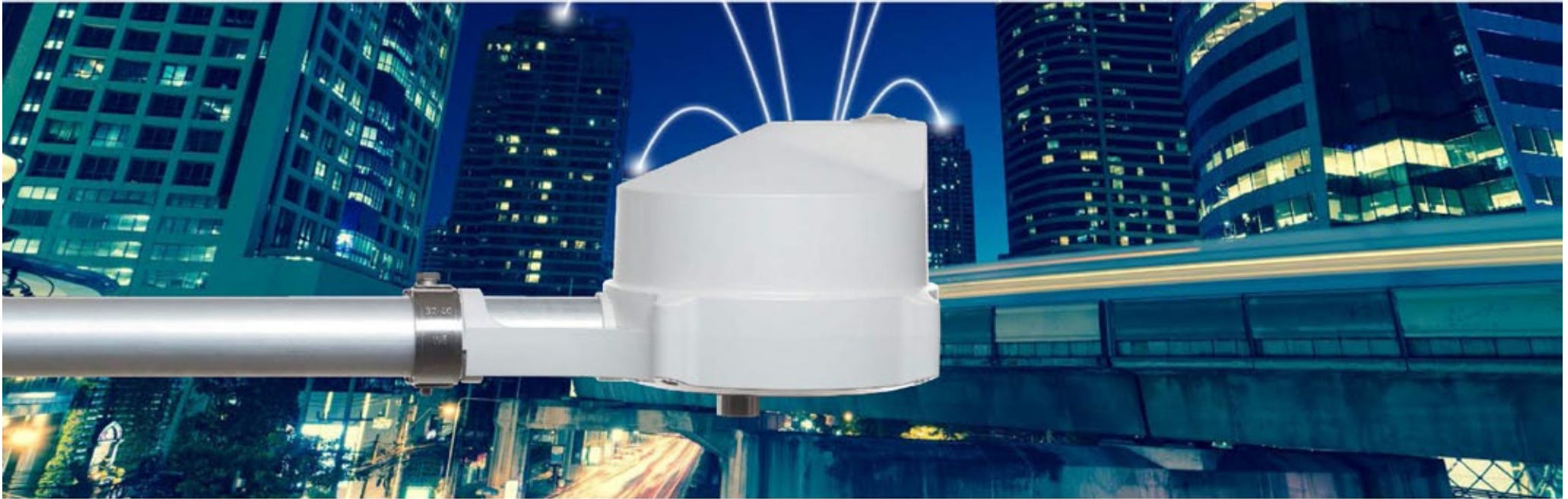


SENSOR GUIDE

LUFFT WS10 MULTIPARAMETER WEATHER SENSOR



August 2018



Abbeon Cal, Inc.
1363 Donlon Street Unit 1, Ventura, CA 93003-8387
800-922-0977 www.Abbeon.com E-mail: abbeoncal@abbeon.com

AGENDA

1

PRODUCT DESCRIPTION

2

COMMUNICATION

3

TECHNICAL DATA

4

FIELDS OF APPLICATION



Abbeon Cal, Inc.
Industrial Plastic Working Equipment & Precision Instruments

Abbeon Cal, Inc.

