KA01554C/66/EN/02.22
70199368

Brief Operating Instructions
Raman Rxn5

Endress+Hauser
People for Process Automation

Table of Contents

1 About this document

1.1 Warnings

Structure of Information	Meaning
⚠ WARNING **Causes (/consequences)** Consequences of non-compliance (if applicable) ▸ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation can result in a fatal or serious injury.
⚠ CAUTION **Causes (/consequences)** Consequences of non-compliance (if applicable) ▸ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
NOTICE **Cause/situation** Consequences of non-compliance (if applicable) ▸ Action/note	This symbol alerts you to situations which may result in damage to property.

1.2 Symbols

Symbol	Description
	The Laser Radiation symbol is used to alert the user to the danger of exposure to hazardous visible laser radiation when using the system.
	The High Voltage symbol that alerts people to the presence of electric potential large enough to cause injury or damage. In certain industries, high voltage refers to voltage above a certain threshold. Equipment and conductors that carry high voltage warrant special safety requirements and procedures.
	The CSA Certification Mark indicates that the product was tested against and met the applicable North American standards requirements.
	The WEEE symbol indicates that the product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.
	The CE Marking indicates conformity with health, safety, and environmental protection standards for products sold within the European economic area (EEA).

1.3 U.S. export compliance

The policy of Endress+Hauser is strict compliance with U.S. export control laws as detailed on the website of the Bureau of Industry and Security at the U.S. Department of Commerce.

2 Basic safety instructions

Read this section carefully to avoid danger to individuals or the facility. Additional laser safety information and hazardous area certification and safety instructions are contained in the *Raman Rxn5 Safety Instructions (XA02746C)*.

2.1 Requirements for personnel

- Installation, commissioning, operation, and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- Technical personnel must be authorized by the plant operator to carry out the specified activities.
- Electrical connections may be performed only by an electrical technician.
- Technical personnel must have read and understood these Operating Instructions and must follow the instructions contained herein.
- Faults at the measuring point may only be rectified by authorized trained personnel. Repairs not described in this document must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Intended use

The Raman Rxn5 analyzer is designed for use in chemical composition measurements of gases and some liquids in a process development environment.

The Raman Rxn5 is particularly suited for measuring the composition of gases at the input and output of the following process units and processes that are often found in refineries, ammonia plants, methanol plants, captive and merchant hydrogen plants, facilities using gas turbines, and LNG liquefaction and regasification terminals:

- Steam methane, partial oxidation, and autothermal reformers
- Coal, petcoke, biomass, and waste gasifiers
- Primary and secondary shift converters
- Acid gas removal
- Methanators
- Ammonia and methanol synthesis loops
- Hydrotreaters
- Hydrocrackers
- Rundown to LNG storage tanks
- Mixed refrigerant composition
- Gas turbine fuel feed

Use of the device for any purpose other than that described poses a threat to the safety of people and of the entire measuring system and is not permitted.

2.3 Workplace safety

- Do not use the Raman Rxn5 for anything other than its intended use.
- Do not drape the power cord over counters or on hot surfaces, or in areas where damage to the integrity of the power cord may occur.
- Do not open the enclosure of the Raman Rxn5 while it is actively collecting data.
- Do not look directly into the laser beam.
- Do not allow emitted laser light to reflect off mirrored or shiny surfaces in an uncontrolled way.
- Minimize the presence of shiny surfaces in the working area and always use a laser beam block to prevent uncontrolled transmission of the laser light.
- Do not leave attached and unused probes uncapped or unblocked while they are still attached to the analyzer.

2.4 Operational safety

Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products. Protect them against unintentional operation.
4. Label damaged products as defective.

During operation:

1. If faults cannot be rectified, products must be taken out of service and protected against unintentional operation.
2. Keep the door closed when not carrying out service and maintenance work.

⚠ CAUTION

Activities while the analyzer is in operation introduce risk of exposure to hazardous materials.

- ▶ Follow standard procedures for limiting exposure to chemical or biological materials.
- ▶ Follow workplace policies on personal protective equipment including wearing protective clothing, goggles and gloves and limiting physical access to analyzer location.
- ▶ Clean any spills following the appropriate site policies and cleaning procedures.

2.5 Product safety

The product is designed to meet local safety requirements for the intended application, and has been tested accordingly, leaving the factory in a condition in which it is safe to operate. All applicable regulations and international standards have been observed. Devices connected to the analyzer must also comply with the applicable safety standards, and users should follow the probe-specific product safety instructions.

2.6 IT security

Our warranty is valid only if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the device and associated data transfer, must be implemented by the operators themselves in line with their security standards.

3 Product description

3.1 The Raman Rxn5 analyzer

The Raman Rxn5 analyzer, powered by Kaiser Raman technology, is a turnkey, laser-based Raman analyzer with an embedded controller with built-in Raman RunTime control software. Raman spectroscopy provides the chemical specificity of mid-infrared (IR) spectroscopy and the sampling simplicity of near-infrared (NIR) spectroscopy. Raman spectroscopy allows vibrational spectra to be collected *in situ*, using fiber-coupled probes. The Raman Rxn5 analyzer was developed specifically optimized for gas-phase applications in the petrochemical and other process industries.

