

High reliability instrumentation power supply

For 4...20mA current loop SIL2 / SIL3

- **Linear low noise version or high density switching power**
AC or DC input
- **Fully protected**
short-circuits, overload, thermal
- **1 to 8 isolated outputs**
Total independence of circuits
- **Long life version, extended temperature**
AL45DLL "long life" with polymer capacitors
- **Applications**
4..20 mA current loop power supply
with current limited (safety for measurement transmitters),
Hart protocol, very low noise.
- **SIL2 and SIL3 compliance** according to IEC 61508 (redundant version)



AL45D-DEC



AL45D-LIN

These supplies are available in 1 to 8 outputs and are particularly suitable for the implementation of converters in two wires technology (loop powered 4-20mA). The isolation between each output eliminates ground loop problems that may affect the measurement. Each output being independent and low power, the risk of damage to the material is discarded compared to the use of a single high output power supply. The independence of each loop greatly increases the reliability of the system. The outputs allow all wiring combinations to suit specific needs, their use in serial or parallel can achieve symmetric output, increase the output current or voltage.

Description:

- The switching version allow high power density without heating due to its high efficiency. It also adapts to a wide range of input voltage (AC or DC)

- The linear version is especially suitable for applications requiring a very stable output voltage and noise-free like the 4-20mA current loop with HART protocol.

Specifications:

- 1 to 8 isolated channels allowing serial or parallel coupling, thereby obtaining exotic or symmetric output voltages, or to increase the output current.
- typical 24 Vdc output voltage,
- Any output voltage available on request from 0 to 24Vdc and up to 192 volts by coupling,
- Continuous short-circuit protection,
- Overload protection,
- Thermal protection (output power limitation),
- Natural convection cooling,
- Build-in EMC filter in accordance with EN55022 class A,
- Regulated output voltage,
- Output protection with 24V transient voltage limiter.

Feature:

- DIN rail mounting, protection rating IP20,
- Conformal coating,
- Green LED for primary voltage presence,
- Wiring by pluggable screw terminals blocks (wire section up to 2.5 mm²).

Implementation and installation recommendations:

- primary protection with fuse recommended (delayed 2A),
- maintain a spacing of 2 mm for natural ventilation. (presence of separation pads on the case flanges)

Operational safety data:

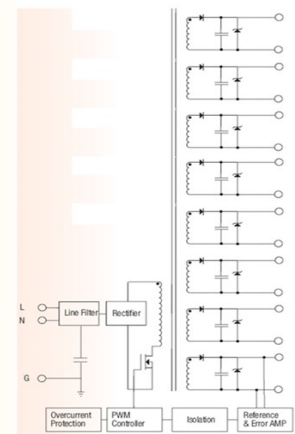
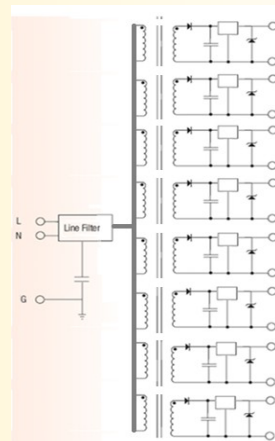
type A components, HFT = 1
 λ .f : 265 fit (1/MTBF)
 DC : tbd % (diagnostic coverage)
 PFH : 1.8 fit (probability of dangerous failure per hour)
 SFF : 99.4 % (Safe failure fraction)



Synoptic

linear version

SMPS version



Version and order code:

[Request a quote](#)

linear versions: (45 mm width)

AL45D/Lin-n : n : number of 24V 30mA outputs (up to 8)
230Vac or 115Vac input

AL45DLL/Lin-n : "Long Life" version. With polymer capacitors.
n : number of 24V 30mA outputs (up to 8)
230Vac or 115Vac input

AL45DLL/Lin-8-RR1 : "Long Life" version for ROLLS ROYCE
8 outputs 24Vdc, 118Vac...136Vac 50/60Hz input
(106 Vac to 148Vac during 2sec)

