Automatic Vehicle Monitoring (AVM) Operating and Instructional Manual.

MTA

Signpost

Location code

Route monitoring & control messages

Driver & vehicle information to Fleet Operations Control

Base station

Data processing

Control console
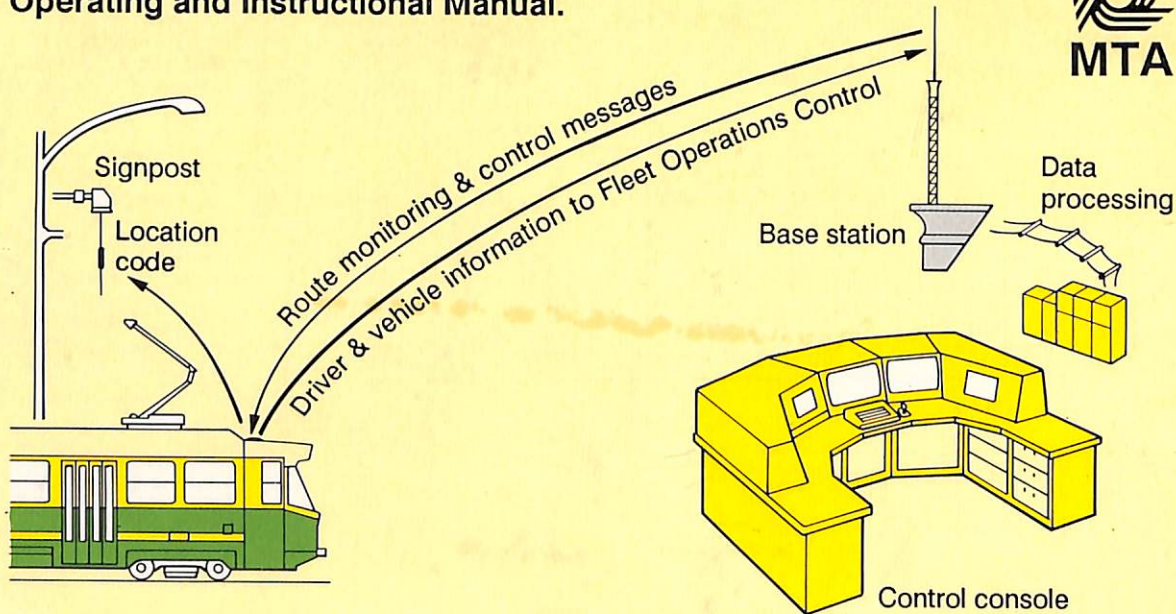
Introduction.

Automatic vehicle monitoring (AVM) is a system that makes use of the latest developments in computer and radio communication technology to monitor and further improve bus and tram operation in the Melbourne metropolitan area.
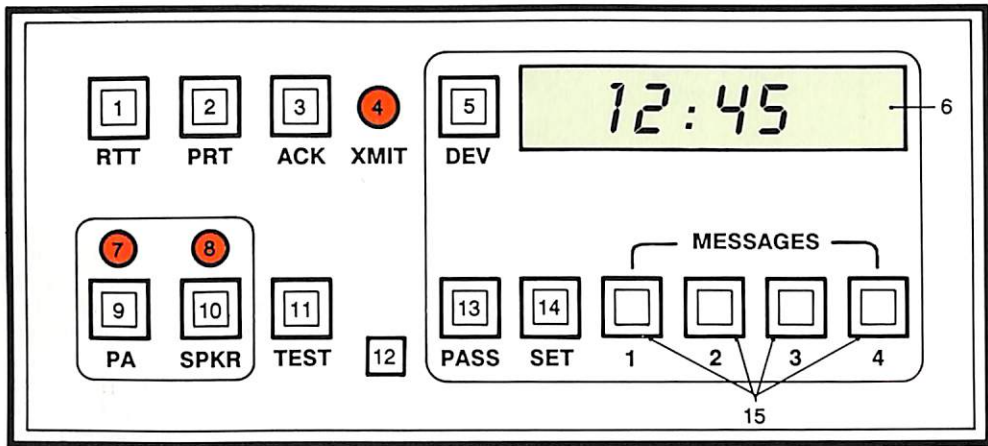
The system enables fleet operations control (FOC) to keep Drivers and if necessary, passengers, up to date with what is happening if there are delays or other traffic problems on their route.

In addition to the trafffic control aspect of the system, the Driver has the protection of a silent alarm system (SAS) which, when activated, allows the FOC operator to monitor the emergency and take the necessary action to resolve the situation.

Contents: Page

AVM Control Head.

1. ☐ **RTT** Request to talk button. Press when wishing to communicate with Fleet Operations Centre (FOC). Use for all routine requests for communication.

2. ☐ **PRT** Priority request to talk button. Use only in urgent situations. e.g. accidents, requests for ambulance. etc.

3. ☐ **ACK** Acknowledge button. Push to advise the Fleet Operations Centre (FOC) that a display message has been sighted and understood. e.g. **CALL**.

4. 🔴 **XMIT** Warning light. When lit, indicates that AVM is in communication with FOC.

