

MDR Series

Ultra-Slim Plastic-Housing DIN Rail Power Supply

Ultra-slim plastic-housing single-output DIN rail power supply for space-constrained industrial control and automation applications.

Available in **10W – 96W**, with **5 / 12 / 15 / 24 / 48 VDC** output, universal **85–264 VAC** input, **22.5–55 mm** slim width, up to **88%** efficiency, **DC OK relay contact** on 40W+ models, and **UL508** approval.

DOCUMENT

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AT A GLANCE

10–96 W OUTPUT POWER	85–264 VAC UNIVERSAL AC INPUT	22.5–55 mm ULTRA-SLIM WIDTH	up to 88 % EFFICIENCY
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MDR Series Overview

Ultra-slim plastic-housing single-output DIN rail power supply for space-constrained industrial control and automation applications.

The DAPPRA MDR Series is an ultra-slim plastic-housing DIN rail power supply series designed for space-constrained industrial control and automation applications. It covers five power ratings — 10W, 20W, 40W, 60W and 96W — with single-output configurations of 5V, 12V, 15V, 24V and 48V DC.

The series features a universal AC input range of 85–264 VAC, fanless natural convection cooling and complete protection functions including short circuit, overload and over voltage protection. The MDR-40, MDR-60 and MDR-100 models include a DC OK relay contact and are certified for Class I, Div 2 Hazardous Locations T4. All models are designed for standard TS35/7.5 or TS35/15 DIN rail mounting.

CORE SPECIFICATIONS

Series	DAPPRA MDR Series
Product Type	Ultra-Slim Plastic-Housing DIN Rail Power Supply
Output Power	10 / 20 / 40 / 60 / 96 W
Output Voltage	5 / 12 / 15 / 24 / 48 VDC
Input Voltage	85–264 VAC (single phase) · 120–370 VDC
Efficiency	up to 88% (MDR-40 / 60 24V/48V)
Cooling	Fanless natural convection
Protection	Short circuit / Overload / Over voltage / Over temperature (MDR-100)
DC OK	Relay contact (MDR-40/60/100) · Active signal (MDR-10/20)
Housing	Plastic (blue) — 22.5 / 40 / 55 mm widths
Mounting	TS35/7.5 or TS35/15 DIN rail
Certification	UL508 · UL62368-1 · TUV BS EN/EN62368-1 · Class I Div 2 (40W+)

MDR Series Key Features

Engineered for ultra-slim, space-saving industrial power supply applications.

UNIVERSAL AC INPUT 85–264 VAC

Full-range single-phase AC input supports global mains voltages. Also supports 120–370 VDC input.

ULTRA-SLIM PLASTIC HOUSING FROM 22.5 MM

MDR-10 and MDR-20 are only 22.5 mm wide; MDR-40 and MDR-60 are 40 mm; MDR-100 is 55 mm — saving valuable space inside control cabinets.

HIGH EFFICIENCY UP TO 88%

Efficiency ranges from 76% to 88% depending on the model and output voltage, reducing energy consumption and heat generation.

DC OK RELAY CONTACT (40W+)

MDR-40, MDR-60 and MDR-100 include a DC OK relay contact (30V/1A resistive load) on two terminal pins for remote status monitoring. MDR-10 and MDR-20 use a DC OK active signal instead.

COMPLETE PROTECTION FUNCTIONS

Short circuit protection, overload protection (constant current limiting or hiccup mode, auto-recovery), over voltage protection and over temperature protection on MDR-100.

CLASS I, DIV 2 HAZARDOUS LOCATIONS

MDR-40, MDR-60 and MDR-100 are certified for Class I, Div 2 Group A, B, C, D Hazardous Locations T4, suitable for use in hazardous industrial environments.

LOW NO-LOAD POWER CONSUMPTION

Below 0.75W for MDR-10 to MDR-60, below 1W for MDR-100 — supporting energy-efficient standby operation.

TS35 DIN RAIL MOUNTING

Admissible DIN rail: TS35/7.5 or TS35/15. LED indicator for power on. 3 years warranty.

MDR Series Model Code & Selection

Select the appropriate MDR model according to the required output power, output voltage and DC OK function.

