

VISATRON

Remote Indicator II

For Oil Mist Detectors

Operation Manual

Part-No. 180050

VNxxx/87plus
VNxxx/93
VNxxx/87-EMC
VN115/87plus EX
VN301plus (EX)
VN2020 (EX)



Part-No. 150998



About this Manual

This operation manual (Part-No. 180050) was designed to answer your questions concerning the handling, operation and maintenance of the Remote Indicator II. It contains no details about repairs.

Should you encounter any interruptions or breakdowns during operation, please contact SCHALLER AUTOMATION Industrielle Automationstechnik GmbH & Co. KG. You can expect a safe and reliable operation of the Remote Indicator II only when the device is operating in accordance with this operation manual.

Please note the following rules:

- This operation manual is valid only for the connection of the Remote Indicator II to Oil Mist Detectors (OMD) VISATRON devices series VN87plus, VN93, VN87-EMC, VN87plus EX, VN301plus (EX) and VN2020 (EX).
- Please acquaint yourself with the operation manual.
- Read the operation manual carefully and take into account the advice given.
- Use the Remote Indicator II only for the purpose described in the operation manual.
- Incorrect maintenance and handling errors may cause failures and accidents!
- The Remote Indicator II may be used by authorised specialised staff only.
- This operation manual must be available at the place of installation at all times.

The manufacturer does not accept any guarantees resulting from improper handling or insufficient maintenance and service.

SCHALLER AUTOMATION Industrielle Automationstechnik GmbH & Co. KG precludes all guarantees for the case that incorrect device combinations are operated with devices not certified to be compatible or not admitted by the manufacturer.

Conditions of Sale

The standard conditions of sale of SCHALLER AUTOMATION (current version) shall apply to all sales of VISATRON and connected products to any of our customers.

Safety instructions

The Remote Indicator II is manufactured according to the high quality standard of SCHALLER AUTOMATION and passes the stringent factory tests. In order to keep the device in a smooth and problem free operation, the user has to take note of the safety hints and warnings. In the instruction manual and at the device they are marked with the following symbol.

Used symbols	
	CAUTION! Do not ignore the warnings. The safety of persons can be imperilled or the device can be damaged.
	WARNING! The marked text contains important information.
	The marked text contains only a hint for faster processing.

Declaration of Conformity

We, the manufacturer

SCHALLER AUTOMATION
Industrielle Automationstechnik GmbH & Co. KG
Industriering 14
D-66440 Blieskastel
Tel.: 06842 / 508-0
Fax: 06842 / 508-260

declare on our own responsibility, that the product:

Kind of equipment: **Monitoring Device**
Type-designation: **VISATRON Remote Indicator II**
Part-No.: **150998**

is in compliance with following norms:

EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
CISPR 16-1
CISPR 16-2

D-66440 Blieskastel, 2007/01/22



Stephan Schaller
- Managing Director -

Table of Contents

1	Introduction and functional overview	6
2	Installation instructions	7
2.1	Mechanical Installation	7
2.2	Electrical connection to OMD-type VN93 or VN87plus (EX)	9
2.3	Optional VN87-EMC operation mode	12
2.4	Electrical connection to OMD-type VN301plus (EX)	13
2.5	Electrical connection to OMD-type VN2020 (EX)	14
2.6	Schematic Connection Diagram	15
3	Functional description	16
4	Maintenance procedures	18
5	Accessories	18
6	Technical data	19
7	Service Partners	20
8	Notes	21



1 Introduction and functional overview

In combination with the Oil Mist Detection devices VISATRON, the Remote Indicator II from SCHALLER AUTOMATION enables a user-friendly monitoring of the Schaller OMD device, as part of a safety system at large combustion engines.

The Remote Indicator II allows the safe remote monitoring of the oil mist concentration from outside the engine room e.g. from the engine control room.

The device can be connected to VISATRON devices of series VN87plus, VN93, VN87plus EX, VN87-EMC, VN301plus (EX) and VN2020 (EX).

In use with a VN93, VN87plus, VN87plus EX or VN2020 (EX), it is possible to monitor the relative opacity and the state of one OMD device similar to the OMD display. The connection to the VN93, VN87plus (EX) and VN2020 (EX) units is realized by a RS485 two-wire bus.

Optional the Remote Indicator II can be connected to a VN87-EMC unit. This connection to the VN87-EMC is realized as a two-wire analog interface. If a VN87-EMC is connected to the Remote Indicator II, the device monitors only the oil mist concentration and not the state of the OMD device. In this case and to fulfil the IACS requests, it is necessary to monitor the status of the Ready- and the Alarm-Relay from the VISATRON device separately in your safety system.