In these applications, the Raman Rxn5 analyzer produces simple spectra that resemble gas chromatograms, allowing for the use of univariate methods of analysis. The Raman Rxn5 analyzer can be used to determine the composition of gas mixtures, but without the need for valves, ovens, columns, or carrier gases that often lead to higher operational expenses.

The Raman Rxn5 is designed to use between one and four laser sources, each coupled to a separate fiber-optic probe interface to a process sample. This configuration allows for simultaneous operation, replacing the need for mechanical stream switching that is often used in multi-stream analyses with a single instrument. The RunTime software allows each channel to use an independent software method for analyzing different stream compositions. It is like having four analyzers in one unit.

The Raman Rxn5 analyzer can measure gas mixtures containing several components. Typical gases that can be analyzed include: H_2, N_2, O_2, CO, CO_2, H_2S, CH_4, C_2H_4, C_2H_6, Cl_2, F_2, HF, BF_3, SO_2, and NH_3. In addition, the Raman Rxn5 has a wide linear dynamic range and can measure components at levels typically from 0.1 mol % up to 100 mol %.

The Raman Rxn5 analyzer incorporates a flat screen, touch-sensitive display that is utilized for all user interactions. A simple tap with a finger is the equivalent of a mouse click.

3.2 Product design

3.2.1 Front exterior

The exterior of the analyzer consists of a painted steel (or optional 316L stainless steel) enclosure. On the front of the instrument are the standard user interfaces. These include an integrated touch screen interface, light emitting diode (LED) indicators, laser interlock switches, and a purge indicator.

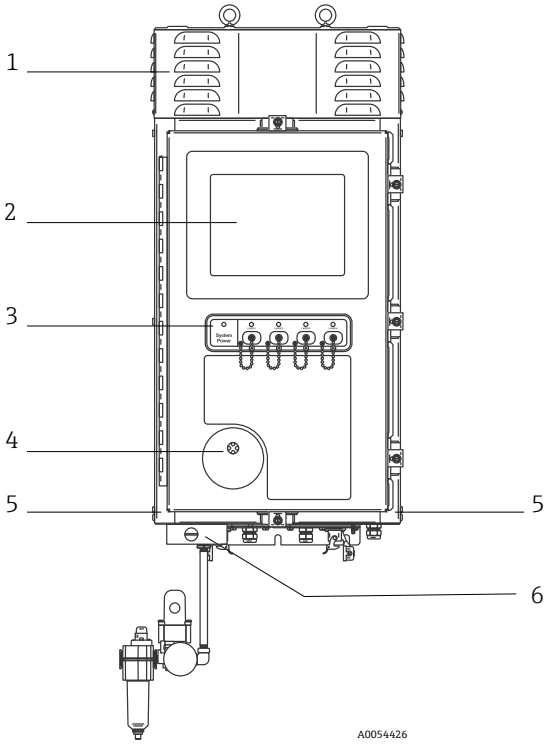


Figure 1. Exterior of the Raman Rxn5 analyzer

#	Name	Description
1	Cooling exhaust vent shroud	Cooling air exhausts through the vents in this cover. Do not block.
2	Touchscreen monitor	The built in Raman RunTime interface and touchscreen monitor

#	Name	Description
3	Switch indicator panel and laser on/off keys	▪ **System power indicator.** Green and steady indicates system is powered and operating normally. Red and fast flashing indicates system is powered, but internal temperature is too warm. Red and slow flashing indicates that the system is too cold. Red and slow is normal upon startup in colder environments. ▪ **Laser on/off keys and indicators.** Magnetically coupled switches control laser power for each channel. Switches are lockout/tagout compatible. Yellow indicators for each channel indicate if laser is on.
4	Purge indicator	A **Green** indicator light that indicates that the pressure inside the enclosure is above 5.1 mm (0.20 in) water column
5	Cooling air inlet	Cooling air enters in this location in both sides of enclosure. Do not block.
6	Purge valve and purge air conditioning	The dilution and leakage compensation includes two modes: ▪ **High flow dilution.** The dial on the valve should be turned so the slot in the dial is horizontal and lined up with the “ON” position. This position is used to purge enclosure of potentially hazardous gases prior to power-up. Dilution time is > 9.5 minutes. ▪ **Leakage compensation mode.** After manual dilution has been performed, the valve can be switched to this mode by turning the dial so the slot in the dial is vertical. This position is used to reduce purge air consumption after initial dilution.

