

# SVM S6 & ULTRAFLOW® 14 Cooling DATA SHEET

- Complete range of communication modules
- High Power RadioRouter module
- Data loggers
- Info loggers
- Data backup in case of power failure



## Cooling meter with unlimited communication

### Application

SVM S6 is an all-purpose energy calculator for cooling and heat/cooling together with almost any kind of pulsed flow sensors and with 2-wired temperature sensor pairs. Used together with Kamstrup ultrasonic flow sensor ULTRAFLOW® 14, even more advanced functions are available. On account of its pinpoint accuracy the meter registers precise consumption throughout the whole lifetime of the meter. The meter is maintenance-free and has a long lifetime which guarantees minimum yearly operating costs.

SVM S6 and ULTRAFLOW® 14 are used for measurement of cooling in all water based plants with flow temperatures from 2°C to 50°C and with ULTRAFLOW® 14 between  $q_p$  1.5 m<sup>3</sup>/h and  $q_p$  100 m<sup>3</sup>/h.

The meter is simple to install, read and test.

### Functionality

SVM S6 is characterized by its complete range of communication modu-

les and integral RTC (Real Time Clock), which make it easy to fit the meter into all applications independent of reading type. The meter can be fitted with LON, SIOX, M-Bus, a data module and the new solutions Metasys N2 and Ethernet/IP for wired communication. If the meter is to be integrated into a wireless network, you can select radio, Wireless M-Bus, Zigbee or one of Kamstrup's new modules: GSM/GPRS or High Power RadioRouter.

The calculator's info codes and data loggers make up an invaluable tool for troubleshooting, error correction and analysis of energy consumption. The info logger constantly monitors a number of key functions in the meter, such as error in measuring system, power failure, leak, burst, or mounting of sensor in wrong flow direction. In such cases a flashing "INFO" and an info code appear in the display.

SVM S6 saves consumption data on a yearly, monthly, daily and hourly basis, which provides the operations manager with a complete performance analysis.

### Operations optimisation

In case of power failure data is backed up, thus securing billing of consumption data. If the meter is supplied with battery, the battery lifetime has been considerably increased – up to 13 years incl. Wireless M-Bus.

Finally, SVM S6 with ULTRAFLOW® and the precisely matched temperature sensors guarantee accurate measuring results even at minimal temperature differences. The flow sensor's long-term stability and accuracy are not influenced by flow velocity, flow disturbances or wear, which ensures an optimal operation.

ULTRAFLOW® 14 is not suitable for use with other media than water and should therefore not be used with e.g. non-freezing additives like glycol.



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### Calculator functions

#### Energy calculation

SVM S6 calculates energy based on the formula in EN 1434-1:2007, in which the international temperature scale from 1990 (ITS-90) and the pressure definition of 16 bar is used.

The energy calculation can in a simplified way be expressed as:

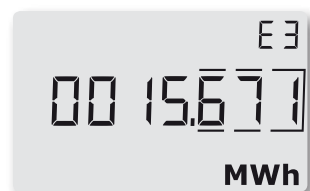
$$\text{Energy} = V \times \Delta\Theta \times k.$$

V is the supplied water volume

$\Delta\Theta$  is the temperature difference measured

k is the thermal coefficient of water

The calculator always calculates energy in [Wh], and then it is converted into the selected measuring unit.



E [Wh] =	$V \times \Delta\Theta \times k \times 1.000$
E [kWh] =	$E [\text{Wh}] / 1.000$
E [MWh] =	$E [\text{Wh}] / 1.000.000$
E [GJ] =	$E [\text{Wh}] / 277.780$
E [Gcal] =	$E [\text{Wh}] / 1.163.100$

#### Application

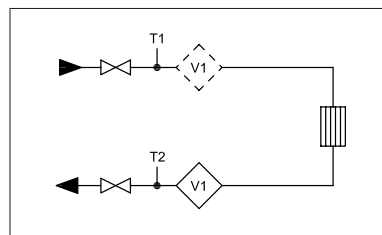
SVM S6 operates with 9 different energy formulas, E1...E9, that are all calculated in parallel in connection with each integration no matter how the meter is configured.

In connection with cooling the following energy calculations are used:

$$E3 = V1(T2 - T1) \quad \text{Cooling energy (V1 in flow or return)}$$

$$E8 = m^3 \times T1 \quad \text{Basis for calculating volume based average temperatures in flow}$$

$$E9 = m^3 \times T2 \quad \text{Basis for calculating volume based average temperatures in return}$$



Closed thermal system with 1 flow sensor

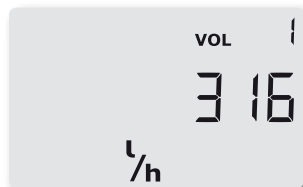
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### Calculator functions

#### Flow measurement

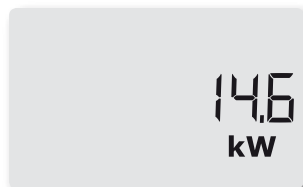
The flow indication is updated every 10 seconds.



#### Power measurement

SVM S6 calculates current power on the basis of current water flow and the temperature difference measured in connection with the latest integration.

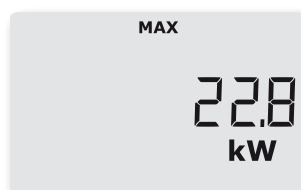
Current power is updated in the display simultaneously with the flow update.



#### Min. and max. flow and power

SVM S6 registers minimum and maximum flow and power on a monthly as well as on a yearly basis. The registrations which appear from the display or can be read via data communication include max. and min. flow and power values, all with date indication.

All max. and min. values are calculated as largest and smallest average respectively of a number of current flow or power measurements. The average period used for all calculations is selected in the interval 1...1440 min.

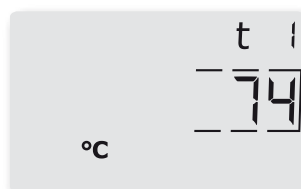
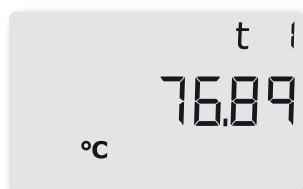


#### Temperature measurement

SVM S6 and ULTRAFLOW® 14 can be ordered for Pt100 or Pt500 sensors with 2 wire connection.

