

Type No.



Wind Speed Sensor

for transmission of electrically measured wind speed values. Low-inertia 3-cup assembly as sensing element; shaft made of stainless steel, guided in special covered precision ball bearings; housing made of polycarbonate.

Dimensions: 224 mm, height 327 mm, max. housing- 80 mm
Weight: approx. 0.9 kg (type 4021) resp. 0.5 kg (type 4034)
Fastening: Socket 34 x 40 mm length
Connection: metal connector, IP 67
Heating: 12 V / 6 W; controlled by thermostat
Operating temp.: -35...+80°C
Max. load: 60 m/s

Sensor with **DC measuring generator** which produces a voltage proportional to the wind speed. Suitable for up to 4 analog instruments, connected in line.

Meas. range:	0...41 m/s = 0...80 kn	Wind Speed Sensor with DC measuring generator	4021.0000
Threshold:	0.8 m/s		
Response length:	approx. 3 m at v = 5 m/s		
Accuracy:	0.3 m/s; at v > 15 m/s 2 % of range	as above, with built-in heating	4021.1000
Output:	0...1 mA at Ri = 4 k		

Sensor with **reflecting light barrier** and **frequency output** 0...600 Hz and built-in heating. Additional **analog outputs** optionally available.

Meas. range:	0...60 m/s = 0...116.7 kn	Wind Speed Sensor with frequency output	4034.0000
Threshold:	0.3 m/s		
Response length:	< 2.5 m at v = 5 m/s		
Accuracy:	0.3 m/s; at v > 15 m/s 2 % of range	as above, with additional analog outputs	4034.1000
Output:	Type 4034.0000: 0...600 Hz, Open Collector Type 4034.1000: 0...600 Hz, Open Collector as well as analog 0...1 V, 0...20 mA, 4...20 mA		
Power supply:	Type 4034.0000: 12...30 V DC, approx. 1 mA Type 4034.1000: 12...30 V DC, approx. 50 mA		
Admissible load:	approx. 400		

Wind speed sensor; Heavy Duty Design

with CNC-manufactured metal housing (seawater resistant aluminium alloy Al Mg Si 1, black anodized). Special rugged design with improved dynamic features basing on high precision bearings and optimised balancing. Principle of measurement as type 4034.



Dimensions:	224 mm, 275 mm height, max. housing- 80 mm		
Weight:	approx. 0.685 kg		
Fastening:	Socket 34 x 40 mm length		
Connection:	metal connector, IP 67		
Heating:	12 V/6 W; controlled by thermostat; high performance heating 24 V/60 W		
Operating temp.:	-25...+80°C; with high performance heating -40...+80°C		
Max. load:	100 m/s		
Meas. range:	0...70 m/s (0...60 m/s for analogue output)	Sensor for windspeed	
Threshold:	< 0.3 m/s (standard) 0.21 m/s (sensitive version)	Frequency output 0...700 Hz, open collector with built-in heating.	4035.0000
Response length:	< 2,5 m (standard) 2.0 m (sensitive version)	As type 4035.0000, but with additional analogue output 0...20 mA, 4...20 mA and 0...1 V, corresp. 0...60 m/s.	4035.1000
Genauigkeit:	0.2 m/s; at v > 15 m/s 2 % f. FS. <i>Individual calibration upon request</i>	As type 4035.0000, but with high performance heating.	4035.0100
Power supply:	Electronic: 12...30 V DC; approx. 50 mA 4.8...30 V DC, approx. 1.0 mA at 12 V for Typ 4035.0000 Heating: 12 V DC; 1.0 A high performance heating: 24 V DC; 2.7 A	As type 4035.1000, but with high performance heating.	4035.1100
		Sensitive version: As mentioned above types, but with additional prefix.	-----1

Type No.



Wind Speed Sensor, small version

cup anemometer, optionally with Reed switch (frequency output) or DC generator. Compact design, low weight and low cost.

