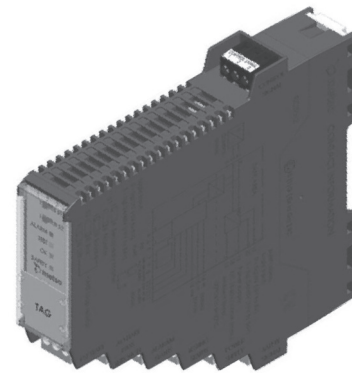


## RCI9H2

Remote Communication Interface RCI9H2 is intended to be used together with the Neles ValvGuard VG9000H intelligent safety solenoid. When 24 VDC output (DO) in the safety system or logic is used RCI9H2 is needed between the DO and VG9000H field device. The primary function of RCI9H2 is to convert binary signal to SIL 3 compatible 4/20mA current signal. RCI9H2 also provides relay outputs for monitoring the test and alarm status of the VG9000H and a discrete input for commanding VG9000H to start a PST (Partial Stroke Test). Additionally, RCI9H2 includes an isolator barrier and can be used in intrinsically safe applications. RCI9H2 provides HART communication for diagnostics and configuration of the VG9000H. The HART communication is available when a 24 VDC power supply is connected, also during the emergency trip.

### SIL 3 certificate

RCI9H2 is approved by TÜV Rheinland to be used in safety applications up to and including safety integrity level 3 (SIL3) according to IEC 61508.

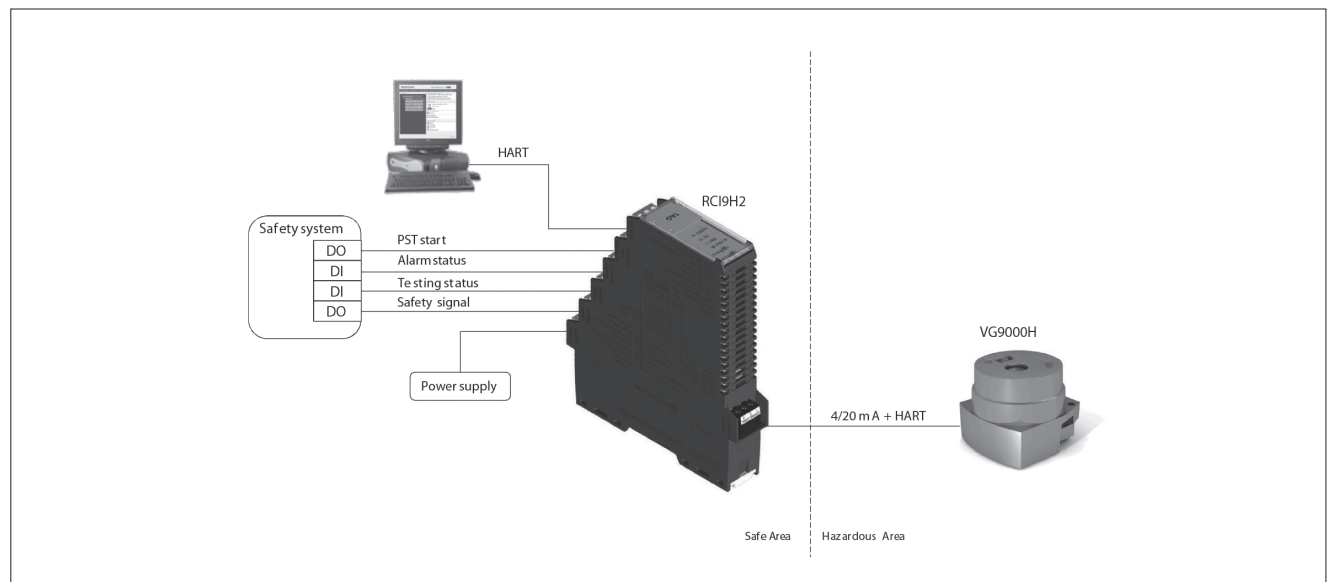


### Features

- 24 VDC input from ESD system
- 4/20 mA output to VG9000H
- Two status relays (test, alarm)
- PST start via separate input
- HART communication
- Isolated Ex barrier



Functional  
Safety  
Type  
Approved  
  
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## Technical specifications

### Safety (input) signal:

|                          |                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------|
| Connection:              | Terminals 19+, 20-                                                                             |
| Signal levels:           | 0-Signal: nominal 0V (-3 - 5V)<br>(leakage <2 mA)<br>1-Signal: nominal 24/48V<br>(19 - 54 VDC) |
| Input current:           | 46.4mA at 24VDC, 47.9mA<br>at 48VDC                                                            |
| Max. voltage:            | 60 VDC                                                                                         |
| Polarity protection:     | -60 VDC                                                                                        |
| Over voltage protection: | 60 VDC                                                                                         |

