DIMENSION
YR2.DIODE

Decoupling Module 20A

- **Dual input, single output**
- **Two diodes with common cathode**
- **Rugged metal housing**
- **Width only 32mm**
- **Cost effective solution to build redundant systems**
- **10-60V Wide-range input**
- **20A Continuous output current**
- **Easy wiring;**
  Distribution terminals for negative pole included
- **Quick-connect Spring Clamp Terminals**
- **3 Year Warranty**

The YR2.Diode is a decoupling module, which can be used for various purposes. The most popular applications are redundant power source systems and separation of sensitive loads from non-sensitive loads, which can distort the power quality of the 24V bus and causes controller failures.

Short-form Data

Input 1	DC 10-60V, 0-20A	continuous operation
	DC 10-60V, 0-30A	for 4s
Input 2	DC 10-60V, 0-20A	continuous operation
	DC 10-60V, 0-30A	for 4s
Output	0-20A	continuous operation
	0-30A	for 4s
Voltage drop	0.9V	V_{IN} - V_{OUT}
Peak current	150A for 10ms	each input
Reverse current	< 2mA	each input
Dimensions	32 x 124 x 102mm	width x height x depth

Ensure that the continuous output current does not exceed 25A.
Check the short-circuit current of the power sources and if the power source can deliver more than 25A, use an appropriate fuse on the output.

Approvals

c UL us
E 246877 HazLoc
Class I Div 2, T4
Groups A,B,C,D

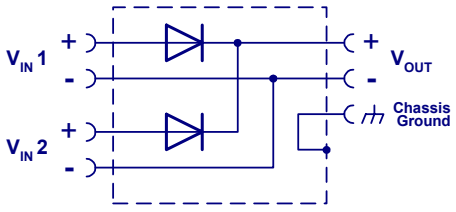
c UL us E
137006
I.T.E. Level 5

c UL 18WM us LISTED
IND. CONT. EQ.

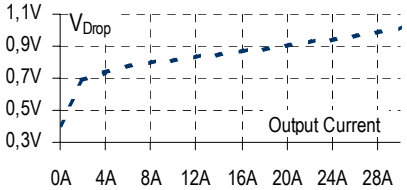
GL
Germanischer Lloyd

CE
EMC, LVD

Functional Diagram



Input to output voltage drop (typ.)



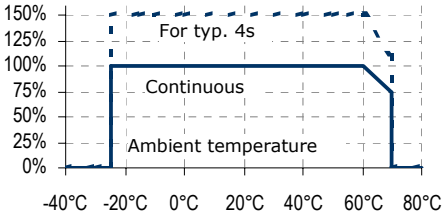
Order Numbers

Power Supply	**YR2.DIODE**	Decoupling Module 20A
Accessory	**ZM1.WALL**	Wall Mounting Bracket

Environment

Operational temperature	-25 to +70°C	De-rate above 60°C
Output de-rating	0.5A/°C	60-70°C
Storage temperature	-40...+85°C	Storage, transport
Humidity	5...95% r.H.	No condensation allowed
Vibration sinusoidal	2-17.8Hz ±1.6mm; 17.8-500Hz 2g	IEC 60068-2-6
Vibration random	0.5m²(s³)	IEC 60068-2-64
Shock	15g 6ms, 10g 11ms	IEC 60068-2-27

Allowed output current versus the ambient temperature



Ambient temperature is defined 2cm below the unit.
The unit does not release any silicone and is suitable for the use in paint shops.

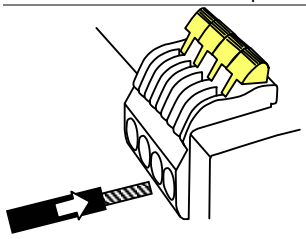
Safety and Protection

Degree of protection	IP 20	EN/IEC 60529
Class of protection	II	PE (Ground) connection not required
Degree of pollution	2	EN 50178, not conductive
Isolation	500Vac	Input to housing (chassis ground)

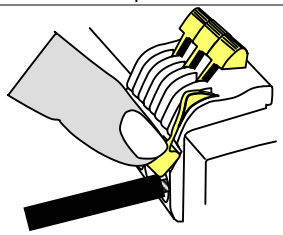
Terminals and Wiring

Type	Quick-connect spring clamp terminals
Solid wire	0.5-6mm²
Stranded wire	0.5-4mm²
AWG	20-10AWG
Ferrules	Allowed, but not required
Wire stripping length	10mm / 0.4inch
Pull-out force	10AWG:80N, 12AWG:60N, 14AWG:50N, 16AWG:40N (UL486E)

Use appropriate copper cables, that are designed for an operating temperature of 60°C (for ambient up to 45°C) and 75°C (for ambient up to 60°C) minimum. Follow national installation codes and regulations! Ensure that all strands of a stranded wire enter the terminal connection! Up to two stranded wires with the same cross section are permitted in one connection point.



