

CON-EURO DC-DC CONVERTER



POSITIVE PROBLEM SOLVING



This range of 19" plug-in DC-DC Converters are available with either 110VDC or 24VDC input and provides isolated and floating outputs of 5V, 24V, 48V, and 110V.

The series have been designed for applications that demand high reliability when subjected to harsh operating conditions. The units have a >750,000 hour MTBF at 40°C and can operate in ambient temperatures of -40°C to +85°C. The converters can be further ruggedised with the addition of conformal coating and the securing of the larger components. The units are suitable for many applications including rail, industrial and telecoms.

- + Extended Operating Temperature Range
- + Wide DC Input Voltage Range
- + Reverse Polarity Protected
- + Rugged Construction
- + Zero Load Operation
- + Remote ON/OFF



CON-EURO DC-DC CONVERTER



SELECTION TABLE

| Part Number | Input Voltage | Output Voltage | Output Current | Maximum Power | Dimensions / Weight |
|-----------------|------------------------|----------------|----------------|---------------|---------------------|
| CON-50 24-5 | 24Vdc ±30% (±40% Dyn) | 5VDC | 10A | 50W | 3U × 7HP / 385g |
| CON-150 24-48 | 24Vdc ±30% (±40% Dyn) | 48VDC | 3.1A | 150W | 3U × 10HP / 570g |
| CON-150 24-110 | 24Vdc ±30% (±40% Dyn) | 110VDC | 1.35A | 150W | 3U × 10HP / 570g |
| CON-300 24-24 | 24Vdc ±20% | 24VDC | 12.5A | 300W | 3U × 14HP / 1kg |
| CON-50 110-5 | 110Vdc ±30% (±40% Dyn) | 5VDC | 10A | 50W | 3U × 7HP / 385g |
| CON-50 110-24 | 110Vdc ±30% (±40% Dyn) | 24VDC | 2.1A | 50W | 3U × 7HP / 385g |
| CON-150 110-48 | 110Vdc ±30% (±40% Dyn) | 48VDC | 3.1A | 150W | 3U × 10HP / 570g |
| CON-300 110-110 | 110Vdc ±30% (±40% Dyn) | 110VDC | 2.7A | 300W | 3U × 14HP / 935g |

OPTIONS

| CODE | DESCRIPTION |
|------|---|
| /CC | Conformal coating and additional fixing of components |