### Output to VG9000H:

|                                                                                                  |                                                                                      |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Connection:                                                                                      | Terminals 2+, 3-                                                                     |
| Output current, normal mode:                                                                     | 0-Signal: nominal 4.2mA,<br>(3.8 -5.6 mA)<br>1-Signal: nominal 20.5mA,<br>(18-22 mA) |
| Output current, loop powered mode 1<br>(power supply not connected):                             | 0-Signal: nominal 0 mA<br>1-Signal: nominal 16.4 mA,<br>(16-17 mA)                   |
| Output current, loop powered mode 2<br>(power supply connected parallel with the safety signal): | 0-Signal: nominal 0 mA<br>1-Signal: nominal 20.5 mA,<br>(18-22 mA)                   |
| Maximum load:                                                                                    | 596 $\Omega$                                                                         |
| Response time:                                                                                   | Input to output <100 ms                                                              |

### Power supply:

|                          |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Connection:              | Terminals 16+, 17-                                                          |
| Input voltage:           | 0-Signal: nominal 0V (-3 - 5V)<br>1-Signal: nominal 24/48V<br>(19 - 54 VDC) |
| Input current:           | 57.4 mA at 24 VDC, 30.7 mA<br>at 48 VDC.                                    |
| Max. voltage:            | 60 VDC                                                                      |
| Polarity protection:     | -60 VDC                                                                     |
| Over voltage protection: | 60 VDC                                                                      |

### HART:

|                |                                                              |
|----------------|--------------------------------------------------------------|
| Connection:    | Terminals 7-, 8+ (source)<br>Terminals 7+, 9- (sink)         |
| Input current: | Fixed at 11 mA, source or sink<br>mode                       |
| Source mode:   | Output voltage max 24 VDC<br>External load max 600 $\Omega$  |
| Sink mode:     | Input voltage 24 VDC (nominal)<br>Internal load 230 $\Omega$ |

### PST start:

|                          |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Connection               | Terminals 4+, 5-                                                            |
| Signal level:            | 0-Signal: nominal 0V (-3 - 5V)<br>1-Signal: nominal 24/48V<br>(19 - 54 VDC) |
| Signal type:             | Rising edge active                                                          |
| Input current            | 4.74 mA at 24 VDC, 9.47mA<br>at 48 VDC                                      |
| Max. voltage:            | 60 VDC                                                                      |
| Polarity protection:     | -60 VDC                                                                     |
| Over voltage protection: | 60 VDC                                                                      |

### Testing status:

|                                                              |                                                        |
|--------------------------------------------------------------|--------------------------------------------------------|
| (Test Status Relay OFF with Test Status LED OFF indication): |                                                        |
| Connection:                                                  | Terminals 13-14 open<br>Terminals 13-15 connected      |
| (Test Status Relay ON with Test Status LED ON indication):   |                                                        |
| Connection:                                                  | Terminals 13-15 open<br>Terminals 13-14 connected      |
| Relay:                                                       | Type SPDT<br>Current 1A (max)<br>Voltage 24V (nominal) |

### Alarm status:

|                                                               |                                                        |
|---------------------------------------------------------------|--------------------------------------------------------|
| (Alarm status relay OFF with Alarm Status LED ON indication): |                                                        |
| Connection:                                                   | Terminals 10-11 open<br>Terminals 10-12 connected      |
| (Alarm Status relay ON with Alarm Status LED OFF indication): |                                                        |
| Connection:                                                   | Terminals 10-12 open<br>Terminals 10-12 connected      |
| Relay:                                                        | Type SPDT<br>Current 1A (max)<br>Voltage 24V (nominal) |

### Ambient conditions:

|                            |               |
|----------------------------|---------------|
| Ambient temperature range: | -20 to +60 °C |
|----------------------------|---------------|

### Mechanical specifications:

|                    |                                                |
|--------------------|------------------------------------------------|
| Protection degree: | IP20                                           |
| Weight:            | Approx. 215g                                   |
| Dimensions:        | 151.5 x 136.2 x 25.2 mm                        |
| Mounting:          | On 35 mm DIN mounting rail<br>acc. to EN 60715 |

