



# Tracktronics Australia

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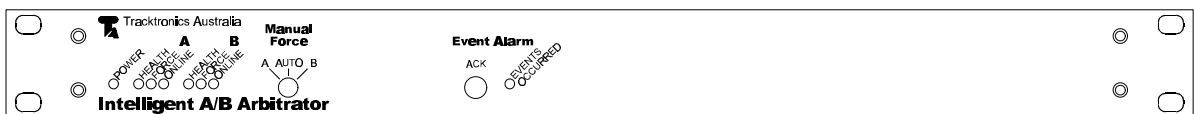
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## Product Specification

### Intelligent A/B Arbitrator

Rev E

3 June, 2008





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### 1. Brief Description

The Intelligent Change-Over Unit provides a method of arbitrating between 2 identical sets of equipment in a dual-redundant system, and controlling which set is allowed to be online (or active).

The 2 sets of equipment (denoted A and B) must provide a Healthy Voltage input which must either toggle or else be constantly asserted to show that the respective set is functionally capable of being online.

In addition to the Healthy Inputs, a set of Force inputs are available which allows external equipment / a remote user switch etc. to force the change-over unit to select a certain set regardless of the Healthy inputs. The Force input can be either a toggling or a constantly asserted input.

Finally, a manual switch located on the front panel of the unit provides a final level of arbitration of which side should be selected online.

Front panel Diagnostic LEDs show the current state of the Healthy and Force inputs, and also shows which set (A or B) is currently on-line

The Change-over unit is capable of A/B switching of up to 32 lines with a maximum switching level of 50V 1A. Clean-contact relay switching is used with up to 500Vdc of isolation present between line to line, and line to chassis.

The unit is designed to be mounted in a 19" rack-mount system and is 1RU in size. All external connections are via the rear panel of the unit.

Power supply options for the unit include 110-240Vac, 12Vdc, 24Vdc and 48Vdc at 25W maximum.

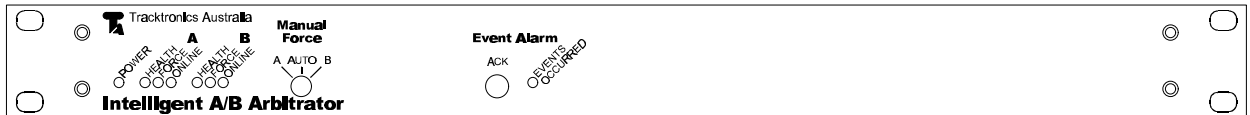


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### 1.1 Front Panel



#### 1.1.1 Status LEDs

Power	- Green 3mm	- indicates presence of internal +5VDC supply rail
A Health	- Yellow 3mm	- Lit when A Healthy input is driven.
A Force	- Yellow 3mm	- Lit when A Force input is driven.
A Online	- Green 3mm	- Lit when A lines are selected
B Health	- Yellow 3mm	- Lit when B Healthy input is driven.
B Force	- Yellow 3mm	- Lit when B Force input is driven.
B Online	- Green 3mm	- Lit when B lines are selected

#### 1.1.2 Manual Force Switch

This switch allows the user to manually select either A, B or Automatic control of the line arbitration.

#### 1.1.3 Event Alarm Acknowledge

A 3mm Yellow LED flashes the number of times that a change-over event has occurred since the last user acknowledgement. The user acknowledges any change-over events by momentarily pressing the associated front panel push-button.

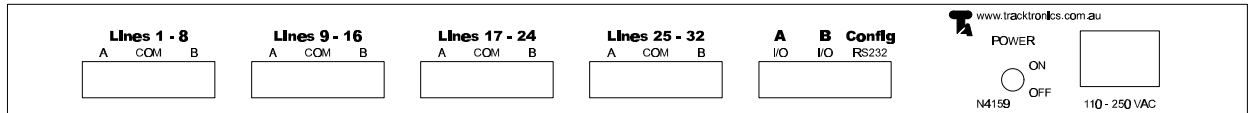


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## 1.2 Rear Panel



### 1.2.1 Line Connectors

The Line Connectors are broken into 4 sets of 8 lines. Each set comprises of 3 RJ45-8 connectors, with an A, COM, and B connector.

### 1.2.2 A I/O and B I/O Connectors

The Health and Force inputs are opto-isolated voltage-activated inputs with an input range of 5 - 24Vdc. The RJ45-8 connector is used for the following inputs : Health A, Health B, Force A, Force B.

#### Connector

RJ45 8P8C Socket

<u>Pin</u>	<u>Signal</u>	<u>Direction</u>
1	+12Vdc Isolated Power Supply (1W max)	Output
2	Health +V (+4 - +24Vdc)	Input
3	Force +V (+4 - +24Vdc)	Input
4	Ground Common for pins 1,2,3	
5	This Side Online Relay Contact	
6	This Side OK Relay Contact	
7	Other Side OK Relay Contact	
8	Relay Common for pins 5,6,7	

The A I/O and B I/O circuitry is completely isolated from each other and all other internal circuitry to a isolation level of +500Vdc. Each connector has 2 voltage-activated inputs (Health and Force) which can be asserted via a connection to an external voltage source, or via a connection to the isolated power supply output provided. The Health & Force inputs require a 4.0V minimum input voltage for activation and present a 2.4k ohm input impedance.

3 voltage-free clean relay contacts short to the Relay Common when activated provide a status output to the controlling equipment.



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### 1.2.3 Status Output

The status outputs consist of 3 sets of clean-contact relay outputs to provide an external indication of the status of the change-over unit.

The RJ45-8 connector is used for the following outputs: A OK (2 pins - contact closes when A is healthy), B OK (2 pins - contact closes when B is healthy), A / B Online (3 pins - A, B + Common - contact closes to reflect currently selected side).

