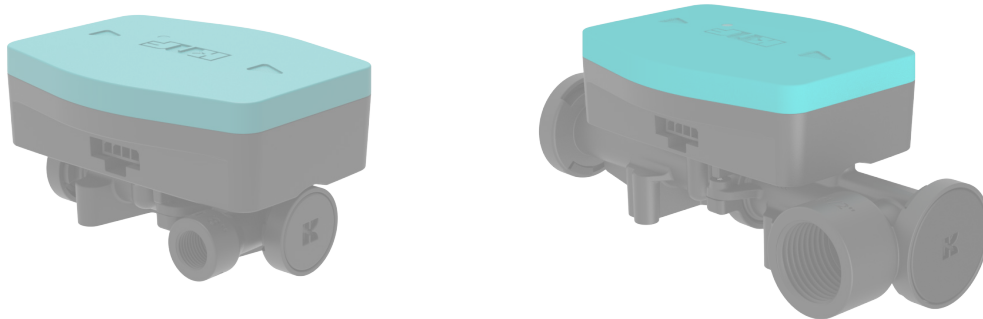
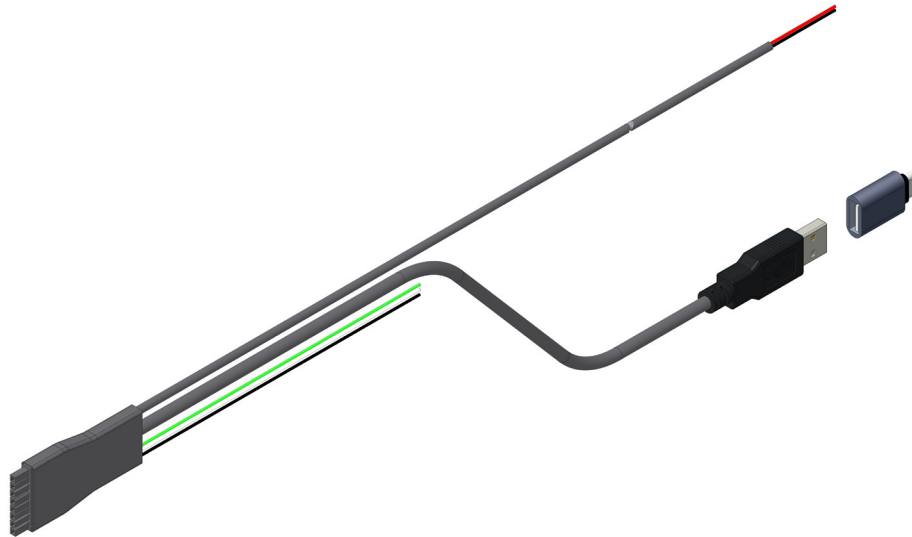


FMS-FC Quick-Start Guide

Starter-Kit cable



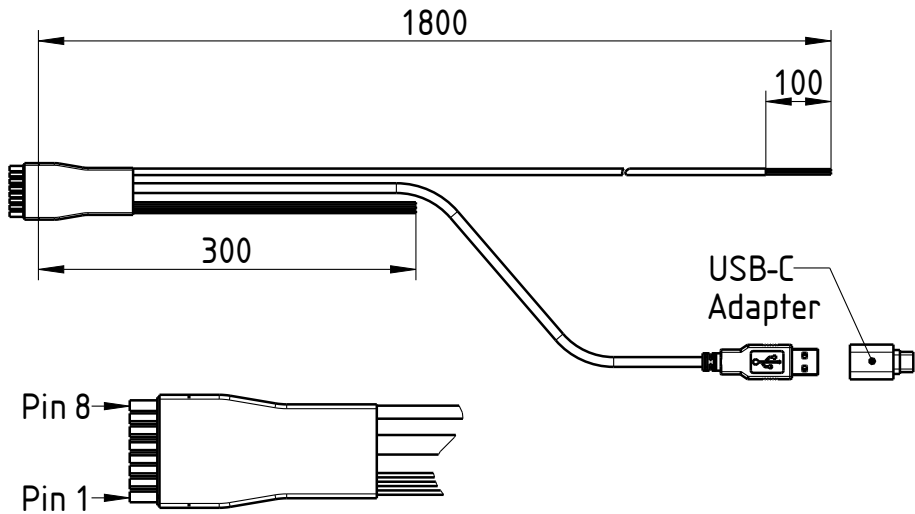
Flowsensor FMS-FC



Please read the installation instruction carefully before starting to use the FMS-FC system.

