USER AND SAFETY MANUAL

ROTOR INTERFERENCE DETECTION 3.0

Part number	22464112
Version	1.0.3
Date	February 19, 2024

FUTURE-PROOF VALUE SINCE 1950

CONTENT

V1.0.0	Initial document	3-11-2023
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

1. PREFACE

This user and safety manual applies to the DMN-WESTNGHOUSE Rotor Interference Detector V3, 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

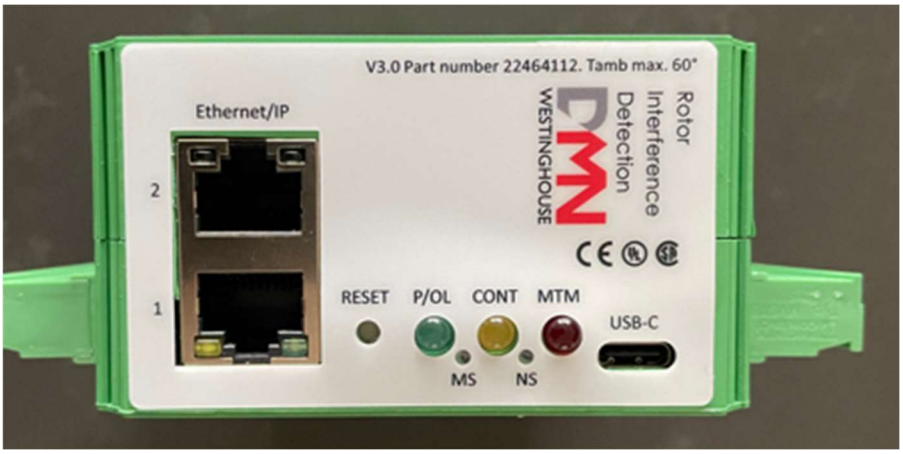

Figure 1: front side of the RID 3.0

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 1000m.
- Relay contacts OK, MTM, OL, CONT: Max 1A AC/DC. Switching voltage may be max 48V relative to the 24VDC supply ground
- Optically isolated inputs RST and CIP: Max 24VDC +/-10%. Voltage may be max 48V 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

3. SAFETY PRECAUTIONS

- The RID V3 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 V3, to be sure the whole measurement loop is included for open loop detection.
- The RID 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.

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 V3 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 must be inside the enclosing cabinet. The RID itself does not need any special ventilation requirements.

4.2. ELECTRICAL INSTALLATION

The RID 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)

IOUT output (+/-)
At this port a 4-20mA measuring device can be connected to monitor the measured resistance. 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

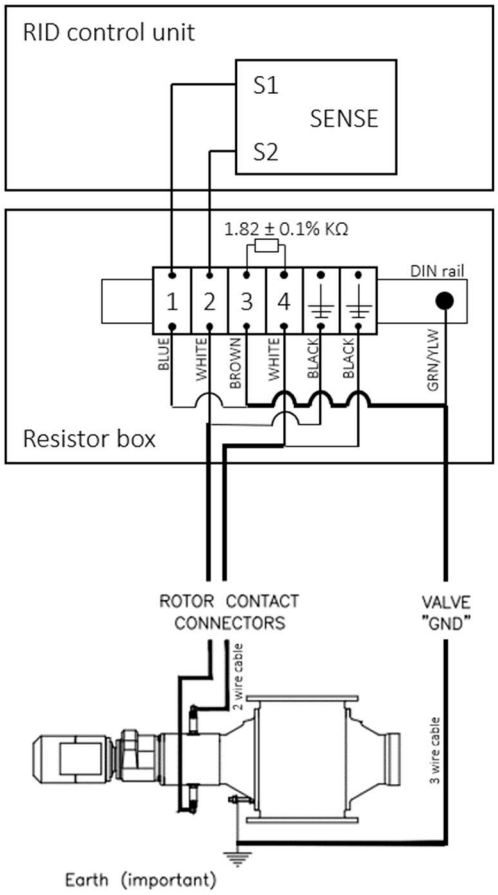

Figure 3: Sense lines directly connected to the machine.