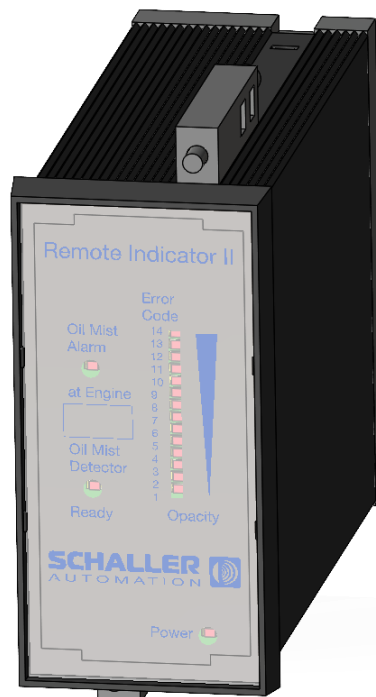


Figure 01: Remote Indicator II

2 Installation instructions

2.1 Mechanical Installation

slot size	IEC 61554, 92+0.8mm x 45+0.6mm
-----------	--------------------------------

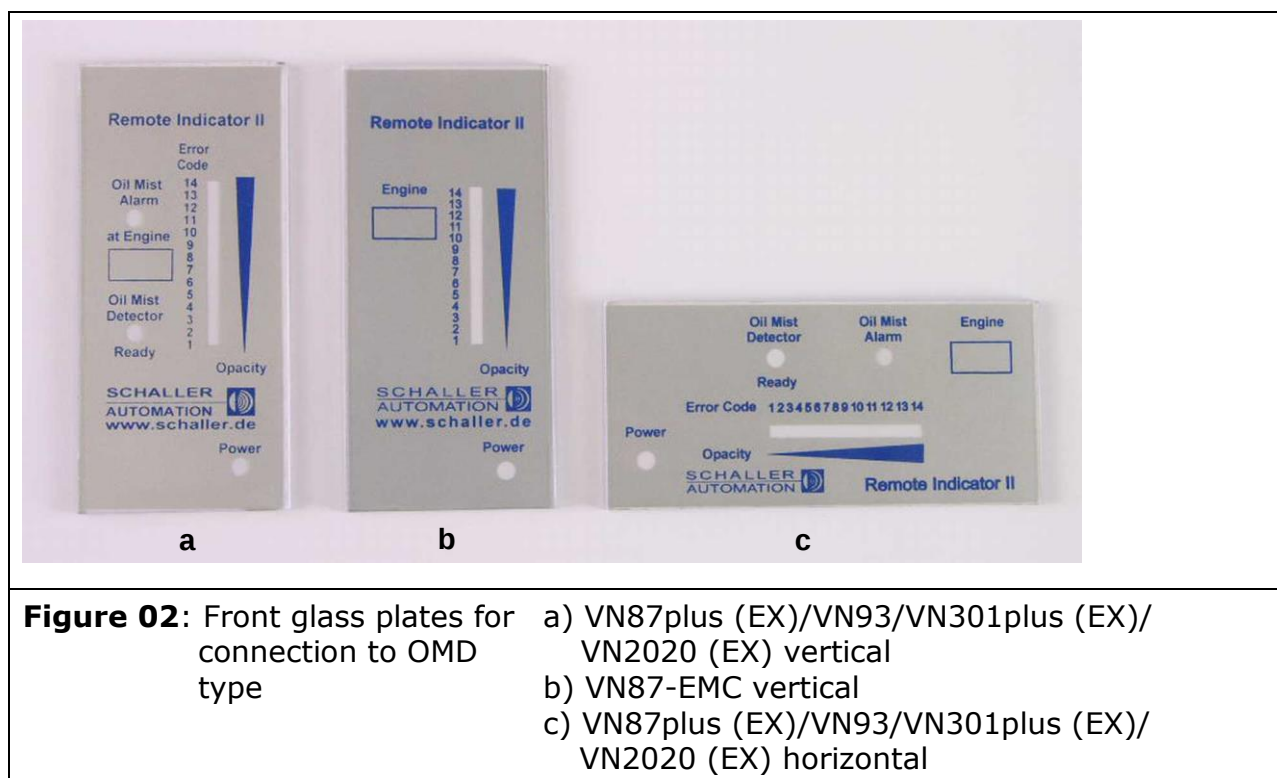
Step 1: Prepare the slot as specified.

Step 2: Select either the normal glass plate

a) for vertical installation, the additional glass plate

b) for VN87mode (see VN87-EMC operation mode)

c) for horizontal installation (included in scope of supply) or glass plate



Step 3: Put the device into the slot (see figure 3).

Step 4: Clip the fixing screws (see figure 4).

Step 5: Fix the device by turning the screws.

