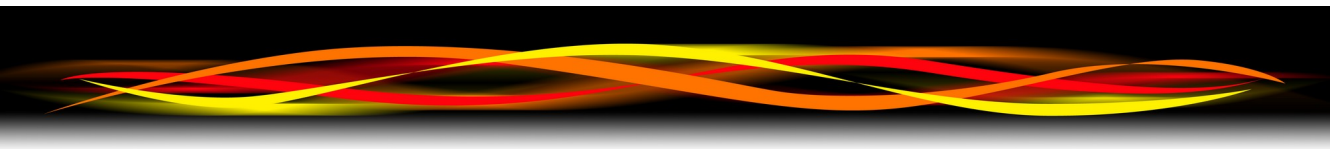


Newflow

P577 DMS

**Operator
Manual**





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2					

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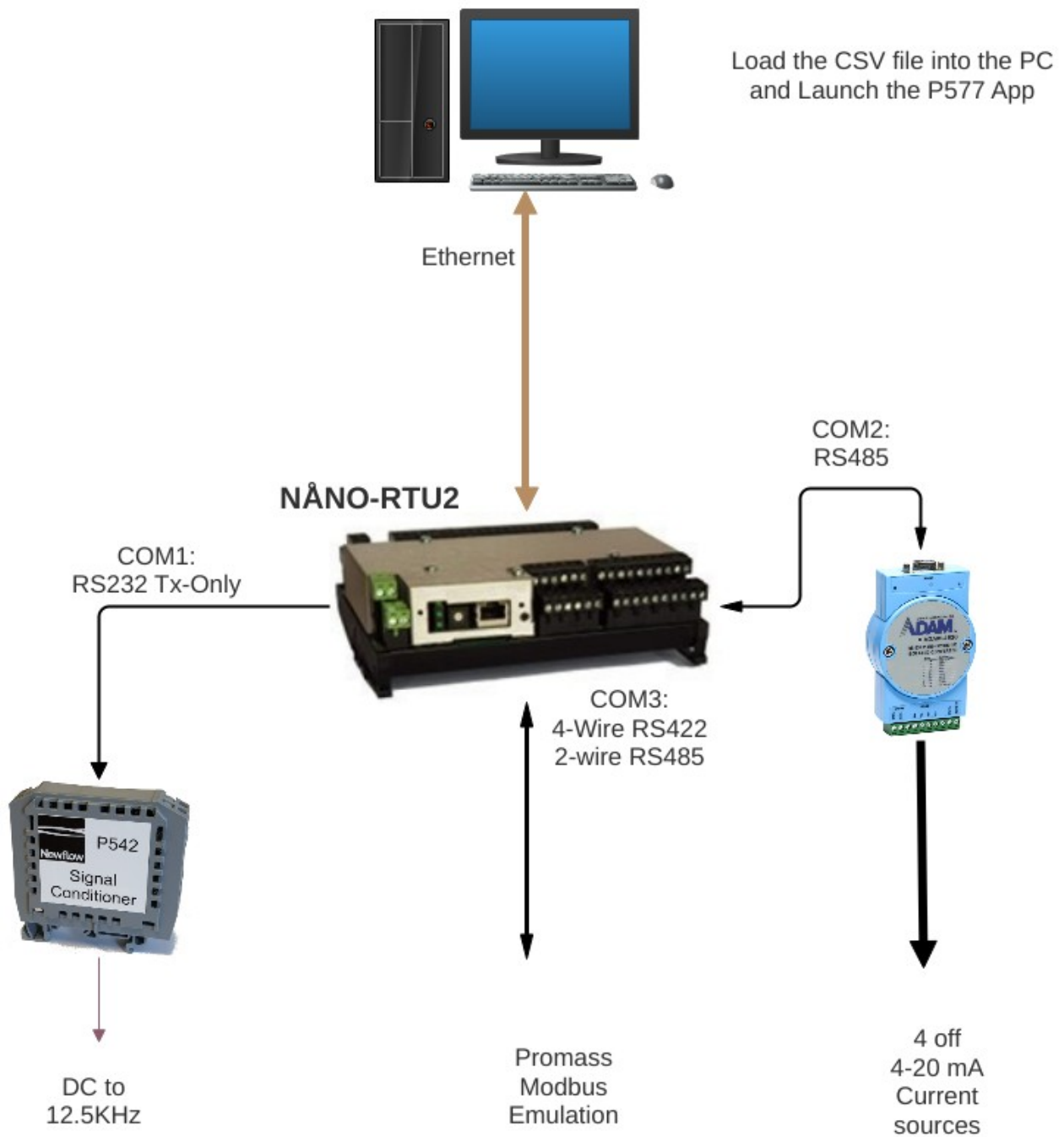
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MMXXI

1 System Overview Drawing



- The Pulse Output simulation comes out of the P542 Signal Conditioner. This allow connections to all types of flow computer, with links to set Open Collector or Totem-pole outputs.
- The Modbus Serial emulation can be either a 4-wire or 2-wire differential communications method depending upon how it has been wired. Addresses 1-10 and 247 can be used.
- The Adam 4024 Analog Output module can provide both 4-20mA and 1-5V outputs.

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2 Introduction

The P577 Dynamic Modbus simulator is able to perform three tasks in near real-time.

