

# Uni-Link Advanced Help

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## **SCADA System Performance**

To achieve the best performance out of Your Uni-Link SCADA system, take into account the following items:

### **Hardware Requirements**

For real time charts to be displayed with reasonable speed, Your computer should be the fastest that Your budget allows. It should be preferably a Pentium II 300MHz with at least 64Mb Ram. Your video card should have at least 8Mb RAM.

The Hard Disk size depends on how much data You intend to log to disk, and how long You intend to keep it. As a guide we would suggest 2.5Gb or larger.

### **Software running in the background**

The more software programs You run at the same time (even when they are minimised) the more pressure You put on Your PC's resources, and the slower real time charts will become.

### **Uni-Link Comms Port Speed**

Comms port speed becomes important when You have more than 3 or 4 devices on the same line, and a slower computer.

The best performance will be obtained with 38,400Baud. If the environment that the RS485 cable runs through is noisy, and the cable is not shielded, You may need to reduce this speed.

Uni-Mux devices are best run in Multi-response (eg: with UniTools, Program Mux with 8ch – 8 Response).

### **Compacting Access Database**

After alterations have been made to an Access database, the database should be compiled and compacted. Backups are required to avoid loosing the entire database should an unexpected error occur (it can happen!).

1. BACK UP DATABASE (Copy & Paste using explorer)
2. Open database
3. Click on Files Tab
4. Highlight the Master Form
5. Click on View | Code
6. Click on Debug | Compile and Save All Modules – No errors should occur
7. Close database
8. Open access with no database open
9. Click on Tools | Database Utilities | Compact Database
10. Select Your Database
11. Select Your Database Again
12. Answer Yes (You have already backed up).
13. Backup database (For the third time)
14. Run Database as Normal.
15. After You are satisfied with the operation of the system, remove the first two (and any old) backup copies.

## **Fitting a database onto a Floppy Diskette**

In addition to compacting a database, if the database will still not fit on a floppy diskette (and if You need it to), You may obtain a smaller file by sacrificing the data which has been logged to the UniData table. (Caution: This will remove all Your previously Logged data, and back it up in Excel worksheet format in Your data folder).

1. BACK UP DATABASE (Copy & Paste using explorer)
2. Open the database 'Master Form' normally
3. Click on 'Purge' at the base of the master form.
4. Close the database when purging has finished (when the button restores).
5. Proceed from the THIRD step in 'Compacting Access Database'

Another way You can reduce the file size is to Link any bitmaps rather than embedding them, but of course You must copy these separately, and maintain the same paths (folders) on the other PC.

## **Re-Sizing Bitmap Pictures**

If You use pictures, drawings or bitmaps in any of the sub forms, they MUST NOT be re-sized using MS Access, or the performance of the system will be degraded as Access re-draws the picture whilst the system is running.

The best way is to make the picture or drawing bitmap the correct size in another application, then embed (or link) it into the access database.

## **Data Logging**

If many channels are logged to a table, or the data is logged at a fast rate, the resultant data can be too complex to analyse, and take up too much disk space. The more data logged, the longer the startup or daily purging operation takes.

To optimize Your system, work out critically what it is You are trying to see with the charts. Tailor Your logging rate to match the period You expect to see.

The system will log all channels which are in the same data table at the fastest rate at which any channel in that table is specified (this is regardless of if the slower channels have been updated with their slower 'Poll' times).

To better organize Your data, or if You need some channels to be logged at a fast rate, and others at a slow rate, then the best way to do this is to log the two groups of readings into two or more different tables. To do this, type a different name in the wizard's last page when You add a reading to a sub form. The same channel can be logged into different tables if desired – simply add a reading with the wizard, and using it's properties in the sub form – set Visible to 'No'.

## **Polling Times**

Polling times must be set at least as fast as Logging times. The optimum is to have two polls per required log period, but You may want a faster Access display.

The faster the polling times, the more overhead the system has to handle, and the times You choose depend on How fast as response You require, How fast a log time You require, how many channels are being polled, how fast Your PC is.

The poll times set in Uni-Link should usually be the same as those used in Access. However these are two distinct settings:

The Uni-Link poll time determines how often the device is called over the Comms Port  
The Access poll time determines how often Access asks Uni-Link for the value.

A Uni-Mux which is in multiple channel response mode (all channels sent in one string) is only polled on channel 1 in Uni-Link. The different channels are handled individually in Access, so all names (channels) will have their own setting.

The Communication speed setting of the Unimeters and Uni-Link has an effect on 1 second polling times – 38,400Baud should be used where possible.

### **Uni-Link Starting Up Delay**

When Uni-Link is started, it checks all the devices which have been installed, and this takes some time for a large number of devices.

If You are starting Uni-Link often (eg: when You are creating Your Access sub forms), it may be best to run Uni-Link on it's own (Start menu | Programs |UniLink | UniLink) and leave it running. Access will still connect to UniLink.

### **Purging Database**

You can Backup and Purge the database by clicking the 'Purge' button. This copies the contents of the database Data table(s) to an Excel spreadsheet in the UniLink\Data folder (Backup), and cleans the data tables in the database (Purge).

This Purging is required so that the database tables do not become too big and unwieldy, and enables the use of MS Excel to analyze the exported data in manageable time periods.

The Backup and Purge routine is normally automatically performed 1 minute past midnight, if the database is continuously running, or the first time after this that the database is run. The time of the automatic Backup and Purge can be set in the 'BackupPurgeDataTables' table.

### **Regular System Maintenance**

The number of old backed up data (\*.xls) files will build up as time goes by. The number and size of these files will depend on the number of channels logged, and the backup/purge time period (normally once per day). As a general rule for 90 channels, logged every 5 Mins, allow 1 x 500Kb Excel spreadsheet each day (ie: nearly 200Mb per Year).

By default these files are stored in the C:\UniLink\Data folder.

In order to manage these files, You should plan to delete any old files, which are not required, on a regular basis (say once a month). This makes the remaining files easier to sort and use and saves disk space. Make sure the 'Recycled' bin is emptied at this time to permanently release the disk space.

At this time You should also de-fragment Your hard disk with the 'disk defragmenter' system utility.

