

AC-DC Adapter  
24 V, 90 W / ADT-090A24AA F-A

ADT- 090A



Highlights & Features

- Efficiency DoE Level VI
- Compact size design
- No load power consumption < 0.15 W
- Universal AC input / Full range
- Fully enclosed plastic case
- Protection: short circuit / over voltage / overload/ over temperature

Standards



CB Certified for worldwide use

**Model Number:** ADT-090A24AA F-A  
**Dimensions (L × W × H):** 126.0 x 51.0 x 30.0 mm  
**Unit Weight:** 180±10 grams (6.35±0.35 ounces)

General Description

ADT-090A24AA F-A is an extremely compact 24 Vdc 90 W adapter. With an efficiency up to 91.5%, the product meets Efficiency DoE Level VI and no-load power consumption < 0.15 W @ 115 Vac and 230 Vac input. It conforms to major international safety standards according to IEC/EN/UL 62368-1 and IEC/EN 60950-1 approval for ITE including BSMI, CCC, PSE and KC. In addition, it also meet the EMI approvals to EN/BS EN 55032 Class B.

Model Information

| Model Number     | Input Voltage Range | Efficiency Level | Rated Output Voltage | Rated Output Current |
|------------------|---------------------|------------------|----------------------|----------------------|
| ADT-090A24AA F-A | 90-264 Vac          | Level VI         | 24 V                 | 3.75 A               |

Model Numbering

| ADT -               | 090         | A           | 24                                            | A                           | A                                        | F -                                                                                | A        |
|---------------------|-------------|-------------|-----------------------------------------------|-----------------------------|------------------------------------------|------------------------------------------------------------------------------------|----------|
| Delta AC-DC Adapter | Max wattage | Family Code | Output Voltage (Single Output)<br>24 for 24 V | Package type:<br>A: Desktop | Input connector type:<br>A: C6 connector | Plug, molding type<br>F: Barrel<br>O.D: 5.5 mm,<br>I.D: 2.5 mm,<br>Length: 11.0 mm | Standard |



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### Specifications

#### Input Ratings / Characteristics

|                                 |         |                                     |
|---------------------------------|---------|-------------------------------------|
| Nominal Input Voltage           |         | 100-240 Vac                         |
| Input Voltage Range             |         | 90-264 Vac                          |
| Nominal Input Frequency         |         | 50-60 Hz                            |
| Input Frequency Range           |         | 47-63 Hz                            |
| Input Current (max)             | 115 Vac | 1.3 A                               |
|                                 | 230 Vac | 0.6 A                               |
| Efficiency at 100% Load         | 115 Vac | 90% typ.                            |
|                                 | 230 Vac | 91.5% typ.                          |
| Average Efficiency (min)        |         | 89% @ 115 Vac & 230 Vac             |
| No Load Power Consumption (max) |         | 0.15 W @ 115 Vac & 230 Vac          |
| Power Factor (min)              |         | 0.9 @ 230 Vac, Rated output current |
| Inrush Current                  |         | No damage                           |
| Leakage Current (max)           |         | 0.1mA @ 240Vac/50Hz                 |

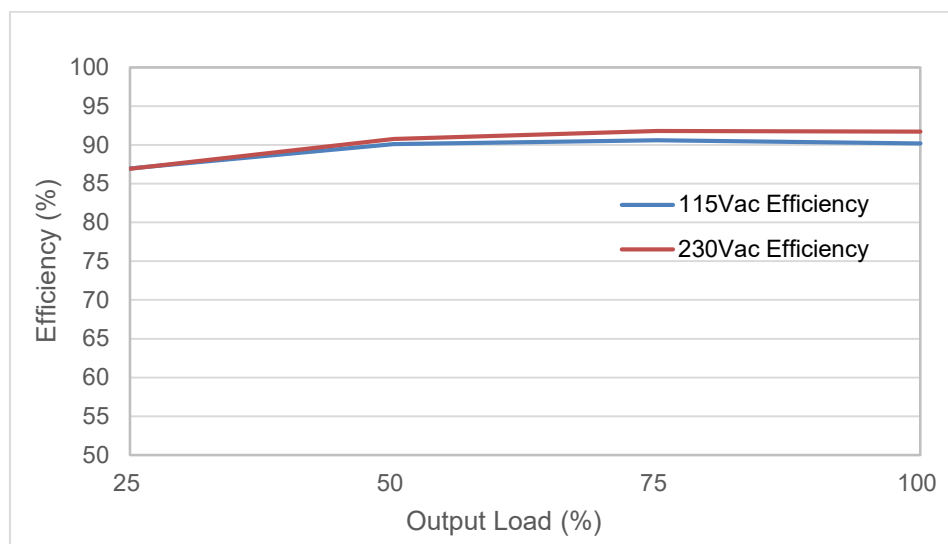


Fig 1. ADT-090A24AA F-A efficiency versus output load.

