2456-LEM communication

with COMPASS for Pressure (or Flow) software (non-Autodetect), or any software that can use Visual Basic script

2456-LEM manual states to use PN 8-826 cable. This is a straight through cable with DB9 female ends. Fluke PN is 3872695. LEM manual incorrectly states that this has M/F ends (not F/F that it actually has).

Set switch on back of LEM to RS232 setting.

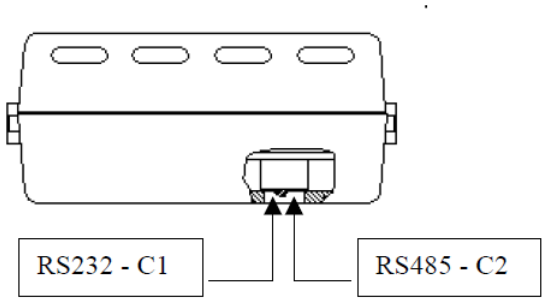


Figure 1-2
LEM Communication Switch

Connect LEM directly to RS232 connection on computer. Connect power adapter included with LEM to power and to LEM. Green light on LEM will come on.

Non-Autodetect Setup, Discrete Outputs Parsed with Macros

See COMPASS for Pressure example with screenshots at end of document

Here is the universal read command and Visual Basic scripts that check/validate the reply and pull the pertinent RH, temp or pressure value from it.

Humidity

Use read command **$00015275** and Visual Basic script **GetLEM2456RHumidity**

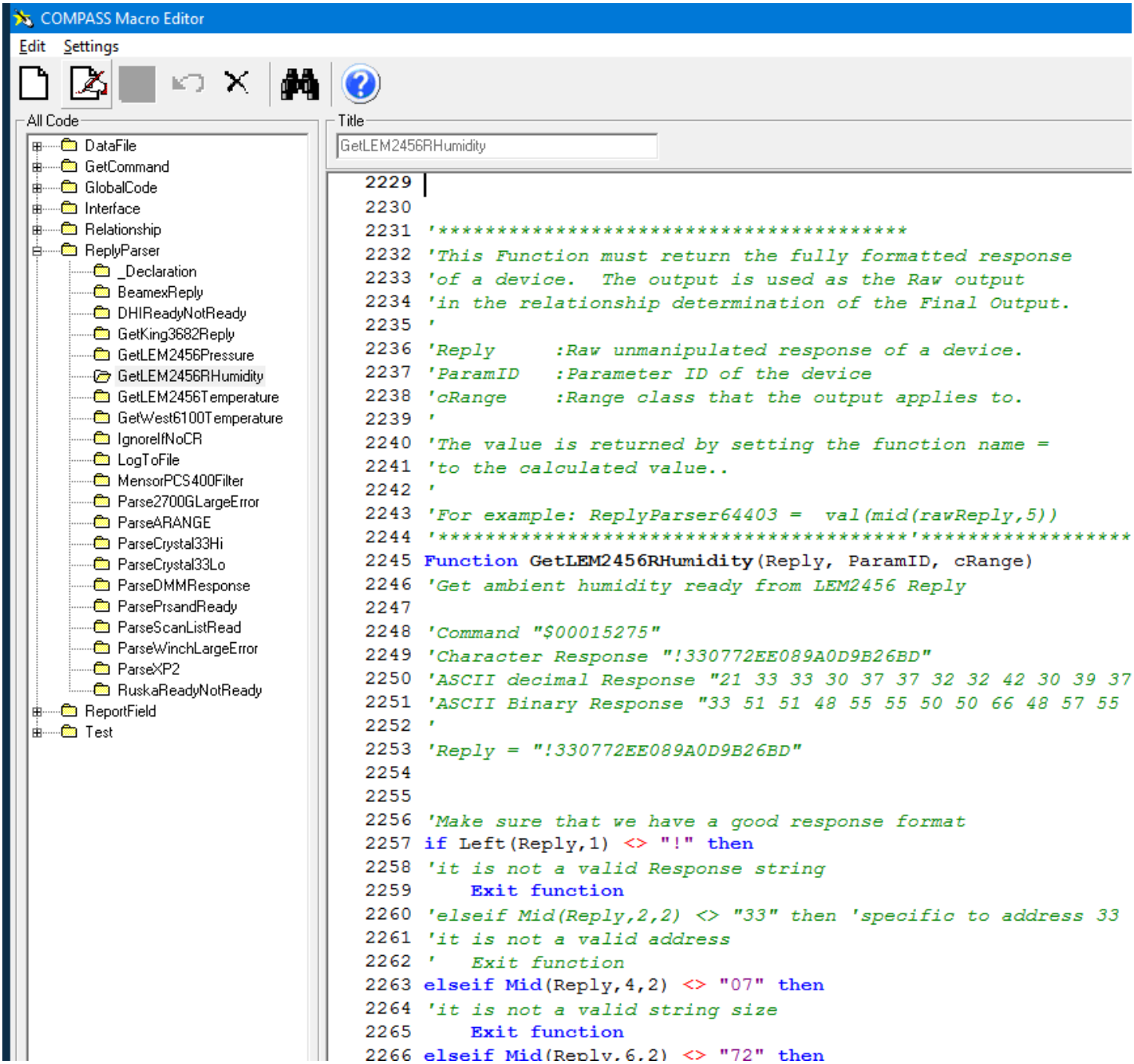
Temperature

Use read command **$00015275** and Visual Basic script **GetLEM2456Temperature**

Pressure

Use read command **$00015275** and Visual Basic script **GetLEM2456Pressure**

This is the view in the COMPASS Macro Editor of the Humidity Macro. The text of the macro to copy/paste into a new macro is on the next page. Select the "ReplyParser" folder and click the "New Macro" icon  to create a new macro. Replace all the text in the new macro with the text on the next page. Name the macro in the Title section the same as the function name (as shown below).