## **Recovering from an Error**

From time to time Your system may have an error for any number of reasons. Some possible suggestions follow, along with suggested recovery procedures.

### **Restart Procedure**

The main thing to remember is that if Your system is not responding properly:

1. Close All Programs
2. Shut down Windows
3. Turn Off the Computer
4. Wait 10 seconds and Turn on the Computer
5. Run the MS Access database (if it is not run automatically)
6. Ensure polling restarts.

### **Un-Recoverable program error (Any program)**

If this error occurs on ANY program, the computers RAM may have become corrupted – Perform restart procedure.

### **Uni Link unable to find Serial adaptor**

If the system has been working: Perform restart procedure.

This can occur if MS Access has had a fault and actually runs two copies of Uni\_Link. If the fault still occurs, check the ‘Comms Port Problems’ section. This problem can also occur if the Uni-Link folder has been copied to a second PC, rather than installed with the setup disks.

### **MS Access Database Corrupted**

Close MS Access, Open MS Access, re-run the database and select “Fix” when prompted.

This can occur after any program fails, or after a database Table Locking clash (ie when some other program tries to use the same database tables). The “Fix” button should clear the lock. Another way is to select ‘Tools | Database Utilities | Repair Database’.

### **Excel Trending spreadsheet ‘Unable to connect to database’**

The requested database either doesn’t exist, or is in ‘exclusive’ mode. Check the database, if it exists, using ‘File | Open Database’ (NOT the ICON), select the database, click ‘Exclusive’ to select then click ‘Exclusive’ to de-select it, then click open. This will set Your database as non-exclusive.

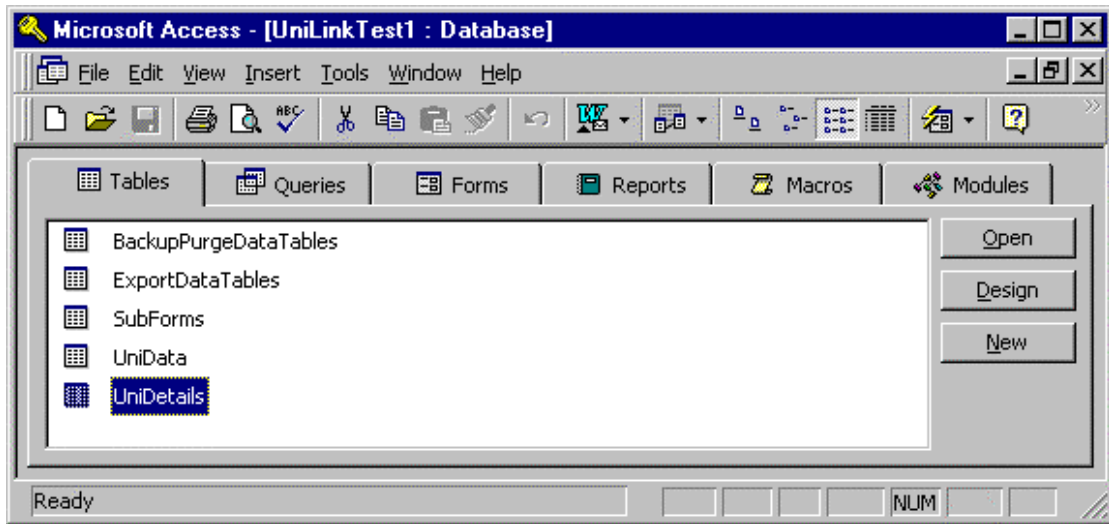
### **Excel Trending spreadsheet data not changing**

- Check the Uni-Link database is running & Logging (The data tables should be growing by 1 record every polling interval).
- Check the data Polling and Logging time periods in the Uni-Link Details table
- Check the ‘Link to Tables’ button is depressed on the Excel control worksheet. Try pressing this button and then depressing it again.

## Uni-Link Database TABLES

This Information on the Tables is for the advanced User. The Tables are set up by the Uni-Link Wizard. ✓ **in the User column in the tables below, indicates the VALUE in the field can be modified. ALL MODIFICATIONS MUST BE MADE WITH CAUTION. We recommend copying the database to a backup directory as a backup before making any alterations.**

The Master Form should not be open (ie: the system shouldn't be running) when You open or edit any table, otherwise a system error could result from the record locking of the table (This includes MS Excel trending charts, which should not be run



### 'BackupPurgeDataTables' Table

This table stores the backup details for each data table. It is used when the system performs it's daily backup and purge of the data tables, or when the 'Purge' Button is clicked. Purging is required to stop the table(s) becoming too large and unwieldy. The backed up data can be viewed with Microsoft Excel, or another spreadsheet application. Uni-Link Wizard adds a new record if You select 'Log Readings?' and type in a different data table name in the field on the 'Data Logging' wizard page. The backup file is saved in the filename format: "UniData\_yyyy-mm-dd\_hh-mm-ss.XLS".

Field Name	User	Description
DataTableName	✓	The name of the Table to Back Up and Purge
Backup Path	✓	The exact Path to store the file including backslash (eg: C:\UniLink\Data\ ).
FileFormat		EXCEL for MS Excel files. (Otherwise the table is added to the \Data\archive.mdb database – this is not recommended).
NextBackupDate	*	The Date & Time of the next scheduled backup & purge. If this time is in the distant future, the backup & purge will no happen until this date. If the Date & Time is passed, the backup & purge will occur when the system next runs, and this date and time will be reset. ( * Normally it is better to leave this Date/Time alone, for the system to manage).
Days	✓	The number of days (0-???, Default 1) to wait for the next due backup & purge. This is used with the current Date, in the setting of a new 'NextBackupDate'.
Hours	✓	The number of hours (0-23) to wait for the next due backup & purge. Used with the above in setting a new 'NextBackupDate'.
Mins	✓	The number of minutes (1-59) to wait for the next due backup & purge. Used with the above in setting a new 'NextBackupDate'.

### **‘ExportDataTables’ Table**

This table is not used. It could be used by a programmer, for exporting current data in excel format.

