



■ Features

- Compliance to EN50155 and EN45545-2 railway standard
- Ultra compact and 1U low profile(25mm)
- 4:1 wide input range
- No minimum load required
- Protections: Short circuit / Overload / Over voltage / Input reverse polarity
- 4000VDC I/O isolation (reinforced isolation)
- Half encapsulated , cooling by free air convection
- -40~+70°C wide working temperature
- Built-in constant current limiting circuit
- LED indicator for power on



■ Applications

- Bus, tram, metro or railway system
- Wireless network
- Telecom or datacom system
- Highly vibrating, highly dusty, extremely low or high temperature harsh environment

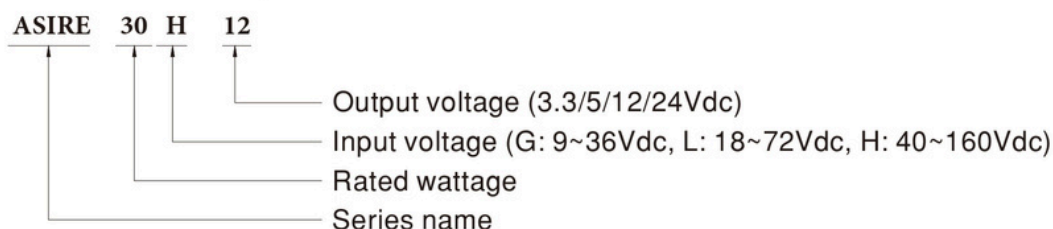
■ Description

ASIRE30 is a 30W enclosed type DC-DC reliable converter. This series is compliant with EN50155/IEC60571 railway standard, constituting three types of model with 4:1 wide but different input ranges.

9-36V/18-72V/40-160V, suitable for railway and all kinds of transportation system exploiting the frequently used standard input voltages such as 12V, 24V, 36V, 48V, 96V and 110V.

Various output voltages, 3.3V, 5V, 12V and 24V are available for selection.