- It emulates a serial Modbus RTU Slave device, with up to 20 Modbus data points being updated
- It can generate a high resolution frequency output to simulate a flow meter
- It can drive up to 4 Analog Outputs (1-5V or 4-20mA)

In the Promass Simulator version, the serial port configuration is fixed at:

Baud Rate: 38,400
Parity: Even
Data Bits: 8
Stop Bits: 1

The Modbus addresses are set by the hexadecimal Rotary Switch SW1

NOTE: Rotary Switch SW1 position 0 is pointing downwards.
Move the switch clockwise to increase the position number.

In the photograph on the right hand side, SW1 is in position 1.



SW1 Position	Operating Mode
1	Serial Modbus Slave Address 1
2	Serial Modbus Slave Address 2
3	Serial Modbus Slave Address 3
4	Serial Modbus Slave Address 4
5	Serial Modbus Slave Address 5
6	Serial Modbus Slave Address 6
7	Serial Modbus Slave Address 7
8	Serial Modbus Slave Address 8
9	Serial Modbus Slave Address 9
A (10)	Serial Modbus Slave Address 10
B (11)	Serial Modbus Slave Address 247
C (12)	Website write-access is set to ENABLED on power-on
D (13)	Website write-access is set to DISABLED on power-on
E (14)	Not to be used in P577 DMS Mode
F (15)	Not to be used in P577 DMS Mode
0	Not to be used in P577 DMS Mode

Table 1: Reserved Switch Positions

The simulation data, presented as a CSV file is loaded into the Windows P577 Promass Simulator Program, screenshot below.

The Windows P577 Promass Simulator Program communicates with a version of the NANO RTU2, running the P577 firmware over an Ethernet connection.

The NANO RTU2 then generates the frequency output, controls the Adam 4024 module to provide the Analog Outputs and acts as a dynamic Modbus slave, over a RS422 4-wire Link that can be wired as a RS485 link.

Once configured, the user operated the DMS system using the Windows P577 Promass Simulator Program

Index	Timestamp	Temperature	Pressure P1	Pressure P2	Mass Flow	Air Index	Coriolis Mass	Damping	Auxiliary Ma	Promass Sta	Exciter Curr	Total Quanti	Control Valv
1	2020-02-10 15:43:14	49.81	1.168	1.153	0	0	1613.83	152.46	0	14.27	0	0	
2	2020-02-10 15:43:16	49.81	1.17	1.154	0	0	1804.9	154.49	0	17.8	0	0	
3	2020-02-10 15:43:18	49.81	1.169	1.154	0	0	1728.38	152.46	0	13.96	0	0	
4	2020-02-10 15:43:20	49.83	1.17	1.154	0	0	2059.84	85.44	0	18.2	0	0	
5	2020-02-10 15:43:22	49.83	1.169	1.154	0	0	1694.98	83.24	0	14.98	0	0	
6	2020-02-10 15:43:24	49.83	1.17	1.154	0	0	1664.52	85.44	0	15.43	0	0	
7	2020-02-10 15:43:26	49.87	1.17	1.155	0	0	3050.78	85.48	0	26.99	0	0	
8	2020-02-10 15:43:28	49.87	1.169	1.154	0	0	1730.32	83.31	0	15.29	0	0	
9	2020-02-10 15:43:30	49.85	1.17	1.154	0	0	1724.19	85.48	0	15.51	0	0	
10	2020-02-10 15:43:32	49.85	1.169	1.154	0	0	1884.9	83.28	0	17.15	0	0	
11	2020-02-10 15:43:34	49.87	1.169	1.154	0	0	1640.12	85.52	0	14.51	0	0	
12	2020-02-10 15:43:36	49.87	1.169	1.154	0	0	1819.51	85.52	0	16.09	0	0	
13	2020-02-10 15:43:38	49.87	1.168	1.153	0	0	1877.48	83.31	0	16.6	0	0	
14	2020-02-10 15:43:40	49.85	1.17	1.154	0	0	1745.2	85.48	0	14.69	0	0	
15	2020-02-10 15:43:42	49.85	1.17	1.154	0	0	1714.07	87.65	0	15.16	0	0	
16	2020-02-10 15:43:44	49.85	1.169	1.153	0	0	2045.73	83.28	0	18.08	0	0	
17	2020-02-10 15:43:46	49.83	1.17	1.154	0	0	1658.45	85.44	1	14.65	0	0.41	
18	2020-02-10 15:43:48	49.83	1.169	1.154	0	0	1779.57	84.35	1	16.28	0	0.41	
19	2020-02-10 15:43:50	49.83	1.169	1.154	0	0	1842.43	84.35	1	16.29	0	0.41	
20	2020-02-10 15:43:52	49.83	1.169	1.154	0	0	2095.63	85.44	1	18.51	0	0.41	
21	2020-02-10 15:43:54	49.83	1.168	1.153	0	0	1563.96	83.24	1	13.83	0	0.41	
Output													

