

Anemometer Thies First Class Advanced II

S11101 / S11101H



Anemometer Thies First Class Advanced II

Order number

S11101 / S11101H

Availability

Usually on stock

Optically-scanned cup anemometer

Description

Classification acc. to IEC 61400-12-1 Edition 2.0 (2017-03)

Class A and B

	Class A*	Class B**
Heating ON or temperature range: 15 ... 40° C	1.8	2.0
Heating OFF	2.3	2.7

***Class A:** simple terrain (-3 ... 3° tilt) (low turbulences) (0° ... 40°C)

****Class B:** complex terrain (-15 ... +15° tilt) (high turbulences) (-10° ... 40°C)

Source: Classification report Class A and B

Class S for different air temperatures

	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C
Class 'S'	2.8	2.6	2.3	2.1	1.9	1.8	1.8	1.8	1.8

The Class S is obtained using the same classification parameters as for Class A with the exception of the temperature.

Source: Classification report Class S temperature

Operational Standard Uncertainty acc. to IEC 61400-12-1

The operational standard uncertainty describes the maximum deviation of the wind speed measured by the anemometer

compared with the real wind speed. The table indicates the operational standard uncertainty at 10 m/s:

	Class A*	Class B**
Heating ON or temperature range: 15 ... 40° C	0.10 m/s	0.12 m/s
Heating OFF	0.13 m/s	0.16 m/s

Optically-scanned cup anemometer

Thies First Class Advanced gives outstanding performance. The sensor has been classified acc. to IEC 61400-12-1 Edition

2.0. It gives optimal dynamic performance with the following characteristics:

- High accuracy
- Minimal deviation from cosine line
- Excellent behaviour to turbulences
- Minimum overspeeding Small distance constant
- Low start up value
- Low power consumption
- Digital output

The sensor is designed for measuring the horizontal wind velocity in the field of meteorology, climate research, site

assessment, and the measurement of capacity characteristics of wind power systems (power curves). The patented design is

the result of long testing in the wind tunnel. The sensor features dynamic behaviour also at high turbulence intensity,

minimal overspeeding, and a low starting values. It requires only low maintenance thanks to its low-inertia and

ball-bearing cup star. The anemometer is equipped with electronically regulated heating to guarantee smooth running of

the ball bearings and prevent icing of shaft and slot during winter operation.

Specifications

Anemometer Thies First Class Advanced II

General Information

Order Number S11101 / S11101H

Functionality & Signal

Physical functionality Optically-scanned cup anemometer

Delivered signal Frequency output (pulse)

Accuracy & Performance

Accuracy 0.3 ... 50 m/s – 1% of meas. value or < 0.2 m/s

Linearity Correlation factor r between frequency f and wind speed y
 $y = 0.0462 \times f + 0.21$ typical
 $r > 0.99999$ (4 ... 20 m/s)

Starting velocity < 0.3 m/s

Resolution 0.05 m wind run

Distance constant < 3 m (acc. to ASTM D 5096 – 96), 3 m acc. to ISO 17713-1

Turbulent flow Deviation Δv compared with stationary horizontal flow:
 $-0.5\% < \Delta v < +2\%$, Frequency < 2 Hz

Inclined flow deviation < 0.1% ($\pm 20^\circ$)
Turbulence effect: < 1% (up to 30% intensity)

Wind load Approx. 100 N @ 75 m/s

Operating Range

Measuring range 0.3 ... 75 m/s

Survival speed 80 m/s (min. 30 min)

Ambient conditions -50 ... +80 °C, all occurring humidity situations

Electrical Data

Output signal Rectangle, 1082 Hz @ 50 m/s, max. 15 V supply

Electrical supply for optoelec. scanning Voltage: 3.3 ... 48 VDC (galvanic isolation from housing)
Current: 0.3 mA @ 3.3 V (w/o external load)
< 0.5 mA @ 5 V (w/o external load)