**AC-DC Adapter****24 V, 90 W / ADT-090A24AA F-A****Output Ratings / Characteristics**

|                        |            |                                                                                                 |
|------------------------|------------|-------------------------------------------------------------------------------------------------|
| Nominal Output Voltage |            | 24 V                                                                                            |
| Output Current         |            | 0-3.75 A                                                                                        |
| Output Power           |            | 90 W                                                                                            |
| Line Regulation        |            | ± 0.5%                                                                                          |
| Load Regulation        |            | ± 4.5%                                                                                          |
| PARD* (20 MHz)         | 0 to 40°C  | 240 mV pk-pk                                                                                    |
|                        | -10 to 0°C | 480 mV pk-pk                                                                                    |
| Start-up Time (typ.)   |            | 1000 ms @ 115 Vac<br>500 ms @ 230 Vac                                                           |
| Rise Time (max)        |            | 40 ms @ nominal input, full load                                                                |
| Hold-up Time (typ)     |            | 30 ms @ nominal input, full load                                                                |
| Transient Responses    |            | ± 5% @ 0.1 A -50% & 50% -100% load change,<br>Slew rate 2.5 A/us ,100 to 10 KHz, 50% Duty Cycle |
| Capacitive Load (max)  |            | 470 uF                                                                                          |

\*PARD is measured with an AC coupling mode, and in parallel with 0.1 uF ceramic capacitor & 470 uF electrolytic capacitor.

**Mechanical**

|                        |        |                                                  |
|------------------------|--------|--------------------------------------------------|
| Case                   |        | PC                                               |
| Dimensions (L × W × H) |        | 126 x 51 x 30.0 mm (4.96 x 2.0 x 1.18 inch)      |
| Unit Weight            |        | 180±10 grams (6.35±0.35 ounces)                  |
| Indicator              |        | N/A                                              |
| Cooling System         |        | Convection                                       |
| Terminal               | Input  | Socket C6 type                                   |
|                        | Output | Barrel (O.D: 5.5 mm, I.D: 2.5 mm, length: 11 mm) |
|                        | Length | 1,800 mm                                         |

**Environment**

|                            |           |                                                                                               |
|----------------------------|-----------|-----------------------------------------------------------------------------------------------|
| Surrounding Temperature    | Operating | -10°C to +60°C                                                                                |
|                            | Storage   | -40°C to +85°C                                                                                |
| Power De-Rating            |           | >40°C de-rated by 2.5%/°C                                                                     |
| Operating Humidity         |           | 5%-95% RH (non-condensing)                                                                    |
| Operating Altitude         |           | 5,000 meters (16,400 feet)                                                                    |
| Ball Impact Test           |           | Test height 130 cm, 1 sample 1 time, Steel Ball 500g, Concrete floor                          |
| Drop Test                  |           | Test height 100 cm, 6 face for each sample, concrete floor Function test pass after drop test |
| Shock Test (Non-Operating) |           | 50 G, 11 ms, 1 shock for each direction                                                       |
| Vibration (Non-Operating)  |           | 5-500 Hz, 2.09 Grms, 20 mins, one cycle for each three axis                                   |

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### Protections

|                              |                  |
|------------------------------|------------------|
| Overvoltage (max)            | 33 V, Latch      |
| Overload / Overcurrent (max) | 120-180% , Latch |
| Over Temperature             | Latch Mode       |
| Short Circuit                | Latch Mode       |
| Pollution Degree             | 2                |
| Protection Against Shock     | Class I          |

### Reliability Data

|                        |                                                                                       |
|------------------------|---------------------------------------------------------------------------------------|
| MTBF                   | > 300,000 hrs. per Telcordia SR-332<br>at Input: 115 Vac, Output: 100% load, Ta: 25°C |
| Expected Cap Life Time | 5 years (50% load @ 25°C)                                                             |

# AC-DC Adapter

## 24 V, 90 W / ADT-090A24AA F-A

### Safety Standards / Directives

|                    |                                                                                                                       |          |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|----------|
| Electrical Safety  | IEC/EN 60950-1 ; IEC/UL/EN 62368-1                                                                                    |          |
|                    | BSMI CNS14336-1                                                                                                       |          |
|                    | CCC GB4943.1                                                                                                          |          |
|                    | PSE J60950-1 (H29)                                                                                                    |          |
|                    | KC K60950-1                                                                                                           |          |
| CE                 | Comply with EMC Directive 2014/30/EU and the Low Voltage Directive 2014/35/EU                                         |          |
| UKCA               | In conformance with Electromagnetic Compatibility Regulations 2016 and Electrical Equipment (Safety) Regulations 2016 |          |
| Galvanic Isolation | I/P to O/P                                                                                                            | 3,000Vac |

