

## **One Non-Contact Radar for Solids or Liquids**

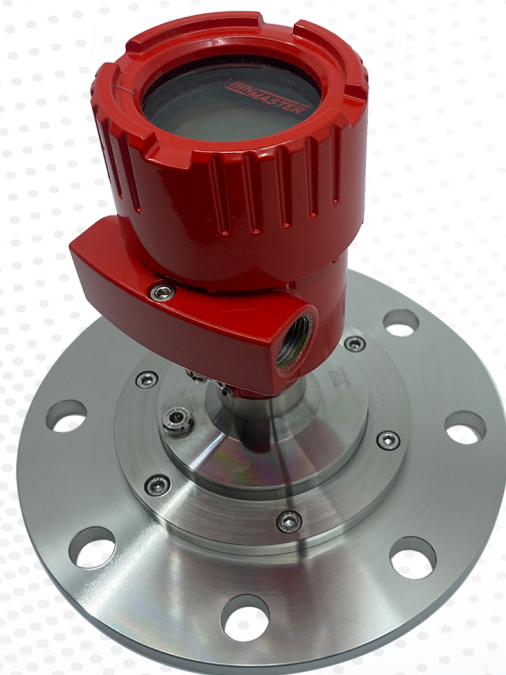
The BinMaster NCR-86 is a non-contact radar level sensor optimized for performance in either bulk solids or liquids. Its advanced technology uses an 80 GHz frequency focused in a narrow 3° beam angle. This ensures reliable performance at measuring ranges up to 394 feet and accuracy within 0.04"/1 mm. The NCR-86 provides continuous level measurement in tall and narrow vessels and excels in excessive noise, dust, temperatures, or condensation.

### **Reliable level measurement. 80 GHz of power.**

There are three versions of the NCR-86 including a metal-jacketed lens antenna, a plastic horn antenna, and a threaded model. There are countless configurations of the NCR-86 offering a diverse selection of approvals, mounting options, specialized seals, output options, and housings. Inventory can be viewed on BinCloud®, BinInventory® LAN-based software, or PLC plus an assortment of digital panel meters and display consoles.

### **Powerful, versatile, tough**

- Measuring distance up to 394 feet
- 3° beam angle for precise targeting
- Reliable accuracy within 0.04"/1 mm
- Process temperatures to 176°F/80°C
- CSA, ATEX, UKEX, IEC approvals
- BinDisc with Bluetooth setup option



*Stainless Steel Flange*



*NPT Threaded*



*Plastic Horn Antenna*



## Narrow 3° Beam Angle for Pinpoint Focus

The narrow 3° beam angle allows for precise aiming to avoid the flow stream, internal structure, or sidewall buildup. Narrow focusing also simplifies setup, as the signal will reflect only from the targeted material. The NCR-86 resists interference, while advanced filters ensure rapid signal processing and a fast update rate. Its firmware constantly tracks echoes and automatically eliminates false echoes for reliable performance.

## Maintenance-Free Antenna System

The NCR-86 antenna lens is encased in a sealed antenna system. This makes it resistant to dust buildup and virtually maintenance-free. Its flush face does not protrude into the vessel which prevents potential damage to the sensor. The plastic lens is made of durable, PEEK plastic for ruggedness and long-lasting performance. It is chemical resistant for tough applications and offers FDA, 3-A, and EHEDG hygienic approvals making it suitable for food and pharmaceutical use.

*80 GHz focuses a narrow 3° beam that measures only material; a 10° beam from 26 GHz may detect internal structure, corrugation, or buildup.*

## Setup with BinDisc and Bluetooth Option

Each job site installation requires one BinDisc interface to enable push-button setup and configuration on the sensor face. The BinDisc is installed in the sensor housing and is visible through the cap. BinDisc simplifies setup and provides continuous, at-a-glance, operational status of the sensor.

BinDisc is also available with a Bluetooth option for setting the sensor up on a cell phone using the BinMaster sensor app. Only one BinDisc is needed to set up multiple sensors, saving money. This handy interface aids in onsite system diagnosis.