Meas. range:	0...41 m/s		
Max. load:	60 m/s		
Threshold:	1.2 m/s (type 4091.1000) resp. 1.5 m/s (type 4091.2000)	Wind Speed Sensor heated, with Reed switch output	4091.1000
Power supply: (4091.1000)	Recommended load: 12 V; 0.1 mA in connection with COMBILOG		
Heating:	12 V DC; approx. 2 W		
Output signal:			
Type 4091.1000:	Reed switch, 0...118.9 Hz	Wind Speed Sensor with generator output	4091.2000
Type 4091.2000:	DC-generator, 0...1 mA at Ri = 500		
Dimensions:	max. : 100 mm, height 127 mm		
Weight:	approx. 120 g		
Installation:	Side bar with 2 holes 6.5 mm		
Connection:	IP 67 connector		
Operating temp.:	-30...+65°C		

Wind Direction Sensors

for transmission of electrically measured wind direction values. The vane turns through the influence of the wind pressure into the corresponding wind direction. Shaft made of stainless steel, guided in special covered precision ball bearings; housing made of polycarbonate.

Dimensions:	Height 436 mm, turning radius of vane approx. 350 mm
Weight:	approx. 0.9 kg
Fastening:	Socket 34 x 40 mm
Connection:	IP 67 connector
Heating:	12 V / 6 W; controlled by thermostat
Operating temperature:	-35...+80°C
Max. load:	60 m/s
Threshold:	0.2 m/s at 90° initial deflection
Damping ratio:	0.57 at v = 3 m/s and initial deflection = 15°

Sensor with **ringpotentiometer**, for connection of **recorders, data acquisition systems, COMBILOG** etc.; winding gap 2° pointing to North direction.

Meas. range:	1...359°	Wind Direction Sensor, 1...359°	4121.0000
Potentiometer:	1000 , lin. 0.3 %	as above, with built-in heating	4121.1000
Power supply:	12 V DC, max. 1.5 W		

Sensor with **digital Gray Code** output and built-in heating. Additional **analog outputs optionally** available.

Meas. range:	0...360°	Wind direction Sensor, with serial output, 8 bit Gray Code	4122.0000
Output:			
Type 4122.0000:	8 bit Gray Code, TTL, serial 600 Bd		
Type 4122.1000:	8 bit Gray Code, TTL, serial 600 Bd as well as analog 0...20 mA, 4...20 mA and 3 phase signal (selsyn motor system) for analog instruments	as above, with addi- tional analog outputs	4122.1000
Power supply:			
Type 4122.0000:	12...30 V DC, approx. 0.5 mA		
Type 4122.1000:	12...30 V DC, approx. 60 mA		
Admissible load:	approx. 400		

Power Supplies for the wind sensors: Refer to product group 1

Masts, cross arms and further accessories: Refer to product group 9

Type No.



Wind Direction Sensor; heavy duty design

with CNC-manufactured metal housing (seawater resistant aluminium alloy Al Mg Si 1, black anodized). Special rugged design with improved dynamic features basing on high precision bearings and optimised balancing. Principle of measurement as type 4122.

Dimensions:	370 mm height, turning radius of vane approx. 350 mm	Sensor for wind direction with serial data output, 8 bit Gray Code, TTL, with built-in heating	4123.0000
Weight:	approx. 1.015 kg		
Fastening:	Socket 34 x 40 mm length		
Connection:	metal connector, IP 67		
Heating:	12 V / 6 W; controlled by thermostat; high performance heating	Sensor for wind direction with serial data output, 8 bit Gray Code, TTL, Analog output	
Operating temp.:	24 V/ 60 W	0...20 mA, 4...20 mA	
	-25...+80°C; with high performance heating - 40...+80°C	sincl. 3-phase signal; suitable for analog instruments with built-in heating.	4123.1000
Max. load:	100 m/s		
Threshold:	0.2 m/s at 90°		
	Initial deflection		
Damping ratio:	< 0.3 at v = 3m/s and initial deflection = 15°	As type 4123.0000, but with high performance heating	4123.0100
Power supply:			
Electronic:	12...30 V DC; approx. 50 mA; 4.8...30 V DC, approx. 1.0 mA at 12 V for type 4123.0000	As type 4123.1000, but with high performance heating	4123.1100
Heating:	12 V DC; 1.0 A		
High performance heating:	24 V DC; 2.7 A		
Output signal:	digital, 8 Bit Gray Code as serial data, RS232 compatible, Additional at version 4123.1000:		
	analogue:	0...20 mA	
		4...20 mA	
		3- phase signal (selyn motor system) suitable for analog instruments	
	admissible load:	approx. 400	
	Heating:	6 W controlled by thermostat	
	High performance heating:	max 60 W	