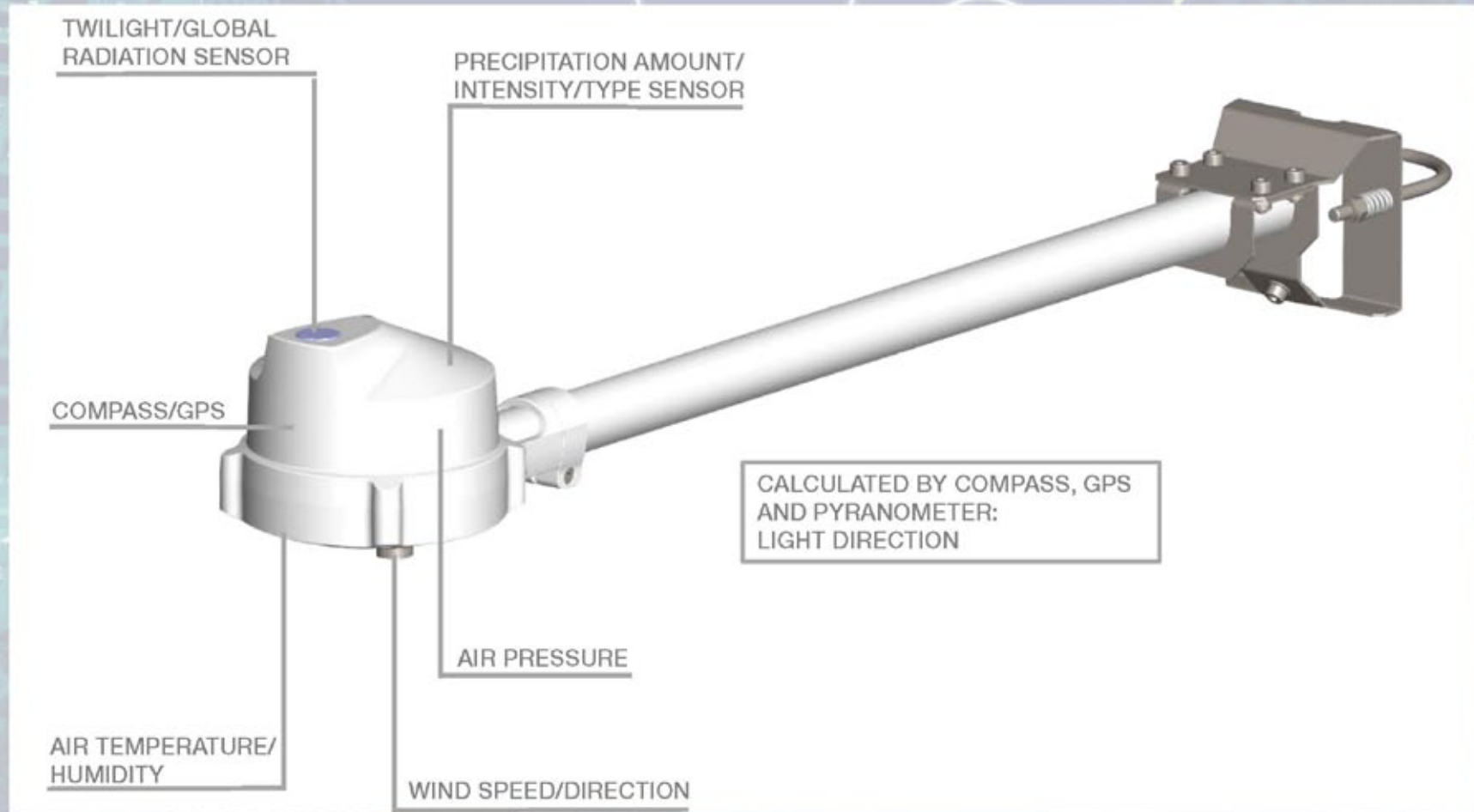
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1. PRODUCT DESCRIPTION



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WEATHER SENSOR WS10 - DESCRIPTION



WEATHER SENSOR WS10 - DESCRIPTION



Measured parameters:

- ✓ Air temperature
- ✓ Relative humidity
- ✓ Air pressure
- ✓ Wind velocity and direction
- ✓ Precipitation amount, intensity and type
- ✓ UV index
- ✓ Sun direction
- ✓ Brightness and twilight
- ✓ Global radiation



Available communication protocols:

- ✓ Modbus (via RS485 interface)
- ✓ WiFi
- ✓ ASCII
- ✓ UMB Binary

Benefits:

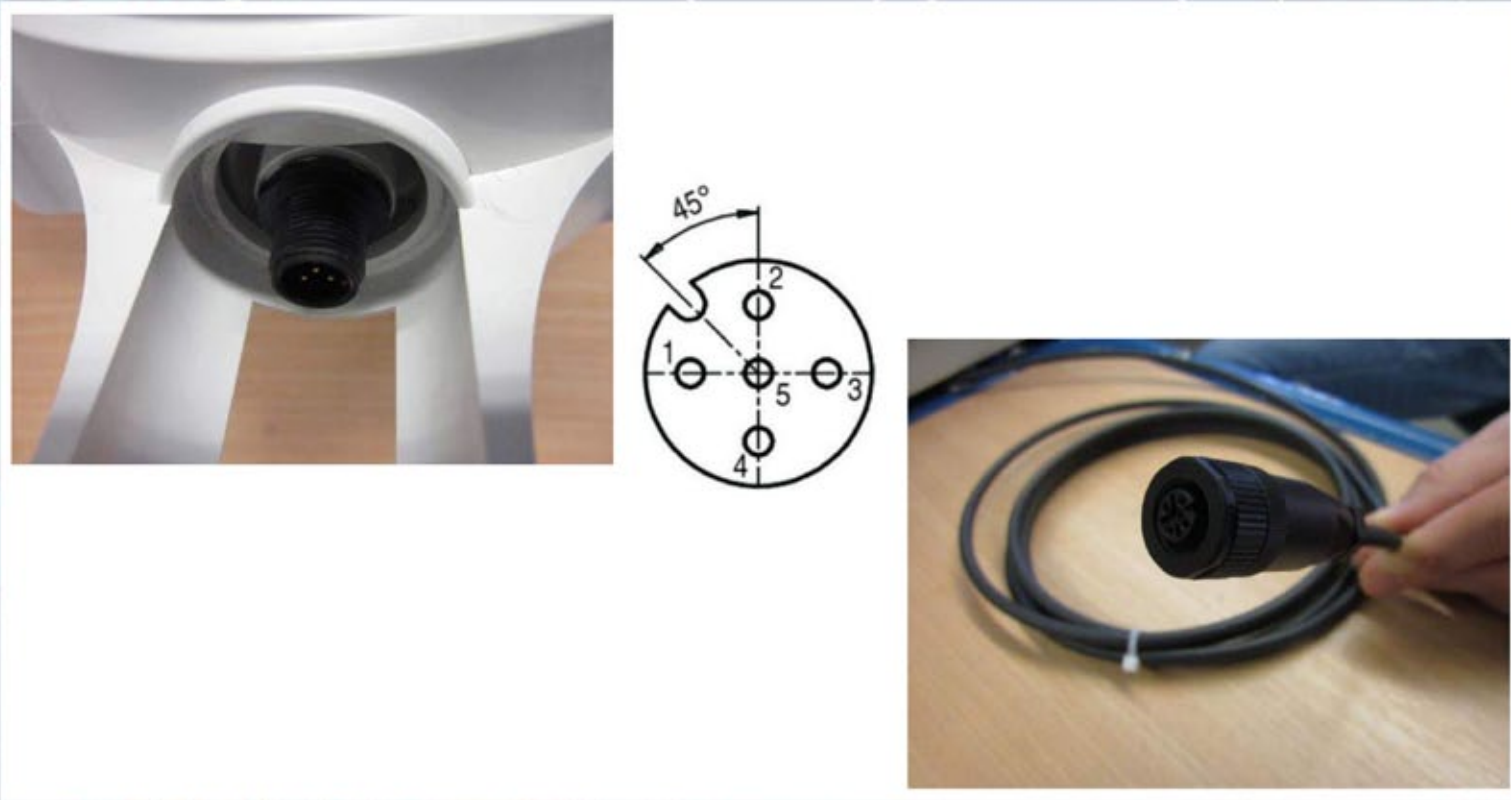
- ✓ All-in-one
- ✓ Easy integration
- ✓ Easy configuration via App
- ✓ Good price performance ratio
- ✓ Easy data access via Weather Underground

2. COMMUNICATION



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WEATHER SENSOR WS10 - COMMUNICATION



7 | Confidential and Proprietary

Lufft

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WEATHER SENSOR WS10 - COMMUNICATION

Connection via WiFi:

Power supply sensor
brown: +24V
white: GND



WEATHER SENSOR WS10 - COMMUNICATION

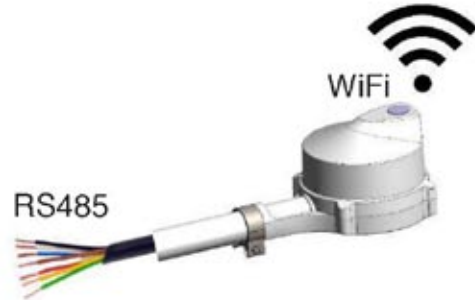
Connection via RS485:

Power supply sensor
brown: +24V
white: GND



WEATHER SENSOR WS10 - COMMUNICATION

WS10 - Commissioning

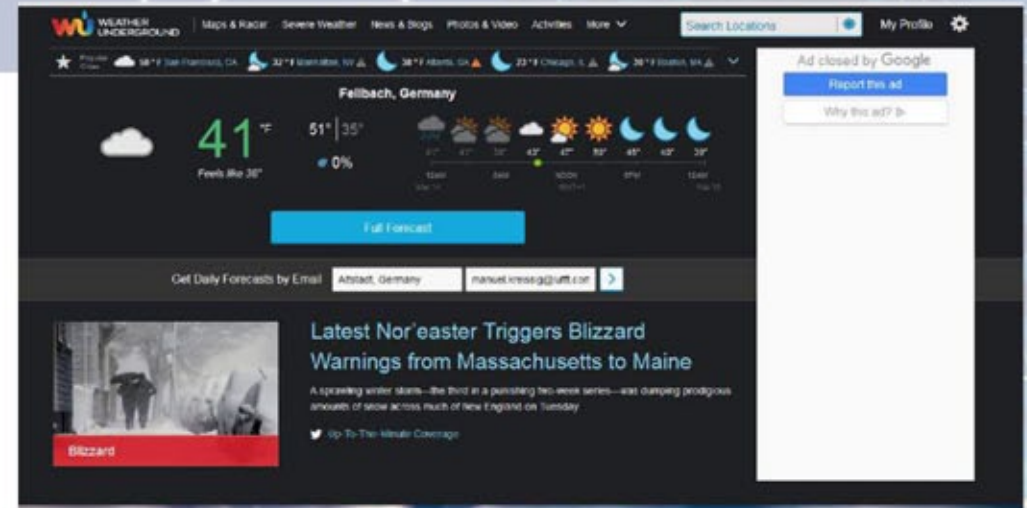


1. **WS10 starts in configuration mode**
 - „AP-mode“ WiFi active
2. **PC connects with the Access Point of the WS10**
 - e.g. *WS10_UMB_Wifi-013* – Password: <serial number>
3. **WS10 sends Broadcast into Network („Here I am“)**
 - contains all Information for Communication
4. **WS10 will be recognized automatically from ConfigTool.NET**
5. **Device configuration can now be started via Config-Tool.NET**

WEATHER SENSOR WS10 - COMMUNICATION

Registration Weather Underground:

- ⇒ Open the page <https://www.wunderground.com>
- ⇒ Open menu "More" and choose "Add Weather Station"
- ⇒ Under "Step 1: Register Your Station" click on the button "Join"
- ⇒ Enter a valid E-Mail address and a password
- ⇒ Read the „Terms of Service“ and click on "I agree to the Terms of Service".
- ⇒ Click on the button "Sign up for free".
- ⇒ In your WU account you can now open the menu „More“ and add the weather station.
- ⇒ After this procedure you will get a „Station ID“ and a „Station password“ for your WS10 station.
- ⇒ This information can be entered to the WS10 via Config-Tool.NET and then the data will be available on the WU website



3. TECHNICAL DATA



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WEATHER SENSOR WS10 – TECHNICAL DATA

