

## POWER SUPPLY 3-PHASE, 24 V DC DIMENSION Q SERIES

QT40.241 POWER SUPPLY 24VDC 960W 40A

- Output current of 40 A
- Up to 95.3% efficiency
- Remote Function
- Maximum performance
- Integrated primary fuses



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### **PRODUCT DESCRIPTION**

Pulse Dimension Q is a series power supply with very high performance and reliability.

QT40.241 have built primary fuses that make it possible to connect the unit without the need for intermediate fuses up to 32 A (UL) which saves space and money. The efficiency is high over a wide load range, which results in reduced power consumption and longer life regardless of load current. An average efficiency is 94.7% with a peak value of 95.3%. The power loss at idle is very low, 9.5 W.

The bonus power provides 50% extra reserve with retained 24 V dc (60 A) which is an advantage when connected loads have high starting currents and to bridge temporary current peaks. The bonus power is limited to 4 seconds to avoid constant overloading of the power supply and wiring. In addition to the bonus effect leave the unit a very high short-circuit current (ms) that helps to secondary fuses. See technical data for example.

Active transient ensure operation also in very störrik electrical environment and also has QT40.241 active inrush current protection, which means a very low starting current, even if the unit has been in operation for a longer time. Especially useful for redundant / parallel-connected systems.

Simple diagnostics via DC-OK relay that falls on the output voltage deviates more than 10% from the set value, a green LED indicates DC-OK, Red LED indicates overload.

The unit can also be remote controlled for on / off function, three different connection options available. See the "Technical data". Can be used instead of expensive DC contactors when you need to break up the 24 V side (NB. The remote control function has no safety circuit and therefore should not be used in the security context).

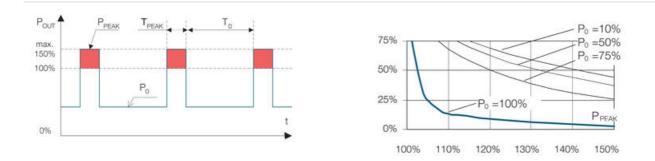
Active PFC reduces power consumption, harmonics close to zero, in addition, the power distribution in phases much smoother at power asymmetry. Bonus power

The power supply has bonus power that enables high power extraction with retained 24 V DC for 4 seconds, which is a major advantage when connected loads have high starting currents, such as the case with motors. How often bonus power can be utilised depends on the application. With the following diagram and formula, the repeat time can be calculated for each application. The bonus power is available as soon as the power supply is started and directly after a short circuit.

We recommend free space of 40 mm above and 20 mm under the power supply, and 5 mm at the sides.

Bonus power

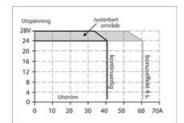
Operating cycle



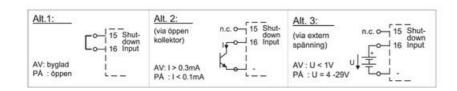
| Ро              | Nominal load current                                |
|-----------------|---|
| Ppeak           | Peak current  |
| То              | Time between bonus power                            |
| Tpeak           | Peak current I time                                 |
| Operating cycle | Tpeak / (Tpeak + To)                                |
| To=             | Tpeak - (operating cycle * Tpeak) / operating cycle |

Example: Peak current (Ppeak) is 50 A =125%. The peak time is 3 seconds. Nominal load current (Po) is 30 A. 30 A =75% of  $I_{nom}$ . According to the diagram, the operating cycle is about 0.45. To = 3 - (0.45 \* 3) / 0.45 = 3.6. Maximum repeat time of bonus power is 3.6 seconds.