4 Incoming product acceptance and identification

4.1 Incoming acceptance

1. Verify that the packaging is undamaged. Notify the supplier of any damage to the packaging. Keep the damaged packaging until the issue has been resolved.
2. Verify that the contents are undamaged. Notify the supplier of any damage to the delivery contents. Keep the damaged goods until the issue has been resolved.
3. Check that the delivery is complete and nothing is missing. Compare the shipping documents with your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture. The original packaging offers the best protection. Make sure to comply with the permitted ambient conditions.

If you have any questions, refer to our website (https://endress.com/contact) for the list of local sales channels in your area.

NOTICE

Incorrect transportation can damage the analyzer.

▶ Always use a lifting truck or a fork-lift to transport the analyzer.

4.1.1 Nameplate

The nameplate located on the rear of the analyzer provides the following information about your device:

- Manufacturer contact information
- Laser radiation notice
- Electric shock notice
- Model number
- Serial number
- Wavelength
- Maximum power
- Build month
- Build year
- Patent information
- Certification information

Compare the information on the nameplate with the order.

4.1.2 Identifying the product

The serial number of your product can be found in the following locations:

- On the nameplate
- In the delivery papers

4.1.3 Manufacturer address

Endress+Hauser
371 Parkland Plaza
Ann Arbor, MI 48103 USA

4.2 Scope of delivery

The scope of delivery comprises:

- Raman Rxn5 analyzer in the configuration ordered
- *Raman Rxn5 Operating Instructions*
- *Raman RunTime Operating Instructions*
- Raman Rxn5 Certificate of Product Performance
- Local declarations of conformity, if applicable
- Certificates for hazardous zone use, if applicable
- Raman Rxn5 optional accessories, if applicable

If you have any questions regarding the items delivered, or if anything appears to be missing, refer to our website (https://endress.com/contact) for the list of local sales channels in your area.

5 Electrical connection

5.1 Glands and connectors

The bottom view of the Raman Rxn5 is shown below.

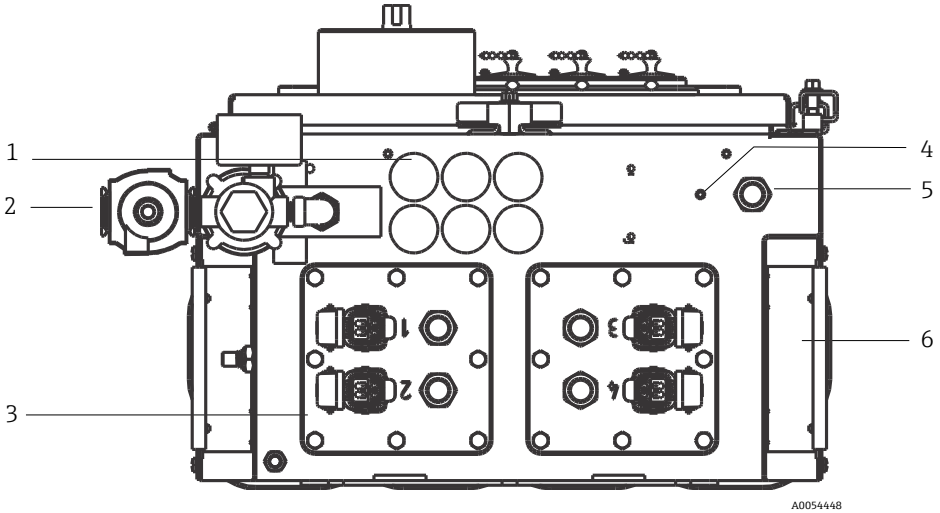


Figure 2. Glands and connectors on the bottom of the Raman Rxn5

#	Name	Description
1	Low voltage input/output (I/O) location	Six holes for low voltage communications and process control wiring. Cord grips provided by customer and shall meet local electrical and hazardous area safety standards.
2	Purge air inlet	¼" NPT connection point for purge air supply
3	Intrinsically safe (IS) I/O location	I/O panels include up to four electro-optical connectors for sampling probes and cord grips for sample environmental sensors.
4	Earth ground stud	¼"-20 x 0.75" enclosure earth ground stud
5	AC mains inlet	Cord grip location for AC mains power connection
6	Cooling air inlet	A cooling air inlet is located on each side of the enclosure. Do not block.

5.2 AC mains power distribution

Incoming power is brought into the analyzer through an approved gland on the bottom right side of the analyzer. AC power is installed to the analyzer by a customer installer per applicable local codes.

The Raman Rxn5 can accept single phase AC voltages between AC 90 to 264 V and 47 to 63 Hz. The enclosure must be grounded according to local codes using the ground stud on the external enclosure adjacent to the power entry cable gland.

The Raman Rxn5 is supplied with a 10A C Curve circuit breaker, Automation Direct, WMZT1C10. Power wires shall be installed to the right of the terminal blocks. The enclosure MUST be grounded using the ground stud provided adjacent to the power entry gland. An optional grounding cable may be connected to any **Green** terminal block on the DIN rail. As long as the enclosure is properly grounded at the external ground stud, the ground terminal blocks will pick up good ground through the enclosure.