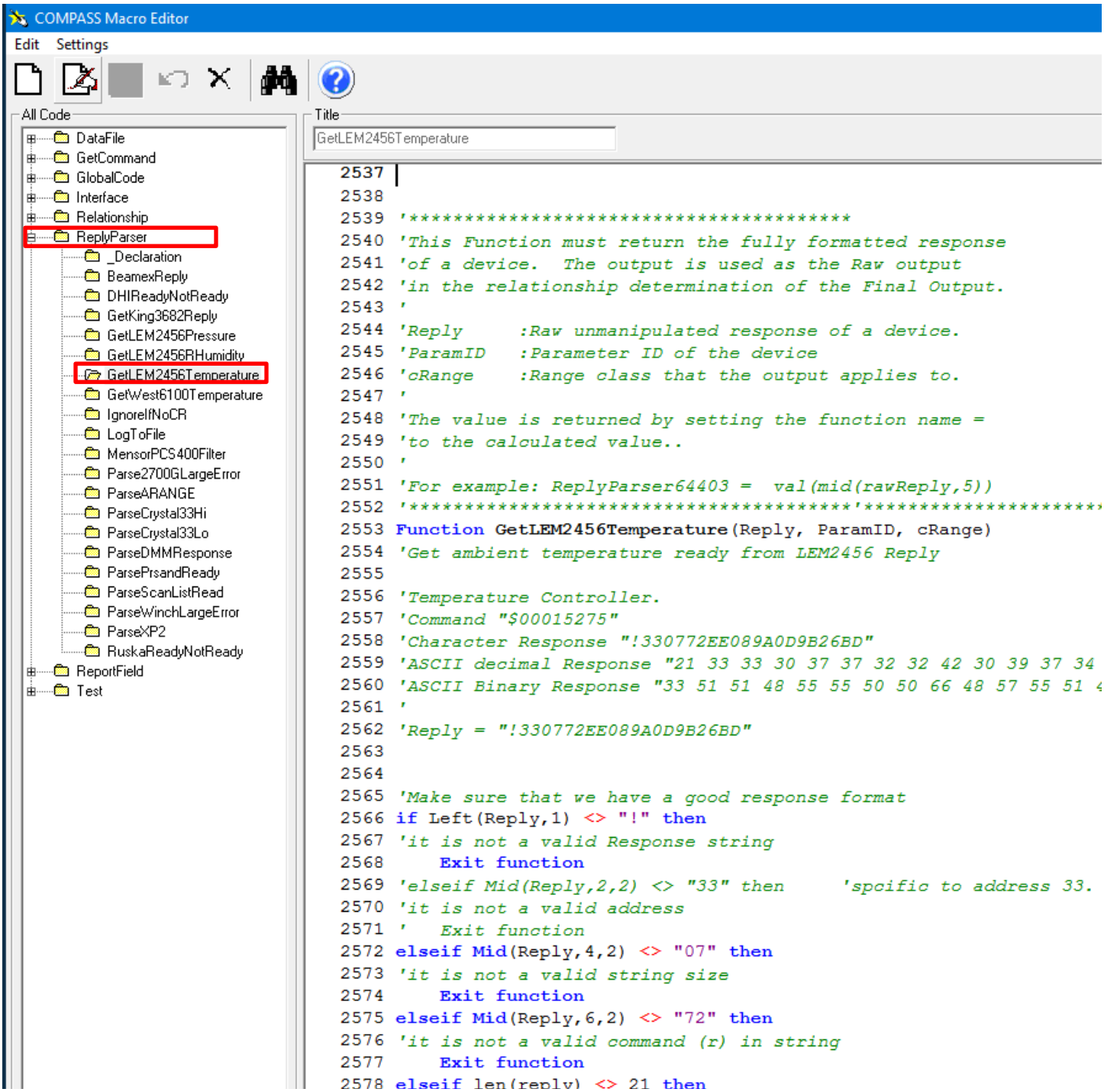
```
Function GetLEM2456RHumidity(Reply, ParamID, cRange)

'Make sure that we have a good response format
if Left(Reply,1) <> "!" then
'it is not a valid Response string
        Exit function
elseif Mid(Reply,2,2) <> "33" then
'it is not a valid address
        Exit function
elseif Mid(Reply,4,2) <> "07" then
'it is not a valid string size
        Exit function
elseif Mid(Reply,6,2) <> "72" then
'it is not a valid command (r) in string
        Exit function
elseif len(reply) <> 21 then
'it is not a valid string len
        Exit function
end if

Rh1 = Mid(Reply,12,1)
Rh2 = Mid(Reply,13,1)
Rh3 = Mid(Reply,14,1)
Rh4 = Mid(Reply,15,1)

Select Case Rh1
        case "A"
          Base1 = 10
        case "B"
          Base1 = 11
        case "C"
          Base1 = 12
        case "D"
          Base1 = 13
        case "E"
          Base1 = 14
    case "F"
          Base1 = 15
    case "9"
          Base1 = 9
    case "8"
          Base1 = 8
    case "7"
          Base1 = 7
    case "6"
          Base1 = 6
    case "5"
          Base1 = 5
    case "4"
          Base1 = 4
    case "3"
          Base1 = 3
    case "2"
```

```
            Base1 = 2
        case "1"
            Base1 = 1
        case "0"
            Base1 = 0
End Select
Select Case Rh2
          case "A"
            Base2 = 10
          case "B"
            Base2 = 11
          case "C"
            Base2 = 12
          case "D"
            Base2 = 13
          case "E"
            Base2 = 14
        case "F"
            Base2 = 15
        case "9"
            Base2 = 9
        case "8"
            Base2 = 8
        case "7"
            Base2 = 7
        case "6"
            Base2 = 6
        case "5"
            Base2 = 5
        case "4"
            Base2 = 4
        case "3"
            Base2 = 3
        case "2"
            Base2 = 2
        case "1"
            Base2 = 1
        case "0"
            Base2 = 0
End Select
Select Case Rh3
          case "A"
            Base3 = 10
          case "B"
            Base3 = 11
          case "C"
            Base3 = 12
          case "D"
            Base3 = 13
          case "E"
            Base3 = 14
        case "F"
            Base3 = 15
```

```
    case "9"
        Base3 = 9
    case "8"
        Base3 = 8
    case "7"
        Base3 = 7
    case "6"
        Base3 = 6
    case "5"
        Base3 = 5
    case "4"
        Base3 = 4
    case "3"
        Base3 = 3
    case "2"
        Base3 = 2
    case "1"
        Base3 = 1
    case "0"
        Base3 = 0
End Select
Select Case Rh4
        case "A"
          Base4 = 10
        case "B"
          Base4 = 11
        case "C"
          Base4 = 12
        case "D"
          Base4 = 13
        case "E"
          Base4 = 14
    case "F"
        Base4 = 15
    case "9"
        Base4 = 9
    case "8"
        Base4 = 8
    case "7"
        Base4 = 7
    case "6"
        Base4 = 6
    case "5"
        Base4 = 5
    case "4"
        Base4 = 4
    case "3"
        Base4 = 3
    case "2"
        Base4 = 2
    case "1"
        Base4 = 1
    case "0"
```

```
            Base4 = 0
End Select

RHumid = (Base1*16)+(Base2*1)+(Base3*4096)+(Base4*256)

'GetLEM2456RHumidity = Base4
GetLEM2456RHumidity = RHumid / 100
End Function
```

This is the view in the COMPASS Macro Editor of the Temperature Macro. The text of the macro to copy/paste into a new macro is on the next page.