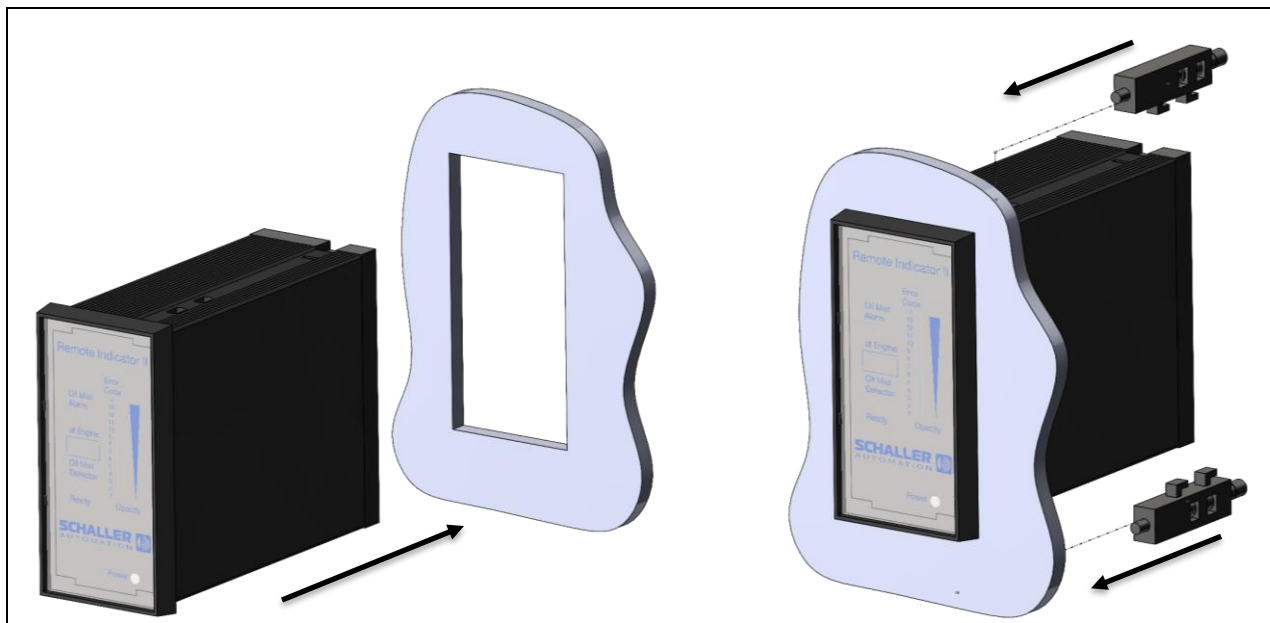


Figure 03: Insert the Remote Indicator II into the slot and push the holding clamps on the device

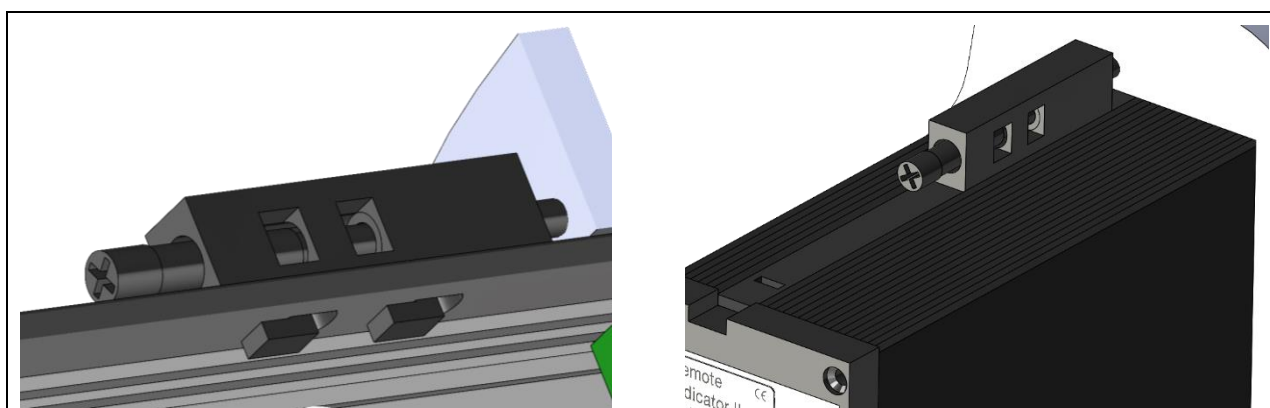


Figure 04: Mounting the fixing screws

2.2 Electrical connection to OMD-type VN93 or VN87plus (EX)

The electrical installation consists of following steps:

- Step 1: If OMD-type is VN93 or VN87plus (EX): Installation of the Terminator and the cable gland on the OMD device,
- Step 2: Connection of the VISATRON devices to the Remote Indicator II,
- Step 3: Switch-on the VISATRON OMD,
- Step 4: Connection of the power supply to the Remote Indicator II device.



Figure 05: Cable entry and terminator on the bottom side of the VISATRON devices

It is necessary to terminate the data link on both sides of the cable. In the Remote Indicator II a terminating resistor is already integrated. The terminator (see figure 06) for the VN93 or VN87plus (EX) unit is scope of supply of the Remote Indicator II package as well as the cable gland for the cable entry.

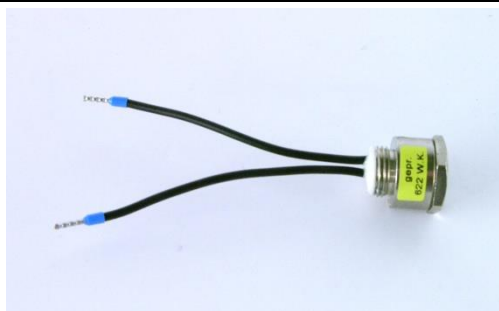


Figure 06: Terminator

All electrical connections of the Remote Indicator II are accessible at the rear connector of type Phoenix Contact MC 1,5/12-GF-3,81 (see figure 07) and the plug FK-MCP 1,5/12-STF-3,81.

