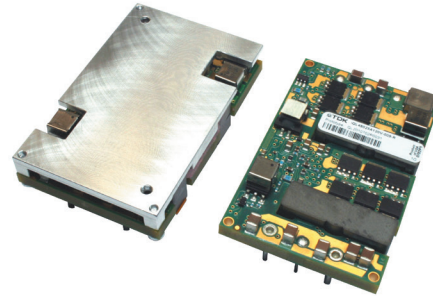


72-308W, 18 to 36V or 36 to 75V Input Isolated DC-DC Quarter Brick

<https://product.tdk.com/en/power/iQL>
www.emea.lambda.tdk.com/uk/products/iql



The iQL series of isolated DC-DC converters deliver up to 308W in a compact and high-performance industry standard quarter footprint. Capable of operating from nominal input voltages of 24V (18-36V) or 48V (36 to 75V), the converter provides fully regulated outputs from 1.2V up to 28V for demanding environments in telecom, datacom, computing and industrial applications. The output voltage can be adjusted from -20 to +10% of nominal using the trim connection to accommodate non-standard voltages.

| Features | Benefits |
|---|---|
| • High Operating Efficiency up to 94% | • Reduces Heat Losses/Dissipation in System |
| • Open frame or Baseplate Construction | • Mounting Flexibility for Low profile or Conduction Cooling |
| • Available from 1.2V up to 28V outputs | • Flexible and wide output voltage coverage for various loads |
| • Constant Switching Frequency | • Predictable EMI |
| • Monotonic Start-Up Into a Pre-Bias Output | • Reliable and Stable Output in Multi-Load conditions |

| Model Selector | | | | | | | | | |
|--|-------------------|--------------------|-------------------------|-----------------|---------------|------------|-----------------|-------------------|-----------|
| Model | Input Voltage (V) | Output Voltage (V) | Output Adjust Range (A) | Max Current (A) | Max Power (W) | Efficiency | On/Off Polarity | Pic Length (inch) | Baseplate |
| iQL24021A120V-001-R | 20 - 36 | 12 | 9.6 - 13.2 | 21 | 252 | 92.0% | Neg | 0.145" | Yes |
| iQL24021A120V-009-R | 20 - 36 | 12 | 9.6 - 13.2 | 21 | 252 | 92.0% | Neg | 0.180" | Yes |
| iQL24040A050V-001-R | 18 - 36 | 5 | 4.0 - 5.5 | 40 | 200 | 91.0% | Neg | 0.145" | Yes |
| iQL24040A050V-009-R | 18 - 36 | 5 | 4.0 - 5.5 | 40 | 200 | 91.0% | Neg | 0.180" | Yes |
| iQL24050A033V-009-R | 18 - 36 | 3.3 | 2.64 - 3.63 | 50 | 165 | 90.5% | Neg | 0.180" | Yes |
| iQL48011A280V-008-R | 36 - 75 | 28 | 22.4 - 30.8 | 11 | 308 | 92.5% | Pos | 0.180" | Yes |
| iQL48011A280V-009-R | 36 - 75 | 28 | 22.4 - 30.8 | 11 | 308 | 92.5% | Neg | 0.180" | Yes |
| iQL48011A280V-0A9-R * | 36 - 75 | 28 | 16.8 - 30.8 | 11 | 308 | 92.5% | Neg | 0.180" | Yes |
| iQL48025A120V-001-R | 36 - 75 | 12 | 9.6 - 13.2 | 25 | 300 | 94.0% | Neg | 0.145" | Yes |
| iQL48025A120V-009-R | 36 - 75 | 12 | 9.6 - 13.2 | 25 | 300 | 94.0% | Neg | 0.180" | Yes |
| iQL48025A120V-0B9-R | 36 - 75 | 12 | 9.6 - 13.2 | 25 | 300 | 94.0% | Neg | 0.180" | No |
| iQL48045A050V-001-R | 36 - 75 | 5 | 4.0 - 5.5 | 45 | 225 | 91.0% | Neg | 0.145" | Yes |
| iQL48045A050V-009-R | 36 - 75 | 5 | 4.0 - 5.5 | 45 | 225 | 91.0% | Neg | 0.180" | Yes |
| iQL48045A050V-0B3-R ** | 36 - 75 | 5 | 4.0 - 5.5 | 45 | 225 | 91.0% | Neg | 0.145" | No |
| iQL48045A050V-0B9-R | 36 - 75 | 5 | 4.0 - 5.5 | 45 | 225 | 91.0% | Neg | 0.180" | No |
| iQL48060A033V-003-R ** | 36 - 75 | 3.3 | 2.64 - 3.63 | 60 | 198 | 91.0% | Neg | 0.145" | Yes |
| iQL48060A033V-009-R | 39 - 75 | 3.3 | 2.64 - 3.63 | 60 | 198 | 91.0% | Neg | 0.180" | Yes |
| iQL48060A033V-0B9-R | 39 - 75 | 3.3 | 2.64 - 3.63 | 60 | 198 | 91.0% | Neg | 0.180" | No |
| iQL48060A025V-008-R | 36 - 75 | 2.5 | 2.0 - 2.75 | 60 | 150 | 89.0% | Pos | 0.180" | Yes |
| iQL48060A025V-0B3-R ** | 36 - 75 | 2.5 | 2.0 - 2.75 | 60 | 150 | 89.0% | Neg | 0.145" | No |
| iQL48060A025V-0B9-R | 36 - 75 | 2.5 | 2.0 - 2.75 | 60 | 150 | 89.0% | Neg | 0.180" | No |
| iQL48060A012V-0B3-R ** | 36 - 75 | 1.2 | 0.96 - 1.32 | 60 | 72 | 83.5% | Neg | 0.145" | No |

