Part B Operation

This part contains operating information for the TA703-01-0000 Change Over Module. It includes the following information:

1 Front Panel Functions

The Change Over Module front panel has a series of LED indicators, switches, and preset resistors.

Note: The upper Base Station is called Base A, the lower Base Station is Base B.

1.1 Switches

Reset

A single poll, momentary push button switch which clears all alarms, returns the unit to its normal operating state, and resumes alarm sensing.

On pressing the reset button, all LEDs (except the green TX and RX LEDs and the red Battery Alarm LED) illuminate for one second. After this, all LEDs resume normal operation.

Base Select

Base Select switch selects and indicates the active T800. Base station selection depends on the selected mode and operation. In Mode A, the front panel Base Select switch, (or remote select) can be used to select the active base station.

Note: Mode B functions override this switch.

Note: In Mode B this applies to T800 Receiver only.

1.2 LED Indicators

Two identical sets of LED indicators provide the following signals for Base A and Base B.

LED	Function
Active	Indicates the active transmitter
Stdby	Indicates the standby transmitter
TX	Indicates this transmitter has been keyed
RX	Indicates the gate condition of this receiver
FWD	Indicates a Forward Power error has occurred
REV	Indicates a Reverse Power error has occurred
Mute	Indicates a Rx mute error has occurred
RSSI	Indicates an RSSI error has occurred
PSU	Indicates a PSU error has occurred

A single red LED labelled **Batt Low** indicates battery power status for the system.

1.3 Preset Resistors

FWD, **REV**, **PSU** and **Batt Low** indicators each has front panel access to a preset resistor. While default levels are factory set, these resistors can be adjusted to suit individual system requirements.

2 Standard Operation

Note: Base A is the normally active T800 and Base B is the standby, unless stated otherwise.

2.1 Power Up

On power up, all LEDs (except green **Tx** and **Rx** LEDs and red **Batt Low** LED) light for one second.

After one second, only one **Active** and one **Stdby** (Standby) LED remains on, depending upon the Base switch setting. For example, when the **Base** switch is set to A, Base A will show its **Active** LED and Base B will show **Stdby**.

2.2 Transmitting

When a Tx-key is received via the 4 wire E&M connector, the green **Tx** LED for the active T800 will turn on.

2.3 Receiving

When either receiver receives a carrier, the Rx Gate signal turns on the green **Rx** LEDs on the **Active** and **Stdby** T800s. (This is because the receivers operate in parallel.)

Note: In repeater mode, both **Rx** LEDs are on, but only **Tx** LED of the active T800.

2.4 Change Over

At change over, one red LED (**FWD, REV, PSU, RSSI, MUTE**) of Base A lights to indicate the failure, and the unit changes over to Base B. Base B **Active** LED lights and its **Stdby** LED turns off. Base A **Active** and **Stdby** LEDs are off.

2.5 Reset

Base B will remain active until **Reset** input is received, locally or remotely. Once reset, the module's internal microprocessor returns operation to Base A and recommences its scan protocol for error conditions.

Note: This does not reset **Batt Low** indicator

2.6 Base Selection - Mode A Only

The **Base** switch on the front of the module allows a technician to select which T800 acts as the active one, by pointing the switch toward A or B, then pressing the reset button. The **Active** and **Stdby** LEDs swap when the **Base** switch is toggled.

3 Change Over

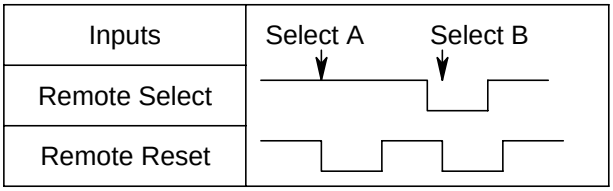
3.1 Manual Change Over - Mode A

On power up, the active base is determined by the position of the Base Select switch on the front panel of the module. Remote base selection is ignored until the first negative transient on the remote reset input.

Change over is either:

- via the front panel with the base select switch, followed by a press of the reset button
- via the remote select and the remote reset input. Refer to section ?? for timing and logic level details.

Both inputs have pull up resistors.



Mode A Test Function

When the carrier button on the standby T800 receiver or transmitter is pressed, the Change Over Module changes over for the duration of the press, provided the active transmitter is not busy. Alarm indicators and outputs are not latched.

When the standby base station Tx-Key is pressed, the module changes over and remains changed over until it is reset by the reset button on the front panel.

Note: If the test function detects a fault on the standby base station, the fault is indicated, but the base is no longer available as a standby until the fault is repaired and the module reset.

3.2 Manual Change Over - Mode B

Note: In this mode the front panel Base Select switch has no effect.

On power up the Change Over Module always defaults to Base A receiver. On presence of a signal, the module selects the receiver that unmutes first. No dedicated change-over input or key is available.

When the Change Over Module raises a Tx alarm, the operator must change over to the standby transmitter manually, via the Remote Select input.

Remote Select selects the transmitter

- RTS high: Active transmitter is in Base A
- RTS low: Active transmitter is in Base B

3.3 Automatic Change Over - Mode A

If the active T800 base develops an error resulting in an alarm, the Change Over Module changes over to the standby base. This change over is final. If the new active base develops an alarm condition, the module will indicate the fault but will not switch back to the original base. A local or remote reset is required.

In Mode A, the Change Over Module automatically changes over under any one of the following conditions:

- PSU monitor indicates a failure
- FWD PWR monitor indicates a failure
- RVS PWR monitor indicates a failure
- RSSI error detection indicates a failure
- RX-Gate monitor indicates a failure

provided there is no PSU error on the standby T800.