Some Columns Removed For Clarity

Batch Mode	FREQ	DAC1	DAC2	DAC3
0	698.57	5.84	5.765	14.27
0	696.64	5.85	5.77	17.8
0	694.37	5.845	5.77	13.96
0	691.28	5.85	5.77	18.2
0	688.24	5.845	5.77	14.98
0	686.53	5.85	5.77	15.43
0	683.15	5.85	5.775	22
0	676.25	5.845	5.77	15.29
0	680.4	5.85	5.77	15.51
0	681.6	5.845	5.77	17.15
0	687.12	5.845	5.77	14.51
0	687.01	5.845	5.77	16.09
0	688.2	5.84	5.765	16.6
0	690.97	5.85	5.77	14.69
0	689.49	5.85	5.77	15.16
0	688.04	5.845	5.765	18.08
S101	688.05	5.85	5.77	14.65
S101	683.05	5.845	5.77	16.28
S101	681.62	5.845	5.77	16.29
S101	680.71	5.845	5.77	18.51
S101	687.11	5.84	5.765	13.83

3 Generating & Storing the simulation Data

The data for the Modbus points, frequency and analog outputs is all stored in a CSV spreadsheet format file, see the screenshot directly below.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Details: csv export															
2	Timestamp in this column	Mass Flow	Raw Den	osc Freq	Exciter I	Damping	S-FV 35	S-FV 36	K-Factor	Status	Not used	Pulse Rate	DAC1	DAC2	DAC3	DAC4
3	Modbus Register ----->	2006	2012	9500	9502	9504	14326	14328	7512	6858						
4	Data Format ----->	F1	F1	F1	F1	F1	F1	F1	F1	noint11		D0	D1	D2	D3	D4
5	2020-02-10 15:43:14	49.81	698.57	850	150.36	200	300	800	36000	888	14.27	698.57	22	22	14.27	1
6	2020-02-10 15:43:16	49.81	696.64	851	150.36	200	0	1804.9	36000	0	17.8	696.64	22	22	17.8	2
7	2020-02-10 15:43:18	49.81	694.37	852	150.36	200	0	1728.38	36000	0	13.96	694.37	22	22	13.96	3
8	2020-02-10 15:43:20	49.83	691.28	853	150.36	200	0	2059.84	36000	0	18.2	691.28	22	22	18.2	4
9	2020-02-10 15:43:22	49.83	688.24	854	150.36	200	0	1694.98	36000	0	14.98	688.24	22	22	14.98	5
10	2020-02-10 15:43:24	49.83	686.53	855	150.36	200	0	1664.52	36000	0	15.43	686.53	22	22	15.43	6
11	2020-02-10 15:43:26	49.87	683.15	856	150.36	200	0	3050.78	36000	0	26.99	683.15	22	22	22	7
12	2020-02-10 15:43:28	49.87	676.25	857	150.36	200	0	1730.32	36000	0	15.29	676.25	22	22	15.29	8
13	2020-02-10 15:43:30	49.85	680.4	858	150.36	200	0	1724.19	36000	0	15.51	680.4	22	22	15.51	9
14	2020-02-10 15:43:32	49.85	681.6	859	150.36	200	0	1884.9	36000	0	17.15	681.6	22	22	17.15	10
15	2020-02-10 15:43:34	49.87	687.12	860	150.36	200	0	1640.12	36000	0	14.51	687.12	22	22	14.51	11
16	2020-02-10 15:43:36	49.87	687.01	861	150.36	200	0	1819.51	36000	0	16.09	687.01	22	22	16.09	12
17	2020-02-10 15:43:38	49.87	688.2	862	150.36	200	0	1877.48	36000	0	16.6	688.2	22	22	16.6	13
18	2020-02-10 15:43:40	49.85	690.97	863	150.36	200	0	1745.2	36000	0	14.69	690.97	22	22	14.69	14
19	2020-02-10 15:43:42	49.85	689.49	864	150.36	200	0	1714.07	36000	0	15.16	689.49	22	22	15.16	15
20	2020-02-10 15:43:44	49.85	688.04	865	150.36	200	0	2045.73	36000	0	18.08	688.04	22	22	18.08	16
21	2020-02-10 15:43:46	49.83	688.05	866	150.36	200	0	1658.45	36000	1	14.65	688.05	22	22	14.65	17
22	2020-02-10 15:43:48	49.83	683.05	867	150.36	200	0	1779.57	36000	1	16.28	683.05	22	22	16.28	18
23	2020-02-10 15:43:50	49.83	681.62	868	150.36	200	0	1842.43	36000	1	16.29	681.62	22	22	16.29	19
24	2020-02-10 15:43:52	49.83	680.71	869	150.36	200	0	2095.63	36000	1	18.51	680.71	2	22	18.51	20
25	2020-02-10 15:43:54	49.83	687.11	870	150.36	200	0	1563.96	36000	1	13.83	687.11	3	22	13.83	19
26	2020-02-10 15:43:56	49.83	689.66	871	150.36	200	0	1707.19	36000	1	15.1	689.66	4	22	15.1	18
27	2020-02-10 15:43:58	49.83	686.96	872	150.36	200	0	2798.77	36000	1	22.4	686.96	5	22	22	17
28	2020-02-10 15:44:00	49.85	688.26	873	150.36	200	0	1649.72	36000	1	14.57	688.26	6	22	14.57	16
29	2020-02-10 15:44:02	49.85	687.92	874	150.36	200	0	1714.94	36000	1	15.58	687.92	7	22	15.58	15
30	2020-02-10 15:44:04	49.85	684.62	875	150.36	200	0	1934.13	36000	1	16.82	684.62	8	22	16.82	14
31	2020-02-10 15:44:06	49.85	685.86	876	150.36	200	0	1785.38	36000	1	17.4	685.86	9	22	17.4	13
32	2020-02-10 15:44:08	49.85	684.41	877	150.36	200	0	1694.68	36000	1	14.98	684.41	10	22	14.98	12
33	2020-02-10 15:44:10	49.87	677.97	878	150.36	200	0	1960.16	36000	1	19.19	677.97	11	22	19.19	11
34	2020-02-10 15:44:12	49.85	680.42	879	150.36	201	0	2041.06	36000	1	18.04	680.42	12	22	18.04	10

