ScreenMaster RVG200
Paperless recorder

Introduction
This publication provides the following commissioning instructions for the ScreenMaster RVG200 paperless recorder:
1 Locating the recorder (location requirements)
2 Panel-mounting the recorder (installation requirements to achieve IP66 / NEMA 4X hose-down rating)
3 Electrical connections (AC and DC min. / max. values and fuse requirements)
4 Navigation (navigating the user-interface quickly and effectively)
5 Menus overview (menu familiarization)
6 Basic setup (steps required for first-time use)
7 Symbols and icons (a schedule of icons / warning symbols that may be displayed during operation)

For more information
Further publications for the ScreenMaster RVG200 paperless recorder are available for free download from www.abb.com (see links and reference numbers below) or by scanning this code:

| RVG200 paperless recorder | OI/RVG200-EN |
| RVG200 paperless recorder Datasheet | DS/RVG200-EN |
Health & Safety

Safety precautions

Be sure to read, understand and follow the instructions contained within this manual before and during use of the equipment. Failure to do so could result in bodily harm or damage to the equipment.

![WARNING]
Installation and maintenance of this product must only be conducted by personnel authorized to work on electrical installations and in accordance with relevant local regulations.

Potential safety hazards

Electrical

![WARNING]
To ensure safe use when operating this equipment, the following points must be observed:
- Up to 240 V AC may be present. Be sure to isolate the supply before removing the terminal cover.
- Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and / or temperature.
Safety advice concerning the use of the equipment described in this manual or any relevant Material Safety Data Sheets (where applicable) can be obtained from the Company, together with servicing and spares information.

Safety conventions

- **WARNING**
  In this manual, a warning is used to indicate a condition which, if not met, could cause serious personal injury and / or death. Do not proceed beyond a warning until all conditions have been met.

- **CAUTION**
  A caution is used to indicate a condition which, if not met, could cause minor or moderate personal injury and / or damage to the equipment. Do not proceed beyond a caution until all conditions have been met.

- **IMPORTANT (NOTE)**
  A note is used to indicate important information or instructions that should be considered before operating the equipment.

Safety standards

This product has been designed to satisfy the requirements of IEC61010-1:2010 3rd edition ‘Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use’ and complies with US NEC 500, NIST and OSHA.

EC Directive 89/336/EEC

**Electrical** – In order to meet the requirements of the EC Directive 89/336/EEC for EMC regulations, this product must be used in an industrial environment.

End-of-life disposal (Europe only)

The recorder contains a small lithium battery that must be removed and disposed of responsibly in accordance with local environmental regulations. The remainder of the recorder does not contain any substance that causes undue harm to the environment and must be disposed of in accordance with the Directive on Waste Electrical and Electronic Equipment (WEEE). It must not be disposed of in Municipal Waste Collection.

Cleaning

The complete recorder can be hosed down if it has been installed to IP66 / NEMA 4X standards – see Section 2, page 4. Warm water and a mild detergent can be used.
Symbols

Symbols that may appear on this product are shown below:

- Functional earth (ground) terminal.

- Both direct and alternating current supply.

- This symbol, when noted on a product, indicates a potential hazard which could cause serious personal injury and / or death. The user should reference this instruction manual for operation and / or safety information.

- This symbol, when noted on a product enclosure or barrier, indicates that a risk of electrical shock and / or electrocution exists and indicates that only individuals qualified to work with hazardous voltages should open the enclosure or remove the barrier.

- The equipment is protected through double insulation.

- Recycle separately from general waste under the WEEE directive.

Cyber security

This product is designed to be connected to and to communicate information and data via a network interface. It is your sole responsibility to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be). You shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc.) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

ABB Ltd and its affiliates are not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

Specification

Electrical

Power supply ranges
- 100 to 240 V AC ±10 % (90 min. to 264 V max.)
- 50 / 60 Hz
- 24 V DC (23.0 to 24.5 V DC)

Power consumption
- 25 W max.

Isolation
- 500 V DC to earth (ground).

