User Manual

Maxiflex

Maxiflex VISTA NIM

Model M1584B

User Manual

Revision 3

REMOTE MONITORING SPECIALISTS

Scope

The Maxiflex M1584B Vista NIM is a custom designed Serial NIM module that receives a serial data string from the printer output port of a Vista Gas Chromatograph.

This document describes the use of the M1584B Serial NIM module in the field as well as the manner in which the serial data string is decoded into Vista GC stream data.

Manual Revision History

Revision	Date	Description
01	April 1999	Initial revision
02	October 1999	Updated new DIT Layout as M1584A Version 1.04
3	January 2026	Updated to B due to internal hardware change. Added TOC, Layout drawing, Specifications and Serial Port table

Table of Contents

1 Introduction

The M1584B Vista NIM module receives a serial data string from the printer output port of a Vista Gas Chromatograph (GC) and decodes this string into time stamped stream measurement values.

These values are read using the Maxiflex M123x T1 range of CPUs. Please refer to the User Documentation for these CPUs for further information.

2 Setting up the Unit

Setting up the Vista NIM is simple. It must be installed into any I/O Slot of the Maxiflex rack but not into the CPU slot. Refer to Figure 2-1 for the I/O Module position.

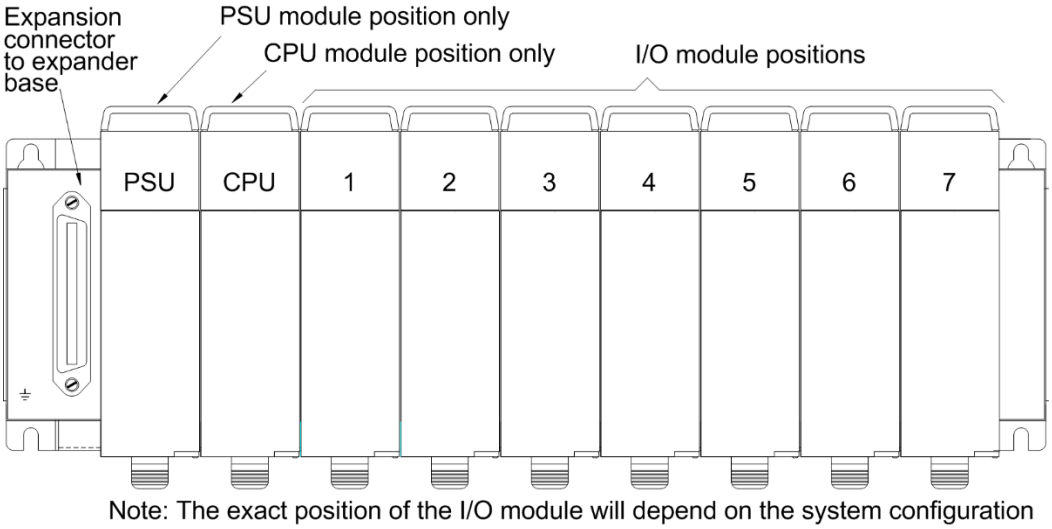

Figure 2-1 Layout of the 7 I/O Master Base.

The M1584B Vista NIM requires neither programming nor configuration before use and no setting is required on the 8 way dipswitch behind the door of the module.

The transmit or “TX” output from the Vista GC must be connected to the receive line or “RX” input (Pin 2) of the DB9 connector at the front of the module. Note that an additional DB9 connector is shipped with the module for this purpose. Signal ground from the Vista GC must also be connected to the signal ground (Pin 5) of the connector.

Table 2-1: Pin allocation of serial port connector

Pin NO	RS232
1	Do not connect
2	Rx Data (In)
3	Tx Data (Out)
4	Do not connect
5	Ground
6	Do not connect
7	RTS (Out)
8	CTS (In)
9	Do not connect

The communications settings are fixed as follows:

- Baud Rate: 1200
- Data Bits: 8
- Parity: None
- Stop Bits: 1

Please ensure that the communications settings of the printer output port of the Vista GC are set to the above settings.

Once the unit is wired and installed into the Maxiflex rack, the stream data can be read via the CPU once communication commences between the Vista GC and the NIM module.

3 Reading Stream Data

The following data is available in the Vista NIM module. Note that the table below is indexed according to the zero-based DIT register system common to all Maxiflex CPUs and NIMs. In addition, a one-based index is also provided for Modbus users.

When viewing the data via the CPU, remember to add the Extended DIT register offset to the DIT/Modbus index in the DIT layout below to read the required data. E.g. if the unit is plugged into I/O Slot 2 then the offset is:

4000 x 2 + dit/modbus index or 8000 + dit/modbus index.