Option : - **SIL2 / SIL3** (up to 4 redundant outputs)

Switching version: (23 mm width)

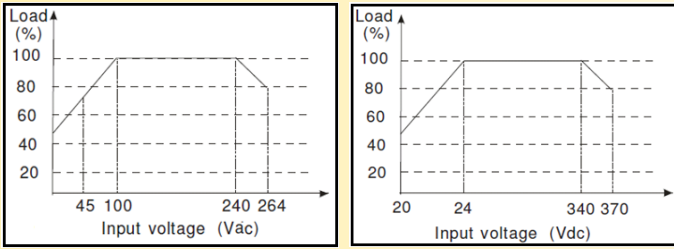
AL45D/Dec-n : n : number of 24V 30mA outputs (up to 8)
input 20...265 Vac-dc
others output voltage available on request

Power Supply

SMPS version:

Input voltage 45...265VAC / 20...370VDC
 Input frequency 47...440Hz
 Typical efficiency 85%
 Inrush current 2A typical

Output power function of input voltage



Linear version:

Input voltage 230VAC or 115Vac +/-15%
 Input frequency 45...65Hz
 Consumption 1.15VA per output

Outputs

SMPS version:

Accuracy +/- 2% max. (no load)
 Regulation - 5% max. (full load)
 Ripple < 1% Vout max (limited to 20MHz)
 Continuous short circuit protection, automatic restart.
 Overload protection 110% typ.
 Switching frequency 100kHz typ.
 Output hold time 50 ms typ.

Linear version:

Voltage (standard) 24 Vdc (+/- 2 %)
 Output current 30 mA max (at 24V)
 the maximum power for an output is 1Watt
 continuous short-circuit protected
 Load influence 0.1 % max
 noise < 20 mV peak to peak. (10 Hz ≤ f ≤ 100 kHz)

ENVIRONMENT

Operating temperature -25 °C to 60 °C (natural convection cooling)
 Thermal protection 100 °C internal
 Temperature storage -25 °C to 105 °C
 Humidity 85 % (not condensed)
 Temperature coefficient < +/- 0.02%/°C (-2mV/°C typ.)

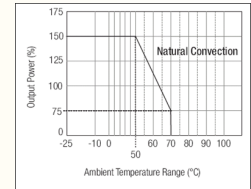
Insulation resistance 100 MΩ min.
 Dielectric strength (input / output) 2500VAC
 Impulse withstand voltage (1.2/50µs) 5000V peak
 Dielectric strength (output / output) 1000VAC

Weight 100 g to 400 g model dependant

MTBF (MIL HDBK 217F) > 4 000 000 Hrs @ 25°C
 MTBF (MIL HDBK 217F) > 1 500 000 Hrs @ 55°C
 Lifetime (standard version) > 170 000 Hrs @ 30°C
 Lifetime (standard version) > 45 000 Hrs @ 55°C
 Lifetime ("long life" version) > 350 000 Hrs @ 30°C
 Lifetime ("long life" version) > 170 000 Hrs @ 55°C

Shocks IEC 60068-2-27 (operating) 15 G / 11 ms
 Bump IEC 60068-2-29 (transportation) 40 G / 6 ms
 Vibrations IEC 60068-2-6 (operating) 1 G / 10 - 150 Hz
 Vibrations IEC 60068-2-6 (transportation) 2 G / 10 - 150 Hz

Mounting recommendation:
 Horizontal DIN rail mounting



Output power function of ambient temperature

Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE

Immunity standard for industrial environments EN 61000-6-2		Emission standard for industrial environments EN 61000-6-4
EN 61000-4-2 ESD	EN 61000-4-8 AC MF	EN 55011 group 1 class A
EN 61000-4-3 RF	EN 61000-4-9 pulse MF	
EN 61000-4-4 EFT	EN 61000-4-11 AC dips	
EN 61000-4-5 CWG	EN 61000-4-12 ring wave	
EN 61000-4-6 RF	EN 61000-4-29 DC dips	



WIRING AND OUTLINE DIMENSIONS:

