

RedyCompact® Series

Thermal Mass Flow Meters and Manual Regulators for Gases

RedyCompact® Meter (GCM)

RedyCompact® Regulator (GCR)

RedyCompact® Meter with Alarm Module (GSC)

RedyCompact® Regulator with Alarm Module (GCA)

Instruction Manual



Part Number: IM-RedyCompact

V1.Compact.EN A2-2



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TRADEMARKS

RedyCompact® and Redy® are registered trademark of Sierra Instruments. Other product and company names listed in this manual are trademarks or trade names of their respective manufacturers.

Warnings and Cautions

“Warning,” “Caution,” and “Note” statements are used throughout this manual to draw your attention to important information.

Symbol Key		
Symbol	Symbol Meaning	Description
	Warning	“Warning” statements appear with information that is important to protect people and equipment from damage. Pay very close attention to all warnings that apply to your application. Failure to comply with these instructions may damage the meter and cause personal injury.
	Caution	“Caution” indicates that failure to comply with stated instructions may result in damage or faulty operation of the meter.
	Note	“Note” indicates that ignoring the relevant requirements or precautions may result in flow meter damage or malfunction.



Warning! Do not remove the electronics housing. A damaged hologram seal will void the warranty.

Warning! There are no serviceable parts inside the unit.

Warning! Repairs must only be performed by qualified personnel.

Warning! This unit has several power supply possibilities. If you use the external 24 VDC power supply, it is strongly recommended to have this device grounded.

Warning! Toxic, Flammable, Gases and ATEX: In the case of toxic and flammable gases, the respective safety guidelines in each country must be followed. This Redy device is **not** Ex certified. In the case of flammable and toxic gases, fittings, cable glands and pipes intended for that purpose must be used. The responsibility for safe operation lies with the user and designer of the facilities.

Important Customer Notice- Oxygen Service

Sierra Instruments, Inc. is not liable for any damage or personal injury, whatsoever, resulting from the use of Sierra Instruments standard mass flow meters or controllers for oxygen gas. You are responsible for determining if this mass flow meter or controller is appropriate for your oxygen application. You are responsible for cleaning the mass flow meter or controller to the degree required for your oxygen flow application.

Warning! Power. If it becomes necessary to remove the instrument from the system or change a battery, the power to the device must be disconnected. Always switch off the power before you disconnect terminal connections in potentially dangerous surroundings to avoid sparks.



Note! Subject to Change: Due to our policy of ongoing product development, we reserve the right to change the information in this manual without notice.

RedyCompact® Series Instruction Manual

This manual is for RedyCompact Series models:

- RedyCompact® Meter (GCM)
- RedCompact® Regulator (GCR)
- RedyCompact® Meter with Alarm Module (GSC)
- RedyCompact® Regulator with Alarm Module (GCA)

This manual is valid for instruments with a serial number greater than (>300000).

This manual is updated for the latest firmware version of the red-y compact 2. Please verify that your unit is updated with firmware version 3.0.6 available from our website (see chapter [5.12 Firmware upgrade](#)).

Receipt of System Components

When receiving a Sierra mass instrument, carefully check the outside packing carton for damage incurred in shipment. If the carton is damaged, notify the local carrier and submit a report to the factory or distributor. Remove the packing slip and check that all ordered components are present. Make sure any spare parts or accessories are not discarded with the packing material. Do not return any equipment to the factory without first contacting Sierra Customer Service.

Technical Assistance

If you encounter a problem with your flow meter, review the configuration information for each step of the installation, operation, and setup procedures. Verify that your settings and adjustments are consistent with factory recommendations. Installation and troubleshooting information can be found in this manual. See Chapter 3 for installation and Chapter 6 for troubleshooting.

If the problem persists after following the troubleshooting procedures outlined in the RedySmart product manual, contact Sierra Instruments by fax or by E-mail (see inside front cover). For urgent phone support you may call (800) 866-0200 or (831) 373-0200 between 8:00 a.m. and 5:00 p.m. PST. In Europe, contact Sierra Instruments Europe at +31 20 6145810. In the Asia-Pacific region, contact Sierra Instruments Asia at +86-21-58798521. When contacting Technical Support, make sure to include this information:

- The flow range, serial number, and Sierra order number (all marked on the meter nameplate)
- The software version (visible at start up)
- The problem you are encountering, and any corrective action taken
- Application information (gas, pressure, temperature and piping configuration)

Recycling



Note the existing regulations of your country.

Register Your Product Today

Three (3) Year Warranty (Sierra MEMS Thermo Mass Flow Sensor: RedySmart and RedyCompact Brands)

All Sierra products are warranted to be free from defects in material and workmanship and will be repaired or replaced at no charge to Buyer, provided return or rejection of product is made within a reasonable period but no longer than three (3) years for calibration and non-calibration defects, from date of delivery.

To assure warranty service, customers must register their products online on Sierra's website. Online registration of all of your Sierra products is required for our warranty process. Read complete warranty policy at www.sierrainstruments.com/warranty.

Lifetime No-Drift Sensor Warranty Sierra MemS Thermal Mass Flow Products

In addition to Sierra's standard three (3) year manufacturing warranty on all MEMS mass flow instruments produced, Sierra also offers a Lifetime No-Drift Sensor Warranty. Sierra defines no-drift as less than 1% of full scale over the life of the instrument. Therefore, if drift of greater than 1% of full scale occurs over the sensor's lifetime, the sensor and/or entire instrument will be repaired or replaced and recalibrated free of charge.

This warranty applies to all MEMS/CMOS thermal mass flow sensors standard on every Sierra RedySmart® and RedyCompact® models sold after January 15, 2020. This warranty is only valid if the unit is exclusively used with the gas or gases specified during the initial calibration or recalibration, without any additives in any form and under the operating conditions (temperature, inlet and outlet pressure, full scale flow rate) the unit was originally specified for.

Sierra's Lifetime No-Drift Sensor Warranty is made possible due to high-precision MEMS (Micro-Electro Mechanical Systems) technology utilizing an advanced ultra-stable CMOS (Complementary Metal Oxide Semiconductor) sensor. The use of MEMS techniques allows both electronic circuits and mechanical devices to be manufactured on a silicon chip, similar to the process used for integrated circuits.

Learn more about Sierra's Lifetime No-Drift Sensor Warranty at www.sierrainstruments.com/warranty or see detailed lifetime no-drift sensor warranty in Appendix 8.

Register Warranty Online

Register now at www.sierrainstruments.com/register. Learn more about Sierra's warranty policy at www.sierrainstruments.com/warranty.

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1. Introduction

Thank you for choosing devices from the RedyCompact® Series. These operating instructions will help you to install and operate these gas flow measuring devices. Please read through these instructions carefully before installing the unit. Our aim has been to write a full and practical guide. We would be grateful if you would notify us of any shortcomings or mistakes.

Please contact Sierra Instruments" Customer Service if you have questions about any aspect of the product (s), you may call (800) 866-0200 or (831) 373-0200 between 8:00 a.m. and 5:00 p.m. PST. In Europe, contact Sierra Instruments Europe at +31 20 6145810. In the Asia-Pacific region, contact Sierra Instruments Asia at +86-21-58798521.

The RedyCompact is a thermal based mass flow meter that can measure the mass flow of gases. The core element of the red-y thermal mass flow meter is a CMOS sensor chip. The sensor and parts of the electronics are on one board and offer a number of advantages for the user.

1.10. Features of RedyCompact Thermal Mass Flow Meters

In developing and manufacturing the devices, we have focused primarily on customers and their applications. Our aim is to implement customers' requirements in the form of new developments or enhancements on an ongoing basis. The essential features are:

- Compact design
- Battery operated optional (Portable)
- Dot-matrix LCD touch screen
- Multiple gases possible (3 gases)
- Flexible due to the many different settings accessible through the touch screen
- Back-light screen in USB and 8...30 VDC power mode
- Power also possible with USB micro-B connector or external 8...30 VDC (Separate module)
- Optional alarm module with power, 3 contacts and 2 inputs
- Display can be rotated 180 degrees
- Fast and accurate measurement and control
- Integrated temperature compensation and flow totalizer (standard)
- Easy to maintain and service
- Firmware upgradable through USB connection
- 3-year warranty

1.11. Scope of Warranty

Warranty for the RedyCompact product line extends to material and manufacturing defects only. Maximum warranty covers product replacement free of charge. The following causes of faults/damage are not covered under warranty:


- Use outside the operating limits
- Damage due to corrosion
- Damage due to leaking batteries
- Mechanical damage in general


- Contamination due to improper sealing
- Contamination due to impure gases or penetration of liquids
- Damage to electronic components due by over-voltage or electrostatic discharges, and corrosion damage due to aggressive environments
- Functional failure due to incorrect operation or faulty parameterization
- If the unit has been opened or otherwise tempered with
- Drift in the calibration
- EEPROM damage

1.12. Instructions and Warnings

Read all of the operating instructions thoroughly before installing and commissioning equipment. Misconceptions and incorrect use can lead to breakage of the measuring device or risk of personal injury. Should one of these cases occur, the responsibility lies solely with the operator of the device. The installation, commissioning and operation and maintenance must be done by appropriately qualified personnel.

1.12.1 Installation

	<p>Important Note</p> <p>Please note before the start-up:</p> <ul style="list-style-type: none"> • Do not use sealing tape or liquid sealant • Piping must be cleaned before installation of instrument
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	<p>Warning!</p> <p>Products in this manual may contain metal or elastomer seals, gaskets, o-rings or valve seats. It is the “user’s” responsibility to select materials that are compatible with their process and process conditions. Using materials that are not compatible with the process limitations of the device, may result in equipment damage and/or personnel injury or death.</p>
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It is recommended that the user check the devices on a regular schedule to ensure that it is leak free as both metal and elastomer seals, gaskets, o-rings and valve seats may change with age and exposure to process gas.

1.12.2 Power

If it becomes necessary to remove the instrument from the system or change a battery, the power to the device must be disconnected. Always switch off the power before you disconnect terminal connections in potentially dangerous surroundings to avoid sparks.

1.13. Documentation and Cables Supplied

A printed quickstart guide is shipped together with each device. However, we recommend to visit our website to obtain the latest version of the manual and the latest firmware version for the *RedyCompact*.

Every device comes with a USB A to USB Micro-B cable. This cable can be used to power the unit and to upgrade the firmware.

We ship the device with the following accompanying documentation:

- 1 factory calibration certificate per ordered calibration
- Final inspection report
- USB cable + 1 x AA battery (if battery powered)
- Quick Install Guide
- Product Information Card with links to current instruction manual

1.14. The Measurement Principle

The thermal mass flow measurement principle is particularly suitable for the measurement and control of clean and dry gaseous media. The most significant advantage is that the measurement process measures the real mass flow and is largely independent of temperature and pressure.

Stated simply, the thermal measurement principle measures the heat transport by gas flowing past.

In the case of *red-y* mass flow measuring instruments, a constant heat input gives a flow-dependent temperature difference (ΔT). Two temperature sensors are positioned in the measuring channel (T1, T2), one before the heating system (H) and one after it (see Figure 1).

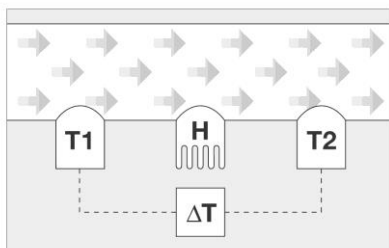


Figure 2: Measurement Principle

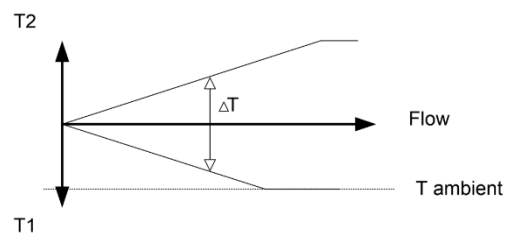


Figure 1: Sensor Operation

If there is no flow, the heat spreads symmetrically in directions T1 and T2. The temperature difference T1-T2 is therefore zero.

Flow rates > 0 create a temperature difference. The sensor T1 at the inlet is cooled by the gas flowing past it, and the temperature of the second sensor T2 rises due to the heat drawn from the heating system.

The temperature difference is related non-linearly to the mass flow, with very high repeatability. The electronics will, based on the calibration, convert this temperature difference in a linear and proportional indication of the mass flow of the gas.

1.15. Real, Standardized and Normalized flow

The user-selectable engineering units of the *RedyCompact* has been divided in two groups: “Real and Normal” units and “Other units.”

This separation is not only there to find the unit you want to select quicker, it also separated the “Normalized flow” from the “Standardized flow.”

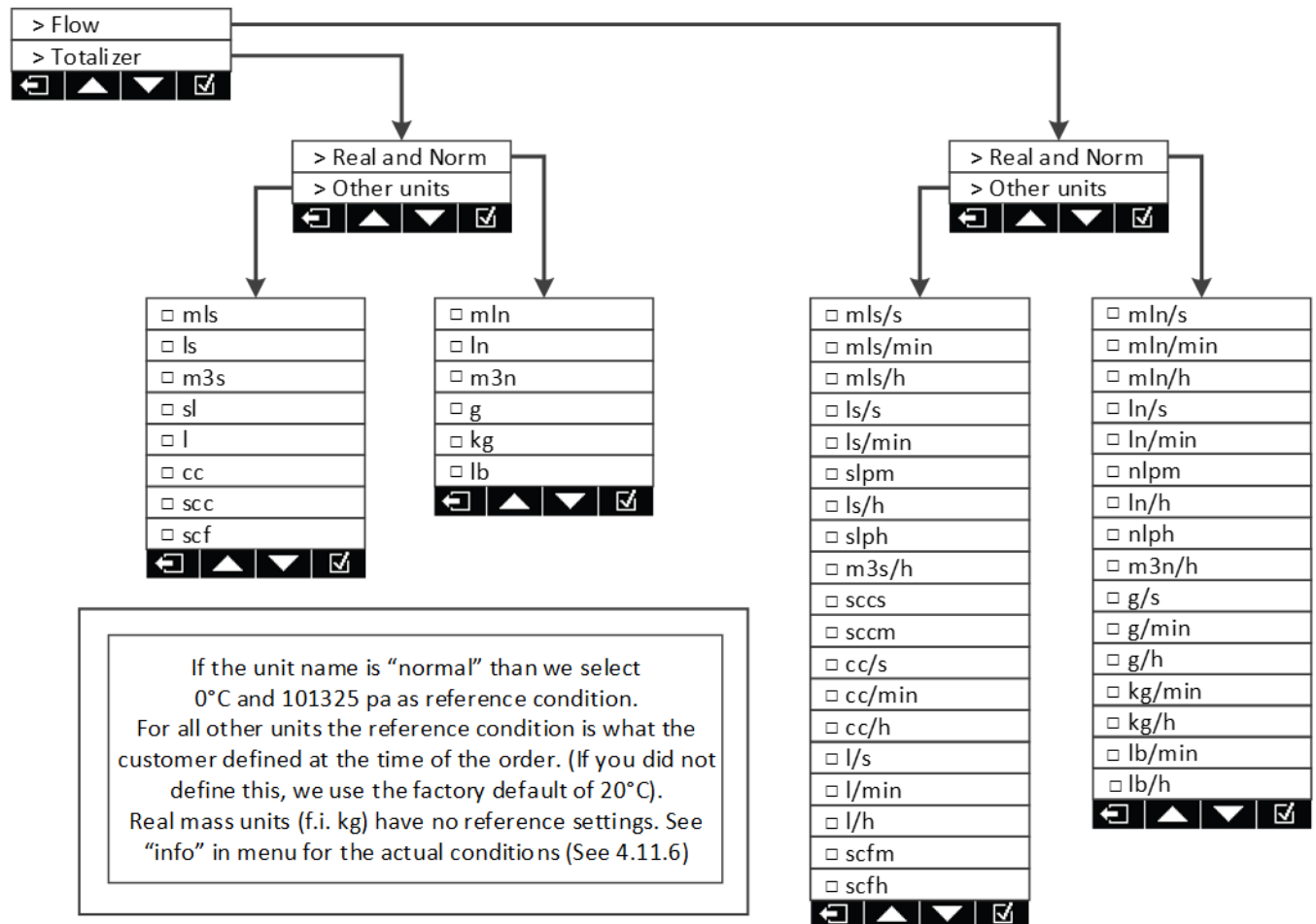


Figure 3: Units Menu

The RedyCompact has basically two reference conditions: One for “Real and Normal” units and one for “Other units.”

The factory setting is as follows:

- 1) For all units that are used in "normal" (like ln/min), the reference conditions are always 0°C and 1013.25 mbara. This cannot be adapted.
- 2) For all the other units that are “standard” (like ls/min and sccm) and the l/min the reference conditions has to be defined when the unit is ordered.

The reference value for all units that are not “Normal” or “Real” it has to be defined with the purchase order. It cannot be changed after the units has been delivered.

On the label of the RedyCompact we will mention a reference condition. This reference condition is for the “Standard” units only. The “normal” units will always be 0°C and 1013.25 mbara.

In future version of the firmware the reference conditions will be adjustable in the menu.

Gas flow in general can be expressed in one of the following:

- **Volumetric Flow:** (f.i. l/min). This theoretically cannot be measured by the RedyCompact because it is volume. The RedyCompact measures **mass flow**. However, due to regional requirements we still have it as a flow unit that is selectable. Units shown as volume (l/min) refer to the customer defined reference conditions (Same as “standard”).
- **Real Mass Flow:** (f.i. kg/h). This refers to true mass units per time unit. The RedyCompact can measure this and you can select this type of unit from the menu.
- **Normalized Volumetric Flow:** Normalized means that the units are “translated” to predefined pressure and temperature conditions. Normalized or Normal Conditions refers to 0°C and 1013.25 mbar absolute. You can select this type of unit from the menu of the RedyCompact. These units are mostly used in Europe and China.
- **Standardized Volumetric Flow:** Standardized means that the units are “translated” to predefined pressure and temperature conditions. Standardized or Standard conditions refers to 20°C (68°F) and 1013.25 mbar (=760 mmHg) absolute. You can select these type of units from the menu of the RedyCompact. These units are mostly used in the USA. Standardized can also refer to other reference conditions (f.i. Natural Gas industry often uses 15°C and 1013.25 mbar absolute. In the semicon world they often use 25°C and 1013.25 mbara. Please define and mention these reference condition at the time of your order.



Important Note

Please note that reference condition relating to Normalized or Standardized volumetric flow are **not** the operating conditions. According to the ideal gas law, the gas volume will change by 0.35% per K.



Important Note

Please note that Sierra standard uses the following densities for their main 3 gasses: Air: 1.293 gr/m³, N₂: 1.2504 gr/m³, O₂: 1.429 gr/m³ (All at 0°C and 1013.25 mbar absolute). If you use other densities or need additional information for other gasses, please contact the factory. Densities need to be defined before manufacturing and cannot be adjusted once the unit has been delivered.

1.16. CMOS technology

The Redy measuring and control devices are equipped with an innovative CMOS semiconductor sensor that sets new standards for accuracy, speed and measurement dynamics.

With our CMOS technology the sensor element, amplifier and A/D converter form a single silicon chip.

1.17. Block Diagram

The following GCM block diagram shows the structure of the device. The block diagram does not show the optional manual control/needle valve (model GCR) that would normally be placed on the outlet of the unit.