#### Output characteristic



#### Remote control function

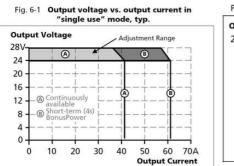


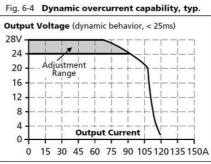
# SPECIFICATIONS

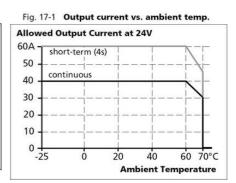
| Input voltage range | Wide-range |
|---------------------|------------|
| Number of phases    | 3          |
| Input voltage AC    | 380-480 V  |

| Input voltage a max76 V ACInvush current at 400 V ac typical5APower Factor at 400 V AC, full load. Typical6A60 46%Supply Froquency6A60 46%Power consumption at 400 V ac185 AOutput voltage6A0 ACOutput voltage min4V D COutput voltage max6A0 ACOutput voltage max6A0 ACPower Reduction Of 00 To 70 °C6A0 ACRippe. max6A0 ACTomperature Range Without Derating From25 °CProfestor At 400 V AC, full load. Typical6A0 ACProfestor At 400 V AC, full load. Typical6A0 ACPoint At 400 V AC, full load. Typical10 maxPoint At 400 V AC, full Load. Typical10 max  |   |                     |
|--|---|---------------------|
| Invisi nument at 400 Vac typicalSAPower Factor at 400 VAC, full load. Typical088Supply Froquency6x60 45%Supply Froquency185 APower consumption at 400 Vac185 AOutput voltage04 V DCOutput voltage max04 V DCOutput voltage max04 V DCOutput voltage max04 V DCPower Reduction Of 60 To 70* C04 V DCRiple. max000 V DTomperature Range Without Derating From25 °CEfficiency At 400 VAC, full load. Typical030 N DEfficiency At 400 VAC, full load. Typical030 N DEfficiency At 400 VAC, full load. Typical0300 NIthing International Constraints0300 NEfficiency At 400 VAC, full load. Typical0300 NIthing International Constraints0300 NIthing Internati   | Input voltage ac min                          | 323 V AC            |
| Power Factor at 400 V AC, full load. Typical0,88Supply Frequency50-60 ± %Power consumption at 400 V ac1.65 APower Supply24 V D COutput voltage24 V D COutput voltage main20 V D CPower Reduction Of 60 To 70 ° C20 V D CRipple. main100 m V pTemperature Range Without Derating From25 °CVoltage main26 °CVoltage main26 °CVoltage main26 °CVoltage main27 °CVoltage main26 °CVoltage main26 °CVoltage main27 °CVoltage main27 °CVoltage main10 °CVoltage main27 °CVoltage main26 °CVoltage main27 °CVoltage main28 °CVoltage main2  | Input voltage ac max                          | 576 V AC            |
| Supply Frequency50-60 ± 8%Power consumption at 400 V ac1.65 APower Supply2.40 DOutput voltage2.40 DOutput voltage main2.40 DOutput voltage main2.50 DPower Reduction Of 60 To 70 °C2.50 COutput voltage main2.50 CPower Reduction Of 60 To 70 °C2.50 CPower Reduction Of 70 °C2.50 C <th< th=""><th>Inrush current at 400 V ac typical</th><th>5 A</th></th<>  | Inrush current at 400 V ac typical            | 5 A                 |
| Power Consumption at 400 V ac   1,65 A     Power Supply   1,65 A     Output voltage   24 V DC     Output voltage min   24 V DC     Output voltage max   28 V DC     Output voltage max   00 A     Effect   960 W     Power Rauge 07 60 To 70 ° C   24 W //C     Ripple. max   100 mV pp     Temperature Range Without Derating From   -25 ° C     Efficiency At 400 V AC, Typical   96.3 %     Efficiency At 400 V AC, full load. Typical   95.3 %     Efficiency At 400 V Ac, full load. Typical   937000 h     Temperature Range Without Derating From   21 V m     Efficiency At 400 V Ac, full load. Typical   937000 h     Efficiency At 400 V Ac, full load. Typical   100 m     Popth   124 mm     Rippin   125 ° C     Rippin   126 ° C     Rippin   5.5 %     Efficiency At 400 V Ac, full load. Typical   95.3 %     Efficiency At 400 V Ac, full load. Typical   100 m     Inform   100 m     Efficiency At 400 V Ac, full load. Typical   5.7 %     Right   100 m  | Power Factor at 400 V AC, full load. Typical  | 0,88                |
