ENGINEERING
TOMORROW

Data sheet

Supercal 5
Energy calculator

Description



The Supercal 5 is Danfoss´s next-generation calculator, succeeding the well-known Infocal series.

This new series is characterised by state-of-the-art multi-functional technologies, is based on a user-friendly modular concept and fully meets customer specific needs as simplified system integration, tariff and data logger functions, universal data transfer and connection to system processors.

Because the design of the Supercal 5 aim at a high degree of flexibility while keeping future standards in mind, it is ideally suited as a heat or cooling meter, as well as a combined heat/cooling meter.

Its volume input can be combined with ultrasonic, mechanical, magnetic-flow or fluidic oscillators flow sensors. The additional pulse inputs allow the connection of hot or cold water, gas, oil, and electricity meters.

Thanks to its extensive range of options for data communication, as well as its flexibility for collecting and recording dynamic plant data, the Supercal 5 also lend itself well to applications in district heating networks and industry installations.

Features

- Optimisation of the housing for easier installation
- NFC technology for simplified and user-friendly configuration using Superprog Android
- Large illuminated dot-matrix display (128×64) for improved navigation
- 2 LEDs indicate, in real time, the status of the calculator
- Fully customisable tariff and data logger functions
- Display menu position customizable by Superprog Windows Software
- Lifespan of 6+1 years without additional power supply module
- Expanded data storage for enhanced monitoring Features
- Calculator for heat meters, cooling meters or combined heat/cooling meters
- Battery or mains powered for increased flexibility
- Exchangeable upper part (MET) while wiring remains in place
- Modules can be retrofitted or replaced at any time without affecting the approval v Self-recognition of optional modules
- Native M-Bus interface according to EN 1434-3
- Optical interface according to IEC 62056-21:2002
- 2- or 4-wire temperature sensors without any configuration
- 2 pulse/state inputs and 2 pulse/state open drain outputs
- User-friendly menu navigation

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Technical specifications

Temperature Measurement		Type of temperatur sensor	Pt500 according to EN 60751
		Cabling	2- or 4-wires
		Absolute temperature range	– 20°C to 200°C
		Approved range	1°C to 200°C
		Homologation range	3 K to 150 K
		Response limit	0,2 K
		Temperature resolution t	0,1 K
		Temperature resolution Δt	0.01K
		Environmental class A	E1/M1
Temperature Measuring Cycle		Battery operated	10 s
		Mains operated	3 s
Medium Temperature		Operation	5°C to 55°C
		Storing and transport	–20°C to 70°C (dry environment)
Display		Illuminated dot-matrix	128 × 64 pixels
Display Units		Energy	kWh, MWh, MJ, GJ, kBtu, MBtu, Mcal, Gcal
		Volume	L, m^3, gal (US), kgal (US), ft^3
		Additional pulse inputs	Energy or volume
		Temperature	°C, °F
Lifespan Supply Modules		w/o supply	6 + 1 years (backup for metrological part)
		D battery	12 + 1 years
		Mains 230 VAC	-
		Mains 24 VAC / 24 VDC	-
Degree of Protection		IP-Code	IP 65 in accordance to IEC 60529
Pulse Inputs	Frequencies	Without supply	maximum 5 Hz
		D battery	maximum 200 Hz
		External Mains	maximum 200 Hz
	Input voltage	0 V to 30 V	
Pulse Outputs	Frequencies	Without supply	maximum 5 Hz
		D battery	maximum 200 Hz
		External Mains	maximum 200 Hz
	Output voltage	0 V to 60 V	
Optical Interface		Interface	according to IEC 62056-21:2002
NFC Interface		Interface	according to ISO/IEC 14443 Type A
M-Bus Interface		Interface	according to EN 13757-2/3
		Baud rate	300 to 9600 baud
		Galvanic isolation	3.75 kV

Compatibility Matrix

Function	w/o any [1] Power Supply	D Battery	Mains Operated
LCD display	✓	✓	✓
Backlight (LCD display)	-	-	✓ [2]
NFC interface	✓	✓	✓
Optical interface	✓	✓	✓
M-Bus interface	✓	✓	✓
Outputs	5 Hz	200 Hz	200 Hz
Inputs	5 Hz	200 Hz	200 Hz
Measurement cycle [3]	Slow	Fast	Fast
Energy measurement (temperatures and volume)	✓	✓	✓
Supply of the flow meter	-	✓	✓
Radio	-	✓	✓
Communication Modules [4]	✓	✓	✓
Life span (years)	6 + 1	12 + 1	-

[1] Only with backup battery.
[2] In case of power cut, there is no backlight.
[3] Slow is between 10 second and 120 Seconds. Fast is between 3 seconds and 120 seconds.
[4] M-Bus modules work always. Any other communication module requires an external main power supply.