Conditions for each of these failure mechanisms is described in **Fault Monitoring** on B9.

3.4 Automatic Change Over - Mode B

Note: In Mode B there is no automatic change over of the T800 transmitters.

If the active T800 receiver develops an error resulting in an alarm, the Change Over Module changes over to the standby receiver. This change over is final. If the newly active receiver develops an alarm condition, the module will indicate the fault, but will not switch back to the original active base until the system receives a local or remote reset.

In Mode B, the Change Over Module automatically changes the active receiver under either one of these conditions:

- RSSI error (A) detection indicates a failure
- RX-Gate (A) monitor indicates a failure

Conditions for each of these failure mechanisms is described in **Fault Monitoring** on B9.

4 Fault Monitoring

The TA703-01-0000 Change Over Module monitors fault conditions in the T800 Base Stations by polling the equipment at predetermined intervals. A predetermined number of consecutive faulty samples is required to activate an alarm and change over. The operating mode determines both polling intervals and consecutive samples as follows:

Mode	Polling	Alarms Activate
Mode A	Once every 20mS	After 8 consecutive fault samples.
Mode B	Once every 10mS.	After 4 consecutive fault samples.

4.1 PSU Monitor

Errors on either active or standby T800 supply lines are indicated by the front panel indicators and signalled on the rear panel alarm connector. The alarm remains active until the front panel reset switch or remote reset signal is manually activated.

Both sides are monitored simultaneously. [Previous versions of the Change Over Module only monitored PSU levels for the Base station that was currently active].

The alarm activates after the mode-specified consecutive samples indicate PSU voltage has fallen below the preset threshold.

The preset level is set on the front panel. Factory setting is 10.8V.

4.2 Forward Power Monitor

Forward power is monitored for the active transmitter only, and only while the transmitter is keyed. FWD-PWR signals are polled at the mode-specific alarm polling interval. The alarm activates after mode-specific consecutive samples indicate that forward power voltage has fallen below the preset threshold, or that a forward power alarm has been received from the active T800. The alarm remains active until the front panel reset switch or remote alarm clear signal is manually activated.

The preset level is set on the front panel.

4.3 Reverse Power Monitor

Reverse power is monitored for active transmitter only, and only while the transmitter is keyed. The REV-PWR signals are polled at the mode-specific alarm polling interval. The alarm activates after mode-specific consecutive samples indicate that reverse power voltage has exceeded the preset threshold, or that a reverse power alarm has been received from the active T800. The alarm remains active until the front panel reset switch or remote reset signal is manually activated.

The preset level is set on the front panel.

4.4 RSSI Error Detection

The output alarm activates after mode-specific consecutive samples (see table above) indicate an absolute RSSI difference of greater than 6dB.

- If RSSI from the non-selected Rx receiver is 6dB greater than that of the active T800

receiver, RSSI alarm indicates the active receiver.

- If RSSI from the selected Rx receiver is 6dB greater than that of the standby T800 receiver, RSSI alarm indicates the standby receiver.

RSSI signals are polled at mode-specific alarm polling intervals only when the Rx gates are open and RSSI levels are below a preset level of -75 to -70dB. Above this level the signal strength is too high to effect noise.) The monitor is reset when either T800 Rx gate opens.

4.5 Rx-Gate Monitor

Mute signals are polled at mode-specific alarm polling intervals. The alarm activates after mode-specific consecutive samples indicate discrepancies between the mutes of the two T800 receivers.

- If the active T800 receiver is muted and the standby T800 receiver is unmuted, the module indicates the active receiver
- If the standby T800 receiver is muted and the active T800 receiver is unmuted, the module indicates the standby receiver

Note: The gate opening level of the active receiver is typically set 0.5 to 1dB more sensitive than the gate opening level of the standby receiver.

4.6 Combined Rx Gate - Mode B only

This is a hardware function. Rx-Gate signals from both T800s are combined so that activity on either generates an interrupt to the microprocessor to determine if receiver change over is required.

4.7 Combined RSSI and Mute Alarm - Mode B only

An RSSI or RX-Gate alarm on either the active or standby T800 receiver will cause the combined RSSI and Mute alarm (PL3 pin 13) to be activated.

An RX-Gate error on the active receiver will cause an alarm condition on both RSSI (active and RX-Gate (active) alarms.

An RX-Gate error occurring on thestandby receiver will cause an alarm condition on both RSSI (standby) and RX-Gate (standby) alarms.

5 Base Station Selection

Note: Throughout this manual, the upper T800 is called Base A, the lower T800 is Base B. Base A is the normally active T800 and Base B the standby, unless stated otherwise.

Base station selection depends on the selected mode and operation. In Mode A the front panel Base Select switch (or remote select) selects the active base station. In Mode B this must be done remotely and the front panel Base Select is overridden.

5.1 Selection Following Error Condition - Mode A

When an error condition is detected on the active T800, the transmitter and receiver pair will automatically switch the standby pair. When the system changes over, the source of the fault is indicated on the Change Over Module front panel indicators via the rear panel alarm connector.

Note: The faulty base station equipment will not be available as standby but alarm monitoring continues on both Base Stations.

5.2 Selection Following Error Condition - Mode B

When an RSSI or mute error condition has been detected, the system will automatically switch to the fault-free receiver. This condition will remain until the front panel reset switch or a remote reset signal is manually activated.

Note: RSSI or mute errors will not affect transmitter selection.

There is no automatic switching resulting from a PSU, FWD or RVS fault condition.

