CONFIGURING MULTIPLEXES

Multitech MMV1616C: (This hardware only runs synchronously - we will NOT have to touch any dip switches on mux for modems I have suggested)
(We will be assuming a 2 mux circle (OFFICE + REMOTE) for examples below, each w/an external **Multitech MT1932BL** modem that will attach to Composite Link A)
Dip Switches should be: **DDDD UDDDDUDD DDDDDDDD** (for an 8-port MM1608 mux, with downline loading and remote access)

1. Attach a terminal(EIA/COM1 port) to the COMMAND port of the Mux, using a NULL-MODEM cable, making sure your Baud Rate is 19200.
2. On the terminal, type: <AT> and press <RETURN>. You should see: "OK" beneath what you've typed.
3. Type: <ATL> and press <RETURN>. You will see:

LOCAL CHANNEL PARAMETERS / NODE # 01

LINK CHAN A/B	SPEED	WORD	STP BIT	PAR	FLOW CONTROL	ENQ/ ACK	ECHO	PACE	PASS EIA	PASS XON	DEST CHAN	DEST NODE
01 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	01	01
02 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	02	01
03 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	03	01
04 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	04	01
05 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	05	01
06 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	06	01
07 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	07	01
08 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	08	01
09 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	09	01
10 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	10	01
11 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	11	01
12 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	12	01
13 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	13	01
14 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	14	01
15 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	15	01
16 A	19200	8	1	N	CTS	OFF	OFF	OFF	OFF	OFF	16	01

4. We will configure **OFFICE** Mux first, so type: <**ATSN1**><RETURN>
   - this has identified the office mux as Source Node#1

5. Next, type: <**ATC0B9600WL8SB1P0F2F4E0F5F8F10DN2**><RETURN>
   - you have defined:
     - C0 - update all channels
     - B9600 - Baud Rate = 9600
     - WL8 - Word Length = 8
     - SB1 - Stop Bits = 1
     - P0 - Parity = none

F2 - xon/xoff flow control
F4 - Enq/Ack On
E0 - Echo off
F5 - Pacing on
F8 - Pass EIA off
F10 - Xon pass through off
DN2 - Destination Node=2

6. Now display the channel parameters again to ensure your changes were reflected, by typing: <**ATL**><RETURN>
You should see the above listing change the baud rates to '9600', the FLOW CONTROL to 'xon/off', the PACE to 'xon' and DESTINATION NODE to '02' - for ALL channels. The message at the very top of the screen defining the Source Node# will remain '01'.

THE SOURCE NODE# CAN NOT MATCH THE DESTINATION NODE# AS THIS WOULD REPRESENT THE MUX COMMUNICATING ONLY WITH ITSELF (all data being sent to itself)

LOCAL CHANNEL PARAMETERS / NODE # 01

LINK CHAN	SPEED	WORD	STP BIT	PAR	FLOW CONTROL	ENQ/ ACK	ECHO	PACE	PASS EIA	PASS XON	DEST CHAN	DEST NODE	A/B
01	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	01	02	A
02	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	02	02	A
03	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	03	02	A
04	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	04	02	A
05	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	05	02	A
06	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	06	02	A
07	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	07	02	A
08	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	08	02	A
09	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	09	02	A
10	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	10	02	A
11	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	11	02	A
12	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	12	02	A
13	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	13	02	A
14	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	14	02	A
15	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	15	02	A
16	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	16	02	A

LOCAL CHANNEL PARAMETERS / NODE # 02

LINK	STP	FLOW	ENQ/	PASS	PASS	DEST	DEST

CHAN	SPEED	WORD	BIT	PAR	CONTROL	ACK	ECHO	PACE	EIA	XON	CHAN	NODE A/B
01	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	01	01 A
02	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	02	01 A
03	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	03	01 A
04	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	04	01 A
05	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	05	01 A
06	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	06	01 A
07	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	07	01 A
08	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	08	01 A
09	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	09	01 A
10	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	10	01 A
11	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	11	01 A
12	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	12	01 A
13	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	13	01 A
14	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	14	01 A
15	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	15	01 A
16	9600	8	1	N	XON/OFF	OFF	OFF	XON	OFF	OFF	16	01 A