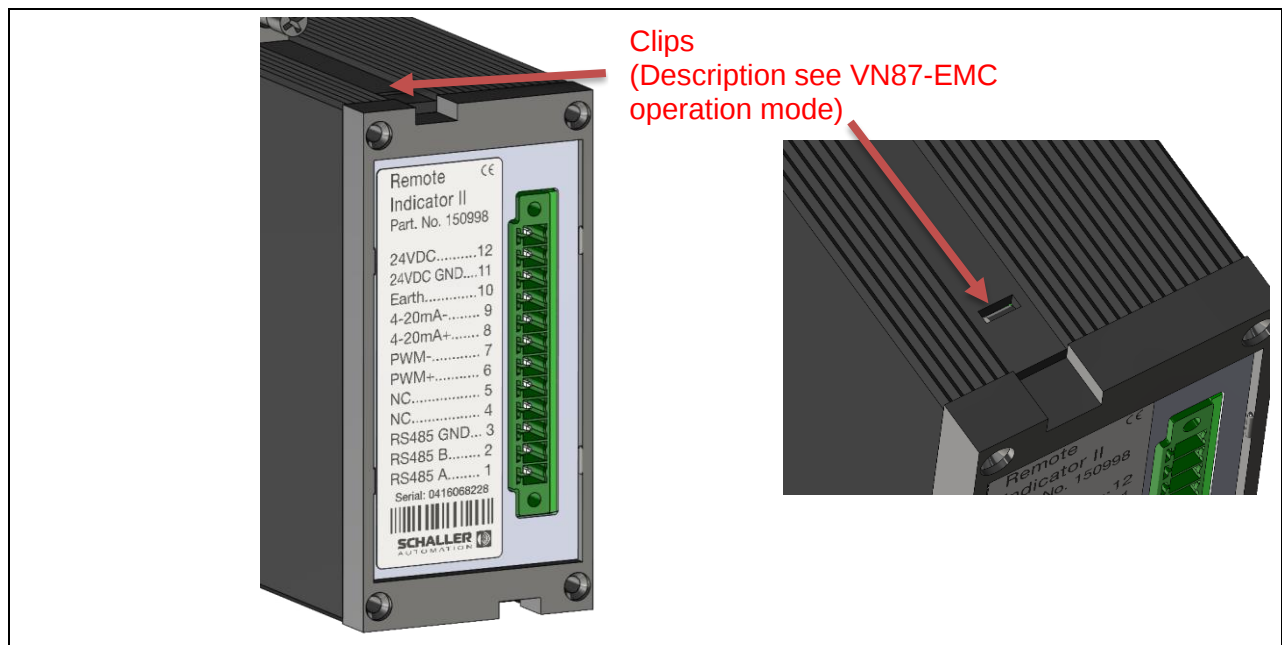


Figure 07: Connector at the rear side of the Remote Indicator II

The following tables show the pin assignment of the Remote Indicator II connector (see also the VISATRON VN93 and VN87plus (EX) manual).

Remote Indicator II to VN93 or VN87plus (EX) Oil Mist Detector		
Name	Pin-No.	Connected to
RS485 A	1	pin 13 of VN93 and VN87plus (EX)
RS485 B	2	pin 11 of VN93 and VN87plus (EX)
RS485 GND	3	
Optional current interface +	4	
Optional current interface -	5	
VN87 – PWM interface +	6	
VN87 – PWM interface -	7	
4 - 20mA Output + (max. 220Ohm)	8	optional to alarm monitoring system
4 - 20mA Output -	9	optional to alarm monitoring system
Earth	10	earth and data cable shield
Power supply GND	11	0 Volts
Power supply 24Volts	12	+ 24Volts DC

Table 01: Pin assignment and connection to VN93 or VN87plus (EX)

The used data cable must be twisted pair and shielded. The total bus length is limited to 400m.

We recommend LAPPKABEL UNITRONIC-BUS LD 2x2x0,22mm².



The shield must be connected directly at the cable gland!

After the correct electrical connection and a power-up phase of 30sec, following display appears:

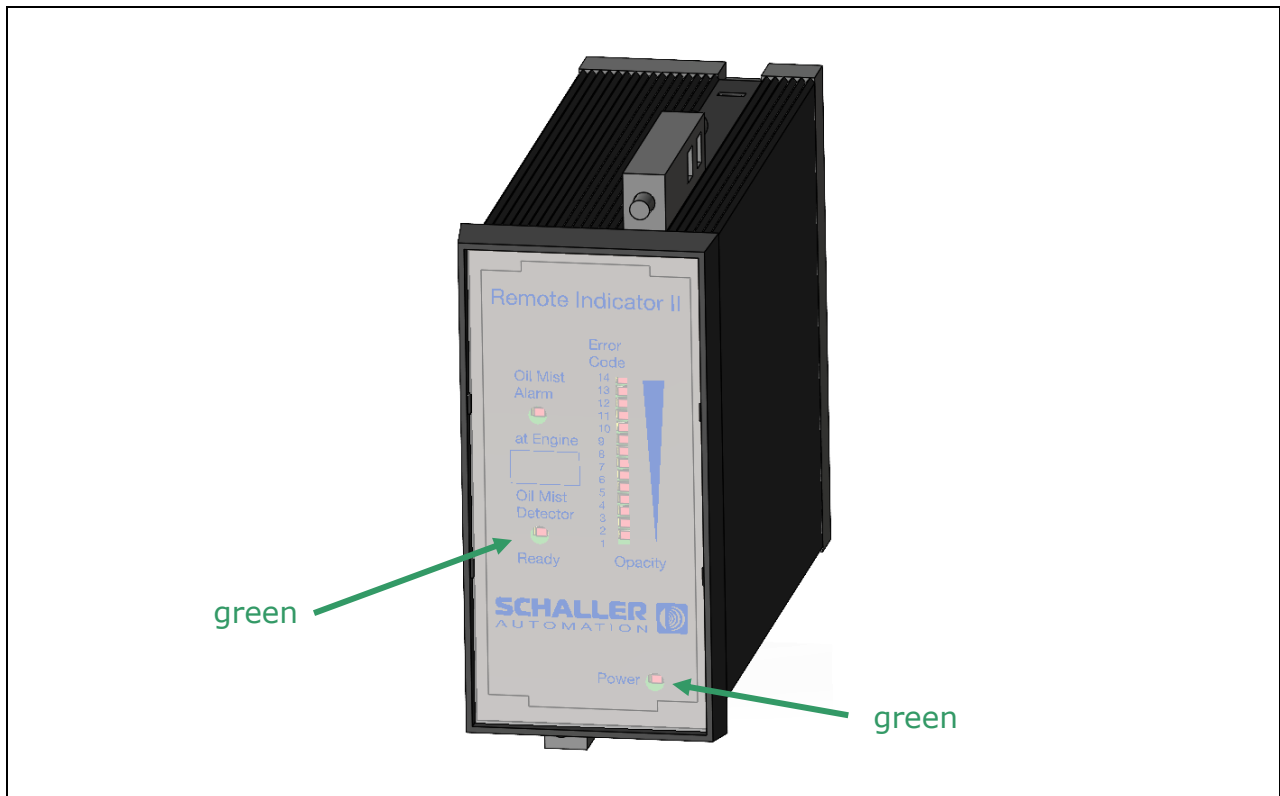


Figure 08: Ready Mode

If the serial RS485-connection between the VISATRON Remote Indicator II and the VISATRON OMD device cannot be established, the **Ready**-LED is **blinking**. In this case check that the OMD device is switched on and the wires of the communication cable are not interchanged.

2.3 Optional VN87-EMC operation mode

	First step to adjust the VN87-EMC operation mode: Switch off the power!!
---	---

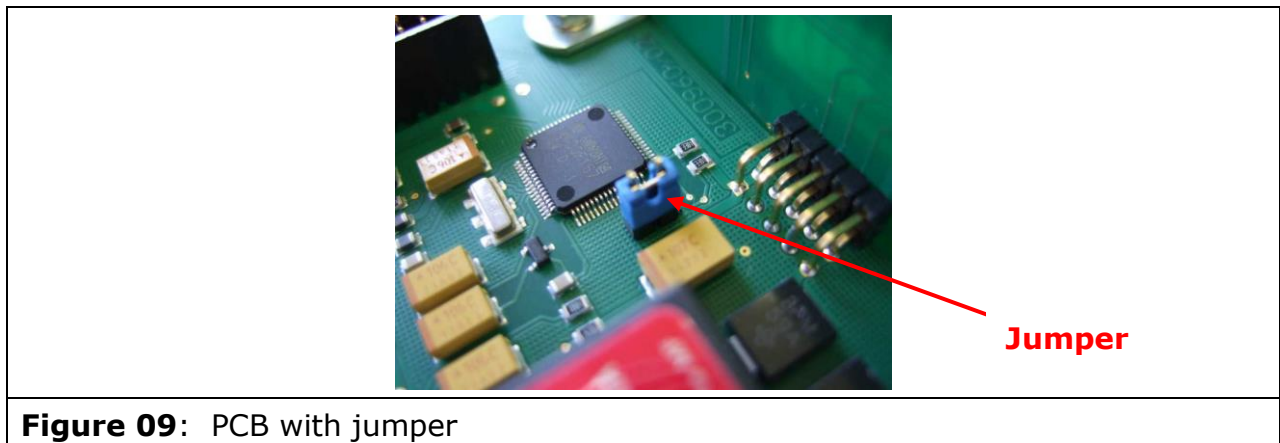
If the Remote Indicator II is connected to a VN87-EMC unit, following pin assignment is valid:

Remote Indicator II to VN87-EMC Oil Mist Detector		
Name	Pin-No.	Connected to
RS485 A	1	
RS485 B	2	
RS485 GND	3	
Optional current interface +	4	
Optional current interface -	5	
VN87 – PWM interface +	6	pin 9 of VN87
VN87 – PWM interface -	7	pin 10 of VN87
4 - 20mA Output + (max. 220 Ohm)	8	optional to alarm monitoring system
4 - 20mA Output -	9	optional to alarm monitoring system
Earth	10	earth and data cable shield
Power supply GND	11	0 Volts
Power supply 24Volts	12	+ 24Volts DC

Table 02: Pin assignment and connection to VN87-EMC

To enable the VN87-EMC operation mode a jumper (also scope of supply) has to be installed inside the Remote Indicator II. First you have to remove the window at the front side and then open the two clips at the upper and lower rear side (see figure 07) to remove the backplate. Now the jumper can be installed (see figure 09). Carefully push the PCB back inside the housing and lock the backplate again. At last mount the window at the front side.

	Finalize the installation by mounting the window at the front side using front glass plate b) (see Fig. 2) for vertical VN87-EMC installation
---	--



2.4 Electrical connection to OMD-type VN301plus (EX)

The electrical installation consists of following steps:

- Step 1: If OMD-type is VN301plus (EX): Use existing cable gland on the OMD device, see manual page 67 – chapter 6.4.4,
- Step 2: Connection of the VISATRON devices to the Remote Indicator II,
- Step 3: Switch-on the VISATRON OMD,
- Step 4: Connection of the power supply to the Remote Indicator II device.

