







## IoT DATA LOGGERS FOR LoRaWAN® NETWORKS

### LR35...SERIES

-  **LoRaWAN®** connectivity  
Easy to connect to public or private networks
-  **Data** directly in your hands  
Pre-programmed to connect and directly receive measurement data
-  **Wide range** of available sensors  
And even third party measurements are easy to integrate
-  **Your measurement data is safe**  
Logging function so that you always have a back-up of the data



# Data loggers for LoRaWAN® networks

## LR35 series

The **Delta OHM LR35 data loggers series** use LoRaWAN® technology. This makes this system the perfect fit for situations where **Long Range transmission** is a need.

This technology works with an **ultra-low power consumption** - works up to 4 years on a battery! - and a transmission range up to several kilometers.

Different from measurement systems that are being built by using a **sensor** with direct LoRa communication, Delta OHM has chosen to use **data loggers** with LoRa communication. This means that the measurement data can be always recovered even in case of failing transmission.

This makes the LR35 series the best choice for a wide range of demanding applications.

Technical Specifications	
Frequency	Available frequencies EU868, US915, AU915, AS923. For other frequencies, please ask us for support.
Antenna	Internal antenna for indoor models. Outdoor models always supplied with external antenna (except LR35PM)
RF Power	+14 dBm (EU), +20 dBm (US)
LoRaWAN Class	A
Activation method	OTAA (Over-The-Air-Activation) and ABP (Activation-by-Personalization)
Data encryption	AES128
Measuring intervals	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Transmitting intervals	Starting from a minimum of 2 minutes - 2, 5, 10, 15, 30, 60 min
Alarm	Acoustic by means of the internal buzzer.
Power supply	Lithium thionyl chloride (Li-SOCl <sub>2</sub> ) not rechargeable battery 7...30 Vdc external power supply for LR35W-MB
Battery autonomy	4 years typ. for LR35WH (10 s meas. intv., 2 min transm. intv.) 1.5 years typ. for LR351NB (2 min meas. and transm. intv.) 2 years typical for the other models (5 s meas. intv., 10 s for LR35H, 2 min transm. intv.)
Operating conditions	-20...+70 °C / 0...85 %RH not condensing for indoor models (except LR351NB) -10...+70 °C / 0...85 %RH not condensing for LR351NB -20...+70 °C / 0...100 %RH for outdoor models
Protection degree	IP 67 for outdoor models

## Applications

There are numerous applications where the LR35 loggers provide a great solution. Perfect for measurements where it is important to be independent from external power and where high speed transmission is not necessary.

- ✓ Smart cities, smart building, air quality
- ✓ Agriculture, solar, soil
- ✓ Environmental conditions
- ✓ Food or medicine storage, production, transport
- ✓ Solar farms, solar power, sunshine conditions



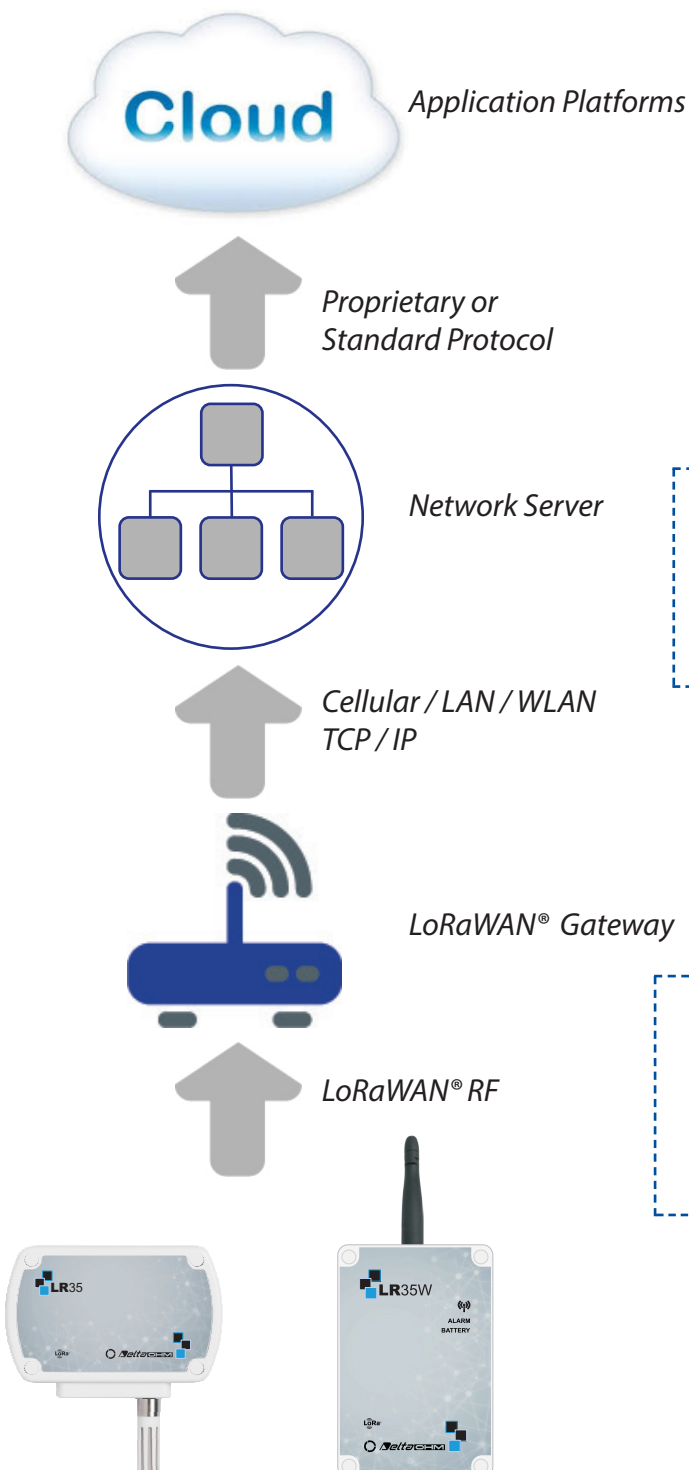
# Architecture of the system

Delta OHM provides a **wide range of loggers** with sensors for all general measurement conditions like temperature, humidity, differential pressure, CO<sub>2</sub>, PM.