General safety
- EN61010-1
- cULus
- Overvoltage Class III on mains,
- Class II on inputs and outputs
- Pollution category 2

Physical

Size – mm (in.)
- Height and width: 144 x 144 (5.7 x 5.7)
- Depth behind panel: 147 (5.8)
  (including terminal cover)

Weight – kg (lb)
- 2.0 (4.4) approx. (unpacked)

EMC

Emissions & Immunity

Meets requirements of:
- EN50081-2
- EN50082-2
- EN61326 for an industrial environment

Environmental

Operating temperature range
- 0 to 50 °C (32 to 122 °F)

Storage temperature range
- −10 to 60 °C (14 to 140 °F)

Humidity range
- 5 to 95 % RH (non-condensing)

Front panel sealing
- IP66 and NEMA4X

Rear panel sealing
- IP40 (with rear cover)
- IP20 (without rear cover)

Vibration
- Conforms to EM60068-2
### Locating the recorder

**WARNING**
- Locate the recorder in a position where its temperature and humidity specification are not exceeded and ensure it is suitably protected from direct sunlight, rain, snow and hail.
- Select a location away from strong electrical and magnetic fields. If this is not possible, particularly in applications where mobile communications equipment is expected to be used, screened cables within flexible, earthed metal conduit must be used.

#### Ambient temperature
- Min. 0 °C (32 °F)
- Max. 50 °C (122 °F)

#### Humidity
- 5 to 95%

#### Avoid vibration

![Figure 1 Locating the recorder](image)

### Panel-mounting the recorder

Referring to Figure 2:
1. Cut the correct sized hole A in the panel.
2. Insert recorder B into the panel cut-out.
3. Fit upper and lower panel clamps C to the recorder.
4. Tighten the clamping screws D evenly and securely to a torque of 0.2 Nm (1.77 lbf.in).

**CAUTION**
Correct tightening of the clamping screws is critical to ensure proper compression of the panel seal and achieve the IP66 / NEMA 4X hose-down rating.

![Figure 2 Panel-mounting the recorder](image)
Electrical connections

**WARNING**
- The recorder is not fitted with a switch therefore a disconnecting device such as a switch or circuit breaker conforming to local safety standards must be fitted to the final installation. It must be fitted in close proximity to the recorder, within easy reach of the Operator and marked clearly as the disconnection device for the recorder. A fuse must be fitted in accordance with Figure 4.
- Remove all power from supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- Use cable appropriate for the load currents: 3-core cable rated 3 A and 90 °C (194 °F) minimum, that conform to either IEC 60227 or IEC 60245. The terminals accept cables from 0.8 to 2.5 mm² (18 to 14 AWG).
- The recorder conforms to Installation Category II of IEC 61010.
- All connections to secondary circuits must have basic insulation.
- After installation, there must be no access to live parts, for example, terminals.
- Terminals for external circuits are for use only with equipment with no accessible live parts.
- If the recorder is used in a manner not specified by the Company, the protection provided by the equipment may be impaired.
- All equipment connected to the recorder’s terminals must comply with local safety standards (IEC 60950, EN601010-1).

**IMPORTANT (NOTE)**
- Always route signal leads and power cables separately, preferably in earthed (grounded) metal conduit.
- Use screened cable for signal inputs and relay connections.
- Replacement of the internal battery (type Varta CR2025 3V lithium cell) must be carried out by an approved technician only.
**Electrical connections**

**Accessing the recorder connection terminals**

Referring to Figure 3:

1. Press the terminal cover release plate in recess A and pull terminal cover B away from the recorder body to expose the terminal connections.

![Figure 3: Accessing the recorder connection terminals](image)

**Power supply connections**

Referring to Figure 4:

1. Make connections to the power supply terminals (module position E) as follows:

   - AC supply: terminals 1 (line), 2 (neutral), 3 (ground)
   - DC supply: terminals 4 (+), 5 (–)

   **IMPORTANT (NOTE)**
   
   Tighten terminal screws to a torque of 0.1 Nm (0.9 lbf.in).

   **AC Supply**
   
   - Line (L) 100 to 240 V AC 50 / 60 Hz
   - Neutrality (N) 2
   - Earth (G) 3

   **Warning.** Use fuse rating 500 mA (maximum) Type T IR (UL category JDYX2)

   **DC Supply**
   
   - Fuse 3
   - Positive (+) 4
   - Negative (–) 5

   **Warning.** Use fuse rating 2.5 A (maximum) Type T

![Figure 4: Power supply connections and fuse ratings](image)
Analog input / relay / hybrid connections

**IMPORTANT (NOTE)**
- Tighten terminal screws to a torque of 0.1 Nm (0.9 lbf.in).
- Analog inputs:
  - 3-Lead RTD: 3-leads must have equal resistance, not exceeding 20 W each
  - for mA input types, to ensure loop continuity when the recorder is switched off, fit a suitably-rated diode (for example, type 1N4148 or equivalent)

*Each thermocouple input must have either a cold junction assembly (part number CM30/0052) or shorting link (part number RVG200/0118) fitted. Each analog input card with a thermocouple input must have a minimum of 1 cold junction assembly fitted.