Remote Indicator II to VN301plus (EX) Oil Mist Detector		
Name	Pin-No.	Connected to
RS485 A	1	RS485 A Central Unit
RS485 B	2	RS485 B Central Unit
RS485 GND	3	RS485 GND
Optional current interface +	4	
Optional current interface -	5	
VN87 – PWM interface +	6	
VN87 – PWM interface -	7	
4 - 20mA Output + (max. 220Ohm)	8	optional to alarm monitoring system
4 - 20mA Output -	9	optional to alarm monitoring system
Earth	10	earth and data cable shield
Power supply GND	11	0 Volts
Power supply 24Volts	12	+ 24Volts DC

Table 03: Pin assignment and connection to VN301plus (EX)

2.5 Electrical connection to OMD-type VN2020 (EX)

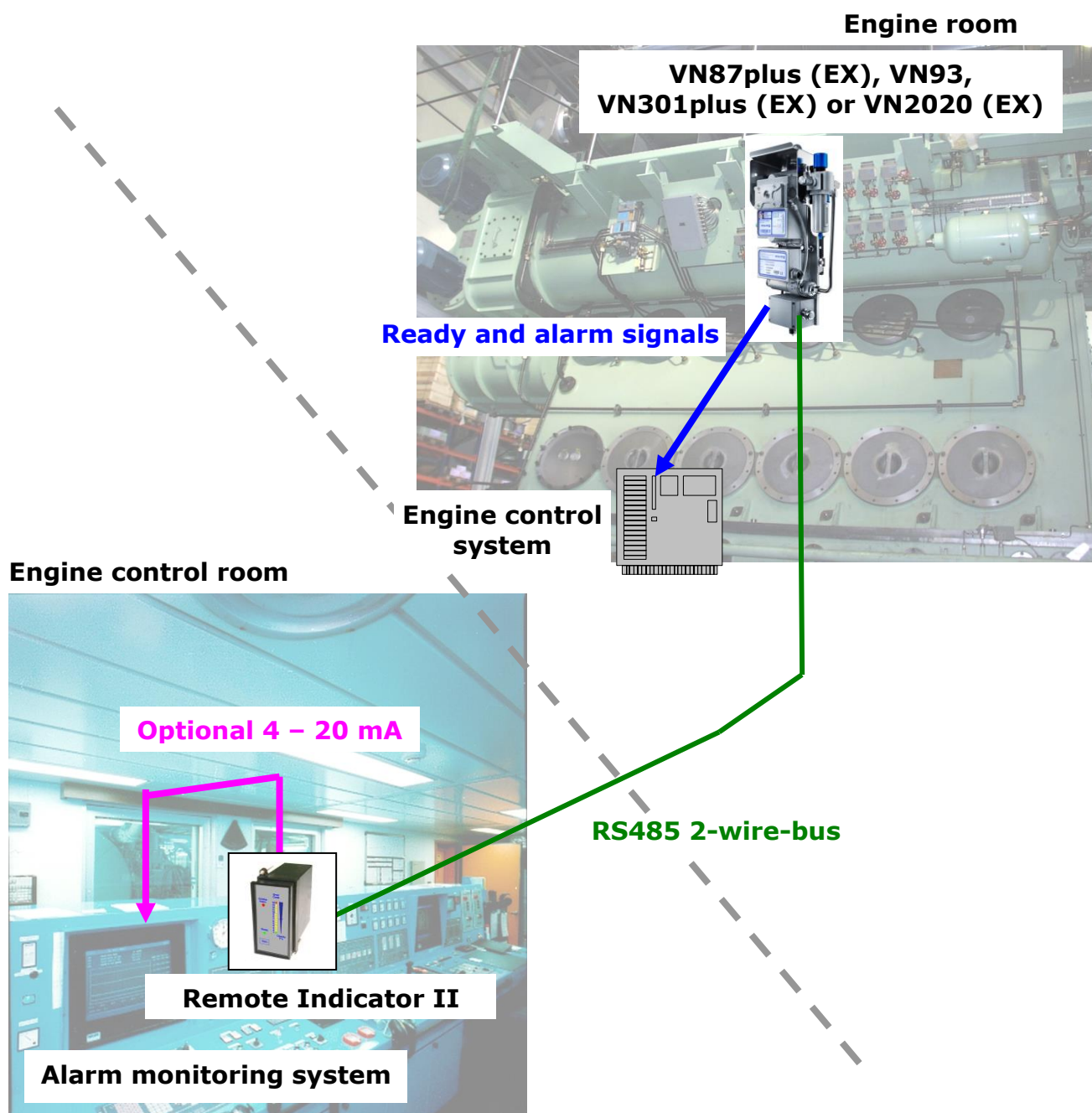
The electrical installation consists of following steps:

- Step 1: If OMD-type is VN2020 (EX): Use existing cable gland on the OMD device, see manual page 43 – chapter 7.9,
- Step 2: Connection of the VISATRON devices to the Remote Indicator II,
- Step 3: Switch-on the VISATRON OMD,
- Step 4: Connection of the power supply to the Remote Indicator II device.