■ Model Encoding



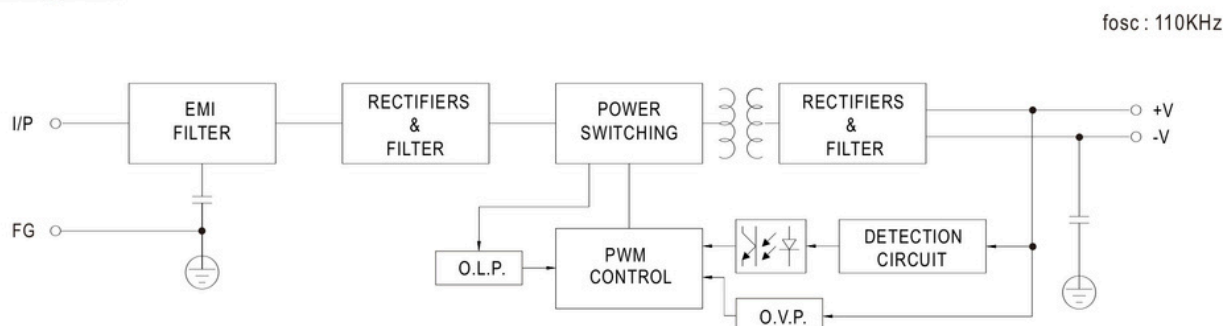
SPECIFICATION

MODEL		ASIRE30G-3	ASIRE30G-5	ASIRE30G-12	ASIRE30G-24	ASIRE30L-3	ASIRE30L-5	ASIRE30L-12	ASIRE30L-24
OUTPUT	DC VOLTAGE	3.3V	5V	12V	24V	3.3V	5V	12V	24V
	RATED CURRENT	6A	6A	2.5A	1.25A	6A	6A	2.5A	1.25A
	CURRENT RANGE	0 ~ 6A	0 ~ 6A	0 ~ 2.5A	0 ~ 1.25A	0 ~ 6A	0 ~ 6A	0 ~ 2.5A	0 ~ 1.25A
	RATED POWER	19.8W	30W	30W	30W	19.8W	30W	30W	30W
	RIPPLE & NOISE (max.) Note.2	70mVp-p	70mVp-p	60mVp-p	50mVp-p	70mVp-p	70mVp-p	60mVp-p	50mVp-p
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±0.5%	±0.5%	±0.3%	±0.2%	±0.5%	±0.5%	±0.3%	±0.2%
	LOAD REGULATION	±0.5%	±0.5%	±0.3%	±0.2%	±0.5%	±0.5%	±0.3%	±0.2%
	SETUP, RISE TIME	120ms, 85ms at full load							
	HOLD UP TIME (Typ.)	G type comply with S1 level(3ms) @full load,S2 level(10ms) @80% load; L type comply with S2 level(10ms) @full load							
INPUT	VOLTAGE RANGE CONTINUOUS	9 ~ 36VDC				18 ~ 72VDC			
	EFFICIENCY (Typ.)	84%	85%	86.5%	89%	84%	86%	90%	91%
	DC CURRENT (Typ.)	1.1A/24V 1.5A/24V				0.52A/48V 0.8A/48V			
	INRUSH CURRENT (Typ.)	20A/24VDC				20A/48VDC			
PROTECTION	OVERLOAD	105 ~ 135% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed							
	OVER VOLTAGE	3.8 ~ 4.5V	5.75 ~ 7V	13.8 ~ 16.2V	27.6 ~ 32.4V	3.8 ~ 4.5V	5.75 ~ 7V	13.8 ~ 16.2V	27.6 ~ 32.4V
		Protection type : Shut down o/p voltage, re-power on to recover							
ENVIRONMENT	WORKING TEMP.	-40 ~ +55℃ (no derating) ; +70℃ @ 60% load by free air convection ; +70℃ (no derating with external base plate)							
	WORKING HUMIDITY	5 ~ 95% RH non-condensing							
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH non-condensing							
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)							
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes ; Mounting : compliance to IEC61373							
SAFETY & EMC (Note 4)	SAFETY STANDARDS	IEC60950-1 (LVD)							
	WITHSTAND VOLTAGE	I/P-O/P:4KVDC I/P-FG:2.5KVDC O/P-FG:2.5KVDC							
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH							
	EMC EMISSION	Parameter	Standard				Test Level / Note		
		Conducted	EN55032				Class A		
		Radiated	EN55032				Class B		
		Harmonic Current	EN6100-3-2				Class A		
		Voltage Flicker	EN6100-3-3				-----		
	EMC IMMUNITY	Parameter	Standard				Test Level / Note		
		ESD	EN61000-4-2				Level 3, ±8KV air ; Level 3, ±6KV contact		
		Radiated Field	EN61000-4-3				Level X		
		EFT / Burst	EN61000-4-4				Level 3, 2KV at power Level 4, 2KV at signal		
		Surge	EN61000-4-5				Level 3,1KV Line-Line, Level 3, 2KV Line-Earth		
		Conducted	EN61000-4-6				Level 3		
	RAILWAY STANDARD	Compliance to EN45545-2 for fire protection ; EN50155 / IEC60571 including IEC61373 for shock & vibration, EN50121-3-2 for EMC							
OTHERS	MTBF	396.9K hrs min. MIL-HDBK-217F (25℃)							
	DIMENSION	113*60*25mm (L*W*H)							
	PACKING	0.25Kg; 56pcs/15Kg/0.83CUFT							
NOTE	1. All parameters NOT specially mentioned are measured at 24,48VDC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to 5. Strongly recommended that external output capacitance should not exceed 5000uF.								