Figure 5  Analog input / relay / hybrid connections

Connecting a 2-lead temperature transmitter

* In the powered-down condition the current input is open circuit. In order to maintain a current loop when the recorder is powered down, fit a zener diode (BZX79 – B/C2V4) to the input as shown.

Figure 6  Connecting a 2-wire temperature transmitter
Navigation

Navigating menus

Figure 7  Navigating menus

Navigating groups and views

Figure 8  Navigating groups and views
Menus overview

Operator menus

Operator menus are accessed by pressing from any Operator or Log view. Recorder functions are accessed by pressing the icon associated with the required function.
**Menus overview**

### Configuration level menus

To access the **Configuration** menus:

1. Press 📅 on the first **Operator** menus page.
2. Enter an operator password if configured (not set at first-time use).
3. Select the required configuration entry mode:
   - **a** – Edit a current configuration.
   - **b** – Edit an existing configuration stored in the instrument’s internal memory or external storage media.
   - **c** – Create a new configuration based on the instrument’s default configuration.

#### System Configuration

<table>
<thead>
<tr>
<th>Common</th>
<th>Groups</th>
<th>Channels</th>
<th>I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions</td>
<td>Logic Editor</td>
<td>Maths equations</td>
<td></td>
</tr>
</tbody>
</table>

#### Configuration menu options comprise:

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<thead>
<tr>
<th><strong>Setup</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of groups</td>
</tr>
<tr>
<td>Channel Allocation</td>
</tr>
<tr>
<td>Language</td>
</tr>
<tr>
<td>Global alarm ack source</td>
</tr>
<tr>
<td>Instrument tag</td>
</tr>
<tr>
<td>Options enabled</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Archive</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Archive Media</td>
</tr>
<tr>
<td>Wrap</td>
</tr>
<tr>
<td>Archiving Groups</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Screen</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen saver wait time</td>
</tr>
<tr>
<td>Screen Capture</td>
</tr>
<tr>
<td>Brightness</td>
</tr>
<tr>
<td>Overview Display</td>
</tr>
<tr>
<td>Chart View Timer</td>
</tr>
<tr>
<td>Touchscreen Tips</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Time</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date and time</td>
</tr>
<tr>
<td>Daylight Saving – Enable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Security (Basic)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Security type</td>
</tr>
<tr>
<td>Logging security</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>User</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>User 1(4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Op. Messages 1 ...24</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Message 1(24)</td>
</tr>
</tbody>
</table>
Groups 1 (6)

### Recording
- Tag
- Recording enable source
- Primary sample rate
- Secondary sample rate
- Sample rate select source

### Chart
- Chart view enable
- Chart Annotation
- Chart divisions
- Pointers/Indicators
- Screen interval
- Trace width
- Menu enables

### Indicator
- Indicator
- Totalizer / statistics
- Bar graph display
- Alarm Trip Points
- Menu enables

### Bar
- Bar graph view enable
- Bar graph markers
- Menu enables

### Batch (if option enabled)
- Enable Batch Recording
- Start/Stop, Abort
- Operator Login
- Batch Number
- Field 1(3) Title

### Channels

#### Setup
- Source ID
- Trace color / Zone
- Filter type
- Scale Type

#### Analog I/P
- Input type
- Engineering range
- Tag
- Filter time constant
- Fault detect level
- Broken sensor direction

#### Alarm A (D)
- Alarm type
- Alarm tag
- Trip
- Hysteresis
- Enable source
- Log Enable/Ack Timeout
- Alarm group

#### Totalizer A (B) (if option enabled)
- Setup
- Tag/Units
- Stop/Go/Reset
- Timed Reset
- Count range
- Log update
- Count rate/Cut off
### Menus overview

#### Configuration level menus

**I/O**

<table>
<thead>
<tr>
<th>Analog I/P</th>
<th>Input</th>
<th>Operator Calibrate</th>
<th>Sensor Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay F1</td>
<td>Source</td>
<td>Polarity</td>
<td></td>
</tr>
</tbody>
</table>

**Ethernet**

<table>
<thead>
<tr>
<th>Ethernet</th>
<th>DHCP</th>
<th>IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTP</td>
<td>FTP user 1 (4)</td>
<td></td>
</tr>
</tbody>
</table>

