

# S418-V

## Compact Thermal Mass Flow Meter for Vacuum Applications

Pro-Inline



**SMARTPHONE ANDROID APP**  
For remote configuration



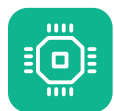
**POINT-OF-USE MEASUREMENT**  
Monitoring of vacuum pumps



**COMPACT DESIGN**  
Can be installed anywhere



**TOTAL FLOW**  
No bypass measurement



**EASY PROCESS MONITORING**  
Effective and inexpensive recording



**ACCURATE RESULTS**  
Integrated flow conditioner



## Benefits

- ✔ Highly economical flow and consumption measurements at the low pressure side of vacuum pumps
- ✔ Integrated data logger for measurement recordings as standard feature
- ✔ Various process connection sizes available: DN8, DN15, DN20 and DN25 (G-inner-thread)
- ✔ Absolute pressure sensor integrated for actual vacuum flow measurements
- ✔ Integrated flow conditioner eliminates the need of straight inlet sections

## Optimize Your Vacuum System Efficiency

The S418-V Compact Thermal Mass Flow Meter offers a simple but effective monitoring solution for vacuum applications.

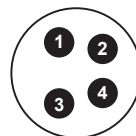
It comes standard with wireless communication interface to help the user quickly and easily check the flow meter readings or adjust the settings via the SUTO flow meter app.

Improve your vacuum system efficiency, while helping to reduce operating costs by monitoring:

- Flow and Consumption
- Pressure
- Temperature

## Various Output Signals

Output	Connector	Pin 1	Pin 2	Pin 3	Pin 4
Modbus/ RTU	A	D-	-VB	+VB	D+
	B	D-	GND	NA	D+
Analog and Pulse	A	I-	-VB	+VB	I+
	B	I-	P	P	I+
M-Bus	A	M-bus	-VB	+VB	M-bus
	B	M-bus	NA	NA	M-bus
Wire color		Brown	White	Blue	Black



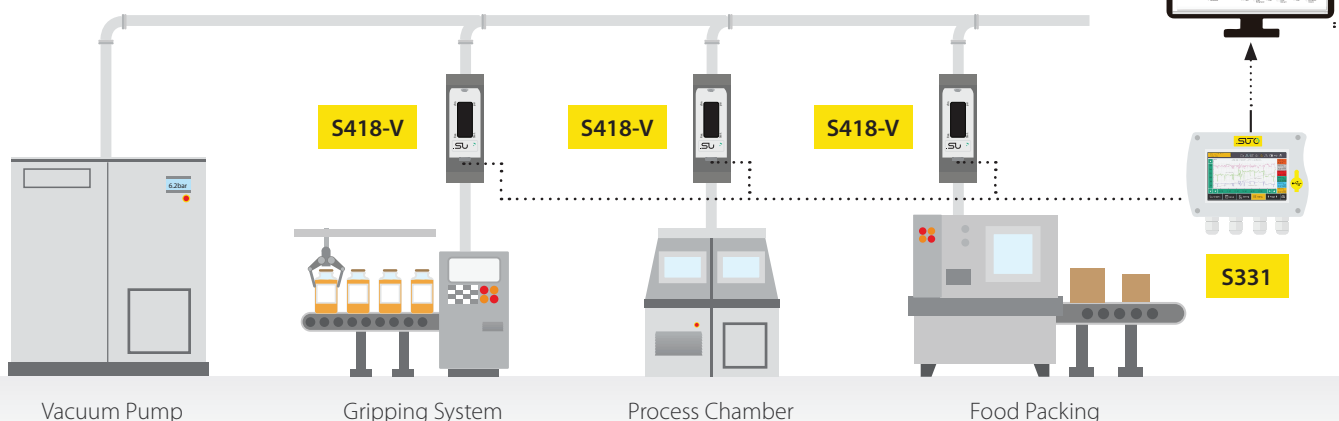
### Pin assignment connector plug M8

- Every sensor includes 5m M8 cables with open ends
- Sensor with Modbus/RTU or M-Bus include 1 cable
- Sensors with Analog output include 2 cables

## Vacuum Applications

S418-V is used for performance monitoring of vacuum pumps. Equipped with an absolute pressure sensor, it does not only show the vacuum pressure, but also shows the actual vacuum flow. These parameters are most the critical values in vacuum applications and help operators to ensure their process reliability.