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Optional Power Supply Modules

One plug and play power supply module can be retrofitted, either Ex Works or on site, or replaced at any time without affecting the approval of the calculator. The calculator recognises automatically the following types of power supplies:

- Lithium D battery 3,6 V
- Mains 24 VDC / 24 VAC (range 12 to 42 VDC / 12 to 36 VAC)
- 230 VAC - 50/60 Hz (range 90 VAC to 240 VAC)

Optional Modules

Up to two plug and play modules can be retrofitted, either Ex Works or on site, or replaced at any time without affecting the approval of the calculator. The calculator recognises automatically the following types of modules:

- Analog Output Module (0..20 mA, 4..20 mA, 0(2)..10 VDC)
- Input Module (state/pulse)
- Output Module (state/pulse)
- M-Bus Module
- BACnet/Modbus Module

Data Logger

The calculator's data logger is fully customisable and allows the following recordings:

- Up to 4 individual historic registers for recording energy, volume, input values
- Average values
- Peak values
- Event log

The only limitation is given by the available memory, which is 10 kB. Each value takes 4 bytes of storage except the maximum values and the event log values that take 8 bytes. Therefore, up to 2175 values can be recorded.

Optional Radio Communication

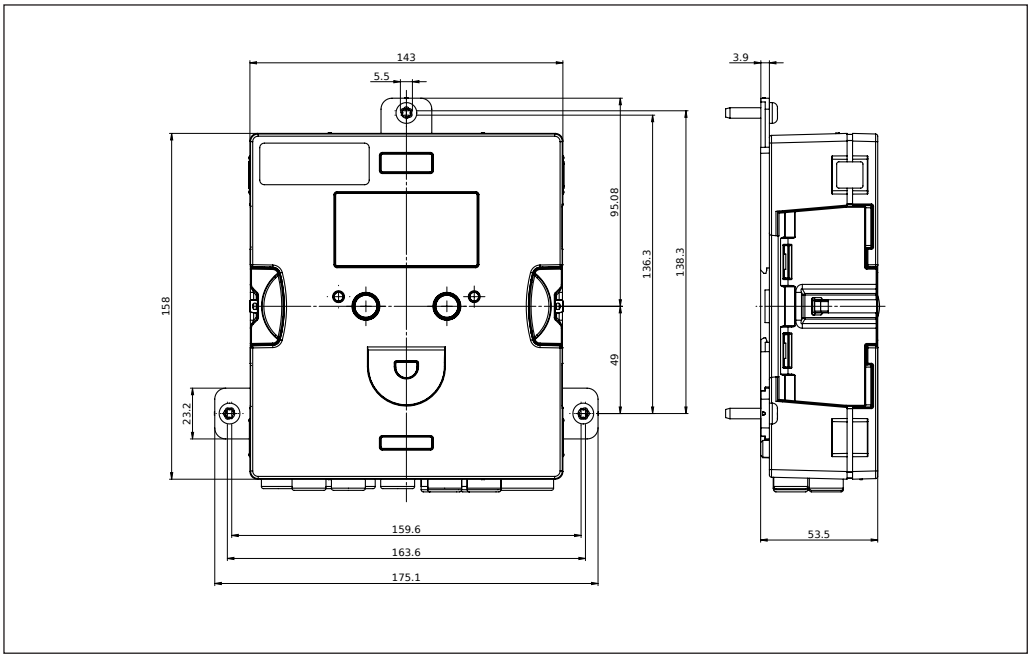
wM-Bus communication

- Frequency: 868.95 MHz
- Communication: Unidirectional
- Protocol: Wireless M-Bus according EN 13757-4
- Encryption: AES-128
- Broadcasting interval: Standard 120 sec. (Mode T1/C1, encryption mode 5/7)
- Broadcasting performance: 25 mW (14 dbm)

LoRaWAN

- Frequency: 868.95 MHz - EU868, normed by ETSI (EN300.220)
- Communication: Bidirectional
- Protocol: Radian – EN60870-5 (M-Bus)
- Encryption: AES-128
- Broadcasting performance: 25 mW (14dBm)
- Cycle: Standard every 2 hours