The measuring circuit includes a high resolution analog/digital converter with a temperature range of 0.00...185.00°C.

In addition to current temperatures for the energy calculation average temperatures on a yearly and monthly basis can also be displayed.



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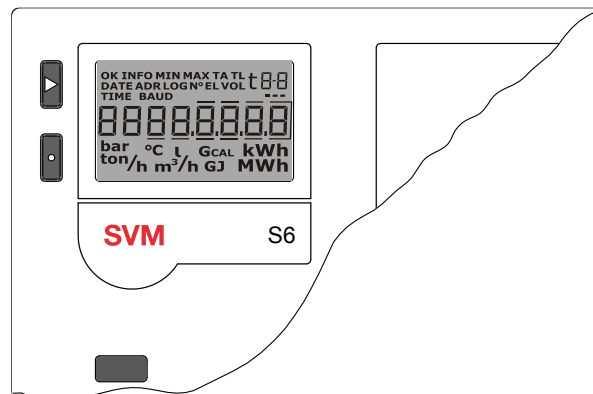
## DATA SHEET

### Calculator functions

#### Display functions

SVM S6 is equipped with a clear LC display including 8 digits, units of measurement and information panel. In connection with energy and volume readings 7 digits and the units of measurement to match are used, whereas 8 digits are used when e.g. meter number is read.

As a starting point the display shows accumulated energy. When the push buttons are activated the display reacts immediately by calling other readings. The display automatically returns to accumulated energy reading 4 minutes after the latest activation of the push buttons.



*The upper push button is used to switch between the primary readings. The consumers typically use the first primary readings in connection with self-reading for billing purposes.  
The lower push button is used to show secondary information on the selected primary reading.*

#### Set/reset function

The set/reset function of SVM S6 makes it possible to change a number of parameters by means of the two buttons on the meter's front.

The following parameters can be changed:

- Date
- Hour
- Input A (preset of register)
- Input B (preset of register)
- Meter no. of Input A
- Meter no. of Input B
- Pulse value for Input A
- Pulse value for Input B
- Primary M-Bus address
- Operating hour counter (reset)
- Info-event counter (reset)

As the installation seal is broken, the change can only be made by the energy supplier.

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## DATA SHEET

### Calculator functions

#### Info codes

SVM S6 constantly monitors a number of important functions, e.g. power supply and temperature sensors. Should a serious error occur in the measuring system or in the installation, a flashing “info” will appear in the display whilst the error exists. The “Info” panel will automatically disappear when the error has been corrected.

An Info Event Logger indicates how many times the info code has been changed.

The info logger stores the latest 50 changes, of which 36 can be displayed.

Info code	Description
0	No irregularities
1	Supply voltage connected after cut off
4	T2 sensor outside range, short-circuited or cut off
8	T1 sensor outside range, short-circuited or cut off
Info code	ULTRAFLOW® 14 info (if activated CCC=4XX)
16	Flow sensor V1, datacomm error, signal too low or wrong flow direction
2048	Flow sensor V1, wrong meter factor
4096	Flow sensor V1, signal too low (Air)
16384	Flow sensor V1, wrong flow direction



#### Data loggers

SVM S6 contains a permanent memory (EEPROM), where the results of a number of various data loggers are stored. The meter contains the following data loggers which can be read on the display or via serial data:

Data logging interval	Data logging depth	Logged value
Yearly logger	15 years	Counter registers (as seen on the display)
Monthly logger	36 months	Counter registers (as seen on the display)
Daily logger	460 days	Consumption (increase)/day
Hourly logger	1392 hours	Consumption (increase)/hour
Programmable data logger (option)	1080 loggings Logging interval 1-1440 min. (e.g. 45 days' hour loggings or 11 days' 15 min. loggings)	Up to 40 optional registers and values
Info logger	50 events	Info code, date, time and energy (E1/E2)

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### Calculator functions

#### Voltage supply

SVM S6 is available with battery supply, 230 VAC mains module, or 24 VAC mains module. The supply modules are exchangeable without breaking the verification seal.

#### Plug-in modules

Plug-in modules can be added to SVM S6 both in the calculator top (top modules) and in the base unit (base modules), in this way the meter can adapt to various applications and data reading methods.

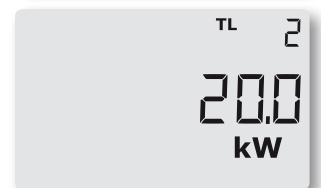
#### Programming and testing

METER TOOL for SVM S6 is a Windows® -based software which includes all facilities for calculator programming. If the software is used together with VERIFICATION EQUIPMENT for SVM S6, the calculator can be tested.

#### Tariff functions

SVM S6 has 2 extra registers TA2 and TA3 to accumulate energy parallelly to the main register based on a programmed tariff condition. No matter which tariff type you select the tariff registers will be displayed as TA2 and TA3.

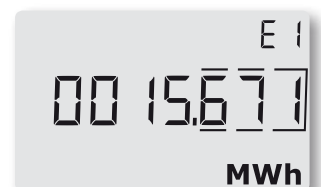
The main register is always accumulated, irrespective of the selected tariff function, as it is considered the legal billing register. Tariff conditions TL2 and TL3 are monitored before each integration. If the tariff conditions are fulfilled, the consumed cooling energy is accumulated in either TA2 or TA3, as well as the main register.



#### Pulse outputs CE and CV

SVM S6 has pulse outputs for energy and volume pulses respectively. CE on terminals 16-17 releases one pulse per least significant digit of the energy count in the display and CV on terminals 18-19 releases one pulse per least significant digit of the volume count in the display.

If a higher resolution of pulse outputs is required, a CCC code with high resolution must be selected.



#### Pulse inputs VA and VB

SVM S6 has two extra pulse inputs, VA and VB, to collect and accumulate pulses remotely, e.g from cold-water meters and electricity meters. The pulse inputs are physically placed on the "base modules".

The pulse inputs VA and VB function independently of the other inputs/ outputs.



