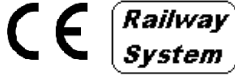




## 20 Watt, 10 – 160VDC Wide Input DC/DC Converters Series DV20X16-72-CH/-DR



### Features

- 20 Watt Isolated Output
- 16:1 Wide Input Range
- Regulated Outputs
- Isolation I/O 3000 VAC
- Fixed Switching Frequency
- Efficiency to 88%
- Meets EN50121-3-2/EN45545-2
- Meets EN50155/EN55032/EN55035
- EN50155 Class S3/Class C2 Criteria A Without External Capacitor
- Low No Load Power Consumption
- Input Reverse Polarity Protection
- Over Temperature Protection
- Over Current/Voltage Protection
- Operating Case Temperature -40 to +100°C
- Negative Logic Remote On/Off
- Meets UL62368-1 2<sup>nd</sup> (Reinforced Insulation)
- Meets Safety IEC/EN/UL62368-1
- Chassis Mount, Baseplate Cooled
- 113x59,2x21,6(mm) Size

MODEL NUMBER -DR : Din Rail -CH : Chassis	INPUT VOLTAGE [ VDC ] (Note 1)	OUTPUT VOLTAGE [ VDC ]	OUTPUT CURRENT [ mA ] MAX.	INPUT CURRENT NO LOAD [ mA ]	INPUT CURRENT FULL LOAD [ mA ]	EFF. TYP. [ % ]	CAP. LOAD Max. [ $\mu$ F ]
DV20X18-72S05N-DR	10 – 160	5	4000	8	330	84	6800
DV20X18-72S12N-DR		12	1670	10	320	87	3300
DV20X18-72S15N-DR		15	1330	10	316	88	2200
DV20X18-72D12N-DR		$\pm 12$	$\pm 833$	10	320	87	820
DV20X18-72D15N-DR		$\pm 15$	$\pm 667$	10	316	88	680
DV20X18-72D24N-DR		$\pm 24$	$\pm 417$	10	316	88	330
DV20X18-72S05N-CH		10 – 160	5	4000	8	330	84
DV20X18-72S12N-CH	12		1670	10	320	87	3300
DV20X18-72S15N-CH	15		1330	10	316	88	2200
DV20X18-72D12N-CH	$\pm 12$		$\pm 833$	10	320	87	820
DV20X18-72D15N-CH	$\pm 15$		$\pm 667$	10	316	88	680
DV20X18-72D24N-CH	$\pm 24$		$\pm 417$	10	316	88	330

Note:

1. Nominal Input Voltage 72 VDC.
2. VR1 is Used for Output Voltage Adjustment (Single Output Only).
3. Refer to Application Note for Thermal Resistance and Derating Information.
4. TVS is Included for Input Surge Voltage Protection.
5. Fuse & Shunt Diode is Include Inside for Input Reverse Polarity Protection.
6. CN1 & CN2 connection: DINKLE 0137-1103 Series or Equivalent, Suitable Electric Wire: 26~16AWG (IEC 0.2~1.5mm<sup>2</sup>).
7. DV20X18-72-DR/CH has De-rating by Input Voltage is Required See Power Derating Curve.
8. -DR with Din Mount, the Clip is Suitable for TS-35 Din Rail.

Part Number Example:

**DV20X18-72S12N-CH:** Enclosed Chassis Mount, 20W, 16:1 10-160Vdc Input, Single 12Vdc Output, Negative Logic Remote ON/OFF

Technische Änderungen vorbehalten / Technical change reserved

## INPUT SPECIFICATIONS:

Input Voltage Range.....	72V	10 – 160VDC
Input Surge Voltage.....	100mS max.	200Vdc max.
Under Voltage lockout (70% Load ).....	Turn-On Voltage Threshold	9,2VDC typ.
	Turn-Off Voltage Threshold	8,7VDC typ.
	Lockout Hysteresis Voltage	0,5VDC typ.
Maximum Input Current.....	Vin=14V, Full load	2,0A typ.
Maximum Input Inrush Current .....	Vin=160V, Full load	15A max.
Input Filter.....		Pi Type
Remote ON/OFF Logic, ON/OFF Control:		
Logic High (Module Off) .....	Von/off at Ion/off>0.3mA	3,5V min. / 12V max.
Logic Low (Module On) .....	Von/off at Ion/off=0.0uA, Pin open=on	0V min. / 1,2V max.
On/Off Current .....	Ion/off at Von/off=3.5-12V	0,3mA min. / 2,4mA max.
Off Converter Input Current .....	Shutdown input idle current	3mA typ.