### Data for application in connection with Ex-areas:

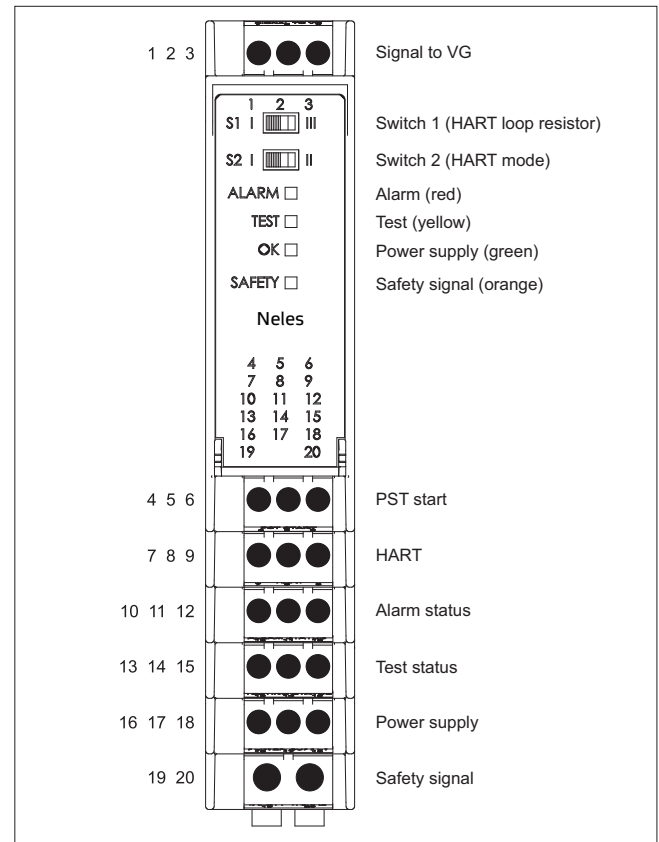
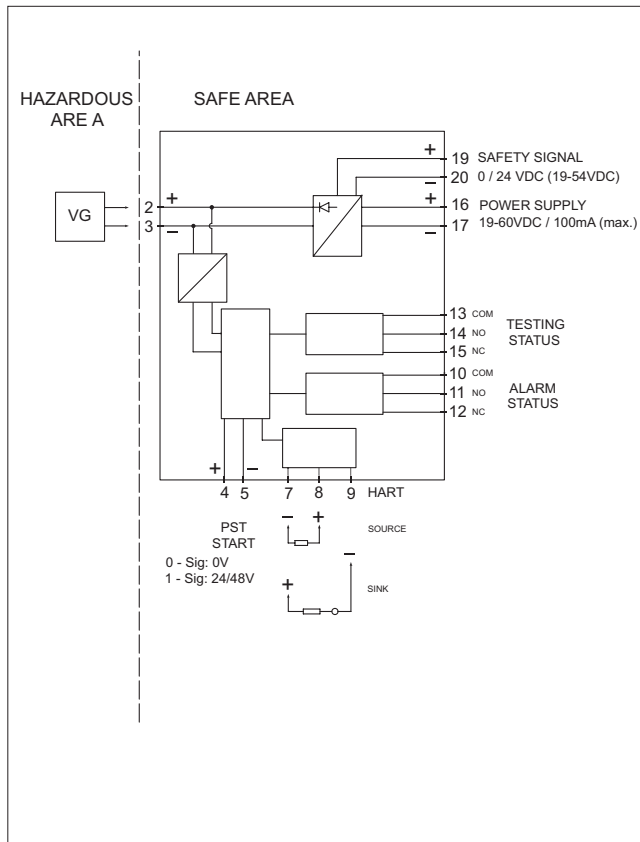
|            |                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Ex values: | U <sub>0</sub> = 24.5 V<br>I <sub>0</sub> = 93.6 mA<br>P <sub>0</sub> = 595 mW<br>C <sub>0</sub> = 0.117 $\mu$ F<br>L <sub>0</sub> = 4.29 mH |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------|

### Approvals

|                                |                                                                                                                                                                                   |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety:                        | Certified by TUV Rheinland<br>up to and including SIL3<br>according to IEC61508<br>[Ex ia Ga] IIC<br>[AEx ia Ga] IIC<br>Class 1 Zone 0, Class I,<br>Division 1, Groups A, B, C, D |
| ATEX, IECEx, CCC<br>cCSAus     |                                                                                                                                                                                   |
| Electromagnetic compatibility: | According to EN61326,<br>EN61000-6-2, EN61000-6-4                                                                                                                                 |

## Additional accessories

### Wiring connections



## Commissioning and operation

### DIP Switches

The RCI9H2 has two DIP switches; switch 1 (S1) and switch 2 (S2).

