

# Hygro-Thermo-Baro-Transmitter-Compact

## Short - Instruction for Use First Steps – Start up

1.1006.54.xxx

At start of software version V3.09



Dok. No. 021934/10/23

THE WORLD OF WEATHER DATA

### **Safety Instructions**

- Before operating with or at the device/product, read through the operating instructions. This manual contains instructions which should be followed on mounting, start-up, and operation. A non-observance might cause:
  - failure of important functions
  - endangerment of persons by electrical or mechanical effect
  - damage to objects
- Mounting, electrical connection and wiring of the device/product must be carried out only by a qualified technician who is familiar with and observes the engineering regulations, provisions and standards applicable in each case.
- Repairs and maintenance may only be carried out by trained staff or **Adolf Thies GmbH & Co. KG**. Only components and spare parts supplied and/or recommended by **Adolf Thies GmbH & Co. KG** should be used for repairs.
- Electrical devices/products must be mounted and wired only in a voltage-free state.
- **Adolf Thies GmbH & Co KG** guarantees proper functioning of the device/products provided that no modifications have been made to the mechanics, electronics or software, and that the following points are observed:
- All information, warnings and instructions for use included in these operating instructions must be taken into account and observed as this is essential to ensure trouble-free operation and a safe condition of the measuring system / device / product.
- The device / product is designed for a specific application as described in these operating instructions.
- The device / product should be operated with the accessories and consumables supplied and/or recommended by **Adolf Thies GmbH & Co KG**.
- Recommendation: As it is possible that each measuring system / device / product may, under certain conditions, and in rare cases, may also output erroneous measuring values, it is recommended using redundant systems with plausibility checks for **security-relevant applications**.

### **Environment**

- As a longstanding manufacturer of sensors Adolf Thies GmbH & Co KG is committed to the objectives of environmental protection and is therefore willing to take back all supplied products governed by the provisions of "ElektroG" (German Electrical and Electronic Equipment Act) and to perform environmentally compatible disposal and recycling. We are prepared to take back all Thies products concerned free of charge if returned to Thies by our customers carriage-paid.
- Make sure you retain packaging for storage or transport of products. Should packaging however no longer be required, please arrange for recycling as the packaging materials are designed to be recycled.



### **Documentation**

- © Copyright **Adolf Thies GmbH & Co KG**, Göttingen / Germany
- Although these operating instructions have been drawn up with due care, **Adolf Thies GmbH & Co KG** can accept no liability whatsoever for any technical and typographical errors or omissions in this document that might remain.
- We can accept no liability whatsoever for any losses arising from the information contained in this document.
- Subject to modification in terms of content.
- The device / product should not be passed on without the/these operating instructions.

## **Table of contents**

1	Models .....	3
1.1	Scaling for sensors with analog output .....	4
2	Installation.....	4
2.1	Electrical Mounting .....	5
2.2	Connection Diagram.....	5
2.3	Cable Assignment .....	6
2.4	Plug Assignment.....	6
2.4.1	Cable .....	7
2.4.2	Cable Shield.....	7
2.4.3	Plug and Cable Mounting .....	8
3	Technical Data .....	9
3.1	Power consumption .....	10
4	More Information / Documents as download .....	10
5	Dimensional Drawing .....	11

## **Table overview:**

Table 1: Cable assignment of the sensor 1.1006.54.x8x .....	6
Table 2: Cable assignment of the sensor 1.1006.54.1xx .....	6
Table 3: Plug assignment of the sensor 1.1006.54.78x .....	7
Table 4: Plug assignment of the sensor 1.1006.54.74x, 1.1006.54.76x .....	7

## **1 Models**

Order no.	Serial interface / Data format / Analogue Output	Supply	Model with
1.1006.54.080	RS 485 HD / THIES ASCII / -	6 ... 30V DC	5m cable
1.1006.54.081	RS 485 HD / MODBUS RTU / -	6 ... 30V DC	5m cable
1.1006.54.087	RS 485 HD / MODBUS RTU / -	6 ... 30V DC	0,3m cable with plug
1.1006.54.141	RS 485 HD / THIES ASCII / 4 ... 20mA	15 ... 30V DC	5m cable
1.1006.54.160	RS 485 HD / THIES ASCII / 0 ... 1V	6 ... 30V DC	5m cable
1.1006.54.161	RS 485 HD / THIES ASCII / 0 ... 10V	15 ... 30V DC	5m cable
1.1006.54.741	RS 485 HD / THIES ASCII / 4 ... 20mA	15 ... 30V DC	Plug*
1.1006.54.760	RS 485 HD / THIES ASCII / 0 ... 1V	6 ... 30V DC	Plug*
1.1006.54.761	RS 485 HD / THIES ASCII / 0 ... 10V	15 ... 30V DC	Plug*
1.1006.54.780	RS 485 HD / THIES ASCII / -	6 ... 30V DC	Plug*
1.1006.54.781	RS 485 HD / MODBUS RTU / -	6 ... 30V DC	Plug*

\*Incl. mating connector

The following parts are included in the scope of delivery:

- 1 x Hygro-Thermo-Baro-Transmitter-Compact
- 1 x Instructions for use short version (included in the package)
- 1 x Factory setting (included in the package)

The inductions for use for the Hygro-Thermo-Baro-Transmitter-Compact are available for download under the following link:

[https://www.thiesclima.com/db/dnl/1.1006.54.xxx\\_Hygro\\_Thermo\\_Baro\\_Compact\\_eng.pdf](https://www.thiesclima.com/db/dnl/1.1006.54.xxx_Hygro_Thermo_Baro_Compact_eng.pdf)

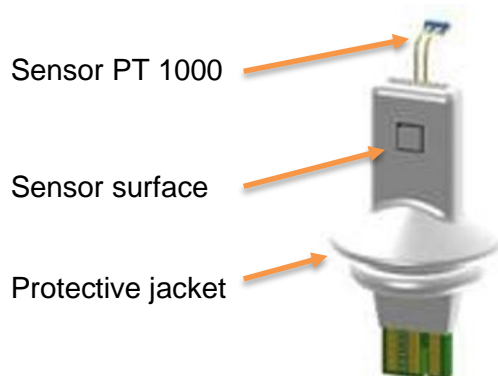
## 1.1 Scaling for sensors with analog output

Order no.	Analogue output	Rel. humidity scaling	Air temperature scaling	Air pressure scaling
1.1006.54.141	4 ... 20mA	0 ... 100%	-30 ... 70°C	800 ... 1100hPa
1.1006.54.160	0 ... 1V	0 ... 100%	-30 ... 70°C	800 ... 1100hPa
1.1006.54.161	0 ... 10V	0 ... 100%	-30 ... 70°C	800 ... 1100hPa
1.1006.54.741	4 ... 20mA	0 ... 100%	-30 ... 70°C	800 ... 1100hPa
1.1006.54.760	0 ... 1V	0 ... 100%	-30 ... 70°C	800 ... 1100hPa
1.1006.54.761	0 ... 10V	0 ... 100%	-30 ... 70°C	800 ... 1100hPa

## 2 Installation

### Note:

Do not touch the highly sensitive hygro-thermo sensor element on the sensor surface.



The white protective jacket on the hygro-thermo sensor element must not be removed.