TECHNICAL DATA

| Protection Pr | GENERAL | | | | | | |
|---|---|--|--|--|--|--|--|
| Copicial Signals | Protection | IP20 | | | | | |
| Inhibit ON 137 to Vin or Open, OFF + 5V to 0V | Connector | H15 DIN 61612; rear side | | | | | |
| Test Point for U_ | Optical Signals | LEDs (green) for V _{IN} :V _{OUT} | | | | | |
| Restrict Safety DIN EN 60950, VDC 0605 Overload and short circuit protected Topus Ripple 15% Safety Ripple 15% Safety Ripple 15% Safety Ripple Safety Protection Reverse polarity protected Safety South Ripple Safety South Ripple | Remote ON/OFF | | | | | | |
| Electrical Safety DIN EN 60950, VDE 0805 Over-local and short circuit protected Input Pipole (19)4 1904 | Test Point for U _A | 2mm test contacts at the front panel | | | | | |
| Input Rippie | Warranty | 2 Years | | | | | |
| Input Protection Reverse polarity protected S.AT.(50-10-5, 50-110-24) S.ISAT.(50-10-148); S.AT.(50-10-48); S.AT.(50-24-48, 150-24-148, 150-24-148); Z.OT.(50-24-24); Z.OT.(50-24-24); Z.OT.(50-24-148, 150-24-148); Z.OT.(50-24-148); Z.OT.(50-24-14 | Electrical Safety | DIN EN 60950, VDE 0805 Overload and short circuit protected | | | | | |
| SART-(\$6-24-5, 300-10-110) SART-(\$60-24-18), 150-24-110): 20AT-(\$500-24-24] | Input Ripple | 15% | | | | | |
| Voltage Tolerance < ±1%, < ±2% 300-24-24 | Input Protection | | | | | | |
| Voltage Protection V _{Out} + +10% Dynamic Regulation Tolerance < ± 2% | <td colspan="6">OUTPUT</td> | OUTPUT | | | | | |
| Bypale < 100mVpp [50MHz 50Ω] | Voltage Tolerance | < ±1%, < ±2% 300-24-24 | | | | | |
| Ripple < 100mVpp [50MHz 5002] | Voltage Protection | V _{OUT} + +10% | | | | | |
| Noise < 200m/tpp (200MHz 50/2) | Dynamic Regulation Tolerance | < ±2% | | | | | |
| Start-up Delay Time | Ripple | < 100mVpp [50MHz 50Ω] | | | | | |
| Output Current I₂ = 0 - 10A Current Limit 105 loase (300-24-24), 1.1 loase (50-24-5, 50-110-5), 1.2 loase (All other units) Overload Characteristic Permanent short circuit operation Parallel Operation Yes for higher output power units Redundant Operation 300-24-24 Efficiency > 85% @ V lock AMBIENT CHARACTERISTICS | Noise | < 200mVpp [200MHz 50Ω] | | | | | |
| Current Limit 105 coxx (300-24-24), Lil _{coxx} (50-24-5, 50-10-5), 12 coxx (All other units) Overload Characteristic Permanent short circuit operation Parallel Operation Yes for higher output power units Redundant Operation 300-24-24 Efficiency >85% @ V _{NOA} Ambient Temperature -40 to +85°C (+60°C 300-24-24), class TX according DIN EN 50155 Relative Humidity Maximum 95%, non-condensing (option /CC for conformal coating) Cooling External forced cooling (e.g. Fan level below module carrier) (Internal fan for 300-24-24) Derating Without external cooling from +50°C/2.5% per 1°C EMC EMISSION & IMMUNITY Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transler/Surge 18kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 1500 V _{or} Imin, 500V 300-24-24 Input to Ground 1500 V _{or} Imin, 500V 300-24-24 Input to Ground 1500 V _{or} Imin, 500V 300-24-24 Input to Output 1500 V _{or} Imin, 500V 300-24-24 Treeping Distance 5-150Hz SHOCK & VIBRATION Frequency Range 5-150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Start-up Delay Time | < 200ms, 3 Secs 300-24-24 | | | | | |
| Overload Characteristic Permanent short circuit operation Parallel Operation Yes for higher output power units Redundant Operation 300-24-24 Efficiency > 85% @ V _{ICCK} AMBIENT CHARACTERISTICS AMBIENT CHARACTERISTICS AMBIENT CHARACTERISTICS Relative Humidity Advinum 95%, non-condensing (option /Cc for conformal coating) Cooling External forced cooling (e.g., Fan level below module carrier) [Internal fan for 300-24-24], Derating Without external cooling from +50°C/2.5% per i°C EMC EMISSION & IMMUNITY Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge I.8kV according to DIN EN 50121-3-2 Immunity: Burst 2xV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 Input to Ground 1500 V _{est} Timin, 500V 300-24-24 Input to Ground 1500 V _{est} Imin, 500V 300-24-24 Input to Output Ground 1500 V _{est} Imin, 500V 300-24-24 Input to Output 3500 V _{est} Imin, 500V 300-24-24 Input to Output 5500 V _{est} Imin, 500V 300-24-24 Input to Output 5500 V _{est} Imin, 500V 300-24-24 Input to Output 5500 V _{est} Imin, 500V 300-24-24 Input to Output 6700 Mest | Output Current | I _A = 0 - 10A | | | | | |
| Parallel Operation Yes for higher output power units Redundant Operation 300-24-24 Efficiency > 85% @ V _{root} ********************************* | Current Limit | 1.05I _{OMAX} (300-24-24), 1.1I _{OMAX} (50-24-5, 50-110-5), 1.2I _{OMAX} (All other units) | | | | | |
