Quick Start Guide

for volume flow meter & controller

ES-FLOW®

ES-103I, ES-113I

IMPORTANT!
Read carefully before use.
Keep for future reference.

⚠ Safety First

- ► Please read this manual carefully before installing and operating the product.
- ► All instructions must be observed, including the online available comprehensive instruction manual of the product.
- ► Failure to comply with the instructions may result in material damage and personal injury, including danger to life.
- ► Scan the QR code (Downloads) on the back cover to download the additional product manuals.
- ► If in any doubt: scan the QR code (Service & Support) on the back cover to get in contact with Bronkhorst.

- ► Before working on the product: de-energize the product.
- ► Take appropriate measures to prevent electrostatic discharge (ESD) while working on the product.
- ► Always check for fluid leakage before and after working on the product.

- ► The product may run hot during operation depending on process fluid and ambient temperature.
- ► Allow the product to cool down before carrying out any work.
- ► If necessary, wear protective gloves.

Intended Use

The product has been developed to measure and/or control volume flow rates of clean liquids in a fluid system. The product is suited for general-purpose indoor (dry) applications, like laboratories and machine enclosures, as well as for sheltered outdoor applications, like installations in plant constructions. Any other use is considered not intended.

- ► Observe the details on the serial number label and this guide to ensure correct use.

Notices for the user

The product requires professional experience and knowledge of installation, operational requirements of the relevant industry, and knowledge of the type of application and national requirements according to relevant standards and regulations.

Modifications

The product may not be disassembled or modified in any way or for any purpose. Unauthorized modifications can undo safety features, compromise system specifications and cause failure to comply with applicable laws, regulations and directives.

Any unauthorized modification will be considered as unintended and improper use.

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⚠ Process fluid

The product is intended for the use of the process fluid indicated on the serial number label.

► Make sure that the process fluid used is identical to that indicated on the serial number label.

In any other case:

► Refer to the online available comprehensive manual for whether the required process fluid is suitable for the product type and wetted materials used.
► If in any doubt: scan the QR code (Service & Support) on the back cover to get in contact with Bronkhorst.

The user is responsible for taking the necessary safety measures to prevent damage and/or injury while working with the product and process fluid.

► Please refer to the on-site available safety data sheet of the process fluid (SDS) before working on the product.

System pressure

The maximum permissible pressure is indicated in the technical specifications table in this guide. Exceeding this value may result in product damage or leakage.

► Make sure that the maximum permissible pressure of the product is equal to or greater than the process conditions of the system.

Product types

This document only applies to the product types indicated on the front cover of this Quick Start Guide.

► Check whether this Quick Start Guide applies to the product.

3-A compliant product

The product is 3-A compliant if the its logo appears on the serial number plate. A 3-A compliant product is suitable for hygienic (food processing) applications. The user is responsible for the suitability (FDA-compliance), intended use, cleaning, corrosion resistance and compatibility with wetted materials against the metered media.
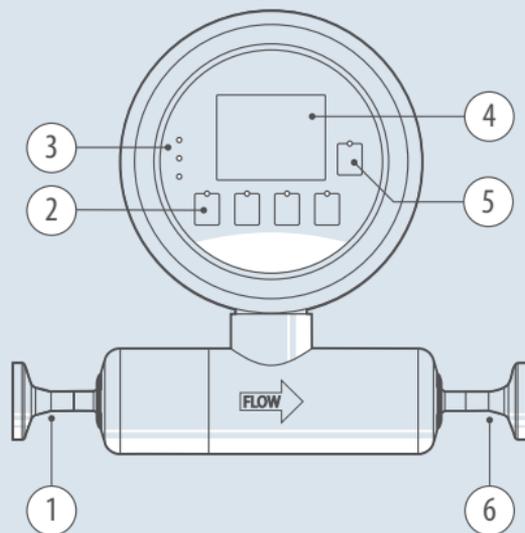
About this Quick Start Guide

> ⓘ All illustrations are general representations and may differ from the actual configuration and product type.

This Quick Start Guide is intended for commissioning the product in a non-critical process. It will guide the user in controlling and monitoring research and pilot setups using Bronkhorst FlowSuite software.