Starter-Kit cable

UART TTL - USB	ID No. 358825
RS232 - USB	ID No. 361323



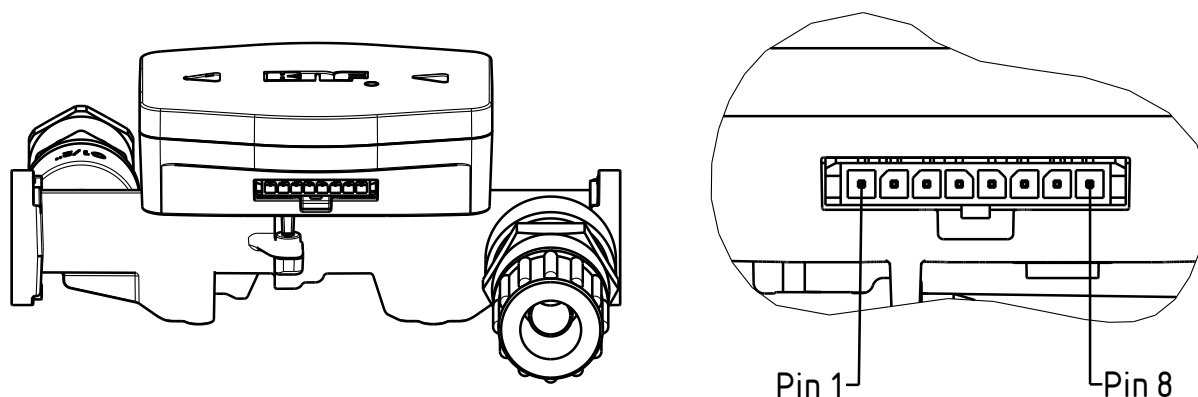
1. Interface Overview

Number	Color	AWG	Description	Function
PIN 1	black	24	Analog/Digital GND	GND Analog/Digital Input/Output
PIN 2	white	24	Analog Input	Set Flowrate
PIN 3	green	24	Digital Output	Measured Flowrate
PIN 4	black	24	Serial GND	Serial GND
PIN 5	yellow	24	Serial COM 1	Rx (receive data)
PIN 6	orange	24	Serial COM 2	Tx (send data)
PIN 7	black	22	GND	GND for electrical power
PIN 8	red	22	+24V	Supply Voltage

Default settings Analog/Digital, Input/Output

Product	PIN 1 (black)	PIN 2 (white)	PIN 3 (green)
FMS-FC 1.70	Analog/Digital GND	Analog Input 0-5V Scaling 0.2l/min per V	Digital-PWM Output Scaling 0.2l/min per 20%
FMS-FC 1.400	Analog/Digital GND	Analog Input 0-5V Scaling 1l/min per V	Digital-PWM Output Scaling 1l/min per 20%

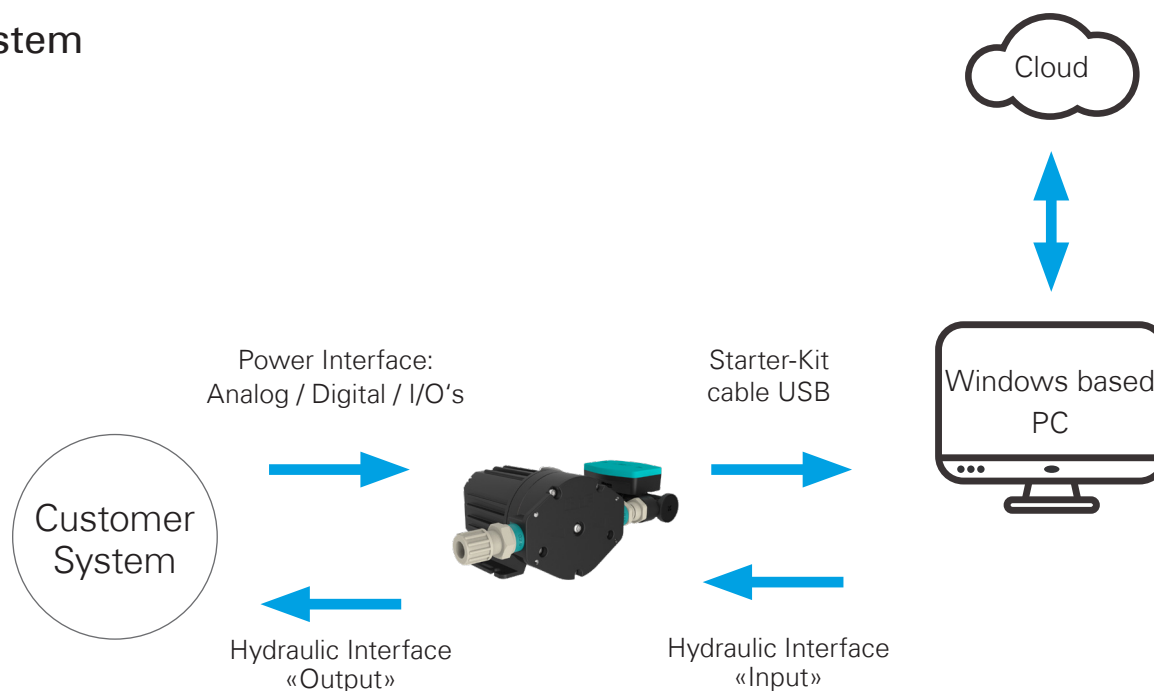
The permissible flow rate range of the product must be observed during control (see data sheet).
PIN 2,3 can be configured as input or output and as analog or PWM on project basis.



