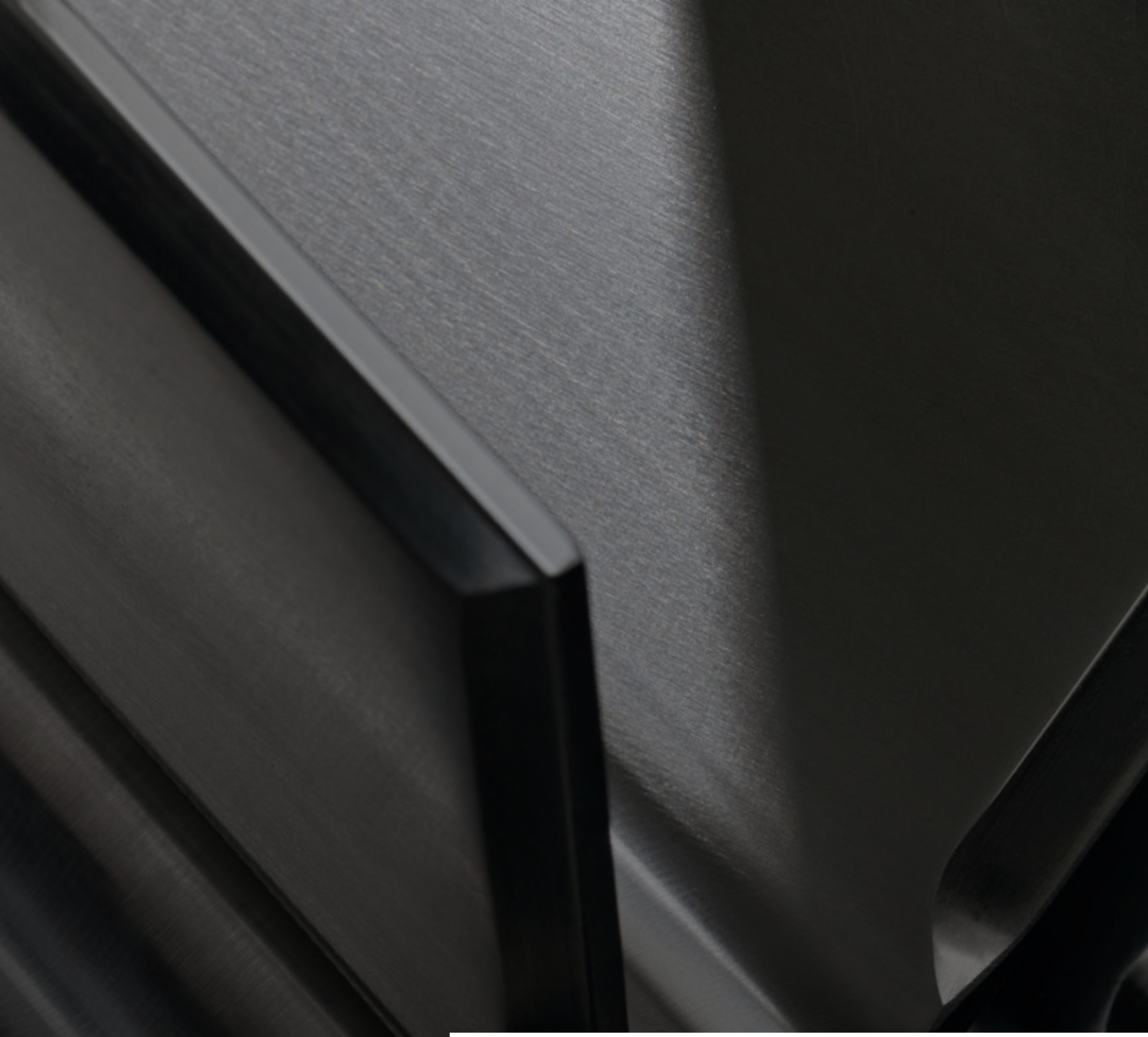
DMN WESTINGHOUSE

RID 3.0
USER AND SAFETY MANUAL

ROTOR INTERFERENCE DETECTION RID 3.0

Part number	22464112
Version	1.06
Date	April 23, 2025



CONTENTS

CHAPTER 1

PREFACE

This user and safety manual applies to the DMN-WESTNGHOUSE Rotor Interference Detector (RID) 3.0, part number 22464112.

