

Sigrow develops modular and wireless monitoring systems for agricultural production.

Chefi-Air

Chefi-Air is the only wireless sensor on the market that measures Photosynthetically Active Radiation (PAR), temperature and humidity all in one device. This unique combination allows users to continuously monitor the most fundamental climate variables in big fields or greenhouses.

Chefi-Air can be placed on any flat surfaces or be hanged in windless locations, it is resistant to fog, water and dust.

- **Create homogeneous climate**
- **Evaluate light quality**
- **Detect disease risk**
- **Monitor field up to 100ha per sensor**



Dimensions: 168 x 94 x 74 mm

Data collection

Sigrow sensors and central station work on 868MHz free ISM band, or 915MHZ for USA, Canada, Australia, Singapore and Israel.

Sigrow sensors are able to transmit data to the central station, which automatically uploads data to Sigrow server via Internet. Users can choose to download the data (csv. files) on local interface or web-based monitoring platform.

Specifications

Photosynthetically Active Radiation

The PAR sensor on the top of Chefi-Air measures the Photosynthetic Photon Flux Density (PPFD), which corresponds to micromoles of photons per meter squared per second ($\mu\text{mol m}^{-2} \text{s}^{-1}$). This is the power of electromagnetic radiation in the spectral range that is used by plants for photosynthesis (400–700 nm).

PAR

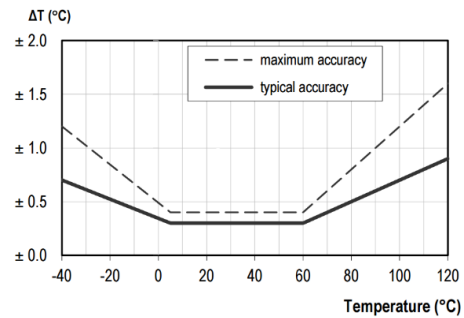
PAR range	0 to 3000 $\mu\text{mol m}^{-2}\text{s}^{-1}$
Resolution	1 $\mu\text{mol m}^{-2}\text{s}^{-1}$
Repeatability	$\pm 1 \%$
Long-term drift	10 %/year
Cosine response	$\pm 5 \%$ at 75°
Absolute accuracy	$\pm 5 \%$
Wavelength range	400 nm to 700 nm

T/RH

Chefi-Air integrates an industry standard temperature and humidity sensor. Every sensor chip is individually calibrated and tested. The measurement of PAR allows Chefi-Air to self-calibrate under high solar radiation, which largely improves data reliability under direct solar radiation.

Air temperature

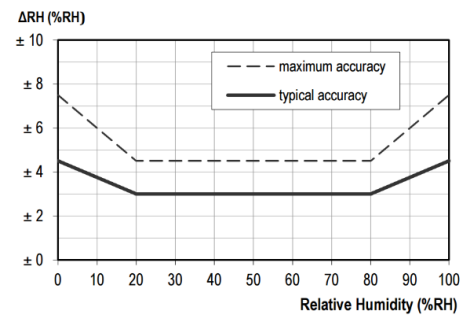
Resolution	0.01 °C
Accuracy tolerance	± 0.3 °C
Repeatability	± 0.1 °C
Operating Range	- 40 to 125 °C
Long Term Drift	< 0.02 °C/year



Typical and maximal tolerance for temperature sensor.

Relative Humidity

Resolution	0.1 %RH
Accuracy tolerance	± 2 %RH
Repeatability	± 0.1 %RH
Hysteresis	± 1 %RH
Nonlinearity	< 0.1 %RH
Operating Range	0 to 100 %RH
Long Term Drift	< 0.25 % RH/year



Typical and maximal tolerance at 25°C for relative humidity.

Operation

Chefi-Air is operated on 4xAA batteries. Typical radio range in open field is 1 km. Battery life will last 4 years with sample time of 5 minutes, and can be easily replaced by users. It is strongly recommended to have the sensors recalibrated every two years.

		Sampling Time (s)		
		30s	300s	3000s
Range	250m	4yr	10yr	10yr
	1km	6 m	4yr	10yr
	4km	18 d	6m	4yr

Sigrow sensors are made and calibrated in the Netherlands