1. Insert the wire



2. Snap the lever

To disconnect wire: same procedure vice versa

EMC

The Decoupling Module is suitable for applications in industrial environment as well as in residential, commercial and light industry environment without any restrictions.
CE mark according to EMC Directive 89/336/EEC and 93/68/EEC.

EMC Immunity

EN 61000-6-1 and EN 61000-6-2

Electrostatic discharge EN 61000-4-2	Contact discharge Air discharge	8kV 15kV	Criterion A Criterion A
Electromagnetic RF field EN 61000-4-3	80MHz-1GHz	10V/m	Criterion A
Fast transients (Burst) EN 61000-4-4	Input lines Output lines	4kV 2kV	Criterion A Criterion A
Conducted disturbance EN 61000-4-6	0.15-80MHz	10V/m	Criterion A

Criterion A Device shows normal operation behavior within the defined limits.

EMC Emission

EN 61000-6-3 and EN 61000-6-4

Conducted emission input lines EN 55011, EN 55022, FCC Part 15, CISPR 11, CISPR 22	Class B
Conducted emission output lines EN 55022	Class B (Independent of wire length)
Radiated emission EN 55011, EN 55022	Class B

This device complies with Part 15 FCC Rules. Operation is subjected to following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Reliability

Lifetime expectancy	> 20 years	2x10A, 40degC No electrolytic capacitors involved
MTBF SN 29500, IEC 61709	46.5 Mio h	2x10A, 40degC
MTBF SN 29500, IEC 61709	70 Mio h	2x10A, 25degC
MTBF MIL HDBK 217F GF40	10 Mio h	2x10A, 40degC
MTBF MIL HDBK 217F GF25	12.7 Mio h	2x10A, 25degC

Approvals

UL 508	**LISTED** E198865 Industrial Control Equipment	18WM US LISTED IND. CONT. EQ.
UL 60950-1	**RECOGNIZED** E137006 Information Technology Equipment Level 5	
UL 1604 Pending	**RECOGNIZED** E246877 Class I Div 2 Hazardous Location	

The unit is suitable for use in Class I Division 2 Groups A, B, C, D locations. Substitution of components may impair suitability for Class I Division 2 environment. Do not disconnect equipment unless power has been switched off. Wiring must be in accordance with Class I, Division 2 wiring methods of the National Electrical Code, NFPA 70.

Marine Pending	GL (Germanischer Lloyd) classified and ABS (American Bureau for Shipping) PDA for marine and offshore applications.	GL ABS

Fulfilled Standards

IEC 60950-1	Information Technology Equipment
EN/IEC 60204-1	Safety of Electrical Equipment of Machines
EN/IEC 61131	Programmable Controllers
EN 50178	Electronic Equipment in Power Installations

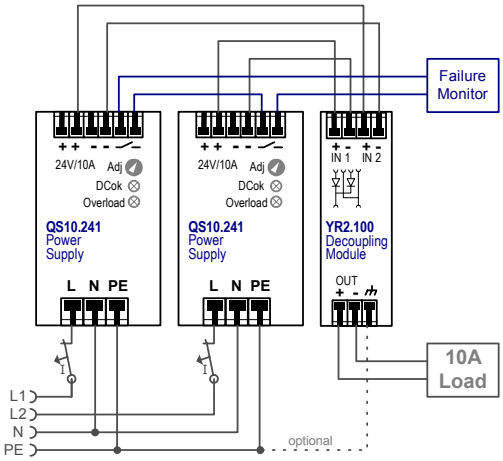
Application Notes

Recommendations for redundant applications:

- Use separate input fuse for each power supply.
- Use Three-phase power supplies to gain functional safety if one phase fails.
- When Single-phase power supplies are utilized connect them to different phases or circuits.
- It is desirable to set the output voltages of all power supplies to the same value to avoid a false signal of the DC-ok signal.
- Use both inputs in parallel for currents above 10A.