► Prior to work, check whether a newer version of this document is available on the Bronkhorst website.
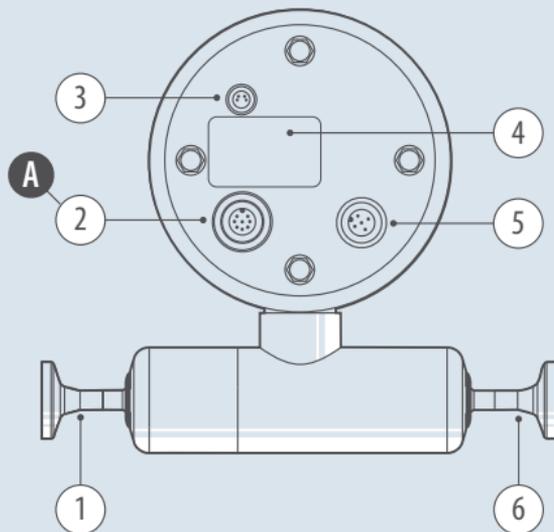► Scan the QR code (Product info) on the back cover to go the product landing page to download the latest version.

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ES-FLOW® ES-1x3I - Front

1. Fluid inlet
2. Navigation buttons
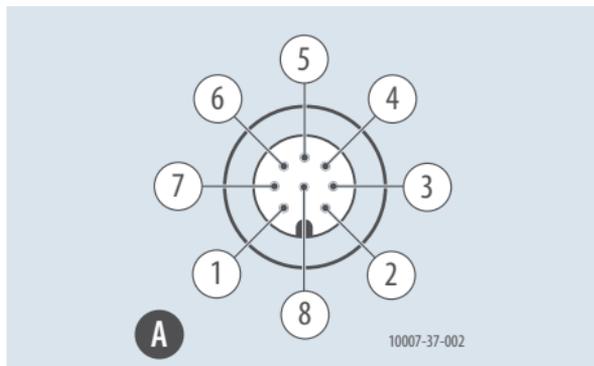3. Status LEDs
4. Display

5. Function button
6. Fluid outlet

ES-FLOW® ES-1x3I - Back

1. Fluid outlet
2. Connector (power)
3. Connector (actuator)
4. Serial number label
5. Connector (optional fieldbus)
6. Fluid inlet

Pinout - M12-A 8 pin

1. TX-RS232/BUS
2. Analog output
3. Analog input
4. 0 V power
5. Custom*
6. RX-RS232/BUS
7. +Us (15 ... 24 Vdc)
8. 0 V sense

* Default disabled, 0 Vdc

Before Installation
► Check the contents of the packaging box for damage.
► Install only undamaged products.

Product specifications
► Verify that the specifications on the serial number label match the application.
► Make sure that the product is sufficiently clean for its intended use.

Install Bronkhorst FlowSuite
► Scan the QR code (Service & Support) on the back cover.
► Go to the Bronkhorst website and select your operating system to download Bronkhorst FlowSuite. For download information, see the back cover of this manual.
► Follow the on-screen instructions to install the application on a Windows PC.

Mounting location

To ensure reliable measurements, it is important to choose a correct mounting location. The product is designed to be supported by the connected sanitary pipeline. Use a clamping bracket for additional support (acc.). Observe the following guidelines:
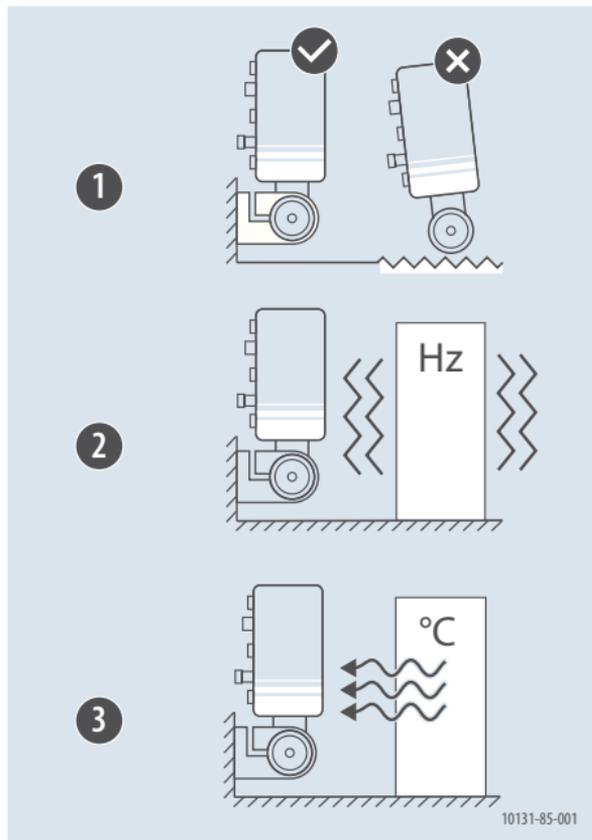
► Install with a clamp bracket that is fixed to a rigid structure [1].
► Avoid installation close to mechanical vibrations [2].
► Avoid installation close to magnetic field sources.
► Avoid installation close to heat sources [3].
► See online available dimensional drawings for further details.

