

# Extension module for soil sensors



## Main characteristics

- Measurement of soil moisture on up to 3 levels
- Measurement of soil temperature

## Applications

- Agribusiness

## Overview

ITS 3G\* and LoRa® and IEEE 802.15.4 Endpoints have extension connectors capable of extending their sensing capabilities, further increasing intelligence in IoT (Internet of Things) in industries from various segments.

Khomp presents to the market, the EM S104, an extension module for soil sensors, which makes it possible to measure soil moisture up to 3 levels of depth. In addition, it is possible to measure the soil temperature for compensation of the humidity sensors, and all this with high precision.

\* ITS 3G support for EM S104 was started in 2019.

## Available Model

Khomp offers the soil sensor extender model seen below:

Model	Description
<b>EM S104</b>	<ul style="list-style-type: none"><li>• Three inputs for soil moisture sensors.</li><li>• One input for soil temperature sensor.</li></ul>

# Technical specifications

## Busbar

- One 16-pin connector
- Type: I<sup>2</sup>C 100 KHz
- Compatible with:
  - ITS 302 and 312 (3G)
  - NIT 20 LI and 21 LI (LoRa®). Compatible with ATC LoraWAN™ Public Network and Private Networks
  - NIR 20 ZI and 21 ZI (IEEE 802.15.4). This Endpoint cannot be extended in the field, so it must leave the factory with the extender

## Moisture sensor input

- Connector: Pin
- Moisture range:
  - 0–200 kPa (kilopascal)
- Model (BP): Watermark Model 200SS

## Temperature sensor input

- Connector: Pin
- Temperature range:
  - 273,15 K to 333,15 K (0 °C to 60 °C)
- Model (PN): AKS12 084N0036 PT1000

## Moisture sensor output

- Resolution: Two decimal places
- Unit of measurement: kPa (kilopascal)

## Temperature sensor output

- Resolution: Two decimal places
- Unit of measurement: K (Kelvin)

