



## AUSTRALIAN RAIL TRACK CORPORATION

INFRASTRUCTURE, STRATEGY AND PERFORMANCE

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### Engineering Standards and Documents

The following recommendation, together with the attached supporting documentation, has been considered at the ARTC Safety Committee Meeting held on 8<sup>th</sup> May 2006.

#### *Documents:*

Ref No:	<b>08-08-10-035</b> - Systems & Equipment Approval
Subject:	'ALSTOM' VPI II Interlocking System
Dated:	28 <sup>th</sup> March 2006.

Prepared By: Arthur Haberlin, Signal Engineer - Equipment

Endorsed by: Trevor Moore, Signal Standards Engineer

#### *Items Considered for Approval:*

Manufacturer:	GRS – General Railway Signals (ALSTOM)
Product:	VPI II Interlocking System
Item Identification:	See list Ref No: <b>01-0602-018a</b>

The items in the form they were presented at the review date were approved for System & Equipment Approval to be used on all ARTC jurisdictions in accordance with the manufacturers published performance criteria and subject to the following.

#### *Relevant ARTC Specifications:*

Ref. No.	Title	Status	Date
SPS 02	Environmental Conditions	Issue1 Revision 2	May '05
SPS 05	Electrical & Electronic Components (Ratings & Construction Requirements)	Issue 1 Revision 3	May '05
SCP 17	Computer-Based Interlocking Requirements	Issue1 Revision 2	March '05

***Specific Conditions of Approval:***

- i.** For use in accordance with ARTC specification SDS 25 and standard typical circuits only.
- ii.** Power to the VPI II interlocking case shall be derived from a Battery Backed-Up D.C. Supply with sufficient capacity to protect against temporary mains supply failure and switchover to an alternative supply.
- iii.** Only components from the list **01-0602-018a** may be utilised.
- iv.** Only the latest approved version of the executive software, together with the associated development system software, may be used in new works installations.
- v.** All cardfiles at a site (included in the same circuit book) shall use the same version of the executive software.
- vi.** For use only within the Parkes to Broken Hill corridor of N.S.W..

***Certificate Issued to:***

United Group Infrastructure  
373 Horsley Road  
Milperra  
NSW 2214

A general condition of approval is that the supplier remains accredited to ISO 9001 specifically for these products and ARTC is advised on a 12 monthly basis that accreditation is current. ARTC reserves the right to conduct its own audit of the manufacture and supply of these components to AS 19011:2003.

Any subsequent change to the design, materials or manufacturing process is not covered by this approval.

Approved for use in the ARTC.

**APPROVAL No: 08-08-10-035**

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John Cowie  
Manager Standards & Systems



**AUSTRALIAN RAIL TRACK CORPORATION LTD**

**Ref No: 01-0603- 018a**

**Date: 2<sup>nd</sup> March 2006**

**Systems & Equipment Approval  
Subject: 'ALSTOM' VPI II Interlocking System**

The following lists the individual components (by catalogue number) of the VPI II Interlocking System manufactured by ALSTOM (General Railway Signal) which are approved for use in signalling installations on ARTC infrastructure under Systems & Equipment Approval Certificate **08-08-10-035** subject only to any conditions shown on that Certificate and the Conditions of Use shown against individual types.

<b>Product Code</b>	<b>Mnemonic</b>	<b>Component</b>	<b>Conditions of Use</b>
Chassis, Cardframes and Covers			
31506-015-01		Plug-coupler (Pc) chassis – split motherboard.	Uses 38216-504 bus extension cable.
31506-015-02		Direct wire (Dw) chassis rear panel – split motherboard.	Use only within Equipment Rooms.
31506-015-03		Dw chassis – split motherboard.	
31506-015-11		Pc chassis – unitary motherboard.	Uses 38216-504 bus extension cable.
31506-015-12		Dw chassis rear panel – unitary motherboard.	Use only within Equipment Rooms.
31506-015-13		Dw chassis – unitary motherboard.	
31506-015-14		Dw chassis rear panel – split motherboard.	Use only within Equipment Rooms. Uses 38216-504-KN bus extension cable.
31506-015-15		Deep Pc chassis – split motherboard.	
31506-015-16		Deep Pc chassis – unitary motherboard.	
31506-016-01		Pc chassis – split motherboard. (Special)	Uses 38216-504 bus extension cable.
58605-043-02		Chassis front cover.	
50253-354-00		Chassis top/bottom screen cover.	
Vital System Cards			
31166-029-01	CPU/PD	Central Processing Unit / Polynomial Divider.	For spares use only.



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<b>Product Code</b>	<b>Mnemonic</b>	<b>Component</b>	<b>Conditions of Use</b>
31166-029-25		CPU/PD with system software.	For new works.
59473-740-02	VRD	Vital Relay Driver	
59473-939-04	VSC	Vital Serial Controller	
59473-939-06	VSC	Vital Serial Controller with T1 adapter	
59473-939-05	MVSC	Vital Serial Controller Multi-drop	
59473-827-01	IOB	I/O Bus Interface	Each IOB in a single VPI II system requires a unique signature header.
59473-867-01	DI	Direct Input 12V DC.	Each DI in a single VPI II system requires a unique signature header.
59473-867-04	DI – 50V	Direct Input 50V DC.	
59473-747-01	DBO	Double Break output.	Each output board in a single VPI II system requires a unique signature PROM.
59473-977-02	DBO - 50V	Double Break output - 50V DC.	
59473-749-02	LDO	12v D.C. Lamp Driver.	May not be directly interfaced to LED type signal lamp units.
59473-749-04		12v D.C. Lamp Driver. (No Cold Filament Proving)	
31166-340-01		LDO2	
59473-937-02	ACO	A.C. Signal Lamp Driver	
59473-894-01	FSVT	Field-Settable Vital Timer (1-8)	
59473-894-02		Field-Settable Vital Timer (9-16)	
<b>Non-Vital System Cards</b>			
3116-175-02	CSEX3	Code System Emulator	
59473-757-03	NVI	Non-Vital Input 12V DC	
59473-785-04	NVO	Non-Vital Output 12V DC	
59473-936-02	NVOAC	Non-Vital Output AC	
<b>Software / Tools</b>			
40025-304-00	VPI II	CPU/PD system software.	
40026-192-00		VSC Pt.-Pt. software.	



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<b>Product Code</b>	<b>Mnemonic</b>	<b>Component</b>	<b>Conditions of Use</b>
40026-193-00		MVSC Multi-drop software.	
31754-KN	CAAPE	Computer Assisted Application Programming Environment	
Ancillary Hardware			
42560-273-02	Melcher	5V Power Supply	
42560-273-05	Melcher	12V Power Supply	
27H010 EPROM		Application data storage for CPU/PD.	
38216-404		Bus Extension Cable	For use with plug coupled chassis.
38216-504-KN		Bus Extension Cable	For use with direct wired chassis w. split motherboard.
59473-871-(01 to 16)		Signature Header	
39780-003-(01 to 40)		Signature PROM	
56001-787-05	B1	Vital Relay, 100ohm	Only for use as VPI II vital output ext. supply isolation.
	n/a	B1 Base	
	n/a	B1 Contact Springs	
58920-124	AMP # 205689-2	AMP M-series plug couplers.	
58920-1124	AMP # 203622-2		
58920-1164	AMP # 201331-2		
Non-Vital Radio			Train Order Working Only
	ER450	Trio E Series radio	
	AP25v	Amtex -12/12 DC-DC Converter	
	Yagi YB6-61	RFI Antenna	
	IS-50NX-C2	RFI Lightning Protector	
	6MC-450s	Trio Datacom Antenna Duplexer	