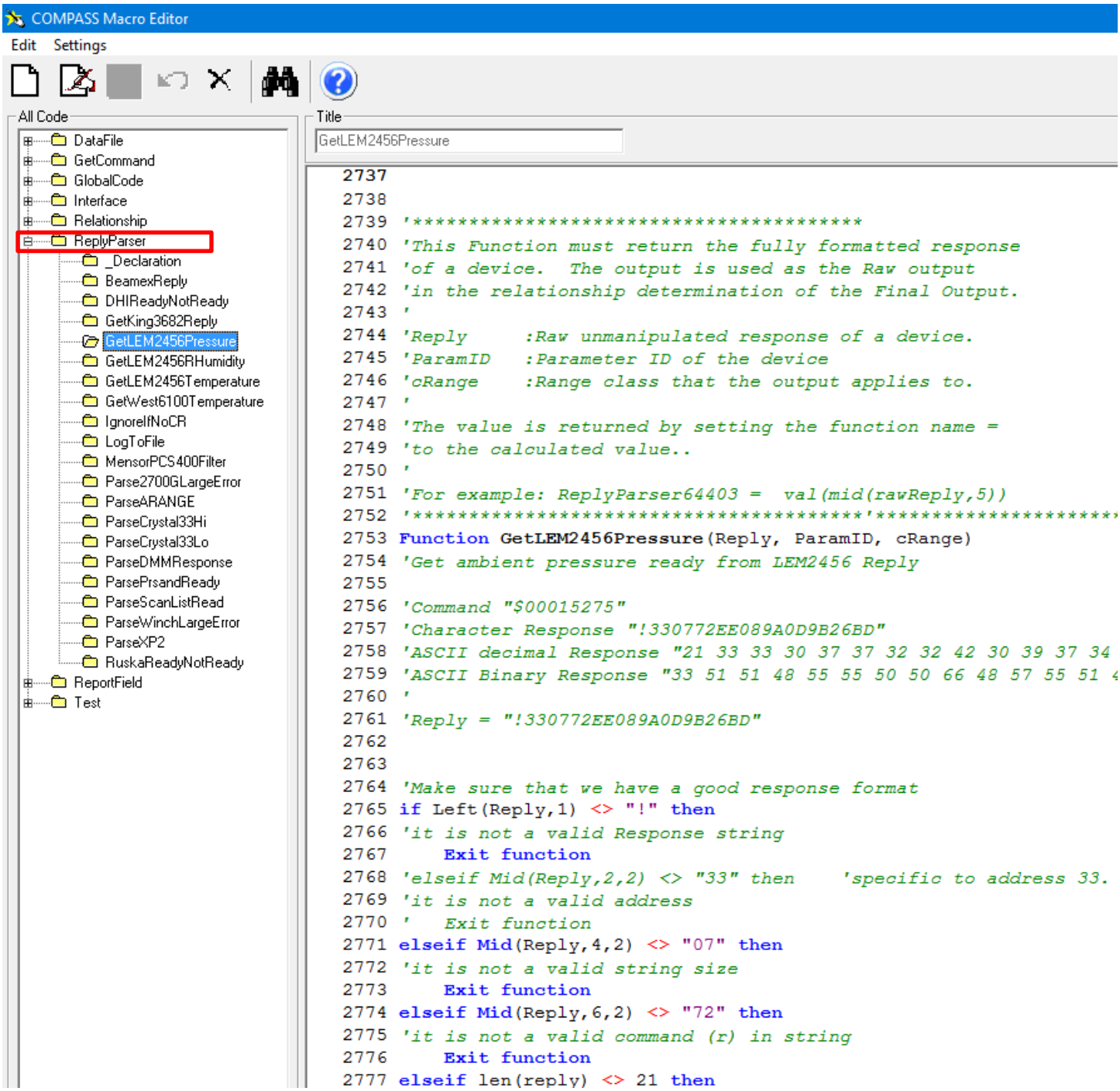
```
Function GetLEM2456Temperature(Reply, ParamID, cRange)

'Make sure that we have a good response format
if Left(Reply,1) <> "!" then
'it is not a valid Response string
        Exit function
elseif Mid(Reply,2,2) <> "33" then
'it is not a valid address
        Exit function
elseif Mid(Reply,4,2) <> "07" then
'it is not a valid string size
        Exit function
elseif Mid(Reply,6,2) <> "72" then
'it is not a valid command (r) in string
        Exit function
elseif len(reply) <> 21 then
'it is not a valid string len
        Exit function
end if

T1 = Mid(Reply,8,1)
T2 = Mid(Reply,9,1)
T3 = Mid(Reply,10,1)
T4 = Mid(Reply,11,1)

Select Case T1
        case "A"
          Base1 = 10
        case "B"
          Base1 = 11
        case "C"
          Base1 = 12
        case "D"
          Base1 = 13
        case "E"
          Base1 = 14
    case "F"
        Base1 = 15
    case "9"
        Base1 = 9
    case "8"
        Base1 = 8
    case "7"
        Base1 = 7
    case "6"
        Base1 = 6
    case "5"
        Base1 = 5
    case "4"
        Base1 = 4
    case "3"
        Base1 = 3
    case "2"
```

```
            Base1 = 2
        case "1"
            Base1 = 1
        case "0"
            Base1 = 0
End Select
Select Case T2
            case "A"
              Base2 = 10
            case "B"
              Base2 = 11
            case "C"
              Base2 = 12
            case "D"
              Base2 = 13
            case "E"
              Base2 = 14
        case "F"
            Base2 = 15
        case "9"
            Base2 = 9
        case "8"
            Base2 = 8
        case "7"
            Base2 = 7
        case "6"
            Base2 = 6
        case "5"
            Base2 = 5
        case "4"
            Base2 = 4
        case "3"
            Base2 = 3
        case "2"
            Base2 = 2
        case "1"
            Base2 = 1
        case "0"
            Base2 = 0
End Select
Select Case T3
            case "A"
              Base3 = 10
            case "B"
              Base3 = 11
            case "C"
              Base3 = 12
            case "D"
              Base3 = 13
            case "E"
              Base3 = 14
        case "F"
            Base3 = 15
```

```
    case "9"
        Base3 = 9
    case "8"
        Base3 = 8
    case "7"
        Base3 = 7
    case "6"
        Base3 = 6
    case "5"
        Base3 = 5
    case "4"
        Base3 = 4
    case "3"
        Base3 = 3
    case "2"
        Base3 = 2
    case "1"
        Base3 = 1
    case "0"
        Base3 = 0
End Select
Select Case T4
        case "A"
          Base4 = 10
        case "B"
          Base4 = 11
        case "C"
          Base4 = 12
        case "D"
          Base4 = 13
        case "E"
          Base4 = 14
    case "F"
        Base4 = 15
    case "9"
        Base4 = 9
    case "8"
        Base4 = 8
    case "7"
        Base4 = 7
    case "6"
        Base4 = 6
    case "5"
        Base4 = 5
    case "4"
        Base4 = 4
    case "3"
        Base4 = 3
    case "2"
        Base4 = 2
    case "1"
        Base4 = 1
    case "0"
```

```
            Base4 = 0
End Select

temp = (Base1*16)+(Base2*1)+(Base3*4096)+(Base4*256)

'GetLEM2456Temperature = Base4
GetLEM2456Temperature = temp / 100
End Function
```

