

NEW EQUIPMENT AND SYSTEM APPROVAL CERTIFICATE

Certificate No. S 05-2703-207A

Approval date	12/09/2018
Approved by	GM Technical Standards
Report no.	TAS 05-2703-PB207A
Report date	24 August 2018

This certificate is issued to

Supplier	Powerbox Australia Pty Ltd 4 Beaumont Road, Mt Kuring-Gai NSW 2080 Australia
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In respect of

Manufacturer	Powerbox Australia Pty Ltd
Product description	Powerbox PBIH DC/DC Converters
Item identification	Refer to Approved Item List in Table 1.
Application	ARTC Network Wide
Relevant Standards	SPS 02 Environmental Conditions SPS 05 Electrical & Electronic Components (Ratings & Construction Requirements) SPS 22 Power Supply Units for Signalling Equipment – General Requirements ESD-09-01 Signalling Power Systems SPS 28 Power Supply Units for Signalling Equipment – DC Filtered Units

Conditions of Approval

General	[1]. The units are suitable to be installed in equipment housings where temperatures do not exceed 50°C. Derating must be considered between >50°C to a maximum temperature of 60°C at 3.5%/K. Table 1 specifies the conditions of use for each unit.
	[2]. The units are not to be installed in steel or aluminum location cupboards, unless the cupboards are double skinned or a sun shelter is installed.
	[3]. There are no field serviceable components within the units, any failed units shall be replaced. Units shall only be repaired by Powerbox Australia Pty Ltd.
Supplier	[4]. The supplier or manufacturer must advise ARTC of any changes made

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	to the product or system which may alter its identification, performance characteristics, form, fit, function or processes required for correct usage so that this approval can be revised or reviewed.
	[5]. 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 AS19001:2003.

Note/Comments NIL.

Issue date

12/09/2018

Expiry date N/A

Issued by



John Furness
ARTC Manager Standards

Table 1 - Approved Item List – PBIH DC/DC Converters

The following lists the individual types of Powerbox PBIH DC/DC Converters manufactured by Powerbox Australia Pty Ltd which are type approved for use in signalling installations on ARTC infrastructure under Type Approval Certificate **S05-2703-207A** subject only to any conditions shown on that Certificate and the Conditions of Use shown against individual types.

Part Number	Input DC	Output DC	Output Power	MTBF Data (Hours)	D-Rating Factor
PBIH-1205G	9.2 - 16V DC	5V @ 5A	25W	887069.88	0 - 50°C (Full Power) D-Rating of 0.88W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1205J	9.2 - 16V DC	5V @ 8A	40W	824769.48	0 - 50°C (Full Power) D-Rating of 1.4W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1205M	9.2 - 16V DC	5V @ 18A	90W	460400.92	0 - 50°C (Full Power) D-Rating of 2.97W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1205R	9.2 - 16V DC	5V @ 27A	135W	416004.53	0 - 50°C (Full Power) D-Rating of 4.72W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1212J	9.2 - 16V DC	12V @ 3.3A	40W	826705.91	0 - 50°C (Full Power) D-Rating of 1.4W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1212M	9.2 - 16V DC	12V @ 9A	108W	475646.88	0 - 50°C (Full Power) D-Rating of 3.56W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1212R	9.2 - 16V DC	12V @ 13A	156W	419445.49	0 - 50°C (Full Power) D-Rating of 5.46W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1215J	9.2 - 16V DC	15V @ 2.7A	41W	826432.62	0 - 50°C (Full Power) D-Rating of 1.43W per Degree Celcius above 50°C to a maximum of 60°C.