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### Electrical data

Typical accuracy	
– Calculator	$E_c \pm(0.15 + 2/\Delta\Theta)\%$
– Sensor set	$E_T \pm(0.4 + 4/\Delta\Theta)\%$
– Flow sensor	$E_F \pm(1 + 0.01 \times q_p/q)\%$
<b>Supply voltage</b>	3.6 VDC $\pm$ 0.1 V
<b>Battery</b>	3.65 VDC, D-cell lithium
Stand-by current	< 85 $\mu$ A
Replacement interval	
– Mounted on wall	12+1 years @ $t_{BAT} < 30^\circ\text{C}$ The replacement interval is reduced when using data modules, frequent data communication or high ambient temperature
<b>Mains supply</b>	230 VAC $\pm$ 15/-30%, 50/60 Hz 24 VAC $\pm$ 50%, 50/60 Hz
Insulation voltage	4 kV
Power supply	< 1 W
Backup supply	Integral super-cap eliminates operational stop-down due to shortterm power cuts (this only applies for supply modules type 602-0000-7 and 602-0000-8).
EMC data	Domestic and light industrial
<b>Calculator data</b>	
Display	LCD – 7 (8) digits with a digit height of 7.6 mm
Resolution	9999.999 – 99999.99 – 999999.9 – 9999999
Energy units	MWh – kWh – GJ – Gcal
Temperature range	$\Theta$ : 0.01...180°C
Differential range	$\Delta\Theta$ : 0.01...170 K
Data logger (Eeprom)	
– Standard	1392 hours, 460 days, 36 months, 15 years, 50 info codes
– Option	Data loggers with larger depth and hour interval
Clock/calendar	Clock, calendar, leap-year compensation, target date, Real time clock with battery back-up
Data communication	KMP protocol with CRC16 used for optical communication and for top and base modules
Power in temperature sensors	< 10 $\mu$ W RMS
<b>Temperature measurement</b>	
Sensor inputs T1, T2	
– Measuring range	0.00...185.00°C
Max. cable lengths	
– Pt500, 2-wire	2 x 0.25 mm <sup>2</sup> : 10 m 2 x 0.50 mm <sup>2</sup> : 20 m
– Pt100, 2-wire	2 x 0.25 mm <sup>2</sup> : 2,5 m 2 x 0.50 mm <sup>2</sup> : 5 m

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### Electrical data

<b>Pulse inputs <u>without</u> bounce damping VA and VB VA: 65-66 og VB: 67-68</b>	<b>Water meter connection FF(VA) and GG(VB) = 71...90</b>	<b>Electricity meter connection FF(VA) and GG(VB) = 50...60</b>
Pulse input	680 kΩ pull-up to 3.6 V	680 kΩ pull-up to 3.6 V
Pulse ON	< 0.4 V for > 30 msec.	< 0.4 V for > 30 msec.
Pulse OFF	> 2.5 V for > 100 msec.	> 2.5 V for > 100 msec.
Pulse frequency	< 1 Hz	< 3 Hz
Electrical isolation	No	No
Max. cable length	25 m	25 m
Requirements to external contact	Leakage current at function open < 1μA	

<b>Pulse inputs <u>with</u> bounce damping VA and VB VA: 65-66 og VB: 67-68</b>	<b>Water meter connection FF(VA) and GG(VB) = 01...40</b>
Pulse input	680 kΩ pull-up to 3.6 V
Pulse ON	< 0.4 V for > 200 msec.
Pulse OFF	> 2.5 V for > 500 msec.
Pulse frequency	< 1 Hz
Electrical isolation	No
Max. cable length	25 m
Requirements to external contact	Leakage current at function open < 1μA

<b>Pulse outputs CE and CV</b>	<b>Via top module 67-OB</b>	<b>Via top module 602-OC</b>
Type	Opto FET	Open collector (OB)
Pulse length	Optional 32 msec. or 100 msec.	
External voltage	5...48 VDC/AC	5...30 VDC
Current	1...50 mA	1...10 mA
Residual voltage	$R_{ON} \leq 40 \Omega$	$U_{CE} \approx 1 V$ at 10 mA
Electrical isolation	2 kV	2 kV
Max. cable length	25 m	25 m

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### Flow data

Nom. flow $q_p$ [m <sup>3</sup> /h]	Nom. diameter	Meter factor <sup>*)</sup> [imp./l]	Dynamic range $q_i:q_p$	$q_s:q_p$	Flow @125 Hz <sup>**)</sup> [m <sup>3</sup> /h]	$\Delta p@q_p$ [bar]	Min. cut off [l/h]
1.5	DN15 & DN20	100	1:100	2:1	4.5	0.22	3
2.5	DN20	60	1:100	2:1	7.5	0.03	5
3.5	DN25	50	1:100	2:1	9	0.07	7
6	DN25	25	1:100	2:1	18	0.20	12
10	DN40	15	1:100	2:1	30	0.06	20
15	DN50	10	1:100	2:1	45	0.14	30
25	DN65	6	1:100	2:1	75	0.06	50
40	DN80	5	1:100	2:1	90	0.05	80
60	DN100	2.5	1:100	2:1	180	0.03	120
100	DN100	1.5	1:100	2:1	300	0.07	200

<sup>\*)</sup> The meter factor can be seen on the label on the side of the meter.

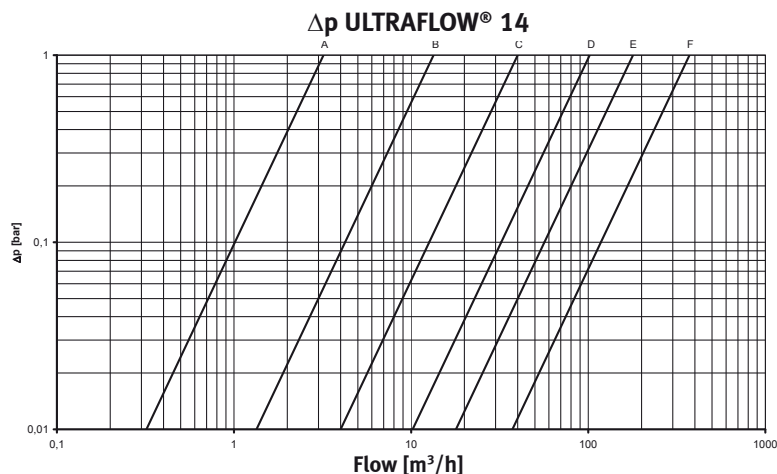
<sup>\*\*)</sup> Saturation flow. Max. pulse frequency 128 Hz is maintained at higher flow rates.