# NCR-86 Specifications



	PLASTIC ANTENNA	STAINLESS STEEL FLANGE	NPT THREADED
Frequency	79 GHz	79 GHz	79 GHz
Antenna Type	3.15" (80 mm) plastic horn antenna	metal jacketed lens antenna	integrated horn antenna
Measuring Range	393 feet (120 m)	393 feet (120 m)	80 feet (24 m)
Beam Angle	3°	3°	7° to 14°
Accuracy	≤ 1 mm	≤ 1 mm	≤ 1 mm
Power Requirements	9.6-48 VDC, 90-253 VAC	9.6-48 VDC, 90-253 VAC	9.6-48 VDC, 90-253 VAC
Ambient Temperature	-40° to +80°C (-40 to +176°F)	-40° to +80°C (-40 to +176°F)	-40° to +80°C (-40 to +176°F)
Process Temperature	-196° to +80°C (-321° to +176°F)	-196° to +250°C (-321° to +482°F)	-196° to +80°C (-321° to +176°F)
Process Pressure	Compression Flange: -1 to 2 bar (-100 to 200 kPa/-14.5 to 29.00 psig) Adapter Flange: -1 to 1 bar (-100 to 100 kPa/-14.5 to 14.5 psig)	-1 to 25 bar (-100 to 2500 kPa/-14.5 to 362.6 psig)	316L: -1 to 40 bar (-100 to 4000 kPa/-14.5 to 580.2 psig) PVDF: -1 to 3 bar (-100 to 300 kPa/-14.5 to 43.51 psig)
Mounting	3", 4", 6", or 8" flange or mounting strap	4", 6", or 8" swiveling flange with 10° adjustable aiming	.75", 1.0", 1.5", or 2" NPT process connection
Housing Material	Plastic, Painted Aluminum, or Stainless Steel	Plastic, Painted Aluminum, or Stainless Steel	Plastic, Painted Aluminum, or Stainless Steel
Enclosure Rating	IP66/IP67, IP66/IP68 (0.2 bar), IP68 (1 bar), IP69K, NEMA Type 4X, NEMA Type 6P	IP66/IP67, IP66/IP68 (0.2 bar), IP68 (1 bar), IP69K, NEMA Type 4X, NEMA Type 6P	IP66/IP67, IP66/IP68 (0.2 bar), IP68 (1 bar), IP69K, NEMA Type 4X, NEMA Type 6P
Approvals	CSA (XP), CSA (DIP), ATEX/UKEX (XP), ATEX/UKEX (DIP), IEC (XP), IEC (DIP)	CSA (XP), CSA (DIP), ATEX/UKEX (XP), ATEX/UKEX (DIP), IEC (XP), IEC (DIP)	CSA (XP), CSA (DIP), ATEX/UKEX (XP), ATEX/UKEX (DIP), IEC (XP), IEC (DIP)
Output	Two-wire 4 - 20 mA/HART®, Four-wire 4 - 20 mA, Modbus RTU	Two-wire 4 - 20 mA/HART®, Four-wire 4 - 20 mA, Modbus RTU	Two-wire 4 - 20 mA/HART®, Four-wire 4 - 20 mA, Modbus RTU
Operating Voltage	12 to 35 V DC	12 to 35 V DC	12 to 35 V DC
Bluetooth Available	Bluetooth 5.0	Bluetooth 5.0	Bluetooth5.0

## Non-Contact Radar Made Better by BinMaster

*You have many choices when it comes to a non-contact radar. What you might NOT get from other manufacturers are the options and accessories that make your installation simpler and more affordable. Plus, BinMaster supplies the complete solution from the sensor to the software and everything in between.*



NCR-86 with swivel flange



NCR-86 with mounting plate

### More Mounting Flexibility

With multiple mounting options, there is no on-site fabrication needed. Plus, you will likely be able to use an existing roof flange. This will simplify installation, while saving you time and money. BinMaster offers a wide variety of mounting plates for angled roofs as well as swiveling flanges and mounting straps that allow for aiming.

### Swivel Mounts for Aiming

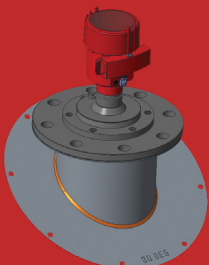
For aiming flexibility, a 10° swiveling holder for the metal jacketed version of the NCR-80 comes in 4", 6", or 8" flange sizes to allow for precise aiming to the output of the vessel. For the NCR-80 plastic horn antenna version, 8° directional aiming is available with 2", 2.5", 3", 4", 5", 6", or 8" adapter flanges.



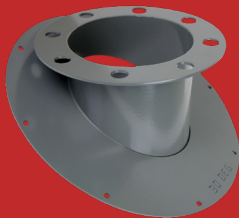
NCR-86 plastic horn model with mounting strap

### Flat and Angled Mounting Plates

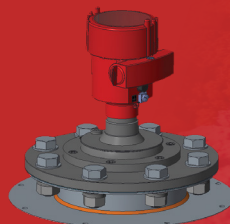
Not all roofs are flat throughout the process industries. Therefore, in addition to the affordable 0° mounting plate BinMaster offers 10°, 30°, and 45° mounting plates with a 4" ANSI flange.



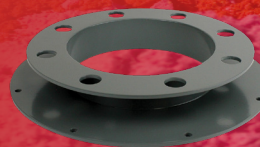
30° Mounting Plate with NCR-86 metal jacketed model



30° Mounting Plate



0° Mounting Plate with NCR-86 metal jacketed model



0° Mounting Plate



Local displays provide data access at ground level.

