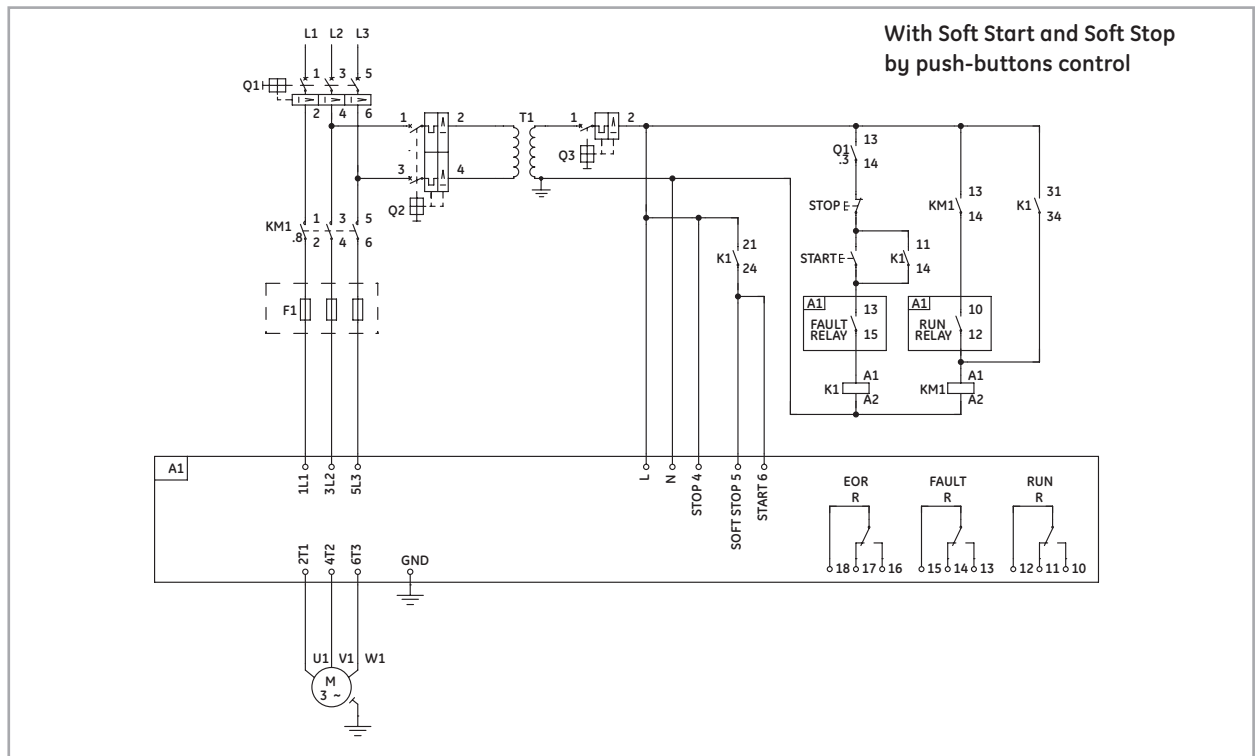
(1) Schemes are given for information purposes. Add additional emergency safety stop, if it is required for your application.

#### Remarks

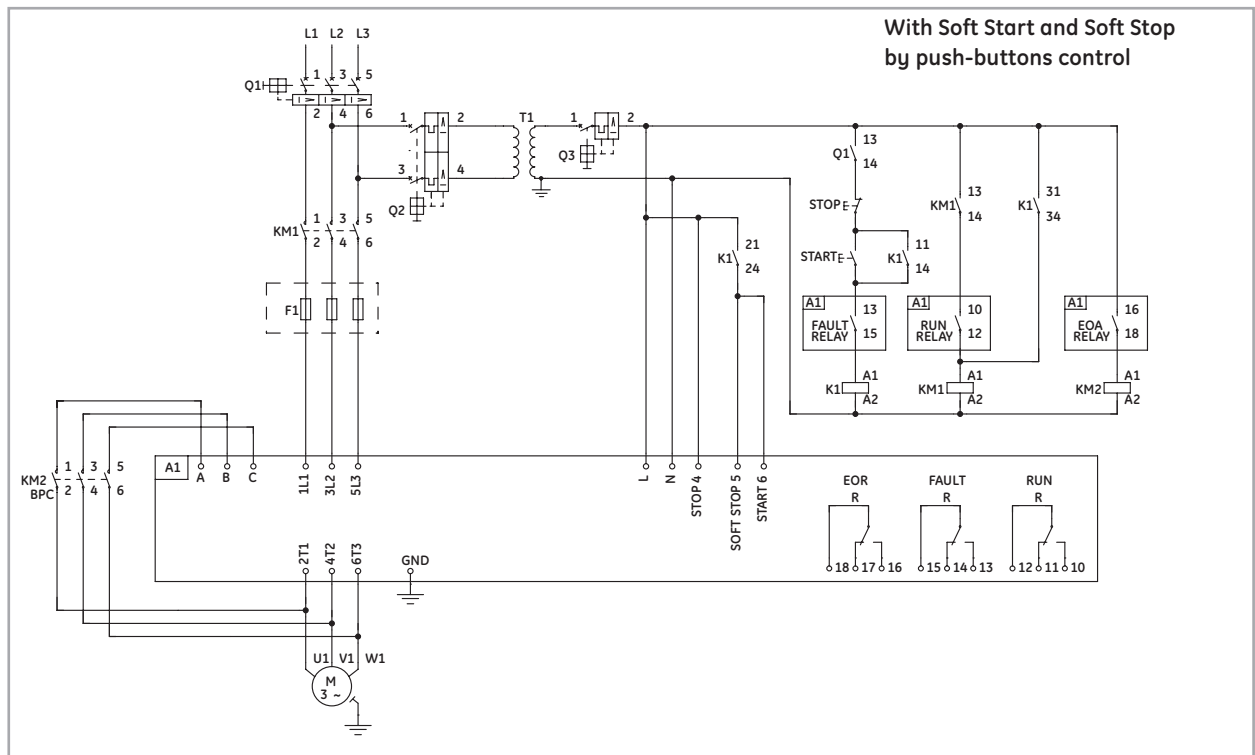
1. Check coordination tables for proper selection of Breaker and Line contactor.
2. Control Voltage and Control Input voltage are from same source in above example. Please check manuals if you have different sources for Control Voltage and Control input Voltage.
3. Semiconductor Fuses "F" are only required for Type 2 coordination. Please check coordination tables
4. In spite of ASTAT XT can operate without line contactor, the use of a line contactor will increase the operation safety. Anyway provide a way to switch off the Breaker in case of an emergency.