5. ☐ **DEV** Deviation button. Press this button to find out how early or late the vehicle is with respect to its schedule.

6. Display panel. Displays (In digital form) messages that have been sent by FOC. At all other times, displays time of day.

7. & 8. Driver's and public address speakers

🔴 indicator lights. Comes on when respective button is pressed.

9. ☐ **PA** Public address system button. Press this button to activate PA system. Talk to passengers through hand set.

10. ☐ **SPKR** Driver's speaker button. Press to hear message over speaker and handset.

11. ☐ **TEST** Test button, press this button and control head will self test all functions.

12. ☐ Light sensing device. Has no external function.

13. ☐ **PASS** Passenger count button. Press this button to display and update current passenger count.

14. ☐ **SET** Passenger count set button. Press to set passenger count, e.g.1/3, 2/3, FULL or empty.

15. ┌─ MESSAGES ─┐
☐ ☐ ☐ ☐
1 2 3 4
Messages buttons. Reserved for future use.

Preparing System for Operation.

Note: To ensure that defective vehicles are not assigned, the following procedures are to be adopted by all Drivers to enable all scheduled runs to be automatically monitored.

(1) Carry out current vehicle testing and checking procedures to ensure vehicle is ready for service.

(2) Once sure that the vehicle is ready for service, then - and only then - insert the vehicle AVM run card in its holder to assign the vehicle for automatic monitoring by FOC.
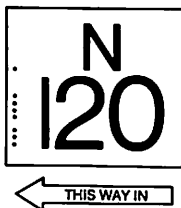
Run Card.
Insert in holder so that what is seen here, is what is seen through holder frame.
Note: Coded edge will be covered by holder frame.

Action	Result
1. Insert run card.	$\boxed{CH\ OFF}$ Control head off appears for approx 5 secs. before the display reverts to time.
2. Press: ▢ TEST	$\boxed{EMER.\ TEST}$ Emergency test appears after test pattern.
3. Activate emergency switch	$\boxed{EMER.\ OK}$ Above display appears if emergency switch is OK, if not displayed after activating switch a second time: switch is defective:obtain another vehicle.
4. Test completed, switch OK.	$\boxed{12:45}$ Display reverts to time of day

Note: Control head off, is an internal signal and does not mean that system is not working, system is *live* as long as run card in and power available when system is being prepared for operation.

Cautionary Notes.

1. Drivers must wait for $\boxed{EMER.\ TEST}$ display before activating SAS (Silent Alarm Switch).

2. If the run card is inserted before the testing and checking procedures have been carried out and the vehicle is eventually found to be unserviceable, the result will be: assignment of a defective vehicle and the inability of FOC to monitor the replacement vehicle, consequently, the controller will be unable to respond to a SAS signal.

3. When running into Depot, make sure that the run card is removed from the vehicle and returned to the rack provided. Failure to do this will result in other unassigned vehicles being on the road.

4. If a run card is lost or stolen, report the loss or theft immediately to the Depot Manager.
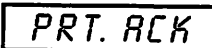
How To Use the System.

A. Voice communication. (Driver initiated)
Note: RTT button is used when a Driver wishes to communicate with FOC for changeovers etc. It is used for all routine communications.

Action	Result
1. Press: ▢ RTT	(a) $\boxed{RTT.\ ACK}$ Request to talk acknowledged will be displayed when FOC is aware of call. Do not pick up handset yet. (b) $\boxed{TALK}$ When talk displayed, pick up handset, press button to talk, release to listen.
2. Press: ▢ SPKR	Option to 1(b) above. Allows Driver to listen to FOC Operator through Driver's speaker as well as through handset.

How to use the system. (continued)

Action	Result
3. Press: □ PRT	(a) `PRT. ACK` Same procedure as for RRT except that PRT has priority over all other calls on Operator's screen. (b) `TALK` Pick up handset when talk appears on display.

Note: Voice contact is only maintained for approximately 30 seconds from the time the talk button was last pushed. To maintain voice contact for more than 30 seconds, it will be necessary to push the talk button again a few seconds before or after the period ends. If voice contact is lost through not pushing the talk button soon enough, the RRT or PRT procedure will have to be repeated.

B. Voice communication. (FOC initiated)
Note:
Only 2 messages are used when the FOC Operator wants to establish voice contact with the Driver: **TALK** and **CALL.**

Action	Result
1. `TALK` Accompanied by 5 second continual *beep*.	Driver picks up handset, presses button and talks to FOC.
2. `CALL` Appears if no response to TALK message.	Do not pick up handset. Press RTT button and await TALK message, then pick up handset and talk to FOC.

Note:
CALL, as above, is usually only sent by FOC. If it is assumed that the Driver has momentarily vacated the vehicle or Driver's seat.

C. Tactical Messages. Messages sent by FOC and displayed on the control head display panel. Each message is an instruction which requires a specific response from the Driver.

