

The Model WCM 7300E is designed to provide the highest possible sensitivity, resolution, and accuracy for water content determination in crude oil, other hydrocarbons, or other low dielectric liquids from a max of 25% to levels below 1000 parts per million (ppm). In oil and natural gas (condensate) production, water cut and S&W measurements are significantly improved with the WCM 7300E technology. Enhanced digital signal processing and full product temperature compensation are two of the technological advancements utilized by this device. Water cut, process temperature or probe electrical value can be selected for viewing without removing conduit cover by use of a supplied magnet to operate an internal reed switch.

### **Product Temperature Compensation**

The base dielectric constant (Dk) of oils can change with changes in temperature. This can cause traditional monitors to change without a variance in water content. For example; for a 10°F change, a typical crude oil may show a reading shift of as much as 0.1%, which normally would be considered as water. The WCM 7300 measures product temperature and calculates a corrected cut reading, providing a true water or S&W cut at any temperature up to 160°F.

### **Applications**

#### **LACT (Lease Automatic Custody Transfer) Units**

Detect and provide relay contact closure that can be used to reroute oil that has excess S&W.

#### **Pipeline Loading**

Monitor transfer of petroleum/condensate products from loading facilities.

#### **Dehydration Equipment**

Determine and enhance equipment efficiencies, by monitoring the product and indicating water content.

#### **Fuel Oil Monitoring**

Determine contamination of fuel oil by condensation, or other external factors, before entry to engine.

#### **Storage and Treating Facilities**

Monitoring and early detection of undesirable conditions as well as interface detection during de-watering of storage tanks.

### **Measurement/Monitor Specifications**

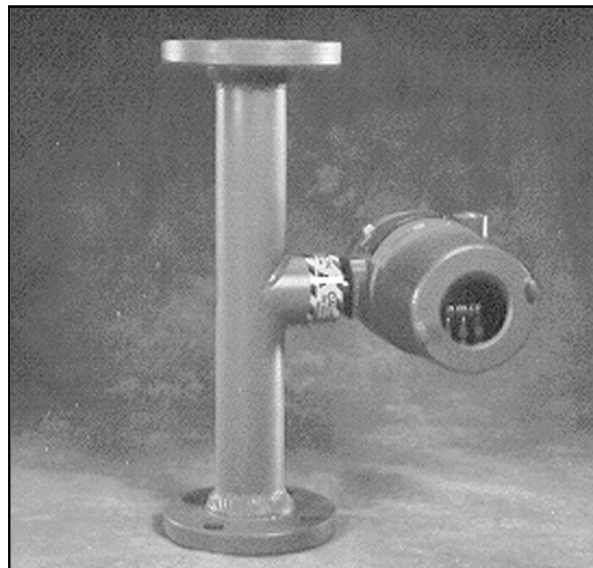
#### **Power Supply**

20-30 Vdc +/-10% @ nominal, 100 mA max.

#### **S&W Full Scale Range**

0-25%

Field adjustable to 0-5%, 0-10%, etc.



**WCM 7300 Water Cut Monitor**

#### **Sensitivity/Resolution**

.01% - 100 ppm

#### **Accuracy**

Is defined as the normal variance observed in the field between the 7300 reading and the water grindout of the oil.

These observed variance numbers are larger than the stated sensitivity/resolution of the WCM because the Dk of the oil in actual field operations is not constant but is continuously changing due to varying amounts of trace contaminants such as chemicals, minerals, solution gas, etc. These cause small changes in the Dk which is independent of the water cut. The WCM "sees" these changes and so indicates them. In the laboratory the WCM easily detects and indicates changes of 100 ppm, or less. This accuracy is seldom observed in the field because of the reasons stated above. The accuracy statements shown are what is normally obtainable (based on many, many installations) in the field and not on controlled testing in a lab.

Normal variances are:

- +/- .05 from 0 to 5% water
- +/- .1 from 5 to 10% water
- +/- .15 from 10% to 15% water
- +/- .2 to .25 from 15 to 25% water

#### **Displays**

One line 16 character, alphanumeric LCD showing by selection:

- Water Cut
- Process Temperature
- Probe Electrical Value

Red/Green LED showing good oil, bad oil, or by passing, condition.

## ***WCM 7300 E Insertion Probes***

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Often it is more economical to use an insertion probe than an inline on large diameter Flow Lines. Not only is the initial cost less, but handling costs in the field are also greatly reduced. Large inline probes may require a crane and extra labor for installation or removal, which can be expensive.