TTDM-128 MODBUS
CONNECTION TEST

APPLICATION & EQUIPMENT

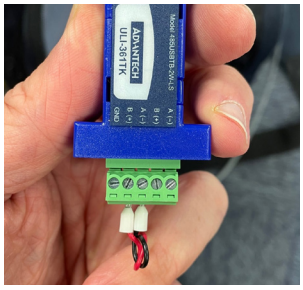
Application used : Modscan 64 downloadable - https://www.win-tech.com/html/demos.htm
Equipment used : ADVANTECH BB-485USBTB2WLS-A - Purchased Here

Modscan 64 is not a free software but it gives you 10 minutes for free, however, licenses are not expensive.

CONNECTION

Connect the RS485 converter to a PC/LAPTOP via a USB cable.

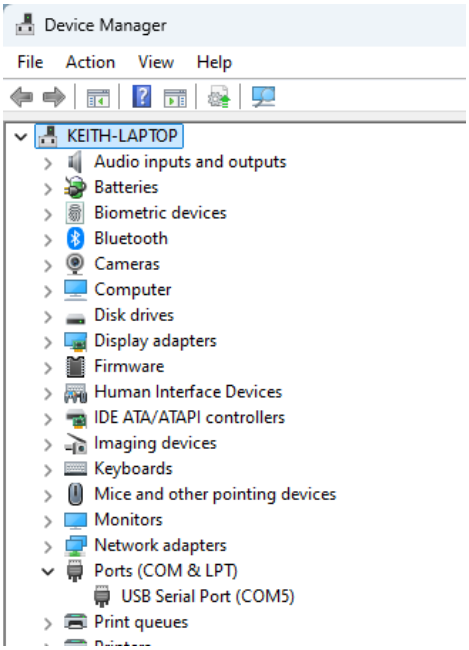
Connect a comms cable as shown below between the TTDM-128 and the RS485 Converter.



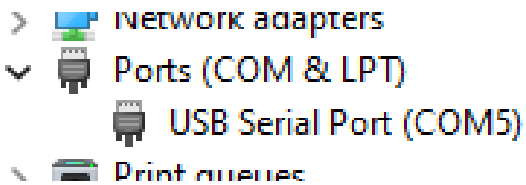
Rs-458 Converter

TTDM-128 HOST

Once the RS-485 converter is connected to the laptop you will need to get the PORT that the converter is using. You can find this out by going to you r computer's Device Manager is and look under the Serial Port section , for this instance the port is No 5, this can be shown as a different port on your PC/LAPTOP.



Ports under Device Manager.



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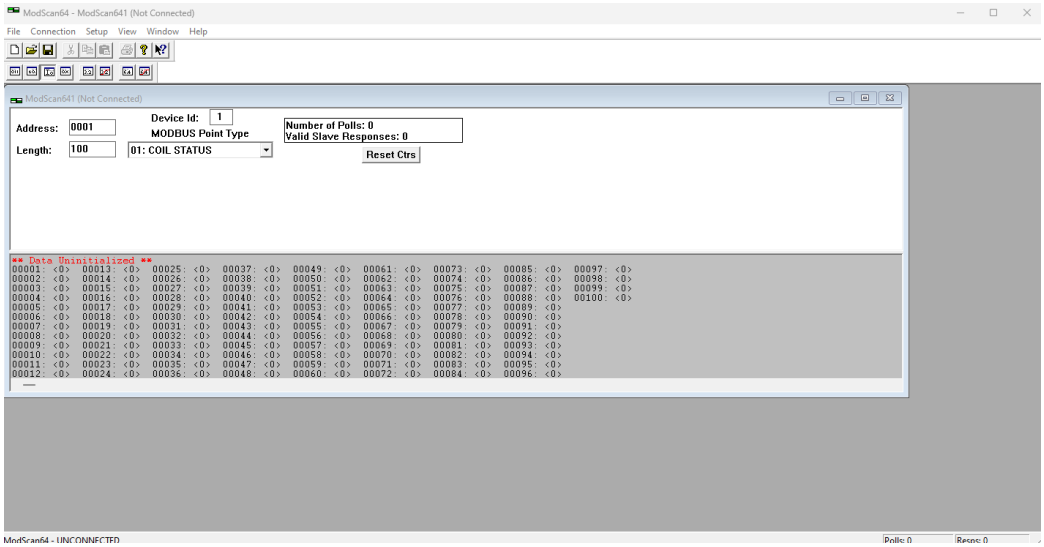
RS-485 CONNECTION AND SETUP