## OUTPUT SPECIFICATIONS:

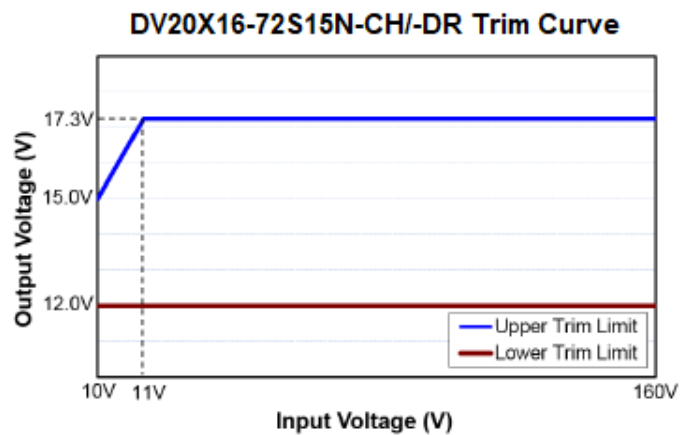
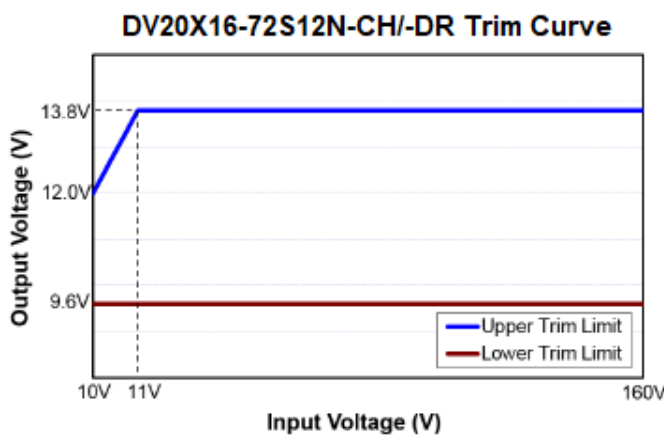
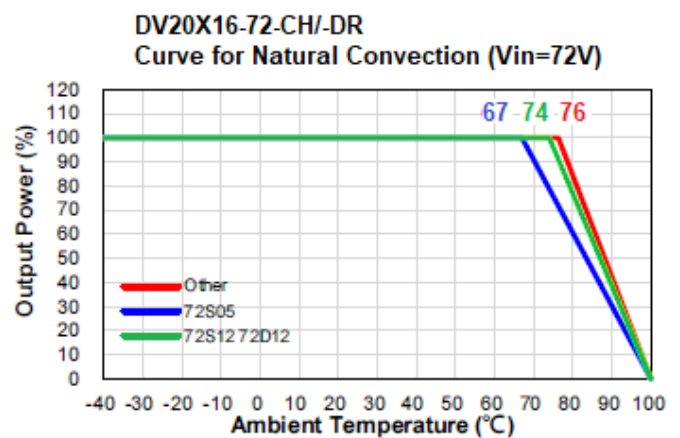
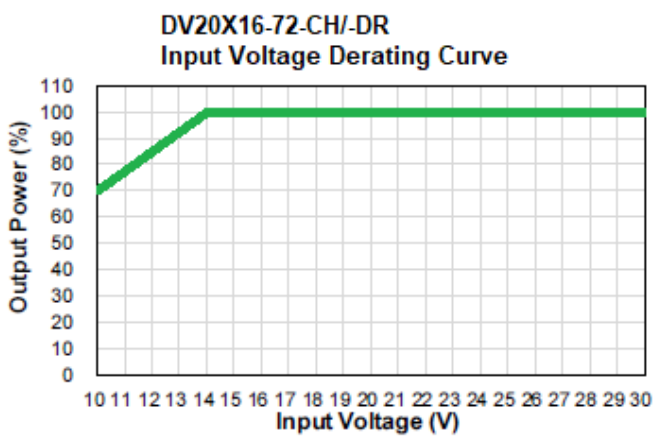
Output Current Min. ....		0mA
Voltage Accuracy.....		-1,2% min. / +1,0% max.
Voltage Balance (Dual Output) .....		±1,0% max.
Load Regulation ( Full load to no load ) .....	Single	±1.5% max.
	Dual	±1.0% max.
Line Regulation ( Vin=High line to low line, full load ) .....		±0,2% max.
Cross Regulation .....	Load cross variation 25%/100%, Dual	±5.0% max.
Temperature Coefficient.....		0,02%/°C max.
Ripple and Noise, 5Hz to 20 MHz BW..Full load, 1uF ceramic capacitors .....		40mV RMS, max., 100mV pk-pk, max.
Over Current Protection .....	Hiccup Mode. Auto recovery	150% typ.
Short Circuit Protection .....		Continuous, Auto Recovery
Over Voltage Protection .....		Zener Clamp
Output Voltage Current Transient ( 75%~100% Step Load Change, (within 1% Vout nominal)):		
	Error Band	±5% max.
	Recovery Time	250µs max.
External Trim Adj. Range (Po≤max rated power, Io ≤ Io_max ) ....	Vo 5V	-20% /+15%
	Vo 12V & 15V	See Power Derating Curve
Turn-On Delay and Rise Time, Full load (Constant resistive load)		
Turn-On Delay Time, From On/Off Control Von/off to 10%Vo_set, Remote On .....		30ms typ.
Turn-On Delay Time, From Input...VinVin_min to 10%Vo_set, Power Up .....		30ms typ.
Output Voltage Rise Time ( 10%Vo_set to 90%Vo_set ) .....	Vo 5V	10ms typ.
	Others	5ms typ.