SPECIFICATION

MODEL		ASIRE30H-3	ASIRE30H-5	ASIRE30H-12	ASIRE30H-24	
OUTPUT	DC VOLTAGE	3.3V	5V	12V	24V	
	RATED CURRENT	6A	6A	2.5A	1.25A	
	CURRENT RANGE	0 ~ 6A	0 ~ 6A	0 ~ 2.5A	0 ~ 1.25A	
	RATED POWER	19.8W	30W	30W	30W	
	RIPPLE & NOISE (max.) Note.2	70mVp-p	70mVp-p	60mVp-p	50mVp-p	
	VOLTAGE TOLERANCE Note.3	± 2.0%	± 2.0%	± 2.0%	± 2.0%	
	LINE REGULATION	± 0.5%	± 0.5%	± 0.3%	± 0.2%	
	LOAD REGULATION	± 0.5%	± 0.5%	± 0.3%	± 0.2%	
	SETUP, RISE TIME	120ms, 85ms at full load				
	HOLD UP TIME (Typ.)	H-type comply with S2 level(10ms) @ full load				
INPUT	VOLTAGE RANGE CONTINUOUS	40 ~ 160VDC				
	EFFICIENCY (Typ.)	87%	89%	89%	89%	
	DC CURRENT (Typ.)	0.23A/110V	0.35A/110V			
	INRUSH CURRENT (Typ.)	20A/110VDC				
PROTECTION	OVERLOAD	105 ~ 135% rated output power				
		Protection type : Constant current limiting, recovers automatically after fault condition is removed				
	OVER VOLTAGE	3.8 ~ 4.5V	5.75 ~ 7V	13.8 ~ 16.2V	27.6 ~ 32.4V	
ENVIRONMENT		Protection type : Shut down o/p voltage, re-power on to recover				
	WORKING TEMP.	-40 ~ +55°C (no derating) ; +70°C @ 60% load by free air convection ; +70°C (no derating with external base plate)				
	WORKING HUMIDITY	5 ~ 95% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH non-condensing				
	TEMP. COEFFICIENT	± 0.03%/°C (0 ~ 50°C)				
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes ; Mounting : compliance to IEC61373				
SAFETY & EMC (Note 4)	SAFETY STANDARDS	IEC60950-1 (LVD)				
	WITHSTAND VOLTAGE	I/P-O/P:4KVDC I/P-FG:2.5KVDC O/P-FG:2.5KVDC				
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH				
	EMC EMISSION	Parameter	Standard		Test Level / Note	
		Conducted	EN55032		Class A	
		Radiated	EN55032		Class B	
		Harmonic Current	EN6100-3-2		Class A	
		Voltage Flicker	EN6100-3-3		-----	
	EMC IMMUNITY	Parameter	Standard		Test Level / Note	
		ESD	EN61000-4-2		Level 3, ±8KV air ; Level 3, ±6KV contact	
		Radiated Field	EN61000-4-3		Level X	
		EFT / Burst	EN61000-4-4		Level 3, 2KV at power Level 4, 2KV at signal	
		Surge	EN61000-4-5		Level 3, 1KV Line-Line, Level 3, 2KV Line-Earth	
		Conducted	EN61000-4-6		Level 3	
		RAILWAY STANDARD	Compliance to EN45545-2 for fire protection ; EN50155 / IEC60571 including IEC61373 for shock & vibration, EN50121-3-2 for EMC			
OTHERS	MTBF	396.9K hrs min. MIL-HDBK-217F (25°C)				
	DIMENSION	113*60*25mm (L*W*H)				
	PACKING	0.25Kg; 56pcs/15Kg/0.83CUFT				
NOTE	1. All parameters NOT specially mentioned are measured at 110VDC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to 5. Strongly recommended that external output capacitance should not exceed 5000uF.					

■ Block Diagram



■ Input Fuse

There is one fuse connected in series to the positive input line, which is used to protect against abnormal surge. Fuse specifications of each model are shown as below.

Type	Fuse Type	Reference and Rating
G	Time-Lag	CONQUE MST, 6.3A, 250V
L	Time-Lag	CONQUE MST, 3.15A, 250V
H	Time-Lag	CONQUE MST, 2A, 250V

■ Input Reverse Polarity Protection

There is a MOSFET connected in series to the negative input line. If the input polarity is connected reversely, the MOSFET opens and there will be no output to protect the unit.