*BinMaster offers several display modules to provide access to level data locally at the bin. This allows workers and drivers quick access to inventory levels from the ground or a vehicle. There is no need to visit a control room or the office. BinMaster will design a solution that fits your needs and budget based upon the number and location of your silos and where it is easiest to access data.*

## Push-Button Control Console

The BinMaster C-100-R control console provides convenient walk or drive-up access to level and volume data from BinMaster non-contact radar level sensors. It displays bin levels as feet or cubic feet, US gallons or bushels, and tons, metric tons, or kilograms. Measurements can be output as height of material or distance to product (headroom).

Configuration of the C-100-R uses intuitive push-button controls in English or Spanish. User settings are stored in a non-volatile memory to protect against data loss in the event of power failure. The C-100-R features a 24 VDC power supply and a NEMA 4X rating for resistance to dust and rain.



## Digital Panel Meters (DPMs)

BinMaster's digital panel meters provide easy-to-use, easy-to-see solutions for bin-level monitoring and control. They have ultra-bright LED displays that are easily seen in bright sunlight, smoke, fog, or dusty environments. DPMs are offered in single and dual-line configurations and can be installed in a NEMA 4X enclosure with one to ten cutouts.



*You buy sensors because you need data to manage your inventory. With BinMaster, you have many options about where the data goes. Data from the sensors can be sent to your PLC or a console, if you prefer. If you are looking for powerful, user-friendly options BinMaster gives you two software alternatives.*



## Cloud-Based Software

BinCloud® is a robust inventory management experience used with the NCR-86 that works anywhere you have a connection to the internet. No software installation, IT department, or server hosting is needed. You can access levels and receive alerts on your phone, tablet, or PC. BinCloud® can be used for remote inventory monitoring from multiple locations around the state, country, or worldwide.

## Locally-Installed Software

BinInventory® software installs on a PC on your LAN, WAN, or VPN. This PC software can be used to manage inventory data from up to 255 vessels per sensor network. It sends automated high and low-level alerts via email, visualizes vessel levels, and generates usage reports. It can be used by one end user or installed across your entire organization.

BinMaster's advanced software platforms are compatible with the NCR-86 and other BinMaster continuous level sensors or just about any sensor using the Modbus RTU or HART protocol. Use BinCloud® or BinInventory® as a complete on-site solution for managing inventory of solids or liquids contained in bins, tanks, or silos.



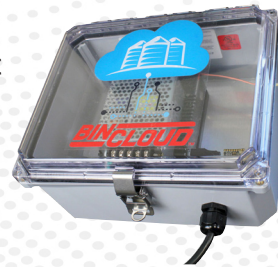
## Easy application & installation

BinMaster helps you simplify the installation of an inventory management system. Programmable, compact devices replace wires with over-the-air technology to reduce wiring and labor costs. BinMaster's solution-centric approach ensures 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, BinCloud®, or BinInventory® software.



## 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® data from the Cloud.



## HART Consolidator Module

The HART Consolidator Module—HCM-100—lets you 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.



## Analog Expansion Hub

The AEH analog expansion hubs—AEH-100/200—simplify connecting analog sensors to a sensor system. Use the AEH to connect analog devices to the BinCloud® gateway or to upgrade an existing sensor system to a cloud-based network.





## Grain, Feed & Petfood

- Bins with ladders or internal structure to avoid
- Segmented cement grain bins with multiple compartments
- Bins where the sensor must mount near the bin wall
- Targeted locations on grain piles or flat storage warehouses
- On large conveyors for distance measurement to detect overloading
- Rendering operations, measuring feather or bonemeal

## Food Processing

- Flour, sugar, and salt silos
- Dry ingredients and malted grains

## Cement & Asphalt

- Clinker silos with excessive noise
- Asphalt storage with hot temperatures
- Finished cement silos with excessive dust
- Over moving belts and conveyors to prevent overloading
- Inside rock crushers to monitor filling and emptying

## Plastic Pellets or Powders

- For narrow resin silos with high volume turnover
- In low dielectric materials or materials with limited reflectivity

## Sand & Aggregates

- Sand or aggregate silos with excessive dust or noise
- Mounted over piles or pits for level detection

## Wood Chips or Pellets

- Detecting level of materials with varying dielectrics and moisture levels
- Performs in high steam environments

## Power Plants

- Monitoring level in coal bunkers and feeders to ensure continuous supply
- Detecting levels in surge bins and on conveyor belts

## Biofuels

- Measuring corn and DDG storage silos
- Dry or wet milling bin monitoring

## Water & Wastewater

- Sewage treatment where material characteristics vary
- Levels in sumps, tanks, stormwater drains, and open waterways