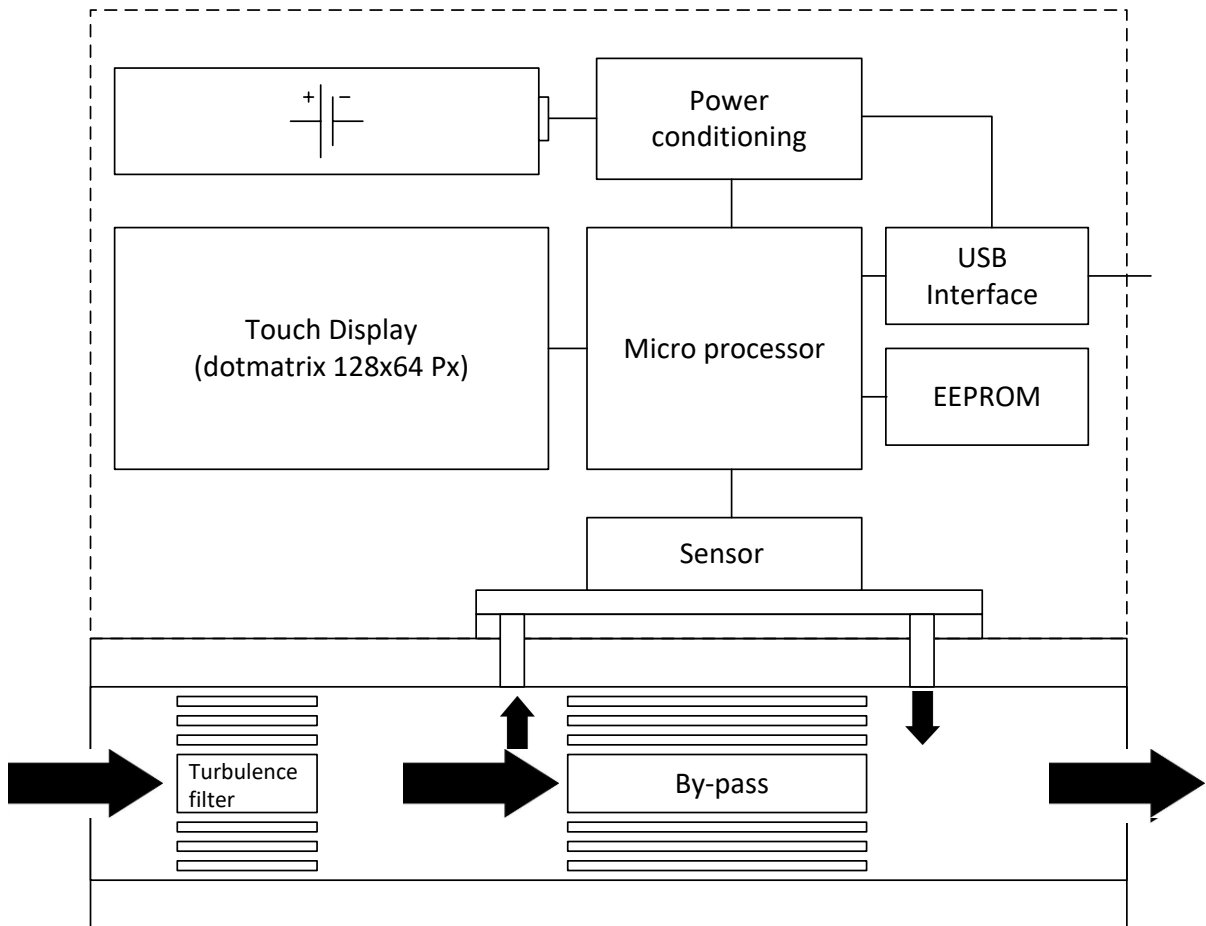



Figure 4: Block Diagram

2. General device specifications

Media (real gas calibration):	Air, O₂*, N₂*, He, Ar, CO₂, H₂, CH₄, C₃H₈ (other gases and gas mixtures on request)
<small>*O₂ & N₂ are calibrated with air.</small>	
Accuracy:	
Eco	±2.0% of full scale; Ranges > 200 l/min ±3.0% of full scale
Special	±1.0% of full scale (only G ¹ / ₄ " instruments and real gas calibrations)
Dynamics:	
Eco	1:50 (Meter reads zero if flow is less than 1.7% of full scale)
Special	1:100 (Meter reads zero if flow is less than 0.83% of full scale)
Response Time	Maximum 300 msec (filter setting dependend)
Flow Update By Sensor	40 ms (Battery mode 500 ms)
Display Update	240 ms (Battery mode 500 ms)
Repeatability	±0.5% of full scale
Long-Term Stability	< 1% of reading / year
Temperature Coefficient	< 0.025% FS measuring range type per °C < 0.012% FS measuring range type per 1°F
Pressure Coefficient	< 0.2% / bar of reading (typical N ₂) < 0.014% / psi of reading (typical N ₂)
Working Pressure Range	0.2 - 11 bara (3-160 psia)
Test Pressure	16 bara (232 psia)
Storage Conditions	-20 to 80°C (-4 to 176°F), 0-95% RH, non-condensing
Temperature Range	0 – 50°C (32 bis 122°F), 0-95%, RH, non-condensing
	 Warning: Do not expose device to direct sun light.
Warm-Up Time	< 5 sec. for full accuracy

Materials	
Electronics Housing	ABS (Acrylnitril-Butadien-Styrol)
Body Material	Anodized aluminium or stainless steel 1.4404 (316L)
Sensor Area	Silicon, glass, epoxy
Seal Material	FKM, optional EPDM (FDA compatible)
Wetted Parts	See appendix (see chapter 6.17 Wetted Parts List)

Integration	
Display	Touch display 128x64 px Backlighted only with external power supply (Micro-USB or 24 VDC)
Process Connection	G ¹ / ₄ " (BSPP* female) up to 60 l/min, G ¹ / ₂ " (BSPP* female) up to 450 l/min *British Standard Pipe Parallel
Inlet Section	None required
Mounting Orientation	Any position (consult manufacturer above 5 bara (72 psia) if the RedyCompact will be mounted vertical)
Connection Cable	For external power supply: 2 m with loose ends (fly leads)

2.10. Safety

Test Pressure:	16 Bara (232 psia)
Leak rate to external:	1 x 10 ⁻⁶ mbar*/l/s He
Protection class:	IP-50
EMC	EN 61326-1

2.11. Electrical Data for Meter GCM and Regulator GCR

Supply Voltage	<p>Power supply RedyCompact meter & regulator Standard AA battery or USB micro-B power supply (DIN 62684)</p> <p>Option: External power 8...30 VDC , 120 mA. We recommend a power supply with a minimum current of 150 mA. (Power supply hereafter referred to as the 24 VDC power supply)</p>
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2.12. Measurement Ranges (air)

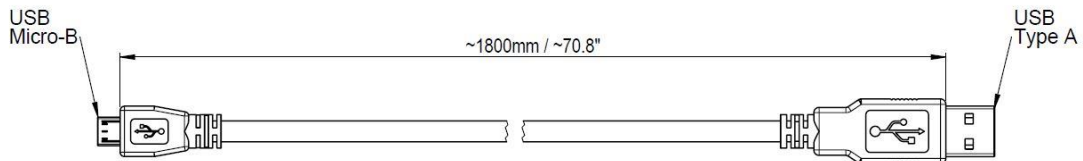
The RedyCompact has four different flow elements available. Each element has a defined maximum operating flow range that will be defined during calibration. The flow ranges selectable below are the maximum flow ranges for air/O₂ and N₂ only. For other gasses consult the factory. These ranges are adjustable electronically during factory configuration to your desired full scale range.

	Type	Measurement full scale (air), scale freely selectable	
RedyCompact Meter GCx:	GCx-A	from 50 mln/min	to 600 mln/min
	GCx-B	from 600 mln/min	to 6000 mln/min
	GCx-C	from 6 ln/min	to 60 ln/min
	GCx-D	from 60 ln/min	to 450 ln/min

2.13. USB Interface

The unit has a female USB micro-B connection (DIN 62684) that can be used as an external power supply and to upgrade the firmware. USB micro-B is the same connector you find on older Android and Windows portable phones, you can use the charger of your telephone to power the RedyCompact.


	Note It is not possible to read data from the flow meter through the USB connection.
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2.14. Battery

The battery operated RedyCompact can operate on any common AA battery. The lifetime is strongly dependent on the usage and the quality of the battery. In general we can state that the battery lasts for about 3-6 months under non-continuous use (see Notes below).

We recommend to use external power (USB micro-B or 24 VDC) if you application needs continuous measurement like measuring totalized flow. To extend the lifetime of the battery, the back-light is disabled during battery operation, you cannot activate it. We strongly recommend to use the “*auto power off*” in the menu for battery driven devices (see chapter [4.12.7 Battery auto off](#)) More information on the battery in chapter [3.15 Electrical power supply](#) and [3.16 How to replace the battery?](#).

	Note When we supply the unit, the “auto power off” will be set to 15 minutes.
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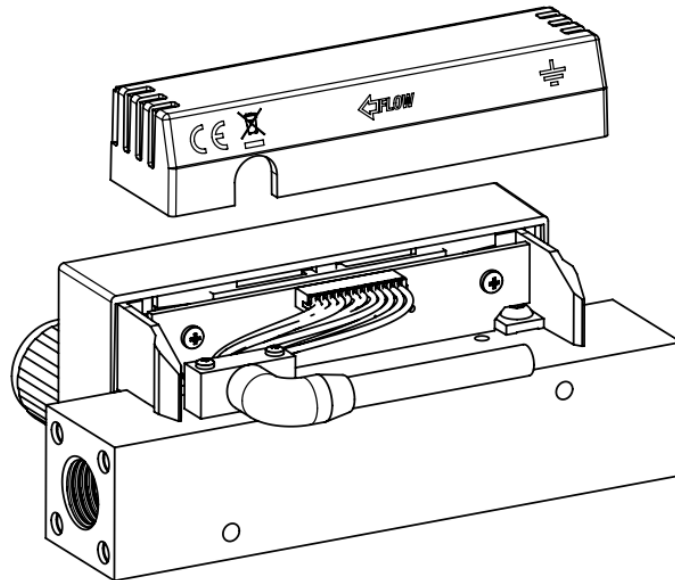
	Note The unit can be set to performance mode when powered from the battery, this will strongly increase the battery usage. See chapter 4.12.1 Measurement for more information.
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2.15. Optional Modules

As an additional option you can purchase a power supply or an alarm module.

2.15.1 Power Supply Module

The **power supply module**, is provided with a voltage from 8-30 VDC , will power the unit. The unit comes with a 2-meter cable.

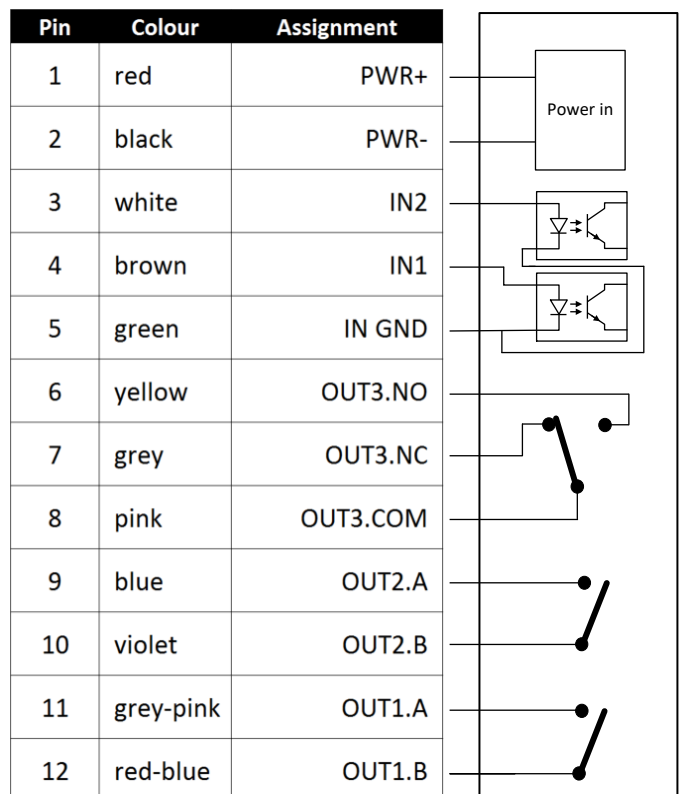


2.15.2 Alarm Module


The **alarm module** provides three individually settable alarms and two inputs. Each alarm can be set by the customer. The module is supplied with a 2-meter fly-lead cable and needs to be powered by 8-30 VDC which also powers the RedyCompact flow meter.

Each of the 3-alarm contacts can be configured as high, low, window and totalizer alarm. Once the alarm becomes active, the three potential free alarm contacts can be reset in many different ways. Automatic, through the touch screen or with one of the two input signals. Other options like hysteresis settings and delays (timers) are also available.

The two input contacts or customer set alarm conditions can also be used to reset the totalizer.



For detailed information see [4.11.2 Alarm Menu](#) in this manual.

	<p>Note</p> <p>Both the power and the alarm module are mounted similar to the battery module (see 3.16 How to replace the battery). They replace the battery module, so you cannot use these modules in combination with battery power.</p>
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	<p>Warning</p> <p>An external magnet can unintentionally influence the alarm contacts.</p>
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Generic Specifications Optional Alarm Module GCA

Power Input	
Voltage Supply Range : 8-30 VDC (Power supply hereafter referred to as the 24 VDC power supply)	
Maximum Current : 300 mA	
Protection input: Polyfuse (trip current > 500mA) and reverse polarity protected	
Switch Ratings Switch 1 + 2 (SPST hard contact)	
Maximum Current	0.5 A
Maximum Voltage	30 VDC
Relais Lifetime	> 5 million
Switch ratings switch 3 (DPST contact)	
Maximum Current	1 A
Maximum Voltage	30 VDC
Relais Lifetime	> 5 million
Inputs 1 + 2 (Opto-couplers)	
Voltage Range (polarity sensitive): 5 – 30 VDC (@ 5mA max)	
Min. Recommended Pulse Width	100 msec (Sample interval: 20 msec)

2.16. Calibration


Each measuring device is supplied with a factory calibration report. The calibration is traceable to American and/or European standards. On request we can also provide DAkkS calibration (German Accreditation Body).

2.17. Operation with Other Gases

Each measuring device can store data for up to 3 types of gas or operational states that need to be defined at the time of purchase.


CMOS gas flow sensors are not linear (The output is linearized) and respond different to each gas. If the gas or gas composition is different than the gas that the unit was calibrated for, the unit will not measure accurately. It is possible to program up to three different gases and gas mixtures, but this needs to be done at the factory or at a Sierra Instruments' certified calibration center. Please

note that the K-factors as used in the traditional capillary MFM/MFC cannot be used for CMOS mass flow meters. Please contact the factory for additional information.

	<p>Note Please note that, among other effects, the zero-point error (offset display) will be higher if the device is not operated with the type of gas, for which it had been calibrated. A difference in zero indication is also possible if the used pressure is different than specified.</p>
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2.18. Pressure Loss

Our thermal mass flow meters have a low pressure drop. The pressure drop depends mainly on the medium, the pressure conditions and the flow rate. In chapter [6.11 Pressure Loss](#) you find the pressure drop for the most common gases. Your sales partner has a calculation program for the other gases. Please note that the size of the pipes has a large effect on the pressure loss. For example from around 60 l/min, we recommend a pipe inside diameter of at least 10 mm.

	<p>Caution Please also note that some fittings have a reduced diameter and can cause considerable pressure drop in your system. Be especially careful with vacuum applications, please select a relative big pipe diameter).</p>
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2.19. Temperature Compensation

The *RedyCompact* thermal mass flow meters measure the mass flow of gases, the result being largely independent of pressure and temperature. In addition to the fundamental principle an internal sensor measures the gas temperature and, with the help of a 3-dimensional table of interpolation values, a correction factor is calculated automatically. The flow indication is thus temperature-compensated.

2.20. Pressure Compensation

During calibration, the specified operating pressure is taken into account. Changes to the pressure conditions may introduce an additional error. This is around $\pm 0.2\%$ per bar.

Please note that the control behavior is influenced by substantially different pressure conditions. This is relevant for units with an integrated needle valve only.

2.21. Response Time

The response time is time required to display 98% of its final value after a sudden change in flow. This response time for the *RedyCompact* is around 300 ms but is dependent on your filter settings. On battery operation you might experience a slower response time than on external power. (See chapter [4.12.1 Measurement](#) for more information.

2.22. Filter settings

The filter settings smoothens the reading of pulsating or noisy flows. It can be set through the set-up menu. Higher filter settings will slow down the response time of the unit.

Please always first try to find and remove the cause of your noisy or pulsating flow e.g. add volume to your system. More information on the filter settings in chapter [4.12.4 Filter](#)

3. Installation and Commissioning

3.10. Mounting Position and Mounting Location

Although the recommend mounting position is horizontal, the unit can used be upright, vertical or upside down. With a vertical mounting position, dependent on the type of gas and at pressures above 5 bara (72 psia, 500 kPa(abs)), a zero-point offset can be possible. This effect is caused by convection in stationary media.

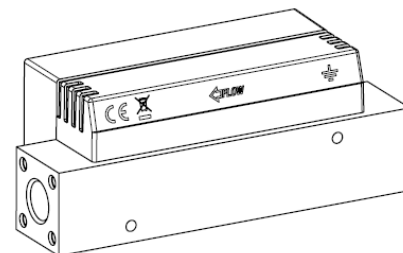
With regard to mounting location, the following situations can cause problems:

- Strong heat sources, or ambient temperatures outside the specification
- Strong sources of electromagnetic radiation such as spark discharges
- Humid environments and the associated condensation lead to damage of the electronic components
- In general, aggressive environments reduce the service life.
- Liquid running backwards can penetrate into the measuring instrument. An elevated mounting location generally helps, or using check valves.
- If your ambient air contains high humidity and at night the temperature goes down, it is possible that you will get some condensation inside the unit. Please take precautions to avoid this.



Warning

At installation make sure to respect the flow direction of the gas. It is indicated by an arrow on the back side of the instrument's housing.



3.11. Requirements for Pipework

The most common causes of faults concern the way that devices are connected to the gas supply.

Please note the following points:

- The pipes must be absolutely clean. Please flush them **before** installing the measuring instruments!
- Please ensure there are no pieces of thread sealant (f.i. Teflon tape) in the piping!
- Use appropriate pipe materials (pressure rating, durability)
- Even when connected to fixed pipework, we recommend that the devices are mounted using the appropriate mounting holes
- From 50 l/min, we recommend the following flow-calming sections of straight and unobstructed straight tubing: Inlet: 10 x diameter; outlet: 5 x diameter
- Use appropriate fittings (see chapter [3.13 Fittings and filters](#)).
- Malfunctions can be caused by unstable pressure controllers, pumps that oscillate, and volumes before and/or after the measuring device that are generally too small. Install an air reservoir with 2 liter volume in the feed pipe (2 liter is an example, the volume depends on the application).

- The size of the pipe must be matched to the measuring/control device. A diameter that is too small results in an increased pressure drop.
- Check for any leaks before commissioning the devices.
- For maintenance work, we recommend that a bypass system is used. This is particularly important where the gas supply must not be interrupted.

3.12. Fittings and Filters

You can order a wide range of process fittings and adapters for the RedyCompact. Some compression fittings are available with an internal 50µ filter. Please refer to our website contact your local distributor for more details. Please also consider that fittings and filters can create additional pressure drops over the flow meter.



Figure 5: 316SS Compression fittings

	<p>Warning</p> <p>Please note that the length of the tread on your fitting that is screwed inside the body is for the G$\frac{1}{4}$" no longer than 10mm ($\frac{3}{8}$") and for the G$\frac{1}{2}$" no longer than 13mm ($\frac{1}{2}$") to avoid internal damage.</p>
	<p>Warning</p> <p>The design of the devices enables sealing at the ends with O-rings or flat seals. It is essential that you avoid:</p> <ul style="list-style-type: none"> ⇒ the use of <u>sealing tape</u> to seal threads. Small pieces can cause incorrect measurements and control-valve malfunctions. As well as that, if the device has to be checked or recalibrated, there will be an extra charge for the additional cleaning work. ⇒ sealing with <u>liquid sealants</u> will incur a higher cleaning charge for cleaning the device in an ultrasonic tank.

3.12.1 Installation

The fittings are supplied in pairs. They preferably should be installed with filter at the inlet and without filter at the outlet. The fitting with a filter must be installed at the inlet (as determined by the flow direction). The sealing rings (O-rings) must not be damaged during assembly.

For more information, see the [data sheet for the fittings](#).

3.13. Filters / Gas Cleanliness

We always recommend that a filter, or at least a fine-mesh sieve (50 microns), is installed before the measuring devices. It often happens that solid matter such as welding residues, metal or plastic chips, rust, sealing tape, etc. affect the function.