### **‘SubForms’ Table**

This table holds the name of each sub form that is to be ‘paged’ to in the Master Form.

Field Name	User	Description
MasterForm		The Name of the Master Form
FormOrder		Sequential order of the SubForms.
SubFormName		The Exact Name of the SubForm
PageButtonCaption		The Caption on the page buttons in the Master Form. System use only
NextForm		Used by the ‘Next’ button.
PrevForm		Used by the ‘Prev’ button.

### **‘UniData’ Data Table**

This table may have a different name, and there may be more than one table. It is used to store or ‘Log’ the Unimeter device readings into. A new Field name is added by the Uni-Link Wizard when You install a new Text Box (Reading).

Warning: if the device field is deleted, or it’s name changed, and the device is still recorded in UniDetails table to be Logged, a Visual Basic error will result. A device name field can be permanently deleted if required, by editing the table in Design mode, But be sure to change the ‘Log’ setting in UniDetails table to “No”. The field name “DateTime” must not be altered in any way, however the DateTime field can be safely formatted to different Time formats when the table is open.

Field Name	User	Description
DateTime		The Date and Time a record was logged. NB: when a reading is logged, all fields will always be logged, regardless of the Log and Poll details of the other fields – but if the other readings are not being polled or updated, they will not be current. (ie: If one reading is Polled and Logged each second, and another is set to be Polled and Logged each Hour, the second field will have 360 readings all the same value – that which was received when it was last polled). In this case the Hourly value should probably be logged in a different table.
Pump 1		Device Field: Refers to a device the user has called “Pump 1”.
Pump 2		Device Field: Refers to a device the user has called “Pump 2”.
Next Device Name etc		Device Field: etc.

### **‘UniDetails’ Table**

This table holds the details about each Unimeter (or PLC) device, which is referenced in the Sub Forms. A new record is added by the Uni-Link Wizard when You install a new Text Box (Reading), or Button.

Field Name	User	Description
Name:	*	The name of the Unimeter Device, including spaces if any. There may be multiple occurrences of the name. This name MUST BE EXACTLY THE SAME as the name used for this device in Uni-Link. It should not have punctuation marks (“ ’, . / ; \ : ). (* Change ONLY if You change the name in Uni-Link or PLC-Link to match).
ControlName:		The actual ‘Control Name’ of the control, with no spaces. This control name must be unique and may have “_1”, “_2” etc added to the end of the name if the same device has been used more than once. This name is used in the SubForm and the UniData table, (and possibly in the MasterForm if Macros have been used).



SubForm:		The name of the Sub Form which contains the control.
Poll:	√	Set to "Yes" if the control is a reading and it is to be updated.
PollDelay:	√	The period of time (in seconds) before the control value is updated again.
Log:	√	Set to "Yes" if the control is a reading and the value is to be saved in a table (ie 'Logged').
LogDelay:	√	The amount of time before a new value is Logged to the table. This time must be equal or greater than the PollDelay. The smaller the delay, the greater the amount of data to be processed.
LogTableName:		The name of a Table in which to store, or Log, the readings for this control.
Val:		The last value received for this control.
ValOffset:	√	Use this to apply an OFFSET to the value.
ValMultiplier:	√	Use this to apply a MULTIPLIER or SPAN to the value.
AP1_Val:	√	Alarm Point 1 Value - set to 19999 to disable. (see also AP1ControlAction).
AP1_Inverted:	√	Inverted if =1. (ie If set to 1, the alarm will activate if the Val is below the alarm point).
AP2_Val:	√	Alarm Point 2 Value - set to 19999 to disable. (see also AP2ControlAction).
AP2_Inverted:	√	Inverted if =1. (ie If set to 1, the alarm will activate if the Val is below the alarm point).
Connected:		Internal use only – used to signify the reading is connected (3), or failed (zero).
ControlType:		Description of the type of control (Reading, Button etc). Normally set to "Reading" for a 'Text Box' control.
ControlAction:		Used internally to indicate the action taken.
ControlMacro:		Reserved.
NextPollTime:		Stores the next due polling date & time.
NextLogTime:		Stores the Next Due Logging date & time.
BackColourOK:	√	White – The colour of the reading if all is OK and no alarm points are activated.
BackColourOff:	√	Grey – Indicates the device is not responding.
AP1OffColour:	√	The background colour of the alarm point 1 'Alarm Light'. Change the colour of the surrounding background and copy the number into this field to reflect this change.
AP2OffColour:	√	The background colour of the alarm point 2 'Alarm Light'. Change the colour of the surrounding background and copy the number into this field to reflect this change.
AP1OnColour:	√	The colour of the alarm point 1. Change the alarm point rectangle colour and copy the number into this field to reflect this change. This is used for the alarm 'light' as well as the reading background colour.
AP2OnColour:	√	Set to the colour of the alarm point 2. Change the alarm point rectangle colour and copy the number into this field to reflect this change. This is used for the alarm 'light' as well as the reading background colour.
AP1ControlParam:		Reserved.
AP2ControlParam:		Reserved.
AP1ControlAction	*	Used to check if, & how the Alarm Point 1 is used. Set by the Wizard. Defined in the master form: USE_ALARM_READING = 1 (Text Box background), USE_ALARM_LIGHT = 2, USE_ALARM_MACRO = 4 (values bitwise ORed together). (* Caution – enabling the light without a control will cause an error, enabling the macro is for advanced use only). (eg: 0=No alarm point, 1=Use Text Box background only, 3=use TB and Light).
AP2ControlAction	*	Used to check if, & how the Alarm Point2 is used. Set by the Wizard. Defined in the master form: USE_ALARM_READING = 1 (Text Box background), USE_ALARM_LIGHT = 2, USE_ALARM_MACRO = 4 (values bitwise ORed together).

