Instructions for the programming of QS- flow rate and LS- leakage sensors

The sensors are normally programmed by BOLENDER Konstruktion & Marketing when you use the serv-Clip (pipe measuring point) as connection between pipe and sensor (up to 5,5 mm wall thickness) according to your order information (outer diameter and wall thickness of the pipe as well as the needed measuring range in Liter/Minute).
If the calibration through BOLENDER Konstruktion & Marketing is not possible because of the use of the welding adaptor (SC-XE-607) for pipes (from 6 mm wall thickness) or you wish to change the measuring range of your sensor you have to have a test stand in your fabric. We provide you through these documents suggestions, programming steps and blank data sheet for escalation (comparison mA with Liter/Minute).

Fundament for programming is you have to have the same pipe diameter and pipe wall thickness at your test bench in order to re-program the measuring range.

For programming you have to pay attention to the following:

1. The **adjustable range in liter/minute** is situated between 4 and 20 mA always.
The upper limit value is 20 mA and will programmed with the maximum flow rate.
The lower limit value is 4 mA and will programmed with the lowest required flow rate.
The adjustable range should not be programmed larger than necessary to ensure an optimal usable curve.

2. The used **measuring range** can be smaller, eg. between 8 and 15 mA.
The used measuring range is utilized within the entire curve.
If the adjustment range is very large, the upper and lower area of the curve is not always usable.
In this case, the adjustment range should be reduced. Maybe is the pipeline very little and therefore the flow velocity very big.

3. The **curve** will be registered on a special **data sheet** provided by BOLENDER Konst.& Mkt.
This data sheet with the curve is delivered with preset sensors according your order instructions.
The non-preset sensors are delivered with a blank data sheet for escalation without curve.
(see please page 3 of this document).

4. Important Indications for programming sensors

Normal adjustment and measuring range
In the case of a pump with a rated capacity of e.g. 100 liter/min should be the setting for monitoring 60 to 140 liter/min. The effective measurement range can e.g. at 80 to 120 l / min. This setting can be done on a test bench.(you can order this service to BOLENDER Konstruktion & Marketing)
If you wish to program the sensor in your fabric you can use the mentioned example where for a rated capacity of example 100 liter/min correspond this value to the upper limit 20 mA. The adjustable range should not be programmed greater than necessary to ensure a good usable curve. In this case is 70 liter/minute at 4 mA is an advantage because you can evaluate the stand of your pump very well.
The adjustment range and the measuring range for leakage sensors have the same fundament.
Example:
Variable capacity pumps have in normal cases approx. 4-6% leak oil, at a 100 liter/min pump 4-6 liter/min.
When the leak oil flow ascent 20 l/min there is a big abrasion wear in the pump.
A sensor with adjustment range from 0,7 to 52 liter/min can be set here.

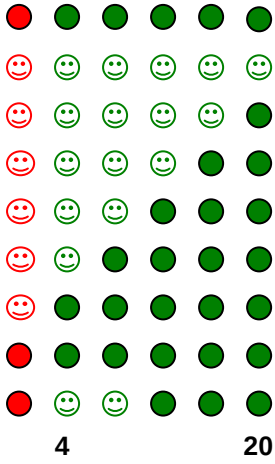
Larger adjustment and measuring range
If necessary, the adjustment can be chosen.
Range of 1:100 are possible e.g. 0,75 to 75 liter/min at QS (flow rate sensor) or 0,05 to 5 liter/min at LS (leakage sensors). Because of the large number of sensors which are installed for a particular measurement in plants. Sensors with a large measuring range are exceptions only.
Example:
If a QS-Sensor is installed for the supervision of engine speeds it is necessary a large measuring range.
If the sensor has to be installed in divers measuring points, BOLENDER can provide you a data sheet with several curves. Here you should not change the measuring range.

Programming
Flow rate and leakage sensors fluid-Check

LED rot dunkel / *dark red*
LED rot leuchtet / *red lights up*
LED rot blinkt / *red blinks*

LED grün dunkel / *dark green*
LED grün leuchtet / *green lights up*
LED gün blinkt / *green blinks*

Messbetrieb
Measuring mode

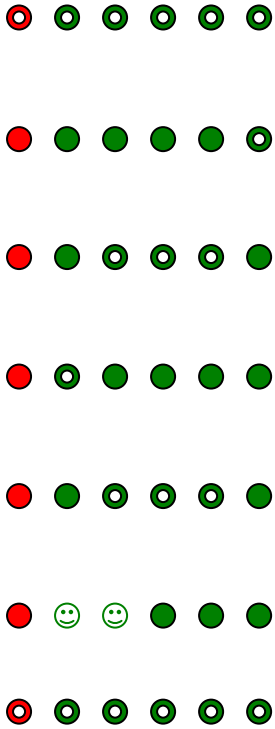


Betriebsspannung wird eingeschaltet.
Operating voltage is switched on.

LEDs leuchten alle auf, erlöschen danach einzeln, der Stromausgang liefert während der Initialisierung 4 mA.
All LEDs light and then lapse one after one, the current output provides during the initiation 4 mA.

Aktueller Messwert wird angezeigt.
Current measurement is displayed

Setup-Prozedur
Setup procedure



Mit schlankem Gegenstand Taster gedrückt halten bis Anzeige blinkt. (ca. 3 Sek)
With a thin object press the pushbutton until the display blinks. (approx. 3 seconds)

Strömung für oberen Messbereichsendwert vorgeben und mit kurzem Tasterdruck bestätigen.
Pretend the flow for upper measuring range value and ratify with a short button press.

Gerät ermittelt automatisch Messbereichsendwert. (erfordert ca. 25 Sek, Strömung nicht verändern)
The sensor unit determine the measuring range value automatically. (It demands approx. 25 seconds, do not change the flow)

Strömung für unteren Messbereichsendwert vorgeben und mit kurzem Tasterdruck bestätigen.
Pretend the flow for lower measuring range value and ratify with a short button press.

Gerät ermittelt automatisch Messbereichsendwert. (erfordert ca. 25 Sek, Strömung nicht verändern)
The sensor unit determine the measuring range value automatically. (It demands approx. 25 seconds, do not change the flow)

Aktueller Messwert mit den programmierten Einstellungen wird angezeigt.
Actual measuring value will displayed with the programmed adjustments.

Alle LEDs blinken für kurze Zeit, wenn der obere Messbereichsendwert nicht größer als der untere ist, die Einstellungen werden nicht gespeichert.
All the LEDs blink for a short time if the upper measuring range value is not higher than the lower the settings are not saved.

Sehr wichtig : Sie können die Kalibrierung nur mit der Hilfe eines Prüfstandes durchführen.
Very important : You can do the calibration only with the help of a test stand.

BOLENDER Konstruktion und Marketing D–58119 HAGEN (Germany) servclip.de salesservclip.de	fluid–Check® Sensoren Volumenstromsensor/flow rate sensor ☐ Leckagesensor/leakage sensor ☐	Name/Dat.

serv–Clip Type 2 Rohr/Pipe aØ:	IØ:	Bemerkung/Observation:
Temperature °C:	Medium:	
Volumenstrom/ flow rate l/min	von from : bis to :	
Anzeige/Display mA	von from : bis to :	
Druck/Pressure bar	von from : bis to :	Sensor Ident–Nr: