IoT Devices to Connect Level Sensors to the Cloud

BinMaster helps you simplify the installation of an inventory management system or transform your existing level sensor system to a Cloud-based program. Programmable, compact devices connect sensors using 4-20 mA, Modbus, or HART outputs to a BinCloud® cloud-based software solution.

Wireless gateways and LoRa transceivers with over-the-air technology help reduce wiring and labor costs. A single analog expansion hub can connect up to 16 analog sensors using a daisy chain, minimizing the need for hardware and complex wiring. The HART consolidator module can be used with any brand of HART device and connect up to 15 sensors in a signal loop.

Count on BinMaster's solution-centric approach for countless scalable configurations for any size plant.

BinCloud® Gateway

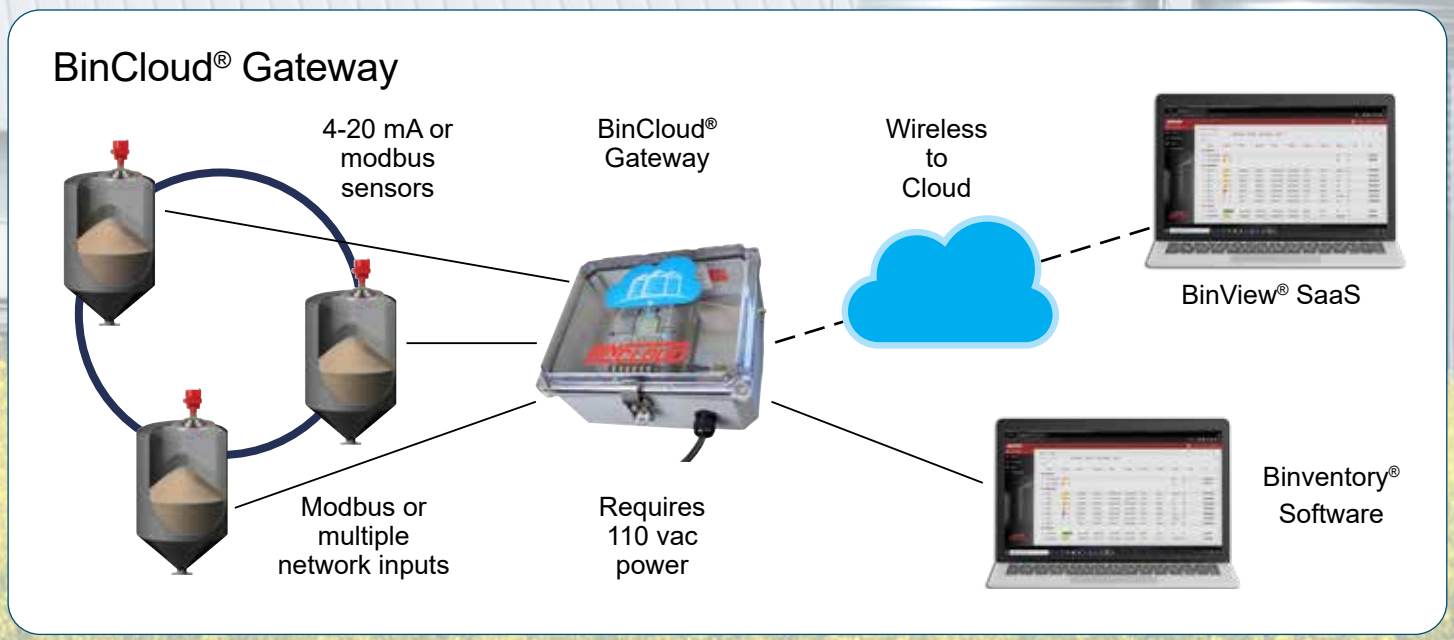
The BinCloud® Gateway is used to flow data quickly and seamlessly in and out of a network. In an inventory management system, the BinCloud® Gateway receives measurement data from level sensors and sends it to a control room, BinView,® or Binventory® software.