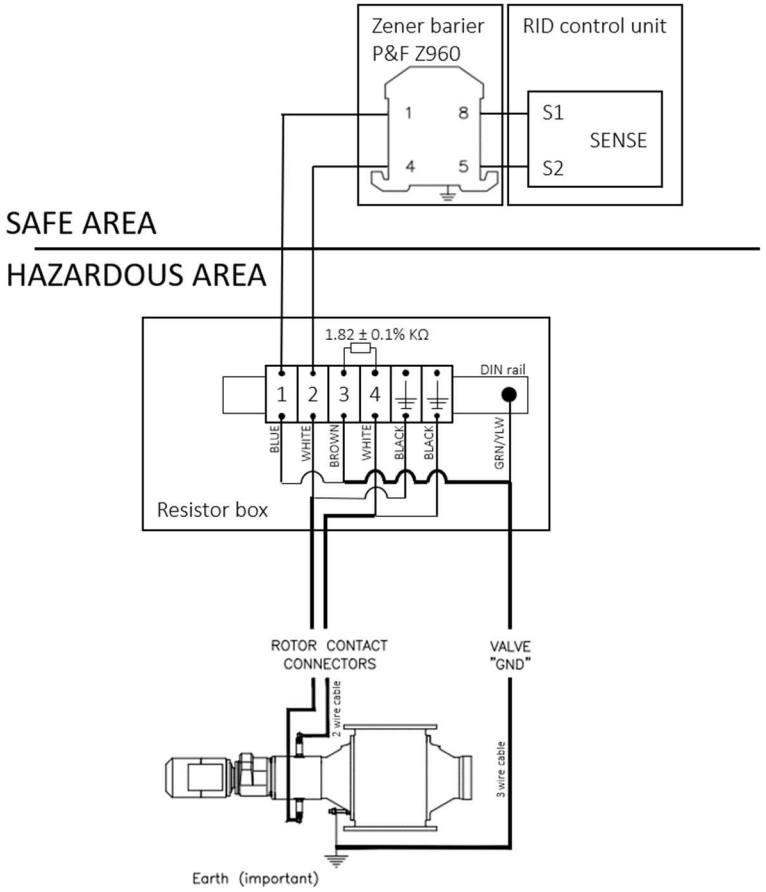

Figure 4: RID connected using a Barrier.

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.

5. OPERATION

5.1. SETUP

The RID has the following default settings:

MTM Settings

- Detection Level 50 ohm
- Minimum Detection Time 1000 msec

- Number of Incidents 3
- Within Time 5000 msec
- Pulse Time Relay 0 msec (0= permanent)

CIP Settings

- Detection Level 10 ohm
- Minimum Detection Time 1000 msec
- Number of Incidents 3
- Within Time 5000 msec
- Pulse Time Relay 0 msec (0= permanent)

Contamination Settings

- Detection Level 1000 ohm
- Minimum Duration 60 sec
- Pulse Time Relay 0 msec (0= permanent)

General Settings

- 4-20mA Lower Setpoint 0 ohm
- 4-20mA Upper Setpoint 1000 ohm
- Open Loop Detection After 5000 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.

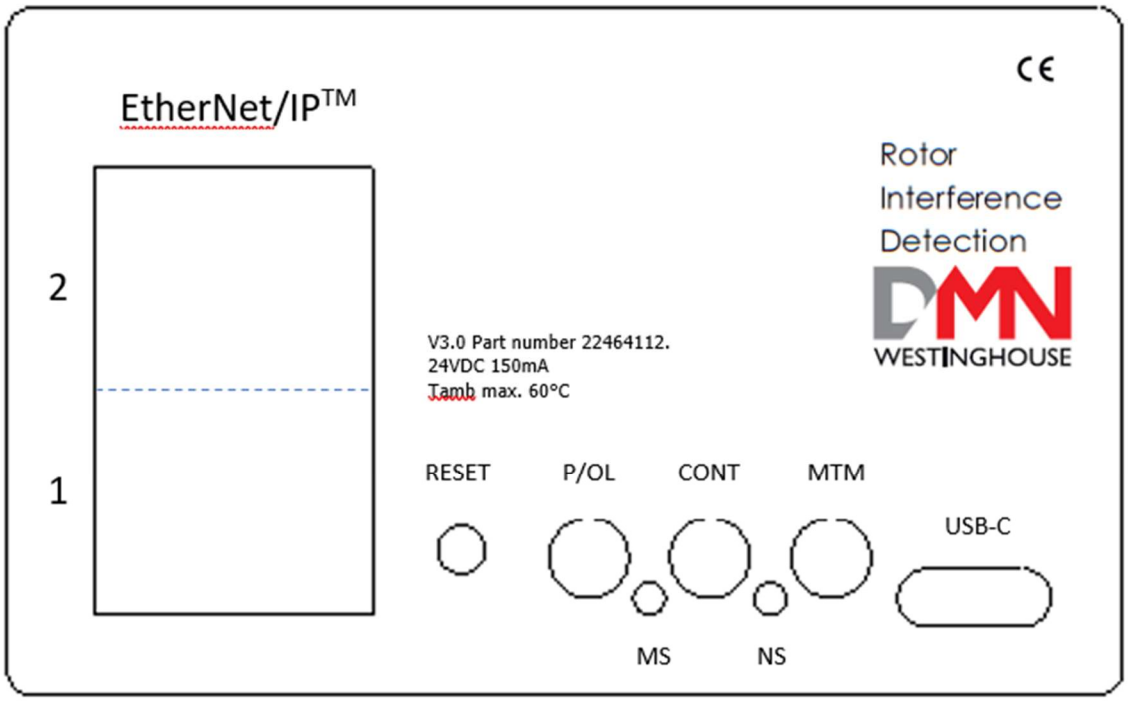

Figure 6: Front panel

5.2. BUTTONS

The RID V3 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 V3 has 3 operations indicators, 2 network indicators and 4 Ethernet connector indicators

Operations Indicators

- 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

Network Indicators

- MS (Network Module Status)

Off	No power, no IP address
Green	Online, one or more connections established
Green flashing	Online, no connections established
Red	Duplicate IP address, fatal error

- NS (Network Status)

Off	No Power
Green	Controlled by a Scanner in Run state and, if CIP Sync is enabled, time is synchronized to a Grandmaster clock
Green flashing	Not configured, Scanner in Idle state, or, if CIP Sync is enabled, time is synchronized Grandmaster clock
Red	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

Ethernet Connector Indicators

The following table shows the function of these indicators

Green	Yellow	Indication
Off	Off	No network connection
Off	On	Link detected 10Mbit
On	Off	Link detected 100Mbit
On	On	Link detected 1Gbit

These indicators do not light up during startup.