Model Code Structure

MDR - 40 - 24

FIELD	MEANING	AVAILABLE VALUES
MDR	Series prefix	MDR
40	Output Wattage — rated output power in Watts	10 / 20 / 40 / 60 / 100 (96W)
24	Output Voltage — nominal DC output voltage	5 / 12 / 15 / 24 / 48 VDC

Example: MDR-40-24 = MDR Series, 40W output power, 24V DC output, with DC OK relay contact.

MODEL LIST - MDR-10 / MDR-20 (10W / 20W)

MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT	RATED POWER	EFFICIENCY	DC OK	WIDTH
MDR-10-5	5 VDC	2 A	10 W	77%	Active signal	22.5 mm
MDR-10-12	12 VDC	0.84 A	10 W	81%	Active signal	22.5 mm
MDR-10-15	15 VDC	0.67 A	10 W	81%	Active signal	22.5 mm
MDR-10-24	24 VDC	0.42 A	10 W	81%	Active signal	22.5 mm
MDR-20-5	5 VDC	3 A	15 W	76%	Active signal	22.5 mm
MDR-20-12	12 VDC	1.67 A	20 W	80%	Active signal	22.5 mm
MDR-20-15	15 VDC	1.34 A	20 W	81%	Active signal	22.5 mm
MDR-20-24	24 VDC	1 A	24 W	84%	Active signal	22.5 mm

MDR Series Model List (40W–96W)

Models from 40W and above include a DC OK relay contact and are certified for Class I, Div 2 Hazardous Locations.

MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT	RATED POWER	EFFICIENCY	DC OK	WIDTH
MDR-40-5	5 VDC	6 A	30 W	78%	Relay contact	40 mm
MDR-40-12	12 VDC	3.33 A	40 W	85%	Relay contact	40 mm
MDR-40-24	24 VDC	1.7 A	40.8 W	88%	Relay contact	40 mm
MDR-40-48	48 VDC	0.83 A	39.8 W	88%	Relay contact	40 mm
MDR-60-5	5 VDC	10 A	50 W	78%	Relay contact	40 mm
MDR-60-12	12 VDC	5 A	60 W	85%	Relay contact	40 mm
MDR-60-24	24 VDC	2.5 A	60 W	87%	Relay contact	40 mm
MDR-60-48	48 VDC	1.25 A	60 W	87%	Relay contact	40 mm
MDR-100-12	12 VDC	7.5 A	90 W	83%	Relay contact	55 mm
MDR-100-24	24 VDC	4 A	96 W	86%	Relay contact	55 mm
MDR-100-48	48 VDC	2 A	96 W	86%	Relay contact	55 mm

Output current and output wattage must not exceed the rated value on the specification. Models with 40W and above include a DC OK relay contact (30V/1A resistive load) on two terminal pins.

MDR Series Dimensions

Ultra-slim plastic housing with a compact footprint designed for space-constrained control cabinets. All dimensions in mm, tolerance ± 1 mm.

MDR-10 / MDR-20	
Width (W)	22.5 mm
Height (H)	90 mm
Depth (D)	100 mm
Housing	Plastic (blue)
Front Panel	DC OK indicator

MDR-40 / MDR-60	
Width (W)	40 mm
Height (H)	90 mm
Depth (D)	100 mm
Housing	Plastic (blue)
Front Panel	+V ADJ / DC OK

MDR-100	
Width (W)	55 mm
Height (H)	90 mm
Depth (D)	100 mm
Housing	Plastic (blue)
Front Panel	+V ADJ / DC OK

Measurement unit: mm. Data is manually measured and may contain minor deviations — please refer to the actual product for final dimensions. Mounting: TS35/7.5 or TS35/15 DIN rail.

MDR Series Installation

The MDR Series supports DIN rail mounting with specific ventilation clearance and orientation requirements for reliable operation.

01 / 06

Vertical Orientation Only

The appropriate mounting orientation is vertical — input terminals at the bottom and output terminals at the top. Upside-down, horizontal or table-top mounting is not allowed.

02 / 06

Ventilation Clearance

Always allow good ventilation clearances around the unit: 5 mm left and right, 40 mm above and 20 mm below. Keep 10–15 cm clearance if adjacent to a heat source.

03 / 06

TS35 DIN Rail Mounting

Admissible DIN rail: TS35/7.5 or TS35/15. Fit over the top hat rail, slide downward until it hits the stop, press against the bottom for locking.

