



High Performance DC/DC
Converters for Harsh
Railway and Industrial
Environments

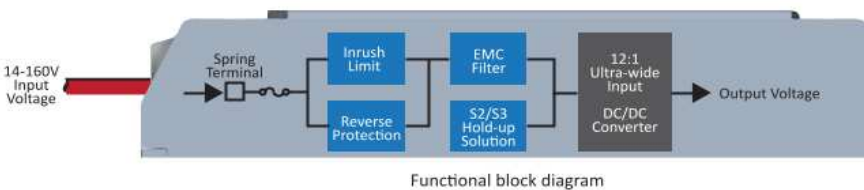
10- 40W Comprehensive Power Solutions for Railway Auxiliary Systems

URCD10U, URCD20U, URED40Uシリーズは、鉄道用途向けに設計されたシャーシマウント型およびDINレール型DC/DCコンバーターです。これらのコンバーターは、耐久性の高い機械設計と高度な機能により、鉄道車両搭載電子機器に関する EN50155規格、および耐衝撃・耐振動性に関する EN61373規格に準拠しています。

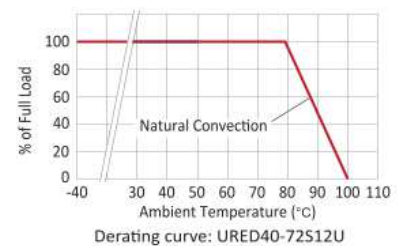
主な機能として、S2/S3電源遮断ソリューション、突入電流制限、逆極性保護、EN55032クラスA/B準拠のEMIフィルタリング、および内蔵ラインヒューズが挙げられます。これらの機能により、システム設計が容易になり、開発時間を抑えることができます。

14V~160Vdcの広い12:1入力電圧範囲により、単一モジュールで多様な電力システムに対応し、出力は、DC3.3V、5V、12V、15V、24V、±5V、±12V、±15Vに対応しています。また、過電流、短絡、過電圧、低電圧、過熱に対する保護機能を備えています。

URCD10U, URCD20U, URED40Uシリーズは、標高5000mまでの動作と、70℃を超える高温環境下でもフル負荷性能を維持できるよう設計されており、鉄道車両、線路脇などの厳しい環境条件に適応出来ます。



URCD10U Series
URCD20U Series
URED40U Series
DC/DC Converters



Features

- 10W、20W、40W出力
- 12:1広入力範囲：14-160Vdc
- 出力：3.3, 5, 12, 15, 24, ±5, ±12, ±15Vdc
- S2/S3電源遮断対応
- 突入電流制限、逆極性保護
- EMIフィルタ EN 55032 Class A/B準拠
- 内蔵ラインヒューズ
- EN 0155、EN61373、IEC/UL/EN 62368-1
- 5000m運用高度
- 3年製品保証

Applications

- 鉄道補助システム
- 鉄道車両電子機器
- 線路沿い監視機器
- 産業オートメーション制御
- 遠隔監視・通信システム

P-DUKE Technology Co., Ltd.
Tel: +886-4-2359-0668 | E-mail: sales@pduke.com | Web: www.pduke.com

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JEMCO 株式会社ジェムコ



大阪本社 TEL : 06-6338-8566
東京 TEL : 080-6449-9194
名古屋 TEL : 0587-96-1970

<https://www.jemc.co.jp/> e-mail: inf@jemc.co.jp



P-DUKE
POWER

URCD20U Series
Chassis-Mount DC-DC Converter
Up to 20 Watts

3
YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT



Railway



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



3000 VDC
Isolation Voltage

12:1
Ultra-Wide Input Range

FUSE
Installed

HOLD UP

INRUSH CURRENT LIMIT

Internal EN55032 Class **B** Filter

LOW
Standby Power

NO
Min. Load Required

Operating Altitude **5000** meter

REMOTE ON OFF

REVERSE POLARITY PROTECTION

OCP

OVP

SCP

UVP

OTP

PART NUMBER STRUCTURE

URCD20 -	72	S	05	U	-	H	DR
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range		Hold-up grade Options	Assembly Options
	72: 14~160	S: Single	05: 5 12: 12 15: 15 24: 24	12:1		□: S2 H: S3	□: None DR: Din Rail Mounting Type
		D: Dual	12: ±12 15: ±15				

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25°C unless otherwise noted

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	mA	mA	%	μF
URCD20-72S05U	14 ~ 160	5	4000	15	85	5000
URCD20-72S12U	14 ~ 160	12	1670	15	86	850
URCD20-72S15U	14 ~ 160	15	1330	15	86	700
URCD20-72S24U	14 ~ 160	24	835	15	86	220
URCD20-72D12U	14 ~ 160	±12	±833	15	86	±500
URCD20-72D15U	14 ~ 160	±15	±667	15	86	±350