· Additional for hygienic applications

► Make sure that the process connections are at least 10 cm (4 inch) above the floor.
► Mount in a location where the exterior cannot come into direct contact with food substances or their packaging materials.
► Use a suitable coated mounting surface of waterproof mastic material and sealed connections between product and mounting surface.

Pressure rating

► Check the maximum permissible system pressure in the technical specifications table in this guide.
► Make sure that the pressure rating of the product, is equal to or greater than the maximum applied system pressure.

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Mounting position

If there is a risk of expansion of dissolved gas in the product, mounting the product at the highest point of a pipe segment [2] is therefore not advisable.

· For standard products

► Mount the product in a location where gas bubbles cannot accumulate inside the product [1, 3, 4, 5, 6].

· For hygienic applications

The product is designed so that proper drainage is not impeded. To allow self-draining:

► Prevent liquid from pooling on the display surface by installing the product vertically.

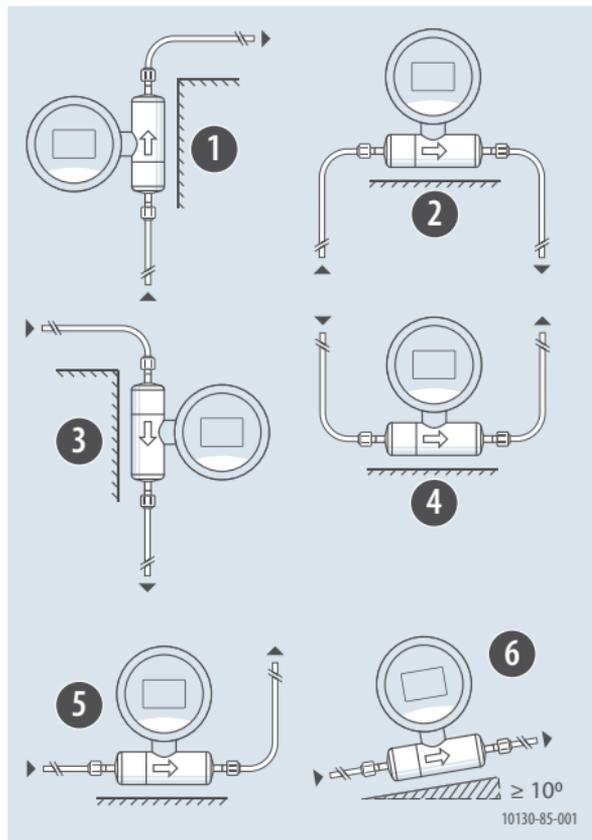► Mount the product with a minimum inclination of 10° [1, 6].

Product use	1	2	3	4	5	6
Standard use	ok	x	!(1	ok	ok	ok
Use in hygienic applications	ok	x	x	x	x	ok

> ⓘ In case a valve is fitted with a purge adapter:
> ► Make sure that the position of the purge adapter enables easy degassing.

1 Risk of piping running dry, leading to malfunction.

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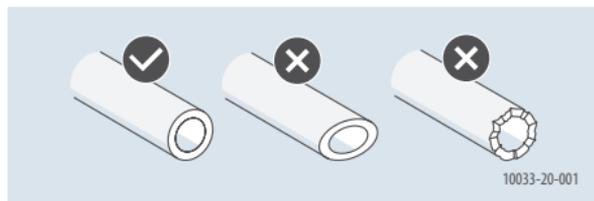
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Fluid line connection

⚠ CAUTION

Risk of personal injury due to fluid leakage!
Unsuitable piping material and loose connectors can
lead to fluid leakage and severe injury.
- ► Use piping and tubing that are suitable for the
  operating conditions of the application.
- ► Check all connections for fluid leakage before and
  after applying fluid pressure.