On the TTDM-128 Setup the TTDM-128 ideally these settings as these have been prove to work best :

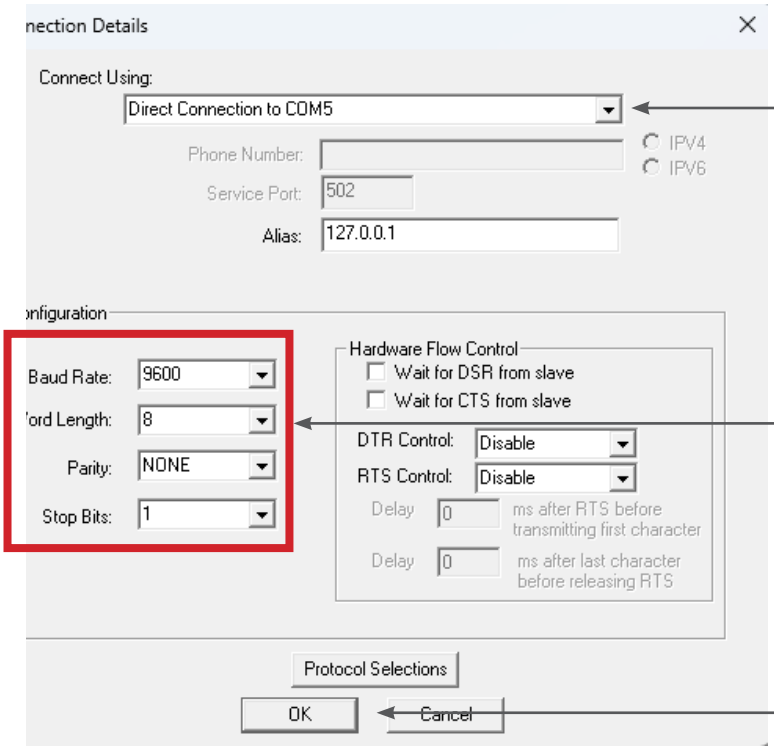
1. Press Menu
2. Scroll to TTDM NETWORK
3. Select BAUD RATE 9600
4. 485 HEX address this is the Modbus address that we will look for when connecting to the TTDM-128 Default 1
5. TTDM select Auto