Notes

* With higher OCP limit up to 15A

** Non Latching OVP

| Related Products | | |
|---|--------------------------------|---|
| Type | Part Number | Description |
| Isolated DC-DC Converter | iQG | 300W-504W, Input 36-75V, Isolated Quarter Brick |
| Isolated DC-DC Converter | iEH | 300W, Input 36-75V, Isolated Eighth Brick |
| Isolated DC-DC Converter | iEA | 78W, Input 36-75V, Isolated Eighth Brick |
| Isolated DC-DC Converter | GQA | 120W Industrial, Input 9-36V, Isolated Quarter Brick |
| Non-Isolated DC-DC Converter | iBH | 80W/20A, 3.5-14Vin, 0.7 - 5.5Vout, DOSA Compatible |
| Non-Isolated DC-DC Converter | iCH | 85W/12A, 4.5-14Vin, 0.7 - 8.5Vout, DOSA Compatible |
| Non-Isolated DC-DC Buck-Boost Converter | i7C | 300W, Input 9-53V or 9-36V, Output 9.6-48V 8A, 5-28V 12.5A or 8-24V 20A |
| Input Filter | iDQ | 75V / 10A Filter |
| Evaluation Board | FQX-HQA-EVK-D0 | Evaluation board (no modules) that fits standard Eighth or Quarter brick and FQx or iDQ input filters |

