

Rosemount™ 5300 Level Transmitter

Single Probes with Cold Temperature
Option Code BR5



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1 Safety messages

⚠ WARNING

Failure to follow safe installation and servicing guidelines could result in death or serious injury.

- Only qualified personnel should install the equipment.
- Use the equipment only as specified in this guide and the Reference Manual. Refer to the Rosemount 5300 Level Transmitter [Reference Manual](#) for more instruction.

Explosions could result in death or serious injury.

- Installation of device in an explosive environment must be in accordance with appropriate local, national, and international standards, codes, and practices.
- Ensure device is installed in accordance with intrinsically safe or non-incendive field practices.

Electrical shock could cause death or serious injury.

- Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.
- Ensure the mains power to the transmitter is off and the lines to any other external power source are disconnected or not powered while wiring the transmitter.

Process leaks could result in death or serious injury.

- Handle the transmitter carefully.
- If the process seal is damaged, gas could escape from the tank when removing the transmitter head from the probe.

⚠ WARNING

Physical access

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

2 About the cold temperature option code BR5

The Rosemount 5300 Level Transmitter with option code BR5 has been factory configured for best performance in cold ambient temperature, down to -67 °F (-55 °C).

This document describes option code BR5 factory settings and required commissioning, for Rosemount 5300 with single probes.

For general Rosemount 5300 information, refer to the Rosemount 5300 Level Transmitter [Product Data Sheet](#).

High Level Supervision (HLS)

Specific instructions for HLS in combination with option code BR5 are described in this document. For general HLS information and instructions, refer to the High Level Supervision [Manual Supplement](#).

2.1 Required commissioning

The Trim Near Zone function shall be performed during commissioning, see section [Perform Trim Near Zone](#) for further instructions.

2.2 Specification

Rosemount 5300 option code BR5 specification is listed in [Table 2-1](#).

Table 2-1: Rosemount 5300 Option Code BR5 Specification

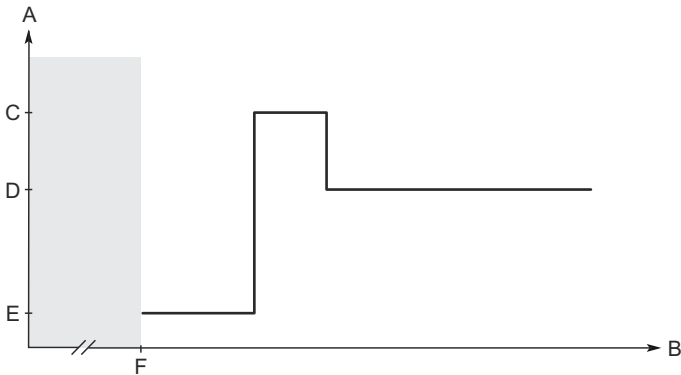
Option code BR5	
Firmware version	Requires version 2.M0 or later
Surface threshold factory settings	<ul style="list-style-type: none"> • Surface threshold for option code BR5 - factory settings • Surface threshold for option code BR5 in combination with HLS - factory settings
Ambient temperature range during operation for HLS	-67 °F to 158 °F (-55 °C to +70 °C) ⁽¹⁾
Start-up time	See Start-up sequence

(1) *Requires calibration performed within proper ambient temperature range, see High Level Supervision [Manual Supplement](#).*

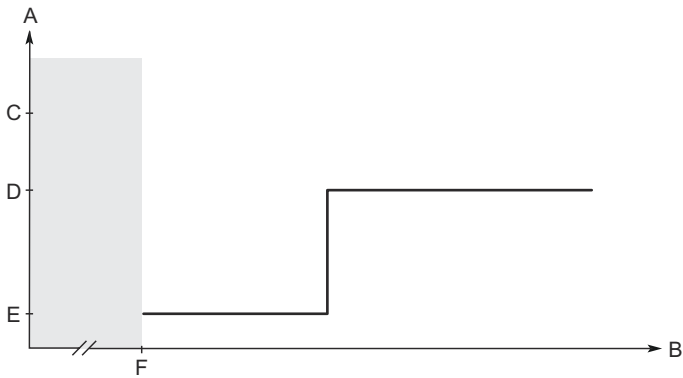
2.3 Start-up sequence

The Rosemount 5300 start-up time is normally <math><40\text{ s}</math>. However for devices with option code BR5 at temperatures below Figure 2-1 and [Figure 2-2](#).