The incoming AC power is routed first through two thermal snap switches at the rear of the DIN rail. The thermal switches will open if the enclosure internal air temperature rises above 57 °C (135 °F). The main purpose of the thermal protection is to ensure that the IS barriers used for I/O will not be subjected to temperatures higher than their rating. If the instrument has shut down because one or both of the thermal snap switches has opened, the instrument will not be powered regardless of whether power is applied to the analyzer.

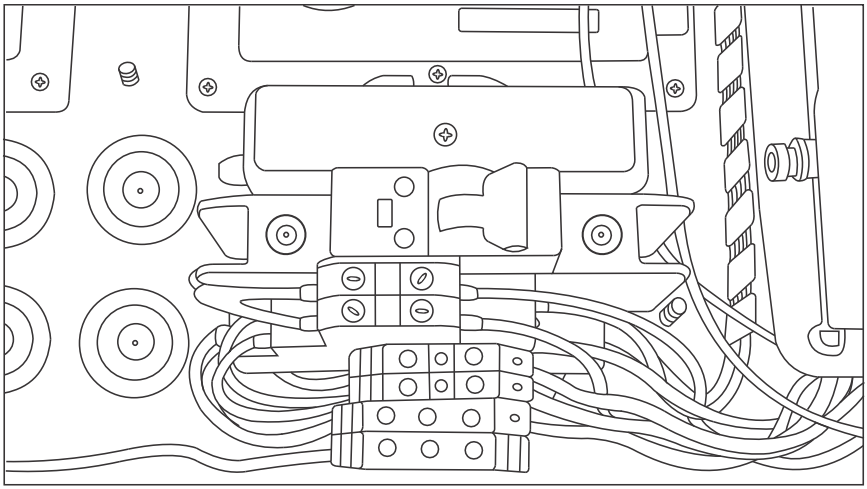


Figure 3. AC mains DIN rail distribution

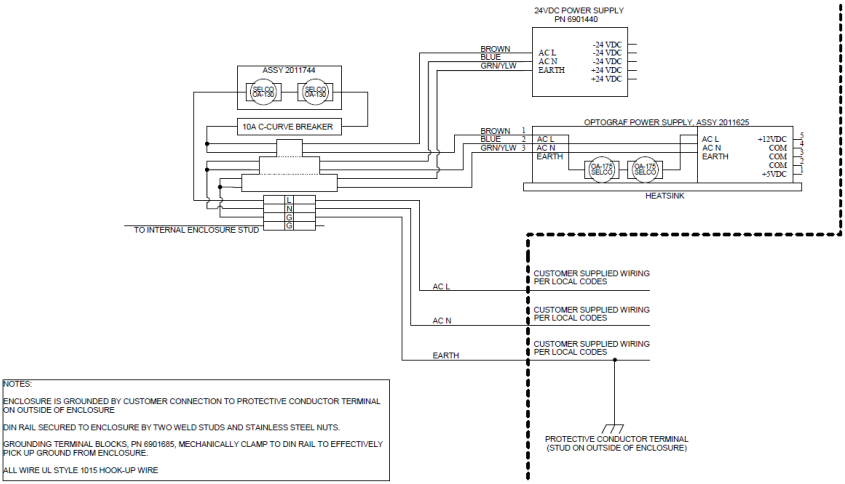


Figure 4. Schematic, AC mains distribution

5.3 USB bus

The detection module, thermal controller, sensor data acquisition (DAQ) systems, touch screen monitor and USB hub all operate on the USB bus generated by the single board computer.