In pressurized-air applications using compressors, the air must be dry and free of oil. Please ensure that a suitable processing unit is located before the devices. In the case of gases from cylinders, in general no filter is needed. For more information, see chapter [5. Maintenance](#).

3.14. Electrical Power Supply

The RedyCompact can be provided with power from a standard AA battery or from a common USB micro-B charger that you typically use for the charging of your android phone. There are optional modules by which you can apply a 8-30 VDC external power.

The lifetime of the battery strongly depends on the type and quality of the AA battery you use. We recommend (and determine the specifications with) an Alkaline-Manganese Dioxide Battery with a capacity of 3000 mAh (ANSI: 15A IEC: LR6)

Other types of batteries (for instance Zinc Carbon, Zinc Chlorine, NiCd, NiMH or Li-ion) can be used, as long as the voltage is 1.2 to 1.8 VDC. Using other batteries will influence the life of the battery when used in the RedyCompact flow meter.

It is also possible to use rechargeable batteries, but the unit will however not charge the battery if powered by the USB micro-B.

We strongly recommend to remove the battery from the case if you do not use the meter for longer periods of time to avoid damage to the flow meter in case the battery starts to leak. The unit will retain its settings so when you re-insert the battery the settings will be the same as when you took it out. (The totalizer will be stored to the non-volatile memory in an interval that you can set. See chapter [4.11.3 Totalizer](#))

There is no need to remove the battery if you connect the USB power supply. When you run the unit on power from the USB micro-B and have a battery inserted, you can remove the USB connector and the battery automatically takes over.

When the unit is powered by the battery you will not see the backlight to conserve energy. The backlight is only operational when there is a power supply other than a battery and the unit is not in ECO mode. (See chapter [4.12.1 Measurement](#) for more information)



Note

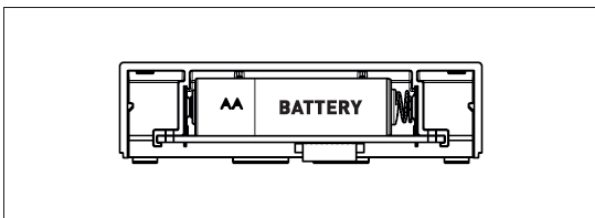
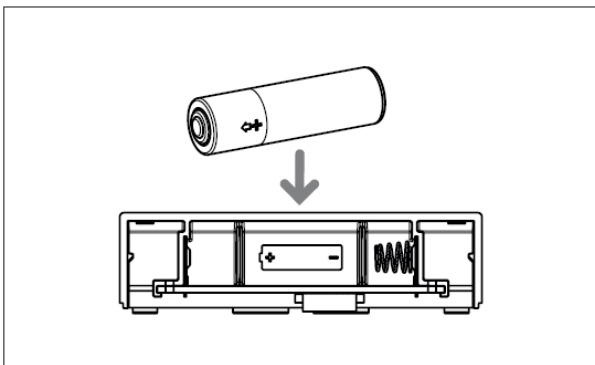
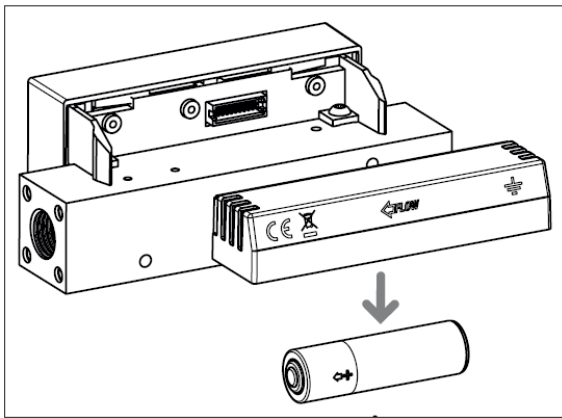
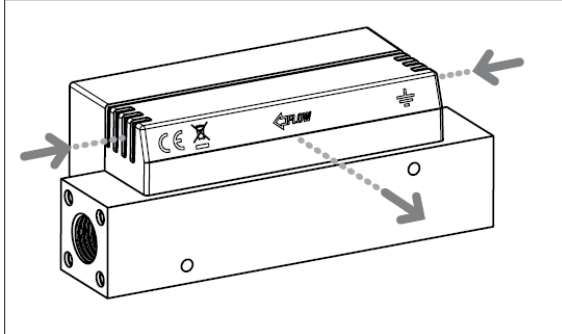
When you replace or install a battery, all power to the unit should be disconnected.

3.15. How to replace the battery?



Warning

Before replacing or installing the battery, disconnect any external power supply.



The battery is placed in a compartment mounted above the body and connected to the housing that contains display and electronics.

The battery compartment has three notches on each side. To remove the battery compartment, hold the housing on both sides of the display. Using your other hand grab the notches and pull the battery compartment out of the housing.

Replace the battery and push the battery compartment back into place.

Note that this will not automatically power up the device. You have to press the screen for about 3 seconds in order to power up the device.



Please dispose of the battery on an environmental friendly way (Recycle)

Figure 6: Battery replacement

3.16. Warm-up time

All instruments of red-y line are ready for use within seconds of connecting the power. There is no significant warm-up time (<5 sec).

4. Operation


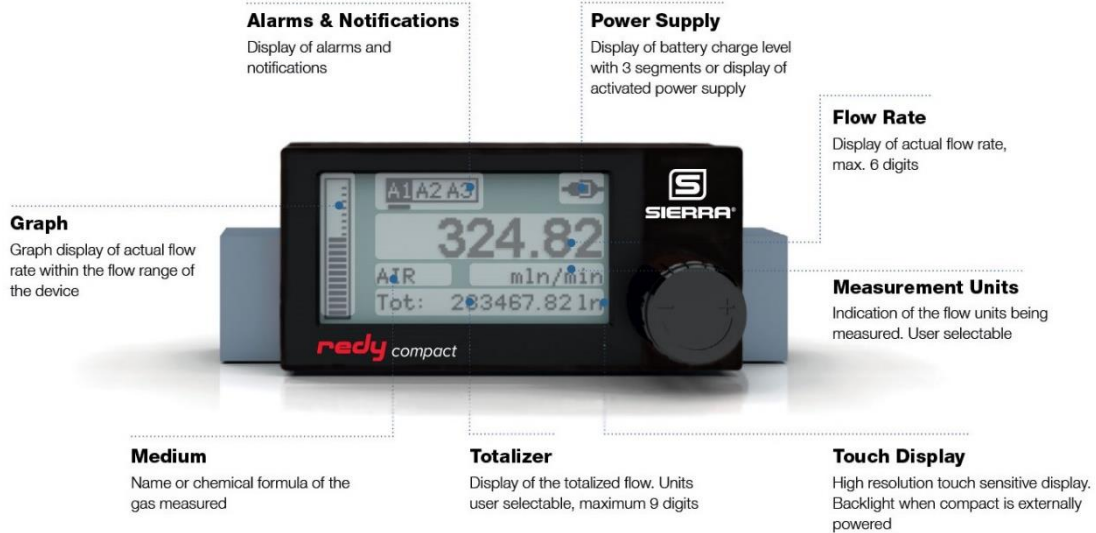
	<p>Warning In case of incorrect handling of the flow meter the measurement function can be impaired.</p>
-----------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------

Figure 7:



Horizontal Mode

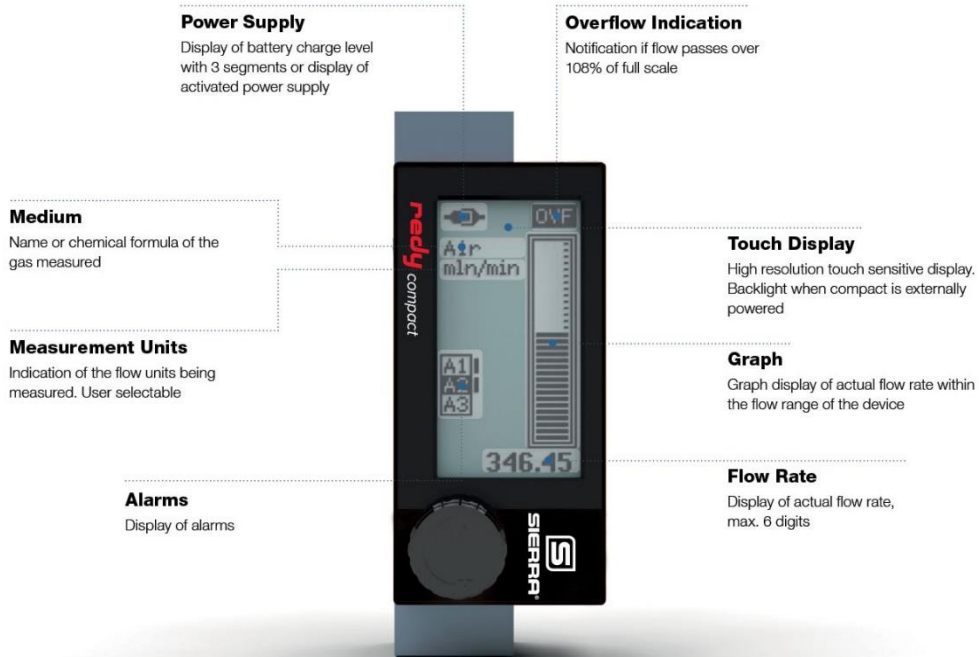


Figure 8 Vertical Mode

4.10. Introduction

4.10.1 Power Up



Warning

Before using the device verify that it is suitable for your application and check gas, range, pressure and temperature. You find these parameters on the calibration sheet. If any of these parameters deviate from your application please contact the manufacturer. The flow direction indicated by an arrow on the back side of the housing has to be respected.

The RedyCompact has a pressure sensitive touch screen. The device can be operated with your fingers or a suitable touch pen that does not damage the display.

To power up the device insert a battery or connect an external power supply (USB or 24 VDC). The device switches on automatically when connected to an external power supply. To power up the device using a battery press the screen for about 3 seconds until the start-up screen appears.

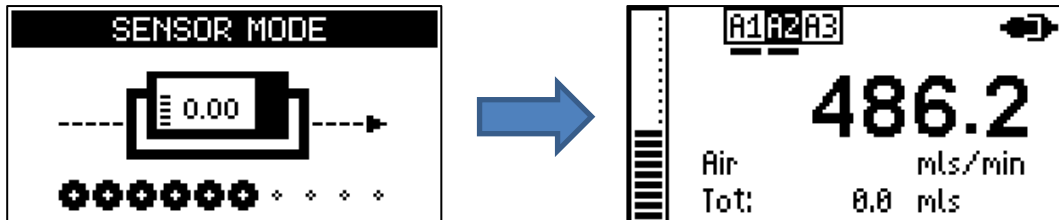


Important Note

Note that the backlight is operational only if the device is powered by an external power supply.

4.10.2 Start-up Screen

During startup the device shows a startup screen ("SENSOR MODE"). After about four seconds, the device shows home screens displaying most relevant measurement values.



Important Note


If keeping the screen pressed for too long during startup "Service mode" is entered. Service mode is required for firmware upgrades only. To leave Service mode keep the screen pressed for about 6 seconds (see [5.12 Firmware upgrade](#)).

4.10.3 Touch Screen Operation

The device is operated using a pressure sensitive touch screen. You can either press the screen or swipe the screen ("swipe control").

A "short press" means touching the screen for about 0.5 seconds while a "long press" means touching the screen for at least one (1) second or more.

To use swipe control, press the screen while moving your finger in one direction. You can move your finger to the top (“swipe up”), to the bottom (“swipe down”) to the left (“swipe left”) or to the right (“swipe right”). The minimum distance to move is about one centimetre. Since it’s a pressure sensitive touch screen swiping requires slight pressure.

	<p>Important Note</p> <p>Note that swipe control can be disabled (see 4.12.2.6. Touch input).</p>
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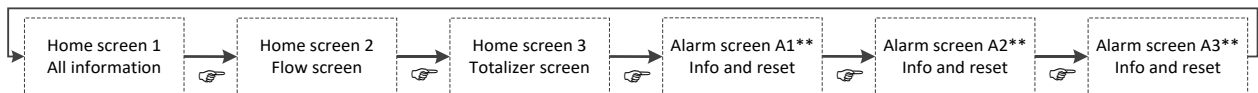
4.10.4 Home Screen Modes

There is a vertical and a horizontal home screen mode (see Figures 8 and 9). The device switches between these modes automatically depending on the orientation of the flow meter. This behavior can be changed and the orientation can be set manually (see [4.12.2.3 Orientation](#)).

4.10.5 Home Screen Navigation

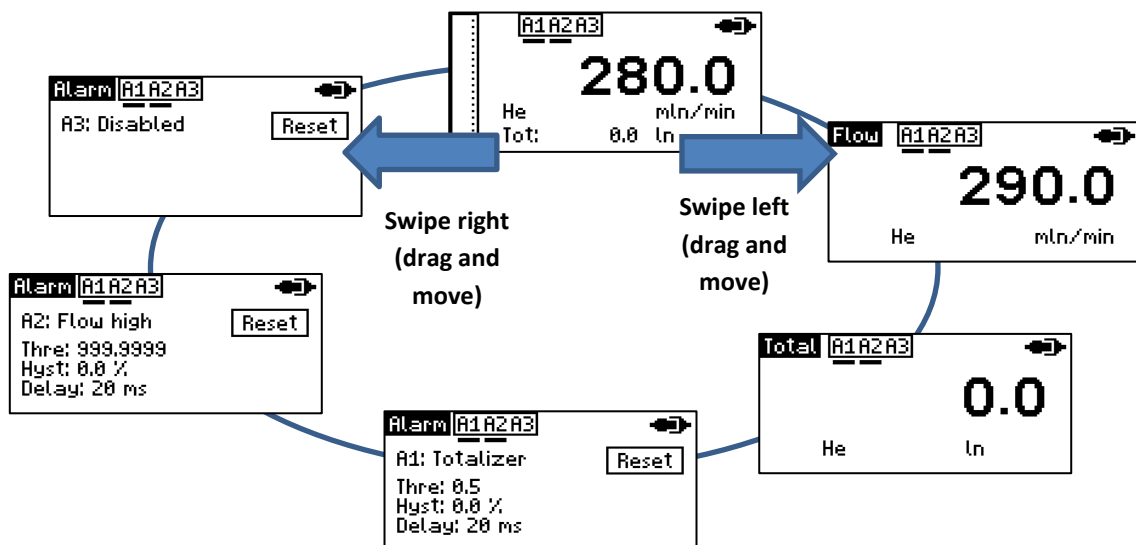
There are different home screens. A short press or swipe control (swipe left or swipe right) is used to switch between these home screens.

A short press switches to the next home screen available. Repeatedly doing this cycles through all available home screens:



** only functional with optional alarm module

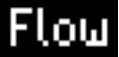
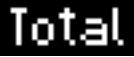

This can also be done via swipe control. Swipe left or swipe right to switch between home screens:



It is possible to hide individual home screens (see [4.12.2.1 Home screen](#)). Alarm home screens are only functional when the optional alarm module is installed.

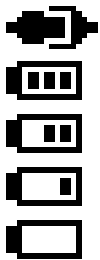
4.10.6 Home Screens

In horizontal home screen mode, the following home screens are available:

(no icon)	Overview
	Flow
	Total
	Alarm (A1, A2, A3)

In vertical home screen mode a single home screen is available only.

Every home screen displays the following information:



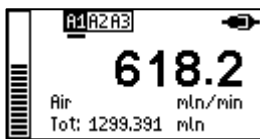
Power Supply

An external power supply icon (if powered by an external power supply) or a battery icon (if powered by battery) indicating the power source. The battery icon also indicates the remaining energy within the battery by the number of bars.

(no icon) **Alarm and Notification Area**

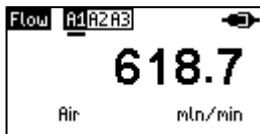
This area displays warnings (e.g. overflow) and errors (e.g. sensor error). If the optional alarm module is installed the alarm status and enable state of the individual alarms (A1, A2, A3) is displayed.

The individual home screens display the following information:



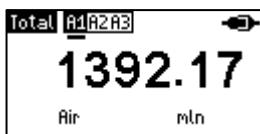
Overview

Flow value, flow unit, totalizer value, unit of totalizer value and selected gas. The bar graph visualizes the flow value within 0-100% of the maximum flow range.



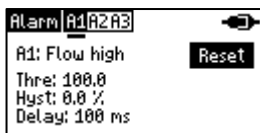
Flow

Flow value (big digits), flow unit and selected gas.



Total

Totalizer value (big digits), unit of totalizer value and selected gas.



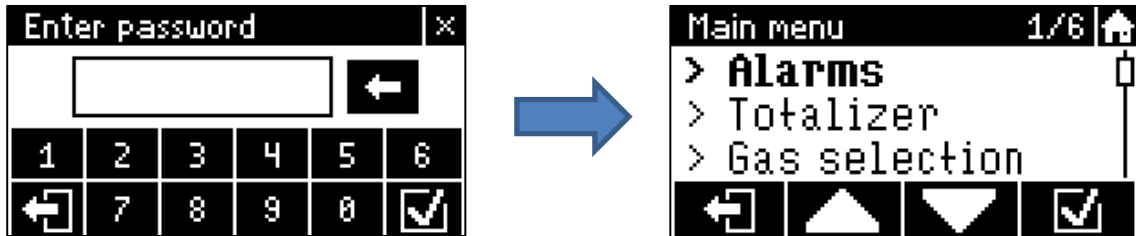
Alarm (if the optional alarm module is installed)

Alarm configuration and alarm reset button. Each alarm (A1, A2, A3) has its own home screen. To reset an alarm using the reset button the alarm must be configured for manual reset.

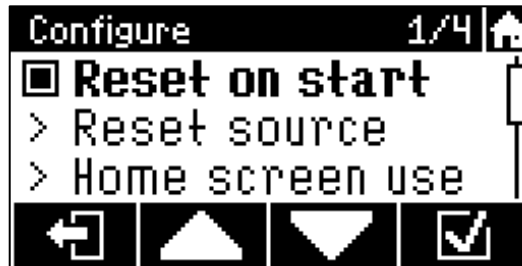
4.10.7 Menu Navigation

The device can be configured for specific applications and preferences by using a graphical menu. This menu is entered from any home screen by a long press or by using swipe control (swipe up or swipe down). The menu is always displayed in horizontal orientation.

To access the menu, the password must be entered if that feature is enabled (see [4.12.6 Security](#)):



The menu is organized in a hierarchical way containing submenus. Each menu is a list of menu items. Within each list one menu item is selected (printed in a bold font):



The menu headline contains the name of the menu and the index of the selected menu item (position of the selected menu item within the list / number of menu items in the list).

The type of menu item is indicated by its icon:

- > Submenu
- Selection: Not selected (not activated)
- Selection: Selected (activated)
- ☰ Input dialog (f.i. alarm threshold value input)
- ☒ Message dialog (f.i. shutdown confirmation dialog)
- ⊕ Direct action (f.i. alarm reset)

The menu is operated by using the following buttons:



The selection is moved up and down using the arrow buttons.

A short press on an arrow button moves the selection by one position. A long press on an arrow button selects the first menu item in list or the last menu item in list.

Swipe control is used to scroll through the list *without moving the selection*. Swipe up to move towards *last item* in list and swipe down to move towards *first item* in list. The selection can be set to a particular menu item by a short press on its menu item text.



To activate or execute a menu item press the check mark button. If the menu item is a submenu the submenu is entered.

The *selected menu item* can also be activated by a short press on its menu item text. Note that this function can be disabled (see [4.12.2.6. Touch input](#)).



A menu is left by a short press on the back button. The menu can also be left using swipe control (swipe right).

Leaving a menu causes its parent menu to be activated again (one level up in hierarchy). Otherwise if there is no parent menu the entire menu is left jumping back to home screens.

A long press on the back button always leaves the entire menu.



It is possible to hide the menu by a short press on the home button.

Hiding the menu jumps back to home screens but keeps the current menu location in background. Reentering the menu then resumes at that location.