Wind Direction Sensor, small version

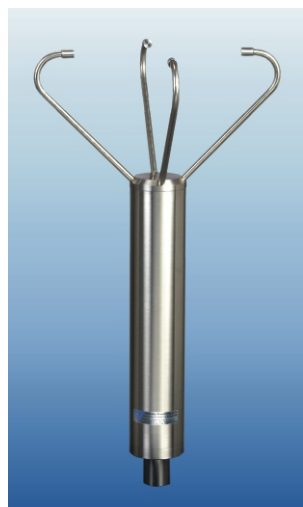
Wind vane coupled to potentiometer, 0...1 k Ω , corresponding 1...359°. Compact design with built-in heating resistor; low weight and low cost.

Meas. range:	360°	Wind Direction Sensor, heated, with potentiometer	
Max. load:	60 m/s	0...1 k	4191.1000
Threshold:	<1 m/s at 90°		
	initial deflection		
Power supply:	12 V DC;		
	max. load 1.5 W		
Heating:	12 V DC; approx. 2 W		
Output signal:	0...1 k		
Linearity:	0,3%		
Dimensions:	Housing : 50 mm, height 210 mm, vane turning radius 187 mm		
Weight:	approx. 280 g		
Installation:	Side bar with 2 holes 6.5 mm		
Connection:	IP 67-connector		
Operating temp.:	-30...+65°C		

Type No.

Ultrasonic Anemometer 2D

4300.0000



for 2 dimensional detection of wind direction and wind speed without moving parts. Measurement by means of two orthogonal positioned ultrasonic measuring paths. The complete electronic for signal processing and -analyzation is contained in a compact stainless steel housing.

Meas. range, max.:	Wind speed:	0...60 m/s
	Wind direction:	0...360°
	Temperature:	-40...+70°C
Accuracy:	Wind speed:	5% of FS
		3% of FS with individual calibration
Output:	Wind direction:	3°
	Serial:	RS232 resp. RS422/RS485
	Analog:	0...10 V and 0...20 mA, alternat.
		0...10 V and 4...20 mA
Power supply:	24 V DC; sensor 2,5 W	
	heating 60 W (optional)	
Dimensions, max.:	300 mm x 540 mm length	
Weight:	approx. 3.1 kg	
Connection:	Metal connector, IP 67	
Fastening:	Socket 34 x 40 mm length	
	Socket with hole 48 mm (optional)	

Ultrasonic Anemometer 3D

4302.0000



for 3 dimensional detection of wind speed and wind direction; without moving parts. Compact design with aluminium housing and stainless steel tubes. Heavy duty version (with outline frame), as well as further options, upon request.

Meas. range:	Wind Speed:	0...45 m/s
		extentable to 0...60 m/s
	Wind direction:	0...360°
	Temperature:	-30...+50°C
	Wind components x,y,z:	0...45 m/s
Output:	RS 232 or analog 0...10 V (optional)	
Power supply:	24 V DC; Sensor 2.5 W	
	Heating 60 W (optional)	
Dimensions:	320 mm x 800 mm length	
Weight:	2.3 kg	
Connection cable:	approx. 12 m	

Combined Sensor for Wind Speed and Wind Direction

combination from types 4021 resp. 4034 (wind speed) and 4121 resp. 4122 (wind direction). Frame and socket made of black anodised aluminium. Further technical data corresponding with the single sensors



Max. load:	60 m/s
Dimensions:	Height approx. 825 mm, turning radius of wind vane: approx. 350mm
Heating (optional):	12 V, 2 x 6 W, controlled by thermostat
Connection:	IP 67 connector
Fastening:	Socket with 48mm hole
Operation temp.:	-35...+80°C

Combination from WS Sensor 4034.0000 and WD Sensor 4122.0000:	4400.0000
Combination from WS Sensor 4034.1000 and WD Sensor 4122.1000:	4400.1000
Combination from WS Sensor 4021.0000 and WD Sensor 4121.0000:	4400.2000
Combination from WS Sensor 4021.1000 and WD Sensor 4121.1000:	4400.3000

Type No.