		(* Caution – enabling the light without a control will cause an error, enabling the macro is for advanced use only). (eg: 0=No alarm point, 1=Use Text Box background only, 3=use TB and Light).
GraphHeight:		Gauge dimensions (if used). These are Used internally and are taken from the actual rectangle size when the form runs. To change, alter the rectangle size/shape in form design mode.
GraphTop:		Gauge dimensions
GraphLeft:		Gauge dimensions
GraphOffColour:		Gauge Colour Background.
GraphOnColour:		Gauge Colour Foreground – This is automatically taken from the gauge rectangle colour when the form starts. To change, change the rectangle ‘Back Color’ setting.
GraphNegColour:		Gauge Colour Foreground when negative.
GraphMax:	√	Max expected value – the Val is taken as a percentage of this (in both positive and negative directions from the GraphMin value).
GraphMin:	√	Minimum expected value (usually zero). Changing this value will apply an OFFSET to the lowest point on the Graph. Ie: the bottom of the Graph will now represent this figure. The Bar Graph Range will be the difference between GraphMax and GraphMin.
GraphAction:		Used internally to indicate the mode of the gauge. If this number has the second bit set (ie: ORed with decimal 2), the gauge is treated as a horizontal bar. This is automatically worked out at run time in ‘UpdateGraphs()’ in the Master Form).
ReadingMisc:		All Misc fields are Reserved - Used Internally. (one use is to store the fact that the Alarm point MACRO was activated).
XxxMisc:		See above.
PLC_TypeNo:		Non Zero if the control is a PLC Device. If non zero – uses the device name in PLC-Link instead of Uni-Link.

## UniLink.INI File

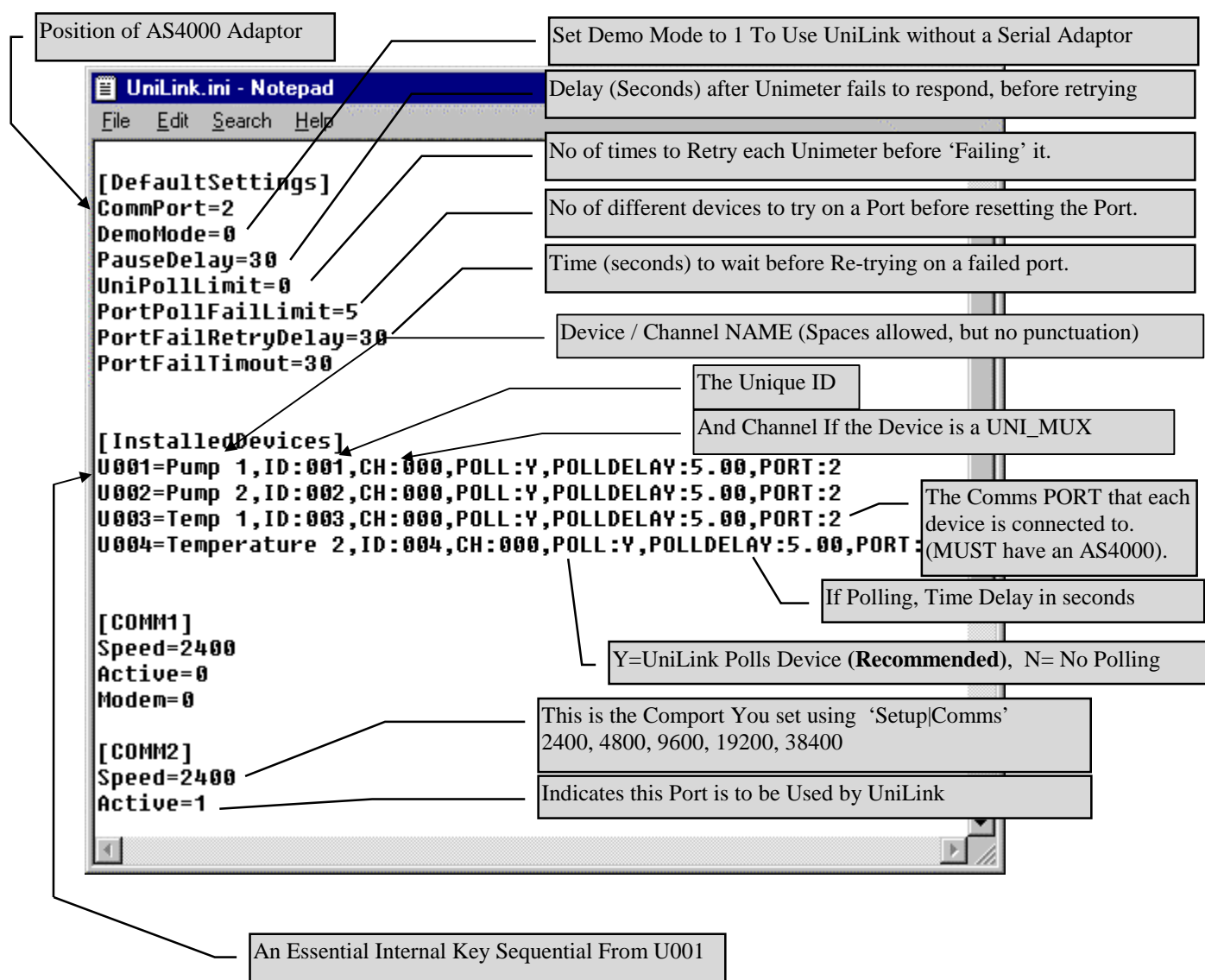
The UniLink.ini file (in the folder where You installed UniLink), contains the settings for Your system.

These are saved automatically when You exit UniLink. Advanced users can edit these settings to change

**[DefaultSettings]** Generally it is best to leave the Polling Settings in the [DefaultSettings] as they are - these settings are for fine tuning and may not be invoked on Your system.

**[InstalledDevices]** These are the settings for each device that You installed with the 'New Unimeter' button.

**[COMn]** The settings for the active Comms Port (where the AS4000 serial adaptor is connected).



**Polling Retries:** If a particular instrument is slow in responding because of it's mode (eg Rate Monitor), You can add ",RETRIES=5" to it's line, to retry this instrument up to 5 times each poll, if no response is received. Normally devices will be polled at their next scheduled time if they don't respond.

## Comms Port Problems

By Running Uni-Link on it's own (Start | Programs | Uni-Link | UniLink), You can see the readings change on the devices which are connected correctly. If all the devices are not responding, check the comms port Number, Driver, Baudrate, and adaptor. If some readings are changing sometimes, check for Multiple Unimeters set to the same ID.