CONNECT TO THE TTDM-128

Open up ModScan you will see a welcome screen as below



Select Connection in the menu tab and then select Connect

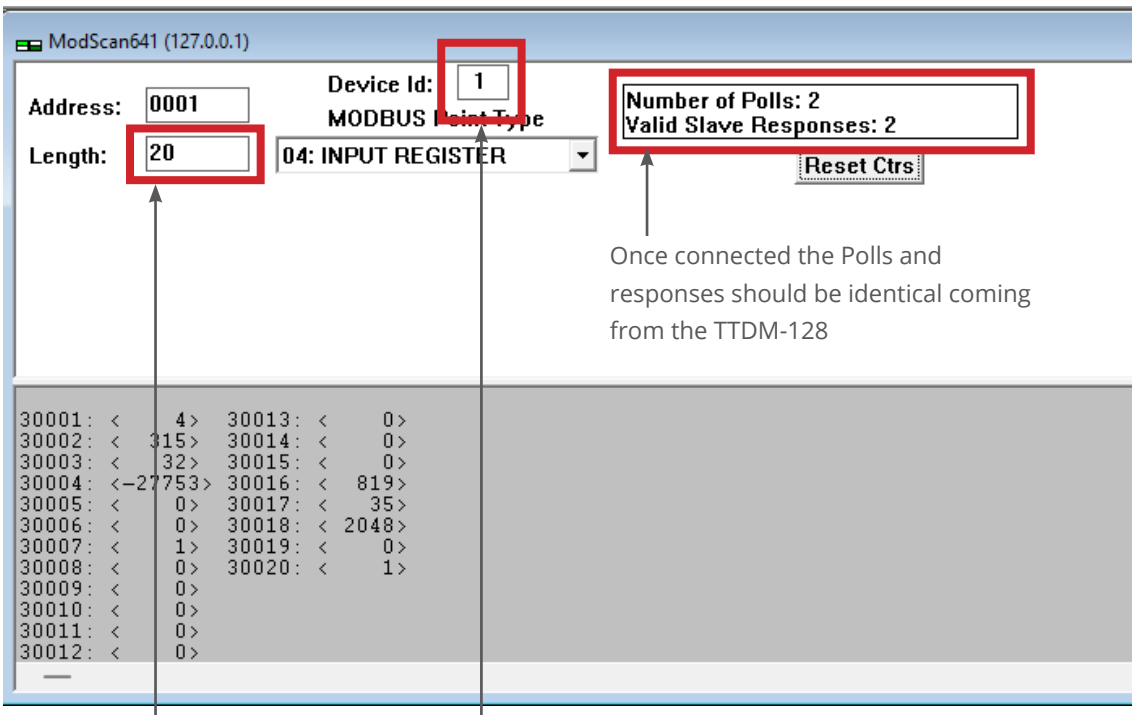


Select the port that the Converter is using, we found this from the Device Manager section.

These settings should be the same as the TTDM-128 is setup.

Press OK to Connect

Select Connection in the menu tab and then select Connect



Once connected the Polls and responses should be identical coming from the TTDM-128

This is the TTDM-128 MODBUS id which was setup in the RS-485 Connection and Setup section Point 4.

IMPORTANT: Minimise the number of registers read below 100 , ideally 20-80 at a time.