| Type Power Supply   AC-DC     Output voltage   44 V DC     Output voltage min   24 V DC     Output voltage max   28 V DC     Output voltage max   60 W     Output voltage max   40 A     Deperted max   40 W CC     Power Reduction Of 60 To 70 °C   24 W/C     Riple. max   400 M V p     Temperature Range Without Denting From   25 °C     Efficiency At 400 V AC. Typical   60 °C     Efficiency At 400 V AC. Typical   63 %     Efficiency At 400 V AC, full load and +0° °C   6300 h     Mith   10 mm     Tenge At 400 V AC, full load and +0° °C   100 m V p     Vieta   100 m V p     Fildiency At 400 V AC, full load and +0° °C   6300 h     Mith   10 m m     Mith   10 m m     Fildient 400 V ac, full load and +0° °C   100 m     Popeh   10 m m     Fildient 400 V ac, full load and +0° °C   100 m     Fildient 400 V ac, full load method °C   100 m     Popeh   10 m m     Fildiency Max   100 m     Nore Mared Marcelleleeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee   | Supply Frequency                              | 50-60 ±6 %          |
| Output voltage24 V DCOutput voltage man24 V DCOutput voltage max28 V DCOutput Current40 AEffect960 WRover Reduction Of 60 To 70 °C24 W/C CancellanceRipple. max100 mV ppTemperature Range Without Derating From-25 °CTemperature Range Without Derating To94.7%Efficiency At 400 V AC, full load and +40 °C96.3%Bittinger At 400 V AC, full load and +40 °C97.5000 hWithh10 mmHeight11 mmHeight12 frameDipple55.8%SeriesSeriesApprovals56.8% CAL, ULApprovals58.6% CAL, ULMichard IP ToteLon98.6% CAL, ULApprovals58.6% CAL, ULApprovals58.6% CAL, ULMichard IP ToteLon98.6% CAL, ULApprovals68.6% CAL, ULConstant Constant Cons  | Power consumption at 400 V ac                 | 1,65 A              |
| Output voltage main24 V DCOutput voltage max28 V DCOutput Current40 AEffect960 WPower Reduction Of 60 To 70 °C24 W/°CRipple.max00 mV ppTemperature Range Without Derating From-25 °CTemperature Range Without Derating From-35 °CEfficiency At 400 V AC. Typical94,7 %Efficiency At 400 V AC, full load. Typical95.3 %Efficiency At 400 V AC, full load. Typical95.000 hUter Hight10 mmIde tight127 mmMitch127 mmRipple.maxSeroe mainApprovalsSeroe mainApprovalsDimension QApprovalsDimension Q<  | Type Power Supply                             | AC-DC               |
| Output voltage main24 V DCOutput voltage max28 V DCOutput Current40 AEffect960 WPower Reduction Of 60 To 70 °C24 W/°CRipple.max00 mV ppTemperature Range Without Derating From-25 °CTemperature Range Without Derating From-35 °CEfficiency At 400 V AC. Typical94,7 %Efficiency At 400 V AC, full load. Typical95.3 %Efficiency At 400 V AC, full load. Typical95.000 hUter Hight10 mmIde tight127 mmMitch127 mmRipple.maxSeroe mainApprovalsSeroe mainApprovalsDimension QApprovalsDimension Q<  | Outeutueltere                                 |                     |
| Output Voltage max28 V DCOutput Current40 ADutput Current40 AEffect960 WPower Reduction Of 60 To 70 °C24 W/°CRipple. max00 mV upTemperature Range Without Derating From-25 °CTemperature Range Without Derating From-25 °CTeffeiency At 400 V AC. Typical94.7 %Efficiency At 400 V AC, full load. Typical95.3 %Efficiency At 400 V AC, full load. Typical96.000 hTeffeite at 400 V ac, full load and +40 °C9600 hUtter full for and state of the |   |                     |
| Output Current40 AEffect960 WPower Reduction Of 60 To 70 ° C24 W/° CRipple: max100 mV pTemperature Range Without Derating From-25 °C CTemperature Range Without Derating From-26 °C CTemperature Range Without Derating From96.0 °C CTemperature Range Without Derating From97.0 °C CTemperature Range Without Derating From96.0 °C CEfficiency At 400 V AC, full load. Typical96.0 °C CBiffeitency At 400 V AC, full load. Typical96.0 °C CWith100 mCTemperature Range Without Derating From96.0 °C CWith101 mmHeight127 rmDepth127 rmWinght128 °C core on CSeriesDimension QApprovalsScrew on CForeirosDimension QApprovals96.0 °C CDerating Torpetotion128 °C CMinimum96.0 °C C </th <th></th> <th></th>  |   |                     |