Lufft WS10 Smart Weather Sensor		
Casing	Dimensions	13 x 145 x 227 mm
	Weight	0.5 kg
	Heating	20 VA @ 24 VDC
Electrical parameters	Protection class	IP67
	Input voltage range	9-36 VDC
	Power consumption (without dome heating)	120 mA (at still air @24V) 360 mA (from -7 m/s wind @24V)
	Dome heating	24VA @ 24VDC
	Max. input power	32.5VA @ 24VDC
Environmental conditions	Permissible rel. humidity	0 ... 100%
	Permissible operating temperature	-40 ... +60°C / -40 ... +140°F
Communication	Interfaces	RS485, 2-wire, half-duplex; WLAN (2.4 GHz; 802.11b/g/n)
Compass	Protocols	Modbus, UMB, UMB ASCII 2.0
	Measurement range	360 °
GPS	Accuracy	± 10 %
	Accuracy	±5m (50% CEP)
Temperature	Principle	PTC
	Measurement range	-40 ... +60°C / -40 ... 140°F
Relative humidity	Accuracy	±1.0°C (@ +5 ... +60°C), otherwise ±2.0°C
	Principle	Capacitive
Precipitation (liquid)	Measurement range	0 ... 100 % RH
	Principle	Doppler Radar
Precipit. type	Measurement range	0 ... 100mm/h
	Accuracy	20% under laboratory conditions
Global radiation	Parameter	Rain, snow, sleet, freezing rain, hail
	Principle	Silicon pyranometer
Sun direction	Measurement range	0 ... 1500 W/ m²
	Accuracy	10% or @ ±120 W/m², the greater value applies
UVA / UVB index	Principle	Calculated
Brightness (ambient light sensor)	Principle	Silicon pyranometer
	Measurement range	0 ... 15 UV index
Twilight	Principle	Silicon pyranometer
	Measurement range	0 ... 160 klx
	Accuracy	±5% of the measured value
	Accuracy	±10 lx

Lufft WS10 Smart Weather Sensor		
Air pressure	Principle	Capacitive
	Measurement range	300 ... 1100 hPa
Wind direction	Accuracy	±0.5 hPa (@ room temp. 25 °C / 77 °F)
	Principle	Thermal
Wind velocity	Measurement range	0 ... 359.9°
	Accuracy	±10 °
	Principle	Thermal
	Measurement range	0 ... 40m/s (0 ... 90 mph)
Accessories	Accuracy	±1 m/s (2.2 mph) or 5%, the greater value applies
	All-round fixture	

Lufft WS700 Smart Weather Sensor		
Technical Data	Dimensions	Ø approx. 150mm, height 317mm
	Weight	Approx. 1.5kg
Temperature	Principle	NTC
	Measuring range	-50 ... 60 °C
Relative humidity	Accuracy	± 0.2 °C (-20 °C ... +50 °C), otherwise ± 0.5 °C (> -30 °C)
	Principle	Capacitive
Precipitation intensity	Measurement range	0 ... 100% RH
	Accuracy	± 2% RH
Precipitation quantity	Resolution	0.1mm/h
	Resolution	0.01mm
Precipitation type	Measuring range	Drop size 0.3 ... 5mm
	Reproducibility	Typ. > 90%
Radiation	Rain/snow	
	Response time (95%)	< 1s
Air pressure	Spectral range	300 to 1100nm
	Measuring range	1400 W/m²
Wind direction	Accuracy	5%
	Principle	MEMS capacitive
Wind speed	Measurement range	300 ... 1200hPa
	Accuracy	± 0.5 hPa (0...+40°C)
General Information	Principle	Ultrasonic
	Measurement range	0 ... 359.9°
	Accuracy	< 3° RMSE >1.0m/s
	Principle	Ultrasonic
	Measurement range	0 ... 75m/s
	Accuracy	±0.3m/s or ±3% (0...35m/s) ±5% (>35m/s) RMS
	Heating	40VA at 24VDC
	Protection type housing	IP66
	Interface	RS485, 2-wire, half-duplex
	Operating voltage	4...32VDC
	Operating humidity range	0 ... 100%
	Operating temperature range	-50 ... 60 °C

MAIN DIFFERENCES:

- ACCURACY!
- Handling (plug and play)
- Price class
- Amount of parameters



WEATHER SENSOR WS10 – FIELDS OF APPLICATION





Building Automation

-  Weather info
-  Energy management
-  Air con & heating
-  Water management
-  Lighting
-  Watering
-  Shutter control
-  Air quality










Smart Home

-  Weather info
-  Energy mgmt (e.g. PV)
-  Air con & heating
-  Water management
-  Lighting
-  Watering
-  Shutter control
-  Air quality




C&I Solar Roof Tops

-  Weather info
-  Radiation, sunshine, UV
-  Ambient temperature
-  Wind strength / direction
-  Precipitation
-  Rel. humidity
-  Air pressure



Smart City (Future)

-  Weather info
-  Energy management
-  Connected vehicles
-  Smart traffic control
-  Lighting systems
-  Supply chain
-  Air quality
-  Watering



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