### Pressure loss

Graph	$q_p$ [m <sup>3</sup> /h]	Nom. diameter	$k_v$ <sup>*)</sup>	Q@0.25 bar [m <sup>3</sup> /h]
A	0.6 & 1.5	DN15 & DN20	3.2	1.6
B	2.5 & 3.5 & 6	DN20 & DN25	13.4	6.7
C	10 & 15	DN40 & DN50	40	20
D	25 & 40	DN65 & DN80 x 350	102	51
E	40	DN80	179	90
F	60 & 100	DN100	373	187

$$*) q = k_v \times \sqrt{\Delta p}$$

### Pressure loss chart



# SVM S6 & ULTRAFLOW® 14 COOLING

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### Mechanical data

Environmental class	Meets EN 1434 Class A
Ambient temperature	5...55°C non condensing, closed location (indoor installation)
Protection class	
– Calculator	IP54
– Flow sensor	IP65
Storage temperature	-20...60°C (drained flow meter)
Weight	
– SVM S6	0.4 kg excluding sensors and flow sensor
– ULTRAFLOW® 14	See Dimension drawings on page 16-17
Flow sensor cable (between flowpart and calculator)	2.5 m Must not be removed/changed
Connection cables	ø3.5...6 mm
Supply cable	ø5...10 mm

### Materials

#### SVM S6

Top cover	Thermoplastic, PC
Base unit	Thermoplastic, PP with thermoplastic elastomer TPE gaskets
Print box	Thermoplastic, ABS
Wall bracket	Thermoplastic, PC 30% GF

#### ULTRAFLOW® 14

##### Wetted parts

##### ULTRAFLOW® 14, $q_p$ 1.5 m<sup>3</sup>/h

Housing, gland	Dezincification resistant brass
Transducers	Stainless steel, W.no. 1.4401
Gaskets	EPDM
Reflectors	Thermoplastic, PES 30% GF and stainless steel, W.no. 1.4301
Measuring pipe	Thermoplastic, PES 30% GF

##### ULTRAFLOW® 14, $q_p$ 2.5 to 100 m<sup>3</sup>/h

Housing, gland	Dezincification resistant brass
Housing, flange	Red brass, RG5 or stainless steel W.no. 1.4308 (see Order specification)
Transducers	Stainless steel, W.no. 1.4401
Gaskets	EPDM
Measuring pipe	Thermoplastic, PES 30% GF
Reflectors	Stainless steel, W.no. 1.4301

##### Electronic housing

Base	Thermoplastic, PBT 30% GF
Lid	Thermoplastic, PC 10% GF

# SVM S6 & ULTRAFLOW® 14 COOLING

## DATA SHEET

### Order specifications

SVM S6	Type S6-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Sensor connection</b>									
Pt100 2-wire (T1-T2)	A								
Pt500 2-wire (T1-T2-T3)	C								
<b>Top module</b>									
No module	0								
PQ or Δt-limiter	3								
Data output	5								
M-Bus	7								
2 pulse outputs for CE and CV + prog. data logger	B								
2 pulse outputs CE and CV	C								
<b>Base module</b>									
No module	00								
Data + pulse inputs	10								
M-Bus + pulse inputs	20								
Prog. datalogger + RTC + 4...20 mA inputs + pulse inputs	22								
0/4...20 mA outputs	23								
LonWorks, FTT-10A + pulse inputs	24								
Radio + pulse inputs (internal antenna) 434 or 444 MHz	25								
Radio + pulse inputs (external antenna connection) 434 or 444 MHz	26								
M-Bus module with alternative registers + pulse inputs	27								
M-Bus module with medium data package + pulse inputs	28								
Wireless M-Bus Mode C1 + pulse inputs	30								
ZigBee 2.4 GHz int.ant. + pulse inputs	60								
Metasys N2 (RS485) + pulse inputs	62								
SIOX module (Auto detect Baud rate)	64								
GSM/GPRS (GSM6H)	80								
Ethernet/IP (IP201)	82	Require High Power supply modules							
High Power Radio Router + pulse inputs	84								
<b>Supply</b>									
No supply	0								
Battery, D-cell	2								
230 VAC High Power isolated SMPS	3								
24 VAC High Power isolated SMPS	4								
230 VAC isolated linear supply	7								
24 VAC isolated linear supply	8								
<b>Pt500 sensor set</b>									
No sensor set (always used when Pt100 sensors are selected)	00								
Pocket sensor set w/1.5 m cable	0A								
Pocket sensor set w/3.0 m cable	0B								
Pocket sensor set w/5 m cable	0C								
Pocket sensor set w/10 m cable	0D								
Short direct sensor set w/1.5 m cable	0F								
Short direct sensor set w/3.0 m cable	0G								
<b>Flow sensor/pick-up unit</b>									
Supplied w/1 ULTRAFLOW®	(Please specify type)							1	
<b>Meter type</b>									
Cooling meter									5
Heat/cooling meter									6
<b>Country code (language on label etc.)</b>									XX

When placing orders please state ULTRAFLOW® type numbers separately.