Table 1 Switch selections

| Switch S1 | HART loop resistor   | Mode / Terminals |
|-----------|----------------------|------------------|
| I         | Yes                  | Sink (7, 9)      |
| II        | No (factory default) | Source or sink   |
| III       | Yes                  | Source (7, 8)    |

| Switch S2 | HART mode                          |
|-----------|------------------------------------|
| I         | Secondary master (factory default) |
| II        | Monitor                            |

### Switch S1

Switch S1 S1 is for HART loop resistor configuration. S1 configuration is explained in Chapter 6.3 “Electrical connections”.

### Switch S2

Switch S2 is for HART mode selection.

### S2 position I, HART secondary master mode

In this mode, full RCI9H2 functionality is available. PST start input is functional and ALARM and TEST status outputs are available. HART handheld communicator cannot be used if HART primary master is present in the HART loop. In HART loop, there can be only two masters and the handheld would be the third one, which is not allowed.

### S2 position II, HART monitor mode

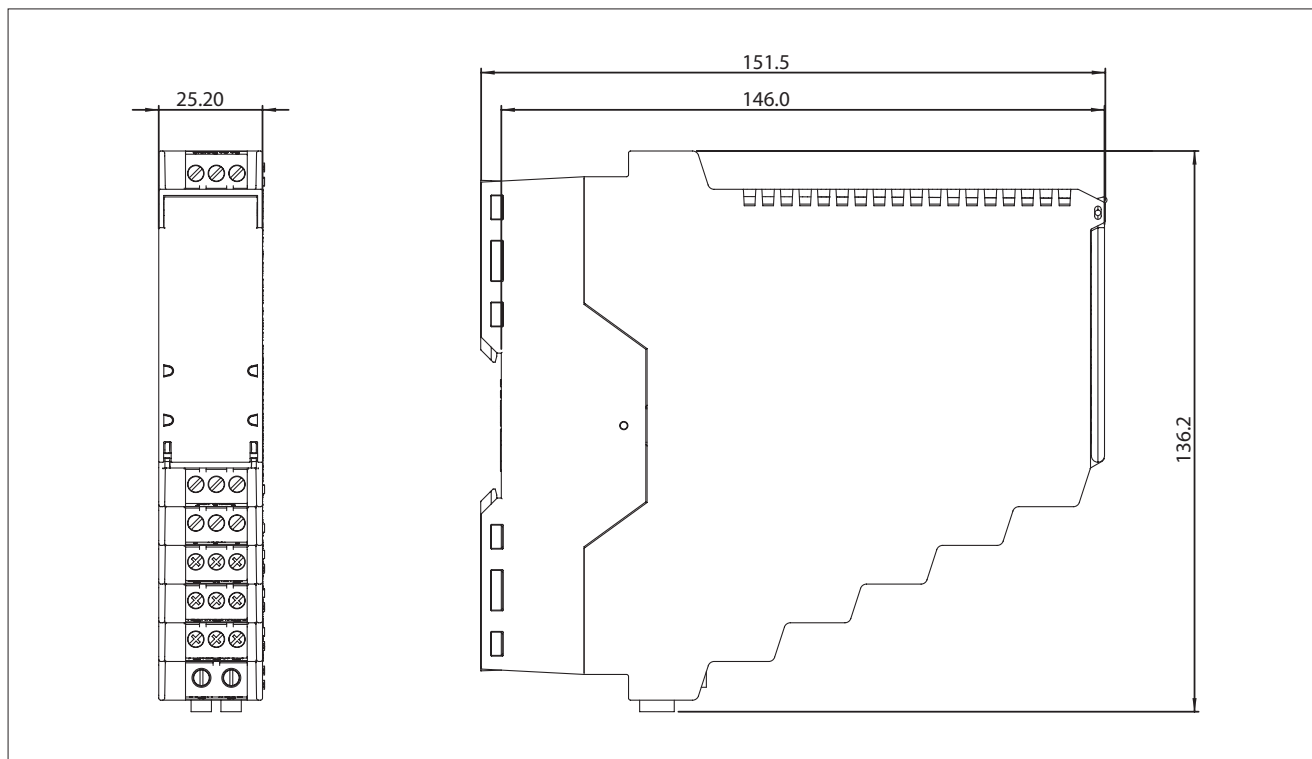
In this mode, HART handheld can be used. PST input is not functional. ALARM and TEST statuses are available if VG9000H is configured to send HART burst status messages to RCI9H2. This configuration can be made via VG9000H DTM/EDD as follows:

- Set the burst mode command to 169 (Read short status).
- Set the burst mode control parameter to ON to activate the burst mode. Default is OFF.

#### NOTE:

When using with VG9000H HART 7 version, the RCI9H2 firmware revision shall be 4.32 or above. Otherwise VG9000H needs to be configured to HART 6. See VG9000H manual for further instructions.

## Dimensions (mm)



Subject to change without prior notice.

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