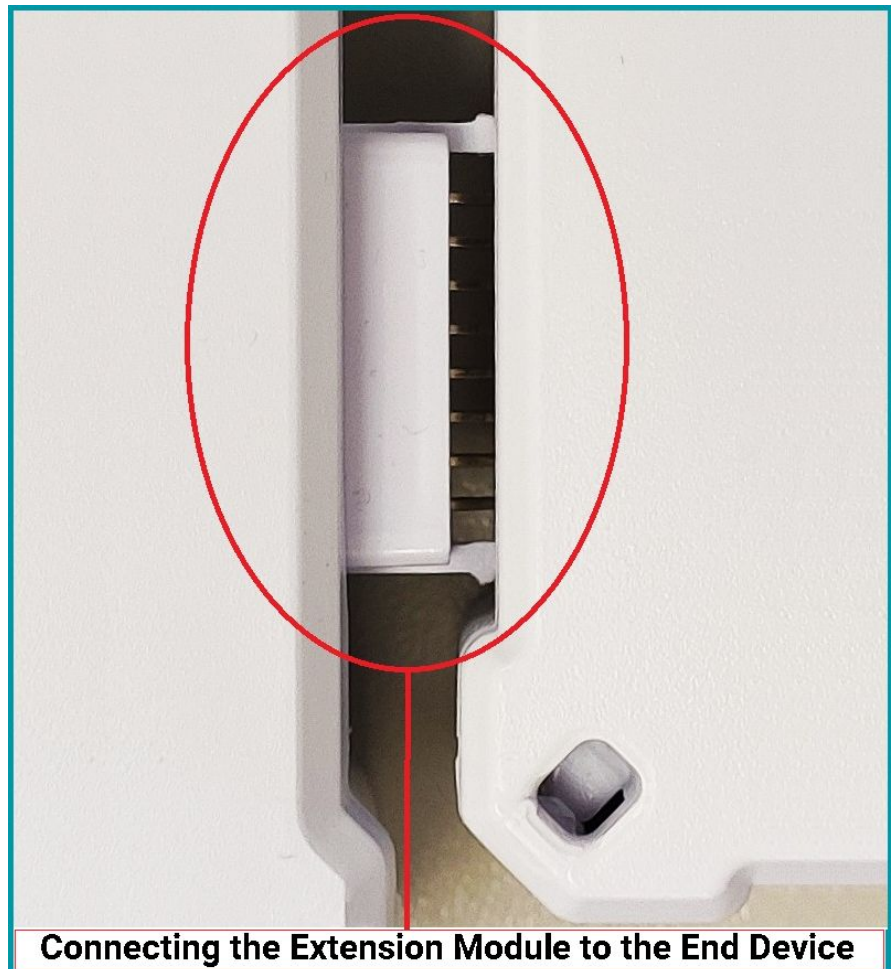
## Power

- Feed via Endpoint

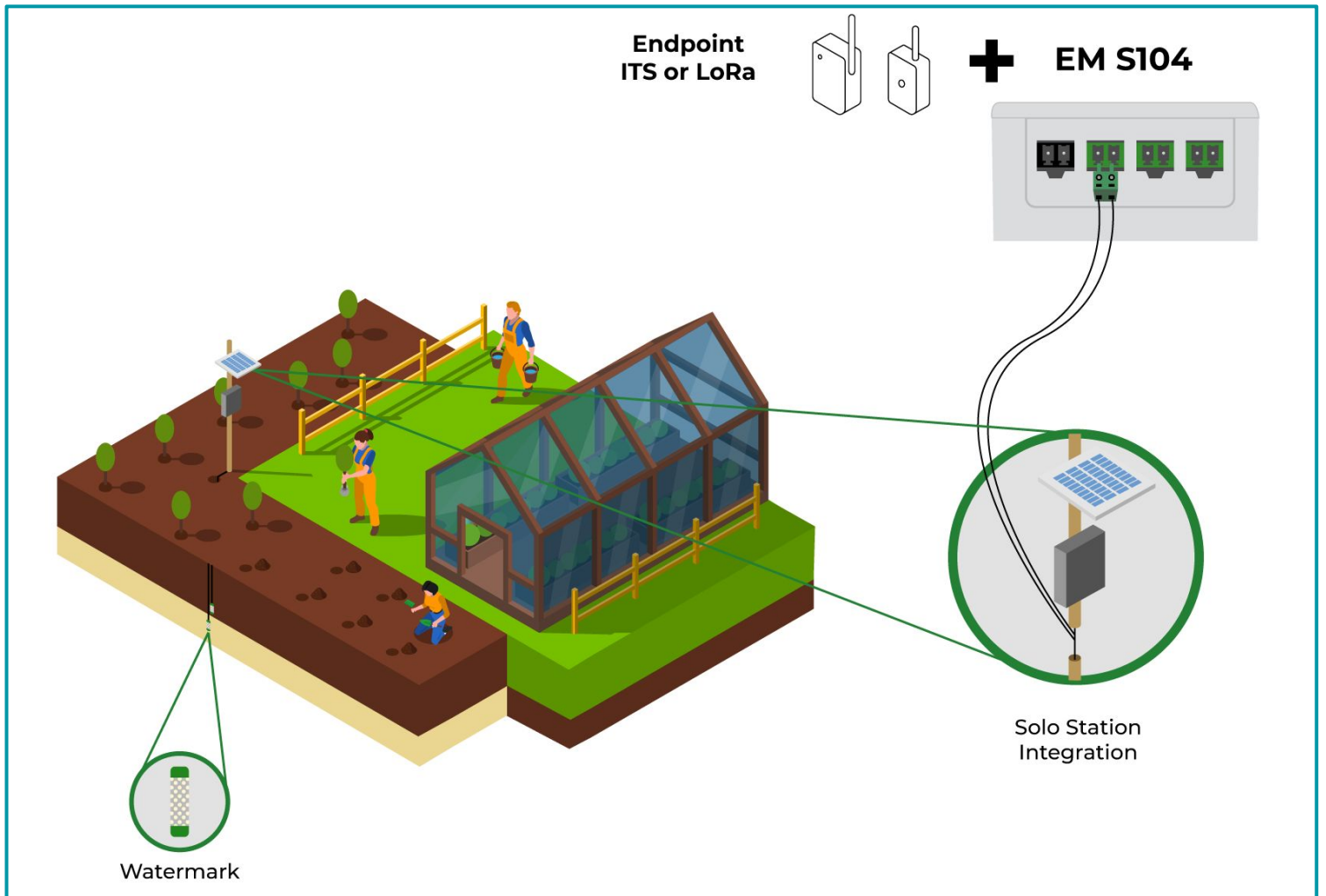
## Physical/Environmental

- Dimensions of the protective case:
  - 102x77x41 mm
- Weight: 98 g
- Operating temperature: -20 °C to 85 °C
- Operating humidity: 0–90% (non-condensing)

# Other product images



# Application model



**Legend:** The EM S104 verifies the soil temperature and humidity through the associated sensors and sends the data to the Endpoint.