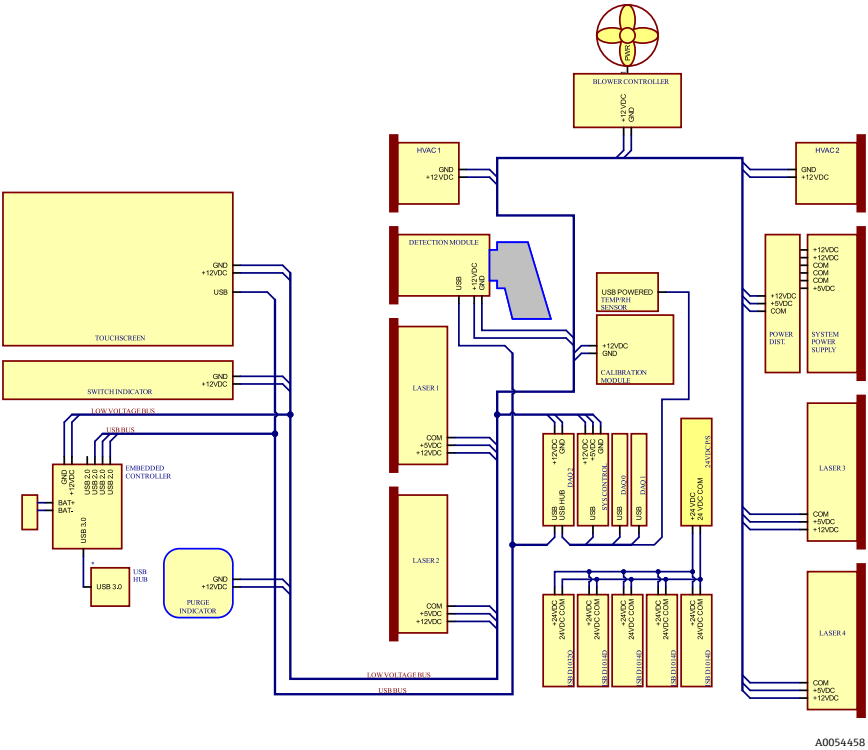


Figure 5. Schematic, low voltage power, and USB distribution

6 Commissioning

6.1 Commissioning the protective gas supply system

Commissioning is required to verify that the air supply will provide an adequate flow during purging and that the minimum internal overpressure is maintained when in the leakage compensation mode (the dial on the valve is turned so the slot in the dial is vertical).

6.2 Resetting operating pressure

The purge regulator has been pre-set at the factory to 2.15 psi during the purging. It may be necessary to reset the operating pressure at installation. The normal operating range for the regulator is 2.0 to 2.5 psi during purging (**ON** position). Operating in the pressure range will ensure appropriate air flow into the enclosure. Checking or resetting of the operating pressure should be considered before putting back into service:

- After commissioning has taken place
- Anytime the enclosure has been opened

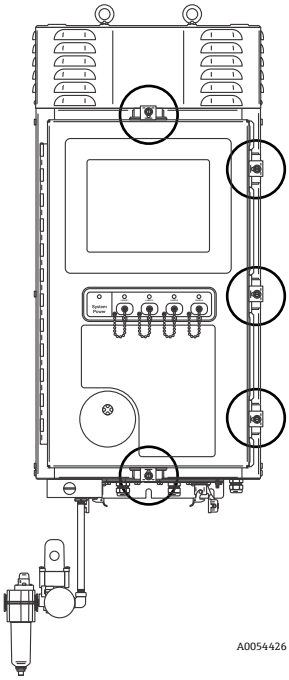
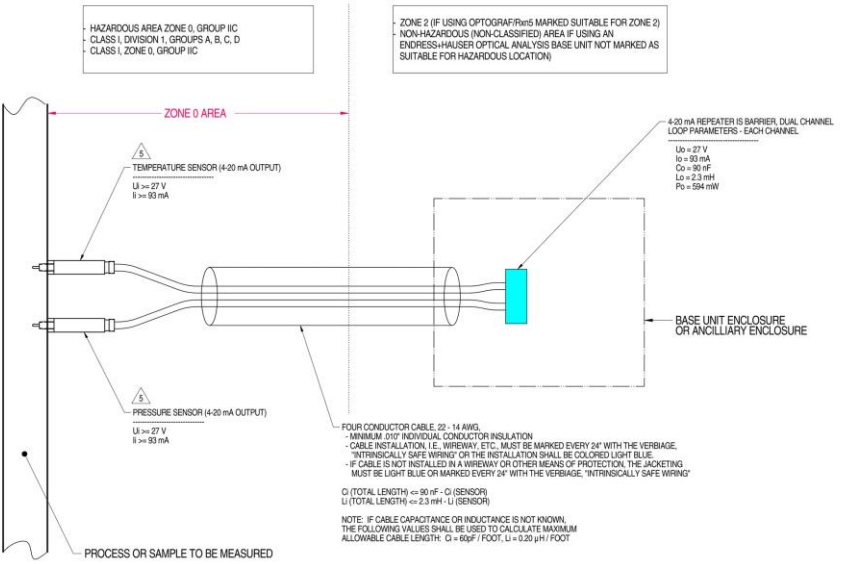