Features of the Gateway

- Compatible with a variety of network infrastructures
- Supports multiple Modbus protocols including RTU, TCP, and RTU over TCP
- Global cellular coverage utilizing 4G LTE, CAT-M, and NB-IoT technologies
- Accepts 4-20 mA, digital, mV, RTD, and potentiometer inputs
- Sends new readings to the Cloud every 10 minutes
- Programmable to automatically switch to cell data in the event of a downed Ethernet or WiFi network
- Cell modem replaceable upon release of next generation cellular
- Can connect to multiple sensor networks simultaneously
- Compatible with BinMaster's wireless technologies to connect remote sensors

Gateway Specifications

Input Power: 120 - 240 VAC
Mounting: Mounting system, gasket, and cover included
Dimensions: 10" W x 8" T x 4" D
Enclosure Type: NEMA-4X
Enclosure Material: UV-Resistant Polycarbonate
Weight: 4 lb.



LoRa Transceiver

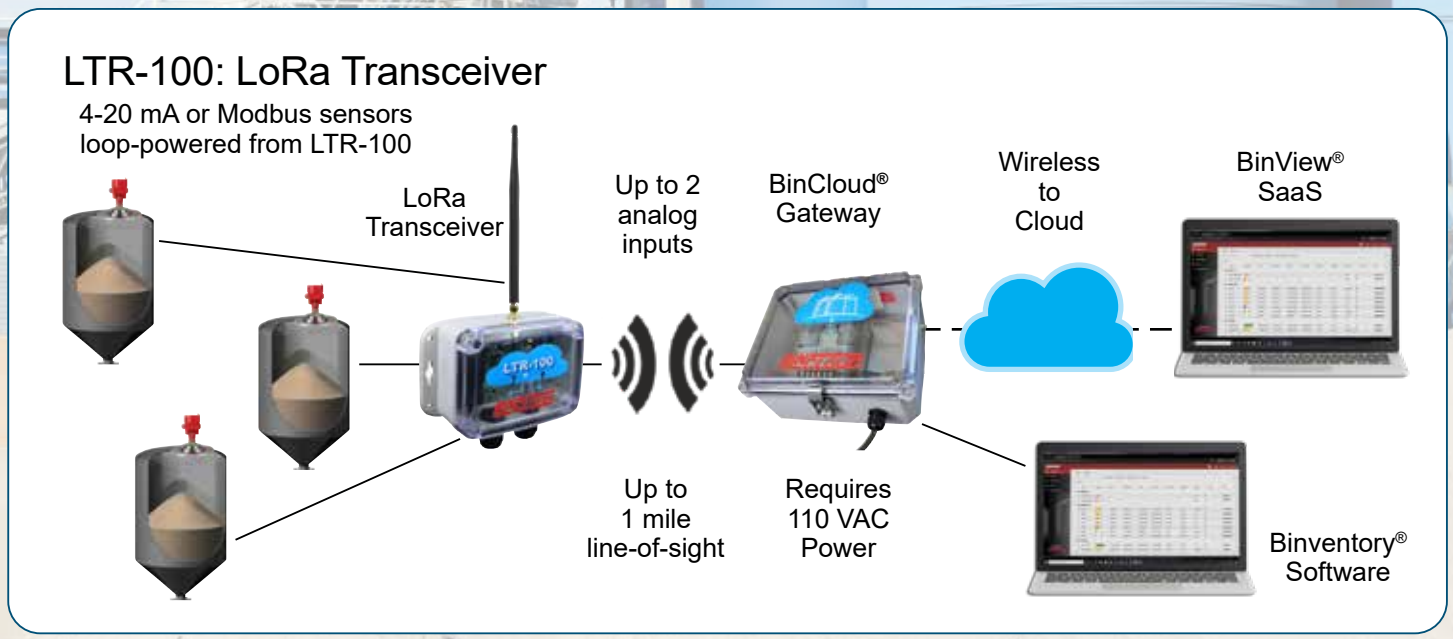
The LoRa Transceiver—LTR-100—is a wireless device used to connect sensors with a 2 or 4 wire 4-20 mA output to a BinCloud® Gateway using long range radio technology. The LTR-100 is a low-cost option for connecting analog sensors to a gateway used to access BinView® or Binventory® data from the Cloud.