This is the view in the COMPASS Macro Editor of the Pressure Macro. The text of the macro to copy/paste into a new macro is on the next page.



```
Function GetLEM2456Pressure(Reply, ParamID, cRange)

'Make sure that we have a good response format
if Left(Reply,1) <> "!" then
'it is not a valid Response string
        Exit function
elseif Mid(Reply,2,2) <> "33" then
'it is not a valid address
        Exit function
elseif Mid(Reply,4,2) <> "07" then
'it is not a valid string size
        Exit function
elseif Mid(Reply,6,2) <> "72" then
'it is not a valid command (r) in string
        Exit function
elseif len(reply) <> 21 then
'it is not a valid string len
        Exit function
end if

P1 = Mid(Reply,16,1)
P2 = Mid(Reply,17,1)
P3 = Mid(Reply,18,1)
P4 = Mid(Reply,19,1)

Select Case P1
        case "A"
          Base1 = 10
        case "B"
          Base1 = 11
        case "C"
          Base1 = 12
        case "D"
          Base1 = 13
        case "E"
          Base1 = 14
    case "F"
        Base1 = 15
    case "9"
        Base1 = 9
    case "8"
        Base1 = 8
    case "7"
        Base1 = 7
    case "6"
        Base1 = 6
    case "5"
        Base1 = 5
    case "4"
        Base1 = 4
    case "3"
        Base1 = 3
    case "2"
```

```
            Base1 = 2
        case "1"
            Base1 = 1
        case "0"
            Base1 = 0
End Select
Select Case P2
          case "A"
            Base2 = 10
          case "B"
            Base2 = 11
          case "C"
            Base2 = 12
          case "D"
            Base2 = 13
          case "E"
            Base2 = 14
        case "F"
            Base2 = 15
        case "9"
            Base2 = 9
        case "8"
            Base2 = 8
        case "7"
            Base2 = 7
        case "6"
            Base2 = 6
        case "5"
            Base2 = 5
        case "4"
            Base2 = 4
        case "3"
            Base2 = 3
        case "2"
            Base2 = 2
        case "1"
            Base2 = 1
        case "0"
            Base2 = 0
End Select
Select Case P3
          case "A"
            Base3 = 10
          case "B"
            Base3 = 11
          case "C"
            Base3 = 12
          case "D"
            Base3 = 13
          case "E"
            Base3 = 14
        case "F"
            Base3 = 15
```

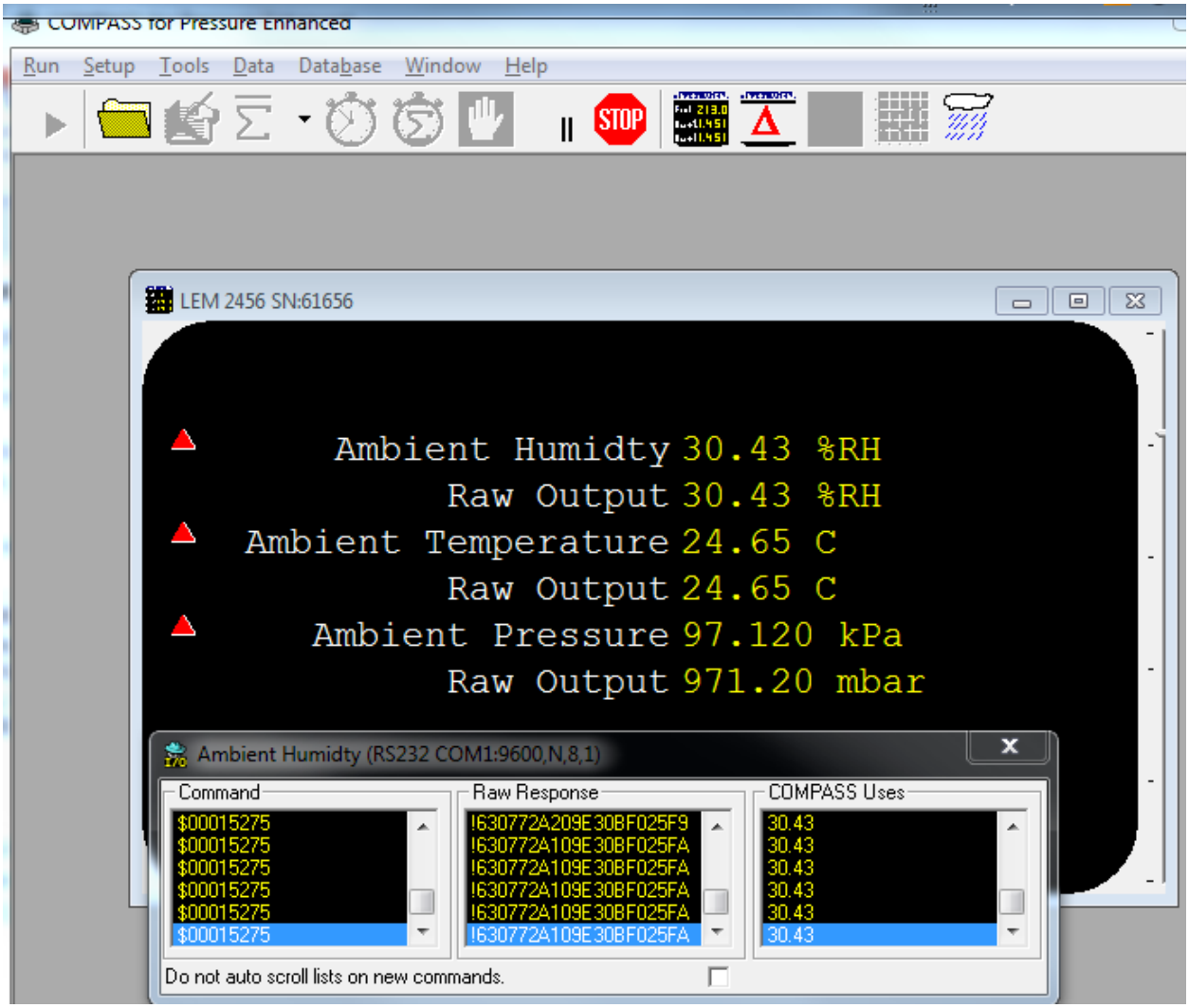
```
    case "9"
        Base3 = 9
    case "8"
        Base3 = 8
    case "7"
        Base3 = 7
    case "6"
        Base3 = 6
    case "5"
        Base3 = 5
    case "4"
        Base3 = 4
    case "3"
        Base3 = 3
    case "2"
        Base3 = 2
    case "1"
        Base3 = 1
    case "0"
        Base3 = 0
End Select
Select Case P4
        case "A"
          Base4 = 10
        case "B"
          Base4 = 11
        case "C"
          Base4 = 12
        case "D"
          Base4 = 13
        case "E"
          Base4 = 14
    case "F"
        Base4 = 15
    case "9"
        Base4 = 9
    case "8"
        Base4 = 8
    case "7"
        Base4 = 7
    case "6"
        Base4 = 6
    case "5"
        Base4 = 5
    case "4"
        Base4 = 4
    case "3"
        Base4 = 3
    case "2"
        Base4 = 2
    case "1"
        Base4 = 1
    case "0"
```

```
            Base4 = 0
End Select

press = (Base1*16)+(Base2*1)+(Base3*4096)+(Base4*256)

'GetLEM2456Pressure = Base4
GetLEM2456Pressure = press / 10
End Function
```

