Electromagnetic CPC Sensor for In-furnace Use

Model : EMW

New Concept — Detection by Electromagnetic Waves.

The furnace can operate safely because there is no need for sensors or other structures inside it.

Electromagnetic CPC sensors are a new kind of sensor. They emit electromagnetic waves from antennae embedded in the furnace wall and use the transmission time taken for the waves reflected from the strip edges to return to the antennae to measure the strip position.

Features

- The system operates safely because there is no interference with the strip and equipment inside the furnace.
- No maintenance is required.
- Dirt (dust and fumes) in the atmosphere inside the furnace has no effect.
- There are no consumable parts.
- The calibration rod makes adjustments simple.
- The sensors are compact and light, for easy installation in a small space.
- Construction costs are low.

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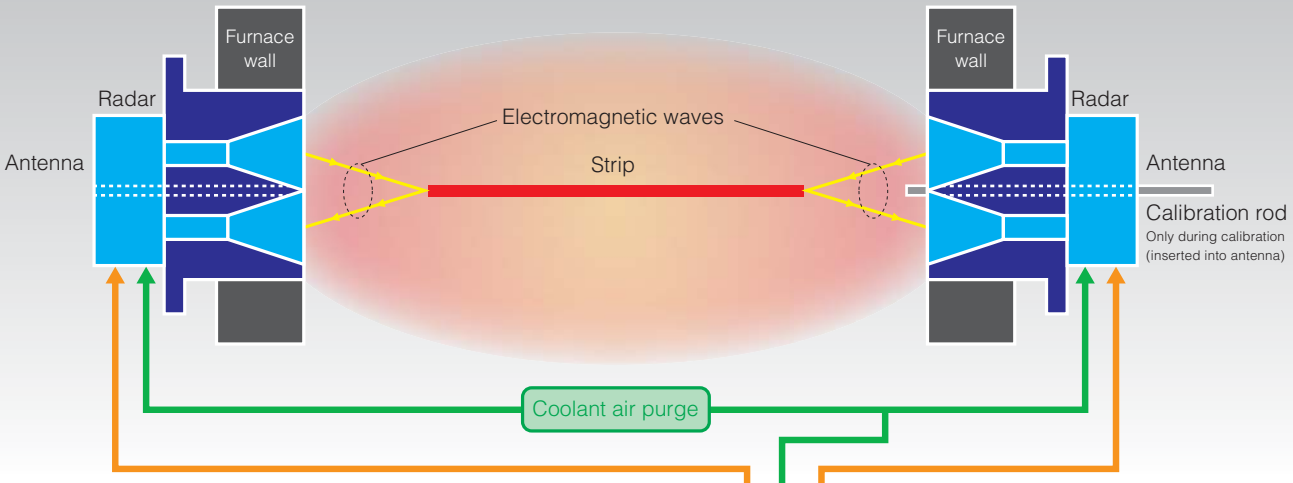
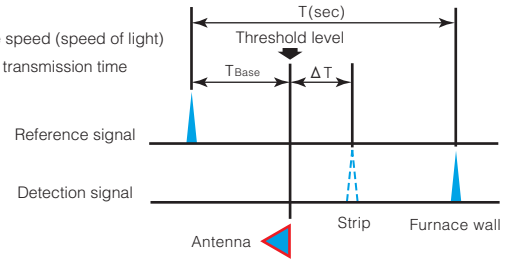
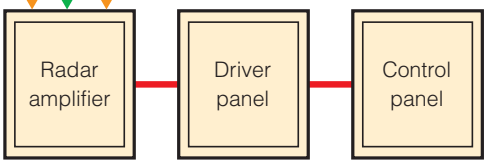
Detection operating principles and equipment configuration

Electromagnetic waves from the antennae are reflected from the strip edges and the transmission time taken for the waves to return is used to measure the strip position.
Even if dirt or other contaminants reduce the reception sensitivity, the transmission speed of the waves does not change, so the measurement is unaffected.



L: Distance to strip edge
C: Electromagnetic wave speed (speed of light)
T: Electromagnetic wave transmission time
$L = C \times T$





Detection operating principles

Specifications

Carrier frequency	10 GHz
Measurement range	40 mm ~ 1200 mm
Linearity	±1 mm or less
Reproducibility	±1 mm or less
Resolution	0.2 mm
Minimum strip thickness	12 μm
Antennae	Pyramidal horn antennae
	Installation aperture 280 mm × 240 mm
	Cooling Connector AIR Q = 50 ℓ / min
	Ambient operating temperature 1,100 °C (max)
	* For furnace temperatures of 1100 °C or greater, please talk to us first.

Radar amplifier	Wall mounted
	Power supply DC24 V
	Cooling air 40 °C → 10 ℓ / min
	50 °C → 100 ℓ / min
	60 °C → 170 ℓ / min
	70 °C → 270 ℓ / min (max35 °C)
	Ambient operating temperature 0 °C ~ 70 °C
Microwave cable	Special type L = 30 m (max)
Radar amplifier output	DeviceNet
Warning outputs	Trigger error
	Level error
	Roll out

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