LoRa Transceiver

- LoRa radio uplink compatible with US or EU radio frequency bands
- Compatible with BinMaster and other brands of sensors with 4-20 mA output
- Eliminates need for running long spans of wire to BinCloud® gateway
- LoRa transceiver sends data at distances up to one-mile line-of-sight
- Affordable, easy to install and connect sensors to network
- Accepts Modbus network inputs from BinMaster 3DLevelScanner, non-contact and guided wave radar, or ultrasonic sensors

LTR-100 Specifications

Input Power: 80 to 305 VAC 50/60 Hz (250 mA maximum)
21.6 to 26.4 VDC (320 mA maximum)
Mounting: Mounting tabs with screw holes
Dimensions: 6.75” x 4.13” x 2.44”
Enclosure Type: NEMA Type 4X
Enclosure Material: Light gray polycarbonate
Weight: 1 lb (0.45 kg)



HART Consolidator Module

The HART Consolidator Module—HCM-100—was developed to easily connect multiple sensors using the HART protocol to the BinCloud® Gateway. It can accommodate up to 15 HART v7 enabled sensors in a daisy-chain (multi-drop) sensor network wiring configuration.

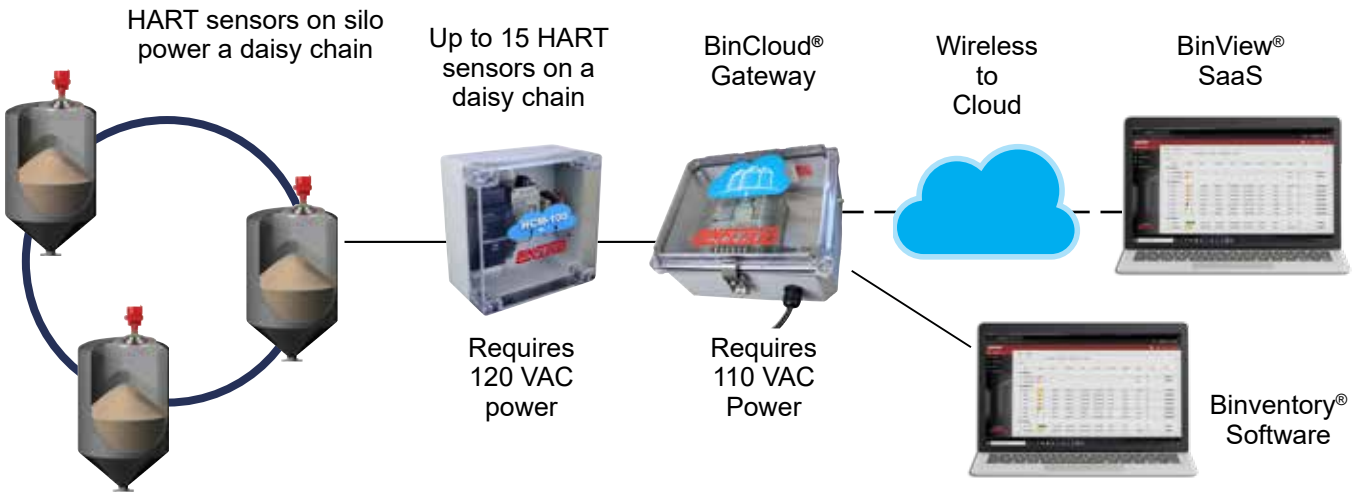
Features of the HCM-100

- Connects HART-enabled sensors to a BinCloud® gateway
- Reduces wiring costs while enabling data access from BinView® or Binventory® software
- Accommodates up to 15 HART-compatible sensors
- Supports connecting multiple HCM-100s to a single gateway
- Compact, weather resistant NEMA 1, 2, 4, 4X, 12, 13 enclosure
- Local customer connection via USB for secondary client support

HCM-100 Specifications

Input Power: 120-240 VAC
Output: 24 VDC
Power: 30W
Dimensions: 6.30” x 6.30” x 3.52”
Enclosure Ratings:
Flame: UL94 HB
NEMA: 1, 2, 4, 4X, 12, 13
IP: I IP65, IP66
Environmental: -30°C to 60°C (-22°F to 140°F)

HART-100: HART Consolidator Module



Analog Expansion Hub

The analog expansion hub—AEH-100—was designed to simplify setting up a sensor network or to upgrade an existing sensor system to a Cloud-based network. The AEH-100 connects analog sensors to the BinCloud® gateway to access data from BinView® SaaS.