4.10.8 Alarms and Notifications

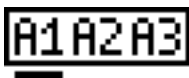
In horizontal home screen mode, the top of the screen contains the alarm and notification area. In vertical home screen mode, the alarm and notification area are on the left-hand side of the screen.

The alarm and notification area displays:



Overflow

If the flow is higher than 108% of the calibrated full range an overflow condition is signaled. The flow value shown is limited and does never exceed that limit.



Alarm Indicator

If the optional alarm module is installed the alarm status and enable state of the alarms A1, A2 and A3 is displayed (see [4.11.2 Alarm Menu](#)).



Economy and Performance Measurement Mode

PERF

The device selects between economy and performance measurement mode automatically depending on the power supply. This behavior can be changed and the measurement mode can be set manually. In that case an indicator shows whenever the measurement mode deviates from the default behavior:

- ECO: External power supply but operating in economy mode
- PERF: Battery power supply but operating in performance mode

ERR

Sensor error

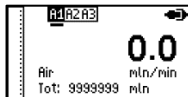
Other conditions displayed outside of the alarm and notification area:



Flow value too big

If the flow value is too large “Out of range” is displayed. In that case flow measurement is still operational but the flow value is not displayed anymore.

Select a flow unit (see [4.12.3 Units](#)) that causes the flow value to fit the number of available digits again.




Totalizer value too big

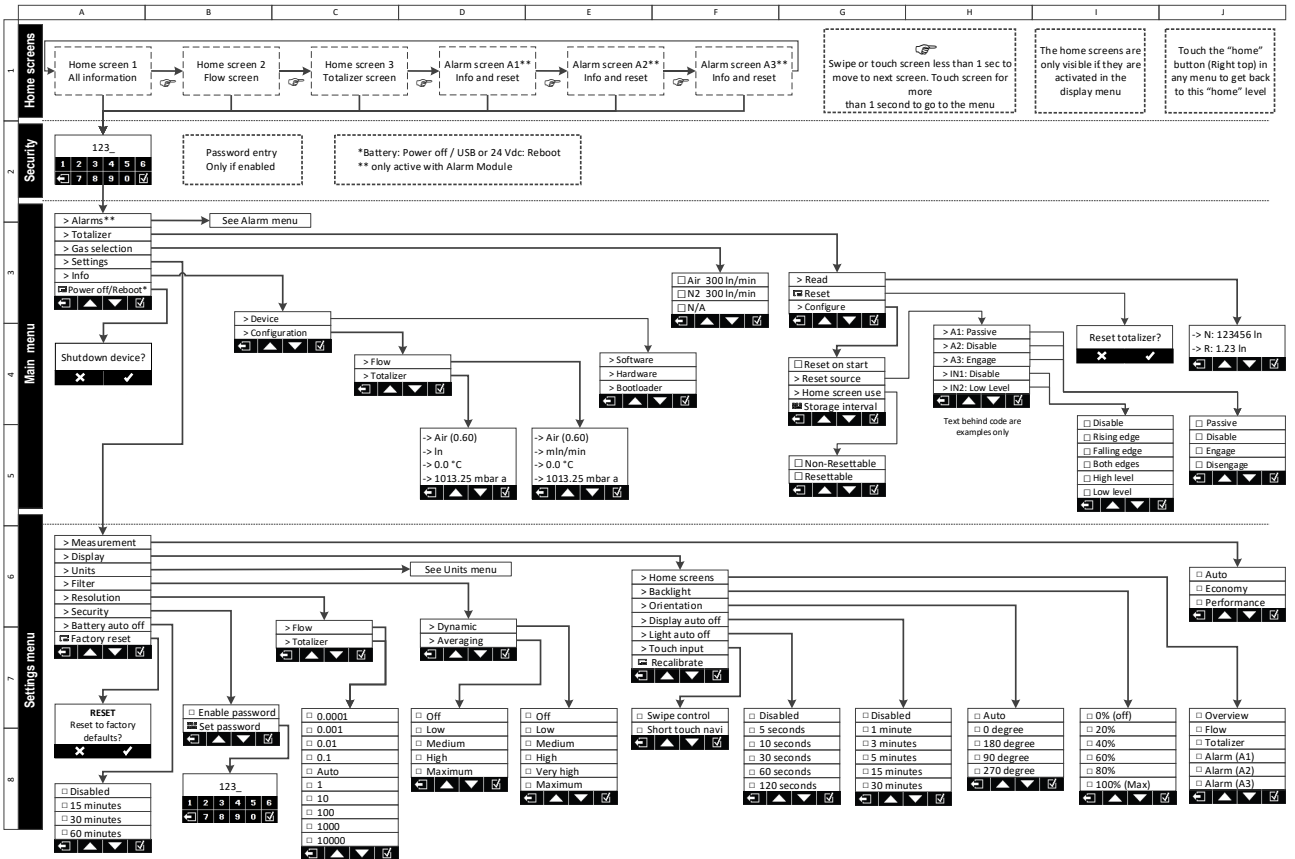
If the totalizer value exceeds the value of 9999999 it is too large to be displayed. In that case the totalizer continues to operate but the totalizer value is limited to 9999999 on display.

Select a totalizer unit (see [4.12.3 Units](#)) that causes the totalizer value to fit the number of available digits again (for instance m3n or kg).

4.11. Main Menu

	<p>Important Note The menu is only available in horizontal mode.</p>
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Below is an overview of the main menu structure. A complete overview of the entire RedyCompact menu can be found on the [last pages of this manual](#).



4.11.1 Main Menu

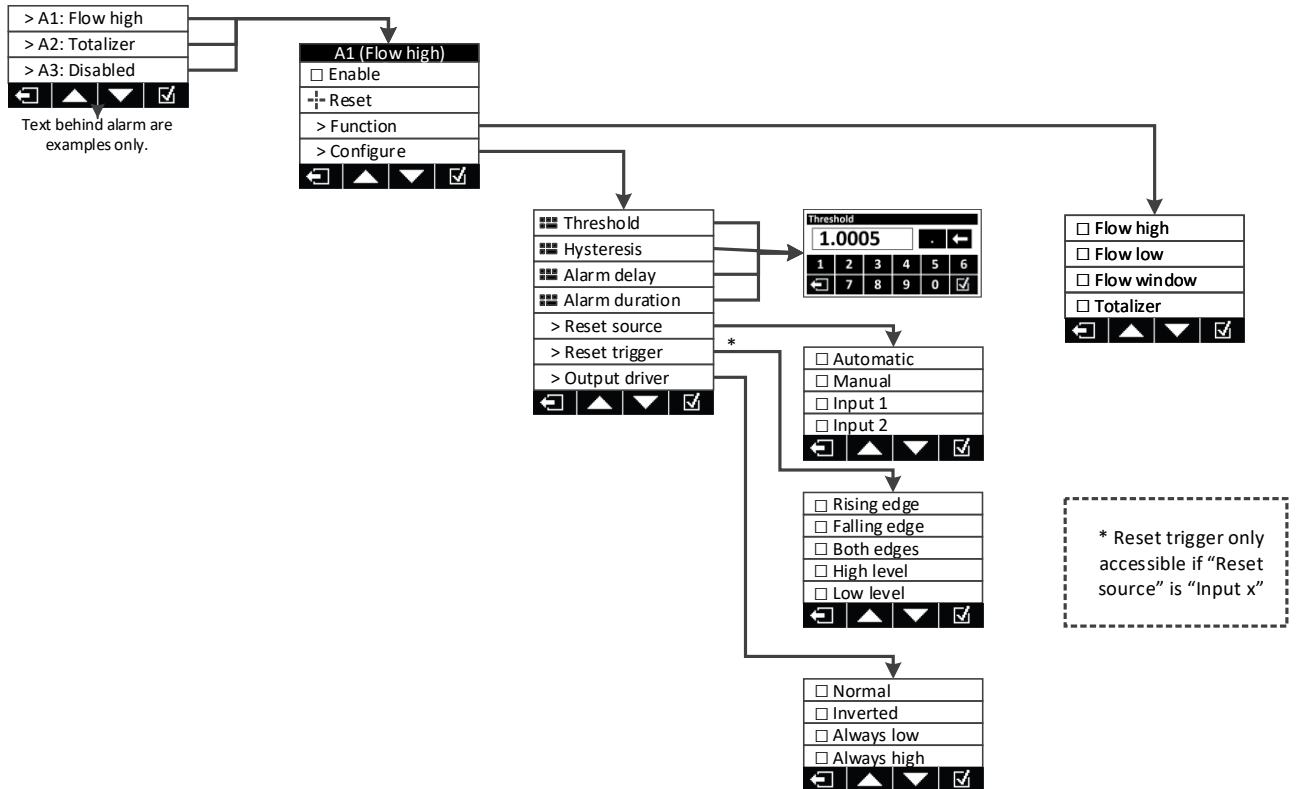
- > Alarms**
- > Totalizer
- > Gas selection
- > Settings
- > Info
- Power off/Reboot*

In the main menu you have access to the “Alarms,” “Totalizer,” “Gas Selection,” “Settings”, and information (under “Info”) about the status and settings of your unit. If your unit is battery powered, it will give the option “Power off” on the bottom line. If the unit is externally powered it will give you the option to “Reboot” the unit.

**Alarms will be visible but if the Alarm module is not installed this menu option cannot be used.

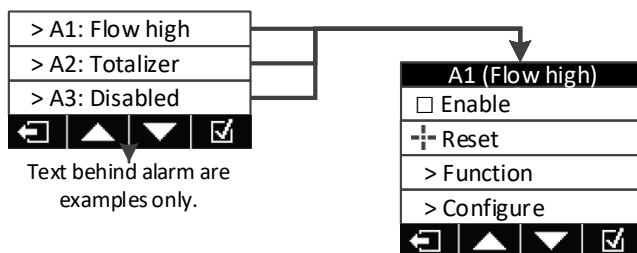
4.11.2 Alarm Menu

If you have installed the optional alarm module and once the alarm function is selected from the main menu, you can select which of the 3 alarms (A1, A2 or A3) you want to configure. Please note that alarm 3 has a different contact type and capacity than alarms 1 and 2 (see diagram in [2.15 Optional Modules](#)). If an alarm has already been configured the primary function is mention behind the Alarm (Example A1: flow high).



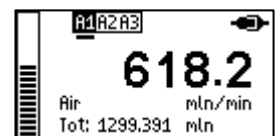
4.11.2.1 Select Alarm Menu

Once you selected A1, A2 or A3, you go into the specific alarm menu. You have the following options:



Enable (Default: disabled)

If you activate this, the alarm becomes operational. You can see that an alarm is enabled on any home screen. If an alarm has been enabled the corresponding alarm name is shown underlined (see picture on the right).



Reset

If applicable you can manually reset an alarm here (The other reset location is on the alarm home screen). If the alarm is active you will see a star (*) behind the word "Reset".

Function

With this submenu you can set the function of the alarm (Options: Flow high, low or window and totalizer). For more details see next page.

Configure

In this menu item you can set the details of the alarm like its alarm value(s), how the alarm is reset, Alarms delays, hysteresis and more. For more details see next page.

4.11.2.2 Function Alarm Menu

Under the “Function Alarm” menu, you can define the functionality of the alarm.

<input type="checkbox"/> Flow high
<input type="checkbox"/> Flow low
<input type="checkbox"/> Flow window
<input type="checkbox"/> Totalizer

Flow high (Default)

With this function, the alarm gets activated if the flow goes over a predefined value set in the threshold by the customer.

Flow low

With this function the alarm gets activated if the flow is under a predefined value set in the threshold by the customer.

Flow window

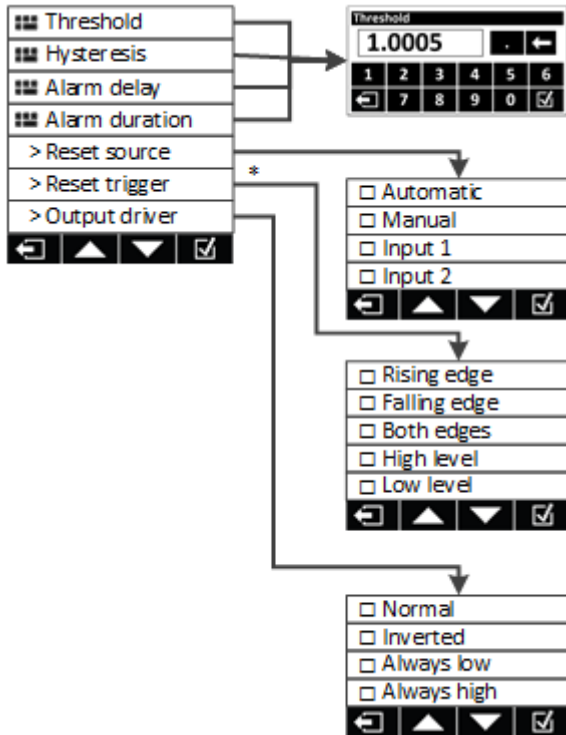
With this function, the alarm gets activated if the flow is outside a “Window” that is predefined by the customer. For example, if upper threshold is set to 5 and lower threshold to 4 the alarm will get active if flow is lower than 4 or higher than 5.

Totalizer

The RedyCompact has two built in totalizers. One is permanent and is non-resettable. The second one is a resettable totalizer. You can bring it back to zero (see [4.11.3 Totalizer](#)). The totalizer alarm works with the resettable totalizer. You enter a value in the threshold and once that value is reached the alarm is activated.

4.11.2.3 Configure Alarm Menu

Once you defined the function of an alarm you can define the details of the operation in this menu



Numerical entry screen

If you have to enter numeric values (Like an alarm value (Threshold)) you will see a little keyboard on the screen where you can enter a numerical value. The decimal point is located behind the number display field. Once you entered a decimal point followed by another number, the dot changes into an “E”. If you press this you can enter the scientific notation, for instance $1.0E-3 = 0.001$ or $2.2E2=220$.

Threshold

Threshold is the activation value. If you for instance selected a high alarm, the alarm will be active when the flow value comes over the Threshold value. The value is entered in flow engineering values that the unit is set for at that moment (for instance in mln/min). If you change the engineering units of the unit in a later stage, the Threshold value will automatically adjust itself to the new flow unit.



Important Note

Please note that there is no limit to the value you can enter as a threshold. Please double check your entered value.

Hysteresis (Default: 0=OFF)

The hysteresis is the difference between the value where the alarm turns **on** from turning **off** and the value where it turns **off** from turning **on**.

This difference is defined in % of full scale. In figure 10 an example of a 50% threshold value high alarm with a 10% hysteresis. The blue line in the top graph reflects the gas flow, the vertical dotted lines the switching points.

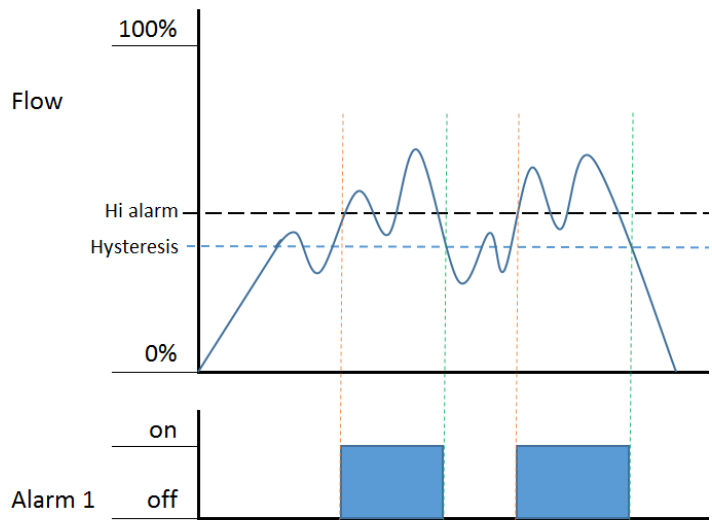



Figure 9: Explanation hysteresis

The blue area's in the graph below is where the alarm is activated. The reset is set to automatic.


	Warning Please note that you can enter a value of 100% as hysteresis value. If you do that the alarm will no longer switch off.
-----------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------

Alarm delay (Default: 20ms)

The alarm delay is a delay in milliseconds between the moment the alarm situation occurs to the moment that the alarm is activated. It can be set from 20 to 9999999 msec (=2.777 hr).

Alarm duration (Default: 500ms)

The alarm duration is minimum time that the alarm is active after it is activated. It can be set from 100 to 9999999 msec (=2.777 hr)

	Important Note This function is only active if the reset is set to automatic.
-------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------

Reset source (Default: Manual)

The alarm can be reset in different ways. Below a list of the 4 possible settings:

Automatic

The alarm is reset the moment the alarm situation is no longer valid. This unless you programmed an alarm duration. For a totalizer alarm this setting will reset the totalizer as soon as the threshold has been exceeded.

Manual

The alarm stays active until you manually reset the alarm through the touch screen of the flow meter.

Input 1

The alarm stays active until you activate input 1

Input 2

The alarm stays active until you activate input 2

Reset Trigger (Default: Falling edge):

When you use input 1 or 2 as an alarm reset, you can set exactly on which action the alarm is reset. If for example the input is a manual push button, the rising edge is the moment that you push the button and the falling edge the moment when you let go of the push button.

<input type="checkbox"/> Rising edge
<input type="checkbox"/> Falling edge
<input type="checkbox"/> Both edges
<input type="checkbox"/> High level
<input type="checkbox"/> Low level

	Important Note The “Reset trigger” function only relates to alarm reset by input 1 or 2.
--	----------------------------------------------------------------------------------------------------

	Important Note Please note that the reset overrides the alarm. Even if the alarm is still valid, if you set this reset trigger to high level, the alarm is ignored until the level becomes low again. If the blue represents the input being active you can see the different trigger points below (See Figure 11).
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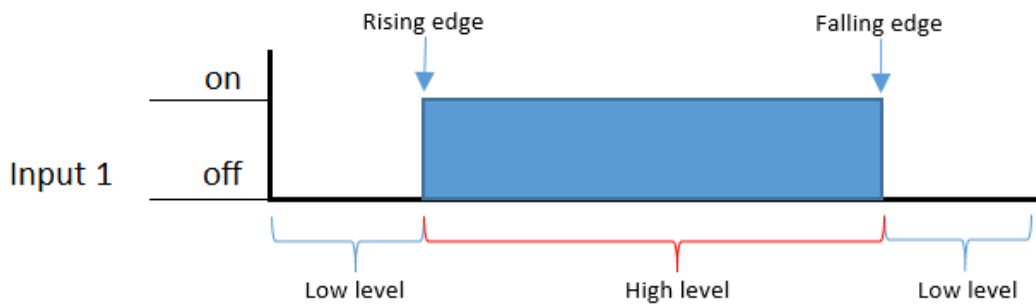


Figure 10: Explanation trigger points

Output driver (Default: Normal)

The output driver setting offers the possibility to invert the action from the alarm switch and set the alarm to a predefined state which is convenient for testing systems.

The “Always low” and “Always high” override all alarm settings and flow signals. Please make sure that you take precautions before you use these options in a “life” system.