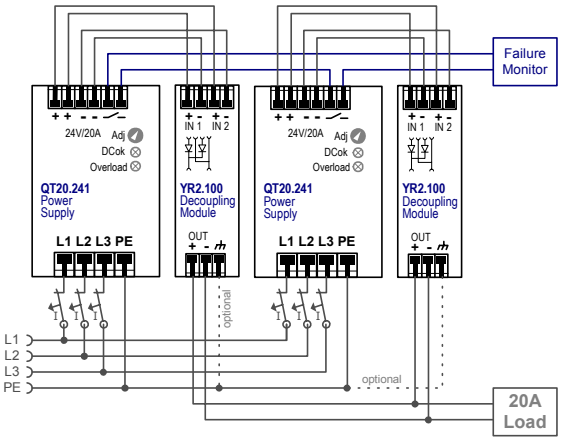
1+1 Redundancy
up to 10A output current

Utilization of two 10A power supplies and one YR2.DIODE.



1+1 Redundancy
up to 20A output current

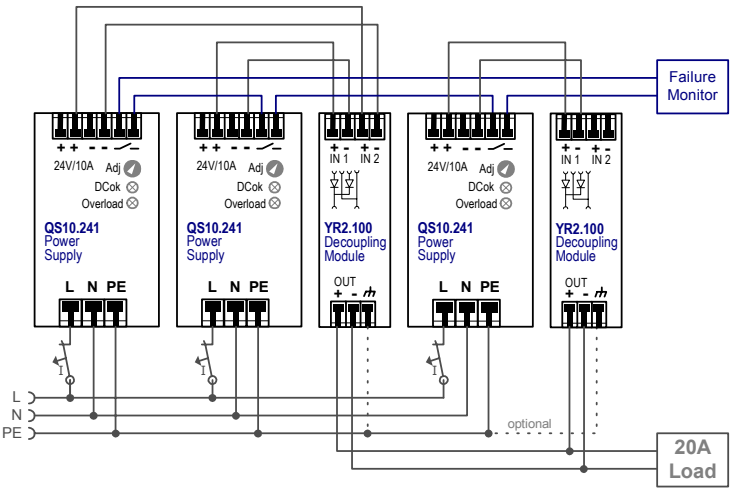
Utilization of two 20A power supplies and two times the YR2.DIODE.



N+1 Redundancy
Example: 20A output current

Utilization of three 10A power supplies and two YR2.DIODE.

The DC-ok will only work properly if the adjusted output voltage of each power supply will be reached after turning-on the input power. A power supply operating in current limiting mode will result in a DC-fail condition.
Read notes in the individual power supply datasheets.

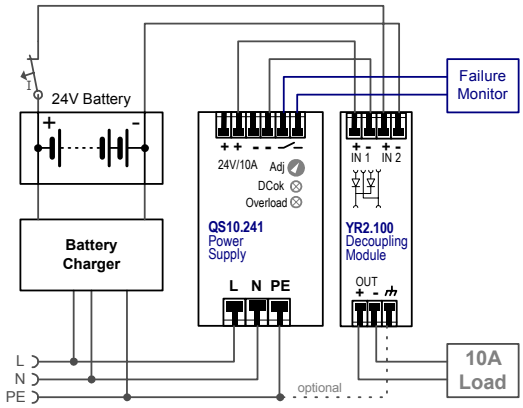


Battery backup

10A output current:

Set output voltage of power supply to 26.5Vdc minimum to avoid that the charger current flows to the load instead of charging the battery.

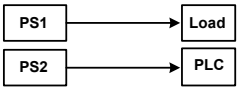
Use a fuse between battery and YR2.DIODE!



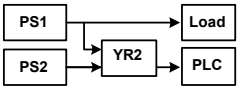
Redundancy for sensitive loads

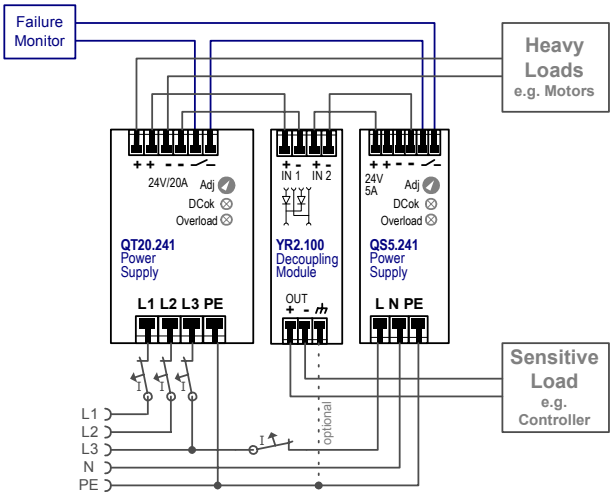
Cost effective solution to get redundant power for a PLC or other controller.