Figure 2-1: Start-Up Sequence, Alarm Mode High



- A. Current, mA
- B. Time, s
- C. High Alarm current (Rosemount or Namur value, according to configuration)
- D. Actual level value
- E. Low Alarm current (Rosemount or Namur value, according to configuration)
- F. For option code BR5 at temperatures below

Figure 2-2: Start-Up Sequence, Alarm Mode Low

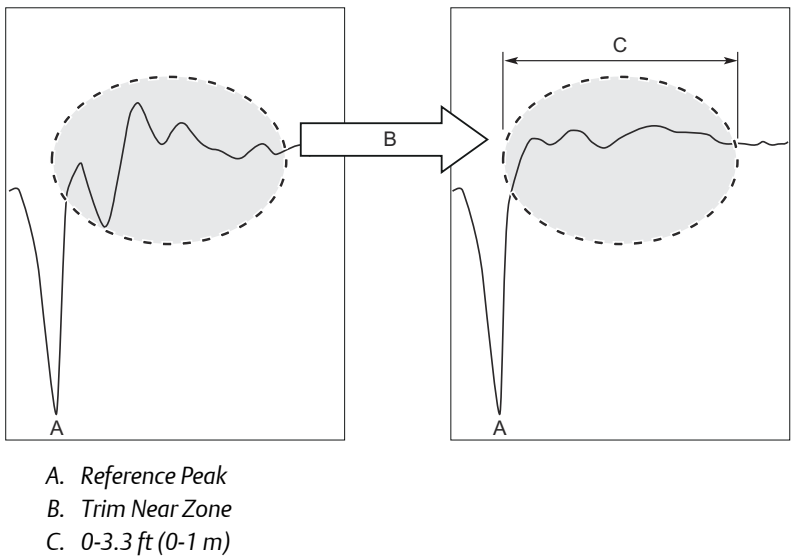
- A. Current, mA
- B. Time, s
- C. High Alarm current (Rosemount or Namur value, according to configuration)
- D. Actual level value
- E. Low Alarm current (Rosemount or Namur value, according to configuration)
- F. For option code BR5 at temperatures below -40°F (-40°C): Five minutes delay with an undefined current value

3 Perform Trim Near Zone

During the commissioning of a transmitter with option code BR5, the Trim Near Zone function shall be performed.

Figure 3-1 displays the effect on the echo curve.

Figure 3-1: Echo Curve Before and After Trim Near Zone



3.1 Perform Trim Near Zone using Rosemount Radar Master

Prerequisites

Before performing the Trim Near Zone, ensure that:

- There is product in the tank.
- The product level is below the Near Zone region (0-3.3 ft (0-1 m) below the Upper Reference Point).

Procedure

1. Select **Setup** → **Advanced**.
2. Select the **Near Zone** tab.
3. Select **Trim Near Zone** and follow the on-screen instructions.
4. When near zone trimming is complete, restart the device.
 - a) Select **Tools** → **Restart Device**.

3.2 Perform Trim Near Zone using AMS or a handheld communicator

Prerequisites

Before performing the Trim Near Zone, ensure that:

- There is product in the tank.
- The product level is below the Near Zone region (0-3.3 ft (0-1 m) below the Upper Reference Point).

Procedure

1. HART®: Select **Overview** → **Echo Tuning**.
FOUNDATION™ Fieldbus: **Configure** → **Manual Setup** → **Advanced**.
2. Select **Near Zone** → **Trim Near Zone** and follow the instructions.
3. When near zone trimming is complete, restart the device.
 - a) HART: Select **Service Tools** → **Maintenance**.
FOUNDATION Fieldbus: Select **Service Tools** → **Maintenance** → **Reset/Restart**.
 - b) Select **Restart Device**.

4 Surface threshold for option code BR5

The surface threshold is pre-configured at factory for transmitters with option code BR5. It is typically not necessary to make manual adjustments to the pre-configured surface threshold. Manual adjustments are necessary in the following cases:

- Configuration in transmitter has been reset to factory settings
- Threshold has been overwritten by other actions

4.1 Adjust surface threshold using Rosemount Radar Master

Prerequisites

When adjusting the surface threshold manually, the Trim Near Zone function shall also be performed.

Note

If the adjusted threshold is set lower than the factory settings, Trim Near Zone must be performed within 72 °F (40 °C) of the expected ambient operating temperature. For factory settings, see [Surface threshold for option code BR5 - factory settings](#).

Procedure

1. Select **Setup** → **Echo Curve**.
2. Drag and drop the Amplitude Threshold Curve (ATC) points to adjust the surface threshold according to factory settings.
3. Click **Store** to save ATC to device.

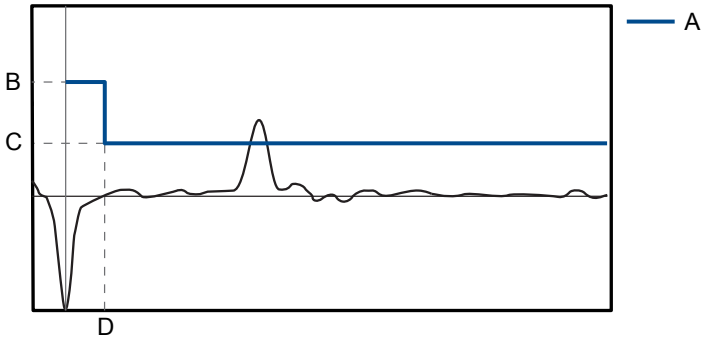
Postrequisites

Perform Trim Near Zone (if not already done).

