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Comms Port Problems: Communication with Unimeters over an RS485 Bus.

Date: 20/03/2000

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If you are suffering problems communicating with Unimeters over an RS485 bus, the best approach is to go back to basics.

Plan of Attack:

1. Windows 95/98: Check that the Communications RS485 Driver is installed
 - Double click on *'My Computer'*.
 - Double click on *'Control Panel'*.
 - Double click on *'System'*.
 - Select *'Device manager'* tab.
 - Double click on *'Ports (Com&LPT)'*.
 - Double click on the **Comms port** that you installed the AS4000 adaptor on.
 - Select the *'Driver'* tab.
 - The selected driver should be *"Communications RS485 Port"* not *"Communications Port"*
2. Use UniTools to communicate with EACH device in turn to make sure they are all connected correctly.
 - Using UniTools is always a better approach than starting with UniLink, as it simplifies the task of checking the physical connections. The Polling rate can be set to 1 second or faster to prove the communications are sound over a period of time.
 - It is easiest to 'Get a Value' or 'Poll' a Unimeter device, and look for a successful value displayed, (or 'No Response' if no communications are established). You should be able to poll the device every second with a success rate of 99.9%. (NB: The Unimeter is sluggish in responding with some rate / counter modes if the input is slow – to prove this temporarily change the mode to Function 64)
 - You must be able to communicate effectively with every device on line using UniTools before you try with UniLink.
3. If this is not successful, Use UniTools to Communicate with ONE single device. (Take all other devices off line and concentrate on one device only).
4. Once Communications is established with a single device, add devices to the RS485 bus, ensuring the continued communications of all existing devices.
5. Once you can successfully communicate with all devices, Check that UniLink is set to the same Comms Port, Baudrate, and ID's and then UniLink should run successfully also.

Physical connections:

- Make sure the AS4000 RS485 Adaptor is connected to the same Comms Port the 'Communications RS485 Port' VXD Driver is installed on.
- Make sure UniTools is set to this same Comms port (Properties | Comms Port), and 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 UniTool's (Properties | Baudrate) or Uni-Link's (Setup, Comms, Baudrate). (If Communicating with a UniMux, make sure you can get a value with UniTools, or search the port if you have the wrong baudrate or ID (Properties | Search Port)
- Make sure the Unimeter's ID is the same as UniTool's or 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).
- On a long run (Greater than 100Metres), you may need a 120 Ohm terminating resistor across the RS485 wires, at each of the two points which are furthest apart (EG: the AS4000, and the furthest Unimeter in a daisy chain arrangement).
- The RS485 wires should be twisted pair, preferably in a shielded cable, connected to a good ground.

Typical Indications of Errors:

No reading AT ALL in UniTools from a single device (No other devices on line):

No Communications RS485 Driver
Incorrect Port
Incorrect Baudrate or ID
Incorrectly Wired
No Power to AS4000
9 Pin Adaptor without all pins connected
Faulty AS4000
Faulty Unimeter Device (Eg suffered lightning surge).
UniLink (Or another Comms program) is running on the same Comms Port.

Tip: A clear LED with a series 1.5 K Ohm resistor placed across the RS485 line will blink **slightly** (or Dim slightly depending on the polarity) when UniTools is Polling at 2400 baud, and nothing else is connected (Set UniTools to 2400 Baud, and to poll at 1 second intervals). You will not see the poll at higher baudrates, unless the Unimeter is answering. This is a good way to prove the link from UniTools through the AS4000 to the RS485 line. This LED should not be left connected permanently.

Occasional reading in UniTools, followed by many 'No Responses':

Second device on line with either the same ID, or with a different baudrate.

Poor shielding or not twisted pair RS485 wires

Spurious voltage or ground on RS485 pair.

End of run resistors required on a long run.

You could slow the baudrate down to 2400 baud. If this cures the problem add end of run 120 Ohm resistors.

Second (Faulty) device on line (Eg: Suffered lightning surge).

Unimeter XQL – The Logging rate AND polling rate are too fast (slow either down to slower than 1/second)

Another Comms program / Driver may be stealing the Comms port (UniTools will normally display an error message announcing this).

Unimeter is in a Counter or Rate mode with Slow (or No) input:

This can cause Comms delay & or failure because the meter is dedicated to the task at hand.

A way to temporarily prove this is to set the Unimeter to Function 64.

If Comms improve, then you either need to let UniLink ignore the Unimeter when it has a slow or no input (which it will do automatically, retrying it every 30 seconds), or choose another rate Function which has fast Comms (eg: Function 207 – Rate & Total)

Communications with UniTools is successful, but not with UniLink:

UniTools is still running

Check the Comms port is the same

Check the UniLink.ini file to ensure

All devices are set to this Comms port

The Comms port is set to active & the correct baudrate

The '**Name**' used in the INI file is EXACTLY the same as that used in the '**Name**' field in the Access database in the 'UniDetails' table (Spaces are allowed, and case is critical).

```

UniLink.ini - Notepad
File Edit Search Help

[MRU]
Count=4

[DefaultSettings]
CommPort=2
DemoMode=0
Customer=0
TurboMode=0
PauseDelay=10
PortPollFailLimit=5
PortFailRetryDelay=30
PortFailTimeout=30
UniPollLimit=3
SaveINI=1
TestCode=0

[InstalledDevices]
U001=Pump 1, ID: 001, CH: 000, POLL: Y, POLLDELAY: 1.00, PORT: 2
U002=Pump 2, ID: 002, CH: 000, POLL: Y, POLLDELAY: 1.00, PORT: 2
U003=Temp 1, ID: 003, CH: 000, POLL: N, POLLDELAY: 1.00, PORT: 2
U004=Temp 2, ID: 004, CH: 000, POLL: N, POLLDELAY: 1.00, PORT: 2
U005=

[COMM1]
Speed=38400
Active=0
Modem=0

[COMM2]
Speed=38400
Active=1
Modem=0

```

In the 'UniDetails Table in the Access Database:

Check that the POLL (And if required the LOG) fields are set to 'Yes', and that the 'PollDelay' and 'LogDelay' times are correct.

The 'ControlName' fields must be the same as the Reading Text Box Control's 'Name' on the sub form (No Spaces).

The 'ControlType' for a text box should say 'Reading' (Other controls can exist with the same Name, but the control name and / or sub form and / or control type will be different).

Microsoft Access - [UniDetails : Table]

| Name | ControlName | SubForm | Poll | PollDelay | Log | LogDelay | LogTableName |
|--------|-------------|---------|------|-----------|-----|----------|--------------|
| Pump 1 | Pump1 | Sub1 | Yes | 1 | Yes | 1 | UniData |
| Pump 2 | Pump2 | Sub1 | Yes | 1 | Yes | 1 | UniData |

Record: 1 of 2

Datasheet View