Monitoring Software  
Alarm Management





## Wireless Connection

The free S4C-FS App offers a unique wireless connection to every SUTO flow meter for online readings and configuration.

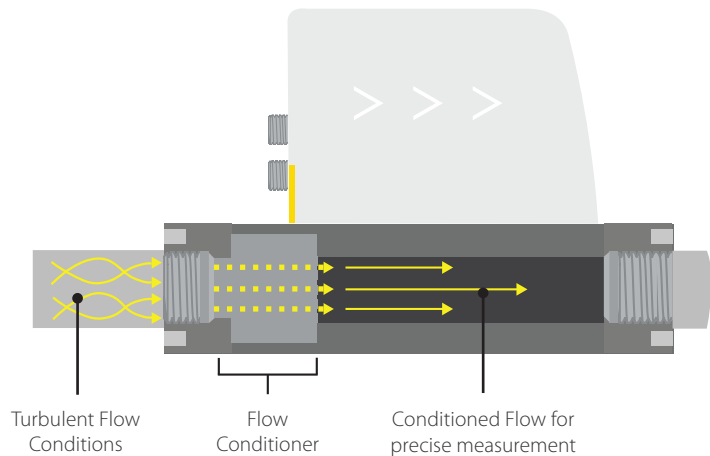
Especially during installation and setup all settings can be performed using a smartphone, there is no need to carry a PC and an interface on site. This saves a lot of time and is the easy way to get reliable sensor readings.

Every sensor is protected by default. To perform changes on the flow meter, first a QR code must be scanned.

## Flow Conditioner

Asymmetric velocity profiles, swirl, and other factors caused by bends in pipes can lead quickly to inaccurate readings. But sometimes there is not enough space to have straight inlet conditions for accurate readings.

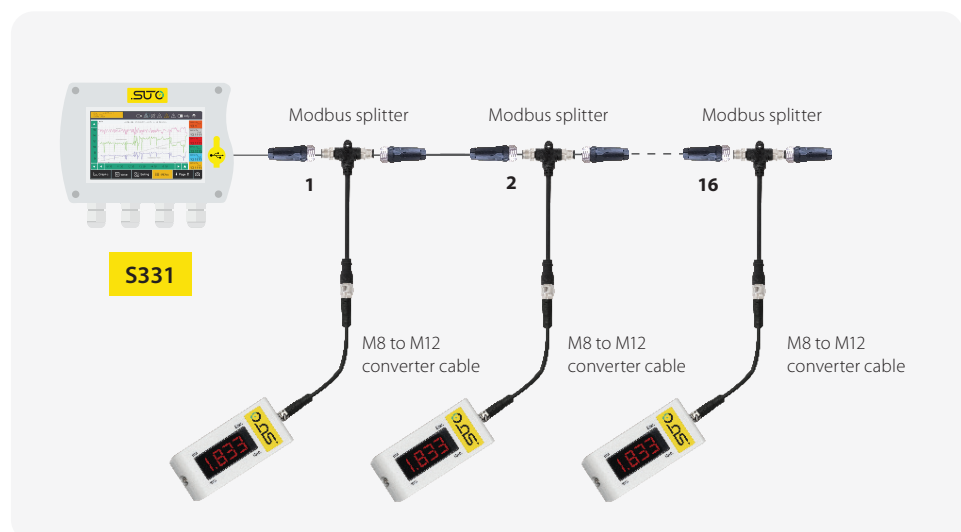
The highly engineered flow conditioner solves this problem. Unlike a standard flow conditions disk, the 3D design of the flow conditioner allows measurements with no additional straight inlet piping at all. Thanks to the innovative mechanical design, the pressure loss is negligible small (<30 hPa), offering high accurate measurements in difficult pipe conditions.