Electrical supply for heating Voltage: 24 V AC/DC (galvanic isolation from housing)
Idling voltage: max. 30 V AC, max. 48 VDC
Power consumption: 25 W

Anemometer Thies First Class Advanced II

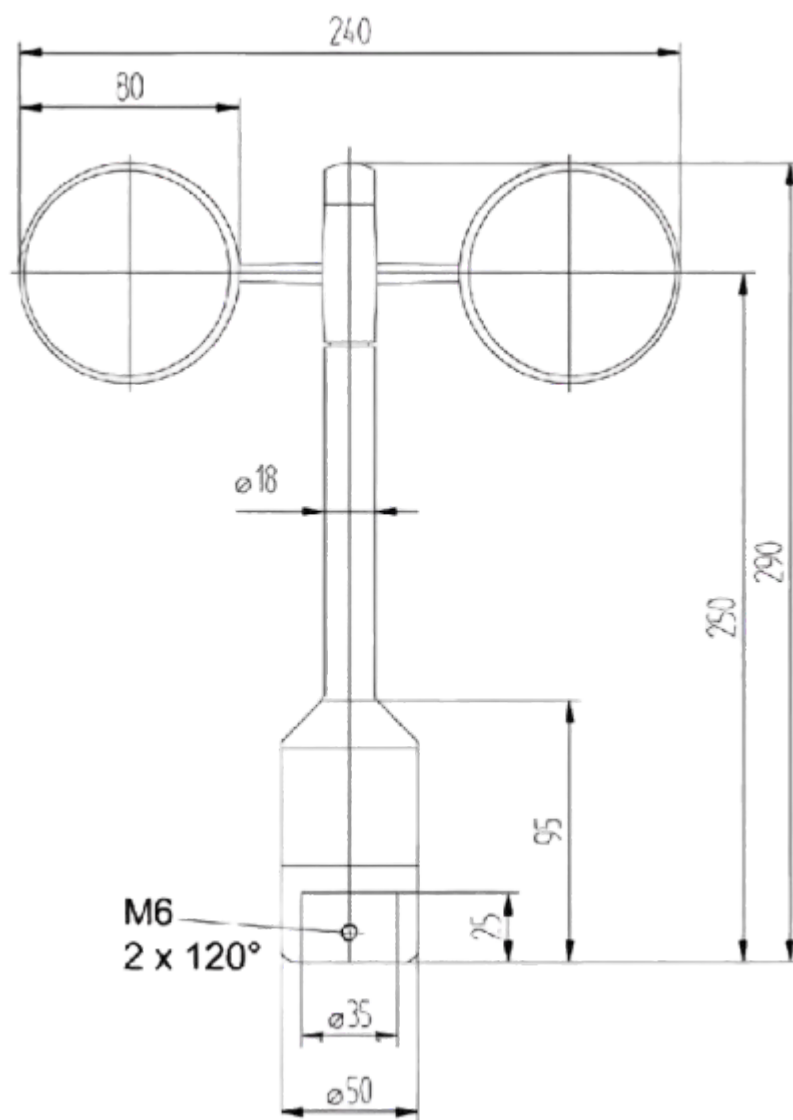
Mechanical & Housing

Connection	8-pole plug for shielded cable in shaft
Mounting	On mast tube R1"
Dimensions	290 x 240 mm
Fixing boring	35 x 25 mm
Weight	Approx. 0.5 kg
Material	Anodised aluminium
Cup star	Carbon-fibre-reinforced plastic
Bearings	Metallic ball bearings
Protection	IP 55 (DIN 40050)