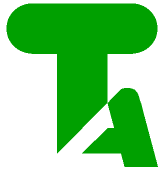
### 1.2.4 Config Port

The Config Port is a RS232 DCE port which is used to configure some of the time-out options etc.

#### Connector

RJ45 8P8C Socket

<u>Pin</u>	<u>Signal</u>	<u>Direction</u>
3	Chassis Ground	
4	Transmit Data	Input
5	Receive Data	Output
6	Signal Ground	



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### 1.3 User Configuration

To configure the unit, an RS232 connection must be made between the Config Port on the rear panel and a laptop / computer RS232 COM port.

The user protocol is as follows:

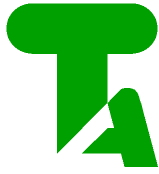
Protocol	VT100
Baud Rate	9600 bps
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None

Upon pressing the ESC key, the following screen will appear:

```
--- Intelligent Arbitrator - v0.6B - 12-05-2003 - Main Menu ---  
  
1. View Current Status  
2. View/Edit Configuration  
3. View/Edit Real time clock  
4. View Event Log  
5. Restore Factory Default Configuration  
  
Enter Option:
```

**Figure 1-1** Screen snapshot of Main Menu

To proceed to any of the next screens, simply press the number corresponding to the required selection.



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### 1.3.1 Status Screen

```
--- Intelligent Arbitrator - v0.6B - 12-05-2003 - Status ---

--- A Side ---
Health Pulses      0
Health Raw OK     NO
Health OK          NO

Force Pulses      0
Force Raw OK     NO
Force OK          NO

--- B Side ---
Health Pulses      0
Health Raw OK     NO
Health OK          NO

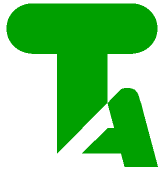
Force Pulses      0
Force Raw OK     NO
Force OK          NO

--- Arbitration Settings ---

Current Online:   A SIDE
Arbitration Period: 5 secs

Press any key to exit....
```

**Figure 1-1** Screen snapshot of Status Screen



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### 1.3.2 View / Edit Configuration Screen

```
--- Intelligent Arbitrator - v0.6B - 12-05-2003 - Configuration ---  
  
--- Health ---  
Minimum Pulses (0 if DC input) : 3  
Maximum Pulses (0 if no maximum): 0  
Minimum Warm-up Arb periods ; 2  
Maximum Warm-down Arb periods : 2  
  
--- Force ---  
Minimum Pulses (0 if DC input) : 3  
Maximum Pulses (0 if no maximum): 0  
Minimum Warm-up Arb periods ; 2  
Maximum Warm-down Arb periods : 2  
  
--- Arbitration ---  
Number of secs per Arb period : 5 secs  
OK relay mimics Raw Health : NO
```

**Minimum Pulses** is the minimum number of health / force pulses that need to be received within an arbitration period to be considered OK. If set to zero, then the DC level of the Health/Force input is used to determine if the input is OK.

**Maximum Pulses** is the maximum number of health / force pulses that allowed to be received within an arbitration period. If too many pulses are received, then the Health/Force input is deemed to not OK.

**Minimum Warm-up Arb period** is the period of time that an input must have a continuous healthy input state, before the Health / Force input is deemed to be officially healthy.

**Minimum Warm-down Arb period** is the period of time that an input has no health/force input before it is determined to be officially 'unhealthy'.

**Number of Secs per Arb period** is the number of seconds the Arbitrator waits before making an Arbitration decision. Longer periods are suited to slow pulse rates, but results in a longer response time before the Arbitrator switches from one side to the other.

**OK Relay mimics Raw Health** means that the OK relay output of the Arbitrator follows the Raw Health input state, rather than the time delayed 'official' health state.



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## 2. Layout, Size, and MTBF figures

### 2.1 Size

1RU high by 19" rack mount, approx. 250 mm in depth.

### 2.2 Environmental Conditions

Operating Temperature      0degC to 60degC  
Relative Humidity            0 to 95% non-condensing

### 2.3 Mean Time Between Failures

Product No.	Product Desc.	MTBF
1100-002-240A	A-B Intelligent Arbitrator 240Vac supply	77,000 hrs



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### 3. Product Part Numbers

#### 3.1 Standard Unit Configuration

TA Part Number	Unit Description
1100-000-xxx	32 switched lines (std)
1100-001-xxx	Nil switched lines - Status relay output only
1100-002-xxx	4 RS232 serial ports - Transmit lines switched only - Receive lines commoned together.
1100-01x-xxx	32 switched lines using latching relays

#### 3.2 Power Supply Options

The part number suffix refers to the power supply option required.

TA Part Number	Unit Description
1100-xxx-12D	12VDC nominal (9 - 18Vdc input) 25W max. (std)
1100-xxx-24D	24VDC nominal (18 - 36Vdc input) 25W max.
1100-xxx-48D	48VDC nominal (36 - 72Vdc input) 25W max.
1100-xxx-240A	110-240VAC nominal (90 - 250Vac input) 25W max.

### 4. Document Revisions

Draft A - Initial Release 25<sup>th</sup> January 2000

Draft B - Released 18<sup>th</sup> February 2000. Added Product Part Numbers Section.

Rev A - Released 10<sup>th</sup> April 2000. Added Environmental Conditions Section. Updated Contact details

Rev B - Released 17<sup>th</sup> January 2001. Changed Isolated Voltage Supply Spec from +5 to +12V.

Rev C - Released 12<sup>th</sup> May 2003 . Updated User configuration screen.

Rev D - Released 4<sup>th</sup> May 2004. Added MTBF figures.

Rev E - Released 3<sup>rd</sup> June 2008. Revised pinout description for Health + Force inputs, and status relay outputs.