

Microwave 320

Non-Contact Microwave Level & Position Switch

The Microwave 320 is a non-contact microwave point-level switch engineered for reliable high- or low-level detection and object presence monitoring in harsh industrial environments. Designed for process engineers, plant operators, EPCs, and maintenance teams, it provides dependable measurement in applications where dust, temperature, abrasion, or corrosive chemicals compromise conventional devices. Using a directional microwave beam, the 320 detects solids or liquids without contacting the product, eliminating coating, corrosion, mechanical wear, or probe fouling. Unlike photoelectric, capacitive, or ultrasonic switches, the Microwave 320 remains unaffected by dust clouds, fog, vibration, or aerated conditions and can detect through sightglasses or non-metallic vessel walls. Optional high-temperature MT/MR assemblies allow operation in extreme heat using water-cooled sensor housings. With adjustable ON/OFF delays, pulse-coded signal discrimination, and rugged corrosion-resistant construction, the Microwave 320 provides a long-life, low-maintenance solution for level detection, plugged-chute monitoring, conveyor protection, and material flow confirmation across mining, chemical, food, cement, and bulk-solids handling facilities.



Key Features

Non-Contact Detection

Microwave sensing eliminates probe intrusion, preventing coating, corrosion, erosion, or plugging while ensuring reliable switching in abrasive, sticky, or fast-moving materials.

Dust and Vapor Immunity

Pulse-coded microwave technology maintains accurate detection through dust clouds, fog, or aerated vapor spaces where photoelectric or ultrasonic devices typically fail.

High-Temperature Capability

Optional MT/MR water-cooled sensors withstand extreme radiant heat, enabling safe operation near boilers, kilns, or high-temperature process streams without signal degradation.

External Sightglass Mounting

Ability to detect through sightglasses or non-metallic vessel walls eliminates process penetrations and protects sensors from corrosive or pressurized service conditions.

False-Trip Prevention

Adjustable ON/OFF delays and microwave discrimination reject intermittent flow noise, falling material, or vibration disturbances, improving switching reliability in dynamic systems.

Rugged Industrial Construction

Glass-reinforced polyester housings and stainless hardware offer long-term resistance to chemicals, outdoor exposure, and harsh mechanical environments with zero moving parts.



Typical Applications



DUSTY STORAGE SILOS

Provides accurate level switching in grain, cement, and powder silos where dust clouds blind optical sensors and interfere with contact-based probes.



ABRASIVE SOLIDS & MINING

Monitors level or blockage in coal, sand, aggregate, and ore systems without suffering wear, erosion, or buildup from abrasive bulk materials.



CORROSIVE CHEMICAL TANKS

Allows external sightglass mounting to avoid chemical attack on wetted components, providing reliable detection in corrosive or vapor-rich environments.



HIGH-TEMPERATURE PROCESSES

Withstands harsh thermal conditions using optional water-cooled MT/MR sensors, delivering stable performance near boilers, kilns, or heated vessels.



PLUGGED CHUTE DETECTION

Detects material backups in chutes, hoppers, or conveyor transitions, preventing equipment overload, belt damage, and costly unplanned downtime.



VEHICLE & INTERFACE DETECTION

Detects truck or railcar positioning, petroleum-water interfaces, and solids in liquids by sensing when material blocks the microwave beam.

Benefits



Zero Contact

No wetted parts eliminate coating, corrosion, or abrasion issues, reducing cleanup needs and maintaining consistent operation in difficult media.



Long Service Life

Solid-state design with no moving components prevents wear and mechanical failure, extending operational lifespan in demanding industrial applications.



High Reliability

Pulse-coded microwave discrimination avoids false alarms from dust, vapor, or EMI interference, delivering stable switching in unpredictable conditions.



Lower Maintenance Costs

Non-contact operation and rugged housings minimize service interventions, repairs, and sensor replacements, reducing total lifecycle expenses.



Enhanced Safety

External mounting options allow detection without vessel penetration, improving safety in corrosive, pressurized, or high-temperature tank environments.



Process Protection

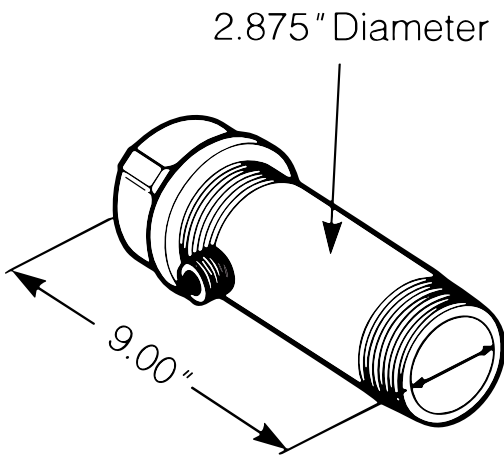
Accurate object detection helps prevent conveyor damage, blocked chutes, material spills, or process interruptions across bulk-handling operations.