| Effect960 WFeffect960 WPower Reduction Of 60 To 70 °C24 W/°CRipple: max100 mV ppTemperature Range Without Derating From25 °C CTemperature Range Without Derating To60 °C CEfficiency At 400 V AC. Typical96,3 %Efficiency At 400 V AC, full load. Typical95,3 %Biffeitence At 400 V ac, full load and +40 °C93000 hWidth100 mmTeg (EC 61709) 400 V ac, max loan, +40 °C97000 hWidth124 mmPopth127 mmWight1,5 kgTeg serveDimension QApprovalsDimension QApprovalsDimension QApprovals08 CE, CSA, GL, ULMetrail ProtectionAuminumBetrail ProtectionAuminumBetrail Protection20 mmBetrail Protection20 mmBetr  |   |                     |
| Power Reduction Of 60 To 70 ° C   24 W/° C     Ripple. max   100 mV pp     Temperature Range Without Derating From   25 ° C     Temperature Range Without Derating To   60 ° C     Temperature Range Without Derating To   94.7 %     Efficiency At 400 V AC. Typical   94.7 %     Efficiency At 400 V AC, full load. Typical   95.3 %     Iffetime at 400 V ac, full load and +40 ° C   69000 h     MTBF (IEC 61709) 400 V ac, max loan, +40° C   375000 h     Vidth   10 mm     Height   124 mm     Poph   127 mm     Vidth   127 mm     Fries   Screw on     Stress   Dimension Q     Approvals   EGC SA GL, UL     Approvals   Kerial Protection     Material Protection   Xuminium  | -   |                     |
| Ripple. max100 mV ppTemperature Range Without Derating From-25 °CTemperature Range Without Derating From-26 °CTemperature Range Without Derating To60 °CEfficiency At 400 V AC. Typical94,7 %Efficiency At 400 V AC, full load. Typical96,3 %Diffe file for 94 000 V ac, full load and +40 °C96000 hWithh100 mmMithh124 mmPepth124 mmDepth127 mmWight5 kgTemperature SampleDimension QReinspaceDimension QApprovalsCicc SCA GL, ULApprovalsCicc SCA GL, ULMatrial ProtectionAuminiumMaterial ProtectionCimminumMithhSimminumMaterial ProtectionSimminumMaterial ProtectionSimminumMithhSimminumMaterial ProtectionSimminumMaterial ProtectionSimminumMaterial ProtectionSimminumMithhold ProtectionSimminumMaterial ProtectionSimminum<   |   |                     |
| Temperature Range Without Derating From   -25 °C     Temperature Range Without Derating To   60 °C     Temperature Range Without Derating To   60 °C     Efficiency At 400 V AC. Typical   94,7 %     Efficiency At 400 V AC, full load. Typical   95,3 %     Iffetime at 400 V ac, full load and +40 °C   6900 h     MTBF (IEC 61709) 400 V ac, max loan, +40 °C   6900 h     With   10 mm     Height   124 mm     Depth   127 mm     Warght   5 crew on     Series   Dimension Q     Approvals   C creaty output     Yes   Yes     Matrial Protection   Auminium   |   |                     |
| Temperature Range Without Derating To   60 °C     Efficiency At 400 V AC. Typical   94,7 %     Efficiency At 400 V AC, full load. Typical   95,3 %     Iffetime at 400 V ac, full load and +40 °C   6000 h     MTBF (IEC 61709) 400 V ac, max loan, +40 °C   75000 h     Vidth   10 nm     Popth   124 nm     Vieght   127 nm     Vieght   Scew on     Series   Dimension Q     Approvals   CSC AS CA, UL     Popth   CS CA, CA, UL     Material Protection   Auminium     Series   Dimension Q     Approvals   Scew SA CA, UL     Dimension Q   Scew SA CA, UL     Material Protection   Auminium   |   |                     |
| Ffriciency At 400 V AC. Typical   94,7 %     Efficiency At 400 V AC, full load. Typical   95,3 %     Lifetime at 400 V AC, full load and +40 °C   69000 h     MTBF (IEC 61709) 400 V ac, max loan, +40 °C   375000 h     Width   110 mm     Height   124 mm     Popth   1,5 kg     Clamp type   Screw on     Feries   Dimension Q     Aprovals   68, CE, CSA, GL, UL     Approvals   Auminium     Material Protection   Auminium   | Temperature Range Without Derating From       | -25 °C              |