<input type="checkbox"/> Normal
<input type="checkbox"/> Inverted
<input type="checkbox"/> Always low
<input type="checkbox"/> Always high

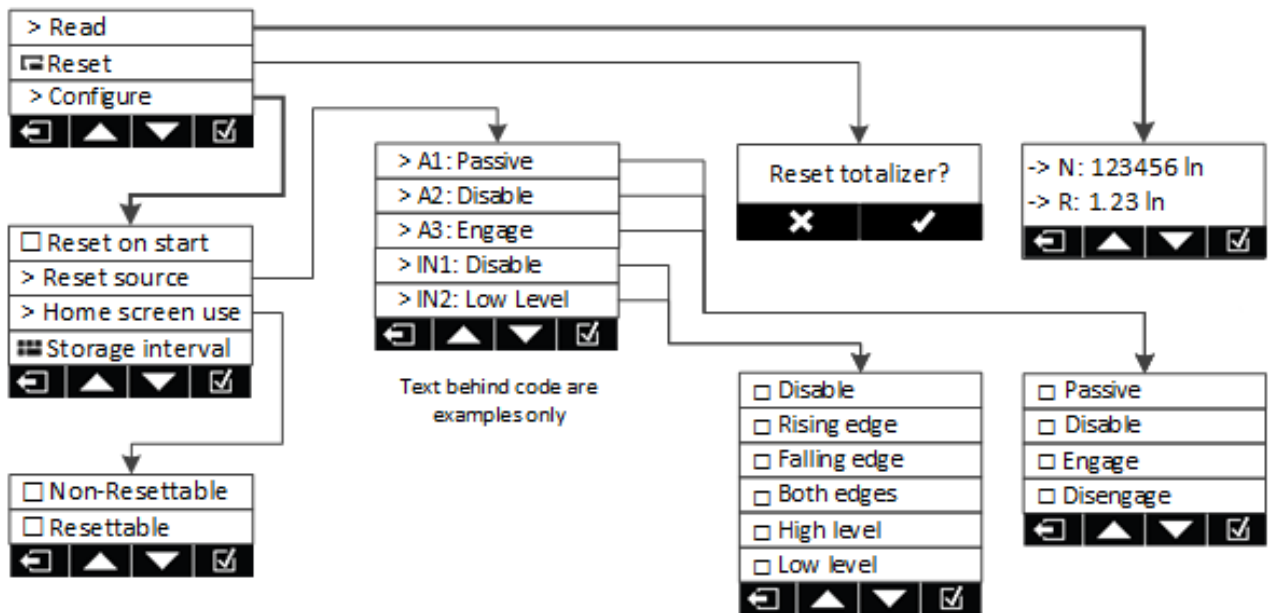
4.11.3 Totalizer

The totalizer calculates how much gas has totally passed through the flow meter based on the measured flow and the factor time. The instrument has 2 totalizers. Each can display a maximum of 8 digits. The totalizer value will be stored internally as an IEEE 754 floating point number. The internal totalizer will never roll-over, the maximum value far exceeds the lifetime of the instrument. One of the two totalizers is resettable, the other can never be reset and always continues to count for the lifetime of the instrument. Both the totalizer values are stored every 10 minutes in a permanent memory so even if there is no power supply the last stored value will still be kept. If you

apply power again the saved value will be restored (Unless you activated the “reset on start” feature).

Please note that if the flow rate exceeds the full scale of the unit (overflow), the totalized value will not be correct. Even if there is an overflow the totalizer operation will continue normally. However, since the flow value is limited the totalizer is totalizing the limited flow value only.

If the totalizer value exceeds the possible 8 digit display, you can set the totalizer engineering units to a suitable unit that can display the value within the 8 digits, for instance m³n or kg. See section [4.12.3 Units](#).



Read

Read the totalizers (for instance in-case you only activated the flow screen).
N: is the non-resettable totalizer, R: is the current value of the resettable totalizer.

Reset

Reset the resettable totalizer to zero

Configure

Reset on Start

Activate this option if you want that the resettable totalizer is set to zero every time you switch the unit on. *Please note: Upon start-up the totalizer will be silently reset without asking for confirmation. It simply resets the resettable totalizer to zero every time you switch the unit on.*



Important Note

With the alarm module it is possible to reset the totalizer with an external remote switch or signal.



Important Note

The following settings are **only** possible if you have the optional alarm module. If you do not have the alarm module installed, the display will show N/A behind the alarms.

Reset Source

In this menu you can set what event triggers the totalizer to reset

Totalizer Reset Via Alarm Handling

Reset trigger via alarm state (A1, A2, A3):

- Passive: An enabled alarm configured as totalizer alarm can reset the totalizer [Standard]
- Disabled: Totalizer reset via alarm handling is disabled
- Engage: Totalizer is reset if selected alarm (A1, A2, A3) gets active*
- Disengage: Totalizer is reset if selected alarm (A1, A2, A3) gets inactive*

Totalizer Reset Via Alarm Input Contact

Reset trigger via alarm inputs (IN1, IN2):

- Disable: Totalizer is *not reset* via selected alarm input [Standard]
- Rising edge: *Rising edge* on selected alarm input
- Falling edge: *Falling edge* on selected alarm input
- Both edge: *Any edge* on selected alarm input
- High level: *High level* on selected alarm input (kept in reset)
- Low level: *Low level* on selected alarm input (kept in reset)

More information on how to work with the Alarm module inputs can be found in Chapter [2.15](#) [Optional modules](#)

Home Screen Use

Here you can select if you want to read the Non-resettable or Resettable totalizer on the main screen.

Storage Interval

The values of the totalizer is saved in an EEPROM so if the battery is empty or the power fails the value is still retained. The frequency in which this happens is standard 600 seconds (=10 minutes).

If required this frequency can be increased or reduced in this setting (Minimum value is 10 seconds).



Warning

Be aware that the lowering this value will decrease the EEPROM life expectancy. Sierra Instruments does not provide any warranty on the lifetime of the EEPROM.

4.11.4 Gas Selection

<input type="checkbox"/> Air 300 l/min
<input type="checkbox"/> N2 300 l/min
<input type="checkbox"/> N/A

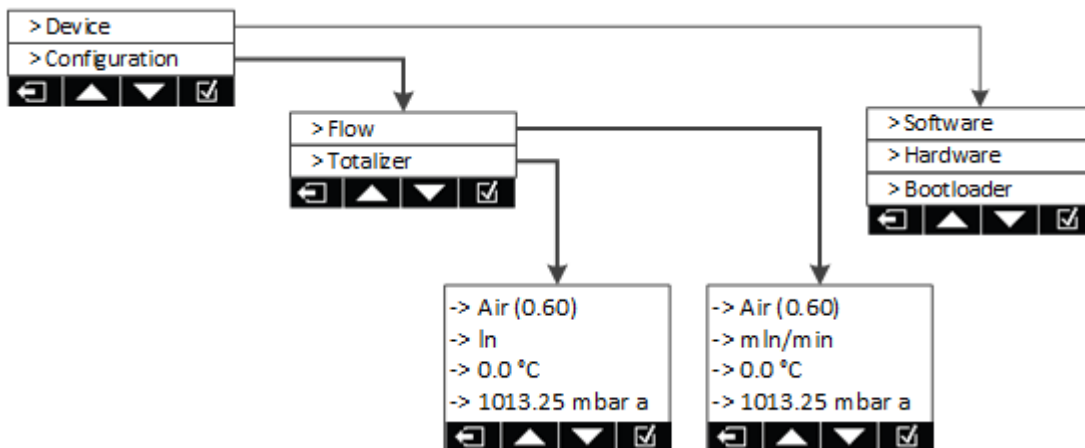
The *RedyCompact* can store up to 3 different curves for different gases or gas mixtures in its memory. If you have ordered more than one gas when you purchased this unit, you can select the required gas here. The locations that do not have a gas programmed are marked with “N/A”. Behind the gas name you see the maximum flow you can measure in your selected units.

4.11.5 Settings

> Measurement
> Display
> Units
> Filter
> Resolution
> Security
> Battery auto off
Factory reset

In this menu you can adjust your preferences. See section [4.12 Settings](#) for details.

4.11.6 Info



Info brings you to menu that informs you about the current configuration of the unit. When you for instance select “Software” under the Info menu you can see the current firmware version and the date that this version was released. Other fields provide similar information.

Under “Configuration” you see the active settings for the flow and the totalizer. The temperature and pressure refer to the reference conditions for the selected flow units. (See [1.15 Real, Standardized and Normalized flow](#))

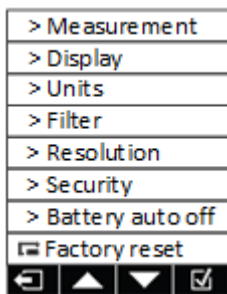
4.11.7 Reboot or Power Off

Shutdown device?

If your unit is battery powered, it will give the option “Power off” in the main menu. You can switch the unit on again by touching the display for 3 seconds.

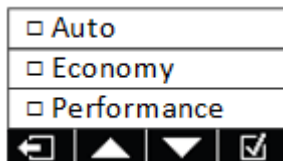
If the unit is externally powered it will give you the option to “Reboot” the unit. “Reboot” restarts the unit. If you select one of these options the unit will ask you to confirm your selection.

4.12 Settings



In the settings menu you can adjust the user variables. See the chapters below for more details.

4.12.1 Measurement



The RedyCompact has 2 measurement modes. When you set the measurement to “Auto”:

- 1) When on battery it takes a flow sample every 300 milliseconds and due to that extends the battery life
- 2) When on external power (24 VDC or USB) it takes a flow sample every 40 millisecond and due to that will have a faster response and a more accurate totalizer when you have fluctuating flows. With this menu you can force either measurement mode independent of the power source.

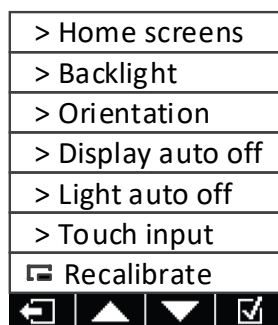


Caution

Please note that when you set the measurement mode to “Performance” and you use the unit on battery the battery life is limited.

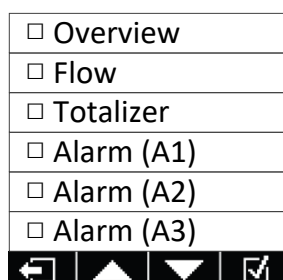
If the measurement setting is forced to “performance” and the unit is operating on the battery, the display shows “PERF”. If the measurement setting is forced to “Economy” and you use an external power supply the display shows “ECO”. Please note that in “ECO” mode the backlight is always off.

4.12.2 Display



In the display menu you can configure the settings for the display. Below you find more details on the individual settings of the display.

4.12.2.1 Home Screen



There are 6 different home screens in horizontal mode and one in vertical mode (see [4.10.6 Home screens](#)). In this menu you can deactivate up to 5 home screens (one home screen must stay activated).

4.12.2.2 Backlight

<input type="checkbox"/> 0% (off)
<input type="checkbox"/> 20%
<input type="checkbox"/> 40%
<input type="checkbox"/> 60%
<input type="checkbox"/> 80%
<input type="checkbox"/> 100% (Max)

In this menu you can select the brightness of the backlight. The backlight is only available if you use an external power (USB or 24 VDC).

4.12.2.3 Orientation

<input type="checkbox"/> Auto
<input type="checkbox"/> 0 degree
<input type="checkbox"/> 180 degree
<input type="checkbox"/> 90 degree
<input type="checkbox"/> 270 degree

The screen can be orientated (turned) in the most convenient position for reading (upside down or vertical). If this menu is set to Auto, the unit will do this automatically. A sensor determines it's orientation. The sensor can be overridden with the 0, 90, 180 or 270 degrees settings. This is very convenient if you want the gas inlet to be on the right side of the flow meter or place the meter vertical. Note: The menu can only be displayed in horizontal mode and the vertical screen mode has only one "Home screen".

Remark: at installation make sure you respect the flow direction of the gas indicated by an arrow on the rear of the instrument.

4.12.2.4 Display Auto Off

<input type="checkbox"/> Disabled
<input type="checkbox"/> 1 minute
<input type="checkbox"/> 3 minutes
<input type="checkbox"/> 5 minutes
<input type="checkbox"/> 15 minutes
<input type="checkbox"/> 30 minutes

The display can be set to switch off after a defined time following your last touch event. If you set the "Display auto off" to "Disabled", the display stays on till the power is switched off. When the display is switched off, the backlight will also switch off. The totalizer is still working.

You can activate the display again by touching it.

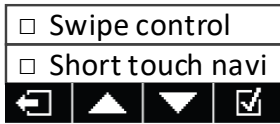
4.12.2.5 Light Auto Off

<input type="checkbox"/> Disabled
<input type="checkbox"/> 5 seconds
<input type="checkbox"/> 10 seconds
<input type="checkbox"/> 30 seconds
<input type="checkbox"/> 60 seconds
<input type="checkbox"/> 120 seconds

In this menu you can define a time before the backlight automatically switches off (after the last touch event). The backlight goes on again when you touch the display. When the setting is "Disabled" the light is continuously on.

When the backlight is switched off you can still read the display. The backlight only works if there is an external power connected. On battery power supply or in ECO mode the backlight is not operational.

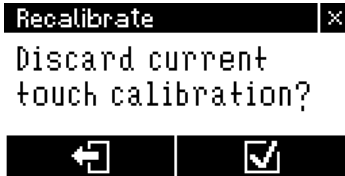
4.12.2.6 Touch Input



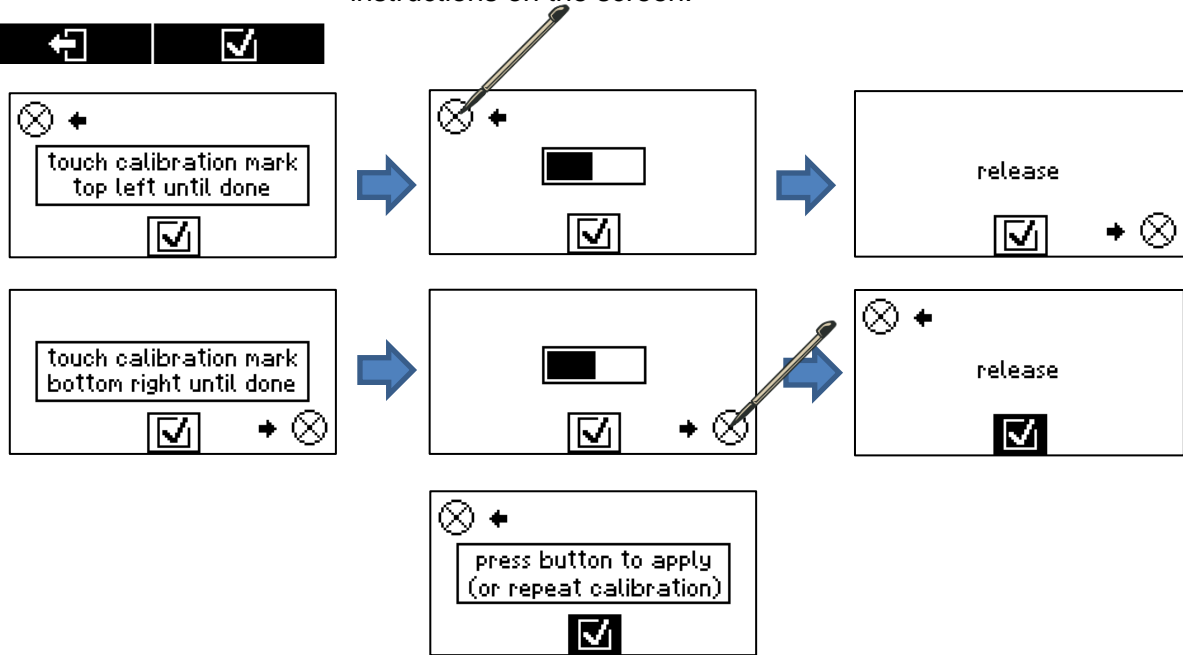
In this menu you can activate or deactivate swipe control and short touch navigation:

- Swipe control: Ability to operate the device by swipe movements
- Short touch navigation: Ability to activate a selected menu item by touching the menu item text.

4.12.2.7 Recalibrate



In this menu you can recalibrate the touch screen. Use a precise tool to operate the touch screen for recalibration. Please follow the instructions on the screen.

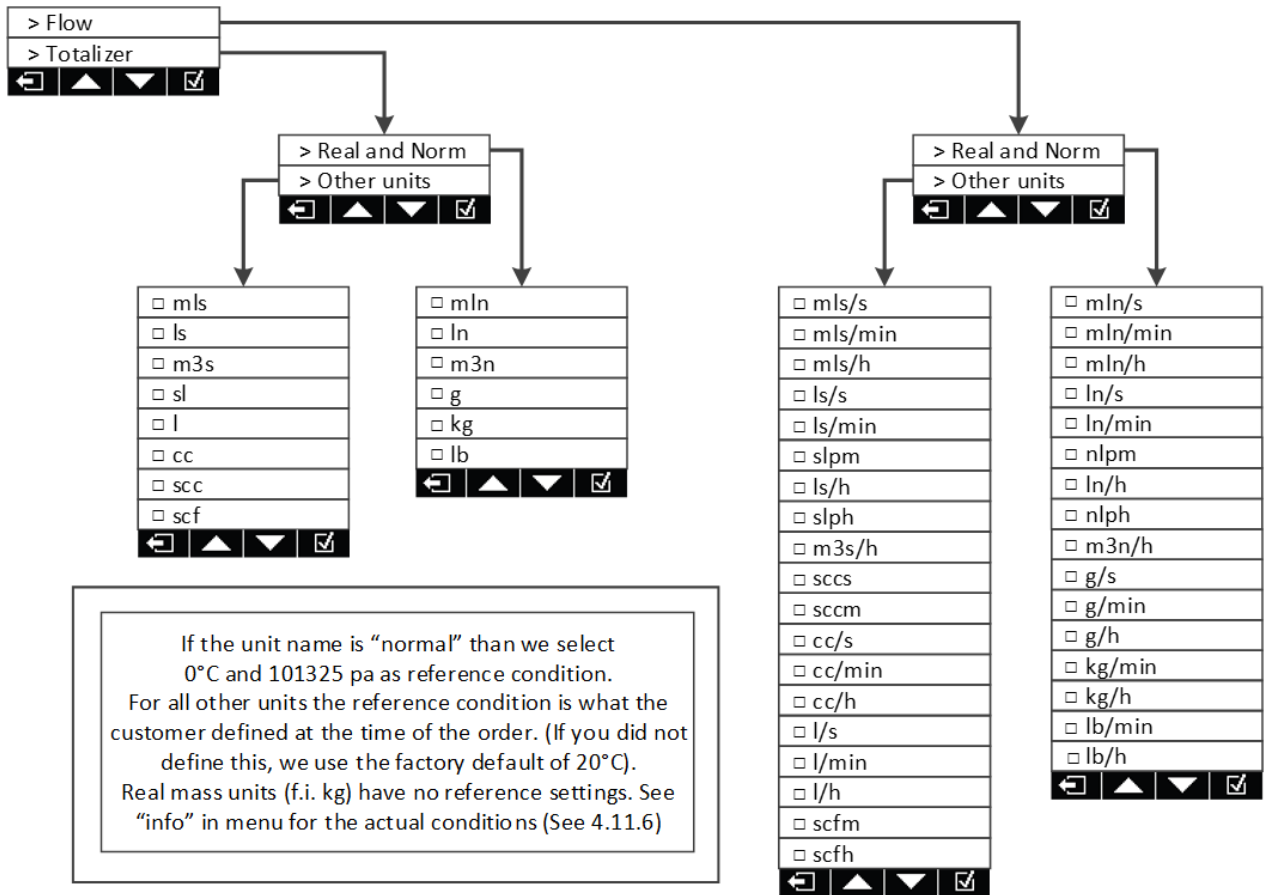


To calibrate the unit use a precise tool and touch the upper left crosshair. Keep the Touch-Display touched until the progress bar has run to completion. Repeat the step touching the lower right crosshair. When progress bar has run to completion the new calibration is applied.

Test the calibration in the area in the middle of the touch screen. The touch position is highlighted by a dot. To repeat the calibration redo the previous steps. This can be done as often as possible.

When the calibration is satisfying touch the apply button in the bottom row.

4.12.3 Units

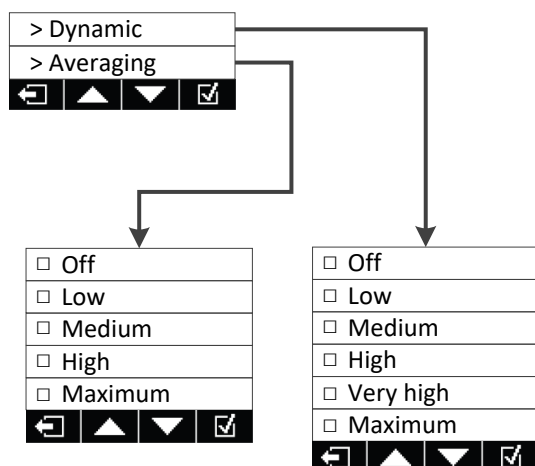


In the "Units" menu you can set the required engineering units for the totalizer and the flow indication. If there is a unit selected with too many digits, the device will show: "Out of range" on the display.