Certifications & Manufacturer

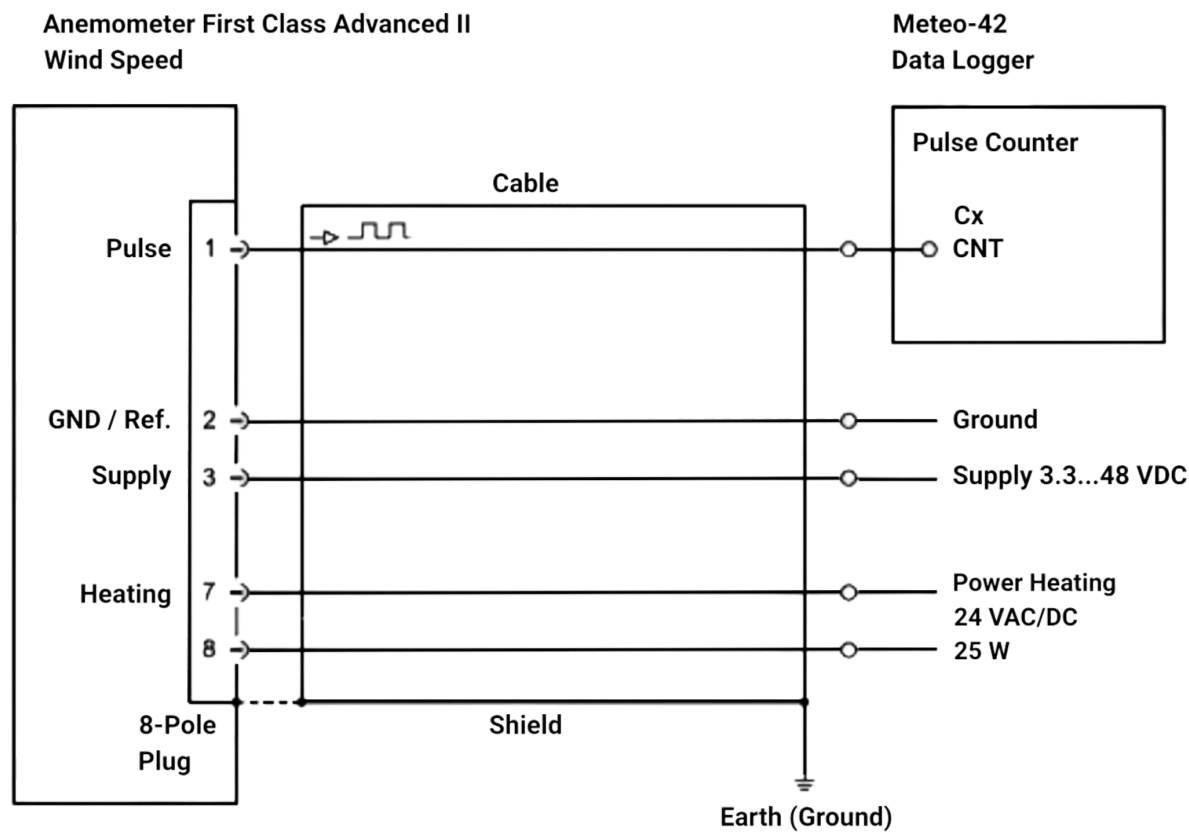
Patent	EP 1 398 637 DE 103 27 632 EP 1 489 427
EMC	EN 61000-6-2:2001 (immunity) EN 55022:2001, Class B (interference)
Manufacturer	Thies

Dimensional drawing



Sensor connection diagram

Sensor connection diagram to Ammonit Meteo-42 Data Logger



Sensor	Plug Pin No.	Ammonit Cable Wire Colour	Meteo-40	Supply Sensor
Wind speed Pulse output	3	white	CNT	
Supply	1	red		9 ... 36 V*
Ground	2	black		Main Ground
Heating	4	orange, orange		24 V AC/DC
	5	violet, violet		

* Supply voltage for usage with Meteo-40 data loggers.