## 2.1 Electrical Mounting

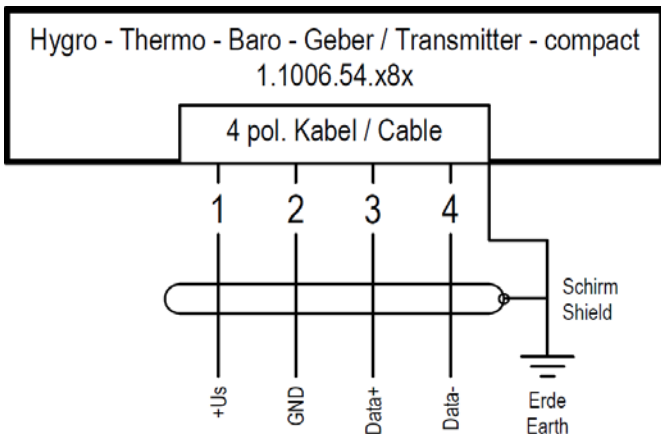
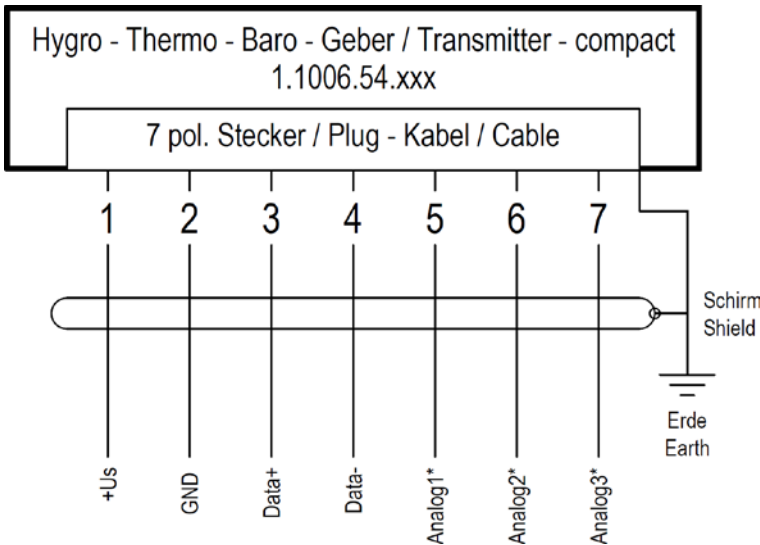
### Note:

**The RS485 interface is electrically connected with the supply voltage. Internally the sensor has 2 bias resistors of 47kOhm with RxD +3.3V and TxD GND.**

**Pressure equalisation for the pressure sensor takes place via the cable. Please bear this in mind on installation.**

### Connection Diagram

## 2.2 Connection Diagram

Order – No.	Connection Diagram
1.1006.54.080 1.1006.54.081 1.1006.54.780 1.1006.54.781	 <p>Hygro - Thermo - Baro - Geber / Transmitter - compact 1.1006.54.x8x</p> <p>4 pol. Kabel / Cable</p> <p>1 2 3 4</p> <p>+Us GND Data+ Data-</p> <p>Schirm Shield Erde Earth</p>
1.1006.54.1xx 1.1006.54.741 1.1006.54.76x	 <p>Hygro - Thermo - Baro - Geber / Transmitter - compact 1.1006.54.xxx</p> <p>7 pol. Stecker / Plug - Kabel / Cable</p> <p>1 2 3 4 5 6 7</p> <p>+Us GND Data+ Data- Analog1* Analog2* Analog3*</p> <p>Schirm Shield Erde Earth</p>

\* Outputs 1 to 3 only have a function with analogue output sensors and are configurable.

## 2.3 Cable Assignment


Order – No.	PIN	Name	Function	Core colour
1.1006.54.080	1	+Us	Supply voltage	white
1.1006.54.081	2	GND	Ground	brown
1.1006.54.780	3	Data+	RS485 Data + (A)	green
1.1006.54.781	4	Data-	RS485 Data – (B)	yellow
		Shield	-	green - yellow

Table 1: Cable assignment of the sensor 1.1006.54.x8x


Order – No.	PIN	Name	Function	Core colour
1.1006.54.141	1	+Us	Supply voltage	white
1.1006.54.160	2	GND	Ground	brown
1.1006.54.161	3	Data+	RS485 Data + (A)	green
1.1006.54.741	4	Data-	RS485 Data – (B)	yellow
1.1006.54.760	5	Analogue 1	Abs. airpressure <sup>1</sup>	gray
1.1006.54.761	6	Analogue 2	Rel. humidity <sup>1</sup>	rose
	7	Analogue 3	Airtemperature <sup>1</sup>	blue
		Shield	-	green - yellow

Table 2: Cable assignment of the sensor 1.1006.54.1xx

## 2.4 Plug Assignment



Order – No.	PIN	Name	Function	Core color	Connector
1.1006.54.087	2	+Us	Supply voltage	white	Front view plug 
	1	GND	Ground	brown	
	3	Data+	RS485 Data + (A)	green	
	4	Data-	RS485 Data – (B)	yellow	
	5	NC	Not connected	gray	
	6	NC	Not connected	rose	
	7	NC	Not connected	blue	
	8	NC	Not connected	-	
		Shield	-	green – yellow	

Table 3: Plug assignment of the sensor 1.1006.54.087

<sup>1</sup> The outputs are configurable and may deviate from the descriptions in the tables. QFF and the dew point may also be output. Configuration takes place at the factory and can be queried with the command OL (Output Link). The specified configuration of the analog outputs refers to the parameter OL00134.