| Redundant Operation 300-24-24 AMBIENT CHARACTERISTICS AMBIENT CHARACTERISTICS Ambient Temperature -40 to +85°C [+60°C 300-24-24], class TX according DIN EN 50155 Relative Humidity Maximum 95%, non-condensing [option /CC for conformal coating] Cooling External forced cooling (e.g., Fan level below module carrier) [Internal fan for 300-24-24] EMC EMISSION & IMMUNITY EMC EMISSION & IMMUNITY Emission: Conductive According to DIN EN 50121-3-2 Emission: Adalated According to DIN EN 50121-3-2 Immunity: Transient/Surge 1.8kV according to DIN EN 50121-3-2 [12Ω] Immunity: Bust 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 INSULATION TEST Input to Ground 1500 V _{ext} Imin, 500V 300-24-24 Output to Ground 1500 V _{ext} Imin, 500V 300-24-24 Input to Output 1500 V _{ext} Imin, 500V 300-24-24 Creeping Distance > 2.5mm according to DIN EN 50155 and EN 61373 SHOCK & VIBRATION Vibration Reliability According to DIN EN | Overload Characteristic | Permanent short circuit operation | | | | | |
| AMBIENT CHARACTERISTICS Ambient Temperature 40 to 485°C (+60°C 300-24-24), class TX according DIN EN 50155 Relative Humidity Maximum 95%, non-condensing (option /CC for conformal coating) Cooling External forced cooling (e.g. Fan level below module carrier) [Internal fan for 300-24-24] Derating Without external cooling from +50°C/2.5% per 1°C EMC EMISSION & IMMUNITY Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge 18kV according to DIN EN 50121-3-2 (12Ω) Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 Imput to Ground 1500 V _{eet} Imin, 500V 300-24-24 Input to Ground 1500 V _{eet} Imin, 500V 300-24-24 Creeping Distance > 2.5mm according to DIN EN 50124 PD3 **SHOCK & VIBRATION** Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Parallel Operation | Yes for higher output power units | | | | | |
| Ambient CHARACTERISTICS Ambient Temperature | Redundant Operation | | | | | | |
| Ambient Temperature -40 to +85°C [+60°C 300-24-24], class TX according DIN EN 50155 Relative Humidity Maximum 95%, non-condensing (option /CC for conformal coating) External forced cooling (e.g. Fan level below module carrier) [Internal fan for 300-24-24] Derating Without external cooling from +50°C/2.5% per 1°C EMC EMISSION & IMMUNITY Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge 1.8kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 INSULATION TEST Input to Ground 1500 V _{et} Imin, 500V 300-24-24 Output to Ground 1500 V _{et} Imin, 500V 300-24-24 Input to Output 1500 V _{et} Imin, 500V 300-24-24 Creeping Distance 3HOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. | Efficiency | > 85% @ V _{NOM} | | | | | |
| Relative Humidity Maximum 95%, non-condensing [option /CC for conformal coating] Cooling External forced cooling [e.g. Fan level below module carrier] [Internal fan for 300-24-24] Derating Without external cooling from +50°C/2.5% per 1°C EMC EMISSION & IMMUNITY Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge 1.8kV according to DIN EN 50121-3-2 Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 INSULATION TEST Input to Ground 1500 V _{ett} Imin, 500V 300-24-24 Output to Ground 1500 V _{ett} Imin, 500V 300-24-24 Input to Output 1500 V _{ett} Imin, 500V 300-24-24 Creeping Distance > 2.5mm according to DIN EN 50124 PD3 SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | | AMBIENT CHARACTERISTICS | | | | | |
| Cooling External forced cooling (e.g. Fan level below module carrier) (Internal fan for 300-24-24) Derating Without external cooling from +50°C/2.5% per 1°C EMC EMISSION & IMMUNITY Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge 1.8kV according to DIN EN 50121-3-2 (12Ω) Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 INSULATION TEST Input to Ground 1500 V _{er} Imin, 500V 300-24-24 Output to Ground 1500 V _{er} min, 500V 300-24-24 Input to Output 1500 V _{er} min, 500V 300-24-24 Creeping Distance > 2.5mm according to DIN EN 50124 PD3 SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | | | | | | | |
| EMC EMISSION & IMMUNITY Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge 1.8kV according to DIN EN 50121-3-2 [12Ω] Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 INSULATION TEST Input to Ground 1500 V _{ert} Imin, 500V 300-24-24 Output to Ground 1500 V _{ert} Imin, 500V 300-24-24 Input to Output 1500 V _{ert} Imin, 500V 300-24-24 Creeping Distance > 2.5mm according to DIN EN 50124 PD3 SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Relative Humidity | Maximum 95%, non-condensing (option /CC for conformal coating) | | | | | |
| Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge 1.8kV according to DIN EN 50121-3-2 [12Ω] Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 Insulation Test Input to Ground 1500 V _{eet} Imin, 500V 300-24-24 Output to Ground 1500 V _{eet} Imin, 500V 300-24-24 Input to Output 1500 V _{eet} Imin, 500V 300-24-24 Creeping Distance SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. | Cooling | | | | | | |
| Emission: Conductive According to DIN EN 50121-3-2 Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge 1.8kV according to DIN EN 50121-3-2 (12Ω) Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 INSULATION TEST Input to Ground 1500 V _{eff} Imin, 500V 300-24-24 Output to Ground 1500 V _{eff} Imin, 500V 300-24-24 Input to Output 1500 V _{eff} Imin, 500V 300-24-24 Creeping Distance > 2.5mm according to DIN EN 50124 PD3 SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Derating | | | | | | |