## Application wiring diagrams

### Basic diagram with line contactor<sup>(1)</sup>



### Basic diagram with line and bypass contactors<sup>(1)</sup>



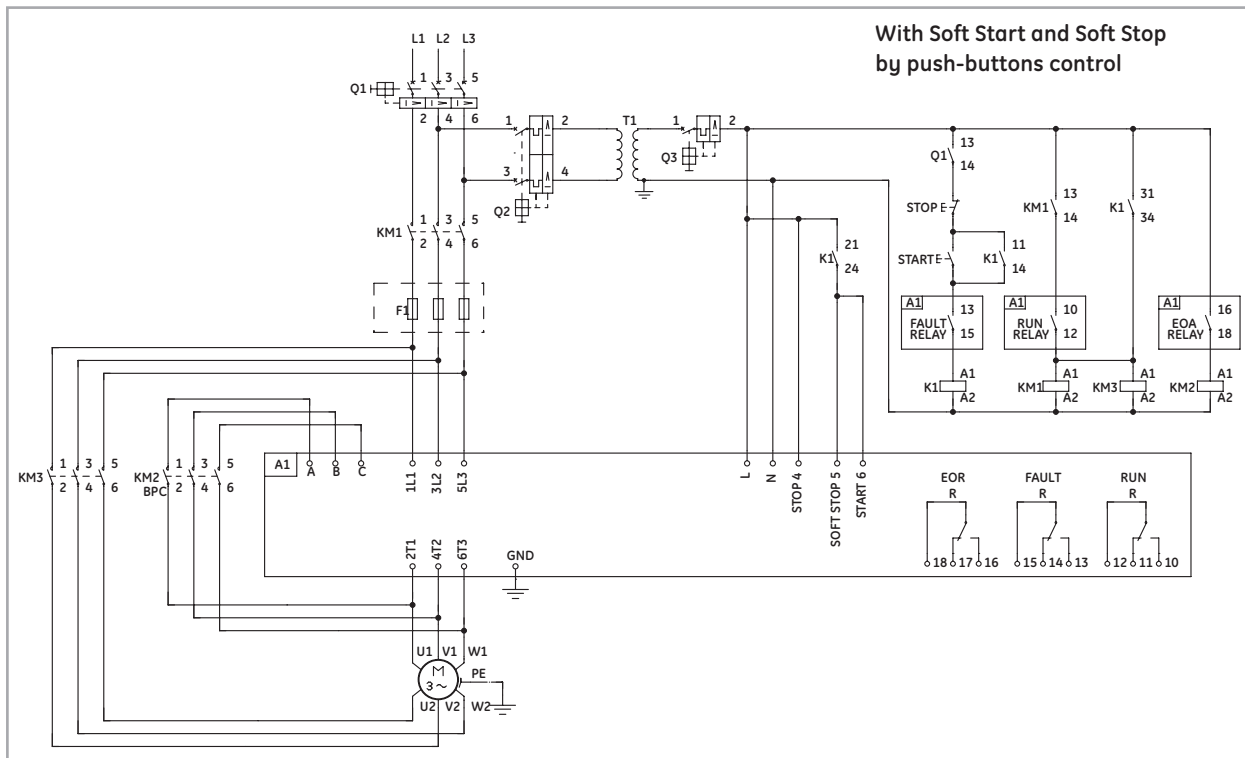
(1) Above schemes are given for information purposes. Add additional emergency safety stop, if it is required for your application.

#### Remarks

1. Check coordination tables for proper selection of Breaker and Line contactor.
2. Control Voltage and Control Input voltage are from same source in above example. Please check manuals if you have different sources for Control Voltage and Control input Voltage.
3. Semiconductor Fuses "F" are only required for Type 2 coordination. Please check coordination tables

## Application wiring diagrams

### Basic diagram in "Inside Delta" configuration with line and bypass contactors<sup>(1)</sup>



(1) Above schemes are given for information purposes. Add additional emergency safety stop, if it is required for your application.

#### Remarks

1. Check coordination tables for proper selection of Breaker and Line contactor.
2. Control Voltage and Control Input voltage are from same source in above example. Please check manuals if you have different sources for Control Voltage and Control input Voltage.
3. Semiconductor Fuses "F" are only required for Type 2 coordination. Please check coordination tables
4. Wrong connection of the motor, or the ASTAT-XT when it is Inside-delta connected may seriously damage the motor or the ASTAT-XT. Please check additional details given in the ASTAT XT's instruction manual.