If you select a totalizer unit that would create too many digits the totalizer will show 9999999. More information in section [4.10.8 Alarms and notifications](#).

For more information on "normal" and "standard" flow units see chapter [1.15 Real, Standardized and Normalized flow](#) of this manual.

4.12.4 Filter



With the filter settings you adjust the reading of quickly changing flows. The filter basically averages the readings from the sensor. More information can be found in chapter [2.22 Filter Settings](#).

There are two separate filters that are adjustable and independent of each other. Dynamic and Averaging filter:


Dynamic Filter:

The dynamic filter will increase the number of readings that are averaged when the flow is less dynamic and decrease the number of readings that are averaged

when the flow shows quick changes. So when the flow is quickly rising or falling it will take less averages in its calculations. On this way the unit will react faster to changes in the flow.

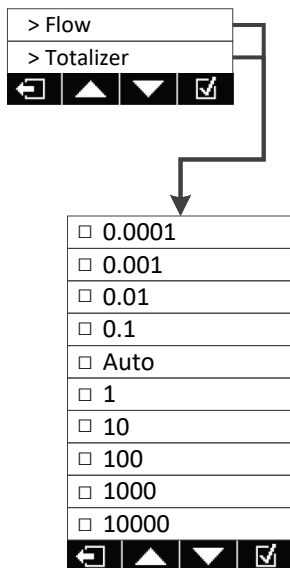
Averaging filter

The averaging filter is a “moving average filter”. It calculates the average value of a number of measurements and shows the average on the display. As you increase the filter setting from off to maximum, you increase the number of measurements the average is calculated from.

	<p>Warning</p> <p>Before you apply higher filter values, please try to identify the cause of the flow pulsations. This could be a compressor, pressure amplifiers, incorrectly sized fittings, non-return valves or pressure regulators. Sometimes creating more “dead volume” before or behind your flow meter could solve the problem.</p>
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4.12.5 Resolution

The RedyCompact has the ability to show the actual flow in many different engineering units. This means that the number of digits in the readout can change a lot. In automatic resolution mode the required number of digits is automatically calculated depending on the range and selected units. This resolution is however adjustable by the user.



In this menu you can adjust the resolution of your flow and totalizer values shown on the display.

The RedyCompact has the ability to show the actual flow and the totalizer in many different engineering units. This means that the number of digits in the readout can change a lot. In automatic resolution mode (menu option "Auto") the number of digits are computed depending on range and current selected unit.

The minimum number of digits is 4, the maximum 6 (Excluding the decimal point). Below you find the table on how many digits will be visible in this auto mode.

Range		Examples display values		Display resolution
from	until	from	until	
0.01	0.09	0.01	0.09999	0.00001
0.1	0.9	0.1	0.9999	0.0001
1	9	1	9.999	0.001
10	99	10	99.99	0.01
100	999	100	999.9	0.1
1000	9999	1000	9999	1
10'000	99'999	10'000	99'990	10
100'000	999'999	100'000	999'900	100


Notes:

1. Because the value is right-aligned, it is possible that depending on the actual flow you can see a change in the number of digits behind the decimal point. For example if the flow is changing from 2 to 2.01 and then 2.1 you can see: 2.0, 2.01 and 2.1 on the display.
2. If the maximum number of digits is exceeded you see out of range on the display. In that case select another unit (see chapter [4.12.3 Units](#)).
3. The step size in auto mode between each reading is depending on the range but it is always well within the accuracy of the flow meter. For other setting mentioned below, this does not have to be the case.

The other settings are the minimum step that the value will take between values.

Example: If you have a flow of 189.673 mln/min than the unit will show 189.6 in auto mode. When selecting the other settings you would see:

Resolution setting	Flow	Displayed	Remarks
0.0001	189.673	189.673	The display cannot show more than 6 digits
0.001		189.673	
0.01		189.67	
0.1		189.6	
auto		189.6	
1		189	
10		180	
100		100	
1000		0.0	
10000		0.0	

	Note The numbers are not rounded off, but they are made invisible (also called a floor function). The totalizer and the bar graph will not be effected by this setting and will also work based on the real high resolution flow.
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4.12.6 Security

Enable password

Set password

← ▲ ▼ ✓

123_

1 2 3 4 5 6

← 7 8 9 0 ✓

To avoid the unauthorized changing of settings in the menu, it is possible to protect the menu with a self-defined password. If you enable this option you first have to enter a 4-digit numeric password to gain access to the menus. In this setting you can also define that password. You can only activate the password after you have defined your own personal password under "Set password"

If you forget or lose your password, please contact the factory at: service@voegtlin.com

4.12.7 Battery Auto Off

<input type="checkbox"/> Disabled
<input type="checkbox"/> 15 minutes
<input type="checkbox"/> 30 minutes
<input type="checkbox"/> 60 minutes

To extend the battery life to the maximum we recommend that you set this menu so that, when powered with a battery, the *RedyCompact* will switch off automatically after the indicated number of minutes. Please note that this menu has no effect if the unit is powered by USB or the external 24 VDC . **Once the unit is switched off it no longer totalizes the flow.**

Note: When we supply the unit, the “*auto power off*” will be set to 15 minutes

4.12.8 Factory Reset

RESET Reset to factory defaults?


If you activate the factory reset, all variables will be reset to the factory default (for instance the password protection will be disabled). The continuous totalizer, however, keeps its value. Only the resettable totalizer gets reset to zero. The reset takes about 30 seconds.

5 Maintenance


When operated properly and with the use of clean and dry gas, *RedyCompact* devices do not require any routine maintenance. There are no internal moving parts in the measurement part of the device. However, we recommend that the calibration is checked after 12 months. If your *RedyCompact* is still within tolerance, this time interval can be extended. The timing of the periodic check is the customer's responsibility.

5.10. Cleaning to Remove Contamination

Depending on the type of contamination, on-site cleaning of the measuring or control device may be possible. As a first step, we recommend flushing with N₂ or dry air. If it is contaminated with liquids (ex. oil), pure methanol alcohol (100%) can be used. After cleaning, rinse the *RedyCompact* with the optional needle valve position fully open with dry air or nitrogen for approximately 15 minutes to dry out all liquids.

	<p>Warning</p> <ul style="list-style-type: none">• The warranty is null and void if the housing was removed.• Only use the proper tools.• Be careful when handling the device and the individual components.• Make sure that the disassembly environment is clean.• Do not touch the circuit board or electronic components without first grounding yourself and the surroundings. Electrostatic discharges can destroy components.• After cleaning, you should have the device checked or, if necessary, recalibrated by your sales partner at the next opportunity.
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Flow Splitter Disassembly

	<p>Warning</p> <p>Before you carry out any mechanical work on the unit the gas supply must be disconnected, any pressure relieved and the all power disconnected/removed</p>
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If the basic body has become contaminated, the flow splitter can be removed. The removal should only be done by trained service personnel. Removal and Assembly can potentially shift the calibration of a unit. Disassembly is different for the different device types:

*Note: The fourth letter of the article code defines the type of the flow splitter. For example: GCM-**B**9EA-BB20 contains a flow splitter of the type **B**.*

Type A

- First release the slotted screw in the center of the flow splitter (Left tread, approx. 5 turns)
- Unscrew the whole flow splitter with a hex key

Type B, C

- Unscrew the whole flow splitter with a hex key

Type D (G 1/2“)

- First unscrew the locking pin (underside of the body) with a hex key
- Unscrew the flow straightener with a suitable tool
- Pull the flow splitter out of the body

Flow Splitter Assembly

- Carry out the steps described above in reverse order
- After correct assembly flush *red-y* with dry inert gas.
- Check that the cleaned measuring device is functioning correctly by checking the zero point and some defined measurement values.

Recalibration

It is mandatory to recalibrate the flow measurement of the instrument after replacing the flow splitter for optimal accuracy.

5.11. Returns

When returning a *RedyCompact* please insure suitable packaging. Please contact us before you return the unit to us. To repair the unit we require a detailed and accurate description of the problem, the required service and the possible causes of the faults.



Warning!

If the device has come into contact with aggressive or toxic gases, please ensure that it is properly cleaned/flushed before returning the device to us. Please always complete the [contamination declaration form when submitting your RMA](#).

Instructions for Returning Your Instrument for Service

The following information will help you return your instrument to Sierra Instruments' Factory Service Center and will ensure that your order is processed promptly. Prices may vary depending on the flow range, type of gas and operating pressure of your unit. To request detailed pricing, contact your local Sierra Instruments distributor or [contact one of our offices directly](#).

Please follow these easy steps to return your instrument for factory service:

1. To obtain a Return Materials Authorization (RMA) number from the Sierra Instruments to <http://www.sierrainstruments.com/rma/new.php> to create a Sierra Account.
2. Once you have created an account, click on the Submit New RMA tab and fill in the RMA form and follow the instructions. You will receive an email confirmation once you have submitted your RMA.
3. Print a copy of the RMA (that now includes RMA #) and send a copy of the RMA form along with your meter back to the factory.

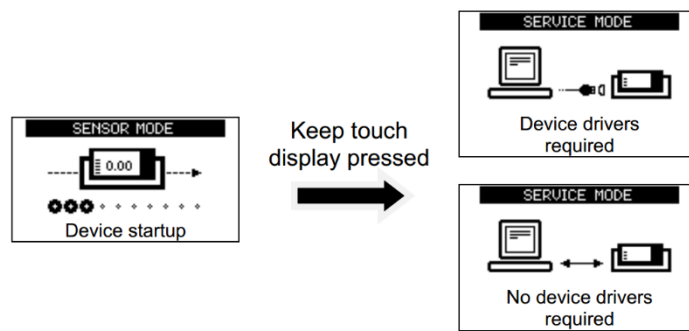
If you require service beyond calibration, but do not know which service(s) will be required, describe the symptoms as accurately as possible on the RMA form.

Pack your instrument carefully. Use the original packaging and foam or bubble wrap (packing peanuts NOT recommended) and include a copy of the RMA form (complete with Sierra supplied RMA number) with the unit(s).

5.12. Firmware Upgrade

Sierra Instruments continues to improve and add features to the firmware. Firmware updates are available free of charge on our website www.sierrainstruments.com. Register as user on our website to get notified on any future firmware updates.


- 1) Download and install the Service Tool software
- 2) Remove the battery and any module from your RedyCompact.
- 3) Start RedyCompact in service mode while connected to your computer via USB cable. To enter service mode restart (or power up) the instrument and keep the touch display pressed for about 4 seconds during startup (see picture below).
- 4) If after the 4 seconds you see the screen with the plug between the icons, refer to the Service tool manual how to install the required driver. If you see arrows, continue with 5)




- 5) Start the Service Tool software and follow the instructions

Do not disconnect USB cable during the firmware update. Once the firmware update is finished, the instrument automatically restarts using the updated firmware.

To leave service mode without performing a firmware update, keep the touch display pressed for about 6 seconds. This will power-off (on battery supply) or restart (on cable power supply) the instrument without replacing its current firmware. The update will not influence your settings

	<p>Note Please read the manual supplied in the upgrade package service tool. You will find the link to the extended version of the upgrade manual in the menu bar once you installed and started the software.</p>
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	<p>Note Valid for upgrade 3.0.6 only: After an update it is possible that the unit will ask you to calibrate the touch screen. Please follow the instructions on the screen (See 4.12.2.7 Recalibrate).</p> <p>If you upgrade from 3.0.5 the swipe and direct select functions will be disabled. If you want to make use of these you have to enable them. (See 4.12.2.6 Touch input).</p>
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**Note**

Alarm configurations set in a previous firmware version will not be affected by a firmware update.

6. Troubleshooting

In the following table we have compiled fault symptoms, their possible causes and suitable measures you can take. If you do not recognize your fault symptom, or the proposed measures were not successful, please consult your sales partner.

If you are planning to return a product, please refer to the chapter [5.11 Returns](#).

If you have to remove the measuring or control device from the pipeline, please observe any flushing procedures and the relevant safety guidelines. You will find a guide on how to remove and clean the devices in the chapter "Operation and Maintenance."

Error	Possible causes	Measures
Output indicates high flow continuously	Flow is too high (Overflow)	Reduce the flow rate. If necessary, the full scale can be extended. Please consult your sales partner
	Device is heavily contaminated	Please consult your sales partner
	Sensor faulty	Please consult your sales partner
Flow is shown despite zero flow.	Sensor contaminated	Please consult your sales partner
	The device is being operated with a different gas from its calibration.	For multi-gas instruments, you can set the appropriate gas type
	Offset due to mounting position	Particularly with small measurement ranges, heavy gases and gauge pressures > 5 bar, a zero-point offset can occur where the mounting position is vertical >> chimney effect. Where possible, mount the device horizontally
The manual valve is leaking	Contaminated valve	Flush the valve repeatedly with clean dry nitrogen
Meter does not indicate the expected value.	Leakage	Flow rate > than reference: Leakage between measuring device and your reference
		Flow rate < than reference: Leakage upstream of the measuring instrument
	Contamination	With contamination by sealing tape, for example, it is possible that the flow divider is partially blocked. In this case the device displays more than the reference. Please consult your sales partner
	The device is being operated with a different gas than calibrated.	Connect the intended gas, or change the type of gas in the 'Calibration' menu
	Different reference conditions	Verify "Normal" or "Standard" conditions
	Inlet pressure is too low	Check your inlet and outlet pressures
Pressure drop too high	Check for blockage or pollution. Check fittings ID	

Error	Possible causes	Measures
Unit, backlight or display unexpectedly switched off	Battery empty	Replace battery
	Menu settings incorrect	Adjust the auto off menu's
Unit always enters service mode when switched on	Firmware damaged	Perform a firmware upgrade as described in this manual. If the problem remains please consult your sales partner.
Out of Range	Wrong unit selection	Select a unit that fits better to the current flow.
Forgot Password	Contact the factory or distributor	Please consult your sales partner
Totalizer shows 9999999	Overflow totalizer units	Select a different unit (try m3n or kg)
Disfunction alarm contacts	An external magnet can unintentionally influence the alarm contacts	Please remove the interfering magnet
Touch display does not work properly	Calibration issue with touch screen	Apply calibration procedure for touch screen. See 4.12.2.7 Recalibrate

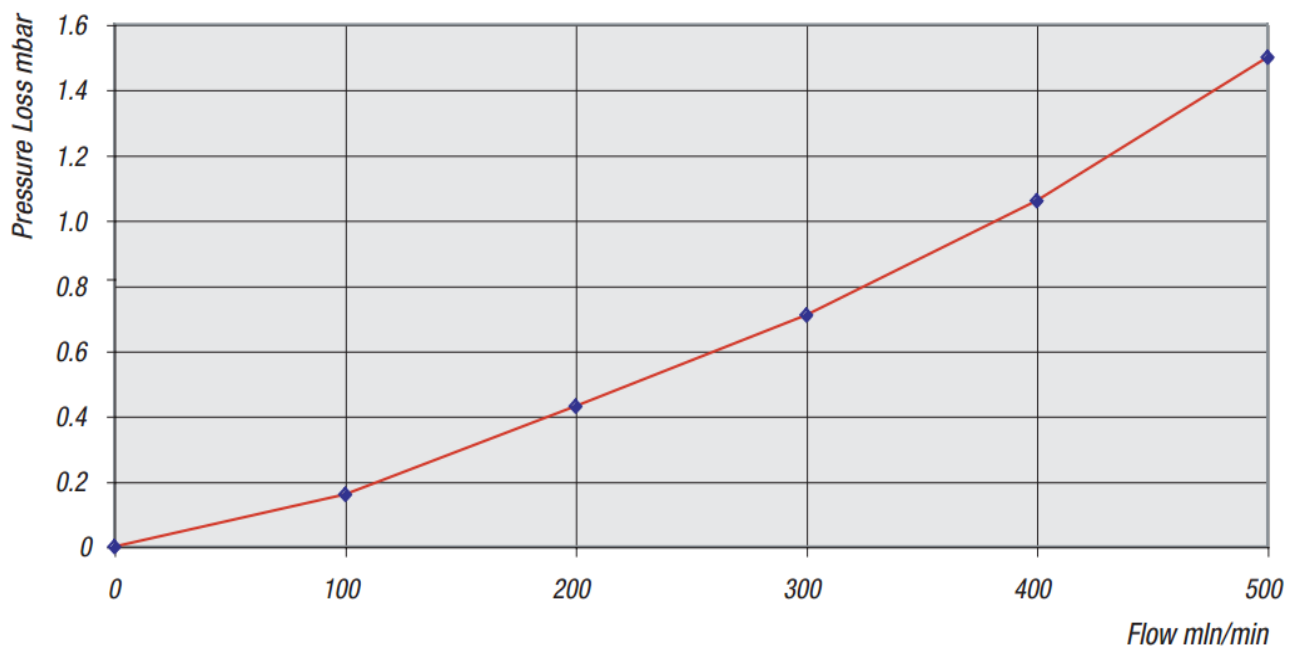
If you need any support please contact Sierra' Customer Service team at <https://www.sierrainstruments.com/techsupport/techsupport.html>.

6.10. Pressure Loss

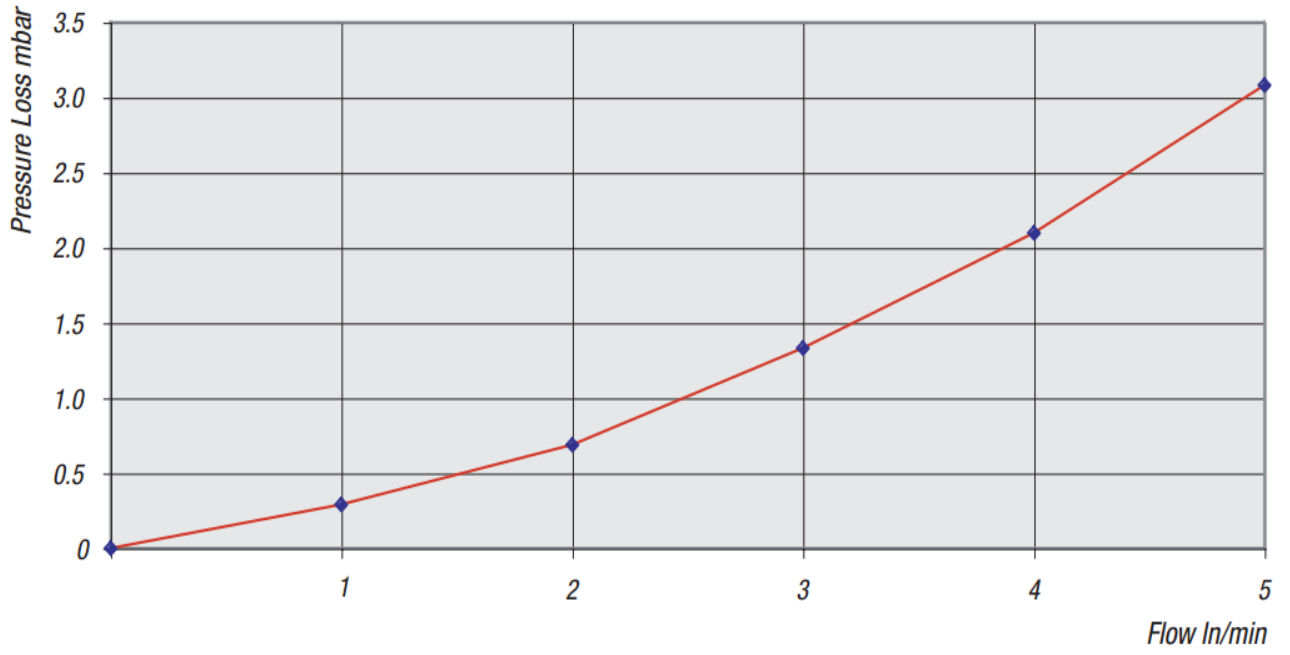
The following figures show examples of the pressure drop of a *RedyCompact* (measuring instrument only, not the valve)

Please note that the curves below are as an indicator only and based on atmospheric outlet pressure. Especially when the outlet is under vacuum, the pressure drop can be higher. Heavier gasses like Argon will create more pressure drop, lighter gasses like helium will create less pressure drop.