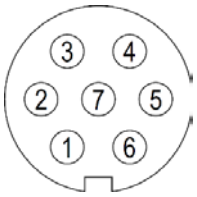

Order – No.	PIN	Name	Function	Core color	Mating connector
1.1006.54.78x	1	+Us	Supply voltage	white	View on the soldered joint of the counter plug 
	2	GND	Ground	brown	
	3	Data+	RS485 Data + (A)	green	
	4	Data-	RS485 Data – (B)	yellow	
	5	NC	Not connected	gray	
	6	NC	Not connected	rose	
	7	NC	Not connected	blue	
		Shield	-	green – yellow	

Table 4: Plug assignment of the sensor 1.1006.54.78x

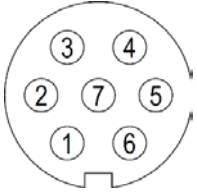

Order – No.	PIN	Name	Function	Core color	Mating connector
1.1006.54.74x 1.1006.54.76x	1	+Us	Supply voltage	white	View on the soldered joint of the counter plug 
	2	GND	Ground	brown	
	3	Data+	RS485 Data + (A)	green	
	4	Data-	RS485 Data – (B)	yellow	
	5	Analogue 1	Abs. airpressure <sup>1</sup>	gray	
	6	Analogue 2	Rel. humidity <sup>1</sup>	rose	
	7	Analogue 3	Airtemperature <sup>1</sup>	blue	
		Shield	-	green – yellow	

Table 5: Plug assignment of the sensor 1.1006.54.74x, 1.1006.54.76x

<sup>1)</sup>The outputs are configurable and may deviate from the descriptions in the tables. QFF and the dew point may also be output. Configuration takes place at the factory and can be queried with the command OL (Output Link). The specified configuration of the analog outputs refers to the parameter OL00134.

## 2.4.1 Cable

Bestell Nr.: **1.1006.54.78x**

The cable to be connected should have the following properties: 4 cores, core cross-section 0.25mm<sup>2</sup>, cable diameter 3 ... 5mm, resistant to ultraviolet rays, overall shielding.

Bestell Nr.: **1.1006.54.74x; 1.1006.54.76x**

The cable to be connected should have the following properties: 7 cores, core cross-section 0.25mm<sup>2</sup>, cable diameter 5 ... 7mm, resistant to ultraviolet rays, overall shielding.

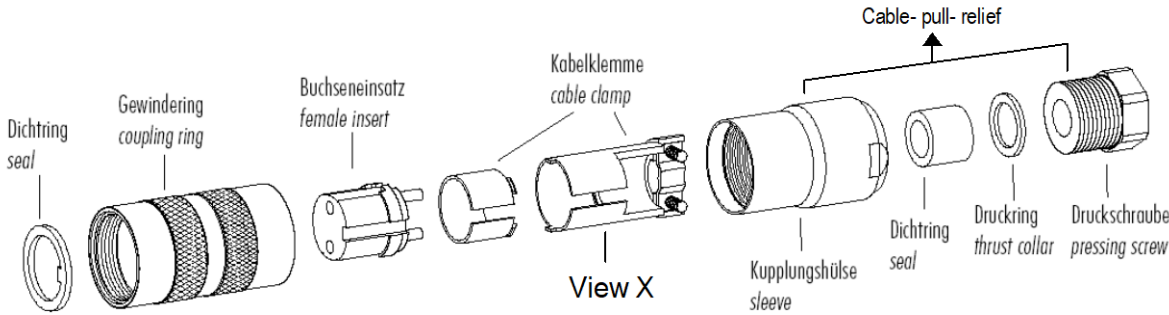
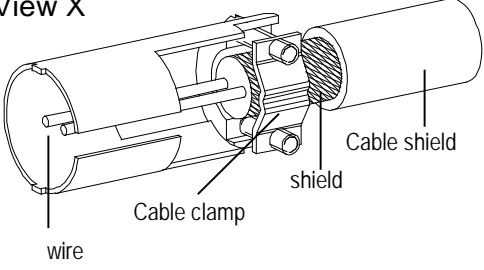
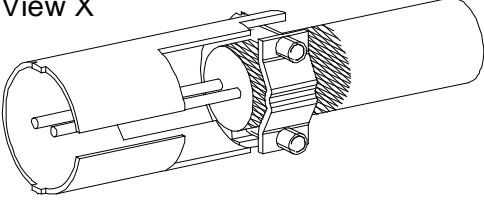
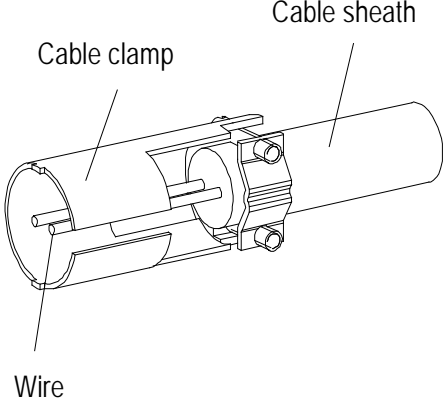
## 2.4.2 Cable Shield