## Coordination Type 1

### Combination with aM fuses - 415V

|                              | Rating (A) | ASTAT-XT type |          | aM fuses |            | Contactor Type | Short-circuit current |
|------------------------------|------------|---------------|----------|----------|------------|----------------|-----------------------|
|                              |            |               | Cat. No. |          | Rating (A) | CL/CK series   | Iq (kA)               |
| Main Voltage<br>Up to 415VAC | 8          | -             | QT10008  | -        | 16         | CL00           | 80                    |
|                              | 17         | -             | QT10017  | -        | 20         | CL02           | 80                    |
|                              | 31         | -             | QT10031  | -        | 35         | CL04           | 80                    |
|                              | 44         | -             | QT10044  | -        | 50         | CL06           | 80                    |
|                              | 58         | -             | QT10058  | -        | 80         | CL07           | 80                    |
|                              | 72         | -             | QT10072  | -        | 100        | CL08           | 80                    |
|                              | 85         | -             | QT10085  | -        | 125        | CL09           | 80                    |
|                              | 105        | -             | QT10105  | -        | 160        | CL10           | 80                    |
|                              | 145        | -             | QT10145  | -        | 200        | CK75C          | 80                    |
|                              | 170        | -             | QT10170  | -        | 200        | CK08C          | 80                    |
|                              | 210        | -             | QT10210  | -        | 250        | CK09B          | 80                    |
|                              | 310        | -             | QT10310  | -        | 400        | CK95B          | 80                    |
|                              | 390        | -             | QT10390  | -        | 500        | CK10C          | 80                    |
|                              | 460        | -             | QT10460  | -        | 630        | CK11C          | 80                    |
|                              | 580        | -             | QT10580  | -        | 800        | CK12B          | 80                    |
|                              | 650        | -             | QT10650  | -        | 1000       | CK13B          | 80                    |
|                              | 950        | -             | QT10950  | -        | 2x630      | -              | 80                    |
|                              | 1100       | -             | QT11100  | -        | 2x800      | -              | 80                    |
|                              | 1400       | -             | QT11400  | -        | 2x800      | -              | 80                    |

### Combination with Record Plus MCCB'S - 415V

|                              | Rating (A) | ASTAT-XT type |          | Circuit Breaker |            | Contactor Type | Short-circuit current |
|------------------------------|------------|---------------|----------|-----------------|------------|----------------|-----------------------|
|                              |            |               | Cat. No. | Record Plus     | Rating (A) | CL/CK series   | Iq (kA)               |
| Main Voltage<br>Up to 415VAC | 8          | -             | QT10008  | FD63            | 16         | CL45           | 65                    |
|                              | 17         | -             | QT10017  | FD63            | 40         | CL06           | 65                    |
|                              | 31         | -             | QT10031  | FD63            | 50         | CL06           | 65                    |
|                              | 44         | -             | QT10044  | FD160           | 63         | CL06           | 65                    |
|                              | 58         | -             | QT10058  | FD160           | 80         | CL07           | 65                    |
|                              | 72         | -             | QT10072  | FD160           | 80         | CL08           | 65                    |
|                              | 85         | -             | QT10085  | FE160           | 125        | CL10           | 65                    |
|                              | 105        | -             | QT10105  | FE160           | 160        | CL10           | 65                    |
|                              | 145        | -             | QT10145  | FE160           | 160        | CK85B          | 65                    |
|                              | 170        | -             | QT10170  | FE250           | 160        | CK08           | 65                    |
|                              | 210        | -             | QT10210  | FE250           | 160        | CK85           | 65                    |
|                              | 310        | -             | QT10310  | FG400           | 400        | CK10C          | 65                    |
|                              | 390        | -             | QT10390  | FG400           | 400        | CK12B          | 65                    |
|                              | 460        | -             | QT10460  | FG630           | 630        | CK12B          | 65                    |
|                              | 580        | -             | QT10580  | FG630           | 630        | CK13B          | 65                    |
|                              | 650        | -             | QT10650  | FK1250          | 1000       | CK13B          | 50                    |
|                              | 950        | -             | QT10950  | FK1250          | 1000       | -              | 50                    |
|                              | 1100       | -             | QT11100  | FK1250          | 1250       | -              | 50                    |
|                              | 1400       | -             | QT11400  | FK1600          | 1600       | -              | 50                    |

### Combination with aM fuses - 500V

|                         | Rating (A) | ASTAT-XT type |          | aM fuses |            | Contactor Type | Short-circuit current |
|-------------------------|------------|---------------|----------|----------|------------|----------------|-----------------------|
|                         |            |               | Cat. No. |          | Rating (A) | CL/CK series   | Iq (kA)               |
| Main Voltage<br>500 VAC | 8          | QT10008       | QT20008  | -        | 16         | CL00           | 80                    |
|                         | 17         | QT10017       | QT20017  | -        | 20         | CL02           | 80                    |
|                         | 31         | QT10031       | QT20031  | -        | 35         | CL04           | 80                    |
|                         | 44         | QT10044       | QT20044  | -        | 50         | CL06           | 80                    |
|                         | 58         | QT10058       | QT20058  | -        | 80         | CL07           | 80                    |
|                         | 72         | QT10072       | QT20072  | -        | 100        | CL08           | 80                    |
|                         | 85         | QT10085       | QT20085  | -        | 125        | CL09           | 80                    |
|                         | 105        | QT10105       | QT20105  | -        | 160        | CL10           | 80                    |
|                         | 145        | QT10145       | QT20145  | -        | 200        | CK75C          | 80                    |
|                         | 170        | QT10170       | QT20170  | -        | 200        | CK08C          | 80                    |
|                         | 210        | QT10210       | QT20210  | -        | 250        | CK09B          | 80                    |
|                         | 310        | QT10310       | QT20310  | -        | 400        | CK95B          | 80                    |
|                         | 390        | QT10390       | QT20390  | -        | 500        | CK10C          | 80                    |
|                         | 460        | QT10460       | QT20460  | -        | 630        | CK11C          | 80                    |
|                         | 580        | QT10580       | QT20580  | -        | 800        | CK12B          | 80                    |
|                         | 650/820    | QT10650       | QT20820  | -        | 1000       | CK13B          | 80                    |
|                         | 950        | QT10950       | QT20950  | -        | 2x630      | -              | 80                    |
|                         | 1100       | QT11100       | QT21100  | -        | 2x800      | -              | 80                    |
|                         | 1400       | QT11400       | QT21400  | -        | 2x800      | -              | 80                    |