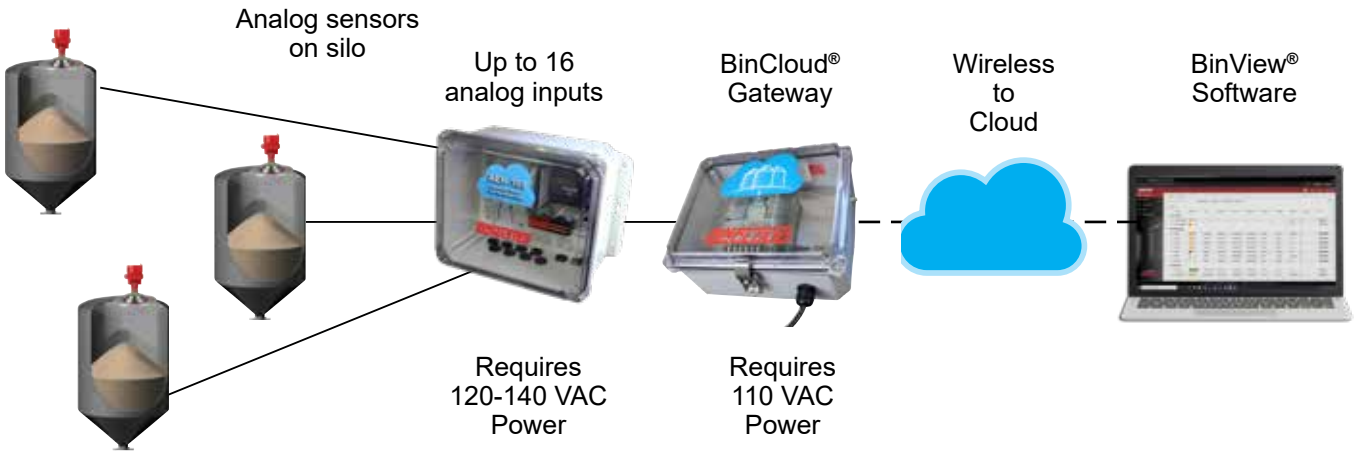
Features of the AEH-100

- Easy all-in-one installation package simplifies setup
- Compatible with existing sensor systems
- Accommodates either 8 or 16 analog inputs
- 24 VDC onboard to power 2 or 4-wire sensors
- Sends data to BinView® inventory management software
- Multiple AEHs can be connected to BinCloud® gateway
- Use with WL-19 and WL-20 wireless transceivers to reduce wiring
- Works with Chiyu BF-430 universal serial device to enable an IP/Ethernet network
- Power distribution blocks for routing and connecting wiring
- Connects to a wide range of BinMaster or other brands of sensors
- Highly scalable for large facilities with many vessels and sensors

AEH-100 Specifications

Input Power: 120-240 VAC
Inputs: Up to 16 analog Inputs
Output Power Supply: 24 VDC
Dimensions: 13.2” x 11.2” x 7.7”
Sensor Support: 2 or 4-wire analog
Communication: RS-485 or TCP

AEH-100: Analog Expansion Hub



How BinCloud® IoT Helps You

Connecting a BinCloud® Software-as-a Service such as BinView® or FeedView® to advanced level sensor technology using BinMaster's IoT devices makes inventory and supply chain management easier.

Accessibility: Information is portable and available anywhere there is internet access from a phone, tablet, or PC.

Accurate Information: Total transparency, fewer discrepancies, and more information leads to better decisions. Know what to buy and when to order it.

Better Control: Automation brings centralized digital control, minimal human intervention, faster and timelier outputs.

Cost Containment: Direct and indirect. Less overtime, automation of daily tasks, fewer inefficiencies, no emergency or late delivery charges.

Historical Reporting: Manage and segregate high-turn, long lead time, and materials with strict reporting requirements.

Improved Monitoring: Real-time reports of on-hand supply, forecast when you will run out, data is continuously updated effortlessly.

Job Satisfaction: Less mundane work, more time for planning and problem solving.

Optimize Production Processes: Streamline vital communication between people and devices and get everyone on the same page.

Process Improvements: Reduce material outages, production stoppages due to shortages, fewer batch processing errors leads to better quality.

Security: Data—both past and present—is stored securely and safely.

Simplicity: No servers, no IT department, programming updates done by host provider, no need-to-know programming to use software.

Time Savings: Less time on the phone, managing spreadsheets, fewer trips to the control room, less time doing routine or redundant tasks.

Vendor Access: BinCloud® can make Vendor Managed Inventory—VMI—part of the inventory monitoring and ordering process.