Standard design:



Improved approach:

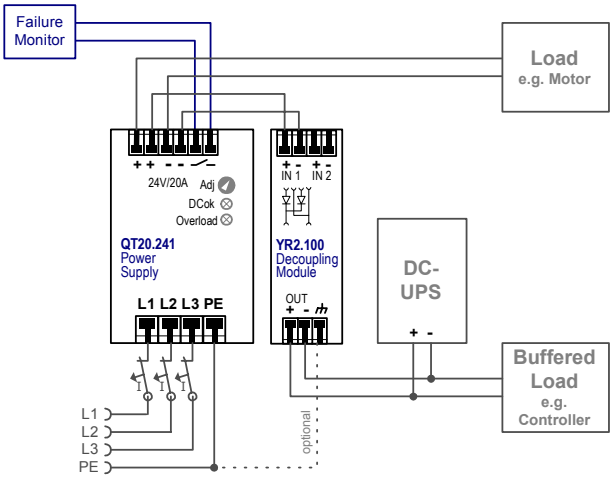




Decoupling of buffered branches

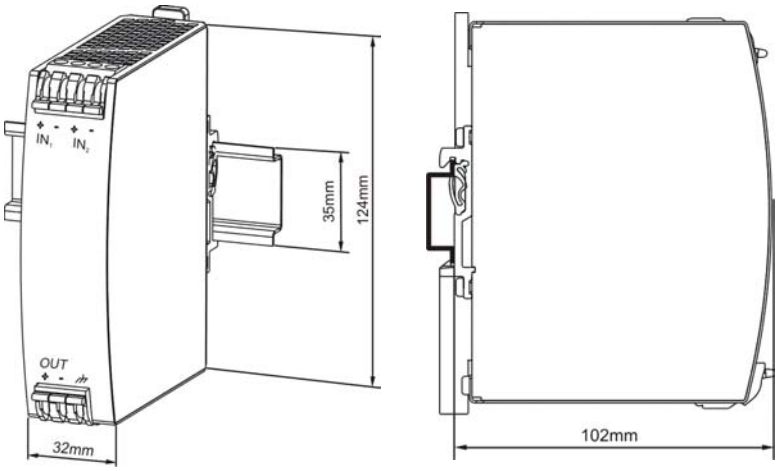
Buffer energy supplied from a DC-UPS or Buffer Module is not wasted in "power branches".

Set output voltage of the power supply to a level that the buffer unit or DC-UPS will not start unexpected. Take the voltage drop of the YR2.DIODE into account.



Dimensions

Width	32mm / 1.26''
Height	124mm / 4.88''
Depth	102mm / 4.02'' Plus DIN-rail depth
Weight	290g / 0.64lb
DIN-Rail	Use DIN-rails according to EN 60715 or EN 50022 with a height of 7.5 or 15mm

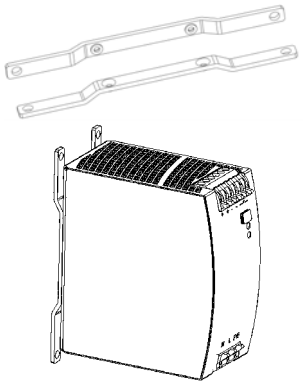


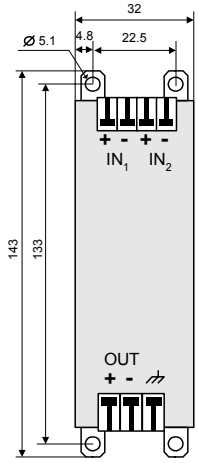
Mounting Orientation	Input terminal on top and output terminals on the bottom. For other orientations consult factory.
Cooling	Convection cooled, no fan required.

Do not obstruct air flow!
Keep installation clearances when loaded with full power:
60mm on top and on the bottom,
15mm on the left and right side

Accessory

ZM1.WALL Wall Mounting Bracket





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