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PBIH-1215M	9.2 - 16V DC	15V @ 7A	105W	482681.39	0 - 50°C (Full Power) D-Rating of 3.46W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1215R	9.2 - 16V DC	15V @ 10A	150W	419720.13	0 - 50°C (Full Power) D-Rating of 5.25W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1224J	9.2 - 16V DC	24V @ 1.7A	41W	826705.91	0 - 50°C (Full Power) D-Rating of 1.43W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1224M	9.2 - 16V DC	24V @ 4.5A	108W	483502.88	0 - 50°C (Full Power) D-Rating of 3.56W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1224R	9.2 - 16V DC	24V @ 6.5A	156W	428485.73	0 - 50°C (Full Power) D-Rating of 5.46W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1248M	9.2 - 16V DC	48V @ 2.2A	106W	483502.88	0 - 50°C (Full Power) D-Rating of 3.49W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-1248R	9.2 - 16V DC	48V @ 3.3A	158W	428485.73	0 - 50°C (Full Power) D-Rating of 5.53W per Degree Celcius above 50°C to a maximum of 60°C.
Part Number	Input DC	Output DC	Output Power	MTBF Data (Hours)	D-Rating Factor
PBIH-2412J	19 - 32V DC	12V @ 4.3A	52W	814358.77	0 - 50°C (Full Power) D-Rating of 1.82W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2412M	19 - 32V DC	12V @ 9A	108W	739207.57	0 - 50°C (Full Power) D-Rating of 3.56W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2412R	19 - 32V DC	12V @ 14A	168W	419603.89	0 - 50°C (Full Power) D-Rating of 5.88W per Degree Celcius above 50°C to a maximum of 60°C.



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Part Number	Input DC	Output DC	Output Power	MTBF Data (Hours)	D-Rating Factor
PBIH-2415J	19 - 32V DC	15V @ 3.4A	51W	814093.59	0 - 50°C (Full Power) D-Rating of 1.78W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2415M	19 - 32V DC	15V @ 7A	105W	740269.16	0 - 50°C (Full Power) D-Rating of 3.46W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2415R	19 - 32V DC	15V @ 11A	165W	427964.94	0 - 50°C (Full Power) D-Rating of 5.77W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2424J	19 - 32V DC	24V @ 2.5A	60W	814358.77	0 - 50°C (Full Power) D-Rating of 2.1W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2424M	19 - 32V DC	24V @ 5A	120W	598114.74	0 - 50°C (Full Power) D-Rating of 3.96W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2424R	19 - 32V DC	24V @ 7A	168W	428485.73	0 - 50°C (Full Power) D-Rating of 5.88W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2448M	19 - 32V DC	48V @ 2A	96W	740269.16	0 - 50°C (Full Power) D-Rating of 3.16W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-2448R	19 - 32V DC	48V @ 3.5A	168W	428485.73	0 - 50°C (Full Power) D-Rating of 5.88W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4812J	38 - 63V DC	12V @ 4.3A	52W	813762.35	0 - 50°C (Full Power) D-Rating of 1.82W per Degree Celcius above 50°C to a maximum of 60°C.

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Part Number	Input DC	Output DC	Output Power	MTBF Data (Hours)	D-Rating Factor
PBIH-4812M	38 - 63V DC	12V @ 9A	108W	716794.5	0 - 50°C (Full Power) D-Rating of 3.56W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4812R	38 - 63V DC	12V @ 14A	168W	425662.33	0 - 50°C (Full Power) D-Rating of 5.88W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4815J	38 - 63V DC	15V @ 3.4A	51W	813497.55	0 - 50°C (Full Power) D-Rating of 1.78W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4815M	38 - 63V DC	15V @ 7A	105W	716589.5	0 - 50°C (Full Power) D-Rating of 3.46W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4815R	38 - 63V DC	15V @ 11A	165W	434296.04	0 - 50°C (Full Power) D-Rating of 5.77W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4824J	38 - 63V DC	24V @ 2.5A	60W	814956.07	0 - 50°C (Full Power) D-Rating of 2.1W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4824M	38 - 63V DC	24V @ 5A	120W	717792.64	0 - 50°C (Full Power) D-Rating of 3.96W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4824R	38 - 63V DC	24V @ 7A	168W	434805.29	0 - 50°C (Full Power) D-Rating of 5.88W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4848M	38 - 63V DC	48V @ 2A	96W	717792.64	0 - 50°C (Full Power) D-Rating of 3.16W per Degree Celcius above 50°C to a maximum of 60°C.
PBIH-4848R	38 - 63V DC	48V @ 3.5A	168W	434805.29	0 - 50°C (Full Power) D-Rating of 5.88W per Degree Celcius above 50°C to a maximum of 60°C.