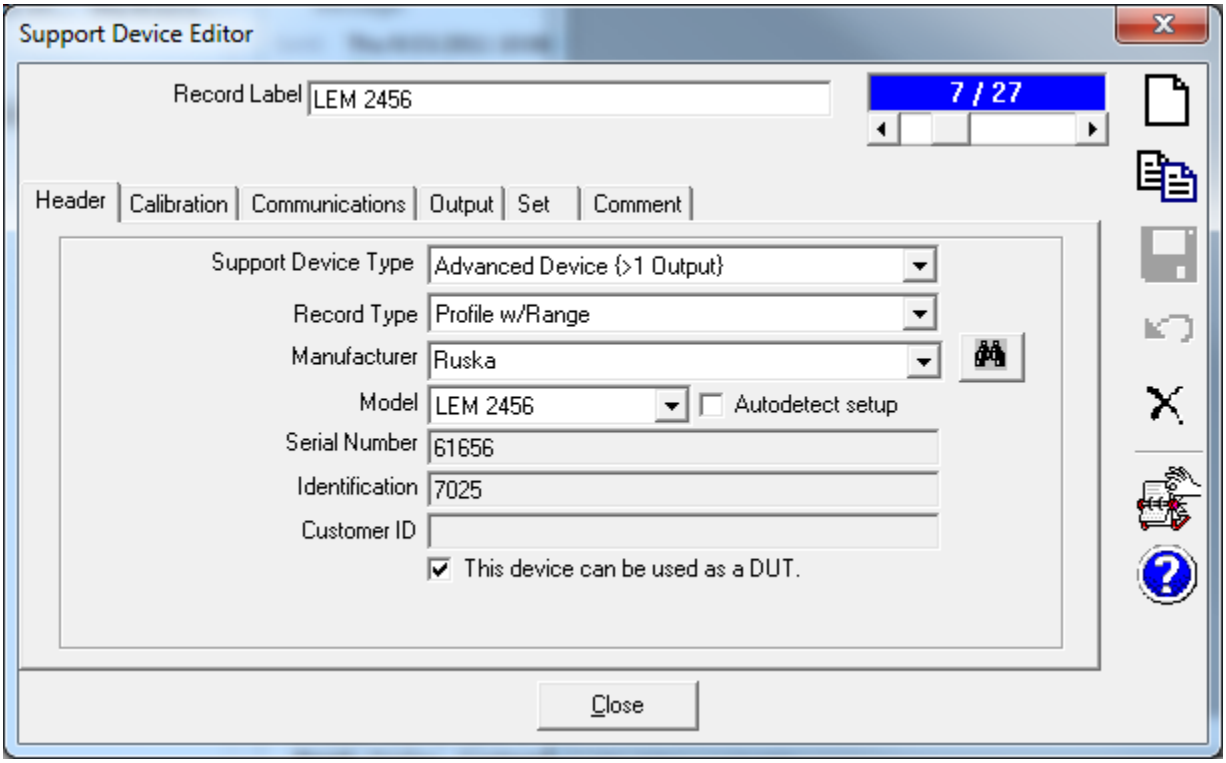
In the below example, the address of the LEM is 63 (second and third characters in the reply). The default address for any new LEM is 33. If the address is different, change the VB script to check for the appropriate address (i.e. change 33 to the correct address).

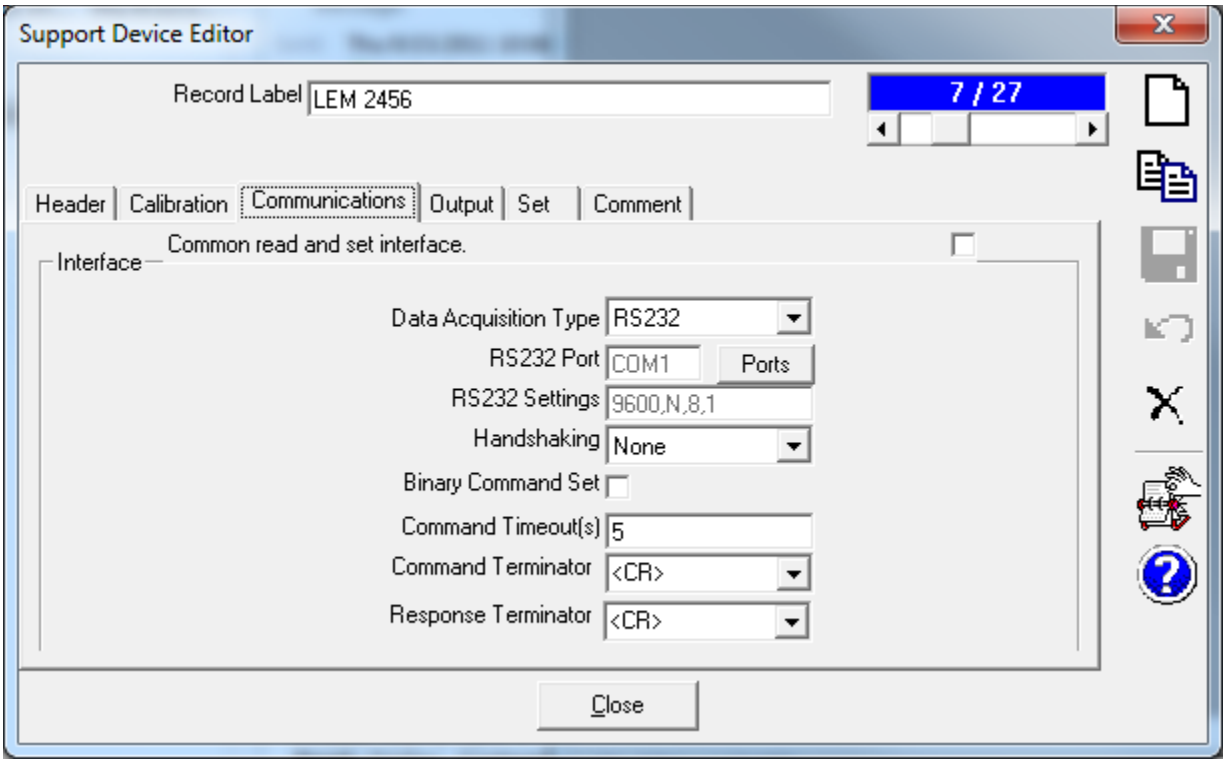
This line in the VB script checks that the address is correct. If it is not then the script will not process the reply.

