

Installation instructions and user's guide

Equflow 6110 Barcode scanner



Please read this manual carefully before installation and use of the converter.

6110 Barcode scanner

Type: 6110.KC.CON.BC.01

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1. Introduction

1.1 General

Thank you for using the Equiflow 6110 K-factor converter including barcode reader (referred to as barcode scanner in this document). This manual provides instructions for correct installation and operation of the Equiflow barcode scanner. Equiflow continuously improves its products, which includes converters. This may result in new revisions of hardware and/or software. This manual complies with software revision 1.0. The Equiflow product code for this Barcode scanner is 6110.KC.CON.BC.01.

We advise you to read this manual entirely before installation and operation of this instrument.

Equiflow is not liable for any damages caused by non-compliance with the installation and operating instructions. This product has a one year warranty on hardware after delivery by manufacturer under the following conditions:

- serial code must be readable on label,
- warranty is at the sole discretion of the manufacturer,
- warranty is limited to purchase costs.

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1.2 Contents of package

The package of the Equiflow 6110 Barcode scanner should contain the following items:

- Equiflow 6110 Barcode scanner
- USB stick with the installation instructions and user's guide

1.3 General use of the Equiflow 6110 Barcode scanner

Each Equiflow flowmeter has a K-factor, which is the amount of pulses generated when 1 liter of water goes through the flowmeter, with a flow that is within the flowmeter's flowrange (see the flowmeter's datasheet/mounting description). This value can be different for different flowmeters, even if they have the same product code. Exchanging a flowmeter would thus require the operator to enter the new K-factor in their equipment.

The Equiflow 6110 Barcode scanner is designed to convert the output of each flowmeter to a user-defined value. This pre-set value has to be entered only once. Upon exchanging the flowmeter, scanning its barcode is all that is needed for the barcode scanner to convert the signal.

This barcode scanner is typically used in combination with an Equiflow flowmeter and a (third party) device, for which the digital signal will be converted (Figure 1).

1.4 Advantages of using the Equiflow 6110 Barcode scanner

- Scanning the barcode takes only a second, and will thus be much faster than changing the settings in your controller, while maintaining the same accuracy and repeatability.
- Reduce the chance of errors that could occur when manually entering the K-factor.
- Correction of the K-factor at up to 5 flowrates over the entire flowrange is possible, this increases the accuracy at the higher and lower end of the flowrange.

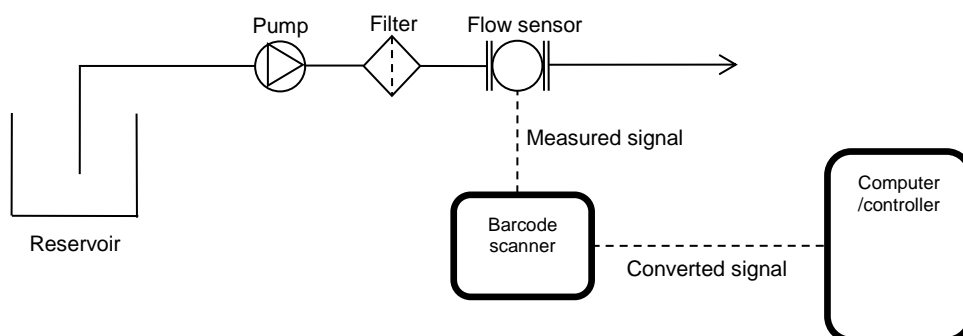


Figure 1. Schematic overview of a typical system for Equflow sensor and barcode scanner.

1.5 Recommendations for using Equflow flowmeters and the barcode scanner

Although the process described above is fairly straightforward, many factors have an influence on the correct working of the flowmeters: temperature, viscosity, type of fluid, type of pump, flowrate, piping, pollution, etc. Therefore, it is important to use the right equipment for a correct operation of the flow meter.

For example:

- A filter is highly recommended in front of the flowmeter to avoid disturbing signal output by contamination and to avoid damage to the flowmeter.
- A pump which introduces a lot of fluctuations in the flow, e.g. a peristaltic pump, could result in more inaccurate measurements. More flexible tubing or changing the pump speed can decrease this inaccuracy.
- Piping and fittings before and behind the flowmeter could influence the waterflow and thus the measurements.
- The flowrange of the flowmeter should match the range of the process.

At Equflow we calibrate the flowmeters using a steady flow of water. Typically the difference in the K-factor in the Equflow setup and in different process conditions will be constant. So if you notice that for several flowmeters the difference with the Equflow calibration is 5%, than it will likely be the case for all future flowmeters as well.