2. Getting started with KNF Connect

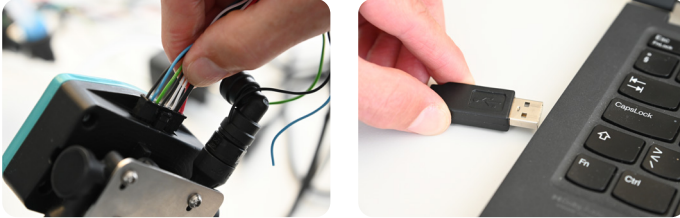
KNF Connect is a web-based software that runs in a web browser and is accessed via the internet. Simply use the Starter-Kit cable to connect the FMS-FC system to your computer for easy plug-and-play setup.

System

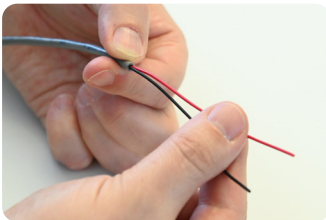


StarterKit cable

1. Plug in the cable, 8-Pin Molex connector on the flow sensor side and the USB part to your laptop.



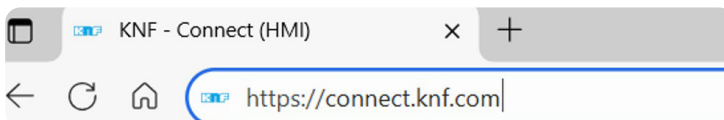
2. Provide power by connecting the wires of the Starter-Kit cable to an appropriate 24 VDC power supply (e.g. benchtop power supply).
Red (PIN 8): 24 VDC
Black (PIN 7): GND



NOTICE

The power supplied via the included USB cable is not sufficient to operate the pump. A separate power supply is therefore mandatory.

3. Open your web browser and navigate to «connect.knf.com»



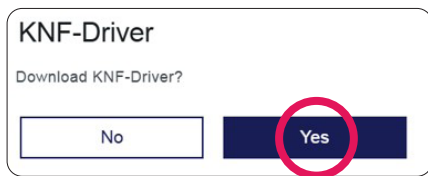
4. Download and install the «KNF Connect Driver» on your system. This step is only required once for all KNF Connect based systems and pumps.



NOTICE

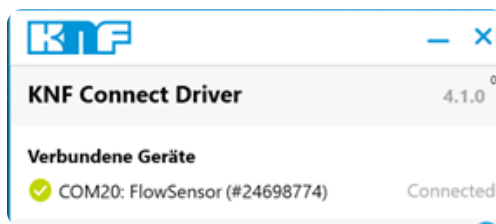
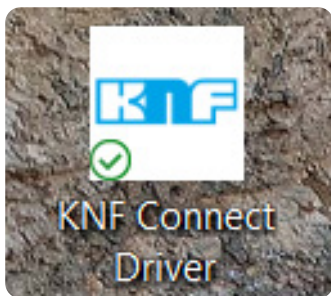
Use of the driver is limited to Windows based operating systems.
Administrator rights are mandatory for the installation.