Figure 6. Door closure points

6.3 Temperature and pressure IS circuit

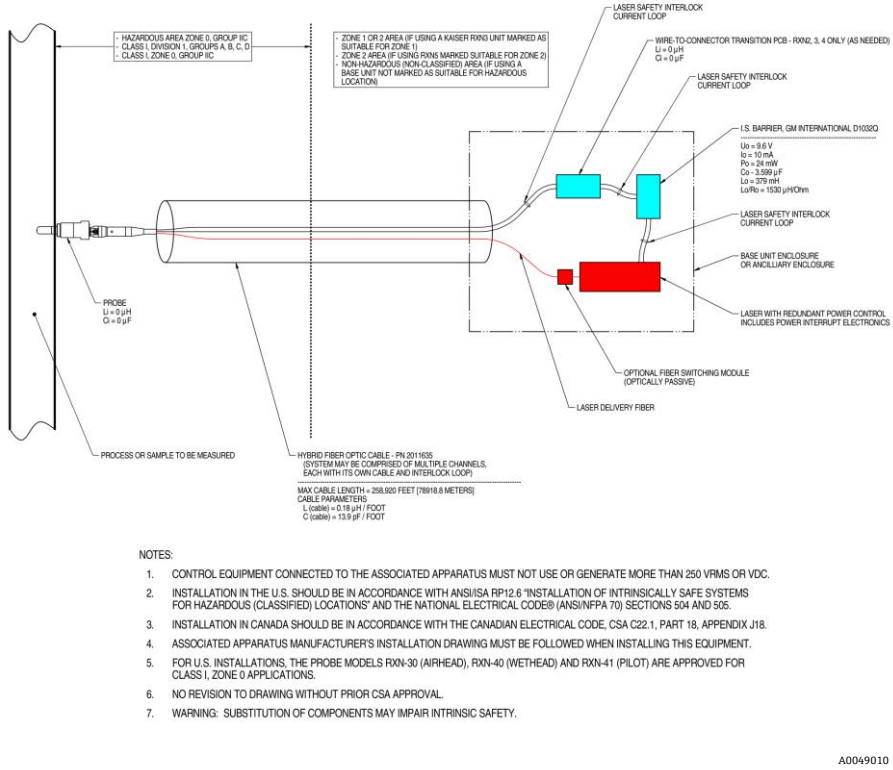


MATERIAL: NA
FINISH: NA
NOTES:
1) CONTROL EQUIPMENT CONNECTED TO THE ASSOCIATED APPARATUS MUST NOT USE OR GENERATE MORE THAN 250 VRMS OR VDC.
2) INSTALLATION IN THE U.S. SHOULD BE IN ACCORDANCE WITH ANSI/ISA RP12.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL ELECTRICAL CODE® (ANSI/NFPA 70) SECTIONS 504 AND 505.
3) INSTALLATION IN CANADA SHOULD BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, CSA C22.1, PART 1, APPENDIX F.
4) ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION DRAWING MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT
5 THE TEMPERATURE AND PRESSURE SENSORS MUST BE ENTITY APPROVED FOR CLASS I, ZONE 0, IIC OR CLASS I DIVISION 1, GROUPS A, B, C, D.
6) NO REVISION TO DRAWING WITHOUT PRIOR CSA-INTERNATIONAL APPROVAL.
7) WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
8) SYSTEM MAY BE COMPRISED OF MULTIPLE CHANNELS, EACH WITH ITS OWN CABLE, TEMPERATURE AND PRESSURE SENSOR AND ASSOCIATED 4-20 mA REPEATER IS BARRIER

A0050082

Figure 7. Control drawing for temperature and pressure IS circuit (2012682 X7)

6.4 Probe IS circuit



NOTES:

1. CONTROL EQUIPMENT CONNECTED TO THE ASSOCIATED APPARATUS MUST NOT USE OR GENERATE MORE THAN 250 VRMS OR VDC.
2. INSTALLATION IN THE U.S. SHOULD BE IN ACCORDANCE WITH ANSI/ISA RP12.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL ELECTRICAL CODE® (ANSI/NFPA 70) SECTIONS 504 AND 505.
3. INSTALLATION IN CANADA SHOULD BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, CSA C22.1, PART 18, APPENDIX J18.
4. ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION DRAWING MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT.
5. FOR U.S. INSTALLATIONS, THE PROBE MODELS RXN-30 (AIRHEAD), RXN-40 (WETHEAD) AND RXN-41 (PILOT) ARE APPROVED FOR CLASS I, ZONE 0 APPLICATIONS.
6. NO REVISION TO DRAWING WITHOUT PRIOR CSA APPROVAL.
7. WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

A0049010

Figure 8. Control drawing for probe IS circuit (4002396 X6)