For outside conditions we have specific IP67 loggers with connections to pyranometers, rain gauges and soil moisture.

But also we connect **any other third party measurement** with LoRa as long as it has a standard output: 4-20mA, 0-10V, Modbus-RTU.

## HOW does the system work?



In those areas where **LoRa coverage** is available, the loggers can be connected to a (free) public gateway.

Or you can use your own commercial available gateway to connect through WiFi, Ethernet, 3G or 4G.








When the use of a private gateway is preferred, Delta OHM can advise several types and brands to work with.

Loggers of the LR35 series are preconfigured to send data to the free-to-use network server "**The Things Network**".

The data sent by the sensors are visible through a third-party **Cloud application** or the Delta OHM Cloud service [www.deltaohm.cloud](http://www.deltaohm.cloud).

For developers, the proprietary protocol (payload) which allows for the development of customized applications is available.

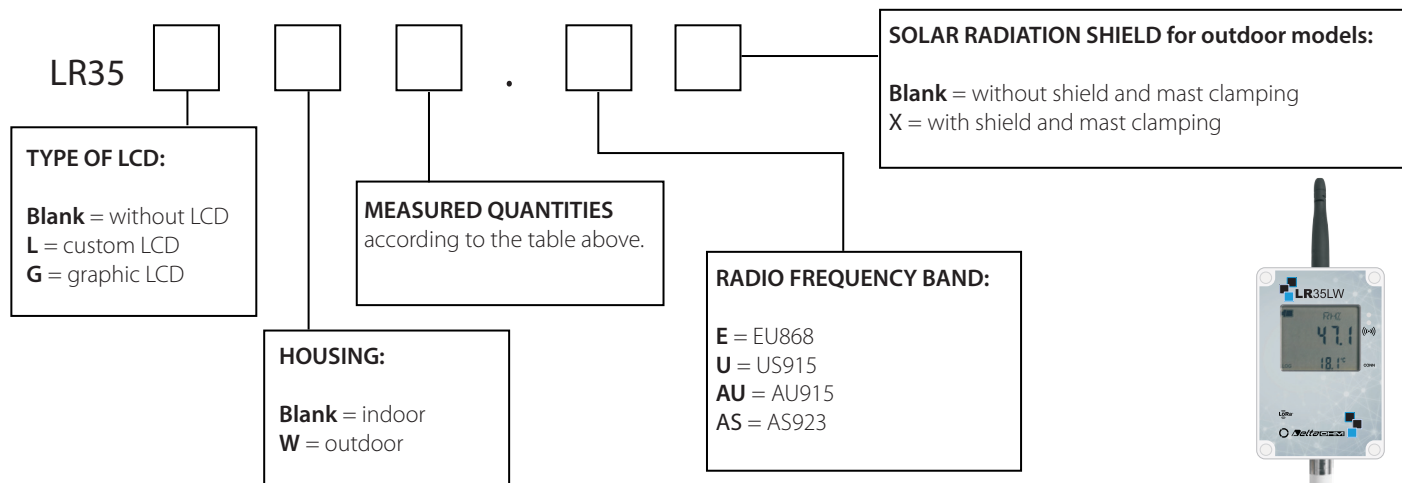
## Available models

Model	MEASURES							VERSION		LCD (optional)	
								Indoor	Outdoor	Custom	Graphic
LR357P/xTC <i>x = 1 or 3 inputs</i>	Pt100 Pt1000							•			<b>G</b>
LR35[W]1NTC <i>probe with cable</i>	NTC	•						•	<b>W</b>	<b>L</b>	
LR35[W]1NTV <i>integrated probe</i>	NTC	•						•	<b>W</b>	<b>L</b>	
LR3514bNTV <i>integrated probe</i>	NTC	•	•					•		<b>L</b>	
LR351N4r1ZTV	NTC	•		•				•		<b>L</b>	
LR354r1Z				•				•		<b>L</b>	
LR351NB	•	•			CO <sub>2</sub>			•			<b>G</b>
LR35WPTC							•		<b>W</b>	<b>L</b>	
LR35WDPTC				Level(*)			•		<b>W</b>	<b>L</b>	
LR35WS/xTC <i>x = 1 or 3 inputs</i>	Temperature and soil VWC								<b>W</b>	<b>L</b>	
LR35WRTC						•			<b>W</b>	<b>L</b>	
LR35WPM					PM				<b>W</b>		
LR35[W]H	Analog inputs (3 for LR35H, 4 for LR35WH)							•	<b>W</b>	<b>L</b> Outdoor	<b>G</b> Indoor
LR35W/MB	RS485 Modbus-RTU input Voltage-free contact input								<b>W</b>	<b>L</b>	

(\*) Use sensor HP712

- Other models can be available on request.

## Ordering codes



The external probes have to be ordered separately

Example of ordering code for T/RH outdoor model with LCD display and integrated probe - Europe RF - LR35LW1NTV.E



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**Delta OHM S.r.l.**

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