Combined Sensor for Wind Speed and Wind Direction

combination from types 4035 (wind speed) and 4123 (wind direction). Frame and socket made of black anodised aluminium. Further technical data corresponding with the single sensors.

Max. load: 100 m/s
Dimensions: height approx. 775 mm , turning radius of the wind vane: approx. 350 mm
Heating: 12 V, 2 x 6 W controlled by thermostat; high performance heating 24 V/60 W
Connection: metal connector, IP 67
Fastening: Socket with 48 mm hole
Operating temp.: -25...+80°C, with high performance heating -40...+80°C

Combination from WS Sensor 4035.0000 and WD Sensor 4123.0000:	4500.0000
Combination from WS Sensor 4035.0100 and WD Sensor 4123.0100:	4500.0100
Combination from WS Sensor 4035.1000 and WD Sensor 4123.1000:	4500.1000
Combination from WS Sensor 4035.1100 and WD Sensor 4121.1100:	4500.1100



Hand Cup Anemometer

4651.0000

hand held instrument, for manual measurement of wind speed. Black ABS housing, 4 different large scales.

Meas. range: 0...35 m/s
0...70 kn
0...120 km/h
0...12 Bft.



Indication Instrument for Wind Speed

moving coil instrument in metal housing suitable for control panel installation; analog scale m/s and kn; illuminable.

Meas. range: 0...41 m/s (inner scale)
0...80 kn (outer scale)
Division: 1 m/s resp. 2 kn
Meas. element: I = 1 mA, Ri = 1 k Ω , resp. 20 mA
Scale: 240° analog
Dimensions: See ordering code
Weight: Dep. upon version max. approx. 1.3 kg

Indication Instrument
for Wind Speed

size 96 x 96 mm 1 mA	4710.1000
size 96 x 96 mm 20 mA	4710.1100
size 144 x 144 mm 1mA	4710.2000
size 144 x 144 mm 20 mA	4710.2100



Indication Instrument for Wind Direction

three-coil receiver, instrument in metal housing, suitable for control panel installation, illuminable.

Meas. range: 0...360° resp.
180° P and 180° Stb
Division: 10°; N, NE, E, SE, S, SW, W, NW
Dimensions: See ordering code
Weight: Dep. upon version max. approx. 1.2 kg

Indication Instrument
for Wind Direction

size 96 x 96 mm	4720.0000
size 144 x 144 mm	
meas. range 0...360°	
meas. range 2 x 180°	

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4720.	

Type No.



Combined Indication Instrument

for simultaneous indication of wind direction (analog) and wind speed (digital) in metal housing for panel installation Selection m/s – kn is possible.

Meas. range WD: 0...360° resp.
180° P and 180° Stb, division 10°
Meas. range WS: 0...41 m/s = 0...80 kn
LED display, 3½ -digit
7-segment, height. 13.5 mm
Illumination: 2 x 12 V, 1 W
Dimensions: 144 x 144 mm, depth 125 mm
Weight: approx. 1.4 kg
Power supply: 230 VAC / 50 Hz
Output: 12 V DC, 1.5 VA for supply of wind direction sensor;
12 V DC, 12 VA for heating supply
WS and WD;
for Type 4733.1--- additional output for ext. selection switch and dimmer
Signal input: 0...1 mA resp. 0...20 mA for WS; 3 phase-signal (selsyn motor system) for WD

Combined Indication
Instrument WS/WD

as above, with ext.
panel with selection
switch m/s-kn and
dimmer

meas. Range WD
180° P and 180° Stb

4733.0000

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4733.

*All Sensors of this group can be **directly** connected to **Datenlogger COMBILOG** (refer to product group 1).
For display of wind parameters on a PC or screen various software programs are available (refer to product group 1: **COMGRAPH, COMVIEW, COMAVIA**).*

Masts, crossarms and further accessories: Refer to product group 9