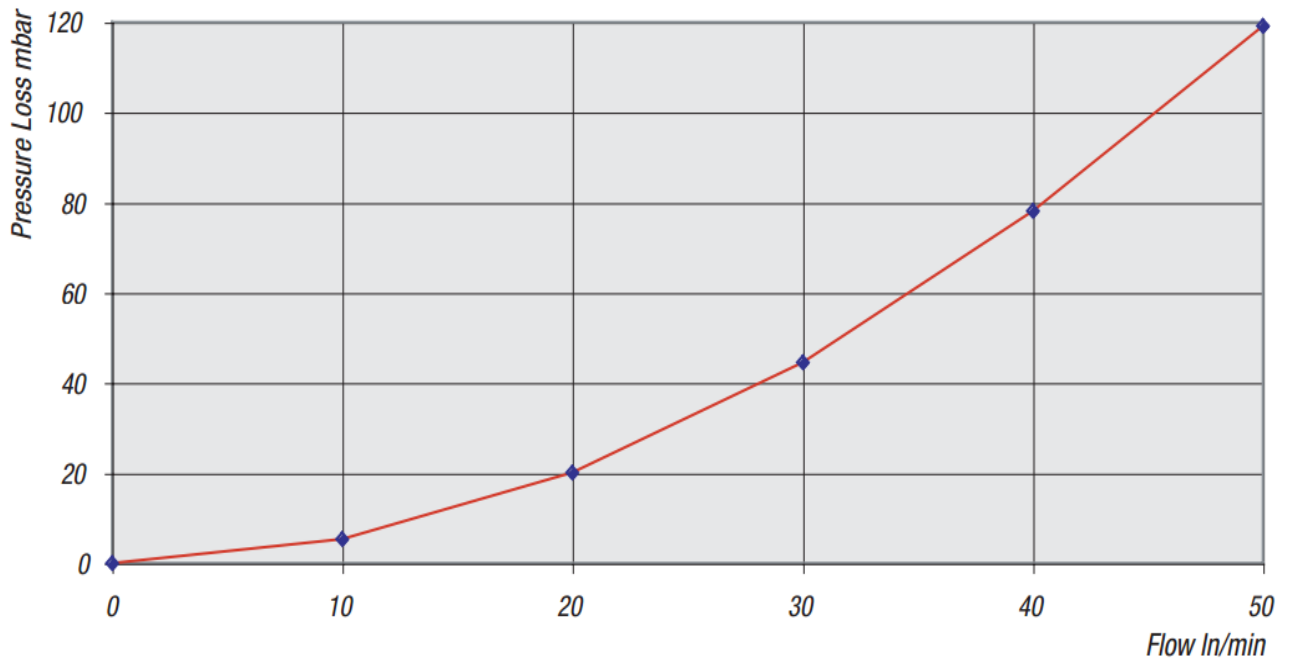
Pressure Loss 500 mln/min (Air)



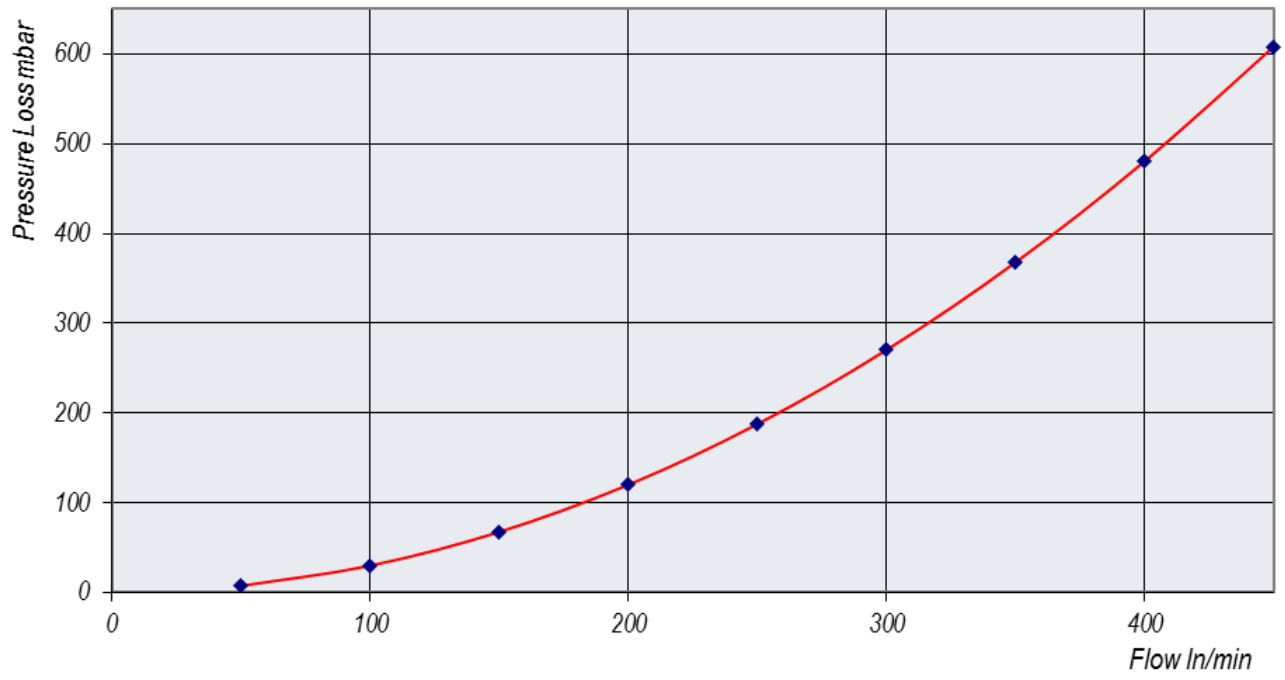
Pressure Loss 5 In/min (Air)



Pressure Loss 50 In/min (Air)

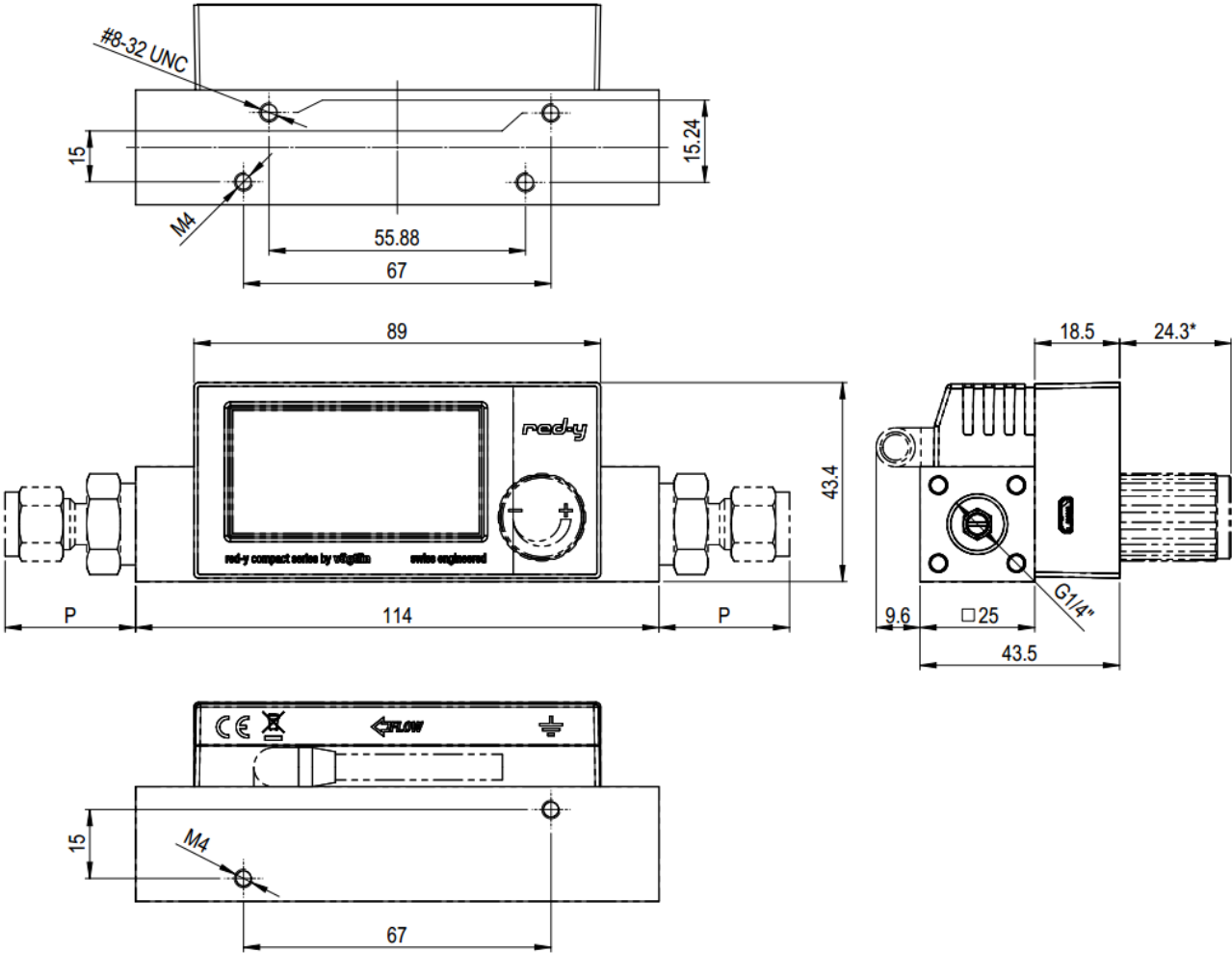


Pressure loss 450 l/min (Air)



6.11. Dimensional Drawings 1/4" In mm

GCx-A/B/C: (Units with 1/4" BSPP process connections)



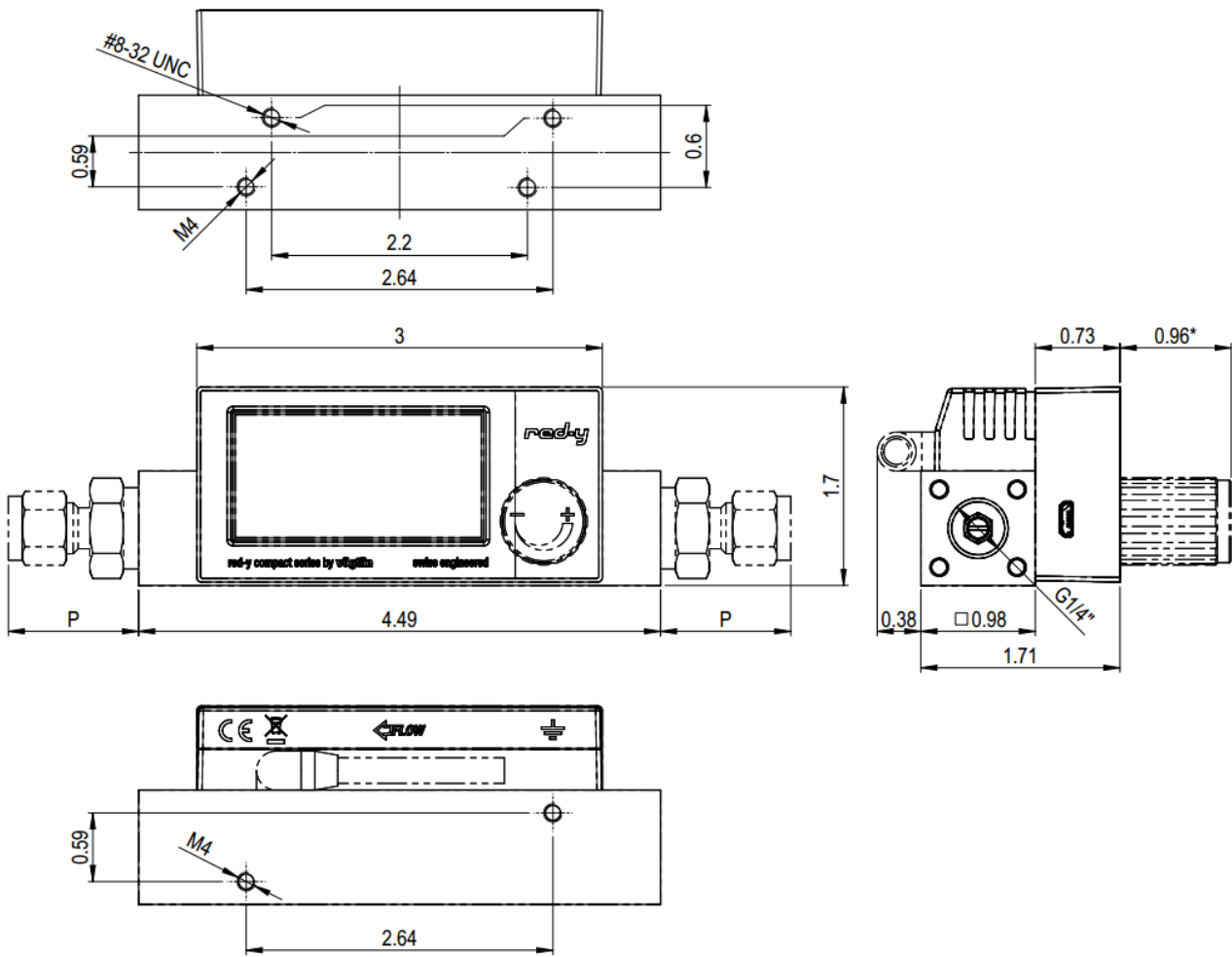
“P” refers to the optional fittings length. Fittings are options only. Standard process connection is female 1/4" BSPP tread.

You can find detailed information for the individual products on our homepage www.sierrainstruments.com.

If additional information is needed, please consult your [Sierra Sales Representative](#).

6.12. Dimensional Drawings 1/4" In Inches

GCx-A/B/C: (Units with 1/4" BSPP process connections)



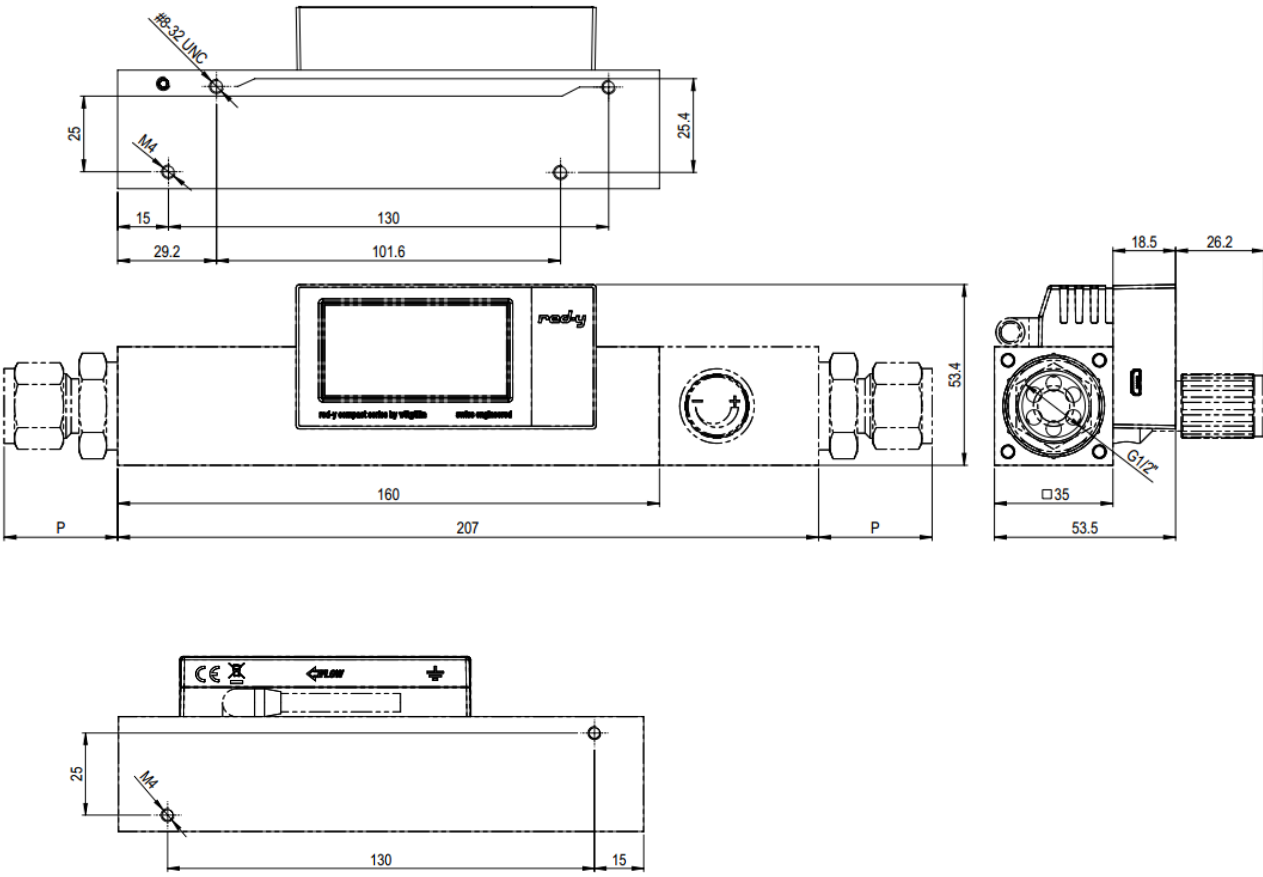
"P" refers to the optional fittings length. Fittings are options only. Standard process connection is female 1/4" BSPP tread.

You can find detailed information for the individual products on our homepage www.sierrainstruments.com.

If additional information is needed, please consult your [Sierra Sales Representative](#)

6.13. Dimensional Drawings 1/2" In mm

GCx-D: (Units with 1/2" BSPP process connections)



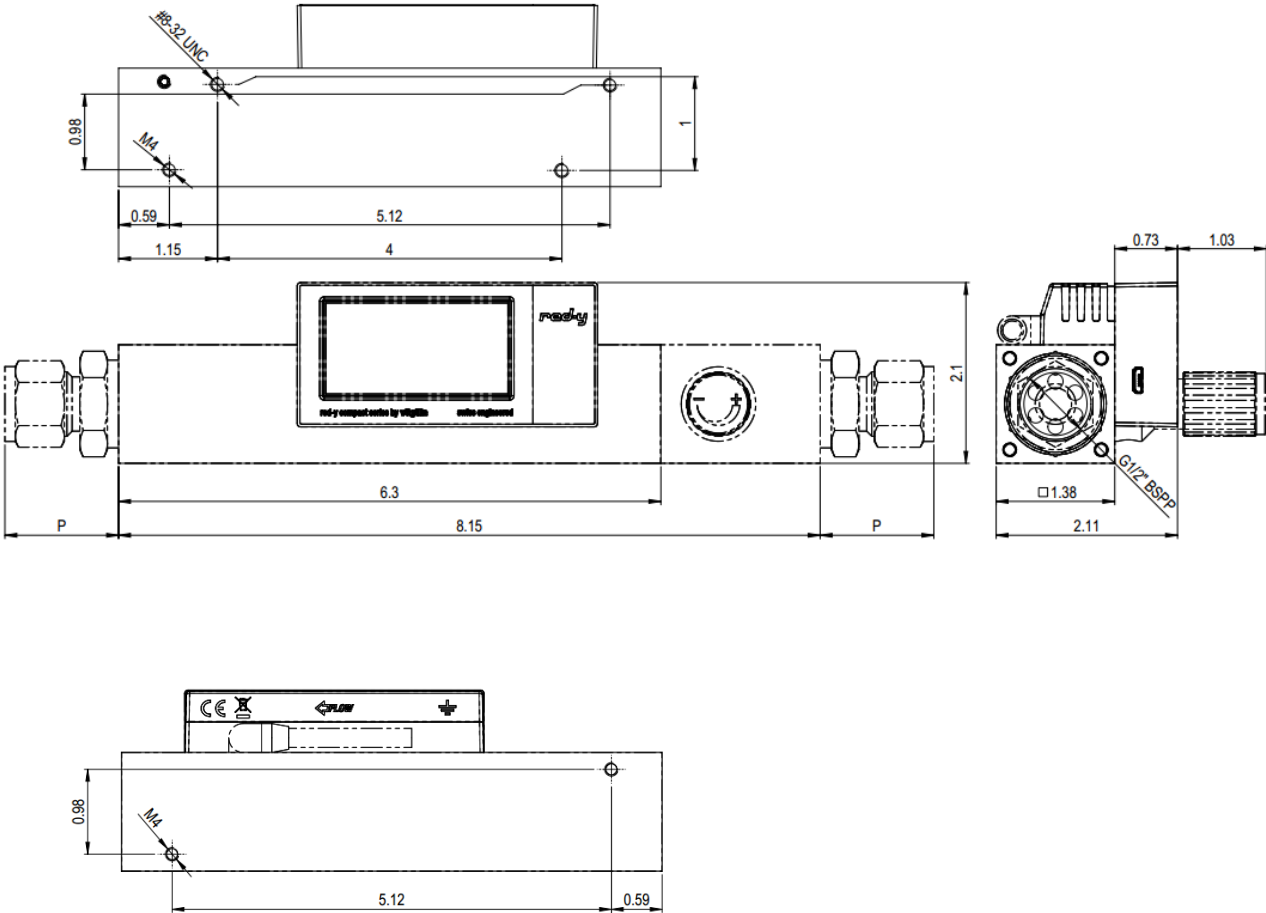
"P" refers to the optional fittings length. Fittings are options only. Standard process connection is female 1/2" BSPP tread.