## Coordination Type 2

### Combination with semiconductor fuses - 415V

| Main Voltage<br>Up to 415VAC | Rating (A) | ASTAT-XT type |          | Semiconductor fuses <sup>(1)</sup> | Contactor Type | Short-circuit current |
|------------------------------|------------|---------------|----------|------------------------------------|----------------|-----------------------|
|                              |            |               | Cat. No. | Bussmann type                      | CL/CK series   | Iq (kA)               |
|                              | 8          | -             | QT10008  | 170M3808D                          | CL25           | 80                    |
|                              | 17         | -             | QT10017  | 170M3810D                          | CL25           | 80                    |
|                              | 31         | -             | QT10031  | 170M3813D                          | CL04           | 80                    |
|                              | 44         | -             | QT10044  | 170M3814D                          | CL45           | 80                    |
|                              | 58         | -             | QT10058  | 170M3814D                          | CL07           | 80                    |
|                              | 72         | -             | QT10072  | 170M3815D                          | CL08           | 80                    |
|                              | 85         | -             | QT10085  | 170M3816D                          | CL09           | 80                    |
|                              | 105        | -             | QT10105  | 170M3817D                          | CL10           | 80                    |
|                              | 145        | -             | QT10145  | 170M3817D                          | CK75C          | 80                    |
|                              | 170        | -             | QT10170  | 170M3819D                          | CK08C          | 80                    |
|                              | 210        | -             | QT10210  | 170M4864D                          | CK09B          | 80                    |
|                              | 310        | -             | QT10310  | 170M4864D                          | CK95B          | 80                    |
|                              | 390        | -             | QT10390  | 170M5814D                          | CK10C          | 80                    |
|                              | 460        | -             | QT10460  | 170M5820D                          | CK11C          | 80                    |
|                              | 580        | -             | QT10580  | 170M5816D                          | CK12B          | 50                    |
|                              | 650        | -             | QT10650  | 2x170M5814D                        | CK13B          | 80                    |
|                              | 950        | -             | QT10950  | 2x170M5816D                        | -              | 80                    |
|                              | 1100       | -             | QT11100  | 2x170M6892D                        | -              | 80                    |
|                              | 1400       | -             | QT11400  | 2x170M8555D                        | -              | 80                    |

### Combination with semiconductor fuses - 500V

| Main Voltage<br>500 VAC | Rating (A) | ASTAT-XT type |          | Semiconductor fuses <sup>(1)</sup> | Contactor Type | Short-circuit current |
|-------------------------|------------|---------------|----------|------------------------------------|----------------|-----------------------|
|                         |            |               | Cat. No. | Bussmann type                      | CL/CK series   | Iq (kA)               |
|                         | 8          | QT10008       | QT20008  | 170M3808D                          | CL25           | 80                    |
|                         | 17         | QT10017       | QT20017  | 170M3810D                          | CL25           | 80                    |
|                         | 31         | QT10031       | QT20031  | 170M3813D                          | CL04           | 80                    |
|                         | 44         | QT10044       | QT20044  | 170M3814D                          | CL06           | 80                    |
|                         | 58         | QT10058       | QT20058  | 170M3814D                          | CL07           | 80                    |
|                         | 72         | QT10072       | QT20072  | 170M3815D                          | CL08           | 80                    |
|                         | 85         | QT10085       | QT20085  | 170M3816D                          | CL09           | 80                    |
|                         | 105        | QT10105       | QT20105  | 170M3817D                          | CL10           | 80                    |
|                         | 145        | QT10145       | QT20145  | 170M3817D                          | CK75C          | 80                    |
|                         | 170        | QT10170       | QT20170  | 170M3819D                          | CK08C          | 80                    |
|                         | 210        | QT10210       | QT20210  | 170M4864D                          | CK09B          | 80                    |
|                         | 310        | QT10310       | QT20310  | 170M4864D                          | CK10C          | 80                    |
|                         | 390        | QT10390       | QT20390  | 170M5814D                          | CK10C          | 80                    |
|                         | 460        | QT10460       | QT20460  | 170M5820D                          | CK11C          | 80                    |
|                         | 580        | QT10580       | QT20580  | 170M5816D                          | CK12B          | 50                    |
|                         | 650/820    | QT10650       | QT20820  | 2x170M5814D                        | CK13B          | 80                    |
|                         | 950        | QT10950       | QT20950  | 2x170M5816D                        | -              | 80                    |
|                         | 1100       | QT11100       | QT21100  | 2x170M6892D                        | -              | 80                    |
|                         | 1400       | QT11400       | QT21400  | 2x170M8555D                        | -              | 80                    |

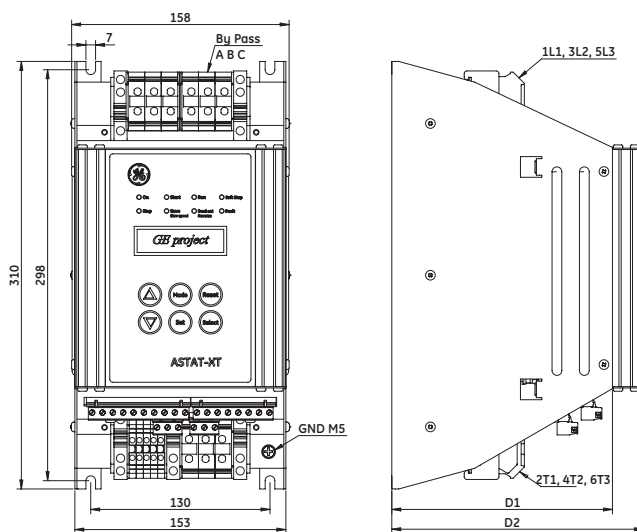
### Combination with semiconductor fuses - 690V