- Make sure the 'Communications RS485 Port' VXD Driver is installed on the same port that the AS4000 RS485 Adaptor is connected to, and that this is the port that is shown as 'Active' in UniLink (Setup | Comms).
- Make sure the AS4000 is powered up (it should be warm).
- Make sure the RS485 Wires have been connected to the correct terminals and +ve on each Unimeter is connected to +ve on the AS4000.
- Make sure the Unimeter's Baudrate (Special Function 236) is the same as Uni-Link's (Setup, Comms, Baudrate).
- Make sure the Unimeter's ID is the same as Uni-Link's.
- Make sure ALL devices have the SAME baudrate settings (Function 236), and DIFFERENT Ids (Function 8).
- If using a 9 pin to 25 pin adaptor, make sure all 9 pins are connected (Some types aren't).
- If Some readings are grey: Make sure ALL the devices are shown connected to the correct comms port. If You are not using Comms Port 2, You will have to delete the default 'Pump 1' device and re-install it after You have set the correct Comms Port (By default it was shown as connected to Comms Port 2).

**Tip: If You are installing the devices in Demo Mode, or have not yet set the correct port number, and intend to use these devices in Real Mode: Be careful to select the correct 'Port No' when installing the device. (Uni-Link allows usage of Multiple Ports).**

- **Tip: It is usually best to Use UniTools first, to communicate with each Unimeter Device on it's own** (ie only one device connected to the RS485 line at a time) whilst setting up, to make sure all the settings are correct. After this UniTools can be used to check all devices together (change to each ID in turn and use 'Tools | Show Unimeter Readings' to display). UniTools is a DOS MODE program and does not use the Vxd Driver – so it may show 'Not Responding' spasmodically if run in a windows environment. See the \uniLink\UniTools\Read\_Me.txt file for more info.

## UniLink – Polling a channel directly using Visual Basic

Sometimes you may wish to poll a Unimeter or UniMux directly, instead of from within the normal 'master form' timer loop.

Firstly there are two methods of calling the value from UniLink.

### Using Names:

In the 'Modules' section of the database created by the UniLink Wizard, there is the following function in the 'UniLinkComms' module:

```
GetUnimeterValue( ):
Public Function GetUnimeterValue(ByRef App As Object, Name As String, ByRef AppRunning As Boolean) As Double
```

This is called after opening the Object (UniLink.exe), which is done in the master form's Form\_Activate() function:

```
UniLinkAppRunning = ConnectUniLink(App, AppCreated)
```

This uses the following function in the 'UniLinkComms' module to start up UniLink.exe:

```
Public Function ConnectUniLink(ByRef App As Object, ByRef AppCreated As Boolean) As Boolean
```

After running this function, if UniLinkAppRunning = True, then a connection has been made to UniLink.exe, and the App object points to that connection.

So to get a value from a single unit or channel, the following would do the job: (The code in italics is not required if the amendment you are doing is in the master form code, as it is already there.)

Defined in the top of the master form:

```
Public UniLinkAppRunning As Boolean
```

```
Public App As Object
```

```
Public AppCreated As Boolean
```

```
UniLinkAppRunning = ConnectUniLink(App, AppCreated)
```

```
Dim Stime As Date
Dim UniValue as Double
Dim Name as String
Dim Command as Long
```

```
Name = "Pump 1"
'The name string must match the string used in UniLink as
'shown on the front screen of UniLink (saved in
'UniLink.ini) It may include spaces, and if used in the
'Access database is in the UniDetails table 'Name' field.
'(Remember the 'ControlName' field can not contain spaces)
```

```
Command = 0
'Generally use Command:=0 (gets local value from UniLink if
'it is polling, else forces poll if it's not polling. Use 1
'if you want to force a poll immediately)
```

```
On Error GoTo AppErr
UniValue = App.GetDeviceValue(Name, Command)
'Test for No Error Condition (Less than 1 Million)
If (UniValue < 1000000) Then
    Stime=Now    'Good value - record time
    'Now save UniMeterValue & Time to a Database Table
Else
```

```
        GetUnimeterValue = 0 'Or some other error value
    End If
```

```
AppErr:
```

```
    MsgBox "Unable to Access 'UniLink' Server"
```

The functions in UniLinkComms are also provided in UniLinkLIBbas.MDA. This is a collection of functions which can be used in a non UniLink Wizard built Visual Basic application.

### **Using Comms Port number and ID of Unimeter:**

Browse the UniLink automation library and select the most appropriate function eg:

Function GetVal(Port As Long, UniID As Long) As Double:

```
    Dim Port as Long
    Dim UniID as Long
    DimVal as Double
    Port=2
    UniID=1
        Val= GetVal(Port, UniID)
        If (Val < 1000000) then
            'Val OK
        Endif
```

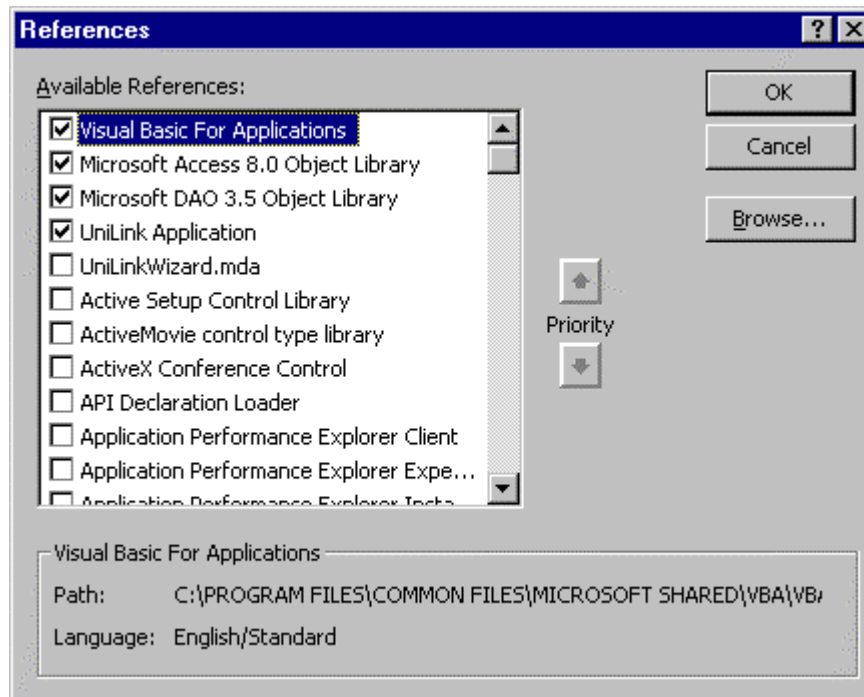
Or:

Function GetMuxChannels(Port As Long, MuxID As Long) As String

‘(Then decode with Public Function Decode\_Mux\_String(Muxstr As String) As Integer  
‘ in the UniLinkComms module)

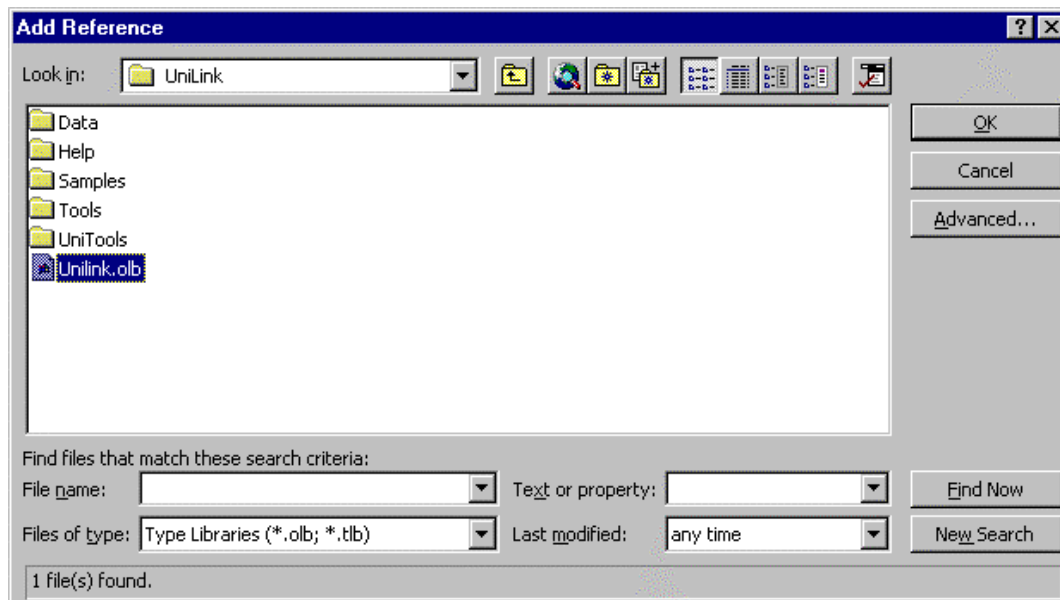
## UniLink Automation Library

To browse the UniLink.olb library, open a code module, select 'Tools | References'



If 'UniLink Application' is not shown as a reference:

- Click 'Browse'
- Select the UniLink folder
- Select UniLink.olb
- Click OK & Click Ok again.



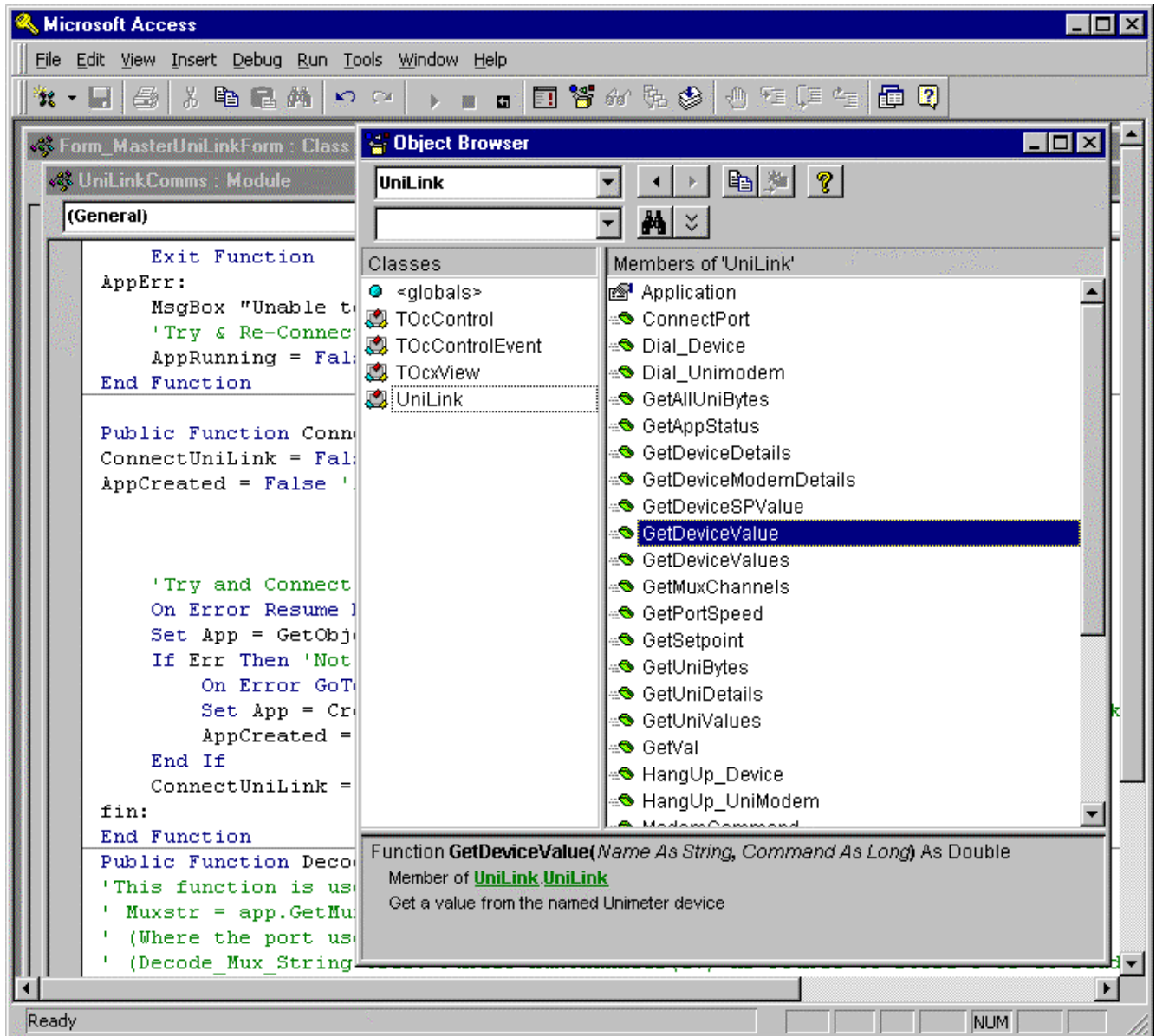
Now to browse the library functions made available by UniLink:

- From the open module, Click on 'View | Object Browser'
- Select the UniLink library in the top left hand side drop box
- Click on UniLink in the left hand window (Ignore the Toc.... Names)
- Click on the Function you wish to browse – the details are shown in the bottom grey window.

The functions are used by referring to the global 'App' object created above:

App.GetDeviceValue(Name, Command)

Make sure the parameters specified are matched by your variable declarations. (Eg: Dim Command as Long)





## **UniLink Error Return Codes**

The codes returned from UniLin.exe to a Visual Basic (Automation) call are based around a value of one million (1000000). If the value expected is say a double, test it for less than a million to make sure it is valid.

```
Dim Val as Double
Val= GetVal(Port, UniID)
If (Val < 1000000) then
    'Val OK
Endif
```

If the returned value is only used for error codes, then the same thing applies before accepting the result.

```
Dim Ret as Long
Ret=SetSetpoint(Port, UniID, SetpointNumber, Value)
If Ret < 1000000 Then
    'Setpoint was set
Else
    'Try again / Message to user
Endif
```

## Using the UniMux in Digital mode, (or a Digital In unit)

The UniMux or UniMux XQL can be set up in digital mode. In this mode the Mux has 16 inputs (channels 1 to 16) which have either 0V (Off) or +5Vdc (On) signals. Please read the UniMux XQL manual for connections. Note that the inputs must be 0V or +5Vdc, not floating (2.2k Ohm Pull Down resistors can be used).

The Digital IN Unit accepts 8 90-260V AC/DC inputs, which UniLink represents as 8 separate channels. See the Unimeter manual on pages 149 and 360.

Firstly set up the UniMux using UniTools to 16 Channel Digital mode (or Digi In to Function 149).

With the UniMux (Digi In) still connected to the PC, run UniLink and set it up to match the UniMux (Digi In).

1. Run UniLink.exe (Make sure Comms is set up correctly: Setup | Comms)
2. Click on Unimeter Icon
3. Set the ID, Channel 1, and Comms Port number
4. Type in the Name of the channel (eg: "Pump 1")
5. Click 'Install'

The screenshot shows the 'Unimeter Device Details' dialog box. It features a title bar with a question mark and a close button. The main area contains input fields for 'ID' (value: 1), 'Channel' (value: 1), and 'Port' (value: 2). Below these is a 'Name' field containing 'Pump 1' with a dropdown arrow. To the right of the Name field are three buttons: 'Install', 'Cancel', and 'Delete'. Below the Name field is a 'Device Description' text area. At the bottom, there is a 'Polling Details' section with a 'Poll Delay' field set to '5.00' and the unit '(Seconds)', and a 'Polling' button.

6. UniLink will install the other 15 (7) channels automatically with names like "UniMux 1 Ch 2" etc. To change these names,
  - Click the Unimeter Icon
  - Select the name of the channel to change by clicking the down arrow on the names field.
  - Type over this name with the new name
  - Click Install

Name	Port	ID	CH	Ver...	Type	Status	Reading
Pump 1	2	1	1	8.06	UniMux, in Digital	No Response	0.00
UNI_MUX 1 Ch 2	2	1	2	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 3	2	1	3	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 4	2	1	4	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 5	2	1	5	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 6	2	1	6	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 7	2	1	7	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 8	2	1	8	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 9	2	1	9	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 10	2	1	10	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 11	2	1	11	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 12	2	1	12	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 13	2	1	13	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 14	2	1	14	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 15	2	1	15	0.00	UniMux	On Line	0.00
UNI_MUX 1 Ch 16	2	1	16	0.00	UniMux	On Line	0.00