Message	Result
1. START	Recommence journey after a WAIT or similar message.
2. TURN SHRT	Turn, short of next scheduled stop.
3. OBS SCHD	Observe schedule to journey's end.
4. WAIT	Hold bus till START message given.
5. DSCH PAS	Discharge passengers from vehicle.
6. NON STOP	Proceed to destination without stops other than required by law.
7. SKIP STP	Do not stop.
8. PASS CNT	Update passenger count
9. CONT TRP	Continue trip as scheduled.

Note: **SYS FAIL.** This message advises the Driver that there is a system failure in the vehicle equipment. If this **SYS FAIL** message appears on the control head display, notify the FOC Operator as soon as possible. Refer to summary of messages for other displays that may be seen on control head.

D. Emergency alarm. (SAS) This switch is to be used in emegency situations only such as robbery or assault. If such a situation arises and the switch is activated, no voice communication will be possible via the handset, until the FOC Operator clears the alarm at the end of the emergency. However, during the emergency, the FOC Operator will listen in on the emergeny and take appropriate action.

E. Public address (PA) system. Drivers can make internal PA announcements by pressing the PA button (light comes on) picking up the handset and speaking into it while holding the TALK button depressed. FOC can initiate a PA message to a particular vehicle or group of

vehicles via either the Driver's speaker (Driver's benefit only) or all speakers (Passenger's and Driver's benefit). During FOC initiated PA messages, the Driver does not have to operate or press any buttons.

F. Passenger count. This is a tactical message and is initiated by FOC. PASS CNT will appear on display panel and when passenger load has been assessed, Driver will respond as follows:

(1) Press PASS button.

(2) Press SET button. This will change display to **1/3. 2/3, FULL** or **EMPTY**. Continue to press SET button until desired passenger status is displayed.

(3) When the desired status is displayed, press the PASS button to send the message to FOC. Display will then revert to time of day.

G. Run card. The run card is inserted in its holder with coded edge towards the front of the vehicle and number clearly visible in the frame. If RUN CARD is displayed on the control head, it means that either the card is not in properly or has not been indicated.

H. Manual radio. If there is a FOC computer problem, the system will go to manual radio communication and MAN RAD will be displayed on the control head, under this condition, the control head buttons become inoperative but voice contact is still maintained as follows:

   Driver to FOC:
   Pick up handset, depress talk button and speak. No other buttons need be pressed.

   FOC to Driver:
   Message will automatically come through Driver's speaker.

Notes.
1. During MAN RAD operation the Driver's speaker, red indicator light will be on and the control head display will alternate between time of day and MAN RAD at 5 second intervals.
2. Some Driver's speakers have a toggle switch on the base. If during MAN RAD operation, static or interference occurs, operate this switch to cut in a filter. Switch back when MAN RAD operation ends.

Summary of messages.

Messages other than tactical that can be expected to appear on control head display.

Message	Meaning
1. RTT ACK	Appears after RTT button is pressed. Informs Driver that request to talk has been received by FOC. Note: Expect to see message TALK within 15 seconds of RTT ACK appearing on display.
2. TALK	Advises Driver that handset can be taken off hook and conversation with FOC commenced. Note: Press button on handset to talk, release to listen.
3. PRT ACK	Appears after PRT button is pressed informs Driver that a priority request to talk was received. Note Expect to see message TALK within 15 seconds of PRT ACK appearing on display.
4. Dev ± MIN	Appears after DEV button is pressed. Informs Driver of schedule deviation in +/- minutes.
5. RUN CARD	Appears to advise Driver that the run card reader has no card inserted or is not inserted correctly.
6. RCR FAIL	Run card has failed. Inform FOC of failure.
7. MSG ACK	Informs Driver that FOC has received message. If no response to message sent after 40 seconds: press button again.
8. CALL	Instructs Driver to establish voice communication with FOC.
9. CH OFF	Informs Driver that control head is no longer operational. If this message appears at other than preparation for operation, advise FOC.
10. EMER OK	Appears during test mode to indicate successful SAS switch activation.
11. EMER TEST	Appears during test mode and advises Driver that SAS switch can now be tested.
12. MAN RAD	Informs Driver of loss of data communication and system has switched to voice channel. Note: Monitor voice channel for instructions. Do not try to talk on handset unless there is an emergency or instructed to do so.
13. OFF HOOK	Advises Driver that handset has been left off hook for more than 30 secs. If OFF HOOK displayed, return handset to ON HOOK position or depress momentarily if in MAN RAD mode.

Contact Telephone Numbers.

Fleet Operations Control.

From track phones:-

Tel: 3384

or

Tel:3385

From public phones between the hours of 4.35am and 1.30am:-

Tel: 610 32384
Tel: 610 3385
Tel: 419 9396

Seven days a week.

Carlton Control.

(Available between 1.30am and 4.30am)

Tel: 610 3424
Tel: 347 3349

When you want to ring your DM Ring direct:-

[DM] **Tel: 610** . . . . .
[DS] **Tel: 610** . . . . .
[REV] **Tel: 610** . . . . .

For information you cannot supply, advise the public to ring the Transport Information Centre between 7.30am and 8.30pm Mon. to Sat. inc. and 9.15am and 8.30pm on Sundays:-

Tel: 617 0900

Alphabetical Index.

Notes & Amendments.