| Main Voltage<br>690 VAC | Rating (A) | ASTAT-XT type |          | Semiconductor fuses <sup>(1)</sup> | Contactor Type | Short-circuit current |
|-------------------------|------------|---------------|----------|------------------------------------|----------------|-----------------------|
|                         |            |               | Cat. No. | Bussmann type                      | CL/CK series   | Iq (kA)               |
|                         | 8          | -             | QT30008  | 170M3808D                          | CL25           | 50                    |
|                         | 17         | -             | QT30017  | 170M3810D                          | CL25           | 50                    |
|                         | 31         | -             | QT30031  | 170M3813D                          | CL06           | 50                    |
|                         | 44         | -             | QT30044  | 170M3814D                          | CL06           | 50                    |
|                         | 58         | -             | QT30058  | 170M3814D                          | CL07           | 50                    |
|                         | 72         | -             | QT30072  | 170M3815D                          | CL08           | 50                    |
|                         | 85         | -             | QT30085  | 170M3816D                          | CK75C          | 50                    |
|                         | 105        | -             | QT30105  | 170M3817D                          | CK75C          | 50                    |
|                         | 145        | -             | QT30145  | 170M3817D                          | CK08B          | 50                    |
|                         | 170        | -             | QT30170  | 170M3819D                          | CK08B          | 50                    |
|                         | 210        | -             | QT30210  | 170M4864D                          | CK08B          | 50                    |
|                         | 310        | -             | QT30310  | 170M4864D                          | CK10C          | 50                    |
|                         | 390        | -             | QT30390  | 170M5814D                          | CK10C          | 50                    |
|                         | 460        | -             | QT30460  | 170M5820D                          | CK12B          | 50                    |
|                         | 580        | -             | QT30580  | 170M5816D                          | CK12B          | 30                    |
|                         | 650        | -             | QT30650  | 2x170M5814D                        | -              | 50                    |
|                         | 950        | -             | QT30950  | 2x170M5816D                        | -              | 50                    |
|                         | 1100       | -             | QT31100  | 2x170M6892D                        | -              | 50                    |
|                         | 1400       | -             | QT31400  | 2x170M8555D                        | -              | 50                    |

(1) Semiconductor Fuses must be always used for Type 2 coordination

## Dimensions and weights

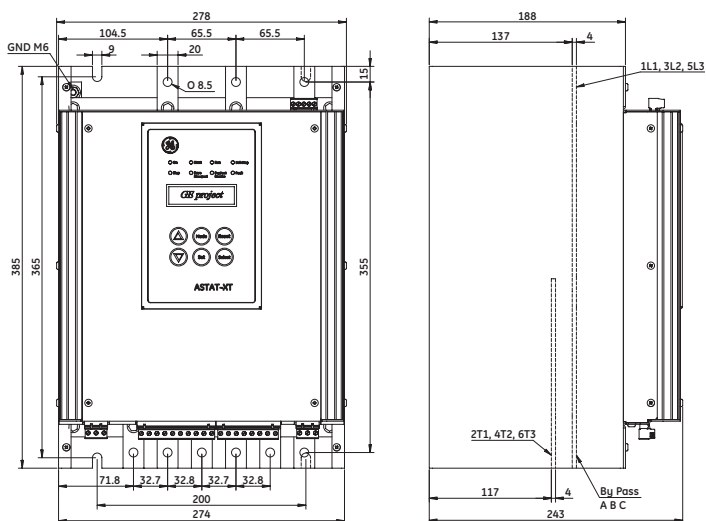
Cat. No.: QTx0008U\_, QTx0017U\_, QTx0031U\_, QTx0044U\_, QTx0058U\_, QTx0072U\_



| Cat. No  | Dimensions |       | Power terminal size (mm <sup>2</sup> ) |                   |                         | Weight Kg |
|----------|------------|-------|----------------------------------------|-------------------|-------------------------|-----------|
|          | D1         | D2    | Input<br>1L1, 3L2, 5L3                 | Bypass<br>A, B, C | Output<br>2T1, 4T2, 6T3 |           |
| QTx0008U | 160        | 182.5 | 16                                     | 16                | 16                      | 4,2       |
| QTx0017U | 160        | 182.5 | 16                                     | 16                | 16                      | 4,2       |
| QTx0031U | 160        | 182.5 | 16                                     | 16                | 16                      | 5,3       |
| QTx0044U | 207        | 229.5 | 16                                     | 16                | 35                      | 6,7       |
| QTx0058U | 207        | 229.5 | 16                                     | 16                | 35                      | 6,7       |
| QTx0072U | 207        | 229.5 | 35                                     | 35                | 35                      | 6,7       |

UL Certified units

Cat. No.: QTx0085U\_, QTx0105U\_



Cat. No.

