Application Note

1606-XLPRED

Redundant/Decoupling Module

- World-wide approvals (CE, UL, CUL)
- Decoupling Diode to produce redundant applications or to decouple power sources from each other, as well as from the load
- DC 10...60V, 0...10 A

Concept

The decoupling module is a dual input diode with 2 inputs and one output in a compact housing, suitable for various applications such as
- to produce redundant applications
- to decouple power sources from each other as well as from the loads e.g. separation of sensitive loads from the power bus, design buffered branches, block reverse power etc.

Decoupling part

<table>
<thead>
<tr>
<th>Input #1</th>
<th>DC 10...60V, 0...10 A</th>
</tr>
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<tbody>
<tr>
<td>Input #2</td>
<td>DC 10...60V, 0...10 A</td>
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<tr>
<td>Output</td>
<td>V_{in} = 0.9V (typ.), 0...10 A</td>
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Ensure, that the max. output current does not exceed 16 A. Check short circuit current of power sources.

Peak current: 125 A for max. 10 ms
Reverse current: < 0.6 mA per diode

When both inputs are used (Dual Input Mode, Fig. 1) the output current results as the sum of the two inputs. If used with only one input (Single Input Mode, Fig. 2), both positive input terminals can be linked. Negative poles do not have to be used.

Connection by Spring Clamp terminals; uniformly firm hold, vibration-resistant and maintenance-free:
- 2 terminals per output

Connector size range
- flexible cable: 0.3...2.5 mm² (28...12 AWG)
- solid cable: 0.3...4 mm² (28...12 AWG)
- Wire strip length: 6 mm (0.24 in.) recommended

Derating diagram

<table>
<thead>
<tr>
<th>Output Current [A]</th>
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<tr>
<td>V_{in} = 10 V</td>
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<tr>
<td>V_{in} = 60 V</td>
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Environmental Data, Safety

Ambient temperature range (measured 25 mm below unit)
- storage/transport: -40°C ... +85°C
- operation: -40°C ... +60°C (70°C, for derating see diagram)
Humidity: max. 95% (without condensation)
Protection class: IP20 (EN 60529)
Fusing: If sources with higher current capability are used, protect the inputs with a fuse or circuit breaker.
Inputs or output: 10 A slow blowing circuit breaker, Char. B recommended
Approvals: UL 60950 recognized and UL 508 Listed

Construction/ Mechanics

Robust plastic housing (US Patent No. D442, 923S), fine ventilation grid on three housing sides to keep out small parts (e.g. screws), IP20

Dimensions and weight
- W x H x D: 45 mm x 75 mm x 91 mm (+ DIN rail)
- Weight: 136 g

Mounting orientation: 

Ventilation/Cooling
- Normal convection, no fan required
- Free space f. cooling: recommended: 25 mm above and beyond

Design details – for your advantage:
- All terminals are easy to reach as mounted on the front panel.
- Input and output are strictly apart from each other (input below, output above) and so cannot be mixed up.
- **Mounting and connection do not require any screwdriver**

→ Easy, quick, durable and reliable installation.
Wiring Diagrams

Fig. 1: Dual Input Node

Fig. 2: Single Input Node

Fig. 3: 1+1 Redundant System

Fig. 4: N+1 Redundant System

Fig. 5: Redundant System other voltages than 24V

Fig. 6: Redundant System with external DC-ok relay

Fig. 7: Blocking of energy which is fed backwards from a decelerating motor

Fig. 8: Protection during battery charging

Fig. 9: Saving energy in buffered branches

This technical information is valid for 230V AC, +25°C ambient temperature and 5 min. run-in time, unless otherwise stated. It is subject to change without prior notice.

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