Read this information carefully to prevent damage to the module or any harm to persons or objects.

SUPPLIER INFORMATION

DMN-WESTINGHOUSE
Gieterij 3
2211 WC Noordwijkerhout
Netherlands
Phone: +31 252 361 800

Figure 1: Overview of the RID 3.0

CHAPTER 2

INTRODUCTION

The RID 3.0 is intended to be used as an instrument detecting metal to metal contact in rotating valves for food transportation to prevent metal parts or burs accidentally to be added to the product.

2.1 TECHNICAL SPECIFICATIONS

- Supply voltage: 24VDC +/- 10%, Overvoltage category I.
- Power consumption: 150mA
- Ambient temperature: Min -20°C or -4 °F, Max 60°C or 140°F
- Storage temperature: Min -20°C or -4 °F, Max 60°C or 140°F
- Relative humidity: 30 to 70%, non-condensing
- Altitude: sea level to 2000m.
- Relay contacts OK, MTM, OL, CONT: Max 1A DC. Switching voltage may be max 48VDC relative to the 24VDC supply ground
- Optically isolated inputs RST and CIP: Max 24VDC +/-10%. Voltage may be max 48VDC relative to the 24VDC supply ground
- Current maximum floating through sensor inputs S1, S2: 5mA. Open voltage 3.3VDC. S2 side must be grounded. S1/S2 may be max 28VDC relative to the 24VDC supply ground. Maximum cable length: 20meter, 0.75mm2
- Resistant measurement range: 0-10kohm, accuracy: 0-1kohm/1k-10kohm 10ohm resp. 100ohm
- Sample rate of sensor resistance: 1kHz
- USB connection: USB2.0 via USB-C connector
- Network connection: EtherNet/IP™ (Dual port)
- 4-20mA current output representing the measured resistance (range adjustable by software). Gnd side of the 4-20mA loop is connected to the 24VDC supply ground.

CHAPTER 3

SAFETY PRECAUTIONS

Before installing or operating the RID 3.0, please carefully review the safety instructions below. Proper handling and certified installation are essential to ensure safe and reliable use, especially in specialised environments such as ATEX zones.

IMPORTANT HANDLING AND INSTALLATION REQUIREMENTS

- The RID 3.0 may only be installed by certified electrical engineers.
- Take the necessary ESD precautions handling and installing the module.
- Any assistant regarding installation or handling may be obtained from:
  DMN-WESTINGHOUSE
  Gieterij 3
  2211 WC Noordwijkerhout
  Netherlands
  Phone: +31 252 361 800
- For Atex Environments, a zener safety barrier must be added to the system.
  Suggested parts: Pepperl and Fuchs Z 710 or Pepperl and Fuchs Z 960.
- For correct and safe operation the open loop detector resistance box must be connected to the S1/S2 sensor inputs at the most far away position from the RID 3.0, to be sure the whole measurement loop is included for open loop detection.
- The RID 3.0 may only be operated in an indoor situation.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

CHAPTER 4

INSTALLATION

The RID 3.0 consists of two parts respectively the module itself and the open loop resistor box. (For an Atex environment a safety barrier must be added to the system).

4.1 MOUNTING

The RID 3.0 must be mounted on a din rail in a horizontal or vertical position (direction not relevant). The module can be mounted between other modules as long as the ambient temperature is not exceeded. The front panel of the RID 3.0 must be inside the enclosing cabinet. The RID 3.0 itself does not need any special ventilation requirements.

4.2 ELECTRICAL INSTALLATION

The RID 3.0 has the following connections:

RELAY CONNECTIONS

(NO= normal open, NC= normal closed, C= common)

CONT (CONTAMINATION DETECTION)

This relay output switches when the resistance measurement exceeds the contamination level for the given time slot.

MTM (METAL TO METAL AND CIP DETECTION)

This relay output switches when the resistance measurement exceeds the MTM or CIP level for the given timeslot and incident setting.

OL (OPEN LOOP DETECTION)

This relay output switches when there is an interruption in the sensor wiring.

OK (OK SIGNAL)

This relay is always on when the module is operating.

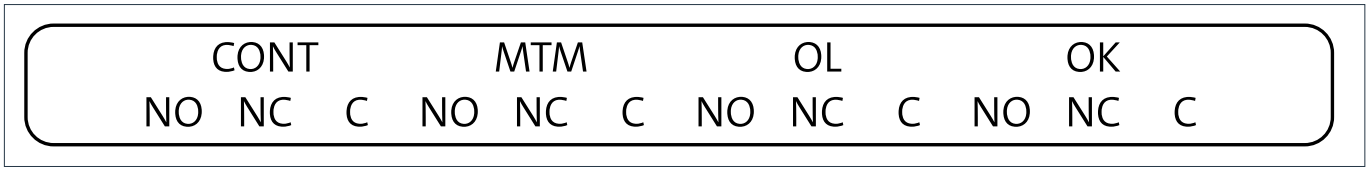


Figure 2: Relay connections

SUPPLY CONNECTIONS

At the connections 24VDC (+/-) the supply voltage must be applied.

RST AND CIP INPUTS (+/-)

At these Optically isolated inputs a 24VDC can be applied to reset the module (RST, single minimum 0.1sec pulse signal) or set the module into Cleaning in Progress mode (CIP – permanent signal during CIP).

Continued on next page ▸▸

IOUT OUTPUT (+/-)

At this port a 4-20mA measuring device can be connected to monitor the measured resistance.
Please note: the negative side of the 4-20mA output is connected to the negative terminal of the supply voltage.

SENSE (S1/S2)

At this port the sense line must be connected, terminated by the resistor box. S2 must be connected to protective ground at the machine side.

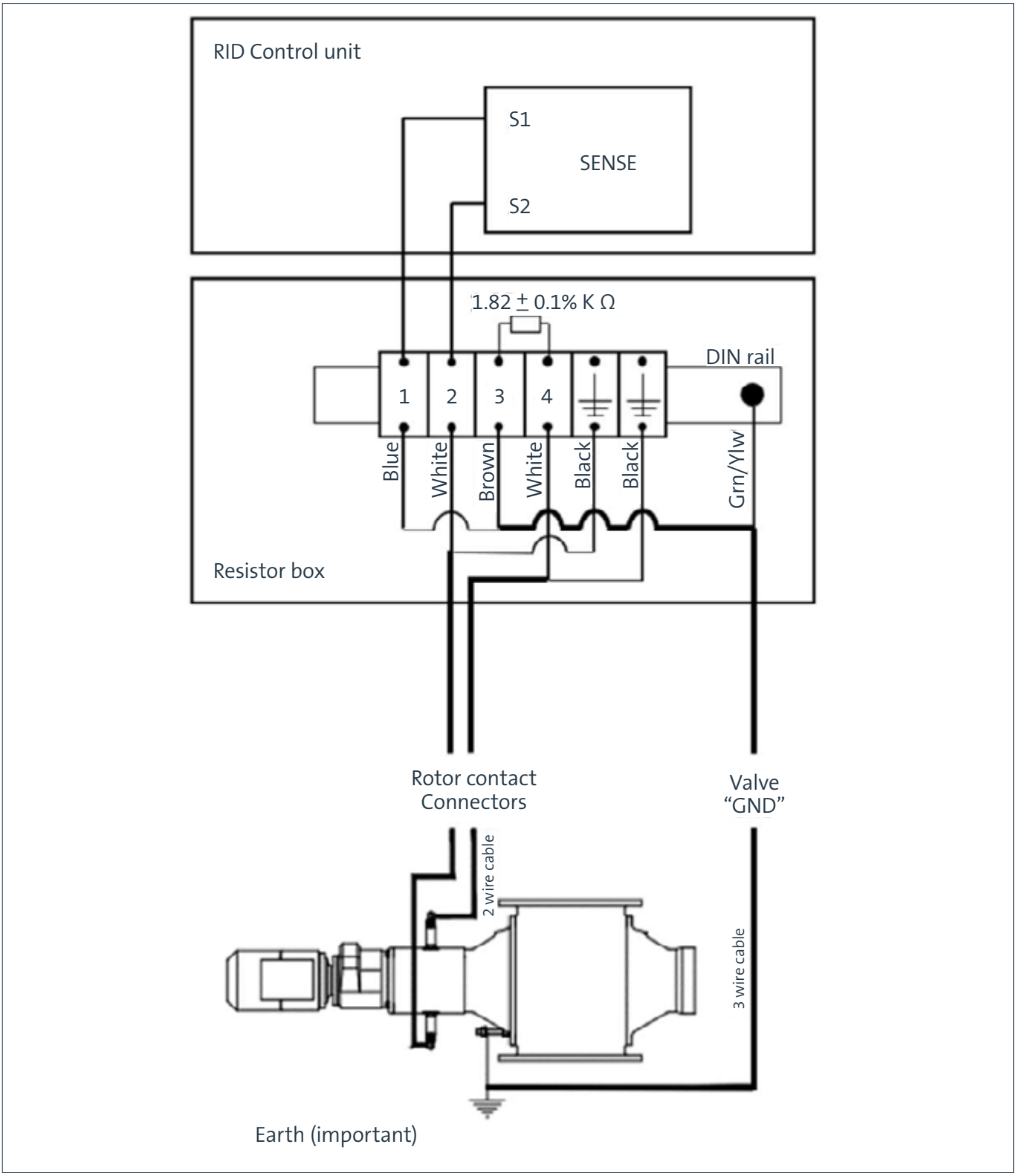


Figure 3: Sense lines directly connected to the machine.

Continued on next page ▸▸

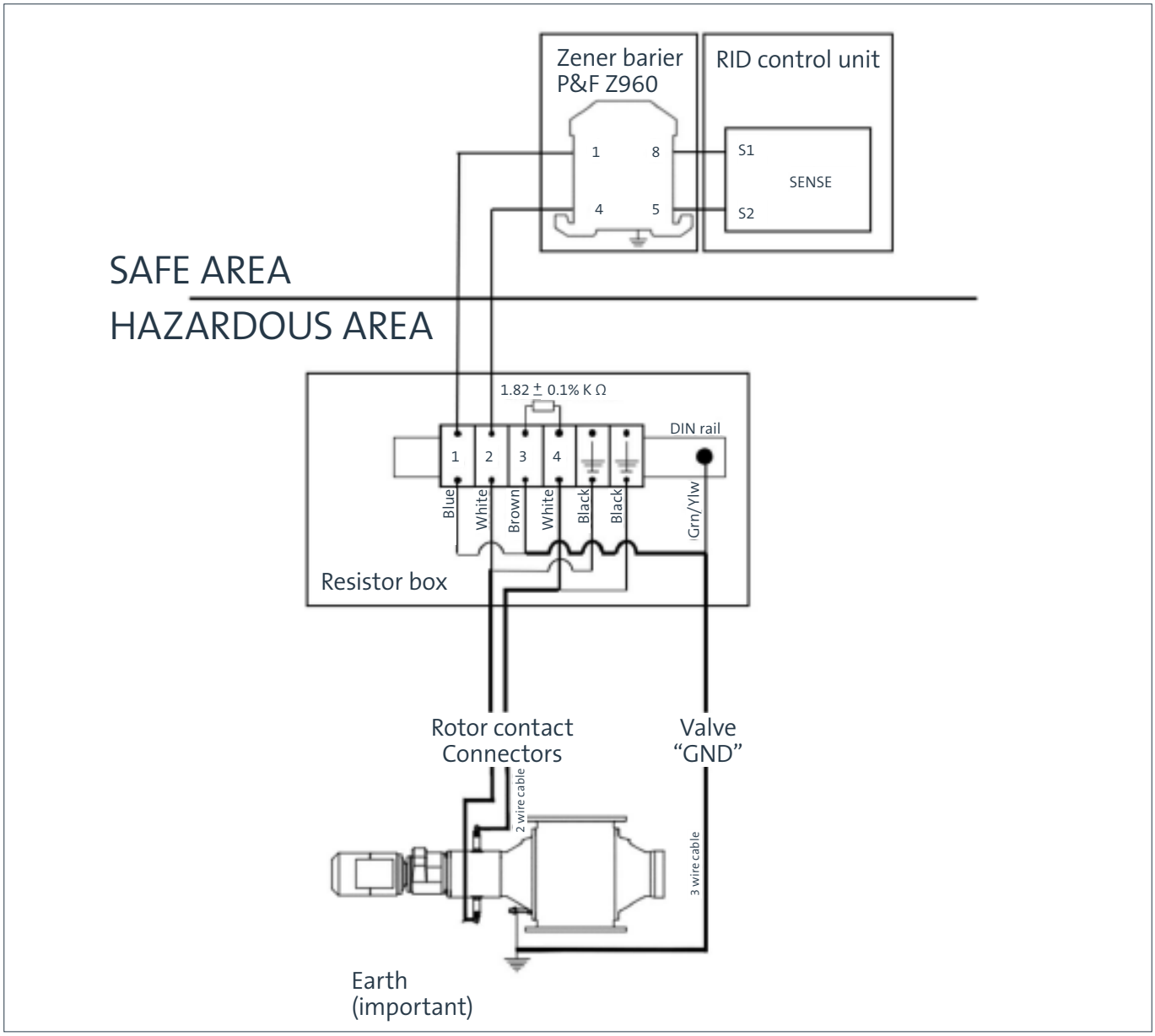


Figure 4: RID 3.0 connected using a Barrier.

IOUT		RST		CIP		24VDC		SENSE			
+	-	+	-	+	-	+	-	S1	S2	NA	NA

Figure 5: Supply, inputs, sensing and 4-20mA connections.

USB CONNECTION

At this port a PC can be connected to monitor and set the module with a dedicated service tool.

ETHERNET/IP™ CONNECTION

With this port the module can be connected to an Allen Bradley PLC network.
The second port can be used to chain multiple devices.

CHAPTER 5

OPERATION

This chapter outlines how to correctly set up and operate the RID 3.0. It includes mounting instructions, default configuration settings, and guidance on making adjustments using the web interface or service tool.

5.1 SETUP

The RID 3.0 has the following default settings:

MTM SETTINGS

- Detection Level 50 ohm
- Minimum detection time 1.000 msec
- Number of Incidents 3
- Within time 5.000 msec
- Pulse time relay 0 sec msec (0 = permanent)

CIP SETTINGS

- Detection Level 50 ohm
- Minimum detection time 1.000 msec
- Number of Incidents 3
- Within time 5.000 msec
- Pulse time relay 0 sec msec (0 = permanent)

CONTAMINATION SETTINGS

- Detection Level 1.000 ohm
- Minimum duration 60 sec
- Pulse time relay 0 sec msec (0 = permanent)

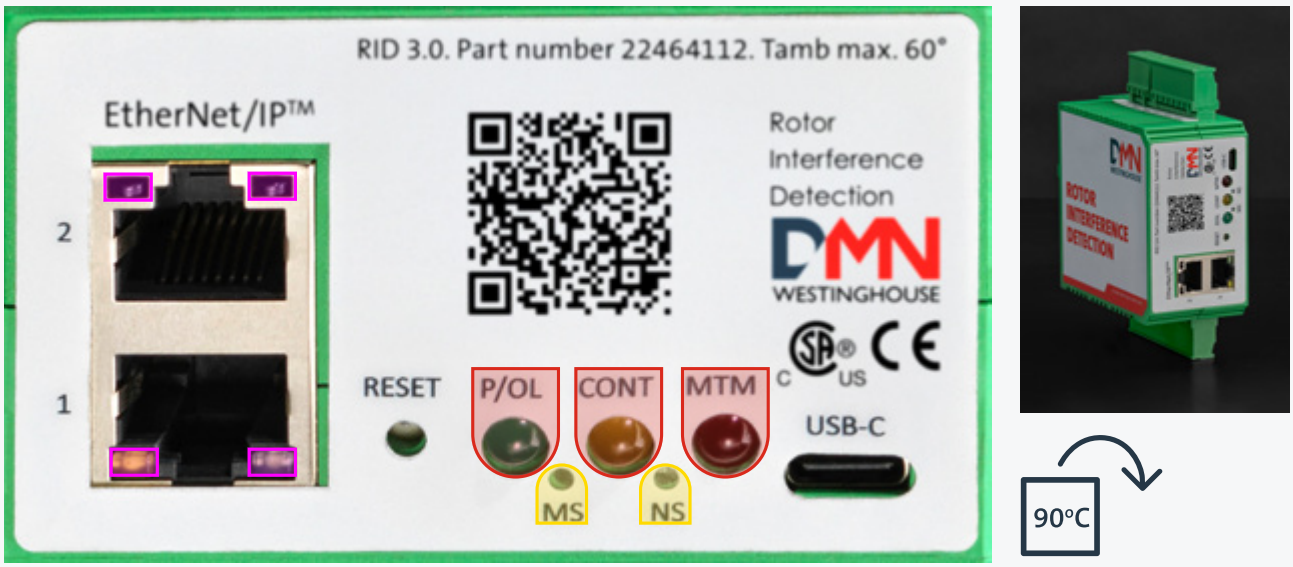
GENERAL SETTINGS

- 4-20mA lower setpoint 0 ohm
- 4-20mA upper setpoint 1.000 ohm
- Open loop detection after 5.000 msec
- Auto reset after 5 sec Disabled
- Activate CIP mode Disabled

The settings can be changed by the web interface (EtherNet/IP™) or service tool (USB).
Please refer to the RID Service Tool or Web Interface manual.

Take care changing the parameters. Contact DMN-WESTINGHOUSE in case of any doubt.

Continued on next page ▸▸



LEGEND

- Ethernet connector indicators
- RID LED indication
- Module en Network status

Figure 6: Front panel

5.2 BUTTONS

The RID 3.0 has one button. This is an extra alarm Reset button, that only can be operated using a small pin, pushing it through the front panel at the location RESET.

5.3 INDICATORS

The RID 3.0 has 3 operations indicators, 2 network indicators and 4 Ethernet connector indicators.

OPERATIONS INDICATORS

LED	INDICATION
P/OL (green)	This indicator is steady green to show correct power supply. The led flashes fast the moment an Open Loop is detected.
CONT (yellow)	This indicator turns yellow, the moment a contamination alarm is detected.
MTM (red)	This indicator turns red when a MTM (or CIP) alarm is detected.

During startup, all indicators show a running light and light up together for a short period.

Continued on next page ▸▸

MS (NETWORK MODULE STATUS)*

LED COLOUR	MEANING
	**Off:** no power, no IP address.
	**Green LED on:** online, one or more connections established.
	**Green LED flashing:** online, no connections established.
	**Red LED on:** duplicate IP address, fatal error.

** During startup both indicators show red and green for a short period of time.*

NS (NETWORK STATUS)*

LED COLOUR	MEANING
	**Off:** no power.
	**Green LED on:** controlled by a Scanner in Run state and, if CIP Sync is enabled, time is synchronized to a Grandmaster clock.
	**Green LED flashing:** not configured, Scanner in Idle state, or, if CIP Sync is enabled, time is synchronized Grandmaster clock.
	**Red LED on:** recoverable fault(s). Module is configured, but stored parameters differ from currently used parameters.

** During startup both indicators show red and green for a short period of time.*

During startup both indicators show red and green for a short period of time.

ETHERNET CONNECTOR INDICATORS

The following table shows the function of these indicators

GREEN LED	YELLOW LED	INDICATION
		**Green LED off/Yellow LED off:** no network connection.
		**Green LED off/Yellow LED on:** link detected 10Mbit.
		**Green LED on/Yellow LED off:** link detected 100Mbit.
		**Green LED on/Yellow LED on:** link detected 1Gbit.

Please note: these indicators do not light up during startup.

VERSION CONTROL

V1.0.0	Initial document	03-11-2023
V1.0.1	Added supplier (Page 4), added extra mounting instructions (Page 5), added ventilation requirements (Page 5), added warning in case of misusage of the RID (page 5), added over voltage category (page 4)	19-11-2023
V1.0.2	Changed over voltage category (page 4)	29-11-2023
V1.0.3	Removed concept from document	19-02-2024
V1.0.4	Adjusted for CSA certification	30-01-2025
V1.0.5	Adjusted for CSA certification	25-03-2025
V1.0.6	Adjusted for CSA certification	23-04-2025

DMN-WESTINGHOUSE
Gieterij 3
2211 WC Noordwijkerhout
The Netherlands

+31 252 361 800

FUTURE-PROOF VALUE SINCE 1950