Weight

QTx0085U\_

15,2

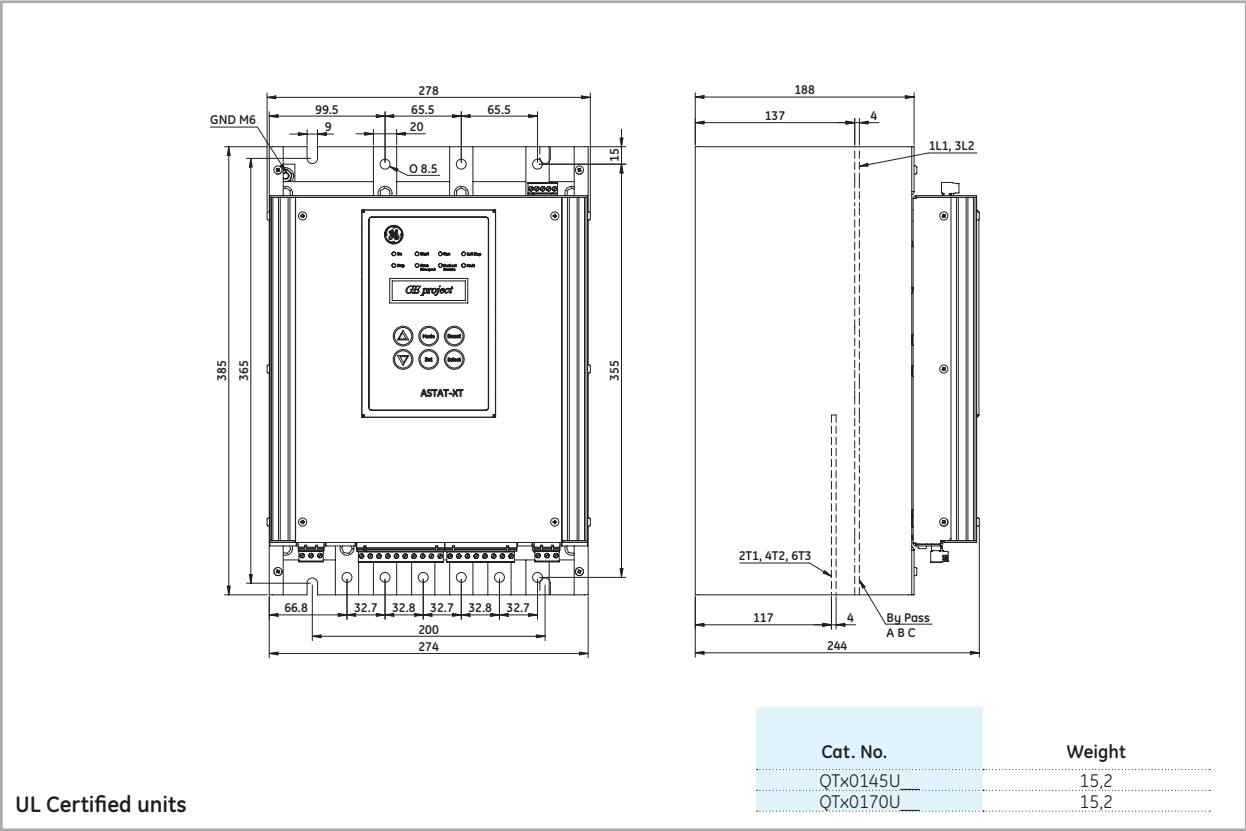
QTx0105U\_

15,2

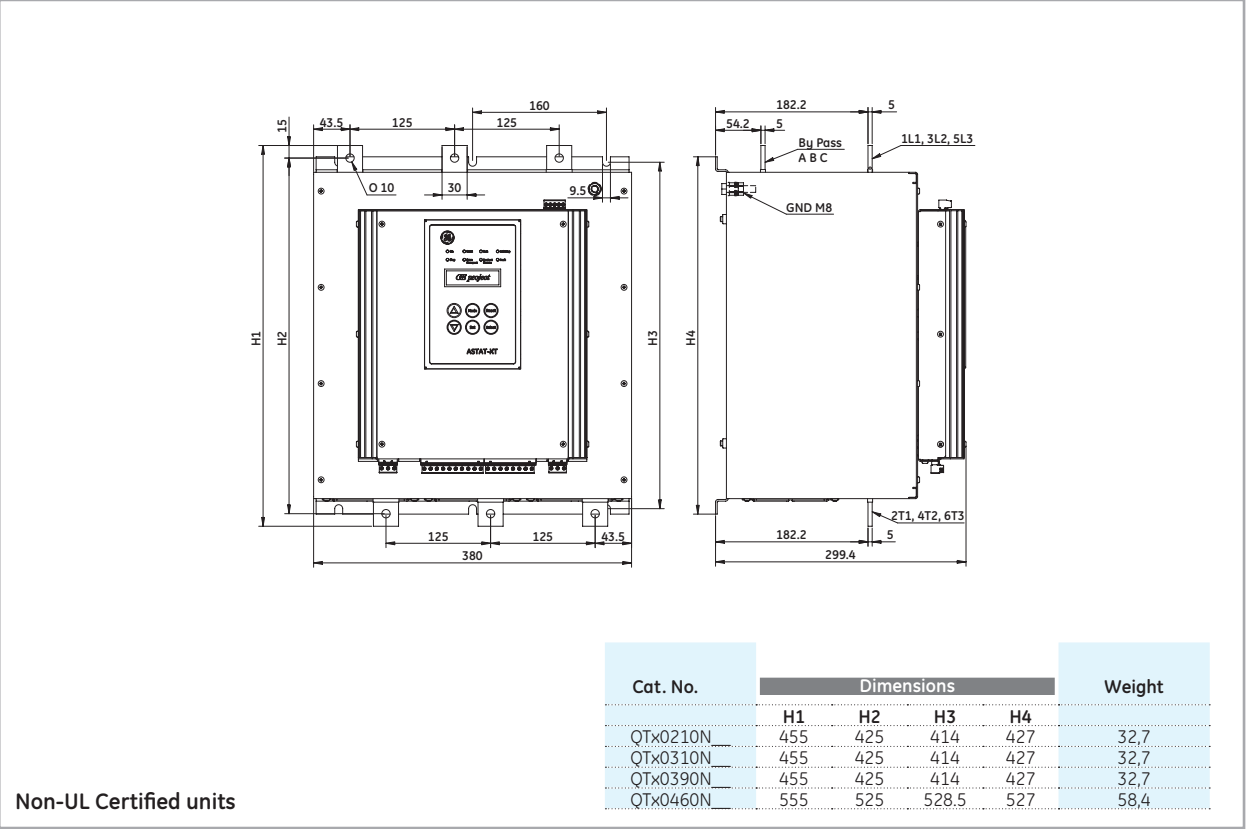
UL Certified units

Dimensions and weights

Cat. No.: QTx0145U\_ , QTx0170U\_

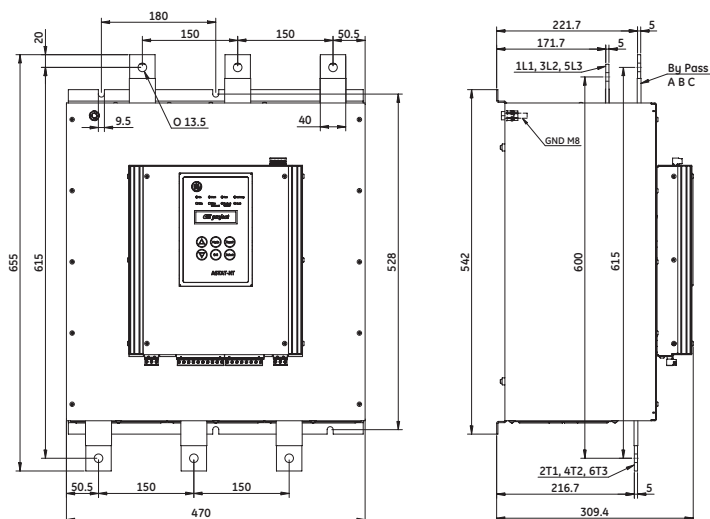


Cat. No.: QTx0210N\_ , QTx0315N\_ , QTx0390N\_ , QTx0460N\_



## Dimensions and weights

Cat. No.: QTx0580N\_



Non-UL Certified unit

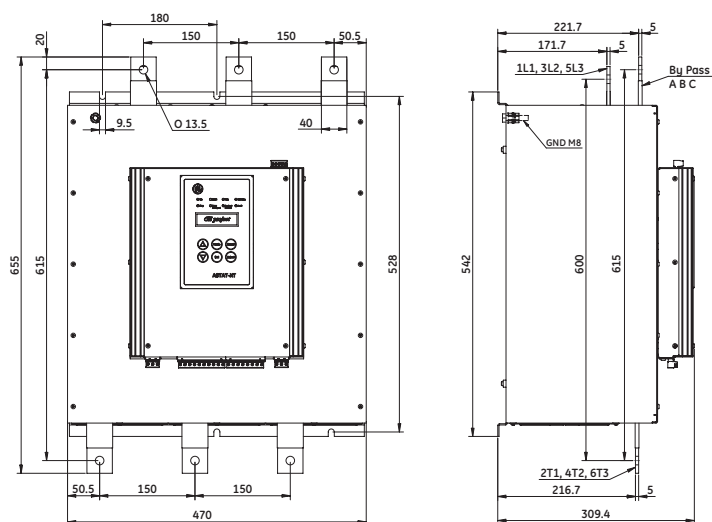
Cat. No.

QTx0580U\_

Weight

63,2

Cat. No.: QTx0650N\_