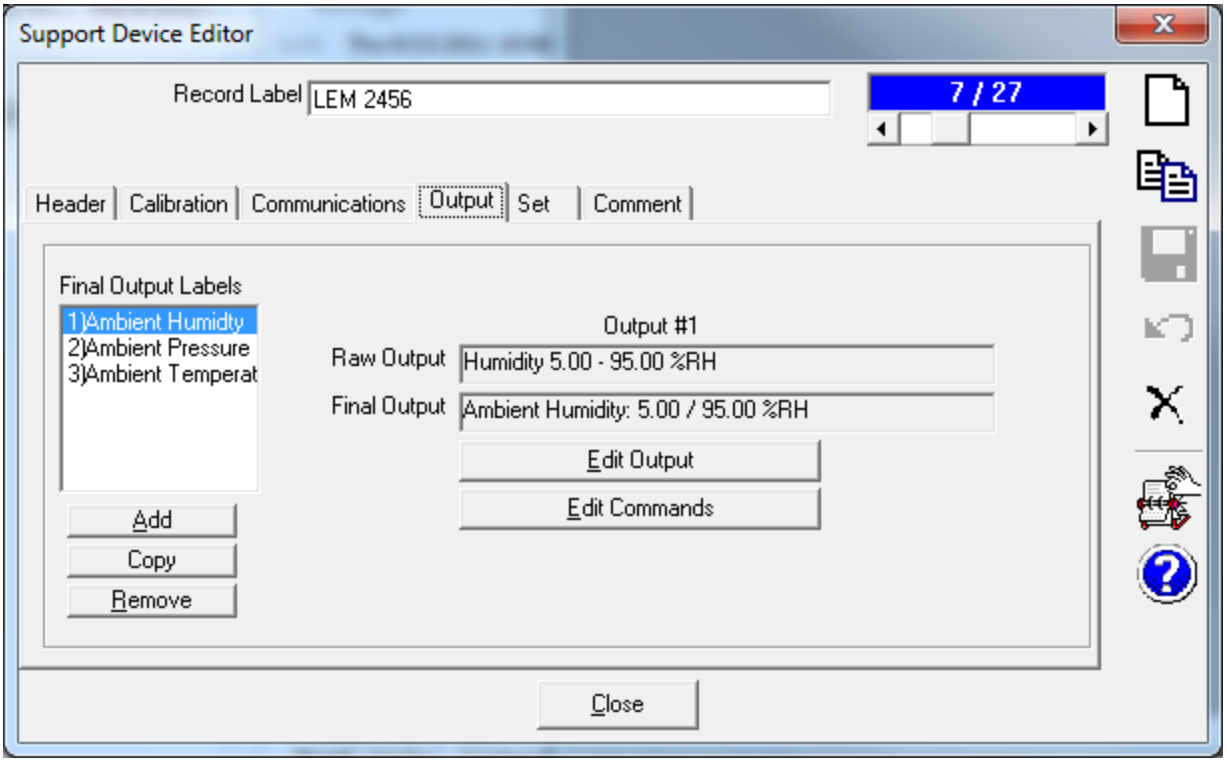
elseif Mid(Reply,2,2) <> "33" **then**

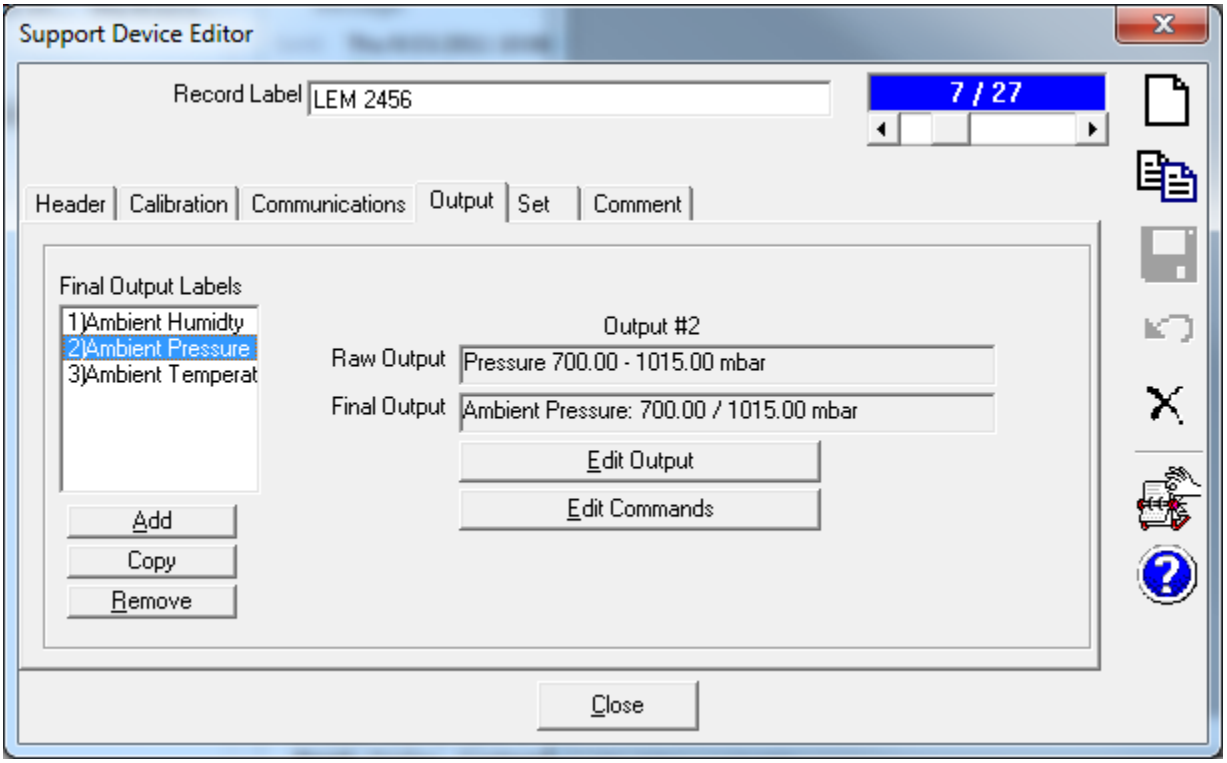


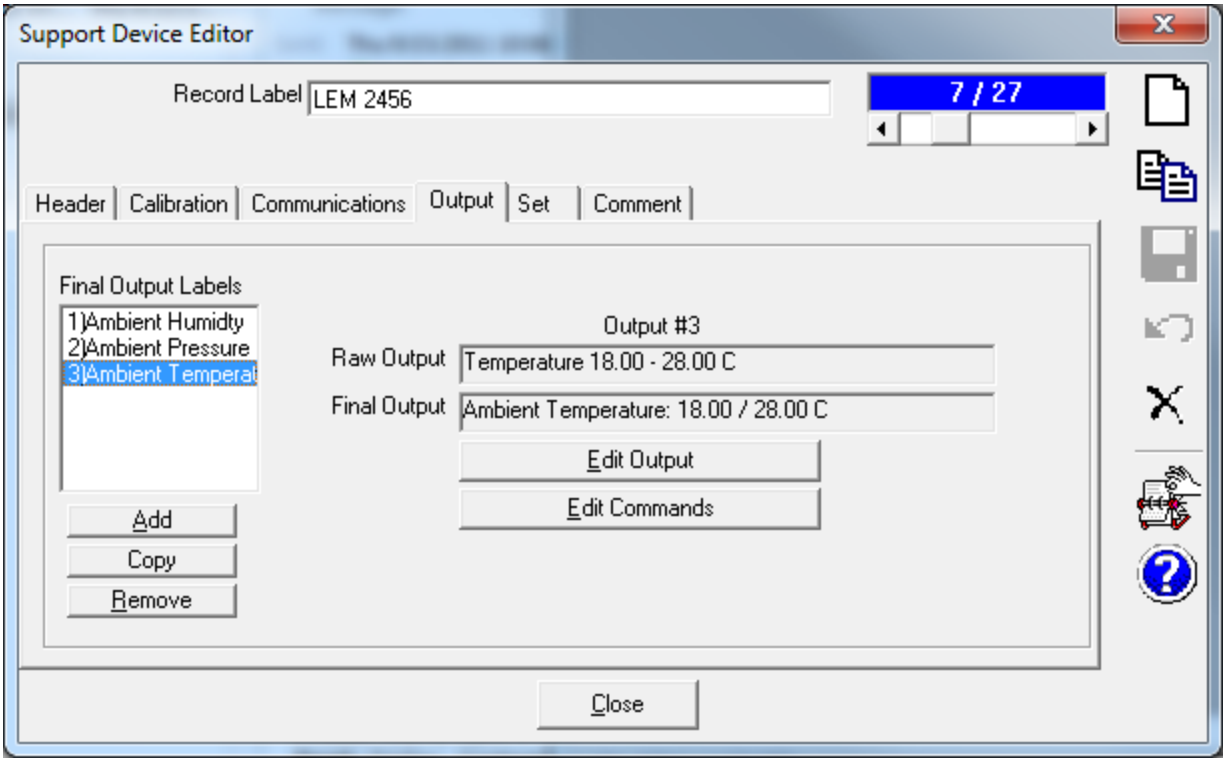
Setup in COMPASS for Pressure

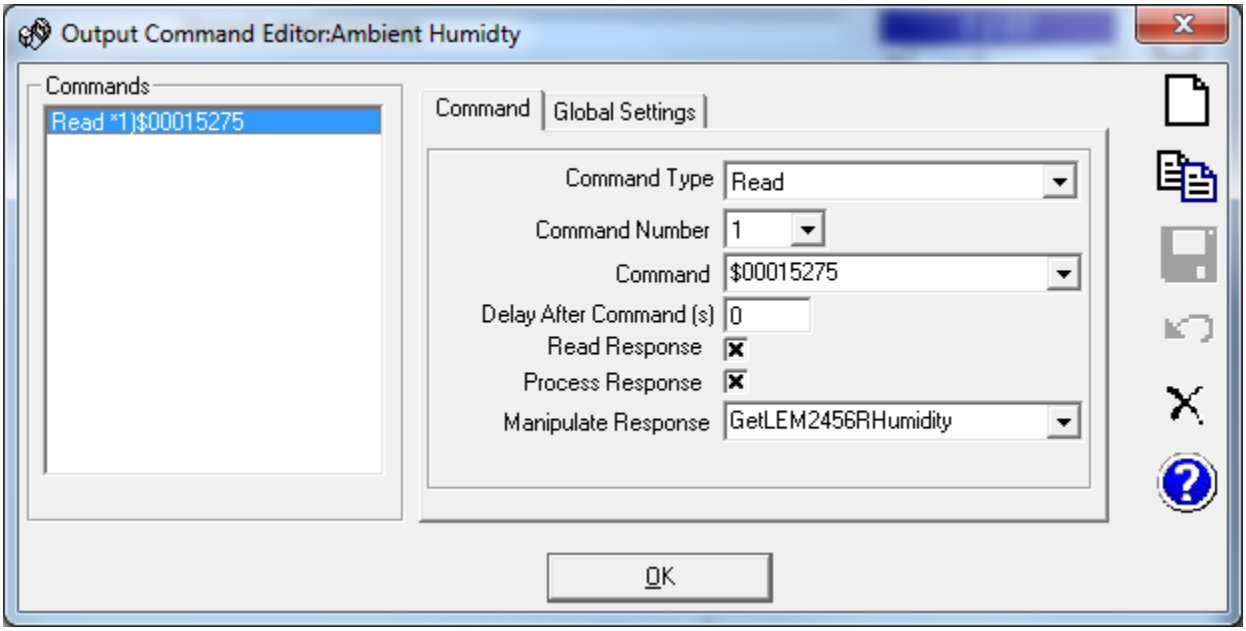


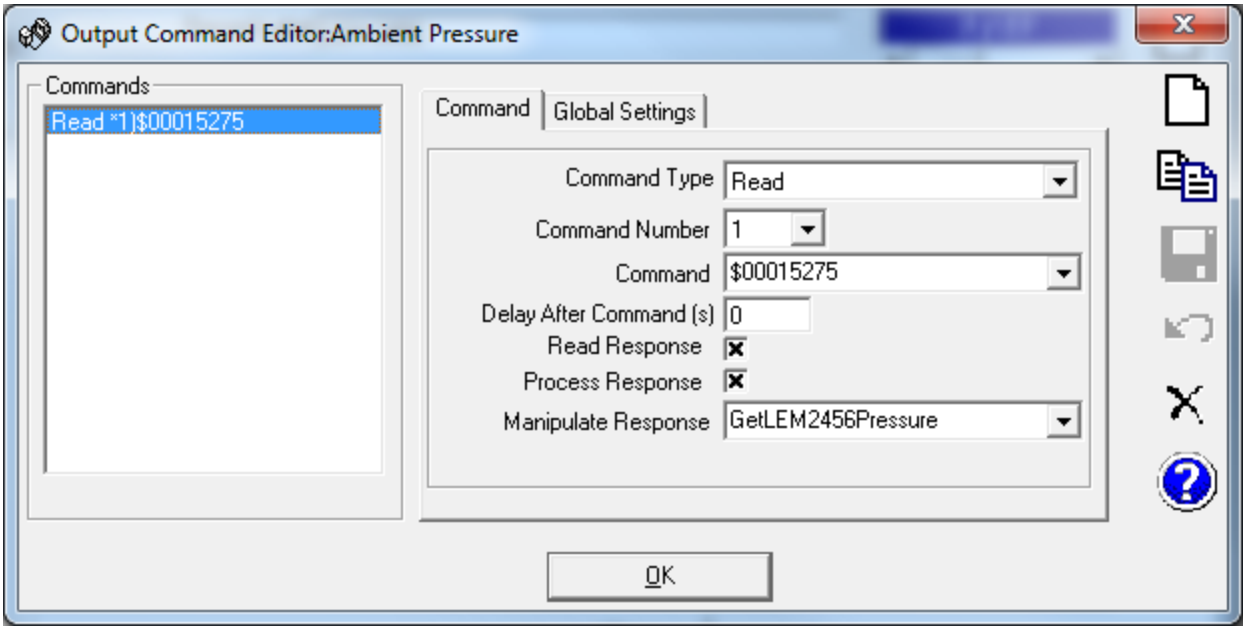


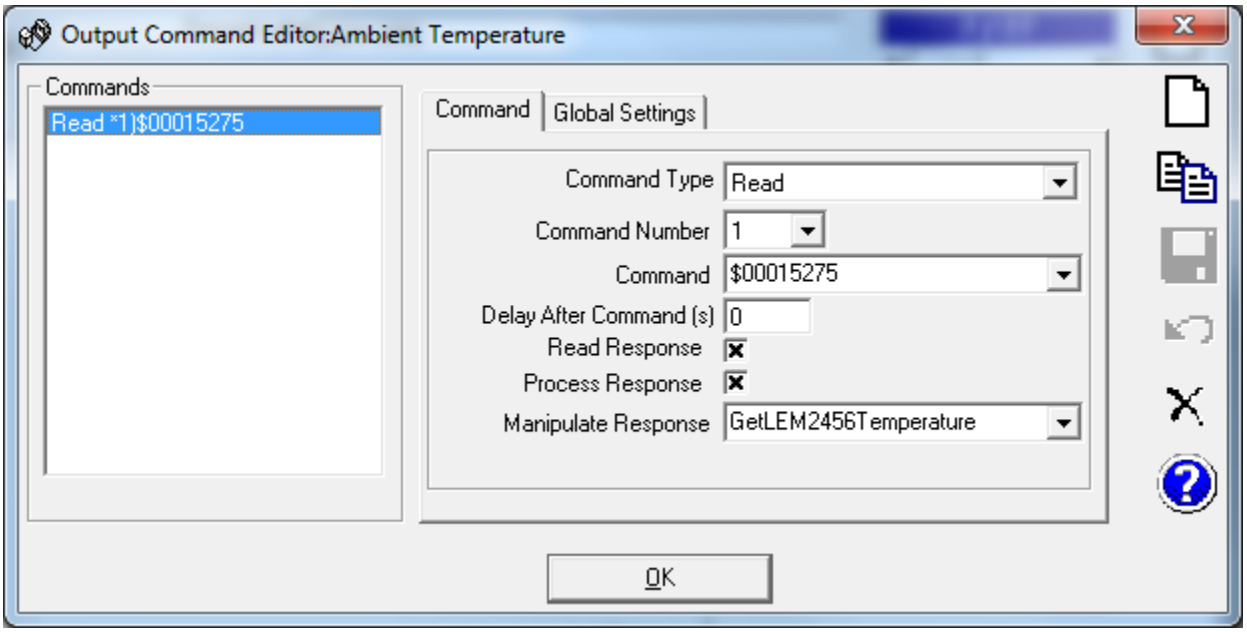

Support Device Editor
Record Label
LEM 2456
7 / 27
Header
Calibration
Communications
Output
Set
Comment
Final Output Labels
1)Ambient Humidty
2)Ambient Pressure
3)Ambient Temperat
Output #1
Raw Output
Humidity 5.00 - 95.00 %RH
Final Output
Ambient Humidity: 5.00 / 95.00 %RH
Edit Output
Edit Commands
Add
Copy
Remove
Close


Support Device Editor
Record Label