The top row (row 1) of the spreadsheet is not used by the P577 DMS, so it can be used to store information regarding to the file, such as file name, source, date of editing or other information

The second row (row 2) is used for the name of the columns B, C, D and so on. It is not used for column A, since column A is always assumed to be the timestamp

The third row (row 3) is used to define which Modbus slave address, the data will be available from. With the 3v2r1 firmware release, the Modbus addresses must be 2000 and above.

If the column is an Analog Output or Frequency output, this should be left blank

The fourth row (row4) defines the data format as shown in the table below.

Row 4 Code	Type	Description / Data Format
10	Modbus	Single Register (16bit) in 01 format
11	Modbus	Single register (16bit) in 10 format
20	Modbus	Double register (32bit) in 0123 format
21	Modbus	Double register (32bit) in 1032 format
22	Modbus	Double register (32bit) in 2301 format
23	Modbus	Double register (32bit) in 3210 format
F0	Modbus	Float (32bit) in 0123 format

F1	Modbus	Float (32bit) in 1032 format
F2	Modbus	Float (32bit) in 2301 format
F3	Modbus	Float (32bit) in 3210 format
D0	Hardware	Frequency Output Hz
D1	Hardware	DAC1 Output mA
D2	Hardware	DAC2 Output mA
D3	Hardware	DAC3 Output mA
D4	Hardware	DAC4 Output mA

Adding the phrase "noint" before the code will stop the interpolation (if selected) between rows of data. Column J on the previous page is such an example, interpolating between status values is obviously not desired.

The timestamp in Column A is displayed by the Windows P577 application for reference only. The time interval is ignored, and the data is updated at 2 second intervals with the current firmware

4 Loading the data

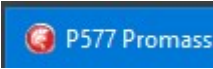
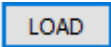
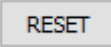

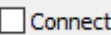


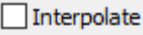
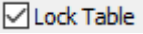
The P577.exe file runs directly in place, it does not need to be installed, and can also be run from a USB Flash drive. The .ini file should be kept in the same location.

Clicking on the .exe file will launch the program, and the screenshot below shows a example of the left hand side of the application window.

The screenshot shows the 'P577 Promass Simulator Driver - Vn 1.00' application window. The title bar includes the file path: 'Table:Y:\engineering\Projects\P577 - Promass Emulator\DelphiSoftware\P577promass\Win32\Release\BMC600_Datalog'. The interface features a 'LOAD' button, a 'RESET' button, an IP address field set to '10.0.98.106', a checked 'Connect' checkbox, a 'Trigger Register' field, a status indicator, and unchecked checkboxes for 'Interpolate' and 'Lock Table'.

Index	Timestamp	Temperature	Pressure P1	Pressure P2	Mass Flow	Air Index	Coriolis Mass	Damping	Auxillary Ma	Promass Sta	Exciter Curr	Total Quanti	C
1	2020-02-10 15:43:14	49.81	1.168	1.153	0	0	0	1613.83	152.46	0	14.27	0	C
2	2020-02-10 15:43:16	49.81	1.17	1.154	0	0	0	1804.9	154.49	0	17.8	0	C
3	2020-02-10 15:43:18	49.81	1.169	1.154	0	0	0	1728.38	152.46	0	13.96	0	C
4	2020-02-10 15:43:20	49.83	1.17	1.154	0	0	0	2059.84	85.44	0	18.2	0	C
5	2020-02-10 15:43:22	49.83	1.169	1.154	0	0	0	1694.98	83.24	0	14.98	0	C
6	2020-02-10 15:43:24	49.83	1.17	1.154	0	0	0	1664.52	85.44	0	15.43	0	C
7	2020-02-10 15:43:26	49.87	1.17	1.155	0	0	0	3050.78	85.48	0	26.99	0	C
8	2020-02-10 15:43:28	49.87	1.169	1.154	0	0	0	1730.32	83.31	0	15.29	0	C
9	2020-02-10 15:43:30	49.85	1.17	1.154	0	0	0	1724.19	85.48	0	15.51	0	C
10	2020-02-10 15:43:32	49.85	1.169	1.154	0	0	0	1884.9	83.28	0	17.15	0	C
11	2020-02-10 15:43:34	49.87	1.169	1.154	0	0	0	1640.12	85.52	0	14.51	0	C
12	2020-02-10 15:43:36	49.87	1.169	1.154	0	0	0	1819.51	85.52	0	16.09	0	C
13	2020-02-10 15:43:38	49.87	1.168	1.153	0	0	0	1877.48	83.31	0	16.6	0	C
14	2020-02-10 15:43:40	49.85	1.17	1.154	0	0	0	1745.2	85.48	0	14.69	0	C
15	2020-02-10 15:43:42	49.85	1.17	1.154	0	0	0	1714.07	87.65	0	15.16	0	C
16	2020-02-10 15:43:44	49.85	1.169	1.153	0	0	0	2045.73	83.28	0	18.08	0	C
17	2020-02-10 15:43:46	49.83	1.17	1.154	0	0	0	1658.45	85.44	1	14.65	0	C
18	2020-02-10 15:43:48	49.83	1.169	1.154	0	0	0	1779.57	84.35	1	16.28	0	C
19	2020-02-10 15:43:50	49.83	1.169	1.154	0	0	0	1842.43	84.35	1	16.29	0	C
20	2020-02-10 15:43:52	49.83	1.169	1.154	0	0	0	2095.63	85.44	1	18.51	0	C
21	2020-02-10 15:43:54	49.83	1.168	1.153	0	0	0	1563.96	83.24	1	13.83	0	C
Output		49.810	1.168	1.153	0.000	0.000	0.000	1613.830	152.460	0.000	14.270	0.000	C

