

TOTALFLOW

Technical Bulletin 154

Adam RS-485 Quad AO Converter to NGC Setup and Operation

Totalflow Technical Bulletin Version 1.0, Revision AA (19 September 2007)

ABB Inc. TOTALFLOW Products 7051 Industrial Blvd. Bartlesville, OK 74006 (918) 338-4888 phone (918) 338-4699 fax (800) 442-3097 www.abb.com/totalflow





Purpose

To describe how to configure the ADAM 4024 Converter to work with the NGC-8xxx Gas Chromatograph.

Description

Step by Step ADAM Converter Configuration

Connect the ADAM model 4024 converter to a personal computer (PC). An RS232/RS485 converter is required to communicate from the PC to the Adam converter.

- 1. Install the ADAM-4000 utility software onto the PC that will be used to configure the converter.
- 2. Run the ADAM-4000 Utility Software

3. Highlight the COM port from your PC that is going to be connected to the ADAM converter and then select "search" from the "tools" drop down located in the utilities tool bar

🚭 A	DAM-4000 Utility	/ (¥er 2.00)		
File	Tools Help			
	Search			
	Terminal	ß		
– –	Save Configura	tion File		
	Download Confi			
		Baudrate	9600 bps 💌]
		DataBits	8	
		Stop Bits	1]
		Parity	None	
		Prefix Char		
		Time Out	80	
		Stop Bits Parity Prefix Char	1 None	

4. Set the module's address to 1 (all the modules ship from the factory with the Modbus address set to 1)

Search Installed Modules	×
Enter start address between 0 and 255 dicimal	OK Cancel
0	



5. Once the program begins communicating to the module you should see the following configuration screen. Begin configuring the AO according to customer requirements.

🚭 ADAM-4000 Utility (Ve	er 2.00)	×
File Tools Help		
· ## 9 #	<u>~</u>	
	ADAM-4024 Modbus Mapping Address: 01 HEX DEC BaudRate: 9600 bps Image: Constraint of the second sec	
A	A0 Channel Setup Direct Output Value Channel Range Current Val. Ch1 0 - 20 mA +16.982 Ch2 4 - 20 mA +04.000 Ch3 4 - 20 mA +04.000 Ch4 0 - 20 mA +04.000 D1 Status DI Status D11 D1 2 D12 D1 3 D14 D1 Data (Hex) V V V V V V	
Polling DI data		1

<u>Note:</u> Online help is available from within the ADAM configuration software if a problem is encountered or additional configuration assistance is needed.

Step by Step NGC Communications Configuration

1. Enable one of the remote communications port on the NGC (if not already visible from "entry" tree view)Set the port in the NGC

🔄 PCCU32 - [Entry]							
Operate View Window Help							
fi 📅 🚾 💀 🚾 V _A 🔚 🖼 🧠 🧇 🗯 🖃 📖 炎							
E-TOTALFLOW É-Communications Setup Advanced Request Blocks Statistics							
Communications Cocal Port	Jetup P	Advanced Request Blocks Statistics					
- Totalflow/TCP							
⊞-NGC Interface	0.4.3	Port Name	Remote Port				
# I/O Interface	2.0.22	Port Type	Serial				
Analyzer Operation	2.3.3	Port	COM2:				
⊞-GCM Interface	2.0.6	Protocol	Modbus Host (RTU)				
B-Chrom Processing	2.0.2	Baud Rate	9600				
B-STREAM 2	2.0.12	Register Format	16 Bit Modicon				
B-STREAM 3							
# STREAM 4							
B-CAL STRM 1							
B- Trend System							
- Operations							
NGC Display							



- 2. Either COM1 or COM2 can be used to communicate RS-485 from the NGC to the ADAM converter.
- 3. Set the port as follows:
 - a. RS-485
 - b. Modbus RTU (default ADAM parameter)
 - c. 16 bit Modicon (default ADAM parameter)
 - d. Data bits 8 (must match ADAM parameter)
 - e. 1 stop bit (must match ADAM parameter)
 - f. No parity

 - g. Response delay = 10h. Transmit key delay = 5
 - i. Unkey delay = 5
 - Timeout = 100j.

🔄 PCCU32 - [Entry]						
📃 Operate View Window Help						
	Ŭ77 [ninel 🔤 Looder 🐼 Archive	🚽 🛄 💑 🗽 🤌			
B-TOTALFLOW						
≜-Communications	Setup Advanced Request Blocks Statistics					
Local Port						
Remote Port		Description	Val			
Totalflow/TCP	2.0.25	Scan Enable	Enabled			
ii⊞-NGC Interface III-I/O Interface						
ar 1/0 Interface E-Analyzer Operation	2.0.1	Interface	Rs485 8			
	2.0.3	Data Bits				
B GCM Interface	2.0.4	Parity	None			
B - Chrom Processing B - STREAM 1	2.0.5	Stop Bits	1			
B STREAM 2	2.1.10	Response Delay (milliseconds)	10			
⊞-STREAM 3 ⊞-STREAM 4	2.1.1	Xmit Key Delay (milliseconds)	5			
B-CAL STRM 1	2.1.2	Unkey Delay (milliseconds)	5			
B-Trend System	2.1.3	Timeout(milliseconds)	100			
- Operations	2.0.24	Keep TCP Connection Open	llo			
ⁱ NGC Display	2.0.17	Trailing Pad	None			
	2.0.13	Retries	0			
	2.3.0	Directory	\Comm-2\Modbus			
		~				
	2.0.14	Thread Priority	250			
	2.0.21	IST Priority	70			
-						

4. Create a Modbus request block from the "request block" tab within the communications port selected to communicate to the ADAM converter. Setup the request block as indicated below.

Set	tup Advanced Request Blocks Statistics			
	Request Blocks	Modbus Function	Source	
	test.mrb	6 - Write Single Register 💌	Register	
		Slave Addresss 1	1 10.68.0	
		Starting Register 1		
		# Registers 1		
		Register Type Int16 💌		
		- Trigger	-	
		Type Interval 💌		
		Interval 00:00:01		
		- Response Status	-	
		Register 0.0.0		
	1			
		>		

- 5. Modbus Function will very between 6 (for one register) or 15 (for multiple register).
- 6. The Register Type is Int16, because that is the format of the value (any value) after scaling it as per the ADAMs settings
- 7. The ADAM's modbus Register are:
 - a. Slave address 1 = AO1
 - b. Slave address 2 = AO2
 - c. Slave address 3 = AO3
 - d. Slave address 4 = AO4
- 8. Scaling Variables using NGC Operations
 - a. Using the "scale" operator, create 1-4 registers that will be used to deliver the value to the ADAM's analog output. In the example below we are sending a BTU value (register 38.4.5) to the ADAM converter using write register 10.68.0.
 - b. Next, scale the BTU's value's "IN" range to match the lowest and highest BTU value that could be calculated
 - c. Next, scale the "OUT" range to match the ADAM's counts. Typical range will be 0 for the low and 4093 for the high scaled value.
 - d. Repeat these steps for any additional variables to be delivered to the ADAM converter's AO2-4

ath Compare Scale Capacity							
	Description	Value	Register	In Low	In High	Out Low	Out High
10.68.0	вти	3802.4280	38.4.5	500.0000	1100.0000	0.0000	4093.0000
10.68.1	Operation 1	0.0000	0.0.0	0.0000	0.0000	0.0000	0.0000
10.68.2	Operation 2	0.0000	0.0.0	0.0000	0.0000	0.0000	0.0000
10.68.3	Operation 3	0.0000	0.0.0	0.0000	0.0000	0.0000	0.0000



Wiring Diagram