You can do a calibration yourself if you think our calibration value is not correct for your system. To do this, measure the volume of water going through the flowmeter, either by using a graduated cylinder or by measuring its mass on a scale and using the fluid's density to calculate the volume. Then check how many pulses were generated by the flowmeter when this volume passed through the flowmeter. Dividing the amount of pulses by the volume will get you the K-factor for the flowmeter in your system.

1.6 Storage

The barcode scanner should be stored properly in order to prevent malfunctioning. The following storing conditions apply:

- humidity: less than 80%,
- temperature: between 0° - 40°C,
- no direct sunlight,
- drastic changes in moisture and temperature should be avoided,
- no vibrations.

2. System description

2.1 General function description

The Equflow 6110 barcode scanner converts the K-factor of a flowmeter to a user defined value. This allows exchanging of flowmeters while keeping the output K-factor the same.

2.2 Lay-out description

On the front of the barcode scanner the function switch, barcode scanner and LED can be found, see Figure 1. The LED indicates the status of the barcode scanner, the function switch activates the barcode reader to scan for a barcode.

On the rear are the connector for the input-signal (3.5mm jackplug connector), the additional power supply, and the output cable to a controller or PLC.

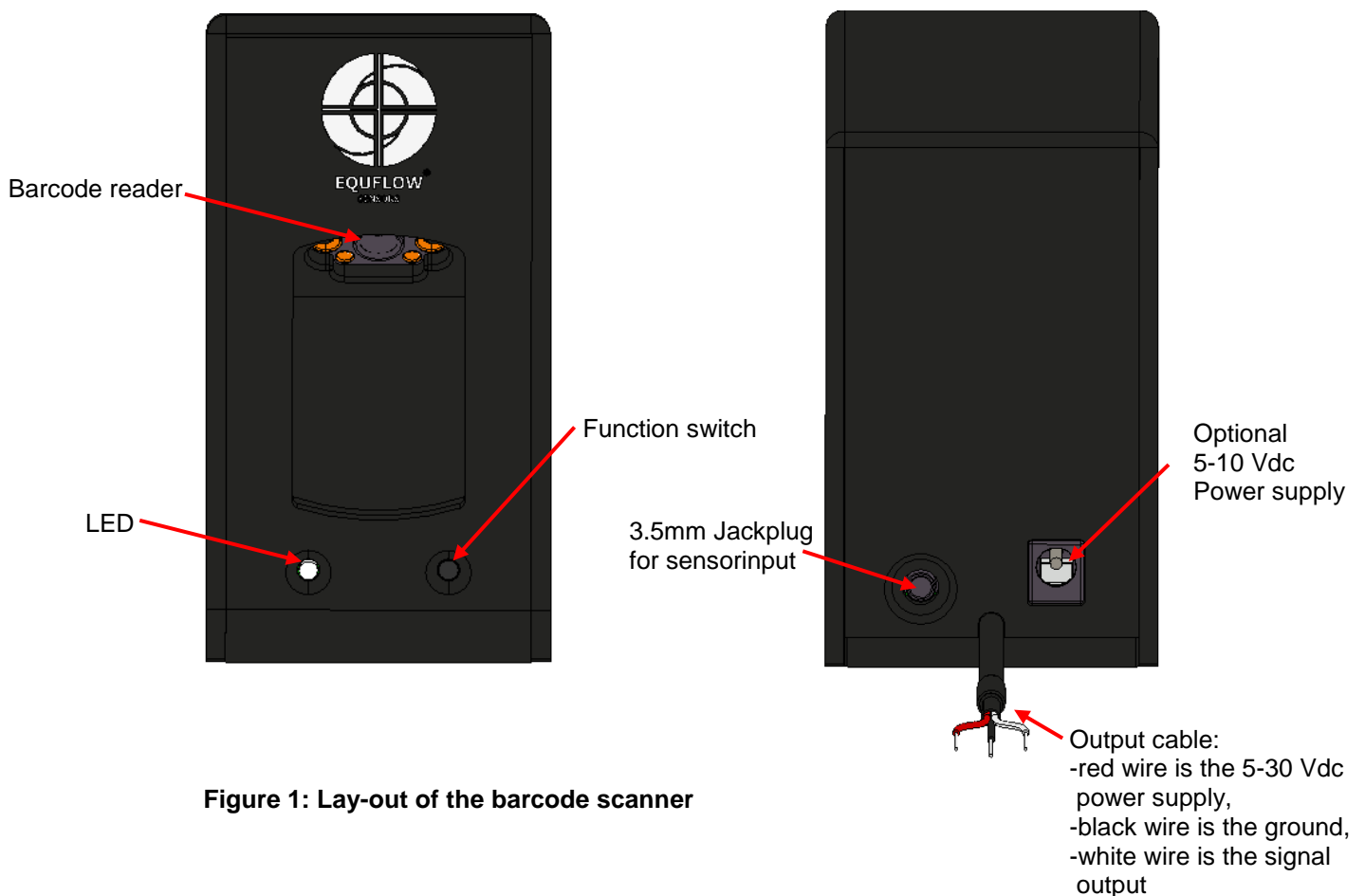


Figure 1: Lay-out of the barcode scanner

3. Installation and programming instructions

3.1 Connections for the barcode scanner

1. The output cable on the rear of the barcode scanner is used as power supply for the flowmeter sensor as well. If sufficient power is supplied it will power the barcode reader itself as well.

Wire	Function	Signal
Red	Power supply	5 – 30 V
Black	Ground	Ground for power supply and signal wire
White	Signal	Signal output: 5 - 30 V square wave (equal to power supply)



2. The jackplug connection on the back is where the signal from the flowmeter sensor goes
3. The DC input is optional and **can only handle up to 10 V**. It is only needed if not enough power can be supplied on the output cable. This DC input cannot be used to power flowmeter sensor, so a power supply on the output cable is always required. The power has to be in the range of 5 to 10 V.

3.2 Procedure for using the barcode scanner

When the barcode scanner is powered, simply press the function switch to activate the barcode reader. A red and green light will be emitted from the reader, and the LED will be orange (see section 3.3). Once the scanner is active, place the barcode in the red and green light. If scanned successfully the LED will blink green, and a beeping sound can be heard. If no barcode has been scanned, the scanner will switch off 10 seconds after pressing the function switch.

Three types of barcodes can be used:

1. Set output K-factor: this barcode will set the user-defined output K-factor. This value will remain in the memory of the barcode scanner and thus does not have to be rescanned each time a flowmeter is exchanged. To change this value, scan a barcode with a new output K-factor value.
2. Flowmeter K-factor: this barcode will be on the label of each flowmeter and contains the K-factor of the flowmeter. Each time a new flowmeter will be used, scan its barcode and the barcode scanner will convert the flowmeter K-factor to the user-defined output K-factor.
3. Set correction value: this barcode will change the output K-factor by the percentage indicated on this correction value barcode. This value will remain in the memory of the barcode scanner and thus does not have to be rescanned each time a flowmeter is exchanged.

3.3 LED color and meaning

During operation

Led Color	Function description
Red (continuous)	No barcode has been scanned
Red (blinking)	No barcode has been scanned, there is an input signal
Green (continuous)	Barcode scanned correctly, but no input signal
Green (blinking)	Barcode scanned correctly and input signal is being converted

After pressing the function switch

Led Color	Function description
Orange	Function switch has been pressed, the barcode scanner is active
Red (blinking fast)	After 10 seconds of pressing the function switch and no correct barcode has been scanned.
Green (blinking fast)	Barcode has been scanned successfully

4. Quick guide for using the barcode scanner

4.1 First time using

- Install the barcode scanner according to section 3
- Press the function switch on the barcode scanner
- Scan the user-defined output K-factor, this will be stored in the memory of the scanner (default output K-factor is 4650 pulses per liter)
- Press the function switch
- Scan the calibration barcode attached to the flowmeter that will be used.
- The barcode scanner will now convert the K-factor of the flowmeter to the user-defined K-factor

4.2 Exchanging flowmeters

- Remove the old flowmeter from the system
- Press the function switch
- Scan the barcode of the new flowmeter
- Insert the new flowmeter in the system
- The barcode scanner will now convert the K-factor of the new flowmeter to the user-defined K-factor

5. Requesting additional barcodes

New barcodes for the user defined K-factor or the correction factor can be requested by mailing to info@equflow.com. Make sure to include the new K-factor(s)/percentages for which you would like to receive the barcode.

5.1 Barcode examples

- Set output K-factor to 95.000 pulses per liter



- Set output K-factor to 4650 pulses per liter



- Set output K-factor to 2000 pulses per liter



For any other barcode, contact Equflow (info@equflow.com).

Appendix A – Technical Specifications

Power supply	+5 - +30 VDC on the output cable, or +5 - +10 VDC on the DC input
Output	5 – 30 V square wave (equal to power supply)
Ambient temp.	-10 - +60 C°
Dimensions encl.	60 x 56 x 105 mm (L x W x H)