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range			14	72	160	VDC
Input fuse	Slow Blow		3.15			A
In-rush current			15			A
Start up voltage			14			VDC
Shutdown voltage			10	11.5	13	VDC
Start up time	Constant resistive load	Power up	50			ms
Input surge voltage	1 second, max.		200			VDC
Interruption of power supply			10			ms
			20			ms
Remote ON/OFF	Referred to -Vin pin	Positive logic DC-DC ON DC-DC OFF	Open or 3 ~ 12VDC Short or 0 ~ 1.2VDC			
		Input current of Ctrl pin	-0.5	+0.5		mA
		Remote off input current	2.5			mA

OUTPUT SPECIFICATIONS

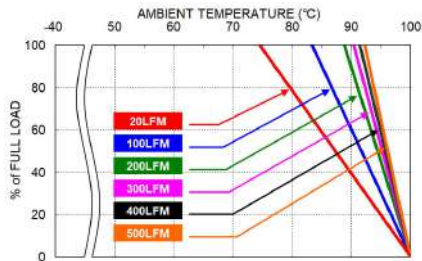
Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy			-1.0	+1.0		%
Line regulation	Low Line to High Line at Full Load		-1.0	+1.0		%
Load regulation	No Load to Full Load	Single 5Vout	-1.5	+1.5		%
		12Vout, 15Vout, 24Vout	-1.0	+1.0		
		Dual 12Vout, 15Vout	-1.5	+1.5		%
			-5.0	+5.0		
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0	+5.0		%
Voltage adjustability	Single output	12Vout	-10	+10		%
		Others	-10	+20		%
Ripple and noise	Measured by 20MHz bandwidth	Single 5Vout	75			mVp-p
		12Vout, 15Vout	100			
		24Vout	125			
		Dual 12Vout, 15Vout	100			
Temperature coefficient			-0.02	+0.02		%/°C
Transient response recovery time	25% load step change		250			μs
Over voltage protection		5Vout	6.3	7.4		VDC
		12Vout	13.5	19.6		
		15Vout	18.3	22.0		
		24Vout	29.1	32.5		
Output indicator			Green LED			
Over load protection	% of Iout rated; Hiccup mode		155			%
Short circuit protection			Continuous, automatics recovery			

GENERAL SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output Input (Output) to Case	3000 2250			VDC
Isolation resistance	500VDC		1			GΩ
Isolation capacitance				6000		pF
Switching frequency			190	220	250	KHz
Safety meets						IEC/ EN/ UL62368-1
Standard approvals						EN50155 EN45545-2
Chassis material						Aluminum
Weight						95g (3.35oz)
MTBF	MIL-HDBK-217F, Full load					1.003 x 10 ⁶ hrs

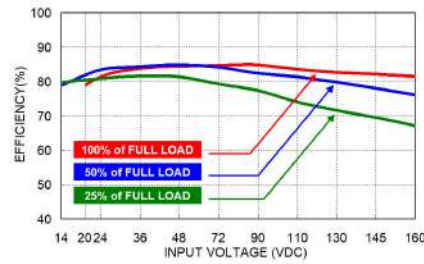
ENVIRONMENTAL SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating ambient temperature			-40		+100	°C
Maximum case temperature					100	°C
Over temperature protection				108		°C
Storage temperature range			-40		+105	°C
Operating altitude					5000	m
Thermal shock						MIL-STD-810F
Shock		□□□□□U □□□□□U - DR				EN61373, MIL-STD-810F EN61373, IEC60068-2-27
Vibration		□□□□□U □□□□□U - DR				EN61373, MIL-STD-810F EN61373, IEC60068-2-6
Relative humidity						5% to 95% RH

EMC SPECIFICATIONS						
Parameter	Conditions		Level			
EMI	EN55032, EN50121-3-2					Class B
EMS	EN55035, EN50121-3-2					
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV				Perf. Criteria A
Radiated immunity	EN61000-4-3	20 V/m				Perf. Criteria A
Fast transient	EN61000-4-4	±2kV				Perf. Criteria A
Surge	EN61000-4-5	EN55035:±1kV and EN50121-3-2:±2kV				Perf. Criteria A
Conducted immunity	EN61000-4-6	10 Vr.m.s				Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	100A/m continuous; 1000A/m 1 second				Perf. Criteria A

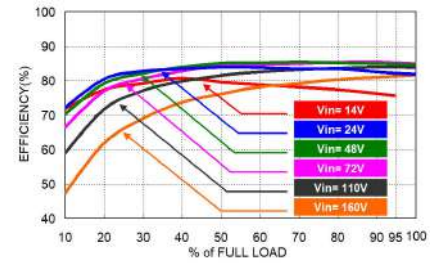
CHARACTERISTIC CURVE



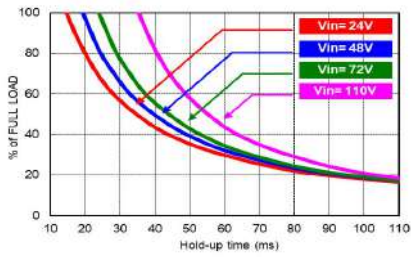
URCD20-72S05U Derating Curve



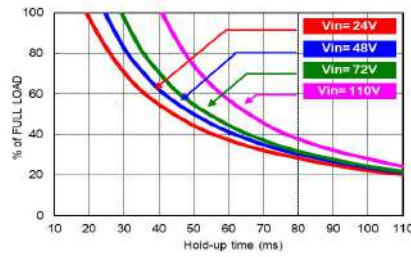
URCD20-72S05U Efficiency vs. Input Voltage