7. Save parameters in memory by typing: <**AT&W**><RETURN>
   You will see: "STORING PARAMETERS. ONE MOMENT PLEASE" and then "OK"

8. Reset mux to begin utilizing parameters by typing: <**ATZ**><RETURN>
   You will see: "RESETTING MUX. ONE MOMENT PLEASE"

9. For printer ports, you may find that the PACE needs to be turned OFF. To change parameters on a single channel: (channel 5 in this example)
   <**AT**><RETURN> - to verify you are still communicating with mux
   <**ATC5F6**><RETURN> - to change pace on channel 5 to OFF
   <**ATL**><RETURN> - to look at the channel parameters again to verify your changes took place
   <**AT&W**><RETURN> - to save your changes in memory (which will be retained when powered off or unplugged)
   <**ATZ**><RETURN> - to reset mux to make changes take effect
   Most ALL peripherals will need to run at 9600 baud rates to ensure NO data loss; however, you should have no problems running your terminals (those that are not attached to anything else like barcode readers and scanners) at 19200. To change each of those from the above defined rate of 9600 to 19200, you would type:
   <**AT**><RETURN> - to verify you are communicating with the mux
   <**ATC11B19200**><RETURN> - to change the baud rate on channel 11 to 19200 from any other baud rate it may have been
   <**ATL**><RETURN> - to display the channel parameters to verify change was made how you expected
   <**AT&W**><RETURN> - to save parameters to memory
   <**ATZ**><RETURN> - to reset mux to make changes take effect

YOU WILL HAVE TO REMEMBER WHAT CHANGES YOU MADE TO THIS MUX AS THE REMOTE MUX WILL HAVE
TO LOOK EXACTLY THE SAME!!! (except for the source node# and the destination node #)

10. Now, to configure the **REMOTE** Multiplexer, follow the same steps above changing step#4 to: <**ATSN2**><RETURN>
    - you have now defined the Warehouse/Remote Mux as SOURCE NODE # 02

11. Change step#5 to: <**ATC0B9600WL8SB1P0F2F4E0F5F8F10DN1**><RETURN>
    - you have now changed all the channel parameters to reflect the same noted above with only the DESTINATION NODE different at
      '01'

12. Now make all the other changes you felt were necessary in step#9 above so that both muxes channels are configured exactly the same except for DESTINATION NODE - these should be opposite

CONFIGURING MODEMS for Multiplexes

Multitech MT1932BL:

For DIAL-UP Lines: Dip Switches: UUDU UUUD DUDD UUUD - do these first and then power on modem.
(Switches 8 & 12 must be down to program modems, but both up on Office modem when programming complete)

TO PROGRAM THE REMOTE/WAREHOUSE MODEM:

1. Attach a modem cable from the EIA/COM1 port on the terminal to the RS232C connector on the back of the modem.
   To verify modem and terminal are communicating, the TR (Terminal Ready) light should be on. You should also have the 19.2 light on

2. Type: <**AAAT**><RETURN>
   The modem should echo back to your screen with "OK", just beneath your typing.
   If you do not see anything and your lights noted above are on then your echo just may be off - still proceed to step#3!

3. Type: <**AT&F&W**><RETURN>
   - you have just restored the factory defaults to the modem and saved them in memory(which will be maintained when unplugged or
     off)

4. Now, let's program the **OFFICE** modem. This will be set up to receive a call from the Warehouse/Remote location. You will type:
   <**AAAT**><RETURN> - which should return an "OK" if you are communicating with the modem successfully. You will also see the SD and RD lights flicker as you type - to verify you are communicating with modem
   <**ATE0**><RETURN> - which turns OFF echo. You will NOT see the "OK" echo to your screen
   <**ATQ1**><RETURN> - which turns OFF the Command codes being sent
   <**ATS0=1**><RETURN>- which will set the number of rings before answering to 1
   <**AT&W**><RETURN> - which saves your changes in memory and overwrites the factory reset and save we did in Step#3

5. Now turn off modem and put switches 8 & 12 back in the UP position to function correctly with/when muxes attached.

You are done with the OFFICE modem!