# SVM S6 & ULTRAFLOW® 14 COOLING

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### Order specifications

The list below shows type numbers for ULTRAFLOW® 14

Type number <sup>*)</sup>	q <sub>p</sub> [m <sup>3</sup> /h]	q <sub>i</sub> [m <sup>3</sup> /h]	q <sub>s</sub> [l/h]	Connection	Length [mm]	Meter factor [pulses/l]	CCC (high res.)	Material
65-1-CDAA-XXX	1.5	0.015	3.0	G <sup>3</sup> / <sub>4</sub> B (R <sup>1</sup> / <sub>2</sub> )	110	100	419 (407)	Brass
65-1-CDAD-XXX	1.5	0.015	3.0	G1B (R <sup>3</sup> / <sub>4</sub> )	130	100	419 (407)	Brass
65-1-CDAF-XXX	1.5	0.015	3.0	G1B (R <sup>3</sup> / <sub>4</sub> )	190	100	419 (407)	Brass
65-1-CEAF-XXX	2.5	0.025	5.0	G1B (R <sup>3</sup> / <sub>4</sub> )	190	60	498	Brass
65-1-CGAG-XXX	3.5	0.035	7.0	G5/4B (R1)	260	50	451 (436)	Brass
65-1-CHAG-XXX	6.0	0.06	12	G5/4B (R1)	260	25	437 (438)	Brass
65-1-CHBB-XXX	6.0	0.06	12	DN25	260	25	437 (438)	Red brass
65-1-CHCB-XXX	6.0	0.06	12	DN25	260	25	437 (438)	Stainless steel
65-1-CJAJ-XXX	10	0.1	20	G2B (R1 <sup>1</sup> / <sub>2</sub> )	300	15	478 (483)	Brass
65-1-CJCD-XXX	10	0.1	20	DN40	300	15	478 (483)	Stainless steel
65-1-CKCE-XXX	15	0.15	30	DN50	270	10	420 (485)	Stainless steel
65-1-CLCG-XXX	25	0.25	50	DN65	300	6	479	Stainless steel
65-1-CMCH-XXX	40	0.4	80	DN80	300	5	458 (486)	Stainless steel
65-1-FACL-XXX	60	0.6	120	DN100	360	2.5	470 (487)	Stainless steel
65-1-FBCL-XXX	100	1	200	DN100	360	1.5	480 (488)	Stainless steel

<sup>\*)</sup> XXX-code pertaining to final assembly, approvals etc. is determined by Kamstrup A/S. Some variants may not be included in national versions.

# SVM S6 & ULTRAFLOW® 14 COOLING

## DATA SHEET

### Accessories

#### Calculator

##### Description

Description	Type No.
D-cell battery	66-00-200-100
230 VAC High Power isolated SMPS	60200003000000
24 VAC High Power isolated SMPS	60200004000000
230 VAC isolated linear supply	60200007000000
24 VAC isolated linear supply	60200008000000
Data cable w/USB plug	66-99-098
Infrared optical reading head w/USB plug	66-99-099
Infrared optical reading head w/D-sub 9F	66-99-102
Data cable RS232, D-sub 9F	66-99-106
Verification unit (used with METERTOOL)	66-99-397/-398/-399
METERTOOL for SVM S6	66-99-718
METERTOOL LogView for SVM S6	66-99-719

#### Temperatur sensors

##### Description

Change-over nipple M10 - R $\frac{1}{2}$ for direct short temperature sensor	65-56-491
Change-over nipple M10 - R $\frac{3}{4}$ for direct short temperature sensor	65-56-492
Sensor pocket, length = 65 mm	65-57-324
Sensor pocket, length = 90 mm	65-57-327
Sensor pocket, length = 140 mm	65-57-314

#### Flow sensors

##### Glands including gaskets (PN16)

Size	Nipple	Union	Type No.	2 pcs.
DN15	R $\frac{1}{2}$	G $\frac{3}{4}$	-	6561-323
DN20	R $\frac{3}{4}$	G1	-	6561-324
DN25	R1	G $\frac{5}{4}$	6561-325	-
DN32	R $\frac{5}{4}$	G $1\frac{1}{2}$	6561-314	-
DN40	R $1\frac{1}{2}$	G2	6561-315	-

##### Gaskets for flange meters (PN25)

Size	Type No.
DN20	2210-147
DN25	2210-133
DN40	2210-132
DN50	2210-099
DN65	2210-141
DN80	2210-140
DN100	1150-142

##### Gaskets for glands

Size (union)	Type No.
G $\frac{3}{4}$	2210-061
G1	2210-062
G $\frac{5}{4}$	2210-063
G $\frac{1}{2}$	2210-064
G2	2210-065

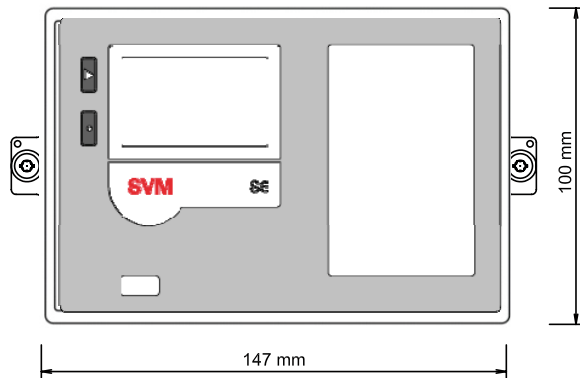
Please contact Kamstrup for questions concerning further accessories.