### EMC

|                                   |               |                                                                                                                                                                                                                        |
|-----------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EMC / Emissions                   |               | CISPR/EN/BS EN 55032 Class B<br>BSMI CNS13438<br>FCC Part 15<br>GB/T9254<br>KN32                                                                                                                                       |
| Harmonic Current Emissions        | IEC61000-3-2  | Class D ; GB17625.1-2003                                                                                                                                                                                               |
| Immunity to                       |               | EN/BS EN 55024; KN35                                                                                                                                                                                                   |
| Radiated and conducted Emissions  |               | Conducted Emissions: EN/BS EN 55032 Class B<br>Radiated Emissions: EN/BS EN 55032 Class B                                                                                                                              |
| Voltage Flicker                   | IEC61000-3-3  |                                                                                                                                                                                                                        |
| Electrostatic Discharge           | IEC61000-4-2  | Level 4 Criteria A <sup>1)</sup><br>Air Discharge: 15 kV<br>Contact Discharge: 8 kV                                                                                                                                    |
| Radiated Field                    | IEC61000-4-3  | Level 2 Criteria A <sup>1)</sup><br>80 MHz-1 GHz, 3 V/m , 80% AM (1 KHz)                                                                                                                                               |
| Electrical Fast Transient / Burst | IEC61000-4-4  | Level 2 Criteria A <sup>1)</sup> : 2 kV                                                                                                                                                                                |
| Surge                             | IEC61000-4-5  | Level 3 Criteria A <sup>1)</sup><br>Common Mode <sup>4)</sup> : 2 kV<br>Differential Mode <sup>5)</sup> : 1 kV                                                                                                         |
| Conducted                         | IEC61000-4-6  | Level 2 Criteria A <sup>1)</sup><br>150 kHz-80 MHz, 3 Vrms, Sine Wave, 80%, AM modulation                                                                                                                              |
| Power Frequency Magnetic Fields   | IEC61000-4-8  | Level 2 Criteria A <sup>1)</sup><br>Magnetic field strength 1 A/m                                                                                                                                                      |
| Voltage Dips                      | IEC61000-4-11 | Voltage dips<br>70% reduction/0.5 periods (Criterion A <sup>1)</sup> )<br>40% reduction/5 periods (Criterion B <sup>2)</sup> )<br>Voltage short interruptions<br>5% reduction/250 periods (Criterion B <sup>2)</sup> ) |

1) Criteria A: Normal performance within the specification limits

2) Criteria B: Output out of regulation, or shuts down during test. Automatically restore to normal operation after test.

3) Criteria C: PSU shuts down during test, but need operator to reset.

4) Asymmetrical: Common mode (Line to earth)

