

'CR1000 Series Datalogger

'Reading Decagon Devices, Inc. 5TE sensors in SDI-12

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'This program handles only sensors numbered 1-9 on port C1. The CR1000 can handle another 53 5TE sensors

'per port, but the program must be modified to call sensors 0, a-z and A-Z.

'Ports C3, C5, and C7 can be configured in a similar manner.

'Sensors must be given a unique address prior to using this program. The default address for all sensors is 0

'This program works as is for 5TE's with board version Rev3 or higher. For versions R2-04 or below, you must

'modify the program to divide the raw output for VWC (bulk dielectric) by 100 before applying the Topp equation.

'change this constant to match the number of sensors attached to your com port.

'Enter 9 for sensors numbered 1-9. Sensors must be numbered sequentially from 1 to SensorNum

Const SensorNum = 2

'an array of 3 measurements for each sensor

Public P(SensorNum,3)

Dim i, j

Public VWCm(SensorNum)

Public VWCsoilless(SensorNum)

Public EC(SensorNum)

Public Temp(SensorNum)

Units VWCm() = m3/m3

Units VWCsoilless() = m3/m3

Units EC() = uS/m

Units Temp = deg_C

DataTable(GS3Out,1,-1)

'change the dataInterval to reflect how often you would like points to be logged.

DataInterval (0,15,Min,0)

'Sample(SensorNum,VWCm(),FP2)

Sample(SensorNum,EC(),FP2)

```
Sample (SensorNum,Temp(),FP2)
EndTable
```

```
'Main Program
```

```
SequentialMode
```

```
BeginProg
```

```
    Scan (5,Sec,0,0)
```

```
    'excite the sensors through SW-12 port
```

```
    PortSet (9,1)
```

```
    Delay (0,1,Sec)
```

```
    For i = 1 To SensorNum
```

```
        'sequentially excite each sensor numberd 1-Sensornum on C1. Returns all 3 values for each sensor.
```

```
        SDI12Recorder (P(i,1),1,i,"M!",1.0,0)
```

```
    Next i
```

```
    'Take bulk dielectric reading from the first element of each sensor array P(i,1) and apply the Topp  
Equation (1980).
```

```
    For i = 1 To SensorNum
```

```
         $VWCm(i) = 5.89E-6 * P(i,1)^3 - 7.62E-4 * P(i,1)^2 + 3.67E-2 * P(i,1) - 7.53E-2$  'mineral soil calibration
```

```
         $VWCsoilless(i) = 1.18 * SQR(P(i,1)) - 0.117$  'calibration for soilless substrates
```

```
    Next i
```

```
    'extract the EC and temperature from the raw data array.
```

```
    For j = 1 To SensorNum
```

```
        EC(j) = P(j,3)
```

```
        Temp(j) = P(j,2)
```

```
    Next j
```

```
    'excitation off
```

```
    PortSet (9,0)
```

```
    CallTable(GS3Out)
```

```
    NextScan
```

```
EndProg
```