

SERIES LINE: J-SERIES WEATHER SENSORS

TYPE: ALL-IN-ONE, COMPACT, SMART

CATEGORY: WEATHER & ENVIRONMENTAL

ALL-IN-ONE

WS501-J All-in-One Weather Sensor

Measure More. Maintain Less.

The professional Lufft WS-J Series of Compact Weather Sensors, builds on the previous WS-UMB weather sensor reputation for consistent, long-lasting performance in all weather situations. With the new WS-J you gain improved accuracy at higher output rates on all measured data as well an improved feature set in measured parameter, connectivity, and housekeeping functions. Achieved by implementing a new processor generation allowing higher sampling rates and a redesigned temperature stabilized A/D conversion.



METEOROLOGICAL OBSERVATION

SOLAR ENERGY

RESEARCH

AIR QUALITY

KEY BENEFITS

1. Performance & Tender- Readiness

ISO9060 Class C Pyranometer integrated, IEC 61724-1:2021 Class A compliant 5s output rates on air temperature, relative humidity, air pressure and wind. Integrated design offering WMO compliant wind gust calculation. Wind speed is reported up to 75 m/s and as our measured parameters 100% tested in our certified calibration process. Each WS-J comes with a FAT certificate.

2. Low Lifecycle Cost by Design

With built-in thermopile radiation sensor and ultrasonic wind sensing, the WS501-J has fewer failure points. The new aspirated radiation solution ensures lifetime performance and the single sensor, single cable connection drops total costs of ownership over the full life of your sensor's deployment.

3. Reduced Risk, Improved Self-Diagnostics

The WS-J's incorporates improved house-keeping functions, live heating-voltage monitoring, and automatic self-diagnostics to catch a failing component before it corrupts the rest of the instrument and finally your decision making data set.

4. One Platform Across Networks

The J-Series is a drop-in replacement for legacy WS units, sharing size, weight, mounting, cable connections, available protocol formats and interfaces, and software across the platform. One calibration reference, one spare pool, one standard.

SUPPORTS EXTERNAL
SENSOR CONNECTIVITY

READ/ WRITE: UMB,
MODBUS RTU, NMEA
SDI-12 1.4, ASCII

UPGRADED ADC
HARDWARE

EXPERIENCE 20+ WS
SENSORS MADE BY LUFFT

Technical Specifications

PRODUCT MODEL: WS501-J

01 – GENERAL

Article number Europe	J8375.1
Dimensions	Ø150 × 332 mm
Weight	1150 g
Communication Interface	Non-isolated RS485; SDI-12

02- ELECTRICAL

Power supply operational range	4 to 28 V DC
Power supply best performance heater, fan for aspirated mode	Below 24 V DC
Current consumption heater	1.7 A / 40 VA at 24 V
Current consumption normal 12v	85 mA
Current consumption normal 24v	85 mA
Current consumption power safe mode 1 at 12v	26 mA
Current consumption power safe mode 1 at 24v	15 mA

03 – TEMPERATURE

Measuring range	-50 to +60 degC
Unit	degC; degF
Accuracy	+/-0.2 degC
Resolution	0.1 deg C

04 - RELATIVE HUMIDITY

Measuring range	0 to 100 % RH
Unit	% RH; g/m ³
Accuracy	+/-2 % RH
Resolution	0.1 % RH

05 - AIR PRESSURE

Measuring range	300 to 1200 hPa
Unit	hPa
Accuracy	+/-0.5 hPa (0 to +40 degC)
Resolution	0.1 hPa

06- WIND DIRECTION

Measuring range	0 to 359.9 deg
Unit	deg
Accuracy	<3 deg (>1 m/s), RMSE
Resolution	0.1 deg

07- WIND SPEED

Measuring range	0 to 75 m/s
Unit	m/s; km/h; mph; kts
Accuracy	+/-0.3 m/s or +/-3 % (0 to 35 m/s); +/-5 % (>35 m/s), RMS
Resolution	0.1 m/s

08 - COMPASS

Measuring range	0 to 359.9 deg
Unit	1.0 deg
Accuracy	+/-10 deg
Output rate	5 s

09 - EXTERNAL TEMPERATURE

Measuring range	-40 to +80 degC
Accuracy	+/-1 degC; WST1 +/-0.3 degC from -10 to +10 degC

10 - GLOBAL RADIATION

Measuring range	0 to 2000 W/m ²
Response time (95 %)	18 s
Global Radiation Class	C

12 MODELS & 15 DERIVATIVES

J-Series Overview

MODELS WS200-J - WS800-J

PARAMETER	WS200-J	WS300-J	WS400-J	WS401-J	WS500-J	WS501-J	WS502-J	WS510-J	WS600-J*	WS601-J*	WS700-J*	WS800-J*
WIND												
Speed	✓	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓
Direction	✓	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓
Gust (WMO-Compliant 3-Sec)	✓	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓
TEMPERATURE & HUMIDITY												
Temperature	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Relative Humidity	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Barometric Pressure	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PRECIPITATION												
Measuring Principle	—	—	radar	gauge	—	—	—	—	radar	gauge	radar	radar
Quantity	—	—	✓	✓	—	—	—	—	—	✓	✓	✓
Type	—	—	✓	—	—	—	—	—	✓	—	✓	✓
Intensity	—	—	✓	✓	—	—	—	—	✓	✓	✓	✓
Doppler Radar Precipitation Technology	—	—	✓	—	—	—	—	—	✓	—	✓	✓
Tipping Bucket Precipitation Technology	—	—	—	✓	—	—	—	—	—	✓	—	—
SOLAR RADIATION												
Silicon Photocell	—	—	—	—	—	—	—	—	✓	✓	✓	✓
Thermopile	—	—	—	—	—	✓	—	✓	—	—	—	—
LIGHTNING												
Strike Count	—	—	—	—	—	—	—	—	—	—	—	✓
INTERFACE												
External Precipitation input	✓	✓	—	—	✓	✓	✓	✓	—	—	—	—
Temperature Sensor input (PT1000 connection)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ Parameter supported on this model

— Not available on this model

* WS600-J, WS700-J, and WS800-J include North America (NA) regional variant



J-SERIES MANUAL