The table on the next page explains the various fields.

	<p>The title bar shows the Program name (P577 Promass Simulator Driver) and version number (Vn 1.00) and the rest of the title bar shows the location of any datafile loaded.</p>
	<p>The LOAD button opens an explorer window, allowing a new data file to be loaded.</p>
	<p>Clicking the RESET button forces the simulator to restart from Index 1.</p>
	<p>The edit box next to the IP label, allows the operator to enter the IP Address of the NANO RTU running the specific DMS firmware. The IP address should be entered in IPv4 quad-dotted decimal representation, as shown in the screenshot. If the address of the NANO-RTU2 is not known, see Section 4.1. Using NANOCConf below.</p>
	<p>The tick box adjacent to the Connect label causes the P577 program to test for the existence of the NANO-RTU2 and then starts to feed data to it from the loaded data file.</p>
	<p>The trigger register should normally be the last Modbus address that is polled in a complete cycle. If the field is left empty (blank), then all requested addresses are a match.</p>
	<p>The trigger match light flashes each time new data is presented to the NANO-RTU2.</p>
	<p>Clicking the box, so that a tick appears in the box means that Interpolation is enabled. The Output frequency, Analog Outputs and the output frequency will be linearly interpolated between the two rows of data, at the time the trigger register is requested. If the trigger register field is blank, then all data points are recalculated for every individual request. If the user needs all the data points to be consistent in time, load the last Modbus Register address in the poll cycle into the Trigger Register.</p>
	<p>If the table is not locked, clicking on the table data, moves the pointer to reload the data from the index number clicked on. When performing a long term test, it is recommended that the table is locked</p>
<p>Index</p>	<p>The index is simply the Row number on the spreadsheet data file, minus 4, for the header information.</p>
<p>Timestamp</p>	<p>This is column A from the spreadsheet data file.</p>
<p>Other Headings</p>	<p>The rest of the headings from Row 2, Cell B onwards from the spreadsheet data file.</p>
<p>The "Data"</p>	<p>The centre of the screen shows the relevant part of the data file. If the Lock Table box is not ticked, then clicking on a line of data, will move the pointer to the position clicked.</p>
<p>Output</p>	<p>The final row of the P577 DMS Windows program is called Output, and shows the data sent over the Ethernet link to the NANO-RTU2, and subsequently relayed to the serial Modbus port.</p>

NOTE: If the NANO RTU2 is not found on the local network, a pop up window will appear as shown below,

P577 Promass Simulator Driver - Vn 1.00 Table:C:\Users\gplowther\Desktop\EH-Line 1 BTN 45 Start Date 2017-04-21 - MPFJ - small.csv