04 / 06

FG Must Be Connected to PE

The FG (Frame Ground) terminal must be connected to PE (Protective Earth) for safety and to ensure proper EMC performance.

05 / 06

Operating Temperature Limits

Max operating temp: 70°C for MDR-10/20/40/60 (with derating above 50°C); 60°C for MDR-100.

06 / 06

Pollution Degree 2 Environment

Install the unit only in a pollution degree 2 environment — typically dry, well-ventilated locations such as control cabinets.

MDR Series Wiring & Terminal

The MDR Series uses two terminal blocks: TB1 for input and TB2 for output. Use copper wire only and ensure all strands of each stranded wire enter the terminal connection.

TB1 – INPUT TERMINAL (ALL MODELS)	
PIN NO.	ASSIGNMENT
1	FG (Frame Ground)
2	AC/N
3	AC/L

TB2 – OUTPUT (MDR-10 / 20) – 3 PINS	
PIN NO.	ASSIGNMENT
1	DC OUTPUT +V
2	DC OUTPUT –V
3	DC OK active signal

MDR-10 / 20 use DC OK active signal (no relay contact).

TB2 – OUTPUT (MDR-40 / 60 / 100) – 6 PINS	
PIN NO.	ASSIGNMENT
1, 2	DC OUTPUT +V
3, 4	DC OUTPUT –V
5, 6	DC OK relay contact

MDR-40 / 60 / 100 include a DC OK relay contact (30V/1A resistive load) occupying 2 pins.

FRONT PANEL CONTROLS	
+V ADJ	DC output voltage adjustment (MDR-20/40/60/100)
DC OK	DC output status indicator LED

MDR-10 does not include a +V ADJ potentiometer — the output voltage is fixed.

Wiring Note: The FG pin must be connected to PE. Both –V pins and both +V pins (on MDR-40/60/100) should be connected to prevent excessive current stress on a single contact. The two DC OK pins are the relay contact terminals.

MDR Series Wiring Specification

Recommended wire gauge, terminal torque settings, and DC OK relay contact configuration for the MDR Series.

Recommended Wire

AWG	RATED CURRENT	CROSS-SECTION
18	0–6 A	0.75 mm ²
16	6–10 A	1.00 mm ²
14	13–16 A	1.52 mm ²
12	16–25 A	2.5 mm ²

Use stranded copper wire only. Use wires that can withstand temperatures of at least 80°C, such as UL1007.

Terminal Torque Setting

MODEL GROUP	TORQUE	STRIPPING LENGTH
MDR-10 / 20	5 kgf-cm (4.4 Lb-in)	5 mm (0.197")
MDR-40 / 60 / 100	5 kgf-cm (4.4 Lb-in)	5 mm (0.197")

Recommended screwdriver: 3 mm slotted type.

DC OK Relay Contact (MDR-40 / 60 / 100)

STATE	CONDITION
Contact Close	PSU turns on / DC OK
Contact Open	PSU turns off / DC Fail
Max Rating	30V / 1A resistive load

Applies to MDR-40, MDR-60 and MDR-100. MDR-10 and MDR-20 use DC OK active signal.

DC Output Voltage Adjustment: MDR-20, MDR-40, MDR-60 and MDR-100 include a front-panel (+V ADJ). MDR-10 does not include a +V ADJ potentiometer. Output current and output wattage must not exceed the rated value on the specification.

MDR Series Safety & Cautions

Read and follow all safety instructions before installing, wiring, maintaining or modifying the MDR Series power supply.

01 • ELECTRICAL SHOCK HAZARD

Risk of electrical shock and energy hazard. All failures should be examined by a qualified technician. Do not remove the case.

02 • PRIMARY / SECONDARY ISOLATION

Connecting both the primary and the secondary sides together is not allowed — risk of electric arcs and electric shock (danger to life).

03 • BURN HAZARD

Do not touch the unit in operation and shortly after disconnection.

04 • FIRE & SHORT CIRCUIT

The openings should be protected from foreign objects or dripping liquids.

05 • PROTECTIVE EARTH

The FG (Frame Ground) must be connected to PE (Protective Earth).

06 • RATED OUTPUT

Output current and output wattage must not exceed the rated value on its specification.

07 • BEFORE SERVICING

Disconnect the system from supply voltage before any installation, maintenance or modification work.