The connection of the cable shielding between the sensor and data acquisition system should be selected to prevent compensating currents in the event of overvoltage's and possible de-struction of the electronic components.

The following procedure is recommended for using the cable shield:

Lay the cable shield between the sensor and the data acquisition system (e.g., datalogger) on both sides. Ground the data acquisition system.

## 2.4.3 Plug and Cable Mounting

Coupling socket, Type: Binder, Serial 423, EMC with cable clamp	
	
Cable connection: <b>with</b> cable shield	
<ol style="list-style-type: none"> <li>1. Stringing parts on cable acc. to plan given above.</li> <li>2. Stripping cable sheath 20mm, cutting uncovered shield 15mm, stripping wire 5mm.</li> </ol> <p><i>Cable mounting 1</i> Putting shrink hose or insulating tape between wire and shield.</p> <p><i>Cable mounting 2</i> If cable diameter permits, put the shield backward on the cable sheath.</p> <ol style="list-style-type: none"> <li>3. Soldering wire to the insert, positioning shield in cable clamp.</li> <li>4. Screwing-on cable clamp.</li> <li>5. Assembling remaining parts acc. to upper plan.</li> <li>6. Tightening pull-relief of cable by screw-wrench (SW16 und 17).</li> </ol>	<p><i>Cable mounting 1</i> View X</p>  <p><i>Cable mounting 2</i> View X</p> 
Cable connection: <b>without</b> cable shield	
<ol style="list-style-type: none"> <li>1. Stringing parts on cable acc. to plan given above.</li> <li>2. Stripping cable sheath 20mm.</li> <li>3. Cutting uncovered shield 20mm.</li> <li>4. Stripping wire 5mm.</li> <li>5. Soldering wire to the insert.</li> <li>6. Positioning shield in cable clamp.</li> <li>7. Screwing-on cable clamp.</li> <li>8. Assembling remaining parts acc. to upper plan.</li> <li>9. Tightening pull-relief of cable by screw-wrench (SW16 und 17).</li> </ol>	