## GENERAL SPECIFICATIONS:

Efficiency .....		See Table
Isolation Voltage .....	Hi-Pot tested @2sec., 1 minute; Input to output,	3000 VAC max.
	Hi-Pot tested @2sec., 1 minute; Input to case	2000 VAC max.
	Hi-Pot tested @2sec., 1 minute; Output to case	500 VAC max.
Isolation Resistance .....		1000 MΩ min.
Isolation Capacitance .....	Input to output, Input to case	2400pF typ.
	Output to case	1900pF typ.
Switching Frequency .....		200KHz, typ.
Operating Case Temperature .....		-40°C to +100°C
Over Temperature Shutdown.....		106°C typ.
Over Temperature Recovery .....		92°C typ.
Derating .....		see Power Derating Curve
Cooling.....		Natural Convection
Storage Temperature .....		-40°C to +105°C
Humidity .....		95% RH max. Non condensing
Operating Altitude.....		5000m
MTBF ( MIL-STD-217F,GB, 25°C, Full Load ) .....		462 – 549 Khrs typ
EMI.....		EN55032 & EN50155 Compliant Class A
ESD.....		EN61000-4-2 Level 3: Air ±8kV, Contact ±6kV
Radiated immunity.....		EN61000-4-3 Level 3: 80~1000MHz, 20V/m
Fast Transient.....		EN61000-4-4 Level 3: On power input port, ±2kV (EN50155)
		Level 4: On power input port, ±4kV (EN55035)
Surge .....		EN61000-4-5 Level 4: Line to earth, ±4kV, Line to line, ±2kV (EN50155)
		Level 3: Line to earth, ±2kV, Line to line, ±1kV (EN55035)
		Level 4: Line to earth, ±4kV, Line to line, ±2kV, with external input capacitor 120uF/220V KXJ series (EN55035)
Conducted immunity.....		EN61000-4-6 Level 3: 0.15~80MHz, 10V
Interruptions of Voltage Supply .....		EN50155 Class S3: 20ms interruptions
Supply Change Over .....		EN50155 Class C2: During a supply break of 30 ms,
Shock/Vibration .....		EN50155 (EN61373) Compliant
Fire & Smoke .....		EN45545-2 Compliant
Low Temperature, Start-up test .....		EN 60068-2-1, Class OT4, Temperature: -40°C
Dry Heat Test .....		EN 60068-2-2, Class OT4 & ST2, Temperature: 70°C, Duration: 6 hrs, Extended temperature: 85°C
Low Temperature, Storage Test.....		EN 60068-2-1, Temperature: -40°C
Cyclic Damp Heat Test .....		EN 60068-2-30, Temperature: 25°C - 55°C, Humidity: 90% RH