6.5 Interior of the Raman Rxn5

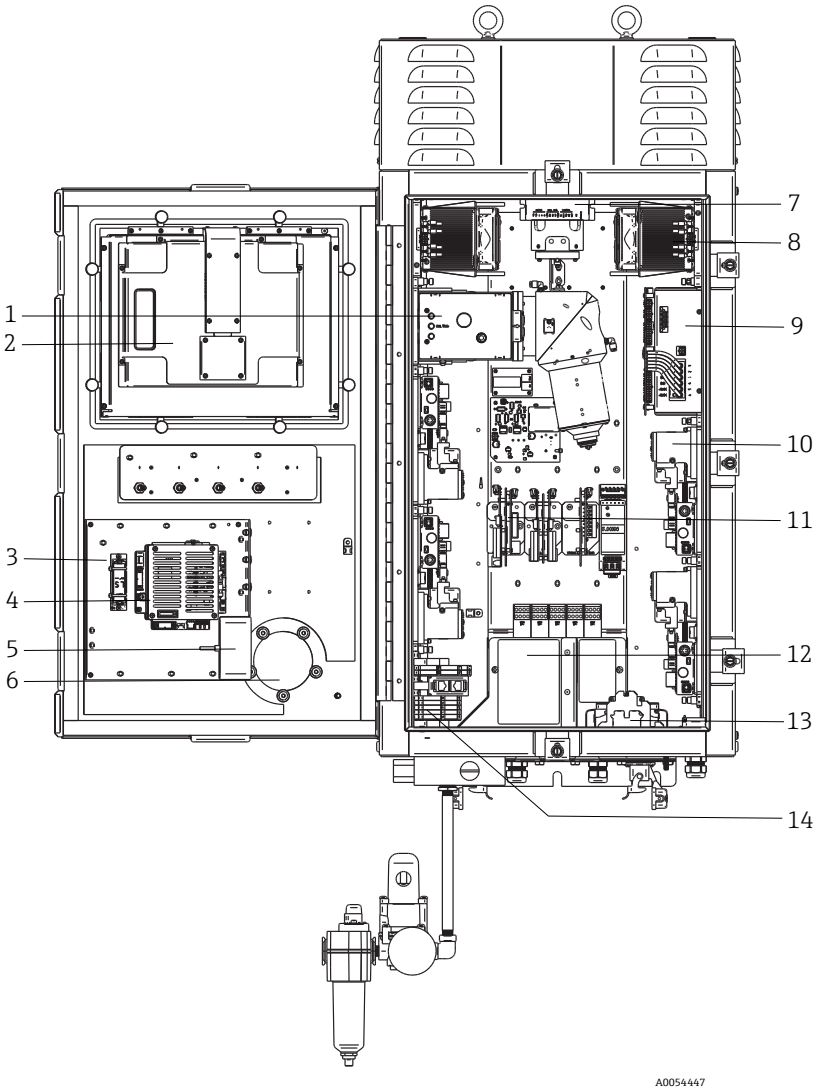


Figure 9. Raman Rxn5 analyzer interior view

#	Name	Description
1	Detection module	The location where collected Raman scattered light from the sample is analyzed. There are four analysis channels in the detection module.
2	Touchscreen monitor	Touchscreen monitor for Raman RunTime interface.
3	Real time clock backup battery	Backup battery for real time clock in the embedded controller. Cell type: 3.6V AA sized Li-SOCl2 The warning label on the front of the analyzer is in reference to this battery. Use only the manufacturer and type listed below for the Raman Rxn5. WARNING THIS ASSEMBLY CONTAINS A BATTERY MFR/TYPE: SAFT/LS 14500. REPLACEMENT BATTERIES MUST BE IDENTICAL. FAILURE TO OBSERVE THIS WARNING WILL INVALIDATE THE GOVERNING CERTIFICATES.
4	Embedded controller	System controller with Raman RunTime.
5	USB hub	USB ports for attachment of USB flash drive and input devices during service procedures.
6	Purge indicator/relief valve	Monitors internal enclosure purge pressure and provides enclosure over-pressure relief valve. A **Green** indicator light that indicates that the pressure inside the enclosure is above 5.1 mm (0.20 in) water column.
7	Motor controller	A device that regulates the speed and direction of the cooling fan motor.
8	Coolers	Peltier cooling devices to remove waste heat from electronics inside the enclosure.
9	Power supply	Main power supply which provides DC power for all electronics inside the enclosure.
10	Lasers (4)	The Rxn5 includes up to 4 lasers, depending on the configuration ordered.
11	Control electronics	Analyzer internal sensor signal conditioning and digitization electronics. Thermal control electronics and IS barrier power supply also reside here.
12	IS I/O area	Probe fiber interlock and temperature/pressure sensor connection area.
13	AC mains distribution	Customer supplied mains power is connected here. Mains power is distributed to additional internal components via factory installed terminal blocks and wiring.
14	Non-IS low voltage I/O area	Connection area for the following non-IS I/O: • (2) RS-485 Modbus RTU • (2) TCP/IP for Modbus TCP or remote control • (4) DC 24 V sampling valve driver

7 Operation

7.1 Raman RunTime embedded software

Raman RunTime is the embedded control software installed on all the Raman Rxn5 analyzers. It is intended for easy integration with standard multivariate analysis and automation platforms to enable a real-time, *in situ* process monitoring and control solution. Raman RunTime presents an OPC and Modbus interface which provides clients with analyzer data as well as analyzer control functions. Refer to the *Raman RunTime Operating Instructions (BA02180C)* for complete instructions on configuring and using the Raman Rxn5 with Raman RunTime.

7.2 Initial Raman RunTime setup

To perform initial Raman RunTime software setup, follow the instructions below.

