

CoverMaster

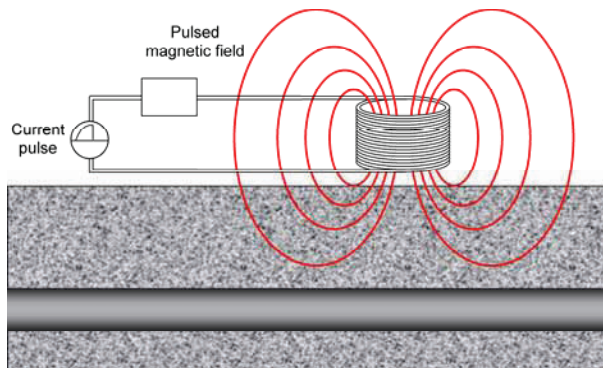
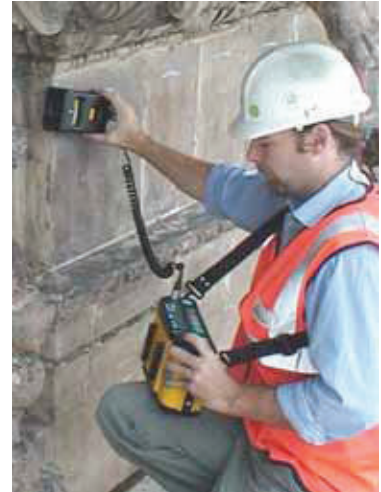
Purpose

CoverMaster covermeters are used for the following purposes:

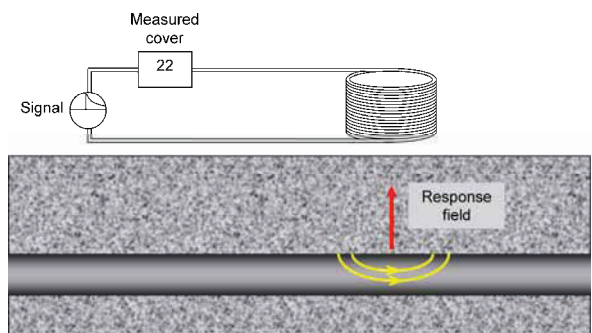
- Locate reinforcing bars and metal cable ducts in concrete structures
- Measure the cover depth of reinforcement
- Estimate the size of reinforcing bars
- Locate other metal objects embedded in concrete

Principle

CoverMaster instruments are based on the **pulse-induction** technique. A repetitive current pulse is applied to the coils in the search head (below left). During each pulse, current increases gradually in the coils but is turned off rapidly. The sudden end of the pulse causes a sudden collapse in the magnetic field produced by the coils, which induces **eddy currents** in a bar located within the coils' influence zone. As the eddy currents decay, a decaying magnetic field induces a secondary current in the coils (below right). The instrument measures the amplitude of the induced current, which depends on the orientation, depth, and size of the bar. The search head is directional and maximum signal is obtained when the bar is aligned with the long axis of the search head. The pulse-induction technique is uniquely stable, is not affected by moisture in concrete or magnetic aggregates, and is immune to temperature variations and electrical interference.



Applied current pulse



Magnetic field induced by decaying eddy currents in bar

Recommendations on the use of covermeters can be found in BS 1881:204

CoverMaster P331²



Basic features:

- Large graphics display of cover depth
- Signal strength indicator and variable tone to identify proximity to bar
- Precise indication of bar direction
- Easy-to-use, menu driven instrument
- Single-handed operation; search head includes key function buttons
- Maxpip™ mode (emits sound when search head is over center of bar)
- Under cover mode (emits sound when minimum cover has been detected)
- International bar sizes included

Basic Features (continued)

- Quick release battery pack and charger
- Can be used with different search heads (See below)
- Includes standard search head, cable, carrying case, and instruction manual
- Rechargeable battery pack

Optional Search Heads

In addition to a choice of four search heads, the **CoverMaster P331²** can also be used with half-cell probes to measure the half-cell potential (see page 85). A borehole probe is also available for locating a second layer of reinforcement or deeply embedded tendon ducts. The borehole probe can be switched from the “forward looking” to the “side looking” mode.



Standard

For general purpose use; maximum cover 70 to 95 mm

Narrow Pitch

For resolving closely-spaced bars; maximum cover 60 to 80 mm

Deep Scan

Maximum cover 160 to 180 mm

Dual Search Head

For high strength and stainless steel



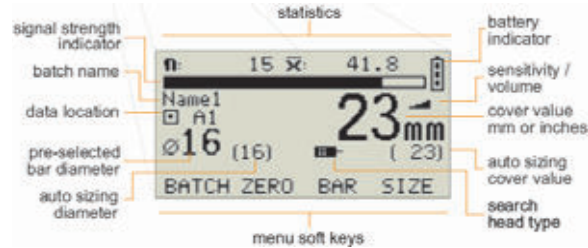
Borehole Probe

For measurement of second layer of reinforcement and tendon ducts



Half-Cell Potential Kit

Cu/CuSO₄ or Ag/AgCl



Sample Display

CoverMaster P331² Models

Model B includes the basic features listed on previous page.

Model BH includes all of the features of Model B with the additional of capability to make half-cell potential readings

Model SH includes all the features of Model BH plus the following:

- Automatic bar sizing (autosize mode for quick estimate or orthogonal method for greater accuracy)
- Orthogonal mode bar diameter determination
- Min-Max cover limits (enter minimum and/or maximum cover to check with specifications)
- Data storage (up to 1000 individual cover measurements in linear sequence)
- Software to upload stored data to PC

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Model TH includes all the features of Model SH plus the following:

- Data storage up to 240,000 points
- Linear and grid data storage (data stored in 2-D format)
- User defined 2-D testing grid
- Graphics plot and threshold plot

Model THD includes all the features of Model TH plus a stainless steel measurement probe.

CoverMaster P331² Feature Comparison

Description	Model				
	B	BH	SH	TH	THD
Rebar location, orientation and depth of cover	•	•	•	•	•
Cover thickness reading in mm and inches	•	•	•	•	•
Graphics display with backlight	•	•	•	•	•
Multiple language menu structure	•	•	•	•	•
Signal strength display	•	•	•	•	•
Interchangeable heads with LED and keypad	•	•	•	•	•
User selectable bar range sizes and numbers	•	•	•	•	•
Measurement sound modes:	•	•	•	•	•
Locate (<i>tone increases as head approaches rebar</i>)	•	•	•	•	•
Under Cover (<i>tone only sounds for low cover</i>)	•	•	•	•	•
Maxpip™ (<i>tone only as head passes rebar center</i>)	•	•	•	•	•
Half-cell potential capability		•	•	•	•
Autosize mode for bar diameter determination			•	•	•
Orthogonal mode for bar diameter determination			•	•	•
RS232 output to printer or PC			•	•	•
EDTS Excel Link Software			•	•	•
CoverMaster® Software			•	•	•
Statistics			•	•	•
Minimum and maximum cover limits			•	•	•
Date and time			•	•	•
Memory			•	•	•
Graphics plot				•	•
Threshold plot				•	•
Stainless steel probe					•
Rugged waterproof case (IP65)	•	•	•	•	•
Adjustable beep volume and earphone socket	•	•	•	•	•

Bar Diameter Ranges

Metric	5 to 50 mm in 21 values
U.S. Bar Numbers	#2 to #18 in 16 values
ASTM/Canadian	10 to 55M in 8 values
Japanese	6 to 57 mm in 17 values

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