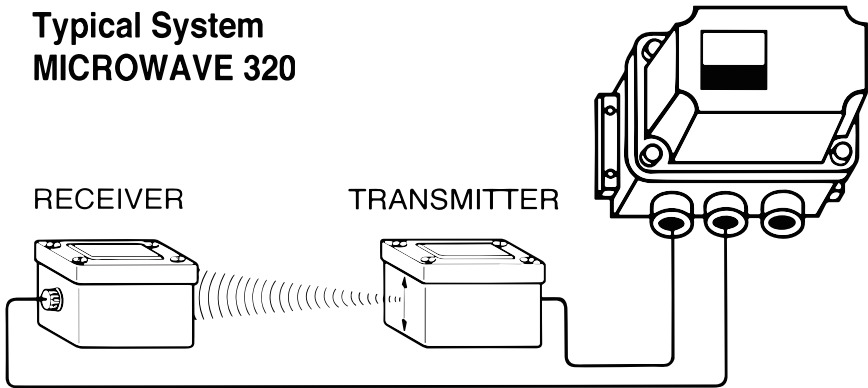
Technical Specifications & Key Features

Sensing Type:	Non-contact pulsed microwave, X-band 10.525 GHz (FCC Part 15 — no site license required)
Function	Point level (high/low) or object/position presence, solids and liquids
Output	DPDT (Form C) relay — 5 A @ 120 VAC, 3 A @ 240 VAC, 3 A @ 24 VDC resistive
Sensing range	6 in – 100 ft (0.15 – 30.5 m) through air, sensor dependent
Beam angle	~40° (10 dB gain horn)
Supply	115 / 230 VAC (95–135 / 190–270 VAC, 45 Hz min) or 24 VDC (20–26 VDC); 6 VA
Time delay	Independent beam-make / beam-break delays, 50 ms – 30 s, auto reset
Fail-safe	Switch-selectable, high or low level
Indicators	Red LED (beam/path status), yellow LED (relay status)
Operating temp	Electronics –40 to +160 °F (–40 to +71 °C); sensor electronics 140 °F max; process to 750 °F with water-cooled 861 / firebrick options
Cable	Up to 1,000 ft (305 m) PVC / 300 ft (91 m) Teflon — pre-amps at both sensors
Enclosure	NEMA 4X glass-reinforced polyester, stainless trim
Approvals	FM and CSA, dust-ignition-proof, Class II Div 1, Groups E, F & G (with MT/MR 851; S/T enclosures); AUS RCM option

Dimensions



Typical System Layout





Model Number Selection

The model number will consist of a base number D320 followed by 8 digits.
These digits will represent 5 sets of option tables.

Part Number Structure

D320-A-BCD-E-FG-H

Part Prefix D320

Part Number	A- Enclosure Type
S	Standard, NEMA 4X Enclosure
C	Clear NEMA 4X Enclosure
O	OEM, Electronics assembly with mounting hardware (no enclosure)
T	Standard, NEMA 4x Enclosure, Test Switch
D	Clear, NEMA 4x Enclosure, Test Switch

Part Number	BCD- Sensor Type (priced per pair)
851	Standard, CS, direct coupled, 2 1/2" NPT
811	NEMA 12, 3.9" x 6.6" enclosure with extension
801	NEMA 4X, 3.9" x 3.8" x 6.6" enclosure
861	High Temp, water cooled (750 Deg F Max)
85S	316SS, direct coupled, 2 1/2" NPT
85V	Vibration resistant 851's
841	NEMA 12, 3.9" x 3.8" x 6.6" enclosure with extension and horn

Part Number	H- Approval
0	Standard
A	Australia (RCM)

Part Number	E- Process Mounting (priced per pair)
W	Standard, 2 ½" CS Weldment for 851's
U	4" CS Weldment and UHMW Window
T	4" CS Weldment and Teflon Window
F	4" CS Weldment and Firebrick (750 Deg F Max)
G	2" Weldment and quartz glass window (400 Deg F Max)
H	High Temp, 4" lagging extension for 851's
A	High Temp, Angled weldment for Fly Ash applications
E	High Temp, 12" lagging extension for Fly Ash bracket
0	None

Part Number	FG- Interconnect Cable
P5	Pair of 50 ft. PVC Cables, 2 Conductor
P1	Pair of 100 Ft. PVC Cables, 2 Conductor
BX	Bulk PVC Cable, 2 Conductors (Lengths over 100 Ft.)
TX	Bulk Teflon Cable, High Temp (300 Ft or less)
00	None

Ordering codes revised to fixed-length format effective August 2026. Legacy codes convert one-to-one: prefix 320-->D320, 851S->85S, 851V->85V, P50->P5, P100->P1, B->BX, T->TX, AUS->A, and 00->0 in the mounting and approval fields. This is a format change only; legacy part numbers in either form remain valid for identification.

Summary

The Microwave 320 is the industry-proven non-contact microwave switch for solids and liquids in harsh industrial environments. Designed for abrasives, high temperature, corrosive conditions, and dusty atmospheres, it delivers reliable on/off level and object detection without contacting the product. Choose the Microwave 320 when application demands non-intrusive sensing, no moving parts, and reliable operation in hostile spaces — making it the ideal solution where magnetostrictive, ultrasonic, or photoelectric/capacitance switches are not suitable.

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