| Efficiency At 400 V AC, full load. Typical95,3 %Lifetime at 400 V ac, full load and +40 ° C69000 hMTBF (IEC 61709) 400 V ac, max loan, +40 ° C375000 hWitht10 mmHeight124 mmDepth127 mmVieight5.kgCampa typeScrew onSeriesDimension QApprovalsCS CS CS A, GL, ULApprovalsSeries QApprovalsYesApprotectionXes QMaterial ProtectionXes QKeine at 400 V AC, full load. TypicalSeriesSeriesDimension QApprovalsSeriesApprovalsSeriesDimension QSeriesApprovalsSeriesDimension QApprovalsSeriesDimension QSeriesDimension QBoth QSeriesDimension QApprovalsSeriesDimension QBoth QSeriesDimension QBoth QSeriesDimension QBoth  | Temperature Range Without Derating To         | 60 °C               |
| Lifetime at 400 V ac, full load and +40 ° C69000 hMTBF (IEC 61709) 400 V ac, max loan, +40 ° C375000 hWidth10 mmWidth10 mmHeight124 mmDepth127 mmWeight1,5 kgClamp typeScrew onSeriesDimension QApprovalsCB, CE, CSA, GL, ULDc relay outputYesMaterial ProtectionJuniniumAptor VAC, full load. Typical.25 ms   | Efficiency At 400 V AC. Typical               | 94,7 %              |
| MTBF (IEC 61709) 400 V ac, max loan, +40 °C   37500 h     Width   10 mm     Height   124 mm     Depth   127 mm     Weight   1,5 kg     Clamp type   Screw on     Series   Dimension Q     Approvals   CB, CE, CSA, GL, UL     Dc relay output   Yes     Material Protection   Stremantum     Auminium   Stremantum   | Efficiency At 400 V AC, full load. Typical    | 95,3 %              |
| Width110 mmHeight124 mmDepth127 mmWeight1,5 kgClamp typeScrew onSeriesDimension QApprovalsCB, CE, CSA, GL, ULDt relay outputYesMaterial ProtectionAurninumKong<  | Lifetime at 400 V ac, full load and +40 ° C   | 69000 h             |
| Height124 mmDepth127 mmWeight1,5 kgClamp typeSrew onSeriesDimension QaApprovalsCB, CE, CA, GL, ULDetail ProtectionYesMaterial ProtectionAuminiumBold-up typeSenseSeriesSenseDimension QaSenseDimension QaSenseDime   | MTBF (IEC 61709) 400 V ac, max loan, +40 °C   | 375000 h            |
| Depth127 mmWeight1,5 kgClamp typeScrew onSeriesDimension QApprovalsCB, CE, CSA, GL, ULDc relay outputYesMaterial ProtectionAuminiumBold-up time at 400 VAC, full load. Typical.25 ms   | Width   | 110 mm              |
| Weight1,5 kgClamp typeScrew onSeriesDimension QApprovalsCB, CE, CSA, GL, ULDc relay outputYesMaterial ProtectionAluminiumHold-up time at 400 V AC, full load. Typical.25 ms  | Height  | 124 mm              |
| Clamp type   Screw on     Series   Dimension Q     Approvals   CB, CE, CSA, GL, UL     DC relay output   Yes     Material Protection   Aluminium     Hold-up time at 400 V AC, full load. Typical.   25 ms   | Depth   | 127 mm              |
| SeriesDimension QApprovalsCB, CE, CSA, GL, ULDC relay outputYesMaterial ProtectionAluminiumHold-up time at 400 V AC, full load. Typical.25 ms  | Weight  | 1,5 kg              |
| ApprovalsCB, CE, CSA, GL, ULDC relay outputYesMaterial ProtectionAluminiumHold-up time at 400 V AC, full load. Typical.25 ms   | Clamp type                                    | Screw on            |
| DC relay outputYesMaterial ProtectionAluminiumHold-up time at 400 V AC, full load. Typical.25 ms   | Series  | Dimension Q         |
| Material Protection Aluminium   Hold-up time at 400 V AC, full load. Typical. 25 ms  | Approvals                                     | CB, CE, CSA, GL, UL |
| Hold-up time at 400 V AC, full load. Typical. 25 ms  | DC relay output                               | Yes                 |
|  | Material Protection                           | Aluminium           |
| IP Class IP20  | Hold-up time at 400 V AC, full load. Typical. | 25 ms               |
|  | IP Class                                      | IP20                |

