

Wind Interface S-D

Operating Instructions 4.4075.xx.xxx



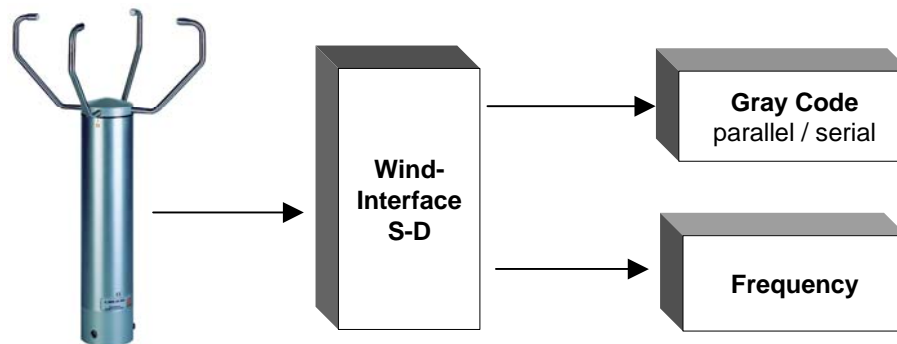
Application



The Wind Interface S-D is used to transform the serial data telegram from the Ultrasonic Anemometer 2D into electrical analogue or digital output variables.

These output variables correspond to the output signals of standard mechanical wind speed and wind direction transmitters.

Through this, it is possible to replace the existing mechanical transmitters for an Ultrasonic Anemometer 2D, retaining at the same time the electrical output signals of installed transmitters.



for ex. Ultrasonic Anemometer
4.3800.00.140

Wind Interface S-D Models

Interface Type Order-No.	Wind Direction Transmitter		Wind Speed Transmitter	
	Order-No.	Output Signal WD	Order-No.	Output Signal WS
4.4075.02.000	4.3121.32.000	8 bit parallel *	4.3303.22.000	1042Hz = 50m/s
4.4075.02.010	4.3128.x0.000	4/5 bit parallel **	4.3518.00.000	573Hz = 50m/s***
4.4075.02.020	4.3125.32.100	8 bit serial *	4.3303.22.007	1042Hz = 50m/s
4.4075.02.021	4.3125.32.100	8 bit serial *	4.3303.22.018	502Hz = 50m/s
4.4075.02.030	4.3129.00.000	5 bit serial **	4.3519.00.000	630Hz = 50m/s
4.4075.02.040	4.3323.21.300	analogue	4.3303.22.000	1042Hz = 50m/s
4.4075.02.050	4.3128.x0.000	4 bit parallel **	4.3520.x0.000	573Hz = 50m/s****
4.4075.02.060	4.3125.32.100	8 bit serial * + temperature output 0...10 V (-30...+ 50 °C)	4.3303.22.007	1042Hz = 50m/s

* Thies-Gray-code 8 Bit / 144 steps / 2.5° resolution

** Gray-code 5/4 Bit / 32/16 steps / 11.25° / 22.5° resolution

*** sink-output (WS)

**** source-output (WS)

Technical Data

Input	Serial Interface Data telegram	RS 422 / RS 485 (for US-type : 4.3800.00.140 or 4.3800.00.141) Ref. to chapter <i>data telegram</i>
Output WS	Frequency Accuracy PP-ratio Up-date rate WS level (high) WS level (low) WS level (low) Output WS I(max) Output WS I(max)	0....1000 Hz $\pm 0,5$ % v. m.r.. 1:1 10 Hz $V_{CC} - 2$ V for 4.4075.02.000 / ...020 / ...021/...040 / ...060 0.7 V for 4.4075.02.000 / ...040 < 0.2 V for 4.4075.02.010 / ...020 / ...021/ ...030 / ...060 50 mA (sink) for 4.4075.02.010 all the others 50 mA (source) for 4.4075.02.050
Output WD digital	WD resolution WD resolution WD resolution Up-date rate WD level (high) WD level (low) WD level (low) Output load I (max) Output load I (max)	2.5° (8bit) for 4.4075.02.000 / ...020 / ...021 22.5° (4bit) for 4.4075.02.010 / ...050 11.25° (5bit) for 4.4075.02.030 10 Hz $V_{CC} - 2$ V 0.7 V for 4.4075.02.000 <0.2 V for 4.4075.02.010 / ...030 / ...050 50 mA (source) for track A - E 20 mA for track H- I
Output WD analogue	WR =170°L (350°) WR =0° (180°) WR =170°R (10°) Resolution Up-date-rate Output resistance DAC –resolution	9.77 V ± 2 % 5.00 V ± 2 % 0.24 V ± 2 % < 1° = 0.028 V 10 Hz 220 Ω 10 bit
Output Temperature	Range Resolution Accuracy Output resistance DAC –resolution	-30 ...+ 50 °C = 0....10 V 0.1 °C = 0.125 V ± 1 % of m.r. 220 Ω 10 bit
Power Supply	Power supply V_{CC} Heating (Ultrasonic) Current consumption Fuse	9....24 V DC 24 V AC / DC approx. 25 mA 250 mA (T)
Housing	Material Protection Dimensions Weight	Alu IP 65 179 x 84 x 67 mm 0,85 kg.

Remark to Error Message:

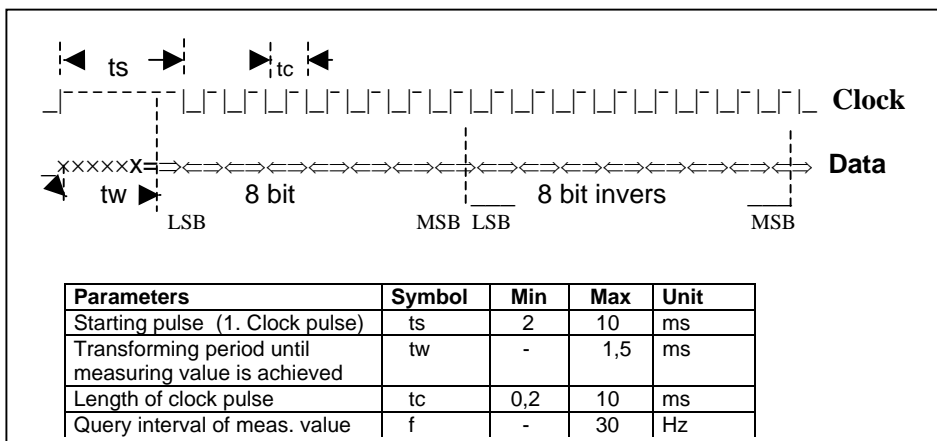
In case the data transmission between the Ultrasonic Anemometer and the interface is faulty or fails, the interface sends an error message, outputting the max. wind speed of 50 m/s and the wind direction as 0°.

Interface Specification for 4.4075.02.020 / ...021

Wind direction Serial-synchronous data output of the wind direction

The control, and transmission of the “wind direction” is carried out via the lines “data”, and “clock (CLK)” as follows:

The rising edge of the first CLK-pulse files the “wind direction” into the shift register according to time [tw] in the form of a specific Gray-code. With this, the LSB of the Gray-code is available at the output “data”. With seven further CLK-signals the Gray-code is completely output. Eight further CLK-signals lead to the output of the inverse Gray-code. This allows a plausibility check on the transmission distance.



Interface Specification for 4.4075.02.030

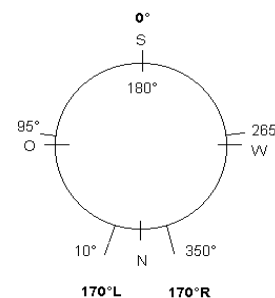
- Wind direction**
- Gray-code
 - Resolution of the wind direction 11.25° 5 bit (32 steps (360 / 32 = 11.25°))
 - Serial-synchronous data output of the wind direction
for description please ref. to type 4.4075.02.020/...021
 - Output of 8 bit/ 16 bit with the following contents:

Gray-Code					Special function		
2 ⁰	2 ¹	2 ²	2 ³	2 ⁴	hard-set		
X	x	x	x	x	0	1	0

Interface Specification for 4.4075.02.040

Wind direction Analogue output of meas. value with specific meas. range. Starting from the selected reference mark (=180°) at the wind transmitter (corresp. to 0° (south)), the deviation is stated to the left(170°L) or to the right (170°R) of it.

Angle of Wind Transmitter	Reference Angle	U(Output)
10°	170°L	9.77V ±2%
180°	0°	5.00V ±2%
350°	170°R	0.23V ±2%



Serial Interface

The wind interface S-D is equipped with an RS422/RS 485-interface. The interface expects a continuous data flow from the Ultrasonic Anemometer 2 D.

Konfiguration

There are 4 baud rate to be selected (standard 1200 baud).

The baud rates are selected via the DIP-switch (see configuration).

Baud-Rate	Data-Bits	Parity	Stop-Bit
1200	8	no	1

Data Telegram

The following data telegram is expected (from the Ultrasonic) (WGWRT):

STXxx.x xxx xxx.x*xx[CR][ETX]

 | | | |
 1. 2. 3. 4.

1. Wind speed
2. Wind direction
3. Temperature
4. Check-sum

Configuration

The configuration of the wind interface is carried out via the DIP-switches 1+2, and the configuration points P2 and P3

- Selecting the output version of the interface
- Test function (wind interface output)
- Selecting the baud rate

Output Versions of Interface 4.4075.02.xxx

Order-No.	S2-1	S2-2	S2-3	S2-8	S1-1(A)	S1-2(B)	S1-3ⓐ	S1-4(D)	S1-5(E)	P2	P3
...000	OFF	OFF	OFF	ON	OFF	OFF	ON	ON	ON	X	X
...010	ON	OFF	OFF	ON	ON	OFF	ON	ON	OFF	X	X
...020	OFF	ON	OFF	ON	ON	OFF	ON	OFF	OFF	X	X
...021	OFF	ON	ON	ON	ON	OFF	ON	OFF	OFF	X	X
...030	ON	ON	OFF	ON	ON	OFF	ON	OFF	OFF	X	X
...040	OFF	OFF	ON	ON	OFF	ON	OFF	OFF	OFF	1-3	1-3
...050	ON	OFF	ON	ON	ON	OFF	ON	ON	OFF	x	X
...060	OFF	ON	OFF	OFF	ON	ON	OFF	OFF	OFF	1-2	1-2

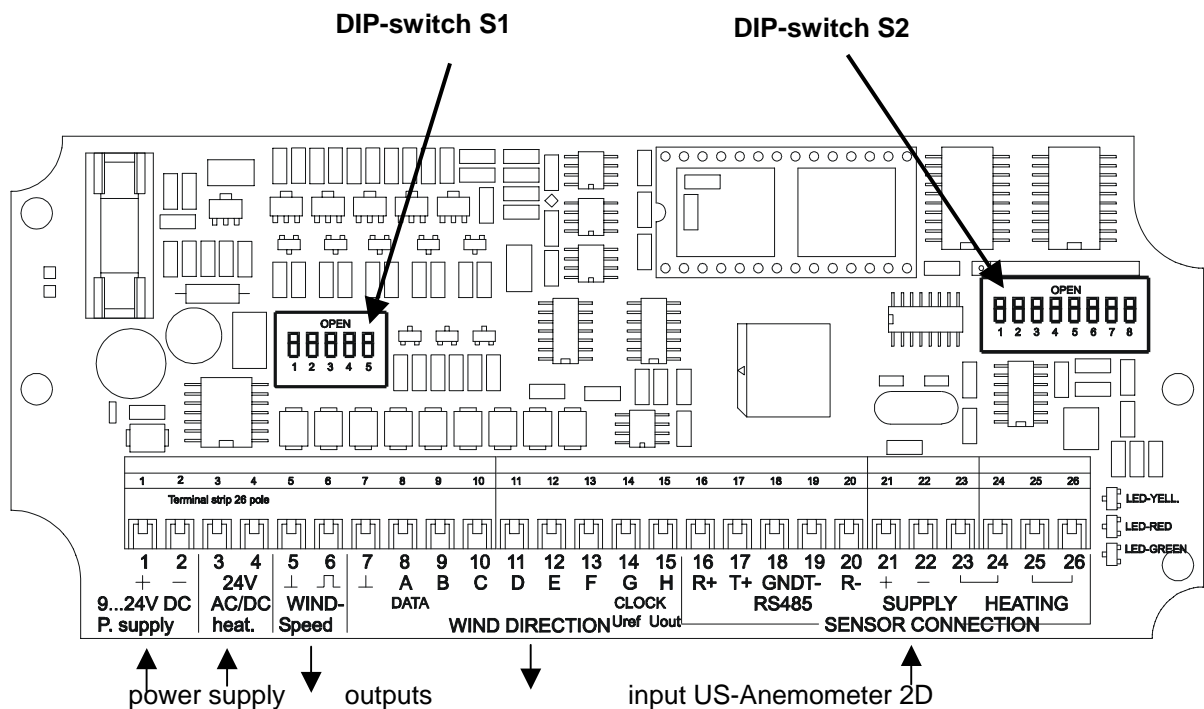
Test function (Interface output)

Function WD/WS		Type ...060	S2-6	S2-7
Test function OFF			ON	ON
WD=0°	WD=0	U _T = 0 V	OFF	ON
WD=180°	WS=1/2	U _T = 5 V	ON	OFF
WD=359°	WS=1/1	U _T = 10 V	OFF	OFF

Baud rate

Function	S2-4	S2-5
1200 baud	ON	ON
2400 baud	OFF	ON
4800 baud	ON	OFF
9600 baud	OFF	OFF

Arrangement of DIP-Switch



Connecting Diagram

Geräte - Konfiguration
siehe Bestell - Nr.
Bedienungsanleitung

Instrument - Configuration
see Order - No.
Instruction for use

Ausgang / Output

WG 0/4 ... 20 mA +
WR 0/4 ... 20 mA +
AGND ⊥
WG 0/2 ... 10V +
WR 0/2 ... 10V +

Pg Kabelmontage Schirm Cable mounting Shield

ggf. Schirmitze entfernen
if necessary remove the
shielded flexible wire

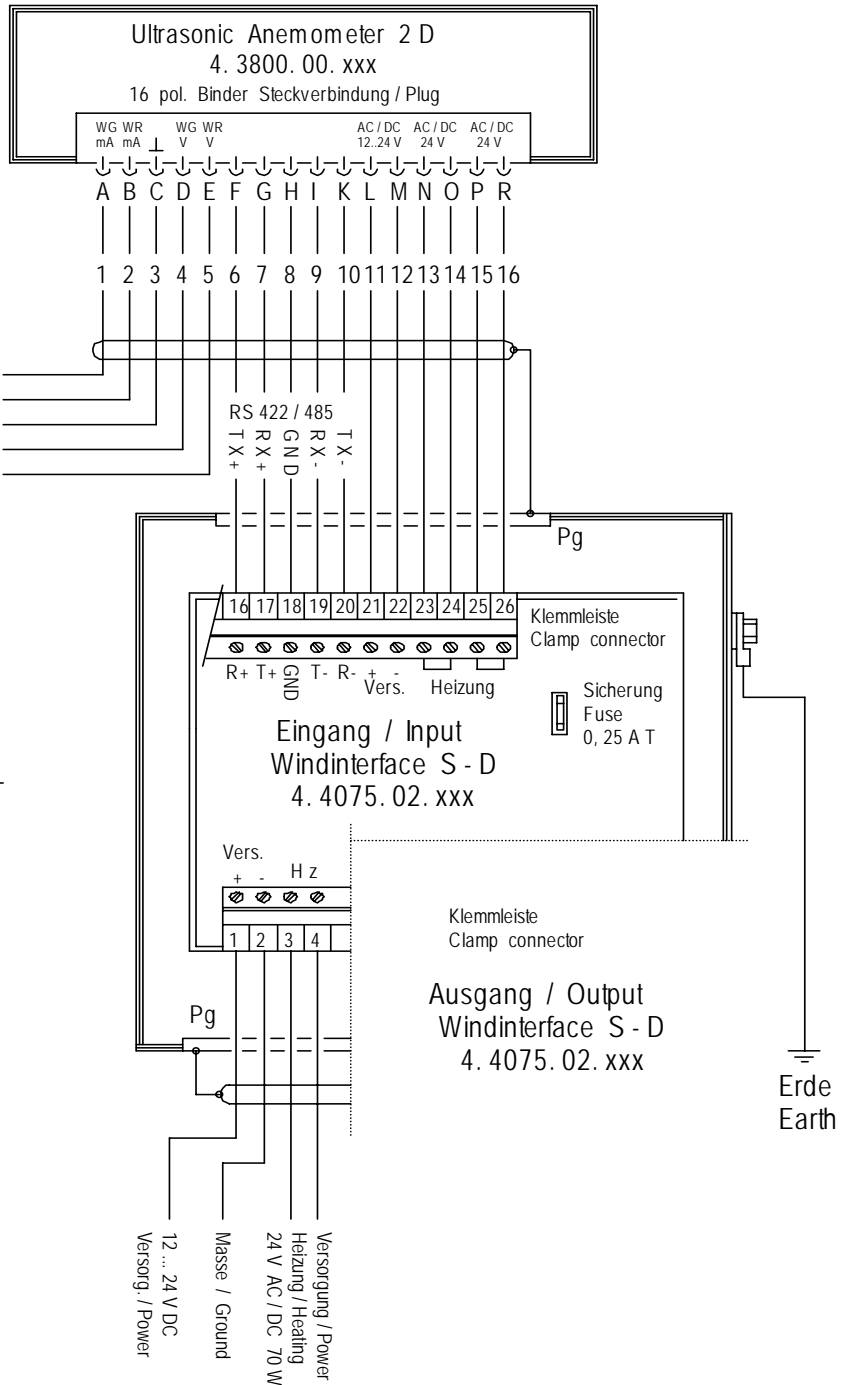
Gehäusewandung