- ► Cut the pipes/tubing squarely.
- ► Make sure that the pipes are clean and deburred before mounting.
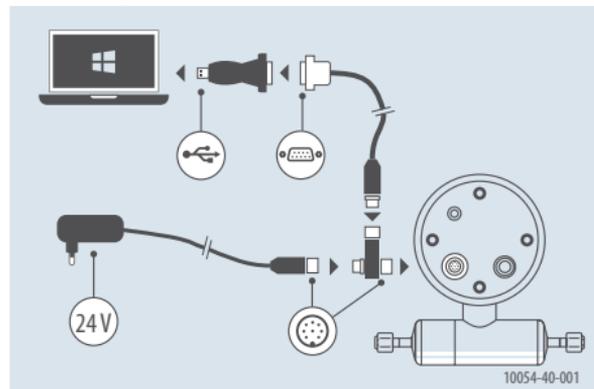

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- ► Connect the piping without stress to the product fluid inlet
  and fluid outlet.
- ► Tighten fluid connections according to the manufacturer's
  instructions.
- ► Clean all connectors and tubing from dirt and debris.

Electrical connection

ⓘ For basic setup, it is recommended to use Bronkhorst®
accessories (not included) as described in this manual.

- ► Connect the product to the PC by using a M12-A 8p/SubD-9
  cable, USB converter and M12 8p A-coded T-part.
- ► Connect the PiPS-IN-M12 power supply to the T-part.
- ► Turn on power.

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When using third-party power supply and cables:
- ► Make sure that the maximum power of the power supply is
  sufficient to power the product.
- ► Check the pinout diagram for the correct pin layout.

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Adding the product to Bronkhorst FlowSuite

When Bronkhorst FlowSuite is started, the software will automatically search for connected products. All found products are displayed in the left pane.

► Use the refresh option to check for newly connected products.

If the product is not found, it may not be set to serial RS-232.

► Follow the instructions on the next page to set the product to serial RS-232.
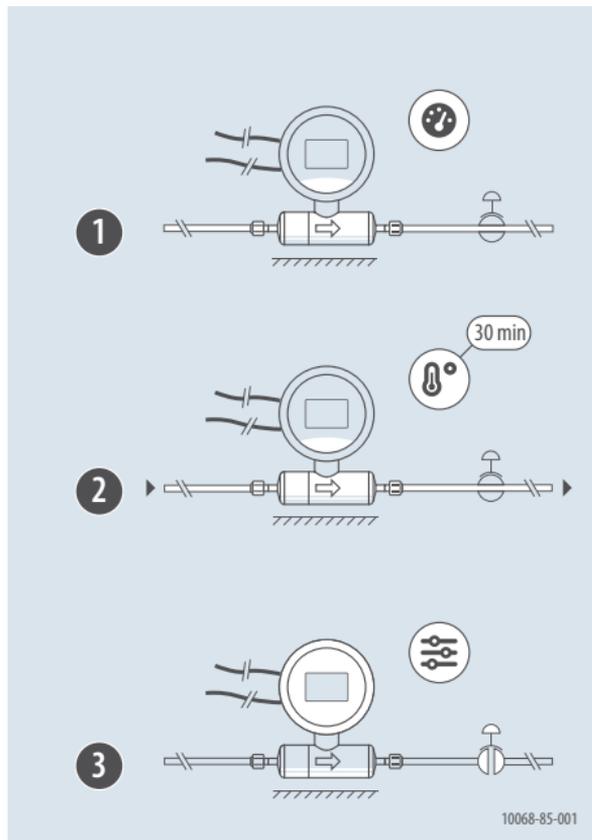
Commissioning

► Apply fluid pressure gradually to prevent pressure shocks [1].
► Warm up the product for at least 30 minutes before starting measurement [2].

Adjusting Zero Point

To ensure correct measurements, adjust Zero Point in the following situations: before first use and after remounting [3].

To start adjusting Zero Point:

► Flush the product with process fluid to ensure a homogeneous fill.
► Open Bronkhorst FlowSuite on the PC.
► Select the product in the left pane.
► Go to the Actions menu.
► Press the button Auto Zero.
► Follow the on-screen instructions.

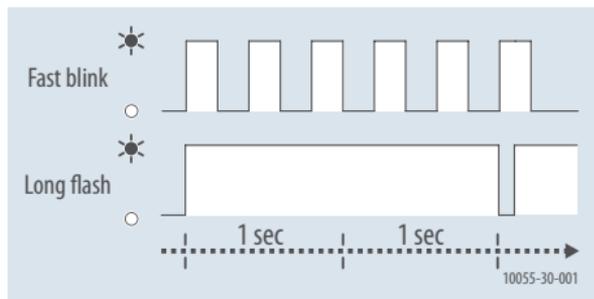The product is ready for use!