#### Yes







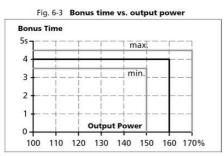


Fig. 11-1 Efficiency vs. output current at 24V, typ. Efficiency

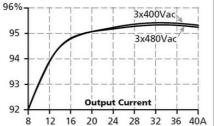
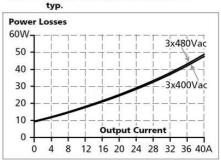


Fig. 11-2 Losses vs. output current at 24V,

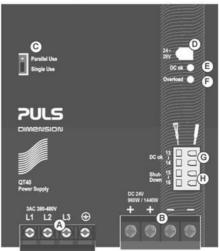


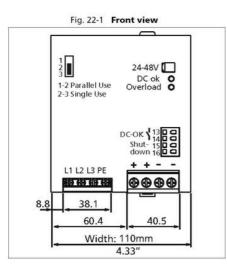
| Maximal | I wire length" for a fast (magnetic) tripping: |                    |                    |                    |  |
|---------|--|--------------------|--------------------|--------------------|--|
|         | 0.75mm <sup>2</sup>                            | 1.0mm <sup>2</sup> | 1.5mm <sup>2</sup> | 2.5mm <sup>2</sup> |  |
| C-2A    | 28m  | 38m                | 54m                | 78m                |  |

