

# Introduction to CR Basic

# Typical CR1000 Program

```
'Declare Public Variables
Public PTemp, batt_volt

'Declare Other Variables
Dim Counter

'Declare Constants
Const PI = 3.141592654

'Define Data Tables
DataTable (Test,1,-1)
    DataInterval (0,15,Sec,10)
    Minimum (1,batt_volt,FP2,0,False)
    Sample (1,PTemp,FP2)
EndTable

'Define Subroutines
'Sub
    'EnterSub instructions here
'EndSub

'Main Program
BeginProg
    Scan (1,Sec,0,0)
    PanelTemp (PTemp,250)
    Battery (Batt_volt)
    'Enter other measurement instructions
    'Call Output Tables
    CallTable Test
    NextScan
EndProg
```

Declarations

Data Tables

Subroutines (optional)

Main Program

# Variable Declarations

- **Variable** – a storage location and associated symbolic name which contains some value
- **Variable Declarations** – a list of variables to be used for program measurements and calculations
- All variables must be declared before they can be used in the program

# Variable Declarations

- **Public** – makes variable or variable array available in the **Public** data table
- **Dim** – declares variables and variable arrays which are not available in the Public data table
- **Const** – symbolic constants for use in place of numeric entries
- **Alias** – assigns a second name to a variable

# Variable Declarations

- Most of the time, you will declare your variables as **Public**
- **Const** is used for numeric values that do not change (e.g. Const PI = 3.1415 -OR- sensor “calibration constants”)
  - Convention is to CAPITALIZE Const variable names
- **Alias** – useful when using variable arrays

# Data Types & Formats

- **FLOAT** – 4 byte floating point
  - Ex: 1.234567
- **LONG** – 4 byte signed integer
  - Ex: -123
- **BOOLEAN** – True (-1) or False (0)
- **STRING** – ASCII string
  - Ex: "My Awesome Experiment"

# Other Data Types & Formats

- **IEEE4** – 4 byte floating point for internal calculations and output
  - Ex: 1.234567
- **FP2** – CSI 2 byte floating point for internal calculations and output
  - Ex: 1.234
- **Binary** – internal calculations and output

# Conditional Statements

- Mathematical concept
- If  $p$ , then  $q$



# Conditional Statements

If *some condition is true* Then

*do something*

Else

*otherwise, condition is false and do something else*

EndIf

# Conditional Statements, cont.

If *some condition A is true* Then  
    *do something*

Elseif *some condition B is true* Then  
    *do something*

Else  
    *otherwise, condition is false and do something else*

EndIf