URCD20-72S05U Efficiency vs. Output Load



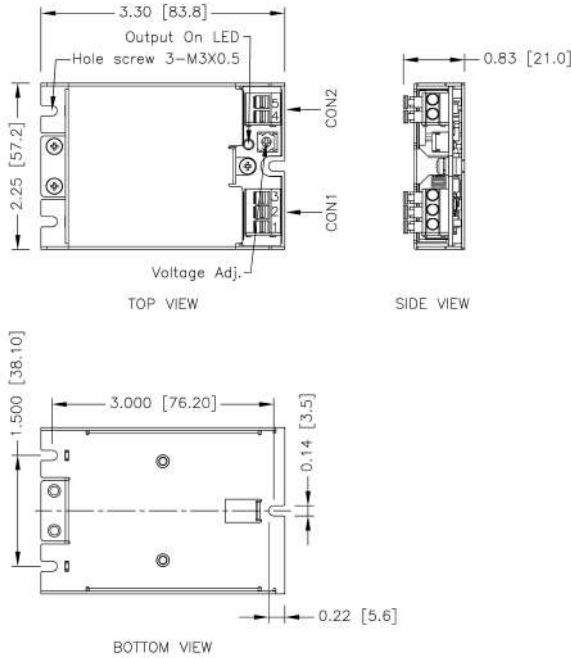
URCD20-72S05U Hold-up Time Curve



URCD20-72S05U-H Hold-up Time Curve (Options)

MECHANICAL DRAWING

CHASSIS MOUNTING TYPE

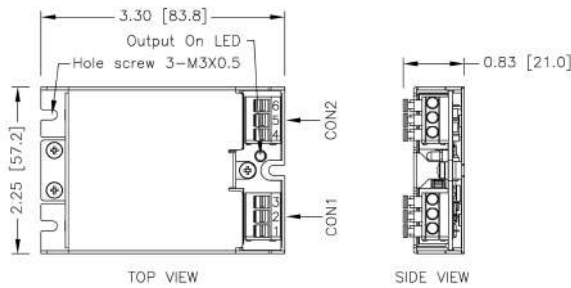


TERMINAL CONNECTION

NO.	SINGLE
1	+Vin
2	-Vin
3	Ctrl
4	-Vout
5	+Vout

※ Terminals – wire range from 14 to 20 AWG

1. All dimensions in Inch [mm]
Tolerance : X.XX±0.02 [X.X±0.5]
X.XXX±0.01 [X.XX±0.25]
2. M3x0.5 screw locked torque MAX 3.4kgf-cm/0.33N-m



TERMINAL CONNECTION

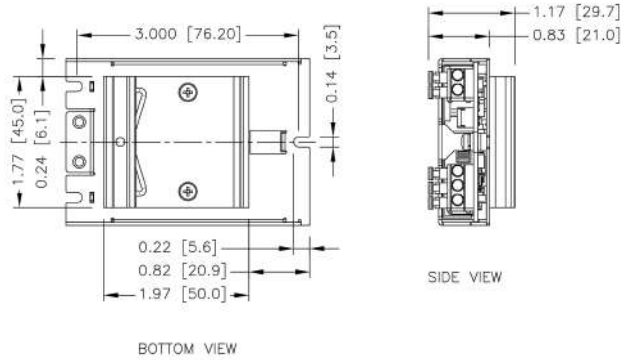
NO.	DUAL
1	+Vin
2	-Vin
3	Ctrl
4	-Vout
5	Common
6	+Vout

※ Terminals – wire range from 14 to 20 AWG

1. All dimensions in Inch [mm]
Tolerance : X.XX±0.02 [X.X±0.5]
X.XXX±0.01 [X.XX±0.25]
2. M3x0.5 screw locked torque MAX 3.4kgf-cm/0.33N-m

MECHANICAL DRAWING (CONTINUED)

DIN RAIL MOUNTING TYPE (OPTION)



- All dimensions in Inch [mm]
Tolerance : X.XX±0.02 [X.X±0.5]
X.XXX±0.01 [X.XX±0.25]
- M3x0.5 screw locked torque MAX 3.4kgf-cm/0.33N-m

THERMAL CONSIDERATIONS

The power module operates in a variety of thermal environments.

However, sufficient cooling should be provided to help ensure reliable operation of the unit.

Heat is removed by conduction, convection, and radiation to the surrounding environment.

Proper cooling can be verified by measuring the point as the figure below.

The temperature at this location should not exceed "Maximum case temperature".

When operating, adequate cooling must be provided to maintain the test point temperature at or below "Maximum case temperature".

You can limit this temperature to a lower value for extremely high reliability.

- Thermal test condition with vertical direction by natural convection (20LFM).