Dimensions



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Ordering
Supercal 5

Power supply	Installation	Pulse value	Designation	Energy unit	Volume unit	Communication integrated	Code no.
Battery	Supply	2.5 liter / pulse	Supercal 5 HC 2.5l/p 3.6V M-Bus	0.01 MWh	0.1 m^3	M-Bus	**187F8300**
		10 liter / pulse	Supercal 5 HC 10l/p 3.6V M-Bus	0.01 MWh	0.1 m^3	M-Bus	**187F8301**
		50 liter / pulse	Supercal 5 HC 50l/p 3.6V M-Bus	0.01 MWh	0.1 m^3	M-Bus	**187F8302**
		100 liter / pulse	Supercal 5 HC 100l/p 3.6V M-Bus	0.01 MWh	0.1 m^3	M-Bus	**187F8303**
		1 liter / pulse	Supercal 5 HC 1l/p 3.6V M-Bus	1 kWh	0.01 m^3	M-Bus	**187F8304**
230V AC	Return	2.5 liter / pulse	Supercal 5 HC 2.5l/p 230V M-Bus	0.01 MWh	0.1 m^3	M-Bus	**187F8305**
		10 liter / pulse	Supercal 5 HC 10l/p 230V M-Bus	0.01 MWh	0.1 m^3	M-Bus	**187F8306**
		50 liter / pulse	Supercal 5 HC 50l/p 230V M-Bus	0.01 MWh	0.1 m^3	M-Bus	**187F8307**
		100 liter / pulse	Supercal 5 HC 100l/p 230V M-Bus	0.01 MWh	0.1 m^3	M-Bus	**187F8308**
		1 liter / pulse	Supercal 5 HC 1l/p 230V M-Bus	1 kWh	0.01 m^3	M-Bus	**187F8309**

Note: Temperature sensors and pockets must be ordered separately!

Ordering
Accessories

Power supply	Installation	Pulse value	Designation
Temperature sensors Ø 5.2 mm	Pt500 / Ø 5.2 mm / 1.5 m cable, MID	1 pair	**187F3125**
	Pt 500 / Ø 5.2 mm / 3 m cable, MID	1 pair	**187F3127**
	Pt500 / Ø 5.2 mm / 5 m cable, MID	1 pair	**187F3390**
	Pt500 / Ø 5.2 mm / 10 m cable, MID	1 pair	**187F3391**
Temperature sensors Ø 6.0 mm	Pt500 / Ø 6.0 mm / 3 m cable, MID	1 pair	**187F3123**
	Pt500 / Ø 6.0 mm / 5 m cable, MID	1 pair	**187F3124**
	Pt500 / Ø 6.0 mm / 10 m cable, MID	1 pair	**187F3389**
Pockets for Ø 5.2 mm temperature sensors	Ø 5.2 mm, brass, 35 mm length	1 pair	**087G6053**
	Ø 5.2 mm, brass, 52 mm length	1 pair	**087G6054**
	Ø 5.2 mm, brass, 85 mm length	1 pair	**087G6055**
	Ø 5.2 mm, brass,120 mm length	1 pair	**087G6056**
	Ø 5.2 mm, stainless steel, 85 mm length	1 pair	**087G6057**
	Ø 5.2 mm, stainless steel, 120 mm length	1 pair	**087G6058**
	Ø 5.2 mm, stainless steel, 155 mm length	1 pair	**087G6059**
	Ø 5.2 mm, stainless steel, 210 mm length	1 pair	**087G6060**
Pockets for Ø 6.0 mm temperature sensors	Ø 6.0 mm, brass, 40 mm length	1 pair	**087G6061**
	Ø 6.0 mm, brass, 85 mm length	1 pair	**087G6062**
	Ø 6.0 mm, brass, 120 mm length	1 pair	**087G6063**
	Ø 6.0 mm, stainless steel, 85 mm length	1 pair	**087G6064**
	Ø 6.0 mm, stainless steel, 120 mm length	1 pair	**087G6065**
	Ø 6.0 mm, stainless steel, 155 mm length	1 pair	**087G6066**
	Ø 6.0 mm, stainless steel, 210 mm length	1 pair	**087G6067**
Power supply	Battery D for Supercal 5	1 pc	**187F8370**
	Power supply 110-230VAC for Supercal 5	1 pc	**187F8371**
Communication module	M-Bus module for Supercal 5	1 pc	**187F8372**
	Modbus / BACnet module for Supercal 5	1 pc	**187F8373**
	AO module 4-20mA, 0-10V for Supercal 5	1 pc	**187F8374**
	LoRaWAN module for Supercal 5	1 pc	**187F8375**

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