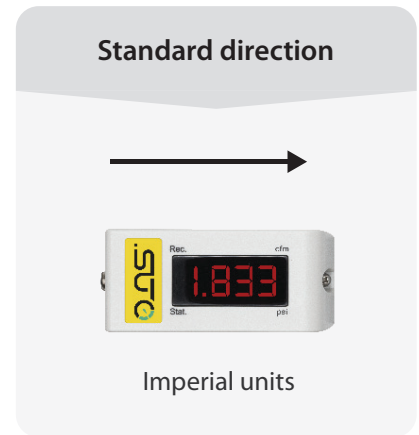
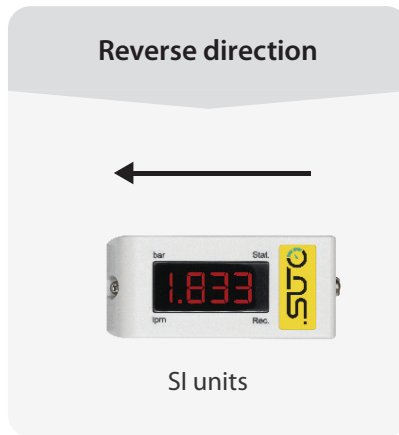
## Connect several S418-V to Modbus Master

The S418-V with Modbus/RTU interface can be easily daisy-chained to a Modbus Master device such as S331 by using RS-485 splitter (A554 3310) and the M8 to M12 converter cable (A553 0161). Through this method you can add up to 16 flow meters to the master

**Remark:** The S331 can maximum provide 10 W power to the connected devices. If more power is required a separate power supply is needed..



## Display Direction



## Measuring Range in Air (l/min)

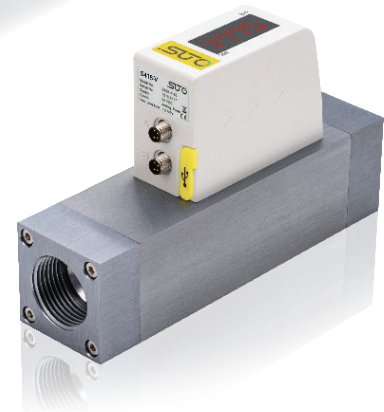
Range	Standard Configuration				
Process connection	DN8	DN15	DN20	DN25	Absolute Pressure (mbar)
Vacuum flow in l/min	56	222	444	778	900
	63	250	500	875	800
	71	286	571	1000	700
	83	333	667	1167	600
	100	400	800	1400	500
	125	500	1000	1750	400
	167	557	1333	2333	300
	250	1000	2000	3500	200
	500	2000	4000	7000	100

Stated measuring ranges for S418-V under following conditions:

- Standard flow in air in l/min
- Reference pressure: 1000 mbar
- Reference Temperature: +20 °C

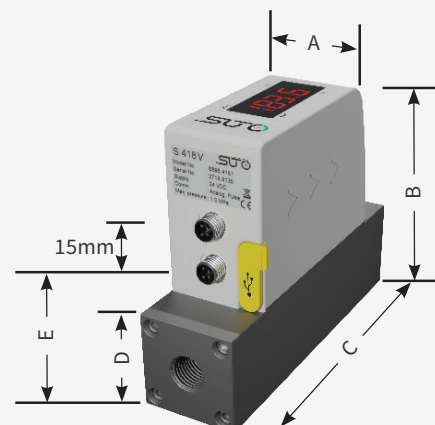


**DN20, DN25**



## Dimensions

Dimensions in mm	A	B	C	D	E
DN8/DN15	35.0	93.0	120.4	35.0	48.0
DN20/DN25	48.0	106.0	178.0	48.0	61.0





# Technical Data

## Measurement

### Flow

Accuracy	1.5 % of reading $\pm$ 0.3 % FS
Selectable units	m <sup>3</sup> /h, l/min, cfm, kg/h
Measuring range	See table on the previous page
Repeatability	0.5 % of reading
Sensor	Thermal mass flow sensor
Sampling rate	10 samples / sec
Turn-down ratio	1:100
Response time (t90)	0.5 sec

### Consumption

Selectable units	m <sup>3</sup> , ft <sup>3</sup> , l, kg
------------------	--

### Pressure

Accuracy	0.5 % FS
Selectable units	Bar, psi
Measuring range	0.01 ... 1.6 bar(a)
Sensor	Piezo resistive sensor