Non-UL Certified units

Cat. No.

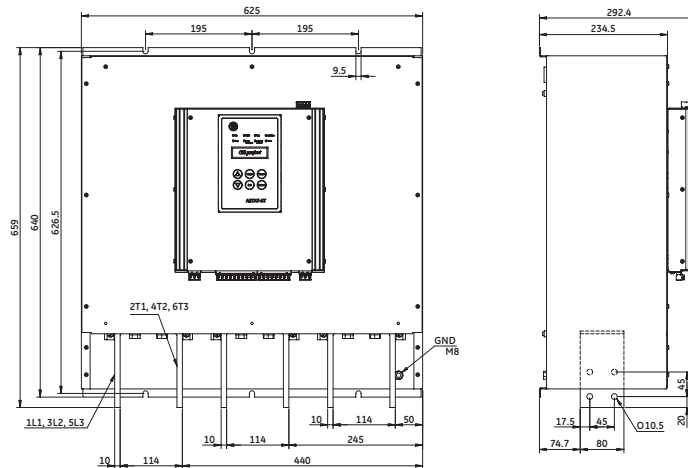
QTx0650N\_

Weight

64,8

## Dimensions and weights

Cat. No.: QTx0950N\_



### Remarks

1. This unit must be operated with a bypass contactor
  2. Add space for current transformers (supplied separately from the main unit) and bus bars for preparation for bypass
- Approximate current transformers dimensions: W=240mm, H=130mm, D=90mm

Non-UL Certified unit

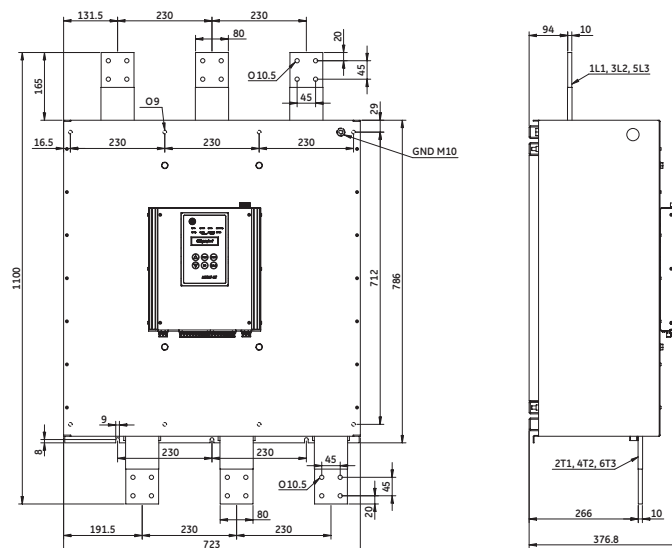
Cat. No.

QTx0950N\_

Weight

86,7

Cat. No.: QTx1100N\_ , QTx1400N



### Remarks

1. Units must be operated with a bypass contactor
2. Add space for current transformers (Supplied separately from main unit) and bus bars for preparation for bypass

Approximate current transformers dimensions:

W=240mm, H=130mm, D=90mm. (for 1100A unit, Cat Numbers QTx1100N\_

W=270mm, H=155mm, D=90mm. (for 1400A unit, Cat Numbers QTx1400N\_

Non-UL Certified unit

Cat. No.

QTx1100N\_

QTx1400N\_

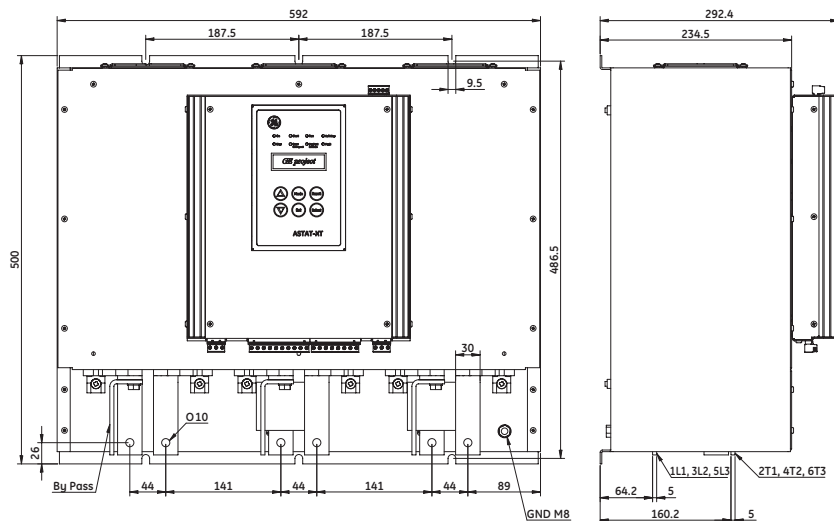
Weight

169,8

175,5

### Dimensions and weights

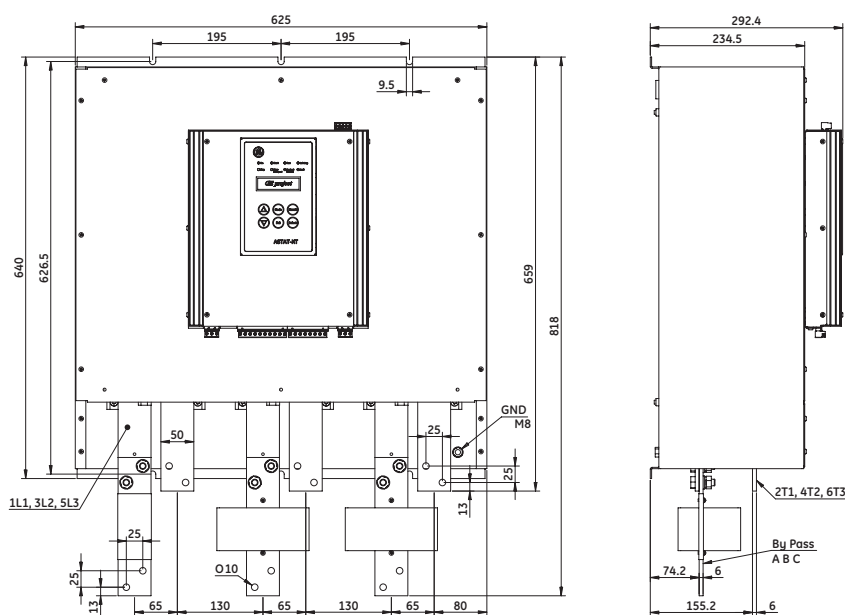
Cat. No.: QTx0210U\_, QTx0315U\_, QTx0390U\_



UL Certified unit

| Cat. No. | Weight |
|----------|--------|
| QTx0210U | 32,7   |
| QTx0310U | 32,7   |
| QTx0390U | 32,7   |

Cat. No.: QTx0460U\_

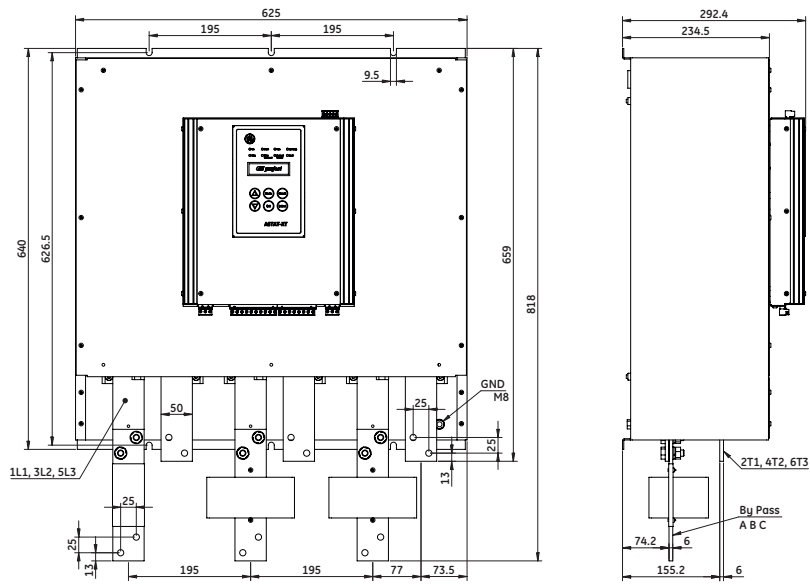


UL Certified unit

|          |        |
|----------|--------|
| Cat. No. | Weight |
| QTx0460U | 61,8   |

Dimensions and weights

Cat. No.: QTx0580U\_, QTx0820U\_



UL Certified unit

| Cat. No.  | Weight |
|-----------|--------|
| QTx0580U_ | 69,5   |
| QTx0820U_ | 69,5   |