Cable type without heating wires: LiYCY 3 x 0.25 mm²

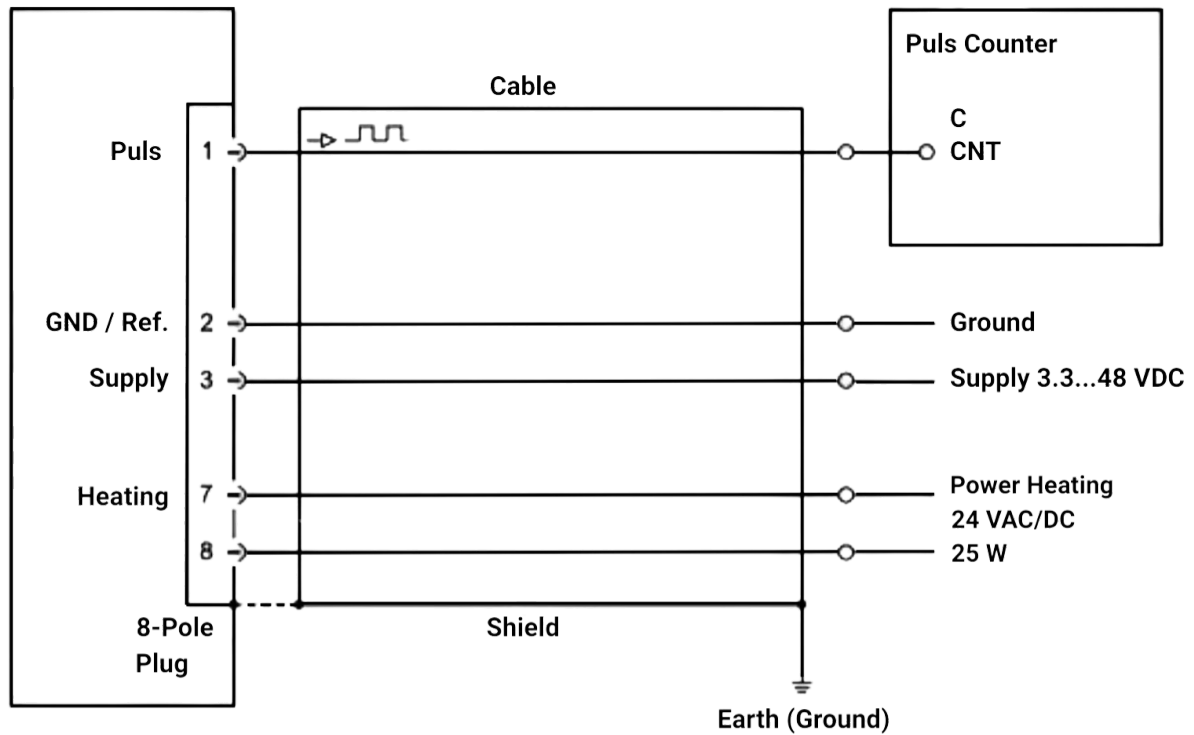
Cable type with heating wires: LiYCY 7 x 0.25 mm²

Connect the shield logger-sided to Ground (GND)

Sensor connection diagram to Ammonit Meteo-40 Data Logger

**Anemometer FC Advanced
Wind Speed**

**Meteo-40
Data Logger**



Sensor	Plug Pin No.	Ammonit Cable Wire Colour	Meteo-40	Supply Sensor
Wind speed Pulse output	3	white	CNT	
Supply	1	red		9 ... 36 V*
Ground	2	black		Main Ground
Heating	4	orange, orange		24 V AC/DC
	5	violet, violet		

*** Supply voltage for usage with Meteo-40 data loggers.**

Cable type without heating wires: LiYCY 3 x 0.25 mm²

Cable type with heating wires: LiYCY 7 x 0.25 mm²

Connect the shield logger-sided to Ground (GND)