■ Input Range and Transient Ability

The series has a wide range input capability. With $\pm 40\%$ of rated input voltage, it can withstand that for 1 second.

■ Input Under-Voltage Protection

If input voltage drops below V_{min} , the internal control IC shuts down and there is no output voltage. It recovers automatically when input voltage reaches above V_{min} , please refer to the curve below.

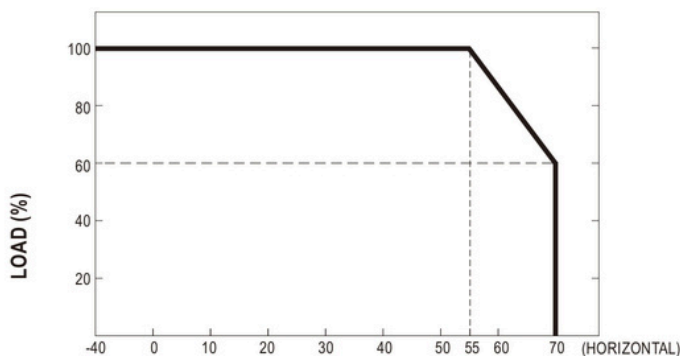
■ Inrush Current

Inrush current is suppressed by a resistor during the initial start-up, and then the resistor is bypassed consumption after accomplishing the start-up.

Derating Curve

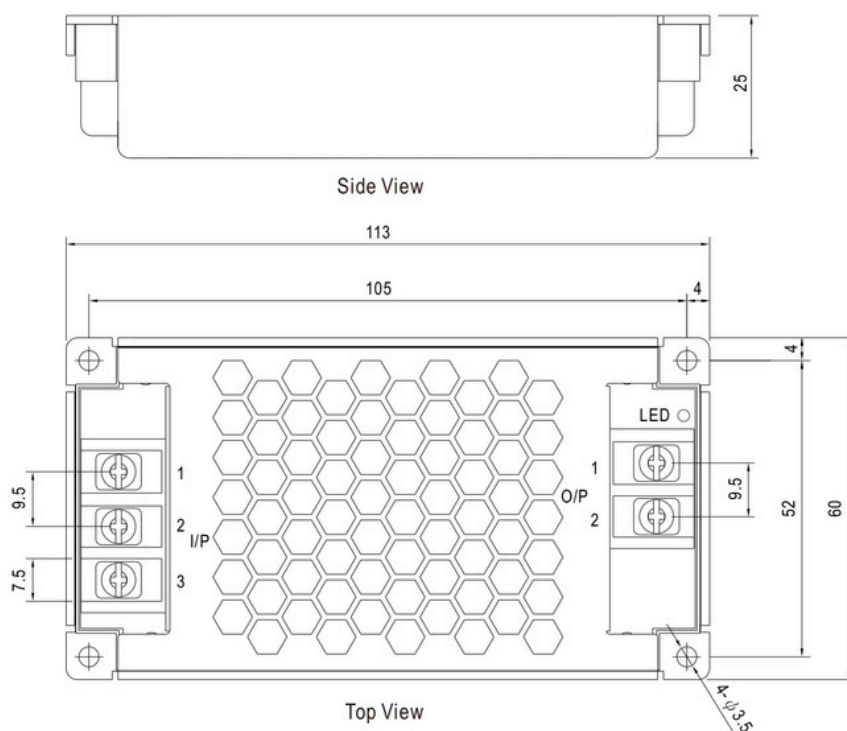
a. Single unit operation

If the unit has no iron plate mounted on its bottom, the maximum ambient temperature for the unit will be 55°C as operating under full load condition. It requires de-rating output current when ambient temperature is between 55~70°C, please refer to the de-rating curve as below.



Mechanical Specification

Case No.253A Unit:mm



Input Terminal Pin No. Assignment :

Pin No.	Assignment
1	DC INPUT V+
2	DC INPUT V-
3	FG $\perp$

Output Terminal Pin No. Assignment :

Pin No.	Assignment
1	DC OUTPUT -V
2	DC OUTPUT +V