LOAD RESET IP 10.0.0.50 Connect Trigger Register 2000 Interpolate Lock Table

Index	Timestamp	Temperature	Pressure P1	Pressure P2	Mass Flow	Air Index	Coriolis Mass	Damping	Auxiliary Ma	Promass Sta	Exciter Curr	Total Quanti	Control Valv	Standard De	Raw Density	Control Valv	FREQ	DAC1	DAC2	DAC3	DAC4
1	21/04/2017 01:20:55	37.39	0.866	0.863	0	0	0	7458.35	0	1	65.54	0	0.41	0	465.82	0	0	9.9824	6.00964210	6.00268029	0
2	21/04/2017 01:20:57	37.41	0.866	0.863	0	0	0	7498.41	0	1	66.43	0	0.41	0	465.72	0	0	9.9856	6.00964210	6.00268029	0
3	21/04/2017 01:20:59	37.41	0.866	0.863	0	0	0	7415.38	0	1	65.56	0	0.41	0	465.69	0	0	9.9856	6.00964210	6.00268029	0
4	21/04/2017 01:21:01	37.41	0.866	0.863	0	0	0	7494.98	0	1	65.81	0	0.41	0	465.82	0	0	9.9856	6.00964210	6.00268029	0
5	21/04/2017 01:21:03	37.39	0.866	0.874	0	0	0	7051.51	0					465.65	0	0	9.9824	6.00964210	6.02820692	0	
6	21/04/2017 01:21:05	37.39	0.922	0.926	0	0	25.15	24959.49	0					386.17	0	251.5	9.9824	6.13959586	6.14887827	0	
7	21/04/2017 01:21:07	37.39	0.956	0.961	0	0	68.74	35368.21	0					242.71	0	687.4	9.9824	6.21849636	6.23009937	0	
8	21/04/2017 01:21:09	37.41	0.973	0.972	0	0	45.85	40118.01	0					244.73	0	458.5	9.9856	6.25794661	6.25562601	0	
9	21/04/2017 01:21:11	37.39	0.974	1.019	-33.54	5288.52	-89.09	105589.24	3					281.58	50	890.9	9.9824	6.26026721	6.36469434	0	
10	21/04/2017 01:21:13	37.41	0.967	1.009	-39.12	7243.07	-19.61	30614.11	39.12	113	100	0.02	32.4	0	738.14	50.29	196.1	9.9856	6.24402299	6.34148831	0
11	21/04/2017 01:21:15	37.46	0.96	1.004	-48.12	4874.79	-51.48	49614.45	45.06	112	100	0.04	50.9	0	850.66	52.21	514.8	9.9936	6.22777877	6.32988530	0
12	21/04/2017 01:21:17	37.48	0.959	0.963	0	4877.15	32.12	80748.02	0	113	100	0.05	50.92	0	418.54	50	321.2	9.9968	6.22545817	6.23474058	0
13	21/04/2017 01:21:19	37.51	0.951	0.966	0	4877.15	32.12	81876.84	0	113	100	0.05	50.92	0	436.89	50	321.2	9.9968	6.22545817	6.23474058	0

Information

Connection Error:
Please check P577 / IP Address

OK

If this happens, use NANOConf to discover the IP address of the RTU2. For more information see [Section 5.1. Using NANOConf](#).

5 Running the DMS

To run the DMS, power up the hardware and launch the Windows P577 application.

Ensure the IP address is the address of the NANO RTU2 unit, and click the connect tick box.

Start the flow computer polling the DMS.

Assuming that the poll rate is more than once every two seconds, then the highlighted line, starting at Index 1 will increment every two seconds. With interpolation turned off, the output line will be same data as the highlighted data line.

With Interpolation turned on the output line shows the interpolated values calculated, as in the screenshot below

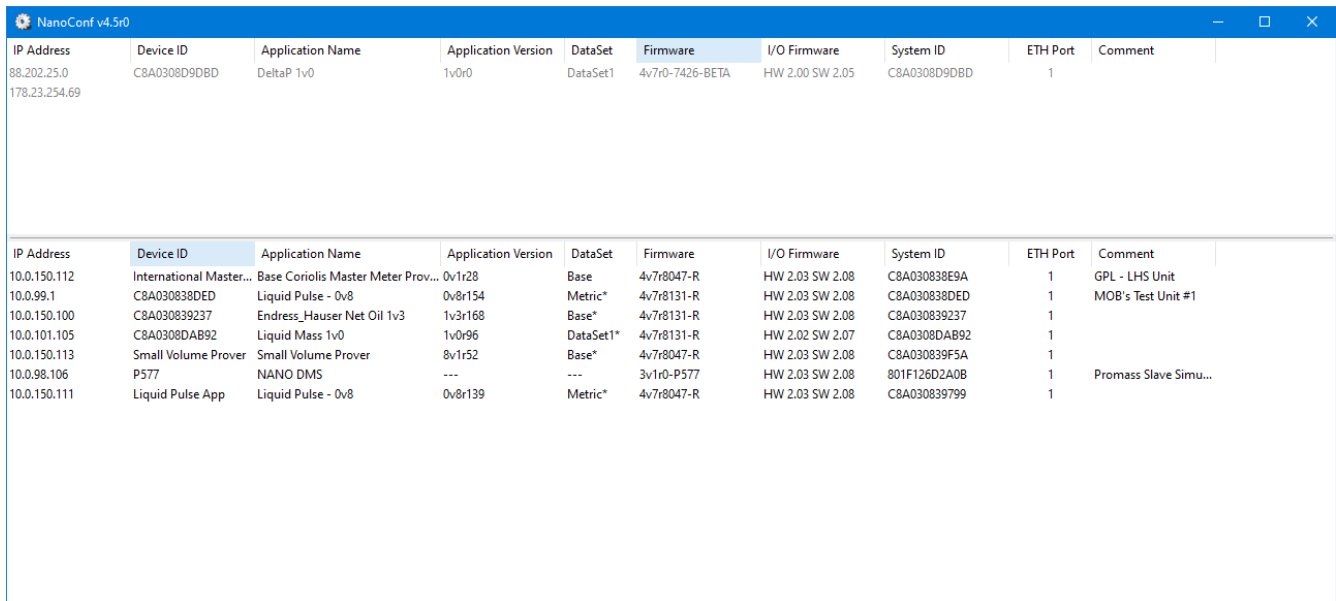
P577 Promass Simulator Driver - Vn 1.00 Table:Y:\engineering\Projects\P577 - Promass Emulator\DelphiSoftware\P577promass\Win32\Release\BMC600_DataLog