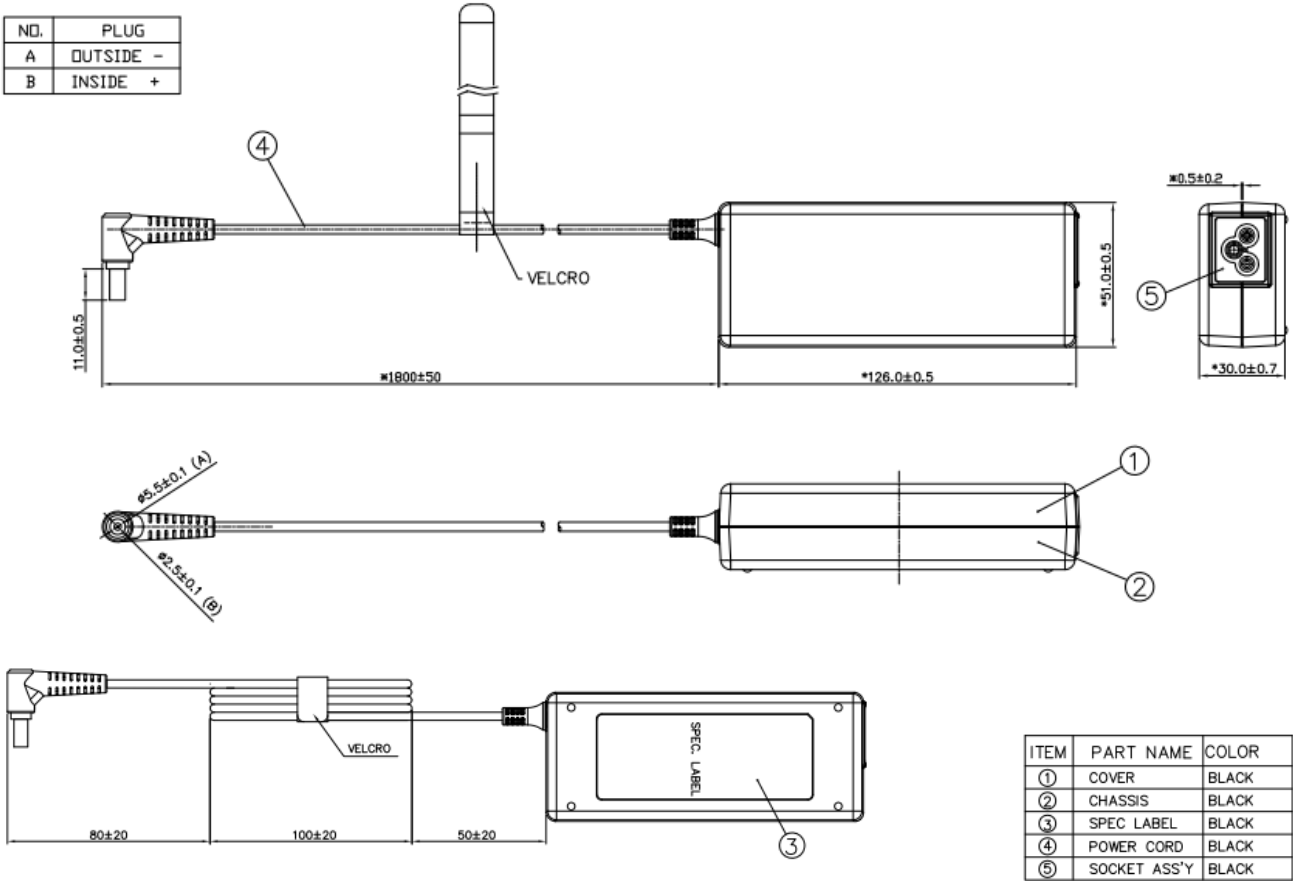
5) Symmetrical: Differential mode (Line to line)

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### Dimensions

L x W x H: 126.0 x 51.0 x 30.0 mm (4.96 x 2.0 x 1.18 inch)



### Engineering Data

Output Load De-rating V.S. Surrounding Air Temperature

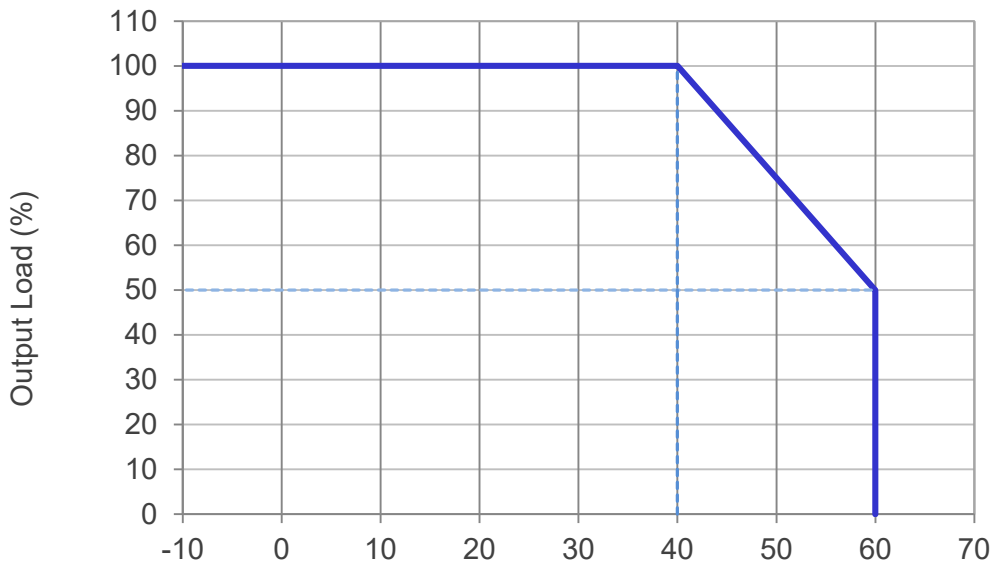


Fig. 2 De-rating for All Mounting Orientation  
> 40°C de-rate power by 2.5% / °C

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## Attention

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