For this example we are going to monitor SIM number one on the TTDM-128

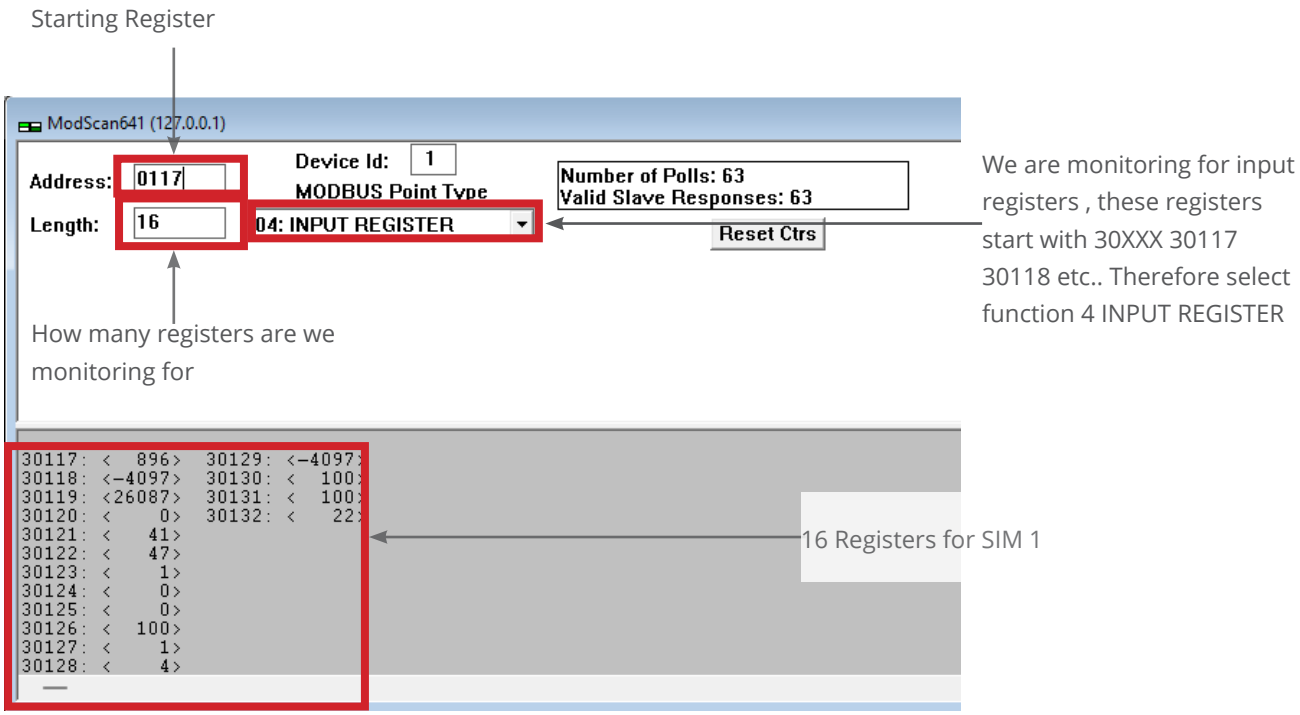
	SIM Analog Inputs/Status - SIM Analog Inputs Address = 101 + (SIM # * 16) Where SIM # is 0 – 127 Use these registers for "flat table" access to all SIM parameters without having to map a desired SIM to the standard output registers listed above. See 40002 for the alternate mapping strategy
30101 - 30116	SIM0 - status see Analog Inputs 30033-30048 for format
30117 - 30132	SIM1 - status see Analog Inputs 30033-30048 for format
30133 - 30148	SIM2 - status see Analog Inputs 30033-30048 for format
…	…
32101 - 32116	SIM125 - status see Analog Inputs 30033-30048 for format
32117	SIM126 - status see Analog Inputs 30033-30048 for format

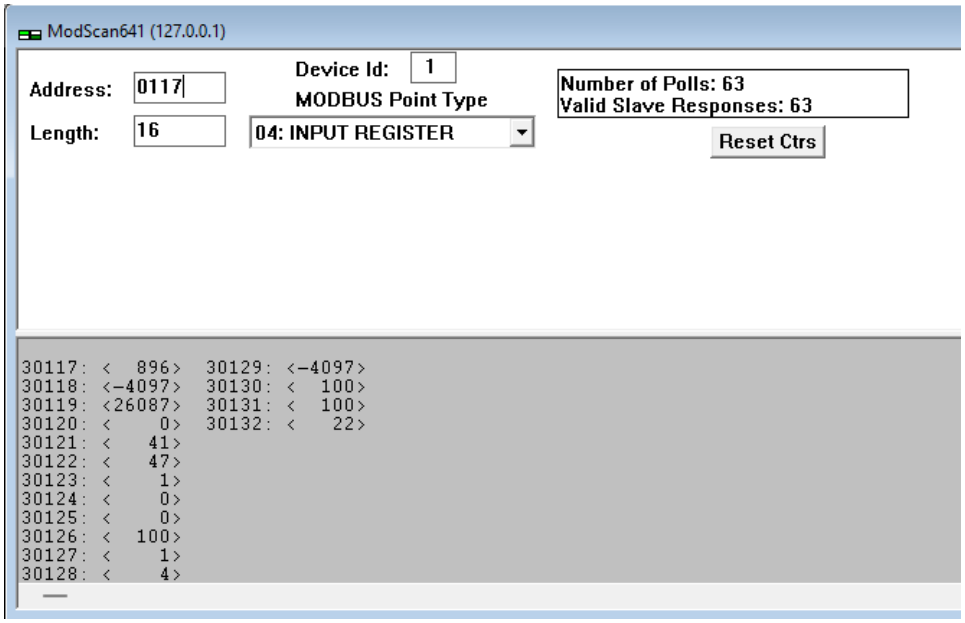
Therefore, we are going to look at registers between 30117 and 30132 (see next page for explanation)