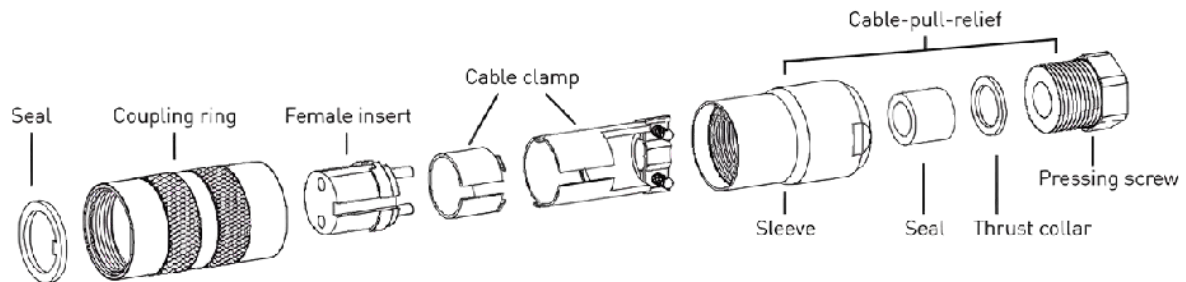
Connection recommendations for the cable shield

Sensor carrier	Sensor	Shielding / Ground
Metallic met mast, grounded	Non-isolated mounting on the met mast (e.g. by using metallic brackets, holders, etc.)	Connect cable shield only at the side of the data logger to ground.
Metallic met mast, grounded	Isolated mounting at the met mast (e.g. by using non-metallic brackets, holder etc. or metallic brackets, holders etc. with isolated plastic adapters)	Connect cable shield at sensor plug and at the side of the data logger to ground.
Metallic met mast, non-grounded	Non-isolated mounting on the met mast (e.g. by using metallic brackets, holders etc.)	

Instructions

Coupling socket, Type: Binder, Serial 423, EMC with cable clamp

Exploded View



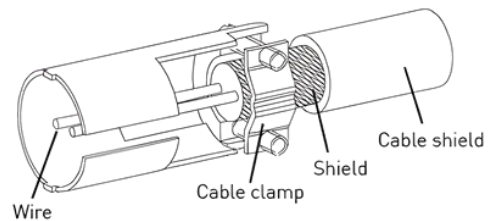
Cable Connection: WITH Cable Shield

Steps:

1. Stringing parts on cable according to plan above.
2. Stripping cable sheath 20 mm
Cutting uncovered shield 15 mm
Stripping wire 5 mm

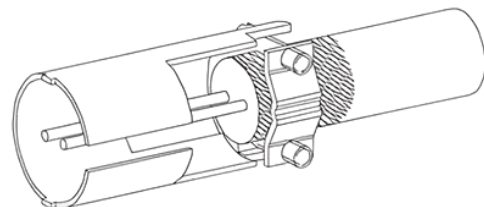
A) Putting shrink hose or insulation tape between wire and shield.

A)



B) If cable diameter permits, put the shield backward on the cable sheath.

B)



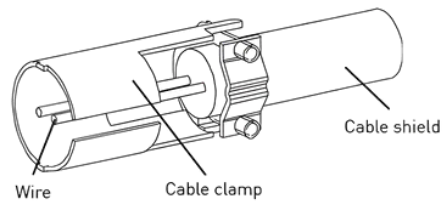
3. Soldering wire to the insert, positioning shield in cable clamp.
4. Screwing-on cable clamp.
5. Assembling remaining parts according to plan above.
6. Tightening pull-relief of cable by screw-wrench (SW 16 and 17).

Cable Connection: WITHOUT Cable Shield

Coupling socket, Type: Binder, Serial 423, EMC with cable clamp

Steps:

1. Stringing parts on cable according to plan above.
2. Stripping cable sheath 20 mm
3. Cutting uncovered shield 20 mm
4. Stripping wire 5 mm
5. Soldering wire to the insert
6. Positioning shield in cable clamp
7. Screwing-on cable clamp
8. Assembling remaining parts according to plan above
9. Tightening pull-relief of cable by screw-wrench (SW 16 and 17)



Accessories

Calibration Anemometer Thies First Class Advanced

Classification

Classification report Thies First Class Advanced II.pdf

Classification report Thies First Class Advanced II class S – warm climate.pdf