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Switching to serial RS-232

If a connection between the product and Bronkhorst FlowSuite cannot be established, the switch/push button can be used to enter the configuration mode and enable the required RS-232 communication. To activate the RS232 communication:

► Switch off the power supply of the product.
► Push and hold the button while switching on the power.
► Release the button after 12 to 16 sec. when both LED's (red and green) are fast blinking.

If the RS-232 communication is active, the green LED will long flash.

To return to the factory configuration:
► Repeat the procedure as described above.

Product status in Bronkhorst FlowSuite

In Bronkhorst FlowSuite, an icon is displayed next to the product in the left pane. The icon indicates the status of the product. When selecting a product from the left pane, more status information is given in the overview screen.

The icon colors are based on the NAMUR NE 107 standard and are a simplified representation of the diagnostic data of the product.

Icon	Icon color	Product status
✓	Green	Normal operation - Valid output signal
⬥	Blue	Maintenance required - Output signal still valid
?	Yellow	Out of specification - Signal out of the specified range
⚙	Orange	Check function - Output signal temporary non-valid
✕	Red	Critical failure - Non-valid output signal

ⓘ Information on the Status LED on the product can be found in the online available comprehensive manual.

Maintenance

Standard products require no routine maintenance. Periodic inspection is recommended to ensure proper and safe product operation. Hygienic applications require periodic maintenance.

Check prior to each use

► Check cabling for proper connection, damage and wear.
► Check fluid lines and connections for leaks, damage and wear.
► Carry out repairs immediately.

Removing contamination

In case of clogging or contamination of the fluid path, purging the product and fluid lines may solve the issue.

· Standard applications

► Purge the fluid path with a clean, dry and inert gas.

· Hygienic applications

► Purge the fluid path with a clean, dry air or a non-aggressive cleaning liquid (e.g. ethanol or isopropyl alcohol).
► Refer to the online available comprehensive manual for information about CIP (Cleaning In Place) procedures.

Cleaning exterior

► Clean the product with a dry or slightly damp cloth.
► Avoid using abrasive or aggressive cleaning agents.

Technical specifications

Description	Unit	Value
Maximum fluid pressure	bar(g)	See serial number label
Permissible fluid temp.	°C (°F)	-10 ... 90 (14 ... 194)
Permissible ambient temp.	°C (°F)	0 ... 60 (32 ... 140)
Storage conditions	°C (°F)	0 ... 50 (32 ... 122)
	%RH	95 (non condensing)
Max. install. altitude	m (ft)	2000 (6560)
Warm-up time	min.	30
Ingress protection		IP66 / IP67
Supply voltage	Vdc	15 ... 24 (±10%)
Power connector		8 pin M12
Process connections		• 1/4" Triclamp flanges • DIN32676-C (welded) • Compression type • Face seal couplings

Service and support

If you have a question about the product or it does not meet the specifications as ordered, do not hesitate to contact your Bronkhorst representative.

- ► To help you quickly, make sure you have the serial number of the product at hand.
- ► Scan the QR code (Service) on the back of this manual to get in touch.

Customer Care

No matter the time zone, our experts within the Customer Care department are available to answer your request immediately or take appropriate further action.

For information about Bronkhorst® and worldwide service addresses, please visit our website.

- ► Scan the QR code (Service) on the back of this guide to get in touch.

Conditions of sales

For information about the conditions of sales, please visit the Bronkhorst website:

www.bronkhorst.com/terms-and-conditions/

Disposal - end of life

This symbol means that the product must not be disposed of with other waste, and instead must be returned (WEEE). Bronkhorst will take care of proper dismantling, recycling and/or reuse. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment caused by inappropriate waste handling of this product.

Within the EU:

Return the item(s) following the return instructions on our website.

- ► Mention during the return process that the product is being returned for disposal.

Outside the EU:

Disposal of electrical and electronic equipment (EEE) may be subject to local or national directives and/or legislation.

- ► Consult local or national authorities to learn how to handle EEE properly in your area.

Declaration of conformity

C E The CE mark on the product indicates that it complies with requirements imposed by the European Union.

UK CA The UKCA mark on the product indicates that it complies with requirements imposed by Great Britain.

The full text of the applicable declarations of conformity are available at the Bronkhorst website:

► Scan the QR code (Downloads) on the back cover to download the declarations of conformity.

Bronkhorst®

Service & Support

Bronkhorst FlowSuite

Downloads