



# Carlson Joint & Foundation Meters



Carlson Joint Meters and Foundation Meters are similar to strain meters except that they have greater range. This is accomplished by having a coil spring in series with each of two loops of elastic wire. The foundation meter is the same as the joint meter except that it has its range mainly in contraction. The joint meter is used mainly to measure the opening to joints and therefore it has most of its range in expansion. Range is allowed by spring loading the elastic wire. Both measure temperature as well as expansion or contraction in the same way that strain meters do.

The dimensions of the joint and foundation meters are roughly similar to those of the strain meter. A bellows near the center of the length permits movement to be transmitted to the interior elastic wires. The bellows has a bursting pressure of 400 psi (2.7 MPa), but should normally not be exposed to more than 100 psi (690 kPa) hydraulic pressure. Padded heat shrink tubing is placed over the bellows to prevent bonding or jamming by concrete or mud.

The installation of joint meters is facilitated by embedding a steel socket on one side of the joint, and not inserting the joint meter until just before placing the concrete on the second side. However, there are many applications of the joint meters, so they can be ordered with or without sockets.



**RST Instruments Ltd.**

11545 Kingston St.,  
Maple Ridge, BC  
Canada V2X 0Z5

Telephone: 604 540 1100  
Facsimile: 604 540 1005  
Toll Free: 1 800 665 5599

[info@rstinstruments.com](mailto:info@rstinstruments.com)

[www.rstinstruments.com](http://www.rstinstruments.com)



specifications + ordering info

# Carlson Join & Foundation Meters



## cable specs

The cable most commonly used is heavy duty, neoprene rubber-covered, with either three or four conductors. Alternate cable types are available to suit site specific conditions and we invite your inquiries.

The Carlson MA7 and later series readout instruments, while compatible with both three and four wire systems, require only three conductors to monitor both temperature and resistance. Earlier versions of Carlson readouts require four conductors to monitor both parameters. We recommend that the total design length of cable be attached at the factory in order to assure system integrity. Should the final design length not be known at the time of order, specify the total length of cable to be supplied in bulk, and that a 1 m. (40 in.) length of either three or four conductor be attached. As conductor diameter is determined by lead length, please specify the approximate total length, to insure that the most appropriate cable is supplied.

While field splicing is possible, the instructions in the Carlson field manual must be followed.

## 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.



## specifications

DESCRIPTION	JOIN METERS			FOUNDATION METERS		
	JO.1	JO.25	JO.5	F0.1	F0.25	F0.5
Range Contraction	0.51 mm (0.02 in.)	0.25mm (0.01 in.)	0.25 mm (0.01 in.)	2.0 mm (0.08 in.)	6.1 mm (0.24 in.)	10.2 mm (0.4 in.)
Range Expansion	2.0 mm (0.08 in.)	6.1 mm (.24 in.)	10.2 mm (0.4 in.)	0.51 mm (0.2 in.)	0.25 mm (0.01 in.)	2.5 mm (0.1 in.)
Resolution	0.005 mm. (0002 in.)	.013 mm (.0005 in.)	0.025 mm (0.001 in.)	0.005 mm (0.0002 in.)	0.013 mm (0.0005 in.)	0.025 mm (0.001 in.)
Resolution Temperature	0.1°F (0.05°C)	0.1°F (0.05°C)	0.1°F (0.05°C)	0.1°F (0.05°C)	0.1°F (0.05°C)	0.1°F (0.05°C)

## ordering info

ITEM	JOIN METERS			FOUNDATION METERS		
	JO.1	JO.25	JO.5	F0.1	F0.25	F0.5
Part Number	CA270A010	CA270A025	CA270A050	CA320A010	CA320A025	CA320A050

GEOTECHNICAL . MINING . ENVIRONMENTAL . STRUCTURAL