

DOUBLE SHEET DETECTION

DS100

Single Probe Double Sheet Detector
for Ferrous Metals

A COMPLETE SYSTEM REQUIRES:

- Control: DS100 (Qty 1)
- Probe: PM4, PM10 or PM15 (Qty 1)
- Cable: CBL100-3, CBL100-3R or CBL100-6 (Qty 1)
- Bracket: Dependent on selected probe

FEATURES:

- Single probe
- Detects ferrous metals (Steel & Tinplate)
- Thickness ranging: .05mm-1.524mm (.002"-.06")
- Ideal for sheet feeder applications or locations where space is limited
- Measures magnetic field change to determine metal thickness
- Automatically adjust signal for probe variations
- Push button calibration

ABOUT DS100

Prime Controls' DS100, Single Probe Double Metal Sheet Detector operates in locations where is space limited or where sensing from only one side is possible. When pair with a specific probe, the DS100 detects steel or tinplate (ferrous metals) ranging in thicknesses of .05 mm to 1.5 mm (.002" to .060"). The DS100 works by measuring a change in a magnetic field on the probe face. Probe models PM4, PM10 and PM15 are paired with the DS100. Each model represents a different housing size, magnetic strength and maximum detectable thickness. A table on the back page illustrates the differences.



The DS100 Double Sheet Detector is simple to calibrate. Simply place a metal sheet on the front of the probe and push the calibrate button once. With one push of the button, the DS100 automatically measures the thickness, calculates its double value and sets the reject threshold midway between the single and double values. It's that easy.

The reject output is a form "C" contact relay. This fail-safe output de-energizes when the thickness is greater than the reject threshold limit; power is lost or when a probe failure is detected.

One additional PNP transistor output turns on when each single is detected. This single output is applied to a good sheet counter, jam detector or last sheet detect circuit. The DS100 detector has fault detection that immediately analyzes any problem and operates a blinking Green LED code that directs the operator or maintenance department to the problem.

PRODUCT SPECIFICATIONS

POWER INPUT: Configurable 120 Volts Max or 240 Volts AC Max, 50 to 60 Hz, 300 mA operating load

OUTPUTS: SPDT contact relay, double detected NC closed

MAX LOAD: 10 Amps @ 240 V ac, 8 Amps @ 24 V dc, 1/2 HP @ 240 V ac

OUTPUT FAIL SAFE: Contact goes to double condition, PNP changes to nothing condition

FAULT DETECTION: Flashing indicators sequence code to identify a problem Outputs go to fail safe condition

PROBE: Optimized for steel or tinplate

PROBE TYPES: PM4, PM10, PM15

CABLE TYPES: CBL100-3, CBL 100-3R, CBL100-6
Other cables lengths available

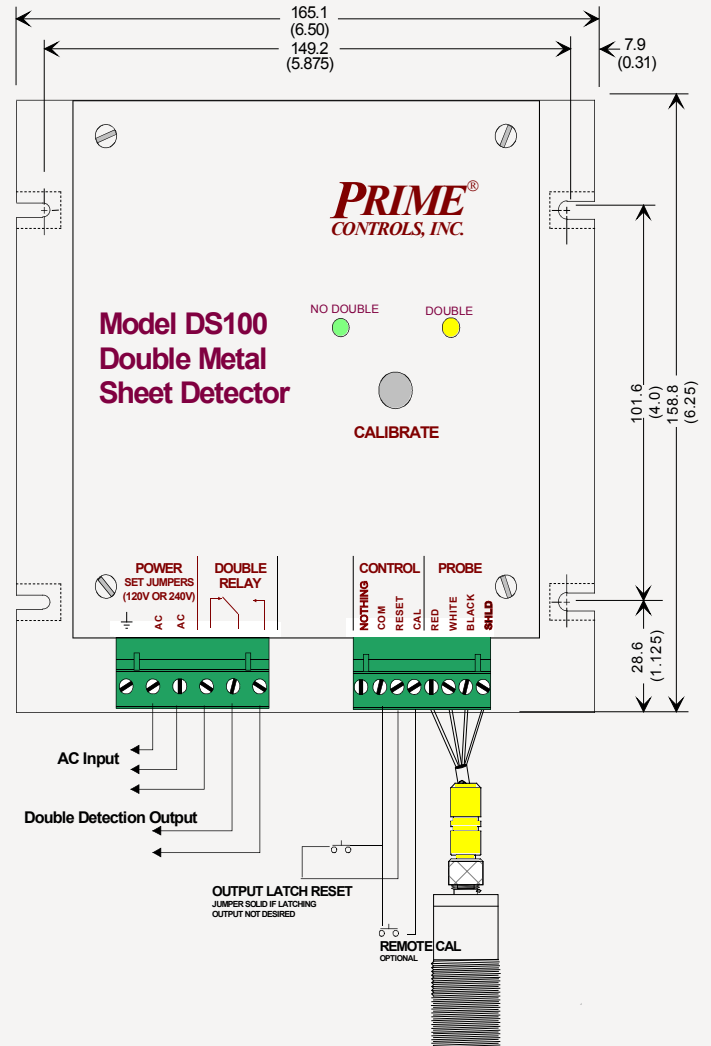
METAL SENSITIVITY: .05mm-1.5mm (.002"-.060")

PROBE SEPARATION: Dependent on magnet strength and probe distance. Probe specs based on contact with metal

CALIBRATION: Push-button or remote switch with single sheet sample

INDICATORS: Green for single, amber for double, green blinking probe is bad or disconnected

THEORY OF OPERATION: Permanent magnetic flux field is shunted across sensor poles by the thickness of metal. Maximum thickness is limited by the diameter of the probe. The chart below provides a range of each probe.



Probe Model	Probe Diameter	Breakaway Force	Min. Thickness	Max. Thickness
PM4	18mm (.7")	.9 Kg*	.04mm (.0015")	.4mm (.015")
PM10	30mm (1.18")	4.5 Kg*	.1mm (.004")	1.0mm (.040")
PM15	36mm (1.41")	9.0 Kg*	.15mm (.006")	1.5mm (.060")

* For example: $\frac{.09\text{mm}}{.8\text{mm}} \times 1.3 \text{ kg} = 0.146 \text{ kg}$ or .32 lbs 1 kg = 2.2 lbs, 1mm = .039 inch

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