You can find detailed information for the individual products on our homepage www.sierrainstruments.com.

If additional information is needed, please consult your [Sierra Sales Representative](#)

6.14. Dimensional Drawings 1/2" In Inches

GCx-D: (Units with 1/2" BSPP process connections)



"P" refers to the optional fittings length. Fittings are options only. Standard process connection is female 1/2" BSPP tread.

You can find detailed information for the individual products on our homepage www.sierrainstruments.com.

If additional information is needed, please consult your [Sierra Sales Representative](#)

6.16. Wetted Parts RedyCompact Series

Instrument Gerät	RedyCompact series
Body <i>Grundkörper</i>	1.4404 (316L) or aluminium
Body: O-Rings <i>Grundkörper: O-Ringe</i>	FKM (Standard), EPDM (option)
Flow divider <i>Strömungsteiler</i>	1.4305
Control valve <i>Regelventil</i>	1.4305/1.4105/1.6908
Control valve: O-Rings <i>Regelventil: O-Ringe</i>	FKM (Standard), EPDM (option)
Sensor material <i>Sensormaterialien</i>	Silicon, silicon oxide, silicon nitride <i>Silizium, Siliziumoxid, Siliziumnitrit</i> Epoxy
Sensor packaging	1.4305

Abbreviation Kurzbezeichnung	Designation Bezeichnung	Remarks Bemerkungen
EPDM	–	Ethylene-propylene-diene-monomer rubber Ethylen-Propylen-Dien-Kautschuk
Epoxy	–	Adhesive for sensor fixation, protection for wire bonding Klebstoff für Sensorfixierung, Schutz für Bonddrähte
FKM	–	Fluor rubber Fluor-Kautschuk

For units with EPDM O-rings it is possible to get a FDA compatible materials statement. Please contact the factory or your local distributor for additional information.

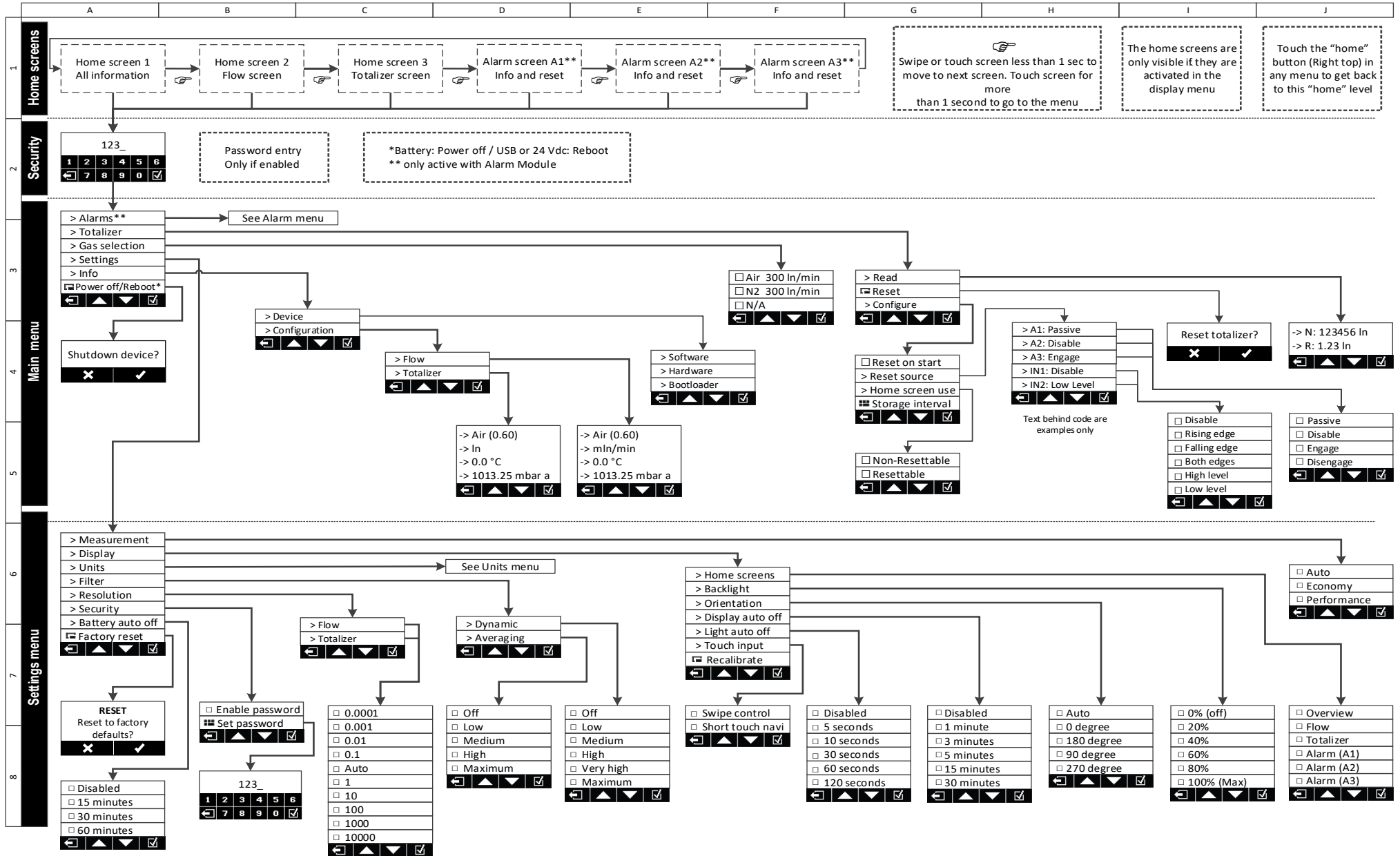
6.17. Overview Default Settings

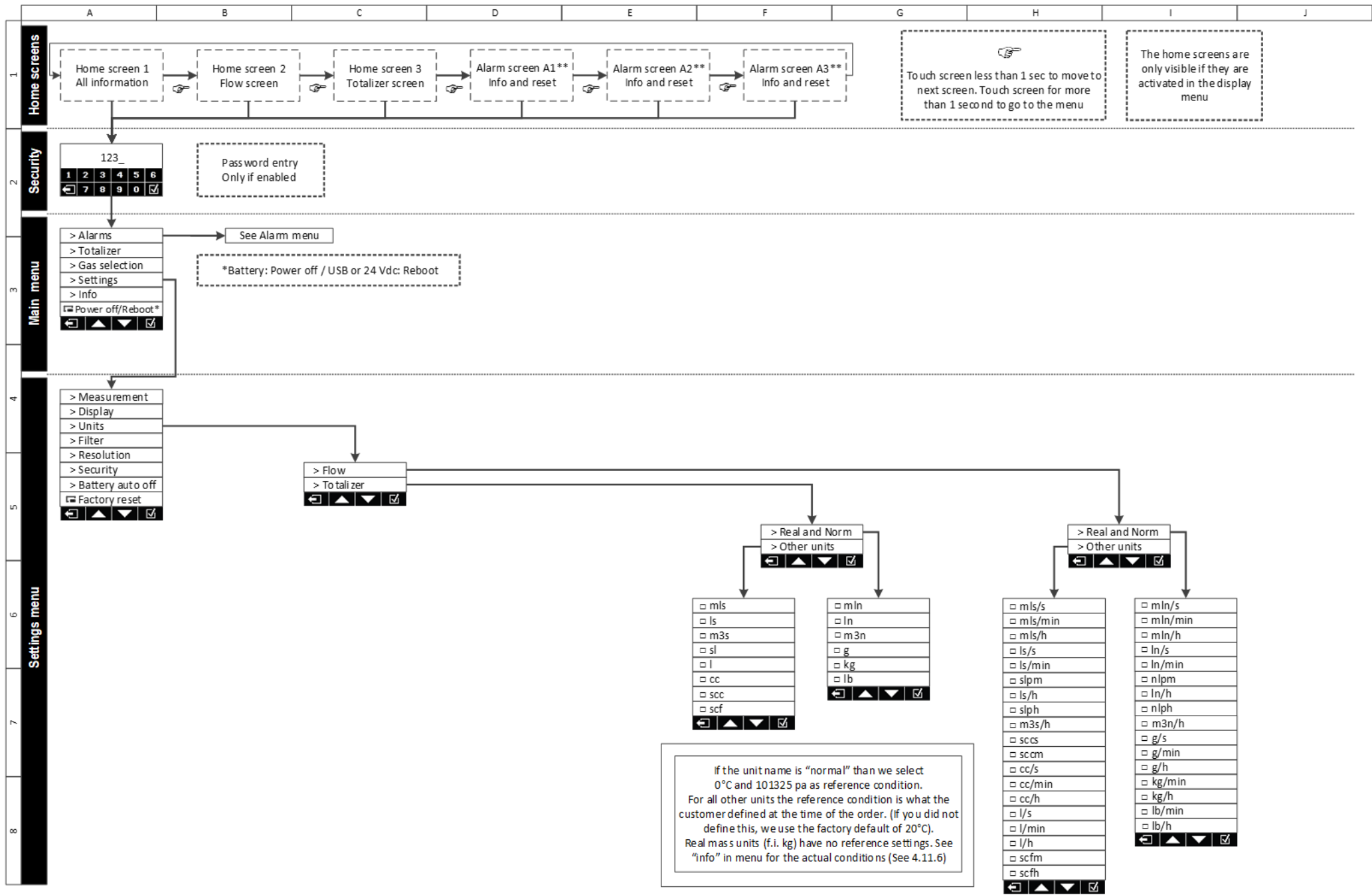
No.	Group	Subgroup	Name	Options	Default	Remarks
1	Totalizer	Configure	Home screen use	Non- Resettable Resettable	<input type="checkbox"/> <input checked="" type="checkbox"/>	
2	Gas selection			Gas 1 Gas 2 Gas 3	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1)
3	Settings	Measurement		Auto Economy Performance	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4	Settings	Display	Home screens (multiple choice)	Overview Flow Totalizer Alarm (A1) Alarm (A2) Alarm (A3)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
5	Settings	Display	Backlight	0% (Off) 20% 40% 60% 80% 100% (Max)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	
6	Settings	Display	Orientation	Auto 0 degree 90 degree 180 degree 270 degree	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
7	Settings	Display	Display auto off	Disabled 1 minute 3 minutes 5 minutes 15 minutes 30 minutes	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
8	Settings	Display	Light auto off	Disabled 5 seconds 10 seconds 30 seconds 60 seconds 120 seconds	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
9	Settings	Display	Touch input	Swipe control Short touch navi	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
10	Settings	Units	Flow	Custom		2)
11	Settings	Units	Totalizer	Custom		2), 3)
12	Settings	Filter	Dynamic filter	Off Low Medium High Very high Maximum	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
13	Settings	Filter	Averaging filter	Off Low Medium High Maximum	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

14	Settings	Resolution	Flow	0.0001 0.001 0.01 0.1 Auto 1 10 100 1000 10000	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
15	Settings	Resolution	Totalizer	0.0001 0.001 0.01 0.1 Auto 1 10 100 1000 10000	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
16	Settings		Security	Enable password	<input type="checkbox"/>	
17	Settings		Battery auto off	Disabled 15 minutes 30 minutes 60 minutes	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

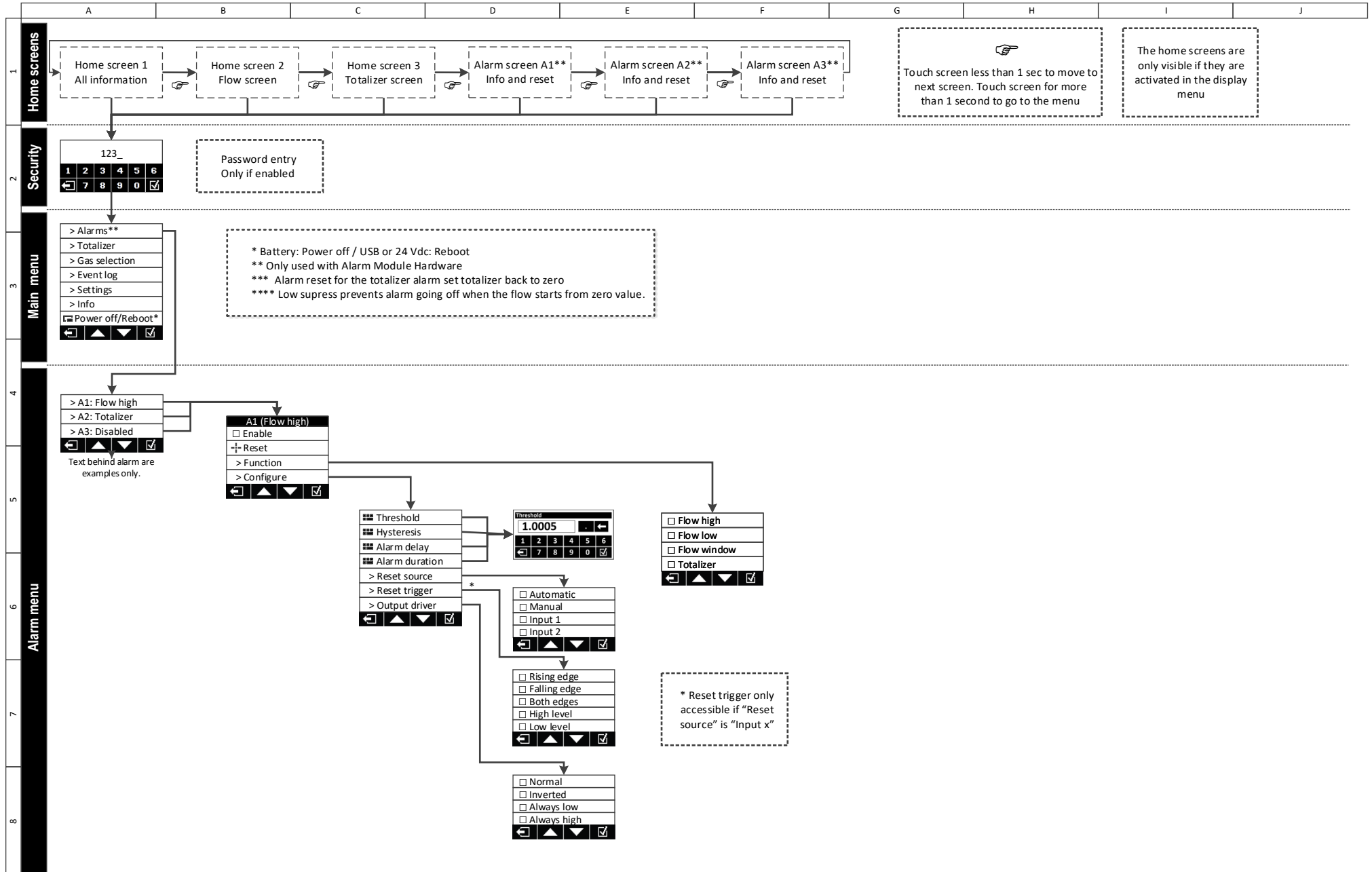
- 1) If ordered for air **or** N₂ **or** O₂ and the unit is calibrated with air and all have the same operating conditions, range and dynamics, all these 3 gasses will be programmed. The gas is set default on the customer ordered gas.
- 2) The reference condition of all units under “Real and Norm” are always 0°C and 1013.25 mbara. (Both for the totalizer and flow units). The reference conditions of all “Other Units” are always defined at the time of ordering.
- 3) If no units are specified for the totalizer, it is set it the same as the main unit without the time factor. For example: In/min becomes In, kg/h becomes kg, etc. The totalizer unit can be changed by the user anytime. See [4.11.3 Totalizer](#) and [4.12.3 Units](#).

7. Overview Menu RedyCompact





Alarm menu (Only valid if the Alarm Module has been install)



8. Detailed Warranty Statement for RedySmart & RedyCompact Brands

In addition to Sierra's standard three (3) year manufacturing warranty on all MEMS mass flow instruments produced, Sierra also offers a Lifetime No-Drift Sensor Warranty. Sierra defines no-drift as less than 1% of full scale over the life of the instrument. Therefore, if drift of greater than 1% of full scale occurs over the sensor's lifetime, the sensor and/or entire instrument will be repaired or replaced and recalibrated free of charge.

This warranty applies to all MEMS/CMOS thermal mass flow sensors standard on every Sierra RedySmart™ and RedyCompact™ models sold after January 15, 2020. This warranty is only valid if the unit is exclusively used with the gas or gases specified during the initial calibration or recalibration, without any additives in any form and under the operating conditions (temperature, inlet and outlet pressure, full scale flow rate) the unit was originally specified for.

Sierra's Lifetime No-Drift Sensor Warranty is made possible due to high-precision MEMS (Micro-Electro Mechanical Systems) technology utilizing an advanced ultra-stable CMOS (Complementary Metal Oxide Semiconductor) sensor. The use of MEMS techniques allows both electronic circuits and mechanical devices to be manufactured on a silicon chip, similar to the process used for integrated circuits.

To assure warranty service, customers must register their products online on Sierra's website. Online registration of all of your Sierra products is required for our warranty process.

Warranty Limitations:

Warranty does not cover any damage or discoloration caused by particulates deposited by dirty gases, liquids, residue or any other source. Warranty does not cover usage of any corrosive gas not compatible with the wetted materials listed:

Wetted Material

Sensor Compartment

- Aluminum
- Stainless Steel

Sensor Element CMOS

- Silicon (Si)
- Silicon oxide (SiO₂)
- Silicon nitride (Si₃N₄)
- Stainless steel
- Hysol FP4450/4451TD
- Gold connectors

Sensor Compartment O-ring Sealing

- FKM
- EPDM / FFKM on request

Warranty does not cover electronics drift or recalibration expenses for any reason other than the failure described above. Such returns are contingent on Sierra's examination and reasonable satisfaction that any defects are covered by this warranty and that the customer has not returned the equipment in a damaged condition, due to any negligence, tampering, misapplication or product modification on the part of the customer or customer agents. Third party reports will not be accepted for warranty claims.

Sierra shall not be liable for installation charges, for expenses of customer for repairs or replacement, for damages from delay or loss of use, or other indirect or consequential damages of any kind. Sierra extends this warranty only to Sierra products properly used and properly installed for the particular application for which intended and quoted, and this warranty does not cover products which have been modified without Sierra's approval or which have been subjected to unusual physical or electrical stress, alteration, or tampering, or upon which the original identification marks have been removed or altered. Whenever the design of the equipment to be furnished or the system in which it is to be incorporated originates with the customer, Sierra's Lifetime No-Drift Sensor Warranty is limited specifically to matters relating to furnishing Sierra equipment free of defects in materials and workmanship and Sierra assumes no responsibility for implied warranties of fitness for purpose or use. Any replacement or repair shall be done by Sierra's factory by qualified technicians.

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