Remote Indicator II to VN2020 (EX) Oil Mist Detector		
Name	Pin-No.	Connected to
RS485 A	1	RS485 A / H (Clamp No.5)
RS485 B	2	RS485 B / L (Clamp No. 6)
RS485 GND	3	RS485 GND (Clamp No. 7)
Optional current interface +	4	
Optional current interface -	5	
VN87 – PWM interface +	6	
VN87 – PWM interface -	7	
4 - 20mA Output + (max. 220Ohm)	8	optional to alarm monitoring system
4 - 20mA Output -	9	optional to alarm monitoring system
Earth	10	earth and data cable shield
Power supply GND	11	0 Volts
Power supply 24Volts	12	+ 24Volts DC

Table 04: Pin assignment and connection to VN2020 (EX)

2.6 Schematic Connection Diagram



3 Functional description

The device can be connected to VISATRON devices of series VN87plus (EX), VN93, VN301plus (EX) and VN2020 (EX). The display of the Remote Indicator II is similar to the display of the VN87plus OMD device. In normal operation mode the Power-LED and the Ready-LED are only lighting green. The LED bar on the right side shows the oil mist concentration given of unit 'Opacity'. If the upper LED is switched on, the oil mist concentration inside the crankcase is equal or higher than the adjusted alarm level. A detected oil mist alarm state was indicated by the red Alarm-LED.

If the Ready-LED is off and a LED of the LED bar is blinking, the OMD device (not the Remote Indicator!) has left the normal detection mode. The reason can be found out by reading the corresponding error code (see Table 05).

Optional the Remote Indicator II can be connected to a VN87-EMC unit. In this case, the device monitors only the oil mist concentration and not the state of the OMD device. In this case, it is necessary to monitor the status of the Ready- and Alarm-Relay from the VISATRON device separately with your safety system. Also an error of the VN87-EMC will not be displayed by the Remote Indicator II.