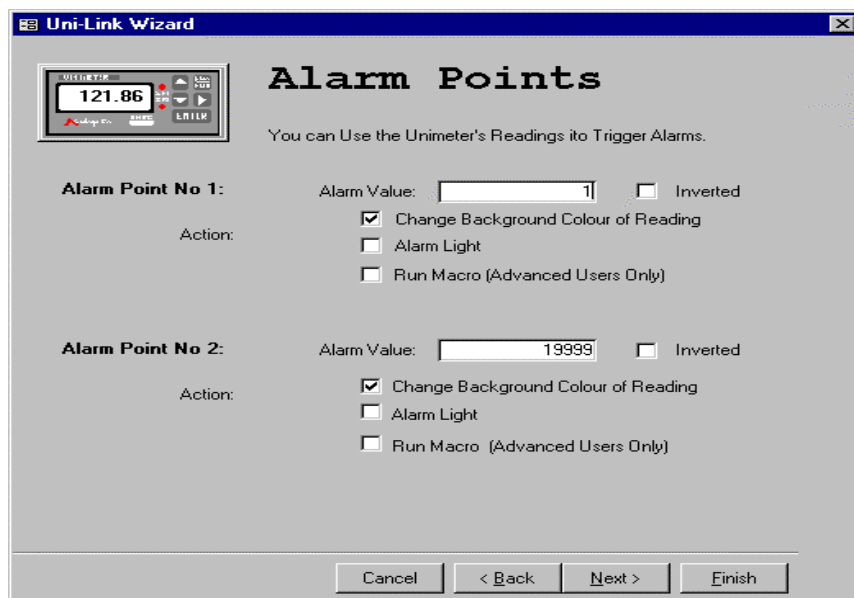
Fig 1: UniMux

Name	Port	ID	CH	Ver...	Type	Status	Reading
Pump 1	2	2	1	0.00	Digital	No Response	0.00
Pump 2	2	2	2	0.00	Digital	No Response	0.00
Pump 3	2	2	3	0.00	Digital	No Response	0.00
DIGI Out Ch 4	2	2	4	0.00	Digital	No Response	0.00
DIGI Out Ch 5	2	2	5	0.00	Digital	No Response	0.00
DIGI Out Ch 6	2	2	6	0.00	Digital	No Response	0.00
DIGI Out Ch 7	2	2	7	0.00	Digital	No Response	0.00
DIGI Out Ch 8	2	2	8	0.00	Digital	No Response	0.00
Temp 1	2	3	1	0.00	Digital	No Response	0.00
DIGI In Ch 2	2	3	2	0.00	Digital	No Response	0.00
DIGI In Ch 3	2	3	3	0.00	Digital	No Response	0.00
DIGI In Ch 4	2	3	4	0.00	Digital	No Response	0.00
DIGI In Ch 5	2	3	5	0.00	Digital	No Response	0.00
DIGI In Ch 6	2	3	6	0.00	Digital	No Response	0.00
DIGI In Ch 7	2	3	7	0.00	Digital	No Response	0.00
DIGI In Ch 8	2	3	8	0.00	Digital	No Response	0.00

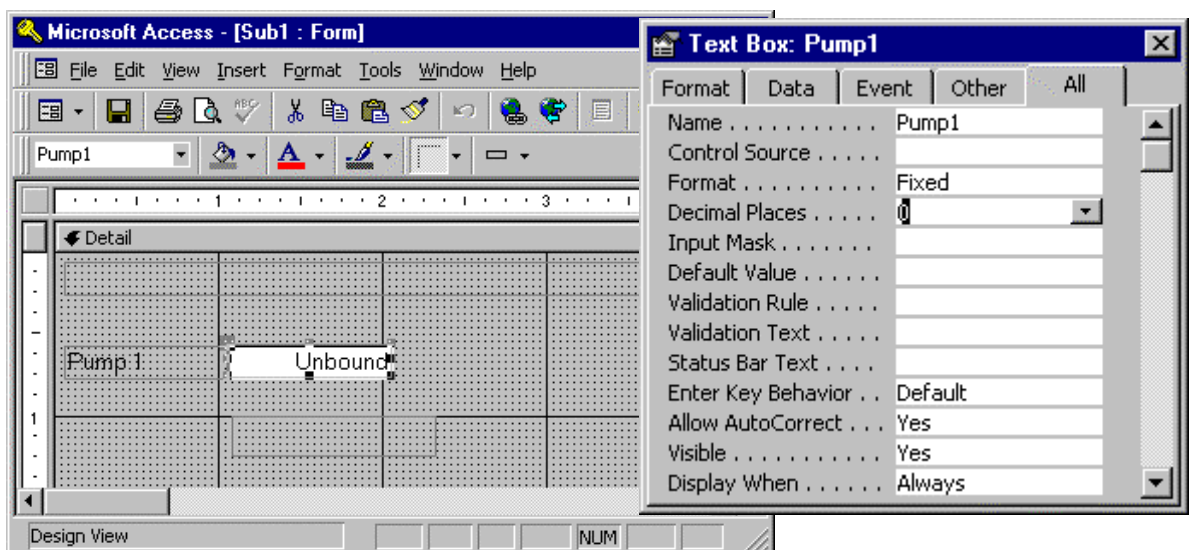
Fig 2: Digi In & Out

## Installing the channels into UniLink SCADA

1. Run the Microsoft Access® database.
2. Install a new 'Text Box' (Or new Form if this is a new database). (Remember the "Wizard" button must be depressed to bring up the UniLink Wizard).
3. Select the UniMux (Digi In) channel to install
4. On the 'Alarm Points' page, type in 1 for the alarm point, and select 'Change background Colour of reading'. (Use Alarm Point 1 for a Red background colour on an active alarm, or Alarm Point 2 for a green colour – these can be changed in the 'UniDetails' table).

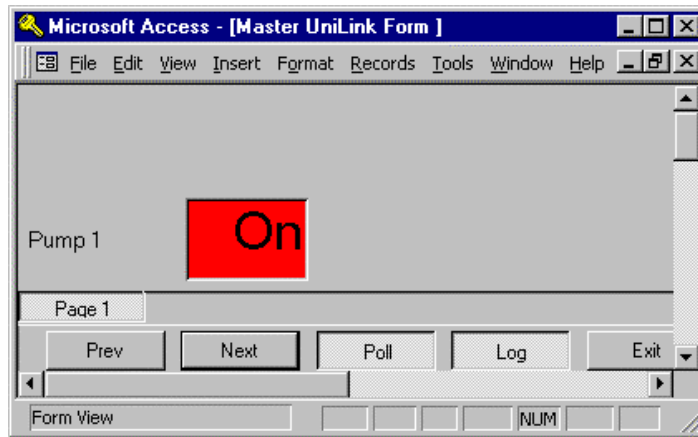


5. In the subform where you placed the reading text box, change the text box properties to 'Decimal Places = 0' (Forms | Design – Highlight the text box by temporarily moving the hidden control button, click on the text box & click 'Properties').
6. Repeat for any other channels.



To change the background colour when there is no alarm condition from white to, say green, type 65280 in the 'BackColorOk' field in the 'Unidetails' table (or 255 for red).

The 0 or 1 can be changed to show the word "On" if the value of the textbox is non zero. This can be done in the subform / design / textbox properties by changing the text box's format from fixed to On/Off.



Logging the UniMux channels will occur as a 1 for an active (On) channel or a zero for an inactive channel. Advanced Visual Basic programmers can log 'Change of states' via the 'Public Sub API\_Control\_Macro(Rst As Recordset)' procedure.