# SVM S6 & ULTRAFLOW® 14 COOLING

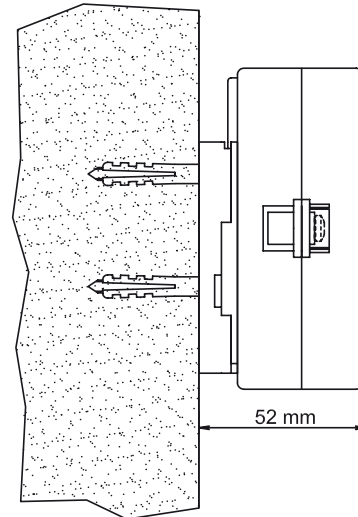
## DATA SHEET

### Dimensional drawings calculator

Front dimensions of SVM S6

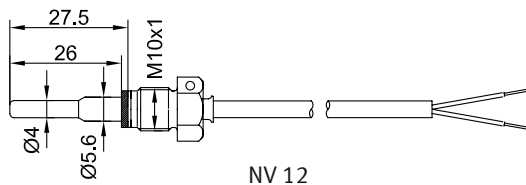


Wall-mounted SVM S6 seen from the side

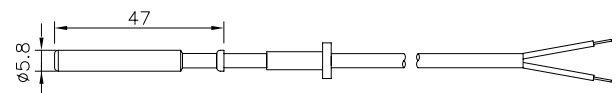


### Dimensional drawings temperature sensors

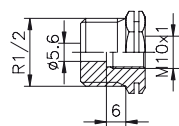
Direct short sensor



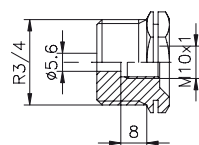
Pocket sensor



Change-over nipples for direct short sensor

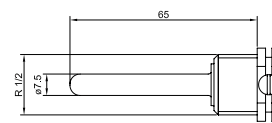


NV 22

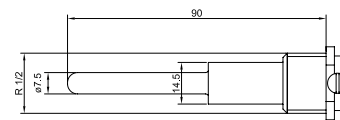


NV 27

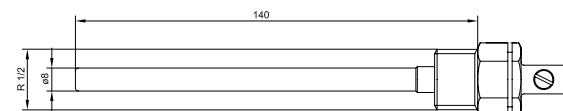
Sensor pocket



NV 22  
65 mm



NV 22  
90 mm



NV 22  
140 mm

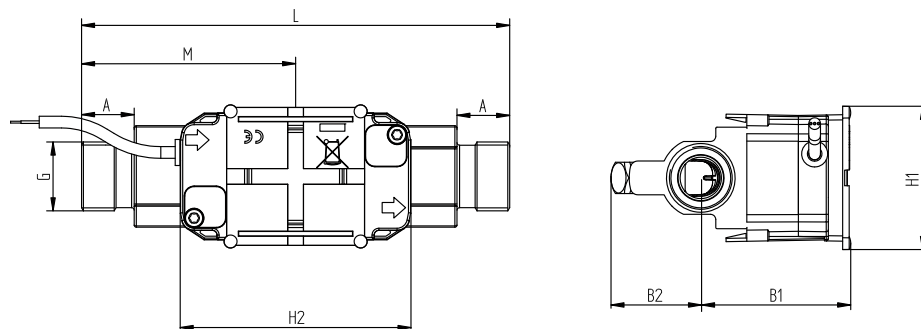
R $\frac{1}{2}$  and R $\frac{3}{4}$  thread according to ISO 7.1.

# SVM S6 & ULTRAFLOW® 14 COOLING

## DATA SHEET

### Dimensional drawings flow sensors

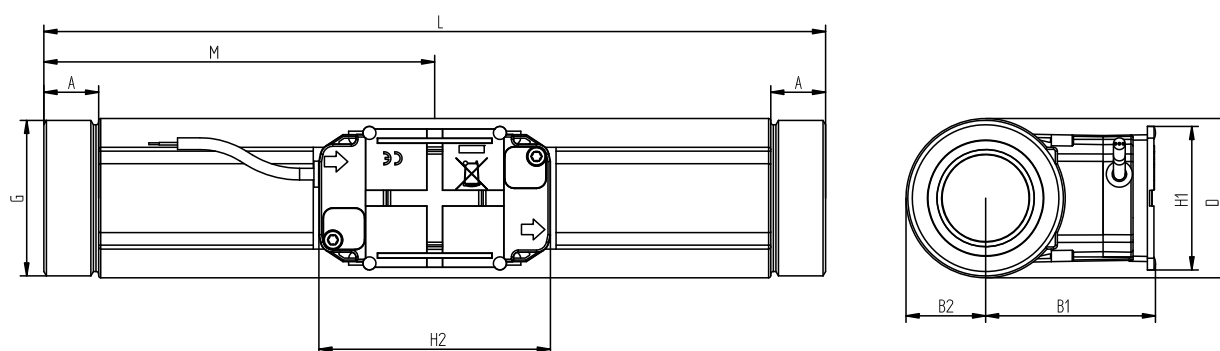
#### ULTRAFLOW® 14, G<sup>3</sup>/<sub>4</sub> and G1



#### Thread ISO 228-1

Thread	L	M	H2	A	B1	B2	H1	App. weight [kg]
G <sup>3</sup> / <sub>4</sub>	110	L/2	89	10.5	58	35	55	0.8
G1	130	L/2	89	20.5	58	35	55	0.9
G1(q <sub>p</sub> 2.5)	190	L/2	89	20.5	58	36	55	1.3

#### ULTRAFLOW® 14, G<sup>5</sup>/<sub>4</sub> and G2



#### Thread ISO 228-1

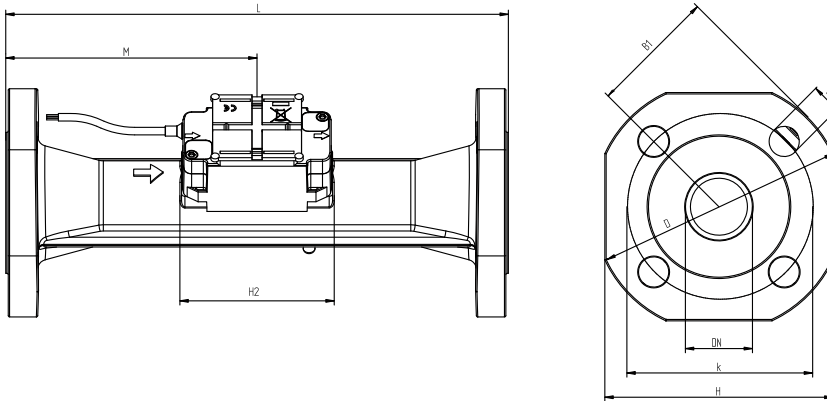
Thread	L	M	H2	A	B1	B2	H1	App. weight [kg]
G <sup>5</sup> / <sub>4</sub>	260	L/2	89	17	58	22	55	2.3
G2	300	L/2	89	21	65	31	55	4.5