4 Vista NIM DIT Layout

Table 4-1: Vista NIM DIT Layout

DIT No.	Modbus No.	Description
0-32	1-33	Standard DIT entries as per conventional DIT layouts
100	101	Good Message Counter Counts the number of good messages received since the counter was last cleared by the User. This counter is incremented when a double *carriage return, line feed* is received after start of Stream dump. Refer next section for details.
101	102	Error Message Counter Counts the number of bad messages received since the counter was last reset by the User. This counter is incremented under the following conditions (refer to next section for details): ♦ No valid element received after start of Stream dump ♦ No valid end of element string received after element handle received ♦ More than 16 elements received ♦ Invalid handle number received ♦ Invalid measurement value received ♦ No *line feed* received immediately after *carriage return* at the end of stream or element
102	103	Last Good Message Timer. Counts the seconds that have elapsed since the last good message was received. This timer is reset to zero on the receipt of each good message.

DIT No.	Modbus No.	Description
110 - 148	111 – 149	STREAM 1 DATA 39 DIT registers are allocated per Stream. The start DIT register number for each stream can be calculated as ([Stream Number] +1) x 39
110	111	Hours
111	112	Mins
112	113	Secs
113	114	Date
114	115	Month
115	116	Year
116	117	Current number of elements: Not all 16 measurement elements are printed for a stream so this number will represent the number of elements received in the last dump.
117	118	Upper 16 bits of signed 32 bit reading of the 1st measurement element read
118	119	Lower 16 bits of signed 32 bit reading of the 1st measurement element read
119	120	Upper 16 bits of signed 32 bit reading of the 2nd measurement element read
120	121	Lower 16 bits of signed 32 bit reading of the 2nd measurement element read
"	"	" " " "
117 + 2(n-1)	118 + 2(n-1)	Upper 16 bits of signed 32 bit reading of the nth measurement element read
118 + 3(n-1)	119 + 2(n-1)	Lower 16 bits of signed 32 bit reading of the nth measurement element read
"		" " " "
147	148	Upper 16 bits of signed 32 bit reading of the 16th measurement element read
148	149	Lower 16 bits of signed 32 bit reading of the 16th measurement element read
149 – 187	150 – 188	STREAM 2 DATA – Layout as per Stream 1
188 – 226	189 – 227	STREAM 3 DATA
227 – 265	228 – 266	STREAM 4 DATA
266 – 304	267 – 305	STREAM 5 DATA
305 – 343	306 – 344	STREAM 6 DATA
344 – 382	345 – 383	STREAM 7 DATA
383 – 421	384 – 422	STREAM 8 DATA
422 – 460	423 – 461	STREAM 9 DATA
461 – 499	462 – 500	STREAM 10 DATA
500 – 538	501 – 539	STREAM 11 DATA
539 – 577	540 – 578	STREAM 12 DATA
578 – 616	579 – 617	STREAM 13 DATA
617 – 655	618 – 656	STREAM 14 DATA

DIT No.	Modbus No.	Description
656 – 694	657 – 695	STREAM 15 DATA
695 – 733	696 – 734	STREAM 16 DATA
734 – 772	735 – 773	STREAM 17 DATA
773 – 811	774 – 812	STREAM 18 DATA
812 – 850	813 – 851	STREAM 19 DATA
851 – 889	852 – 890	STREAM 20 DATA

All remaining DIT registers are unused.

5 Interpretation of the Received Printer Data String

The following section describes the manner in which the M1584B Vista NIM module decodes the ASCII string it receives from the Vista GC. An example printout is provided below.

ASCII printer dump:

```
8:16:10  Fri   5 Feb 1999   Stream 03 crlf
crlf
  Regular Analysis Reportcrlf
crlf
  Name          RT      Conccrlf
#12METHAN      73.62    0.02907  PPMcrlf
#34ETHYLE      155.7    0.003663 PPMcrlf
#08ETHANE      179.2    0.005658 PPMcrlf
#64ACETYL      213.5    0.004505 PPMcrlf
#28PROPAN      288.0    0.0      PPMcrlf
#58 1.3C       441.8    0.008223 PPMcrlf
crlf
crlf
```

Please note that the handle numbers (e.g. #12…) are not defined numbers here. "*crlf*" means Carriage return, Line feed.