### Reference conditions

Selectable conditions	20 °C 1000 mbar (ISO1217)
-----------------------	---------------------------

## Signal / Interface & Supply

### Analog output

Signal	4 ... 20 mA (4-wire), isolated
Scaling	0 ... max flow, freely adjustable
Load	Max. 250 Ohm
Update rate	3/sec

### Pulse output

Signal	Switch output, normally open, max. 30 VDC, 200 mA
Scaling	1 pulse per consumption unit

### Fieldbus

Protocol	Modbus/RTU
----------	------------

### Supply

Voltage supply	15 ... 30 VDC
Current consumption	120 mA @ 24 VDC

### Data interface

Connection	USB micro
------------	-----------

## General data

### Configuration

Wireless	S4C-FS App for mobile phones
PC Software	S4A PC software for data analyzes

### Display

Integrated	4 digit LED
------------	-------------

### Data Logger

Storage	8 Mio. values
---------	---------------

### Material

Process connection	Aluminum alloy
Housing	PC + ABS
Sensor	Ceramic, glass coated
Metal parts	Aluminum alloy

### Miscellaneous

Electrical connection	2 x M8 (4 pole)
Protection class	IP54
Approvals	CE, RoHS, FCC
Process connection	G-thread
Weight	0.45 ... 1.1 kg (depends on model)

## Operating conditions

Medium	Air, N <sub>2</sub> , O <sub>2</sub> , CO <sub>2</sub> and other gases
Medium quality	ISO 8573: 4.4.3 or better
Medium temperature	0 ... 50 °C
Medium humidity	< 90 % rH, no condensation
Operating pressure	Max. 10 bar(g)
Ambient temperature	0 ... 50 °C
Ambient humidity	< 95 % rH
Storage temperature	-30 ... 70 °C
Transport temperature	-30 ... 70 °C
Pipe sizes	DN8, DN15, DN20, DN25

## Vacuum Scales

Bar(a)	Inch Hg(g)	kPa(g)	Bar(g)	mbar(a)
1.00	0.00	0	0.00	1000
0.90	-2.95	-10	-0.10	900
0.80	-5.91	-20	-0.20	800
0.70	-8.86	-30	-0.30	700
0.60	-11.81	-40	-0.40	600
0.50	-14.77	-50	-0.50	500
0.40	-17.72	-60	-0.60	400
0.30	-20.67	-70	-0.70	300
0.20	-23.63	-80	-0.80	200
0.10	-26.58	-90	-0.90	100
0.01	-29.24	-99	-0.99	10

# Ordering

Please use the following tables to assist in placing your order with our sales staff.

## S418-V Compact Thermal Mass Flow Meter for Vacuum Applications (Inline)

Order No.	Description
S695 419	S418-V, Vacuum Flow Meter, with integrated absolute pressure sensor, G inner thread, 24 VDC, 5 m cable with M8 connector and open ends included
Size	
S695 4190	DN8
S695 4191	DN15
S695 4192	DN20
S695 4193	DN25
Output	
A1455	S418: Analog 4 ... 20 mA, Pulse output
A1456	S418: Modbus/RTU output
A1457	S418: M-Bus output
Units	
A1467	With SI units
A1459	With imperial units
Display direction	
A1463	Standard display direction (left to right)
A1461	Reverse display direction

## Ordering Example

**Example:** S418-V DN20, Modbus/RTU, SI units, Standard Display direction

**Order Code:** S695 4192.A1456.A1467.A1463

## S418-V Accessories

Order No.	Description
A554 0109	Mains power supply 100-240 VAC / 24 VDC, 0.5 A, 2 m cable with M8 connector
A553 0137	Connection cable to S551, 5 m
M599 7020	S4A data analysis software, for data logger S418-V
A554 3310	RS-485 / Modbus/RTU splitter
A553 0161	M8 to M12 converter cable for Modbus/RTU splitter
A553 0171	Cable to connect power bank, 1.8 m, USB-C connector for power bank, M8 connector

## Mobile Power

S418-V powered by power bank with connection cable A553 0171

**Note:** power bank must be sourced locally due to shipping restrictions [USB-C, 20 V, min. 100 mA]