08 • FUSE REPLACEMENT

For continued protection against risk of fire, replace only with the same type and rating of fuse.

09 • EMC DIRECTIVE

The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.

Pollution Degree 2: Applies where there is only non-conductive pollution that might temporarily become conductive due to occasional condensation. Generally refers to dry, well-ventilated locations, such as control cabinets.

MDR Series Industrial Applications

The MDR Series is suitable for industrial control systems, factory automation equipment, electrical panels, semiconductor manufacturing equipment and hazardous location applications.

▣ Industrial Control Systems	▣ Factory Automation	▣ Electrical Panels
▣ Semiconductor Equipment	▣ Hazardous Locations (Div 2)	▣ Machine Control
▣ Building Automation	▣ Process Control	▣ Test & Measurement

TYPICAL USE CASES

CONTROL CABINETS Ultra-slim 22.5–55 mm housing and DIN rail mounting make the MDR Series ideal for space-constrained control cabinets and electrical panels.	FACTORY AUTOMATION Reliable single-output DC power with full protection functions for PLC, sensor, relay and actuator circuits in automation equipment.
HAZARDOUS LOCATIONS MDR-40/60/100 are certified for Class I, Div 2 Group A, B, C, D Hazardous Locations T4, suitable for oil, gas, and chemical processing environments.	TEST & MEASUREMENT High efficiency up to 88% and stable DC output support precision test, measurement and process control equipment.

FAQ & Contact Information

Frequently asked questions and DAPPRA contact details.

What is the DAPPRA MDR Series?

The DAPPRA MDR Series is an ultra-slim plastic-housing single-output DIN rail power supply series. It covers 10W, 20W, 40W, 60W and 96W with 5V, 12V, 15V, 24V and 48V output configurations, and is designed for space-constrained industrial control and automation applications.

What is the input voltage range of the MDR Series?

All MDR Series models support a universal AC input range of 85–264 VAC (single phase) or 120–370 VDC.

What output voltages are available in the MDR Series?

The MDR-10 and MDR-20 offer 5V, 12V, 15V and 24V output options. The MDR-40 and MDR-60 offer 5V, 12V, 24V and 48V; the MDR-100 offers 12V, 24V and 48V.

Which MDR models include a DC OK relay contact?

The MDR-40, MDR-60 and MDR-100 models include a DC OK relay contact (30V/1A resistive load) on two terminal pins. The MDR-10 and MDR-20 use a DC OK active signal instead.

What is the efficiency of the MDR Series?

Efficiency ranges from 76% (MDR-20-5) up to 88% (MDR-40 and MDR-60 24V/48V models), depending on the model and output voltage.

What is the no-load power consumption of the MDR Series?

No-load power consumption is below 0.75W for MDR-10, MDR-20, MDR-40 and MDR-60, and below 1W for MDR-100.

What is the maximum operating temperature of the MDR Series?

The maximum operating temperature is 70°C for MDR-10, MDR-20, MDR-40 and MDR-60 (with derating above 50°C), and 60°C for MDR-100.

What is the terminal pin assignment of the MDR Series?

TB1 (Input): Pin 1 = FG, Pin 2 = AC/N, Pin 3 = AC/L. TB2 (Output, MDR-10/20): Pin 1 = +V, Pin 2 = -V, Pin 3 = DC OK active signal. TB2 (Output, MDR-40/60/100): Pin 1,2 = +V, Pin 3,4 = -V, Pin 5,6 = DC OK relay contact.

What certifications does the MDR Series have?

The MDR Series is certified to UL508, UL62368-1, TUV BS EN/EN62368-1, EAC TP TC 004, BSMI CNS14336-1 and AS/NZS 60950.1. MDR-40, MDR-60 and MDR-100 are also certified for Class I, Div 2 Hazardous Locations T4.

How do I choose the right MDR Series model?

Select the MDR model according to the required output power (10W to 96W), output voltage, whether a DC OK relay contact is needed, and available DIN rail mounting space in the control cabinet.

Contact DAPPRA

For product selection, technical support, samples or quotation, please contact us through the channels below.

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Notice: Specifications, dimensions and model availability in this datasheet are subject to change without prior notice. Please refer to the latest DAPPRA official documentation or contact DAPPRA for the most current information. MDR Series Datasheet · Doc No. MDR-DS-001 · Rev. 1.0 · 2024-01.