**Modbus TCP**

<table>
<thead>
<tr>
<th>email</th>
<th>Auto Address</th>
<th>Sender Address</th>
</tr>
</thead>
</table>

**Modbus TCP**

<table>
<thead>
<tr>
<th>SMTP Server IP address</th>
<th>Recipient 1, 2, 3</th>
<th>Options enabled</th>
<th>Trigger 1-5</th>
<th>Trigger 6-10</th>
</tr>
</thead>
</table>

**Modbus TCP**

<table>
<thead>
<tr>
<th>Implementation – Slave</th>
<th>Modbus TCP Port</th>
<th>Reverse IEEE Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation – Master</td>
<td>Modbus TCP Port</td>
<td>Poll Rate</td>
</tr>
</tbody>
</table>

**Modbus TCP**

<table>
<thead>
<tr>
<th>Poll fail limit</th>
<th>Response Timeout</th>
</tr>
</thead>
</table>

**Client Authorization TCP**

<table>
<thead>
<tr>
<th>TCP Client Access</th>
<th>Authorized IP 1 – 6</th>
</tr>
</thead>
</table>

**Comms analog I/P**

<table>
<thead>
<tr>
<th>Comms analog I/P Protocol</th>
</tr>
</thead>
</table>

**Comms Digital I/P**

<table>
<thead>
<tr>
<th>Comms Digital I/P Protocol</th>
</tr>
</thead>
</table>

**Linearizer**

<table>
<thead>
<tr>
<th>Adjust custom linearizer1 (2)</th>
</tr>
</thead>
</table>

**RTA 1 (4)**

<table>
<thead>
<tr>
<th>Alarm tag</th>
<th>Daily enables</th>
<th>1st of the month enable</th>
<th>On time</th>
<th>Duration</th>
<th>Log enable</th>
</tr>
</thead>
</table>

**Logic Editor**

<table>
<thead>
<tr>
<th>LE 1 (24)</th>
<th>Operand / Operator 1 (6)</th>
</tr>
</thead>
</table>

**Maths equations**

<table>
<thead>
<tr>
<th>Maths 1 (24)</th>
<th>Block Type</th>
<th>Equation</th>
<th>Reset source</th>
<th>Engineering range</th>
<th>Tag</th>
<th>Fault detect level</th>
<th>Fault Detect Direction</th>
</tr>
</thead>
</table>

Basic setup

Perform the following steps, in sequence, when setting up the recorder for first-time use – for detailed configuration routines refer to the Operating instructions (OI/RVG200-EN).

Start-up

1. Locate and mount the recorder as described in Sections 1 and 2.
2. Make electrical and signal connections as described in Section 3.
3. Power-up the recorder.

IMPORTANT (NOTE)
At power-up, a start-up screen is displayed while a self-test sequence is performed. An operator view is displayed when the self-test sequence is complete and the recorder is ready for operation.

4. Proceed to the next step to set the date and time.

Set the date and time

1. Press the Home icon (Home) from any Operator or Log view to display page 1 of the Operator menus.
2. Press the Configuration icon (Configuration) to display the Select Operator page.
3. Press [Home] and at the Operator 1 – Password (0..9999) page press [Home] again (passwords are not set at first-time use). The Operator 1 Edit / Open / New configuration page is displayed.
4. Press the Edit Configuration icon (Edit Configuration) at the Operator 1(4) page to display the System Configuration page and press the Common icon (Common) to display the Common Configuration level menus.
5. Press the tab and at the Date and time field, press the icon to display the Date and Time dialog.
   Enter the required information in each field, pressing [Home] to accept the content and return to the Date and Time dialog.
6. When all fields have been set, press [Home] to return to the Common Configuration level [Home] menu options.

Set up the archive files

1. Press the Archive tab to display the associated fields.
2. Press the icon associated with each field to enter and configure Archive parameters – press [Home] to accept the content at each field.
3. When all fields have been configured, press [Home] to return to the I/O Groups 1(6) page then [Home] to return to the Common Configuration page.
4. Press [Home] to exit the Common Configuration level and return to the System Configuration page.

Set the sample rate

1. At the System Configuration page, press the Groups icon (Groups) to display the I/O Groups 1 (6) page.
2. Press the icon associated with the required Group (for example) to display the Group 1 (6) dialog.
3. Press the tab and then the icon associated with each field to enter and configure Recording parameters – press [Home] to accept the content at each field.