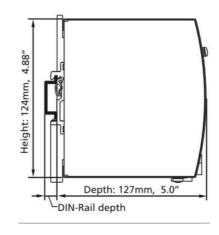
| C-ZA  | 20111 | 2011 | 54111 | 7011 |
|-------|-------|------|-------|------|
| C-3A  | 26m   | 35m  | 50m   | 74m  |
| C-4A  | 19m   | 26m  | 38m   | 58m  |
| C-6A  | 12m   | 16m  | 24m   | 32m  |
| C-8A  | 9m    | 12m  | 17m   | 25m  |
| C-10A | 7m    | 10m  | 15m   | 21m  |
| C-13A | 4m    | 5m   | 7m    | 11m  |
| B-6A  | 19m   | 26m  | 35m   | 59m  |
| B-10A | 11m   | 17m  | 26m   | 37m  |
| B-13A | 10m   | 13m  | 21m   | 32m  |
| B-16A | 8m    | 11m  | 14m   | 24m  |
| B-20A | 4m    | 6m   | 8m    | 14m  |
|       |       |      |       |      |

| Option A:                | Co-15 Shut- | Option.8:<br>(via open<br>collector) | n.c. 0-15 Shut-<br>down<br>16 Input | Option C:<br>(via external n.c. o-15 Shut-<br>voltage |
|--------------------------|-------------|--------------------------------------|-------------------------------------|---|
| OFF: linked<br>ON : open | L           | OFF: 1 > 0.3mA<br>ON : 1 < 0.1mA     | Kal:_                               | OFF: U < 1V U   |

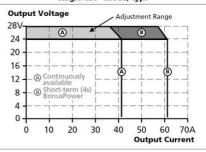
Fig. 15-1 Front side

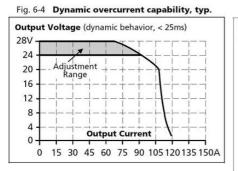






#### Fig. 6-1 Output voltage vs. output current in "single use" mode, typ.





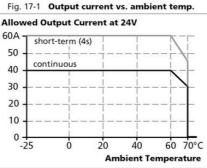
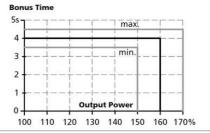
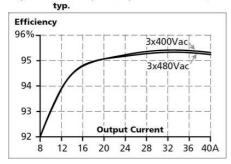


Fig. 6-3 Bonus time vs. output power



#### Fig. 11-1 Efficiency vs. output current at 24V,



#### Fig. 11-2 Losses vs. output current at 24V,

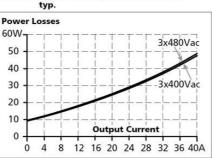


Fig. 15-1 Front side

Maximal wire length\*) for a fast (magnetic) tripping:

|       | 0.75mm <sup>2</sup> | 1.0mm <sup>2</sup> | 1.5mm <sup>2</sup> | 2.5mm <sup>2</sup> |
|-------|---------------------|--------------------|--------------------|--------------------|
| C-2A  | 28m                 | 38m                | 54m                | 78m                |
| C-3A  | 26m                 | 35m                | 50m                | 74m                |
| C-4A  | 19m                 | 26m                | 38m                | 58m                |
| C-6A  | 12m                 | 16m                | 24m                | 32m                |
| C-8A  | 9m                  | 12m                | 17m                | 25m                |
| C-10A | 7m                  | 10m                | 15m                | 21m                |
| C-13A | 4m                  | 5m                 | 7m                 | 11m                |
| B-6A  | 19m                 | 26m                | 35m                | 59m                |
| B-10A | 11m                 | 17m                | 26m                | 37m                |
| B-13A | 10m                 | 13m                | 21m                | 32m                |
| B-16A | 8m                  | 11m                | 14m                | 24m                |
| B-20A | 4m                  | 6m                 | 8m                 | 14m                |

#### Option A: Construction A: Construction C Construc

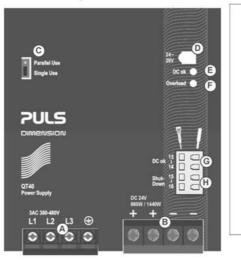


Fig. 22-1 Front view