| Specifications | | | | | | | |
|--|--------------------|------|--|--------------|--------------|--------------------|-------------|
| Model | | 1.2V | 2.5V | 3.3V | 5V | 12V | 28V |
| Input | | | | | | | |
| Input Voltage Range | (iQL24) (iQL48) | Vdc | 18 - 36 | | 20 - 36 | | |
| | | | 36 - 75 | | | | |
| Input Transient, 100 ms | | Vdc | 50 (iQL24); 100 (iQL48) | | | | |
| Input Current (max) | (iQL24) (iQL48) | A | | 12 | 13 | 14.5 | |
| | | | 3 | 5.2 | 7 | 7.5 | 10.5 |
| Turn-ON Input Voltage (typ) | (iQL24) (iQL48) | Vdc | 16.9 | | 19.9 | | |
| | | | 34.2 - 34.9 | | | | |
| Turn-OFF Input Voltage (typ) | (iQL24) (iQL48) | Vdc | 16.0 | | 18.8 | | |
| | | | 32.4 - 33.2 | | | | |
| Efficiency (typical) | | % | Refer to Model Selector Table | | | | |
| Safety Certifications and Markings | | - | IEC/UL/CSA/EN 62368-1, 60950-1, CE Mark and UKCA Mark | | | | |
| Output | | | | | | | |
| Output Voltage Initial Setpoint | (iQL24) (iQL48) | Vdc | | 3.23 - 3.37 | 4.88 - 5.12 | 11.3 - 11.9 | |
| | | | 1.17 - 1.23 | 2.45 - 2.55 | | 11.7 - 12.3 | 27.4 - 28.6 |
| Output Voltage Tolerance | (iQL24) (iQL48) | Vdc | | 3.20 - 3.40 | 4.85 - 5.15 | 11.2 - 12.0 | |
| | | | 1.16 - 1.24 | 2.42 - 2.58 | 3.23 - 3.37 | 11.6 - 12.4 | 27.2 - 28.8 |
| Line Regulation | (iQL24) (iQL48) | mV | | 2 | 4 | 40 | |
| | | | 1 | 1.5 | 2 | 3 | 50 |
| Load Regulation | (iQL24) (iQL48) | mV | | 2 | 4 | 70 | |
| | | | 1 | 1.5 | 3 | 3 | 40 |
| Remote Sense | | | Yes | Yes | Yes | Yes ⁽³⁾ | Yes |
| External Load Capacitance | (iQL24) (iQL48) | uF | | 488 - 40,000 | 488 - 25,000 | 470 - 5,000 | |
| | | | 488 - 60,000 | 488 - 40,000 | | 488 - 8,000 | 480 - 3,300 |
| Ripple & Noise (typ) | (iQL24) (iQL48) | mVpp | | 27 | 27 | 65 | |
| | | | 30 | 30 | 35 | 40 | 310 |
| Switching Frequency (fixed) | (iQL24) (iQL48) | kHz | | 125 | 130 | 120 | |
| | | | 110 | 125 | 130 | 125 | 125 |
| Overcurrent Protection (hiccup) | (iQL24) (iQL48) | A | | 57 | 44 | 23 | |
| | | | 71 | 69 | 70 | 54 | 12.5 |
| Over Voltage Protection ⁽²⁾ | | Vdc | 1.5 | 3.1 | 4.1 | 6.1 | 33.2 |
| Over Temperature Protection | | - | Auto recovery | | | | |
| Environmental | | | | | | | |
| Operating Temperature (Tc) | | °C | -40 up to 125 (maximum temperature is model dependent, check the product specifications) | | | | |
| Storage Temperature | | °C | -55 to 125 | | | | |
| Humidity (non condensing) | | %RH | 10 - 95 | | | | |
| Cooling | | - | Conduction, convection or forced air (See product specifications for derating) | | | | |
| Isolation Voltage | | Vdc | 1500 (Input to Output; Output to Baseplate) | | | | |
| Shock | | - | MIL-STD-202G, Method 213B, Test Condition 1 | | | | |
| Vibration | | - | 5 to 50 Hz (0.5g); 50 to 500 Hz (1.5g); three axes; Bellcore TR-EOP-000063-5.4.4 | | | | |

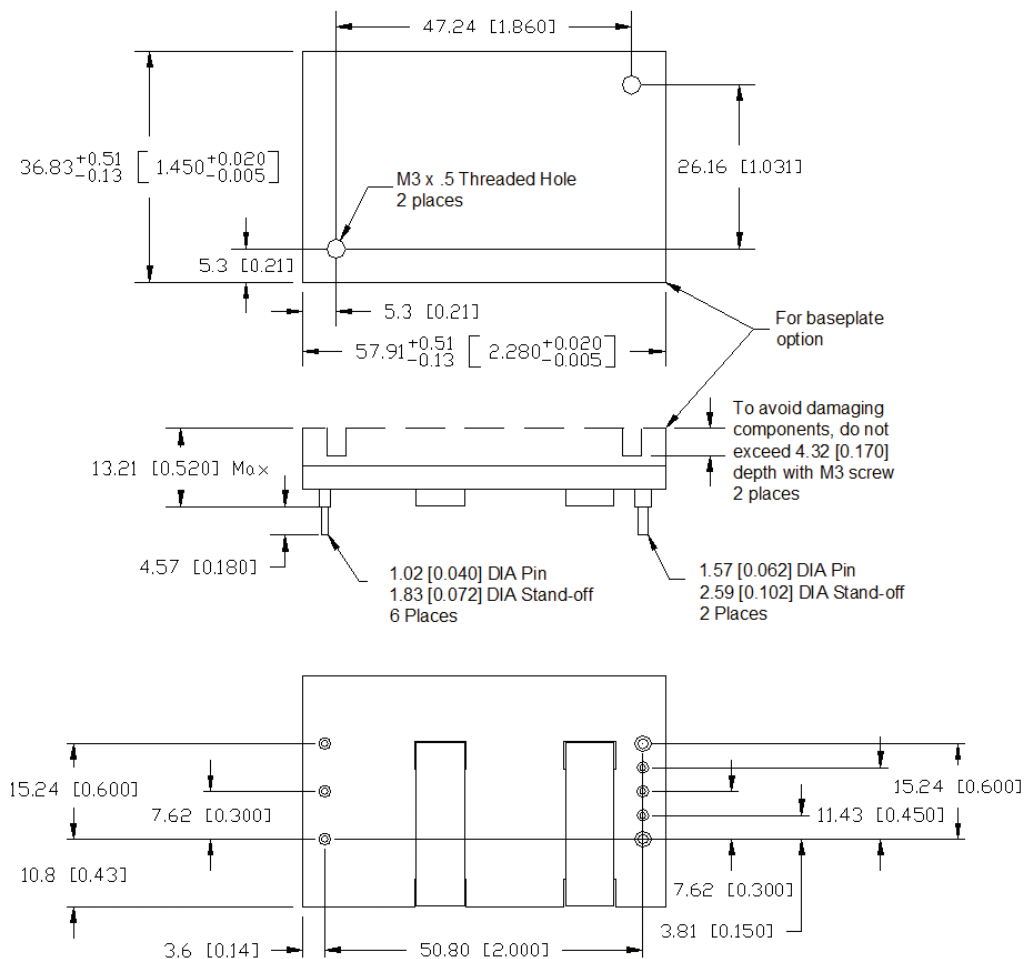
| Specifications | | 1.2V | 2.5V | 3.3V | 5V | 12V | 28V |
|---|--------|---------------------------------|------|------|----|-----|-----|
| Other | | | | | | | |
| Weight (max) | g | 70 (baseplate); 55 (open frame) | | | | | |
| Size (LxWxH) | mm | 57.91 x 36.83 x ≤13.21 | | | | | |
| Size (LxWxH) | Inches | 2.28 x 1.45 x ≤0.52 | | | | | |
| MTBF - Telcordia SR-332 (100% Load, 40°C) | MHrs | > 3 | | | | | |
| Warranty | yrs | 3 | | | | | |