There are 16 Registers to be monitored for every SIM. Which are found below : the left registers get altered for every sim , for example See the RED registers on the far left for TT-SIM 1

		SIM Analog Status (Mapped Version - see Register 400002)
30117	30033	Low Level SIM Status code – (See Table 2)
30118	30034	Location Resistance (Ω) {Loc Res}
30119	30035	Detection Resistance (kΩ) {Sense Res}
30120	30036	Detection Current (uA) {Sense Cur}
30121	30037	Cable Resistance RG (Ω) {R-G Res}
30122	30038	Cable Resistance YB (Ω) {Y-B Res}
30123	30039	Spare
30124	30040	Spare
30125	30041	SIM Node Status : SIM Unused Node = 0xFFFF SIM Active Normal = 0x0000 SIM Active Trouble = 0x0001 SIM Active Service = 0x0004 SIM Active Leak = 0x0002
30126	30042	AI -9 Sensor Version
30127	30043	AI -10 Product ID
30128	30044	SIM Cable Test Length (selected units)
30129	30045	SIM Leak Location (selected units)
30130	30046	SIM New Leak Threshold Resistance (Ω)
30131	30047	SIM Comm Rate 100% = no packet loss
30132	30048	Last SIM Event Code (see Table 1)
	30049 – 30091	TTDM LCD Text 4 rows*(20 chars + CR)
	30092	Relays states – that way you can get all front panel info with one read
	30093 - 30096	spare

Ex For SIM 2 these registers will start 30133 and finish 30148, For SIM 3 start at 30149 + 16 etc..

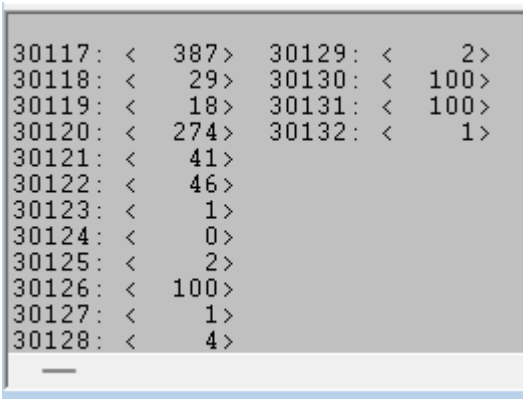




We are going to concentrate on two registers for the purpose of this example. Register 30118 and 30125. As you can see from the SIM analogue status table 30118 is the Location Resistance and 30125 is the SIM node status.

When a cable is connected and healthy location resistance is shown at -4097, for register 30125 there are 5 possible outcomes, however this will be explained soon.

We are going to introduce a leak on this 3M cable (you can tell it is a 3M cable by reading registers 30121 / 30122 and divide this resistance by 12.8Ohms. As this will give you the length of the circuit attached. Beware if there is any weighted lengths and or branch connectors as these would need to be taken into consideration when calculating length.



Now the Cable is in Leak : we can see that the two registers we are monitoring have changed, 30118 showing 29(Ohms) there fore we can easily get the location of the leak by dividing this number by 12.8Ohms to get the leak location which is approximately 2 Meters.

We can also see that register 30125 from 0 to 2 , as shown in the below table 2 = Leak, if this register shows the number 4 this would mean that there is a Service etc.

SIM Node Status :

SIM Unused Node	= 0xFFFF
SIM Active Normal	= 0x0000
SIM Active Trouble	= 0x0001
SIM Active Service	= 0x0004
SIM Active Leak	= 0x0002

By reading these registers you can make sure that the data from the TTDM-128 is being emitted correctly. This strategy can be rolled to other registers that you are trying to monitor for.

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