Select Operator views and Menu enables

1. At the Group 1 (6) dialog, select the view(s) required by pressing the Chart / Indicator / Bar tabs to display the associated fields.
2. Press the icon associated with each field to enter and configure view parameters (Chart / Indicator / Bar) and Menu enables for each view – press [Home] to accept the content at each field.
3. Proceed to the next section to set up the archive files.

Setup Groups and Channel allocation

1. Press the tab and at the Number of Groups field, press and enter the number of Groups required.
   Press [Home] to return to the Common Configuration level.
2. At the Channel Allocation field, press (Channel Allocation) to display the Group Configuration dialog. Select the channel(s) to be assigned to each group. When allocation is complete, press [Home] to return to the Common Configuration level.
Basic setup

Change the channel configuration

1. At the System Configuration page, press the Channels icon to display the I/O Groups 1(6) Channels page.

2. Press the icon associated with the required Group 1 (6) Channels (for example 1) to display the Channel 1 (01 ...06) dialog.

   **IMPORTANT (NOTE)**
   Use the arrows to select different Channels in the same process group.

3. Press the tab and then the icon associated with each field to enter and configure Setup parameters – press to accept the content at each field.

4. Repeat for all other tabs on the Channel 1.01 (1.06) dialog and for all other required channels.

   When all fields have been configured, press to return to the I/O Groups 1(6) Channels page then to return to the System Configuration page.

5. Proceed to the next section to set up the inputs / outputs (I/O).

Set up the inputs / outputs (I/O)

1. At the System Configuration page, press the I/O icon to open an I/O page displaying fitted I/O modules.

   **IMPORTANT (NOTE)**
   I/O modules are detected automatically.

2. Press the icon associated with the required module to display the dialog and fields associated with that module.

3. Configure parameters for each required module.

4. When all parameters have been configured, press to return to the I/O page then to return to the System Configuration page.

5. Proceed to the next section to exit Configuration level and save changes.

Save current configuration and exit

1. Press at the System Configuration page – a prompt is displayed with options to Apply Changes, Export Configuration, Return to Configuration Mode or Discard Changes.

2. Press Apply Changes to save the current configuration and return to the Operator page.

3. Proceed to the next section to start recording.

Start recording (archiving)

1. Open the media door and insert the external media card and close the door.

   Recording is initiated automatically.

   **IMPORTANT (NOTE)**
   Alternative archive media can be used – refer to the Operating instructions (OI/RVG200-EN) for compatible media types.
## Symbols and icons

### Process Group name
- **Process Group 1**
- **Process Group 1 to 6**
- **Channel 1.1 – 1.6**
- **Channel 6.1 – 6.6**

### Common Configuration
- **Functions Configuration**
- **I/O Module Configuration**

### Status icons
- **Historical review active**
- **External archive media online (green icon, number indicates % used)**
- **do not remove external media while online**
- **External archive media offline (grey icon)**
- **External media 100 % full, archiving stopped (green icon, flashing red cross)**
- **Alarm(s) active, red flashing border indicates unacknowledged alarm(s) active**
- **AutoView scroll active**
- **Clock battery failure**

### Alarm event icons
- **Inactive**
  - High process alarm
  - Low process alarm
  - Delayed high process alarm
  - Delayed low process alarm
  - High latch alarm
  - Low latch alarm
  - Fast rate alarm
  - Slow rate alarm
  - High annunciate alarm
  - Low annunciate alarm
  - Real-time alarm
  - Alarm acknowledged
  - Operator message
  - Daylight saving start / end changed
  - Electronic Signature

- **Active**
  - Totalizer started
  - Totalizer stopped
  - Totalizer wrapped
  - Totalizer reset
  - Intermediate value reached
  - Timed event
  - Triggered event
  - Power failed
  - Power restored
  - Batch total
  - Maximum value
  - Minimum value
  - Average value
  - Daylight saving start / end changed
  - FTP Logon

### Totalizer icons
- Totalizer started
- Totalizer stopped
- Totalizer wrapped
- Totalizer reset
- Intermediate value reached
- Timed event
- Triggered event
- Power failed
- Power restored
- Batch total
- Maximum value
- Minimum value
- Average value
- Daylight saving start / end changed

### Audit log icons
- Power failed
- Power restored
- Calibration change
- Configuration change
- File deleted
- Archive media inserted
- Archive media removed
- Archive media offline
- Archive media online
- Archive media full
- System error / reset archiving
- Daylight time or daylight saving start end changed
- FTP Logon