Housing wall

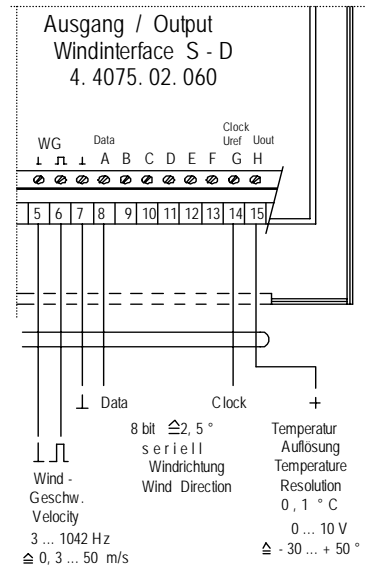
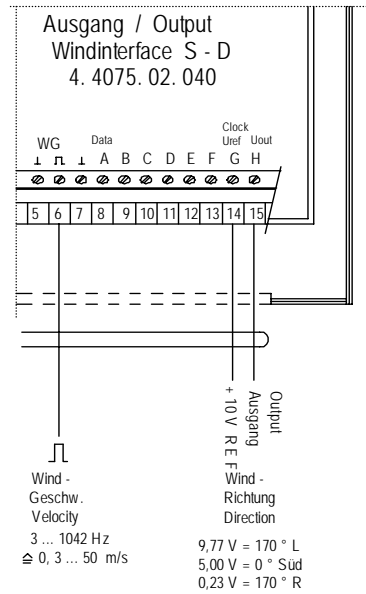
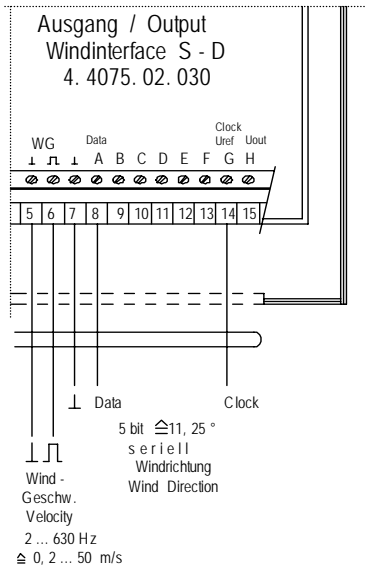
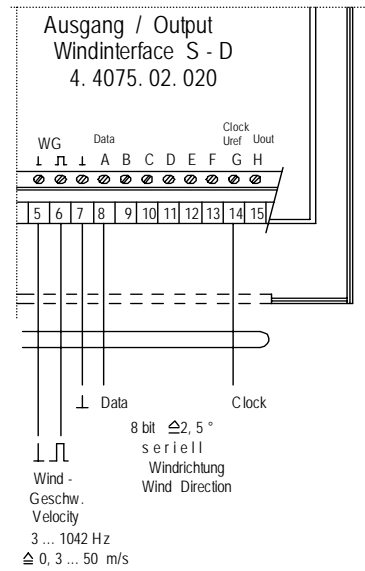
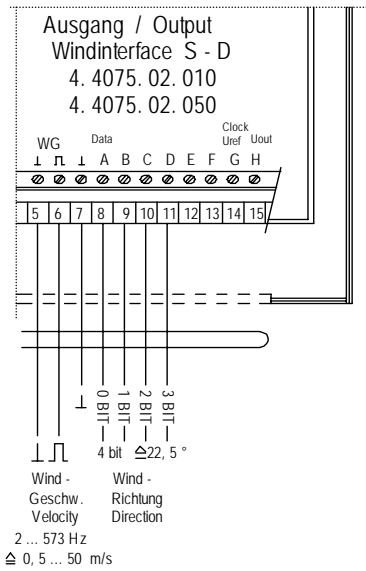
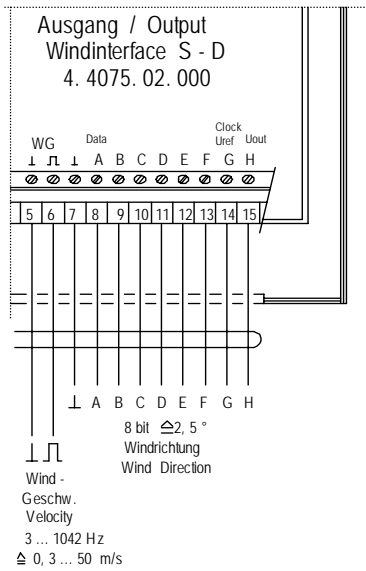
Abschirmgeflecht
zurückgestülpt
Woven shield
coupling

Klemmeinsatz
Clamp insertion

Schraubkappe
Screw

Kabel
Cable







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