# SVM S6 & ULTRAFLOW® 14 COOLING

## DATA SHEET

### Dimensional drawings flow sensors

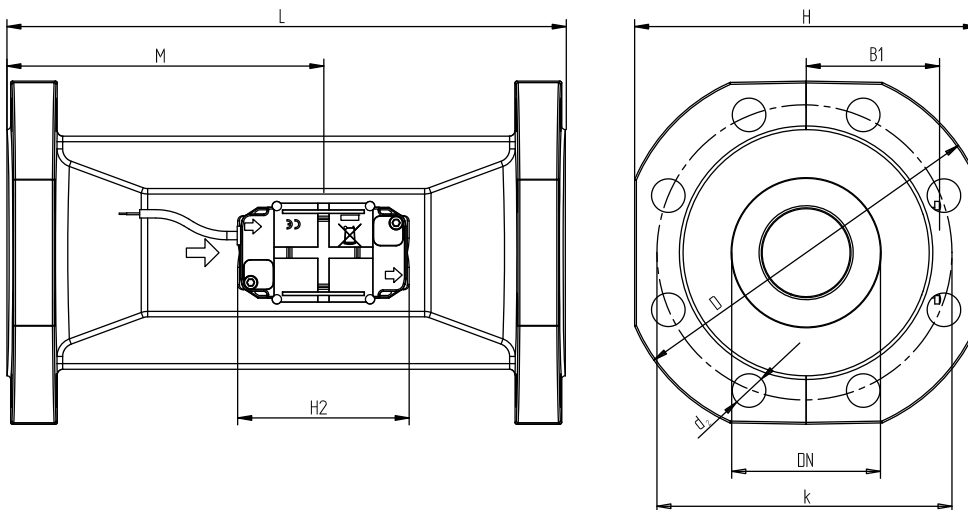
#### ULTRAFLOW® 14, DN20 to DN50



#### Flange EN 1092, type B, PN25

Nom. diameter	L	M	H2	B1	D	H	k	Bolts			App. weight [kg]
								No.	Thread	d <sub>2</sub>	
DN25	260	L/2	89	58	115	106	85	4	M12	14	5.0
DN40	300	L/2	89	<D/2	150	136	110	4	M16	18	8.3
DN50	270	155	89	<D/2	165	145	125	4	M16	18	10.1

#### ULTRAFLOW® 14, DN65, DN80 and DN100



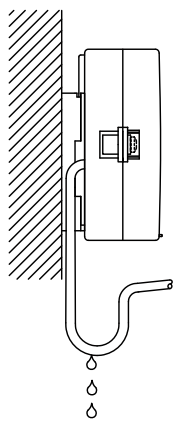
#### Flange EN 1092, type B, PN25

Nom. diameter	L	M	H2	B1	D	H	k	Bolts			App. weight [kg]
								No.	Thread	d <sub>2</sub>	
DN65	300	170	89	<H/2	185	168	145	8	M16	18	13.2
DN80	300	170	89	<H/2	200	184	160	8	M16	18	16.8
DN80	350	170	89	<H/2	200	184	160	8	M16	18	18.6
DN100	360	210	89	<H/2	235	220	190	8	M20	22	21.7

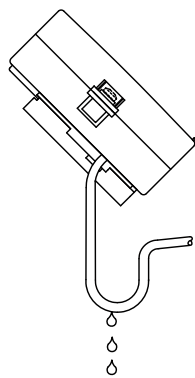
# SVM S6 & ULTRAFLOW® 14 COOLING

## DATA SHEET

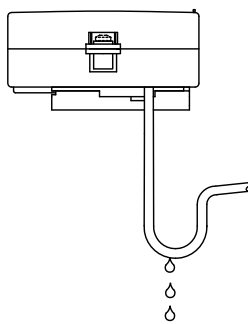
### Installation of calculator



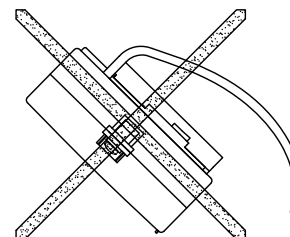
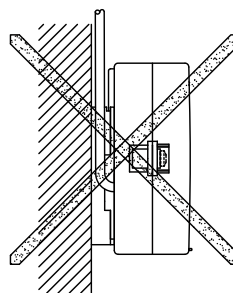
Front, vertical