LEM 2456
7 / 27
Header
Calibration
Communications
Output
Set
Comment
Final Output Labels
1)Ambient Humidty
2)Ambient Pressure
3)Ambient Temperat
Output #2
Raw Output
Pressure 700.00 - 1015.00 mbar
Final Output
Ambient Pressure: 700.00 / 1015.00 mbar
Edit Output
Edit Commands
Add
Copy
Remove
Close


Support Device Editor
Record Label
LEM 2456
7 / 27
Header
Calibration
Communications
Output
Set
Comment
Final Output Labels
1)Ambient Humidty
2)Ambient Pressure
3)Ambient Temperat
Add
Copy
Remove
Output #3
Raw Output
Temperature 18.00 - 28.00 C
Final Output
Ambient Temperature: 18.00 / 28.00 C
Edit Output
Edit Commands
Close


Output Command Editor:Ambient Humidty
Commands
Read *1)$00015275
Command
Global Settings
Command Type
Read
Command Number
1
Command
$00015275
Delay After Command (s)
0
Read Response
Process Response
Manipulate Response
GetLEM2456RHumidity
OK


Output Command Editor:Ambient Pressure
Commands
Read *1)$00015275
Command
Global Settings
Command Type
Read
Command Number
1
Command
$00015275
Delay After Command (s)
0
Read Response
Process Response
Manipulate Response
GetLEM2456Pressure
OK


Output Command Editor:Ambient Temperature
Commands
Read *1)$00015275
Command
Global Settings
Command Type
Read
Command Number
1
Command
$00015275
Delay After Command (s)
0
Read Response
Process Response
Manipulate Response
GetLEM2456Temperature
OK