

# ED120 Fill Level Sensor



- Either 3D ToF optical laser or Dual Ultrasonic Sensors
- LoRaWAN, GSM/GPRS/3G/LTE/NB IoT
- Compact design
- Rotating device
- GNSS Module

The ED120 sensor enables real-time insights and intelligence to help enterprises optimize waste assets management with real-time data and analytics.

Device rotation allows straightforward fitting to every container type. It complies with extremely low power and EMI proof technology standards.

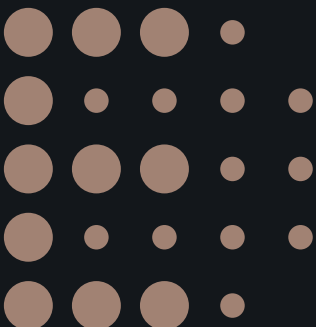
While running multiple processes in parallel, it provides high performance, with a very low battery consumption. Device stability renders it a maintenance-free device.

A specially selected glass fiber reinforced by polyamide, gives the ED120 high resistance against impacts, vibration, and UV damage. It applies the

latest ranging technology to calculate the distance between the sensor and the objects.

The sensor has been designed and developed in-house by EmDoT. We manufacture, install and service all our waste management systems.

EmDoT offers a holistic waste management solution integrated into a single native Azure cloud platform, encapsulating data from both Dot.Weighing and ED120 containers level sensors, offering accurate measuring weights of individual bins, KPIs on waste production, total waste collection cost minimization and comparison between waste volume and weight.



### Fill Level Monitoring

ED120 is designed to be mounted on the inside wall of different types of waste bins, in order to monitor the fill level. It has a small footprint to minimize the impacts from waste flow. Taking into account the type of the container to be installed, the device is adjusted to perform accurately.

### Multiple Sensors and Alerts

ED120 provides multiple types of alerts that can be easily configured. In any case of bin being overturned, filled, moved away from its designated spot or in case of a fire, alerts are communicated accordingly so as to inform the right stakeholders.

To provide these alerts, EmDoT's ED120 Smart Waste Device is equipped with four different types of sensors:

Dual closed type ultrasonic sensors for fill level monitoring, 3-axis accelerometer to detect if the waste bin is overturned and to monitor waste collection, thermometer to detect bin's temperature and a potential fire in the waste bin, and GNSS (GPS, Galileo, GLONASS and Beidou) for the positioning of the waste bin.

### Reliable and Secure Communications

Data security is important. Extremely experienced engineers have developed a high level of security based on data encryption, maintaining power efficiency. ED120 utilizes LoRa, GPRS/EDGE, 3G, FDD - LTE as well as NBIoT. In an event of a Network Service interruption, data is saved and transmitted when the service is restored. The signal level is also measured.

### Easy Installation

Maximizing flexibility of installation, ED120 is designed to be installed in waste bins of different sizes, above or underground. It comes in a rugged enclosure made of glass fiber reinforced polyamide (PA6X) that provides impressive resistance. Operating at environments with temperatures of -40°C to 85°C and certified with IP69K environmental protection, it only needs to be securely screwed or riveted on the inside wall of the waste bin without the need for special mounting plates or braces.

### Azure Cloud Platform

Dot.Weighing incorporates a native Azure, ground up designed holistic waste management cloud platform offered as SaaS. It's a modular, highly-secure, scalable, highly available platform, able to grow customer business and to adapt to customer changing needs. Data is used to provide insights and KPIs on waste production per waste bin, waste stream, neighborhood, community, day, etc. More specifically intelligent route planning and scheduling resulting in more efficient collecting routes and itineraries, while minimizing total waste collection cost by utilizing EmDoT's ED120 waste fill level sensors.

### Quality Assured

EmDoT, not only uses the best quality material parts but it is also qualified in ISO 9001:2015 and conforms to ISO/IEC/IEEE 29119:2013 and ISO/IEC 25000:2014 to ensure engineering processes and overall system testing. The ED120 fill level sensor has been designed and developed in-house. We design, develop, manufacture, install and service all our systems, concerning specifically waste management.

EmDoT S.A. may modify, change, suspend, cancel or remove the products described in this brochure as well as the information provided by this brochure at any time and without prior notice.



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## ● Technical Specifications

|                       |                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Communication         | GPRS/EDGE 900/1800 - 3G/UMTS - Tri band NBloT<br>FDD - LTE B3/B8/B20 - LoRa                                                                                                                   |
| Fill Level Sensors    | Dual ultrasonic closed type sensors                                                                                                                                                           |
| Measuring Distance    | 3cm - 4m                                                                                                                                                                                      |
| Measuring Accuracy    | ± 1cm                                                                                                                                                                                         |
| Temperature Sensor    | Used for waste bin temperature reading and fire detection                                                                                                                                     |
| Positioning Sensor    | GNSS module (GPS, Galileo, Glonass, Beidou) , Accuracy (Open Sky) 2,5m (CEP50)<br>Tracking sensibility: -162dBm, TTFF (Open Sky): Hot start <1s, Cold start <35s<br>Receiver type: 16-channel |
| Overturn Sensor       | 3-axis accelerometer used for Inclination, turnover and collection detection                                                                                                                  |
| Data Security         | Encryption , Internal Memory Storage for more than 30 days                                                                                                                                    |
| Enclosure             | Glass reinforced polyamide                                                                                                                                                                    |
| Battery Life          | > 5 years                                                                                                                                                                                     |
| Alerts (configurable) | Fill level - Temperature - Turnover - Position change - Unauthorized uninstallation                                                                                                           |
| Remote Management     | Diagnostics, management and firmware upgrade                                                                                                                                                  |
| Operating Temperature | -40°C to +85°C                                                                                                                                                                                |
| Protection Class      | IP69K                                                                                                                                                                                         |
| Dimensions WxDxH (mm) | 144x83x40                                                                                                                                                                                     |
| Marking               | CE                                                                                                                                                                                            |
| Software Platform     | etrack                                                                                                                                                                                        |

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