LOAD RESET IP 10.0.98.106 Connect Trigger Register Interpolate Lock Table

Index	Timestamp	Temperature	Pressure P1	Pressure P2	Mass Flow	Air Index	Coriolis Mass	Damping	Auxillary Ma	Promass Sta	Exciter Curr	Total Quanti
23557	2020-02-10 16:51:07	34.8	2.447	2.386	146.04	1061.91	150.62	11890.23	88.6	1	99.93	14.89
23558	2020-02-10 16:51:09	34.76	2.448	2.389	143.64	1061.42	144.86	3051.54	87.96	1	28.14	14.97
23559	2020-02-10 16:51:11	34.76	2.516	2.451	141.84	1057.29	143.86	2329.57	83.16	1	17.07	15.05
23560	2020-02-10 16:51:13	34.74	2.437	2.386	149.52	1054.89	149.48	5571.64	91.95	1	48.61	15.13
23561	2020-02-10 16:51:15	34.72	2.444	2.384	140.04	1053.7	141.96	4578.67	90.47	1	40.15	15.21
23562	2020-02-10 16:51:17	34.67	2.434	2.375	147	1049.98	141.17	2793.68	89.24	1	24.52	15.3
23563	2020-02-10 16:51:19	34.65	2.433	2.37	144.6	1047.22	147.07	2517.24	89.46	1	22.19	15.38
23564	2020-02-10 16:51:21	34.63	2.421	2.359	147.72	1043.26	153.16	2885.36	88.25	1	21.29	15.46
23565	2020-02-10 16:51:23	34.59	2.403	2.345	144.36	1039.21	143.91	2018.95	88.76	1	17.87	15.54
23566	2020-02-10 16:51:25	34.59	2.404	2.339	146.4	1034.99	145.38	2078.4	87	1	18.35	15.62
23567	2020-02-10 16:51:27	34.59	2.399	2.338	145.08	1030.65	142.26	1090.69	87	1	11.82	15.7
23568	2020-02-10 16:51:29	34.59	2.393	2.326	147.96	1026.1	145.58	1684.97	90.49	1	14.83	15.78
23569	2020-02-10 16:51:31	34.57	2.379	2.318	145.32	1021.9	147.98	2016.07	89.3	1	16.93	15.86
23570	2020-02-10 16:51:33	34.57	2.392	2.337	147	1017.37	147.47	1251.21	85.79	1	11.06	15.95
23571	2020-02-10 16:51:35	34.59	2.383	2.317	145.56	1013.09	146.24	1572.86	90.2	1	14.62	16.03
23572	2020-02-10 16:51:37	34.59	2.372	2.324	147.24	1008.98	146.44	1885.51	74.79	1	13.47	16.11
23573	2020-02-10 16:51:39	34.61	2.356	2.295	148.08	1004.97	147.33	731.1	87.63	1	19.33	16.19
23574	2020-02-10 16:51:41	34.61	2.34	2.284	151.68	1000.98	147.22	2799.92	83.48	1	22.09	16.27
23575	2020-02-10 16:51:43	34.61	2.324	2.267	149.04	993.55	150.9	1639.29	91.1	1	14.48	16.44
23576	2020-02-10 16:51:45	34.63	2.337	2.269	146.88	989.25	150.01	554	94.45	1	5	16.52
23577	2020-02-10 16:51:46	34.63	2.337	2.269	146.88	989.25	150.01	554	94.45	1	5	16.52
Output		34.626	2.334	2.269	147.316	990.119	150.190	773.229	93.773	1.000	6.915	16.504

5.1 Using NANOConf

When NANOConf is launched, a window similar to the screenshot below will appear.



The screenshot shows the NanoConf v4.5r0 application window. It contains a table with the following columns: IP Address, Device ID, Application Name, Application Version, DataSet, Firmware, I/O Firmware, System ID, ETH Port, and Comment. The table lists several devices, including a DeltaP 1v0 and a NANO DMS (Device ID P577).

IP Address	Device ID	Application Name	Application Version	DataSet	Firmware	I/O Firmware	System ID	ETH Port	Comment
88.202.25.0	C8A0308D9DBD	DeltaP 1v0	1v0r0	DataSet1	4v7r0-7426-BETA	HW 2.00 SW 2.05	C8A0308D9DBD	1	
178.23.254.69									
IP Address	Device ID	Application Name	Application Version	DataSet	Firmware	I/O Firmware	System ID	ETH Port	Comment
10.0.150.112	International Master...	Base Coriolis Master Meter Prov...	0v1r28	Base	4v7r8047-R	HW 2.03 SW 2.08	C8A030838E9A	1	GPL - LHS Unit
10.0.99.1	C8A030838DED	Liquid Pulse - 0v8	0v8r154	Metric*	4v7r8131-R	HW 2.03 SW 2.08	C8A030838DED	1	MOB's Test Unit #1
10.0.150.100	C8A030839237	Endress_Hauser Net Oil 1v3	1v3r168	Base*	4v7r8131-R	HW 2.03 SW 2.08	C8A030839237	1	
10.0.101.105	C8A0308DAB92	Liquid Mass 1v0	1v0r96	DataSet1*	4v7r8131-R	HW 2.02 SW 2.07	C8A0308DAB92	1	
10.0.150.113	Small Volume Prover	Small Volume Prover	8v1r52	Base*	4v7r8047-R	HW 2.03 SW 2.08	C8A030839F5A	1	
10.0.98.106	P577	NANO DMS	---	---	3v1r0-P577	HW 2.03 SW 2.08	801F126D2A0B	1	Promass Slave Simu...
10.0.150.111	Liquid Pulse App	Liquid Pulse - 0v8	0v8r139	Metric*	4v7r8047-R	HW 2.03 SW 2.08	C8A030839799	1	

Look for the Device ID "P577" and the left hand side will show the IP address of the unit.