5. Click «Yes»

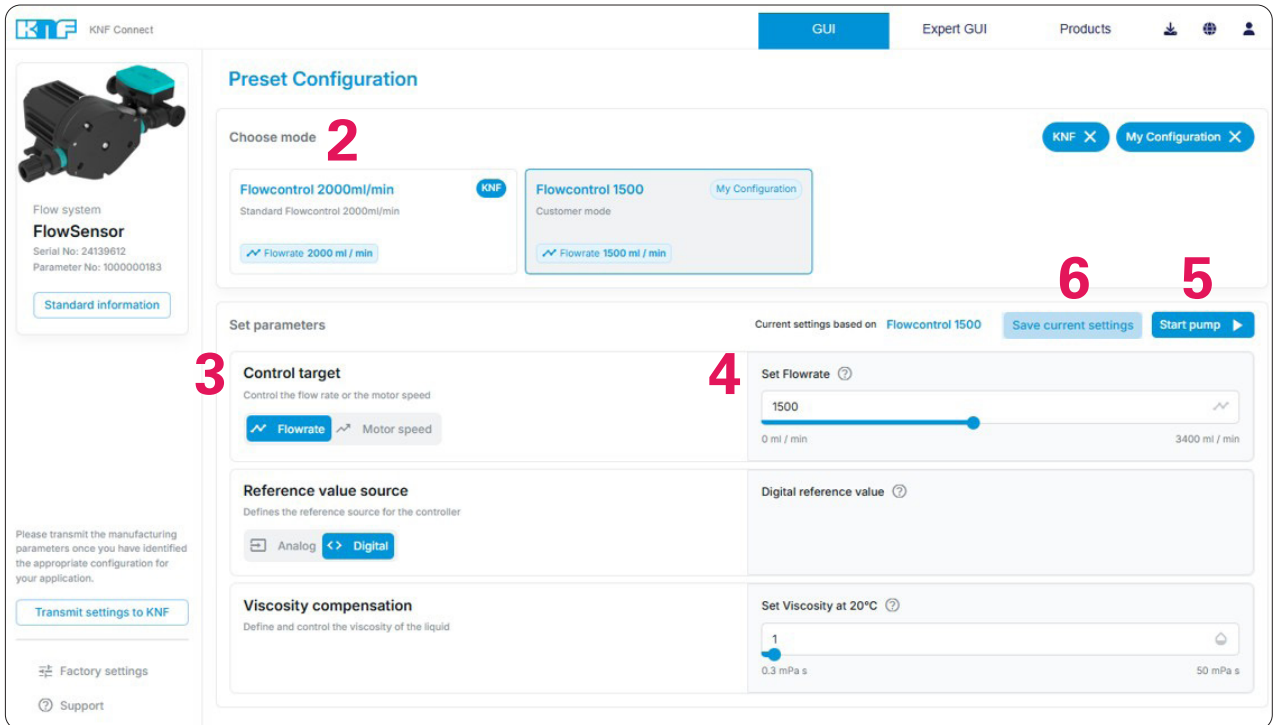


6. Check the connection after the installation

Click on the installed Icon on your Screen to ensure the connection is properly established on your COM-Port (Serial Port).



3. Getting familiar with KNF Connect



1. Your connected FSM-FC system will be displayed. Flow system name, Serial No., Parameter No.
2. Preset Configuration / Choose mode
One preconfigured setting example. To store your own configuration, refer to point 6.
3. Set parameters
Control target - Start adjusting the parameters:
 - Flowrate – control loop active
 - Motor speed – control by motor speed, control loop deactivated
 Reference value source
 - Analog = Input Signal Analog
 - PWM = Input Signal PWM
 - Digital = Input Signal on the serial Interface (select to use KNF Connect)
 Viscosity compensation - By default it is set to 1, the viscosity of water.
4. Select depends on the chosen Control target. Settings possible by using the slider or text field.
5. Start and stop the currently selected operating mode.
After the pump starts, the status is illustrated in a live diagram. (Refer to chapter 4. Live diagram for details). Once your testing is done and the operating is valid, save your settings.
Pump can be stopped after your settings are saved.

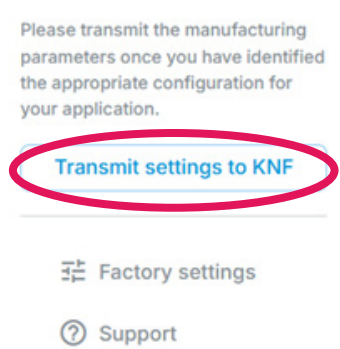
6. Different save mode

As soon as you modify the preconfigured settings, the following store options are available.

Store permanently to pump	Downloads the current settings to the pump's persistent storage.
Save current settings	Creates a new Custom mode, displayed in «My Configuration»
Update current settings	Parameters of the current mode are updated
Reset mode settings	Restore the temporary settings in the selected mode to their default state.
Delete mode settings	Customized mode will be deleted.

7. Transmit settings to KNF

Click to start a customized project with your preconfigured Parameters. e.g. The customer specific parameters define a PWM input instead of an analog input. If the preconfigured configuration is requested for standard production devices, it will be handled as a customer project. After transmit settings, a KNF representative will contact you.



4. Live diagram



1. Displayed defined setpoint and input source.
2. Measured values: The digital gauge shows measured Flow rate, Motor speed, Air level and Temperature.
3. Edit: Adjust the control target during operation.
4. Monitoring control: Show control target in the live diagram.
Select a second value from the drop-down, to display in the live diagram.
(motor speed, temperature or air level).

5. Status LED

Operation state	Error	Troubleshooting
Green permanent	Normal operation	–
Green flashing	Warning	system still running
Red permanent	Motor stop, reboot required	See installation instruction
Red flashing	Motor stop, self reset	See installation instruction