Notes

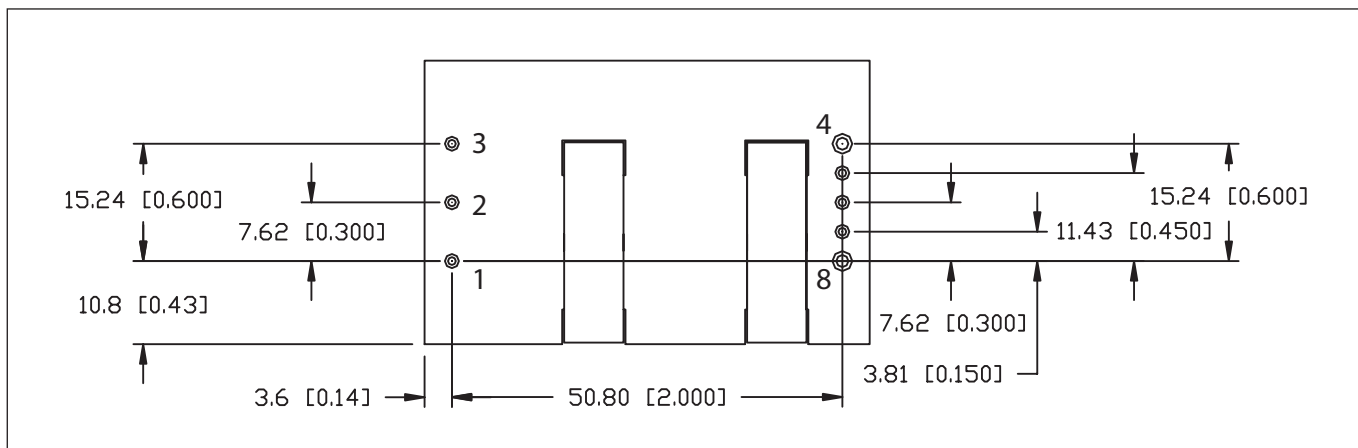
- (1) See website for detailed product specifications.
- (2) Default Over Voltage Protection is Latching unless otherwise indicated. Refer to Model Selector Table.
- (3) iQL24021A120V has remote sense, iQL48025A120V does not have remote sense.

Mechanical Specification

Dimensions are in mm [in]. Unless otherwise specified tolerances are: $x.x \pm 0.5$ [0.02], $x.xx$ and $x.xxx \pm 0.25$ [0.010].



Recommended PCB Hole Pattern



PIN Assignment

| Pin | Function | Pin | Function |
|-----|----------|-----|---------------------------|
| 1 | Vin(+) | 5 | Sense (+) (if applicable) |
| 2 | On/Off | 6 | Trim |
| 3 | Vin(-) | 7 | Sense (+) (if applicable) |
| 4 | Vo(-) | 8 | Vo(+) |

Pin base material is brass with gold over nickel plating.



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