1. Customize the analyzer name. The default name is “Raman Analyzer”:
   - From the Raman RunTime dashboard, navigate to **Options > System > General**.
   - Click the **Instrument Name** field.
   - Enter a custom name, for example, Raman Rxn5 sn0012345, then click **Apply**. The analyzer name is how the system is identified in diagnostic exports and within calibration reports.
2. (Optional) Calibrate the touch screen:
   - From the dashboard, navigate to **Options > System > General > Calibrate Touch Screen**.
   - Follow the on-screen prompts. To achieve better calibration, use the edge of your fingernail when following on screen prompts and touching the requested touch points.
3. Customize the identity for communication protocols, and customize network settings:
   - Navigate to **Options > System > Network.**
   - Click the **Hostname** field.
   - Enter a custom name and click **Apply**. This is a critical step because the hostname is how the Raman Rxn system is identified through communication protocols.

     If using DHCP, the IP address is obtained automatically.
   - (Optional) Enter the static IP information, as applicable, then click **Apply**.

4. Set the date and time:
   - From the dashboard, navigate to **Options > System > Date & Time**.
   - Specify the time, date, and time zone, or
   - Enable **Time Synchronization**. Provide a time server address on the local network.
   - Click **Apply**.
     - ▶ If setting the date and time manually, ensure the time zone is set up correctly before proceeding to other adjustments.
     - ▶ This is another critical step because spectral acquisition and resulting files and communication protocols are managed by the system's date/time.
5. Specify names for each probe/quadrant such as Probe 1, Probe 2:
   - From the dashboard, click the title bar of the probe you wish to name. The stream or probe detail view displays.
   - Select the **Settings Tab** and click **Name**.
   - Enter the name of the probe and click **Apply**.
   - Let the system stabilize for at least two hours before proceeding to calibration.
6. Refer to the *Raman RunTime Operating Instructions (BA02180C)* for initial calibration and verification instructions.

7.3 Calibration and verification

Reliable, transferable calibration is important for comparing data acquired at various times or with different analyzers. Different instruments analyzing the same sample can generate nearly identical spectra if they are properly calibrated.

There are two distinct types of calibration for Endress+Hauser Raman instruments. Internal calibration is used to calibrate both the spectrograph and laser wavelengths. Probe calibration corrects for differences overall throughput of the analyzer to different wavelengths.

7.3.1 Internal calibration

The Raman RunTime control software automatically performs internal calibrations with each analysis without user intervention or configuration. As such, the Calibration screen only displays Probe Calibration functions.

The Calibration screen shows each channel with the date of the most recent calibration and verification. On that screen you can access channel calibration and or verification, including the date and time of calibrations and verifications, pass or fail results, and details of each calibration.

The Calibrate and Verify buttons located at the top of each channel are used to run a new verification or calibration. The recommended operating procedure for an installed measurement channel is to verify first and calibrate only if the verification fails.

Running a new calibration is typically recommended under the following conditions:

- During installation and commissioning of a new analyzer or analyzer measurement channel
- After a failed verification
- After cleaning, repair, or replacement of major system components (laser, probe, detection module, fiber-optic cable)

7.3.2 Probe calibration

The sensitivity of the Raman Rxn5 varies with wavelength due to variations in the throughput of the optics and the quantum efficiency of the CCD. The probe calibration function in Raman RunTime can be used to remove the effects of this variation from measured spectra.
Probe calibration for the Raman Rxn5 analyzer is performed using a calibration gas. The calibration gas composition is chosen based on the application for which the channel is being used. Each channel may have its own calibration gas. Refer to the Operating Instructions for Raman RunTime and the Raman Rxn-30 probe for details on the calibration process.

7.3.3 Probe verification

The probe verification wizard may be used to verify that the Raman Rxn5 is performing within specifications. Probe verification acquires a Raman spectrum of a standard Raman sample, typically the current calibration gas, calculates the composition using the software method, and determines if the measured concentration of each gas is within a specified tolerance. Method verification confirms that the spectrograph and laser wavelength calibrations are within specification and the calibrated response factors for each gas provide results within specification. A report is generated showing the results of the verification steps along with a Pass/Fail indication.

8 Diagnostics and troubleshooting

Raman RunTime provides diagnostic information to help determine troubleshooting required on the analyzer. Refer to the System warnings and errors section of the *Raman RunTime Operating Instructions (BA02180C)* for additional information.

8.1 Warnings and errors

The **Status** button in the middle of the main view Status bar displays the current state of the system.

Symbol	Description
	When the system is fully calibrated and operating as expected, the **Status** button in the middle of the main view status bar reads OK and appears **Green**.
	If a system warning is encountered, the **Status** button changes to **Yellow**. Warnings should be acknowledged but immediate action may not be necessary. Click the **Status** button to view details of the warning. The most common warning occurs when all the channels are not occupied. The button pulses continuously until the problem is resolved. Click the **Status** button to view details about the warning.
	If a system error is encountered, the **Status** button changes to **Red**. An error requires immediate action to restore system performance. Click the **Status** button to view details about the error.

8.2 Contact information

For Technical Service, refer to our website (https://endress.com/contact) for the list of local sales channels in your area.

www.addresses.endress.com

Endress+Hauser

People for Process Automation