Front, at an angle  
between horizontal and  
vertical

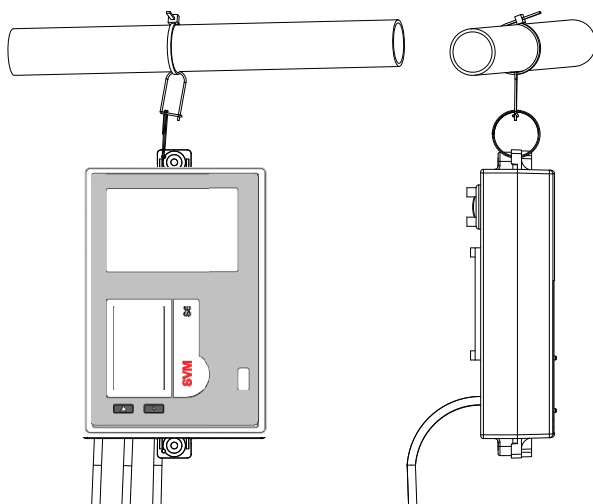


Front, horizontal



**Note!** Cables **must** be installed from below.

### Installation example with suspension

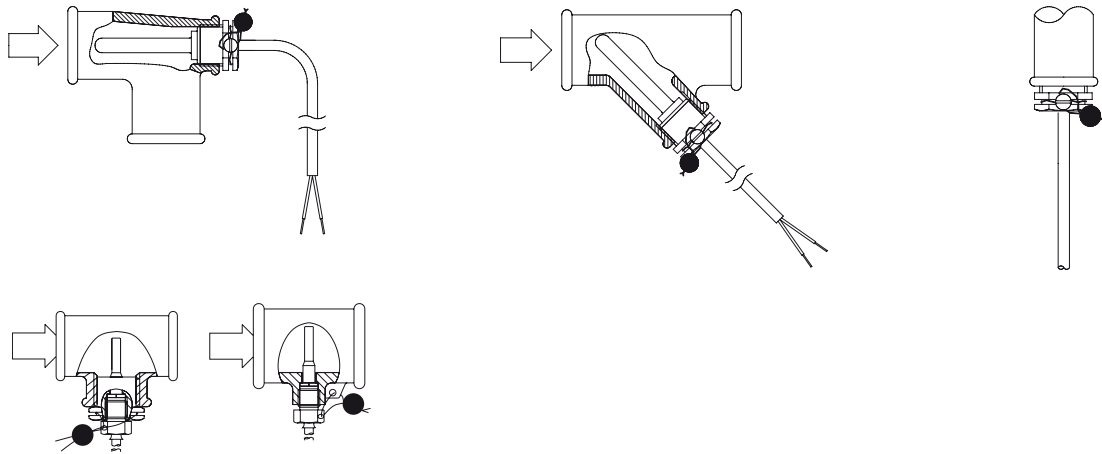


**Note:**  
The suspension **must** not be used on condensing pipes.  
Suspension kit item no. 5915-144. Not included.

# SVM S6 & ULTRAFLOW® 14 COOLING

## DATA SHEET

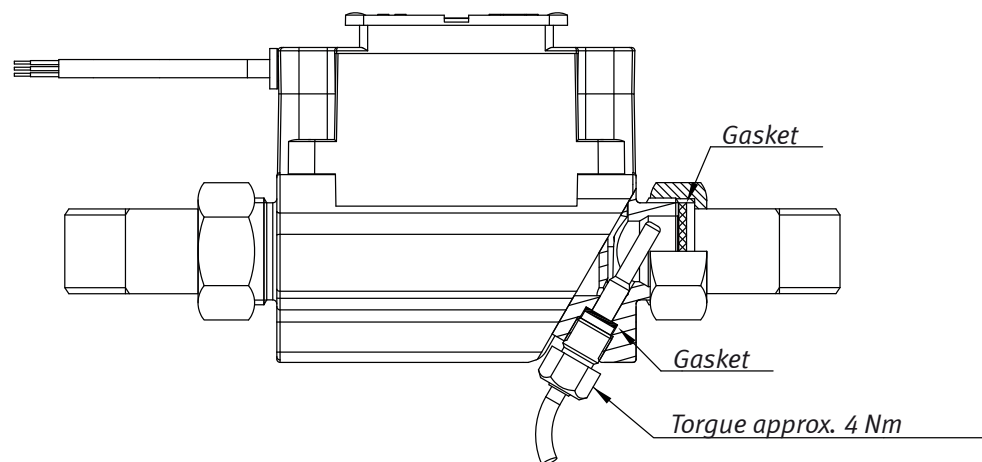
### Installation of temperature sensors



Temperature sensors must be mounted from below

### Mounting of flow sensors

Before mounting the flow sensor, flush the system thoroughly and remove protection plugs/plastic membranes from the flow sensor. Correct flow sensor position (flow or return pipe) appears from the front label placed on the SVM S6. The flow direction is indicated by an arrow on the side of the flow sensor.



Glands and gaskets must be mounted as shown on the drawing above.

Straight inlet: ULTRAFLOW® 14 requires neither straight inlet nor outlet to meet the Measuring Instruments Directive (MID) 2004/22/EC, OIML R75:2002 and EN 1434:2007. Only in case of heavy flow disturbances before the meter will a straight inlet section be necessary. We recommend to follow the guidelines in CEN CR 13582.

To prevent cavitation, the operating pressure at the ULTRAFLOW® 14 must be min. 1.5 bar at  $q_p$  and min. 2.5 bar at  $q_s$ .

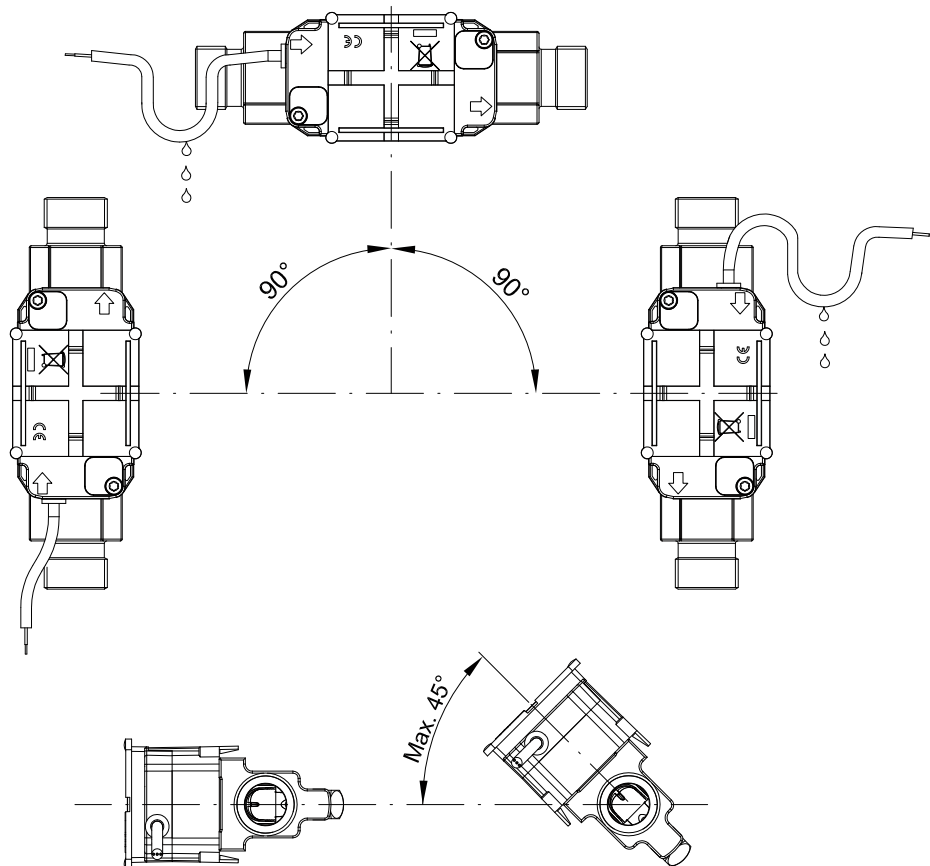
ULTRAFLOW® 14 must not be exposed to pressures below ambient pressure (vacuum).

# SVM S6 & ULTRAFLOW® 14 COOLING

## DATA SHEET

### Mounting of ULTRAFLOW® 14

ULTRAFLOW® 14 must be mounted vertically, horizontally or at any angle in between.  
ULTRAFLOW® 14 may be turned up to 45° in relation to horizontal.



The ULTRAFLOW® 14 housing must **not** be mounted facing upwards or downwards.