The printer dump comprises a number of components:

Start of Stream:	"8:16:10 Fri 5 Feb 1999 Stream 03"
Element 1 String:	"#12METHAN 73.62 0.02907 PPM"
Element 2 String:	"#34ETHYLE 155.7 0.003663 PPM"
Element 3 String:	"#08ETHANE 179.2 0.005658 PPM"
Element 4 String:	"#64ACETYL 213.5 0.004505 PPM"
Element 5 String:	"#28PROPAN 288.0 0.0 PPM"
Element 6 String:	"#58 1.3C 441.8 0.008223 PPM"
End of Dump :	"crlfcrlf"

Each Element string is decoded as follows (using Element 1 as an example):

Start of Element:	"#"
Element Handle:	"12" i.e. the first two digits after the "#".
Element reading:	"0.029" i.e. the "Conc" reading to three decimal places.
End of Element:	" " (a single space) OR *carriage return, line feed*

Assumptions about the received stream dump:

1. The serial communications is fixed at: 1200, 8, N, 1.
2. The START of a new printer dump for a given stream is a valid and date and time stamp followed by "Stream nn" where nn is a two digit stream number ranging between “01” and "20".
3. The word “Stream” may also be printed as “STREAM”.
4. The month reference can be either small letters, capital letters or both e.g. “feb”, “Feb” or “FEB”.
5. The END of the printer dump for a given stream is a 10 second timeout after the receipt of an element string.
6. Valid streams are between 1 and 20.
7. Valid elements will range between 1 and 16.
8. Elements of a particular do not come in a fixed order every time.
9. Measurement values will be read and formatted as 32 bit signed numbers where the most significant bit of the upper 16 bits indicates “-ve” if set.
10. Measurement readings will be read to 3 (three) decimal places.
11. Trailing zeroes after the decimal point are not included in the reading, so trailing zeroes must be implied and included in the DIT reading. E.g. if the printed output was “1.2” then the reading in the DIT will be 1200 i.e. two trailing zeroes added because the DIT reading always implies three decimal places.
12. The greatest number before the decimal point of the Concentration value will be 999.
13. There will always be an “RT” column.
14. There will always be at least two spaces after the last character of the element name and the first number of the RT value.
15. There will always be at least one space between the RT value and the Conc value.
16. There will always be at least one space between the last number of the Conc value and the unit of measure.
17. It is possible that there is no unit of measure at all which means the last number of the Conc reading may be followed by either a space or a *carriage return, line feed*.
18. The first character of an element name will always be “#“ followed by a 2 digit number. Thisis referred to as the “handle” for that element. E.g. “#01”.
19. After the handle there may still be additional characters (not more than 10 including thehandle). These characters are ignored.
20. It is possible to have decimal points, SINGLE spaces and numeric digits in the elementname.
21. There may or may not be a single space between the last number of the handle and the restof the name string e.g. a valid name string will be: #01 METH or #01METH.
22. The number in the handle (e.g. #01 handle number is 01) is to used as a FIXED elementnumber and is therefore also an index into the DIT table. For example a handle number of “02” means that the concentration value received applies to Element 02 and must be written to the DIT in its fixed location as defined in the previous section.
23. Handle numbers can range from 01 to 16.
24. Element readings are to be written into the DIT table according to the handle number of that stream.

If all measurement readings are not provided, then the remaining available DIT space must be filled with 0xFFFF’s (hex).

6 Specifications

Serial Port	
Type	Asynchronous RS232
Protocol	Serial
Baud Rate	1200 baud
Maximum cable length	15 meters (50ft) in RS232
Connection	9 pin sub-miniature DB9 (male).
Isolation to Logic	Tested to 1500Vac
Memory	
User Program	10k EEPROM
User Variables	10k Battery Backed RAM
Data Interchange Table	4000 16 bit Registers
Front Panel Indicators	
NIM OK (Green)	On = Healthy Flashing or Off = NIM faulty
Network Tx (Red)	On = Data is being sent out to the Gas Analyzer
Network Rx (Amber)	On = Data is being received from the Gas Analyzer
Environmental	
Operating Temperature	-25°C to +50°C (-13°F to +140°F)
Storage Temperature	-40°C to +70°C (-40°F to +158°F)
Humidity	95% max. at 40°C (104°F) non-condensing.
Protection	Electronics conformal coated
Logic Power Consumption	
From Logic Power Supply	250mA from 5Vdc max.
Weight	
Unpacked	390g (13.8oz)
Packed	480g (16.9oz)
Ordering Information	
M1584B	Maxiflex ABB Vista NIM

7 Technical Support

Lifetime technical support for all Omniflex products is available by email to techsupport@omniflex.com or via our online helpdesk service at http://www.omniflex.com/helpdesk

Alternatively, you can check the knowledgebase on the Omniflex web site at www.omniflex.com.

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