TO PROGRAM THE REMOTE/WAREHOUSE MODEM:

6. Follow above steps again, including dip switch settings.
   (Muxes only operate in Synchronous mode with an external composite link (external modem))
   To program, type:
   <**AAAT**><RETURN> - which should return an "OK" if you are communicating with the modem successfully. You will also see the SD and RD lights flicker as you type - to verify you are communicating with modem
   <**ATE1**><RETURN> - which turns echo ON. You may or may not see the "OK" echo to your screen
   <**ATQ0**><RETURN> - which turns ON the Command codes being sent. You should now see what you type and receive a response of "OK"
   <**ATDT**phonenumber**N0**><RETURN> - which will store the number in location 0 for our autodialing of Office modem
   <**AT$D1**><RETURN>- which will turn ON the Autodialer causing this modem to autodial the Office when on and mux is then turned on)
   <**AT&W**><RETURN> - which saves your changes in memory

7. Now turn off modem and put dip switches 8 & 12 back in the UP position to function synchronously, as the muxes require. Also put switch 5 in the opposite position as the other modem, which will be DOWN for this Remote/Warehouse modem – to disable auto-answer

You are done with the REMOTE modem!

The following should already be set correctly, but to display the internal parameters of the modem, you would type: <**ATL5**><RETURN>
You will see:

(for office modem - dial-up)
B1 E0 M1 Q1 R0 V1 X0 &E1 &E5 &E6 &E8 &E10 &E13 &E15 $E0 %C0
$MB19200 $SB19200 $BA0 &W0

(for remote modem - dial-out)
B1 E1 M1 Q0 R0 V1 X0 &E1 &E5 &E6 &E8 &E10 &E13 &E15 $E0 %C0
$MB19200 $SB19200 $BA0 &W0

<ATL6><RETURN> would show you the value of the "S-REGISTERS": (on both modems)

S0	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	**S9**	**S10**	**S11**	**S13**	**S18**	**S19**	**S24**	**S25**
001	043	013	010	008	002	045	002	006	007	070	037	030	001	020	000

<**ATL7**><RETURN> would show you all ADDITIONAL parameters:

(for office modem):
$A0 &A0 #A0 &B0 &BS1 &C1 $D0 &D2 #DB0 $EB0 %E1 %E4 #F2 $F1 &G0 #L0 $MI0 &M0 &P0 #P0 &Q0 $R0 &R1 &RF1 &S1
$SP0 &SF0 &T5 #T1 $T1 $V0 $V6 $VD0 &X0 Y0 $MB19200 $SB19200 $BA0 &W0

(for warehouse modem):
$A0 &A0 #A0 &B0 &BS1 &C1 $D1 &D2 #DB0 $EB0 %E1 %E4 #F2 $F1 &G0 #L0 $MI0 &M0 &P0 #P0 &Q0 $R0 &R1 &RF1 &S1
$SP0 &SF0 &T5 #T1 $T1 $V0 $V6 $VD0 &X0 Y0 $MB19200 $SB19200 $BA0 &W0

To list numbers stored in speed dialer:
<**ATL**><RETURN>

NOTE: This programming is assuming that the Remote site will autodial the Office modem each day for processing to begin.

When the remote site is ready to begin processing the next day, they will FIRST turn on the MODEM.
THEN, they will turn on the MUX, which will send a signal to the modem causing it to autodial the number stored in its autodial memory location zero (which we already programmed above).

The remote site will logoff/turn off all its terminals, printers and all other peripherals *each night* BEFORE turning off its mux and modem. (The mux and modem can be turned OFF in ANY order.)