| Emission: Radiated According to DIN EN 50121-3-2 Immunity: Transient/Surge I.8kV according to DIN EN 50121-3-2 [12Ω] Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 1500 V _{eff} Imin, 500V 300-24-24 Output to Ground 1500 V _{eff} Imin, 500V 300-24-24 Input to Output 1500 V _{eff} Imin, 500V 300-24-24 Creeping Distance 3+0 Creeping Distanc | | EMC EMISSION & IMMUNITY | | | | | |
| Immunity: Transient/Surge 1.8kV according to DIN EN 50121-3-2 [12\Omega] Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 INSULATION TEST Input to Ground 1500 V _{err} Imin, 500V 300-24-24 Output to Ground 1500 V _{err} Imin, 500V 300-24-24 Input to Output 1500 V _{err} Imin, 500V 300-24-24 Creeping Distance 2.5mm according to DIN EN 50124 PD3 SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Emission: Conductive | According to DIN EN 50121-3-2 | | | | | |
| Immunity: Burst 2kV according to DIN EN 50121-3-2 Immunity: Electro Magnetic Field 20V/m according to DIN EN 50121-3-2 INSULATION TEST Input to Ground 1500 V _{eff} Imin, 500V 300-24-24 Output to Ground 1500 V _{eff} Imin, 500V 300-24-24 Input to Output 1500 V _{eff} Imin, 500V 300-24-24 Creeping Distance > 2.5mm according to DIN EN 50124 PD3 SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Emission: Radiated | According to DIN EN 50121-3-2 | | | | | |
| Inmunity: Electro Magnetic Field ENSULATION TEST Input to Ground I500 V _{eff} Imin, 500V 300-24-24 Output to Ground I500 V _{eff} Imin, 500V 300-24-24 Input to Output I500 V _{eff} Imin, 500V 300-24-24 Creeping Distance SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency Amplitude Acceleration below trans. freq. 20V/m according to DIN EN 50121-3-2 Input to Ground I500 V _{eff} Imin, 500V 300-24-24 Input to Output I500 V _{eff} Imin, 500V 300-24-24 SHOCK & VIBRATION SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. | Immunity: Transient/Surge | 1.8kV according to DIN EN 50121-3-2 [12 Ω] | | | | | |
| Input to Ground 1500 V _{eff} Imin, 500V 300-24-24 Output to Ground 1500 V _{eff} Imin, 500V 300-24-24 Input to Output 1500 V _{eff} Imin, 500V 300-24-24 Creeping Distance 1500 V _{eff} Imin, 500V 300-24-24 Creeping Distance 2.5mm according to DIN EN 50124 PD3 SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Immunity: Burst | | | | | | |
| Input to Ground 1500 V _{eff} Imin, 500V 300-24-24 Output to Ground 1500 V _{eff} Imin, 500V 300-24-24 Input to Output 1500 V _{eff} Imin, 500V 300-24-24 Creeping Distance SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency Amplitude Acceleration below trans. freq. 2mm | Immunity: Electro Magnetic Field | 20V/m according to DIN EN 50121-3-2 | | | | | |
| Output to Ground 1500 V _{eff} Imin, 500V 300-24-24 Input to Output 1500 V _{eff} Imin, 500V 300-24-24 Creeping Distance SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency Amplitude Acceleration below trans. freq. 2mm | | | | | | | |
| Input to Output 1500 V _{eff} Imin, 500V 300-24-24 Creeping Distance > 2.5mm according to DIN EN 50124 PD3 SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Input to Ground | | | | | | |
| SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Output to Ground | GII | | | | | |
| SHOCK & VIBRATION Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Input to Output | 1500 V _{eff} 1min, 500V 300-24-24 | | | | | |
| Vibration Reliability According to DIN EN 50155 and EN 61373 Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Creeping Distance | The state of the s | | | | | |
| Frequency Range 5 - 150Hz Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | SHOCK & VIBRATION | | | | | | |
| Transfer Frequency 8Hz Amplitude Acceleration below trans. freq. 2mm | Vibration Reliability | According to DIN EN 50155 and EN 61373 | | | | | |
| Amplitude Acceleration below trans. freq. 2mm | Frequency Range | | | | | | |
| | Transfer Frequency | | | | | | |
| Amplitude Acceleration below trans. freq. 5m/s ² | Amplitude Acceleration below trans. freq. | de Acceleration below trans. freq. 2mm | | | | | |
| | Amplitude Acceleration below trans. freq. | 5m/s ² | | | | | |
| Shock Reliability 50m/s² all 3 axis according toDIN EN 61373 (extended) | Shock Reliability | 50m/s² all 3 axis according toDIN EN 61373 (extended) | | | | | |
| MTBF > 750,000 hours @ 40°C | MTBF | > 750,000 hours @ 40°C | | | | | |

Every effort is made to ensure that the information provided within this technical summary is accurate. However, ETPS Ltd must reserve the right to make changes to the published specifications without prior notice. Where certain operating parameters are critical for your application we advise that they be confirmed at the time of order. ETPS Ltd specialises in modifying its proven platforms to suit your needs. Please contact our office if your requirement is non-standard. Please note that your actual unit may differ from those shown.





ETPS engineer electronic power supply and testing systems. Our problem solving skills provide the spark of innovation to some of the world's leading technology brands.