### 3 Technical Data

<b>Relative Humidity</b>			
Measuring range	0 ... 100% rel. Humidity		
Accuracy	Typ. $\pm 1,5\%$ r. H. @ 25°C and $< 80\%$ r. H. 1,5% r. H. over the complete measuring range		
Long-term stability	Typ. $< 0,25$ rel. humidity / year		
Setting time <sup>1</sup>	$\leq 10\text{sec}$		
<b>Absolute Humidity</b>			
Accuracy <sup>2</sup>	Better than $\pm 0,15\text{g/m}^3$ @ -40 ... -20°C Better than 6% of measuring @ -20 ... +60°C		
<b>Air temperature</b>			
Measuring range	-40 ... +85°C		
Accuracy	$\pm 0.1^\circ\text{C}$ @ -40 ... +85°C @ moved air $> 2\text{m/s}$		
Long-term stability	Max. $\leq 0,03^\circ\text{C}$ / Year		
Setting time <sup>1</sup>	$\leq 20\text{sec}$		
<b>Dew point temperature</b>			
Accuracy <sup>2</sup>	Better than $\pm 2,0^\circ\text{C}$ @ 10 ... 100% rel. humidity, -40 ... 60°C		
<b>Barometric pressure</b>			
Measuring range	300 ... 1200hPa		
Accuracy	$\pm 0.25\text{hPa}$ @ -20 ... +80°C @ 800 ... 1100hPa $\pm 0.50\text{hPa}$ @ -20 ... +80°C @ 600 ... 800hPa		
Long-term stability	$\pm 0,3\text{hPa}$ / Year		
Setting time <sup>1</sup>	$\leq 5\text{s}$		
<b>Electrical output</b>			
See 1. Models	RS 485 HD; 0 ... 1V; 0 ... 10V; 4 ... 20mA		
<b>Serial interface</b>	Type	RS485	
	Operating mode	Half duplex mode	
	Data format	8N1	
	Baud rate	2400, 4800, 9600, 19200, 38400, 57600	
Resolution (Telegram and interpreter dependent)	Air pressure:	0,01hPa (max.)	
	Humidity:	0,1% rel. humidity	
	Temperature:	0,01°C (max.)	
Accuracy	See above		
<b>Analogue</b>	0 ... 1V @ $U_s > 6\text{V}$	0 ... 10V @ $U_s > 15\text{V}$	4 ... 20mA @ $U_s > 15\text{V}$
	Resolution	16Bit	16Bit
Accuracy	See above	See above	See above
Analogue numbers	3, freely configurable		
Electric supply for electronic	Voltage: 6 ... 30V DC		
Power consumption	See 3.1 Power consumption		

Further information	
Cable with <b>1.1006.54.78x</b>	LiYCY 4 x 0.25mm <sup>2</sup> shielded, UV-resistant
Cable with <b>1.1006.54.74x;</b> <b>1.1006.54.76x</b>	LiYCY 7 x 0.25mm <sup>2</sup> shielded, UV-resistant
Type of connection	See 1. Models
Admissible environmental conditions	-40 ... +85°C 0 ... 100rel. humidity, including condensation
Dimensions	See 4. and 5. Dimensional drawing
Weight	Approx. 0.45kg
Type of protection	IP 67 (applies to the total sensor)
Housing material	Stainless steel

1) Tau63%

2) Derived from the accuracies of humidity and air temperature.

### 3.1 Power consumption

Type Output	RS485	0 ... 1 V	0 ... 10V	0 ... 20mA	Power [mW] at supply voltage from:				
Supply voltage (Us) :					6V	12V	15V	24V	30V
Typical values <sup>1</sup>	☀				13,0	22,3	25,4	36,2	28,8
	☀	☀			26,8	35,8	39,6	52,8	63,9
	☀		☀		-	-	39,6	52,8	63,9
	☀			☀	-	-	249,0	319,2	291,0
Max values <sup>2</sup>	☀				40,0	62,0	78,0	78,0	97,0
	☀	☀			78,0	102,0	108,0	126,0	139,0
	☀		☀		-	-	117,0	156,0	156,0
	☀			☀	-	-	1017,0	1086,0	1105,0

1) average

2) short-term max values during operation

## 4 More Information / Documents as download

Further information can be found in the short instructions for use. These document and also the instruction for use are available for download under the following links.

Instruction for use

[https://www.thiesclima.com/db/dnl/1.1006.54.xxx\\_Hygro\\_Thermo\\_Baro\\_Compact\\_eng.pdf](https://www.thiesclima.com/db/dnl/1.1006.54.xxx_Hygro_Thermo_Baro_Compact_eng.pdf)

## 5 Dimensional Drawing

Cable version



Shown with accessory 510314 sintered filter cap.

Plug version



Shown with accessory 510314 sintered filter cap.

**Please contact us for your system requirements.  
We advise you gladly.**

**ADOLF THIES GMBH & CO. KG**

Meteorology and environmental metrology  
Hauptstraße 76 · 37083 Göttingen · Germany  
Phone +49 551 79001-0 · Fax +49 551 79001-65  
info@thiesclima.com



**[www.thiesclima.com](http://www.thiesclima.com)**