Random Vibration Test .....	EN 61373, Temperature: 25°C +/- 10°C	
Simulated Long Life Test at Increased Random Vibration Levels.....	EN 61373, Temperature: 25°C +/-10°C	
Shock Test.....	EN 61373, Temperature: 25°C +/-10, Frequency range: 5 ~ 150 Hz, Duration: 30ms x18 (Each axis 3 shocks)	
R22 .....	Oxygen Index Test .....	EN 45545-2: 2013, EN ISO 4589-2: 2006, HL1, HL2, HL3
	Smoke Density Test .....	EN 45545-2: 2013, EN ISO 5659-2: 2013, HL1, HL2, HL3
	Smoke Toxicity Test .....	EN 45545-2: 2013, NF X70-100: 2006, HL1, HL2, HL3
R23.....	Oxygen Index Test .....	EN 45545-2: 2013, EN ISO 4589-2: 2006, HL1, HL2, HL3
	Smoke Density Test .....	EN 45545-2: 2013, EN ISO 5659-2: 2013, HL1, HL2, HL3
	Smoke Toxicity Test .....	EN 45545-2: 2013, NF X70-100: 2006, HL1, HL2, HL3
R24 .....	Oxygen Index Test .....	EN 45545-2: 2013, EN ISO 4589-2: 2006, HL1, HL2, HL3
R25.....	Glow - Wire Test .....	EN 45545-2:2013, EN 60695-2-11:2001, HL1, HL2, HL3
R26.....	Vertical Flame Test .....	EN 45545-2: 2013, EN 60695-11-10: 2013, HL1, HL2, HL3
Dimensions .....	-CH ( CHASSIS ) .....	( 4,45 x 2,33 x 0,85 inches ) 113,0 x 59,2 x 21,6 mm
	-DR ( DIN RAIL ) .....	( 4,45 x 2,33 x 1,43 inches ) 113,0 x 59,2 x 32,2 mm
Case Material .....	Aluminum	
Potting Material.....	UL 94V-0 (DC Module)	
Weight.....	150g typ.	

Note:  
All Specifications Typical at Nominal Line, Full Load and 25°C. Unless Otherwise Noted



# MECHANICAL SPECIFICATION

# Series DV20X16-72-CH/-DR

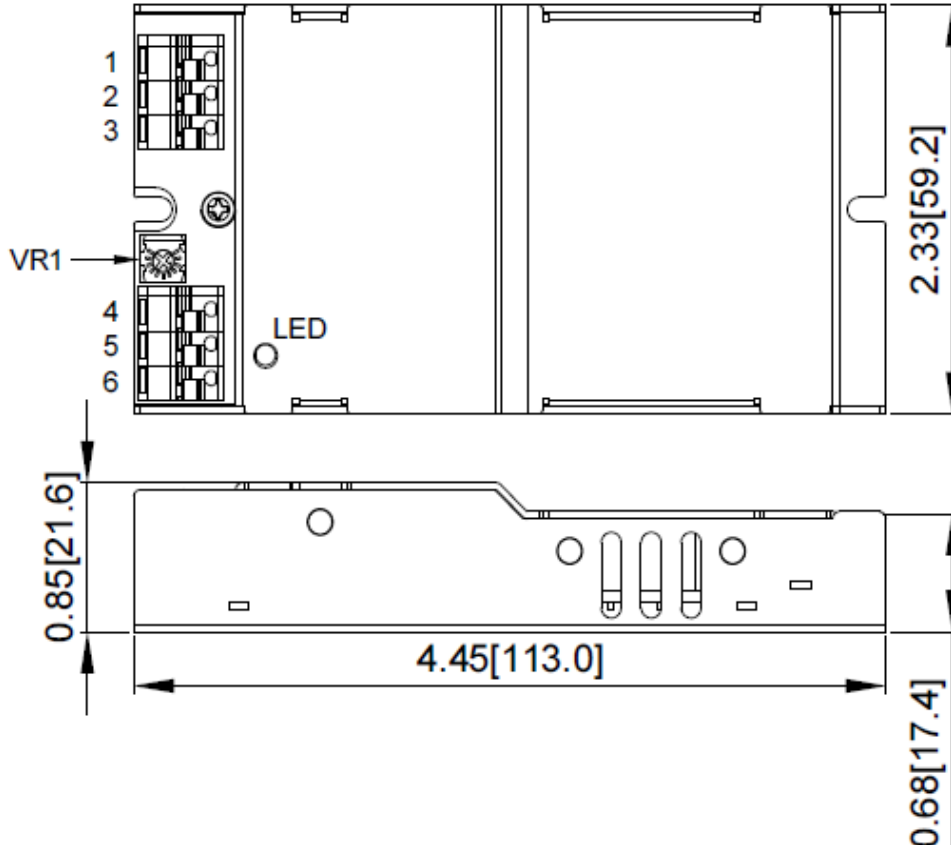
All Dimensions in Inches ( mm )