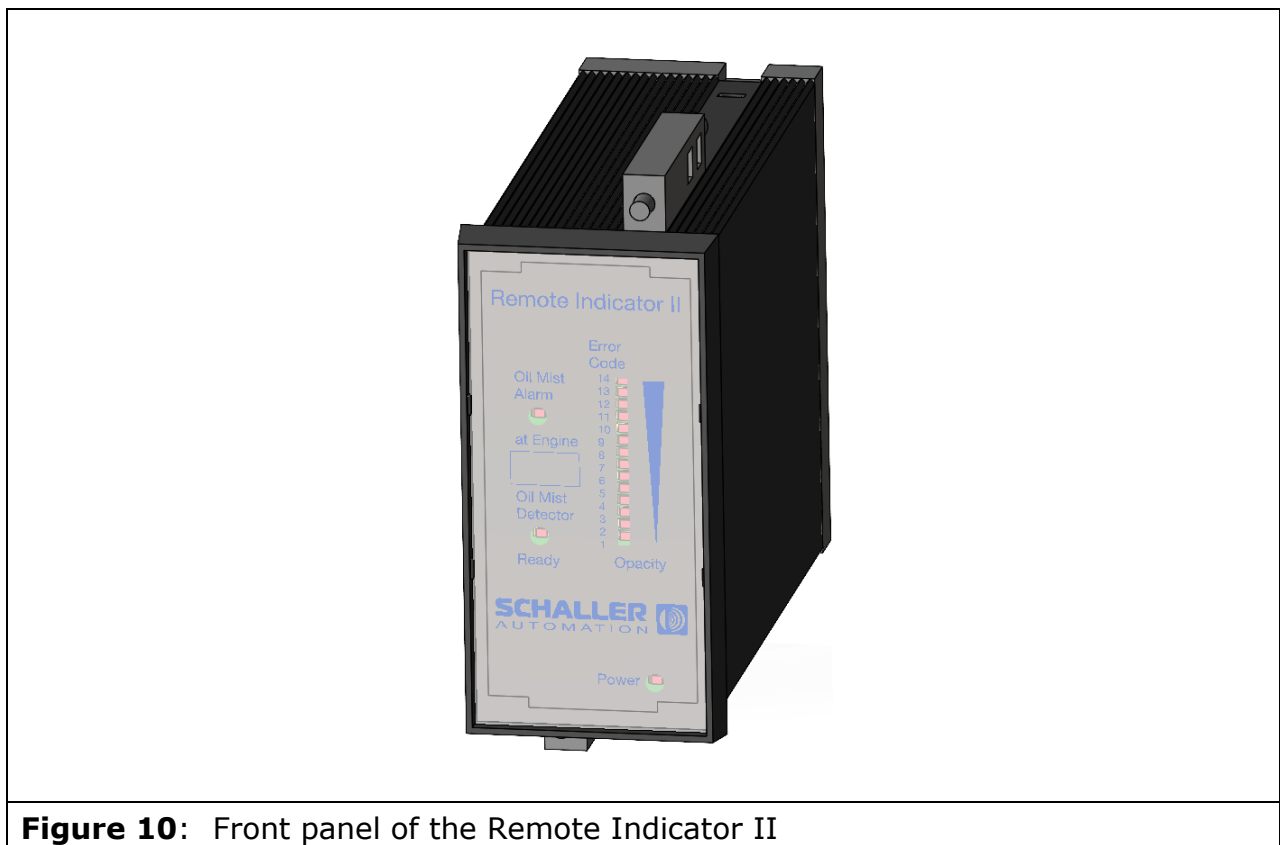


Figure 10: Front panel of the Remote Indicator II

Blinking LED on Remote Indicator II	VN87plus (EX) failure	VN93 failure	VN301plus (EX) failure	VN2020 (EX) failure
14	Negative pressure/airflow too low	Negative pressure/airflow too low	Supply pressure out of limits	Supply pressure too low
13	Optical sensor dirty	Optical sensor dirty	Optical sensor dirty	Optical sensor dirty – cleaning required
12	Voltage of internal battery too low	Voltage of internal battery too low	Not used	Voltage of internal battery too low
11	Ambient temperature too low (<0°C)	Ambient temperature too low (<0°C)	Central unit electronics temperature too low (<0°C)	Supply pressure too high
10	Ambient temperature too high (>70°C)	Ambient temperature too high (>70°C)	Central unit electronics temperature too high (>85°C)	Internal error
9	Electronics temperature too low (<0°C)	Electronics temperature too low (<0°C)	Sensor unit electronics temperature error	Electronics temperature too low (<-2°C)
8	Electronics temperature too low (>75°C)	Electronics temperature too low (>75°C)	Sensor unit heat temperature error	Electronics temperature too low (>85°C)
7	Reset button defective	Light button defective	Voltage of internal battery too low	Internal error
6	Supply voltage too high	Supply voltage too high	Central unit supply voltage too low	Supply voltage out of limits
5	Switch for adjusting sensitivity defective		Base plate of sensor unit missing	Internal error
4	Optical sensor defective	Optical sensor defective	Sensor unit defective	Internal error
3	Airflow-sensor defective	Airflow-sensor defective	Airflow of Sensor unit too low	Internal error
2	Electronic module defective	Electronic module defective	Electronic module of Central unit defective	Internal error
1	Blinking: startup phase	Blinking: startup phase	Blinking: startup phase	Blinking: startup phase

Table 05: Error Codes

4 Maintenance procedures

Regularly clean the surface of the panel with a **soft, dry cloth**.

5 Accessories

Scopes of supply are all components to connect a Remote Indicator II to **one** VISATRON OMD-System excluding the cable. The recommended cable can be ordered in steps of 10m.

Part-No. 150993	Remote Indicator II Unit
Part-No. 310375	Connector 'FK-MCP 1,5/12-STF-3,81'
Part-No. 365925	Cable gland
Part-No. 271685	Network Terminator
Part-No. 2001251	Front glass plate for horizontal VN87plus/VN93/ VN301plus/VN2020 installation
Part-No. 2001252	Front glass plate for vertical VN87-EMC installation
Part-No. 310690	Jumper
Part-No. 180050	Manual

Table 06: Scope of supply

Part-No. 2001249	Front glass plate for vertical VN87plus/VN93/ VN301plus/VN2020 installation
Part-No. 230140	UNITRONIC cable (10m)

Table 07: Accessories

6 Technical data

Mechanical data	
dimensions (w x h x d)	96mm x 48mm x 123mm
standard slot size	IEC 61554, 92+0.8mm x 45+0.6mm
weight	210g
display	LED-bar with 1 green, 12 yellow, 1 red LED 1 green Ready LED 1 red Alarm LED 1 green Power LED
Electrical data	
power supply	18 Volts – 31.2 Volts DC, 75mA
nominal voltage	24 Volts DC
communication interface to OMD	RS485, galvanic isolated
analog interface to VN87-EMC	2 wire PWM, 2 wire current loop
connector and plug	Phoenix Contact MC 1,5/12-GF-3,81 Phoenix Contact FK-MCP 1,5/12-STF-3,81
rel. Opacity Output	4 – 20mA (max. 220 Ohm)
communication cable recommendation	LAPPKABEL UNITRONIC-BUS LD 2x2x0,22mm ² , max 400m length
Environmental conditions	
operating temperature	0 - 55 °C
storage temperature	-20 – 80 °C
max. vibrations	0.7g
relative humidity	up to 100%
protection class	IP41
Approval of classes	
	Approval from Germanischer Lloyd for closed areas, environmental category C, installation in control panels or cabinets

7 Service Partners

Schaller Automation maintains a worldwide network of service partners in following countries:

Argentina	Latvia
Australia	Lithuania
Bahrain	Mauritania
Belgium	Mexico
Belize	Morocco
Bolivia	Netherlands
Brazil	Nicaragua
Canada	Norway
Cape Verde Islands	Oman
Chile	Panama
Colombia	Peru
Costa Rica	Philippines
Denmark	Poland
Ecuador	Portugal
El Salvador	Qatar
Estonia	Saudi Arabia
France	Senegal
Germany	Singapore
Greece	Spain
Guatemala	Sweden
Honduras	Taiwan
Iceland	Turkey
India	United Arabian Emirates
Iran	United Kingdom
Ireland	United States of America
Italy	Caribbean Islands
Japan	
Korea	
Kuwait	

As details in relevant addresses are supposed to change, please find actual addresses of the relevant service partner under

www.schaller-automation.com

or call our technical support center at the German headquarter:

Tel. +49 6842 508 0



8 Notes







