



PRODUCT CATEGORY:
CARLSON INSTRUMENTS

Carlson Reinforced Concrete Meter

The Carlson Reinforced Concrete Meter is a rod-like device which simulates a bar of reinforcing steel. The rod is hollow to accommodate a miniature strain meter within, and it is this strain meter which measures the change in length from which the stress is derived. What makes the Reinforced Concrete Meter unique is that it measures the change in length of the steel rod regardless of the occurrence of fine cracking which is common to reinforced concrete. It measures the average strain over most of the rod's length, as all of the bond between the steel rod and the concrete occurs within a few inches of each end. To ensure this happening the hollow steel rod is threaded externally near each end.

The fact that the Reinforced Concrete Meter measures average length change is important when there are external cracks, because the average length change determines the stress in the reinforcing. On the other hand, if conventional strain meters of limited length were used, they would indicate a different result depending upon whether a crack is within the gauge length or just beyond it. Whenever the Reinforced Concrete Meter indicates a strain greater than the strain capacity of the concrete, it may be concluded that the concrete is cracked. In such a case, it nevertheless indicates the true stress in the steel. In the case where the tensile strain is below the strain capacity of the concrete, the Reinforced Concrete Meter indicates both the tensile stress in the reinforcing and that in the concrete. Another advantage is ease of installation. Since the sensing element is surrounded by a heavy steel wall, the device is very rugged. The usual method of installation is to wire the meter to a bar of reinforcing steel and have the cable attached to the reinforcing in such a way that when the concrete is placed, movement of the concrete will not pull on the cable.

The temperature correction can be applied simply and accurately as in all Carlson Instruments, temperature measurement is standard.

OPERATING PRINCIPLE:
Carlson Instruments are elastic wire strain meters containing two coils of highly elastic steel wire, one of which increases in length and electrical resistance when a strain occurs, while the other decreases. The ratio of the two resistances is independent of temperature (except for thermal expansion) and therefore the change in resistance ratio is a measure of strain. The total resistance is independent of strain since one coil increases the same amount as the other decreases due to a change in length of the meter. Therefore, the total resistance is a measure of temperature.

> APPLICATIONS

Measurement of stress in reinforced concrete.

> FEATURES

Robust construction	Ease of installation
Proven Carlson design	Self temperature compensating
Integral temperature measurement	

> BENEFITS

✓ Increase Safety	✓ High Accuracy
✓ Increase Productivity	✓ High Reliability

SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Range (micro-strain)	±950
Resolution (micro-strain)	3.4
Resolution (stress in steel)	100 psi (690 kPa)
Resolution Temperature	0.1°F (.05°C)
Maximum Stress	±44,000 psi (300 MPa)
Weight	2.5 kg (5.5 lbs.)