NOTE:

Tolerance Inches: X.XX=±0.02 , X.XXX= ±0.010

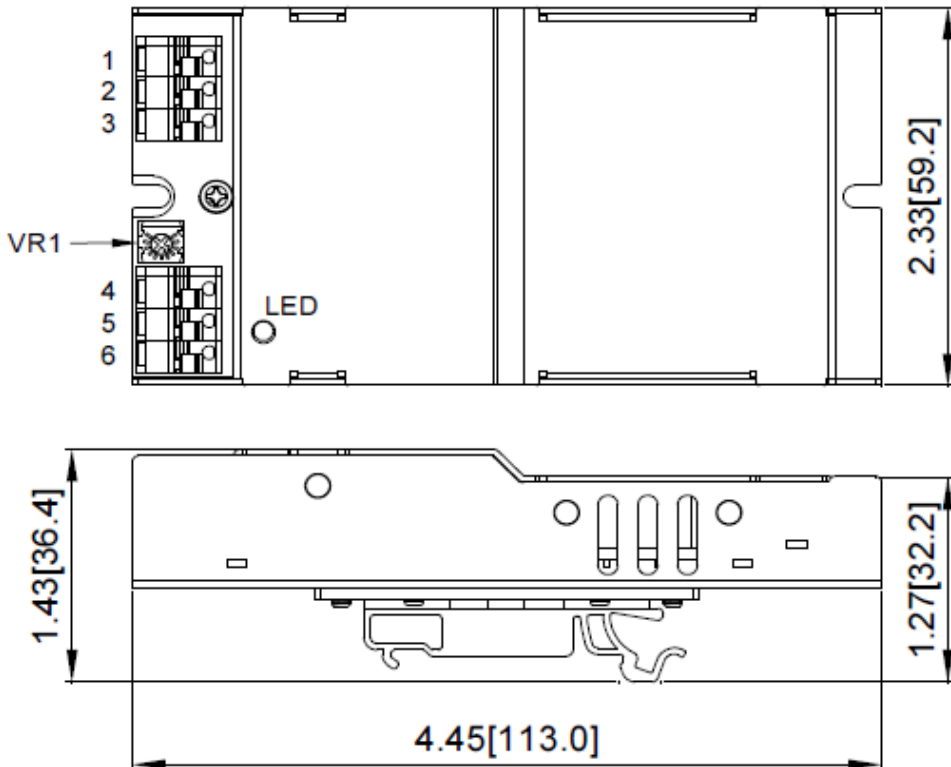
Millimeters: X.X= ±0.5 , X.XX=±0.25

## DV20X16-72-CH



PIN CONNECTION		
Pin	Single	Dual
1	+V Input	+V Input
2	-V Input	-V Input
3	Remote	Remote
4	NA	-V Output
5	-V Output	Common
6	+V Output	+V Output

## DV20X16-72-DR



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