4.2 Surface threshold for option code BR5 - factory settings

Figure 4-1 specifies the surface threshold factory settings for Rosemount 5300 with option code BR5.

Figure 4-1: Surface Threshold for Option Code BR5



- A. Surface threshold, pre-configured at factory
- B. 1500 mV
- C. 700 mV
- D. 16 in. (40 cm)

5 Surface threshold for option code BR5 in combination with High Level Supervision

The surface threshold is pre-configured at factory for transmitters with option code BR5 together with the High Level Supervision option. It is typically not necessary to make manual adjustments to the surface threshold. Manual adjustments are necessary in the following cases:

- High Level Supervision is retrofitted on existing transmitter
- Configuration in transmitter has been reset to factory settings
- Threshold around reference reflector has been overwritten by other actions

5.1 Adjust surface threshold using Rosemount Radar Master

Prerequisites

When adjusting the surface threshold manually, the Trim Near Zone function shall also be performed.

Note

If the adjusted threshold is set lower than the factory settings, Trim Near Zone must be performed within 72 °F (40 °C) of the expected ambient operating temperature. For factory settings, see [Surface threshold for option code BR5 in combination with HLS - factory settings](#).

Procedure

1. Select **Setup** → **Echo Curve**.
2. Drag and drop the Amplitude Threshold Curve (ATC) points to adjust the surface threshold according to factory settings.
3. Click **Store** to save ATC to device.

Postrequisites

Perform Trim Near Zone (if not already done).

Ensure that installation and configuration is properly performed as described in the High Level Supervision [Manual Supplement](#).

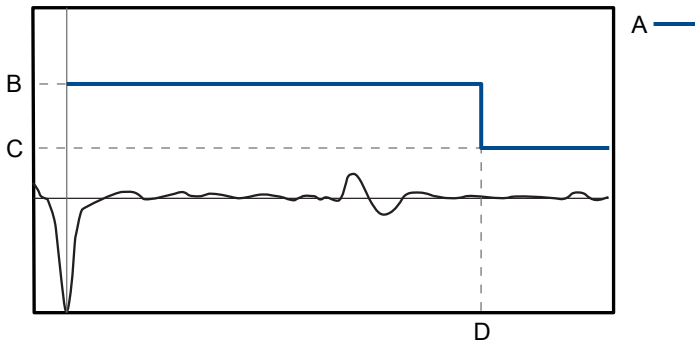
5.2 Surface threshold for option code BR5 in combination with HLS - factory settings

The surface threshold factory settings is dependent on device mounting type, as shown in [Table 5-1](#).

Table 5-1: Surface Threshold Depending on Device Mounting Type

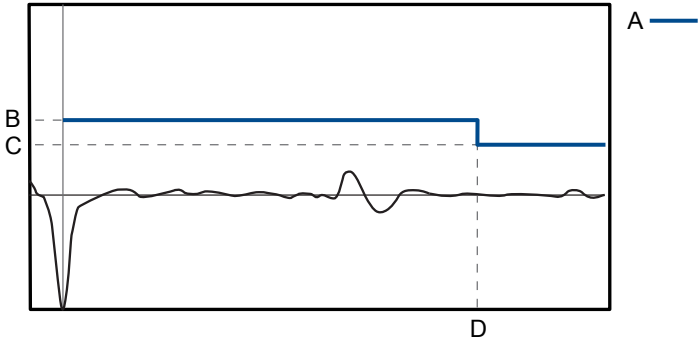
Device mounting type	HLS option code	Surface threshold factory settings
3-in. to 6-in. pipe/chamber (inner diameter)	HL1	See Figure 5-1
8-in. pipe/chamber (inner diameter)	HL2	See Figure 5-2
10-in. pipe/chamber or bigger (inner diameter) or Open tank (tank without pipe)	HL3	See Figure 5-2

Figure 5-1: Surface Threshold for Option Code BR5 Together with HL1, (3-in. to 6-in. Pipe/Chamber)



- A. Surface threshold, pre-configured at factory
- B. 1500 mV
- C. 700 mV
- D. 13 ft. (4.4 m)

Figure 5-2: Surface Threshold for Option Code BR5 Together with HL2/HL3, (8-in. Pipe/Chamber or Bigger, or Open Tank)



- A. Surface threshold, pre-configured at factory
- B. 900 mV
- C. 700 mV
- D. 13 ft. (4.4 m)



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