If you are fortunate enough to have more than one P577 on your local network, right-click on the line showing one of the units, and a menu will pop-up. Select the Strobe Ident Light option, then view the physical unit, and see if the Ident Light is flashing amber rapidly. If it is, you have identified the unit, and now know the IP Address.

If you wish to change the IP Address, again right-click and then choose the Configure Option. Note the NANO RTU2 only has a single Ethernet address.

6 P577 DMS Field I/O Connection Information

6.1 Pulse Output

The pulse output generated by the NANO RTU2 is routed to the RS232 Transmit pin, TB2 Pin1.

The signal can directly drive the Pulse Input of a NANO flow computer, but to guarantee operation with all flow computers, the signal is boosted by a P542 Signal Conditioner. This allow connections to all types of flow computer, with links on the P542 to set Open Collector or Totem-pole outputs

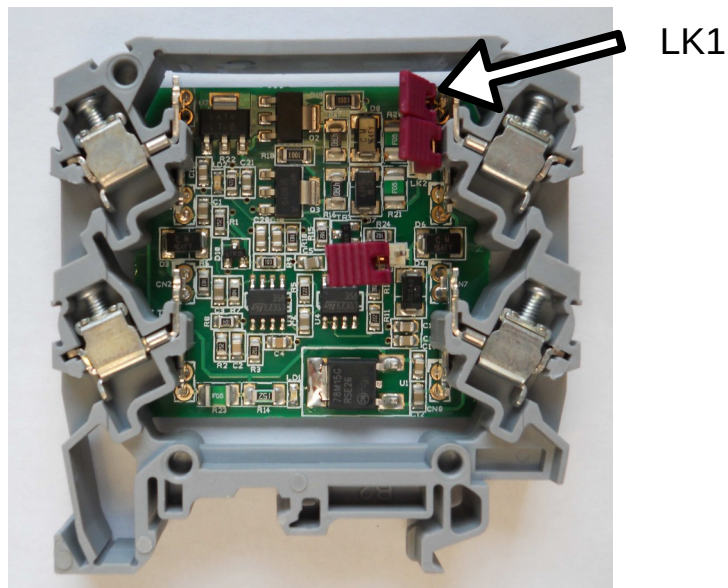
Connect NANO RTU2 Terminal TB2-1 (Tx) to the P542 Terminal C (Signal In +ve)

Connect NANO RTU2 Terminal TB2-3 (Gnd) to the P542 Terminal B (Signal In Return)

Apply 24V power to the P542, +ve Power to Terminal G and the return to Terminal H

The +ve Signal Output Pin from the P542 is Terminal E, and the Output Signal Return on F.

As standard Link LK1 is fitted, giving a totem-pole (Push-Pull) output. For an open-collector output, remove Link LK1



6.2 Modbus Serial

The Modbus Serial emulation can be either a 4-wire or 2-wire differential communications method depending upon how it has been wired. The COM3 Port on the NANO RTU2 is used.

For 4-wire mode:

NANO RTU2 Terminal TB2-7 is RS422/485 TxOUT +

NANO RTU2 Terminal TB2-8 is RS422/485 TxOUT -

NANO RTU2 Terminal TB2-9 is RS422/485 RxIN +

NANO RTU2 Terminal TB2-10 is RS422/485 RxIN -

For 2-wire mode:

Connect TB2-7 to TB2-9 as the +ve and

Connect TB2-8 to TB2-10 as the -ve

6.3 Analog Outputs

The Analog outputs are generated by an Adam 4024 module. The unit is pre-configured by Newflow for the serial port settings. The Adam module is connected to NANO RTU2 COM2.

Connect NANO RTU2 Terminal TB2-11 (RS485A) to the 4024 Terminal 10 (Data+)

Connect NANO RTU2 Terminal TB2-12 (RS485B) to the 4024 Terminal 11 (Data+)

Apply 24V power to the Adam 4024 +ve to Terminal 12(+vs) & the return to Terminal 13(GND)

If connecting the current mode Analog Outs from the Adam 4024 to the current mode Analog Inputs of a NANO flow computer:

Connect Adam 4024 Iout0+ to the NANO Terminal TB3-1 (AnIn1+)

Connect Adam 4024 Iout0- to the NANO Terminal TB3-2 (AnIn1-)

Connect Adam 4024 Iout1+ to the NANO Terminal TB3-3 (AnIn2+)

Connect Adam 4024 Iout1- to the NANO Terminal TB3-4 (AnIn2-)

Connect Adam 4024 Iout2+ to the NANO Terminal TB3-5 (AnIn3+)

Connect Adam 4024 Iout2- to the NANO Terminal TB3-6 (AnIn3-)

Connect Adam 4024 Iout3+ to the NANO Terminal TB3-7 (AnIn4+)

Connect Adam 4024 Iout3- to the NANO Terminal TB3-8 (AnIn4-)

If connecting to another flow computer, refer to the Adam 4024 documentation.

6.4 NANO RTU2 Lid Label

