Appendix 1

Window Air Conditioner
LW2513ER

TECHNOLOGY THAT’LL BLOW YOU AWAY

Looking for some real cooling power? How about 24,500 BTUs with a 9.4 Energy Efficiency Ratio? This is our most powerful window unit yet, and can take on up to 1,560 square feet with three cooling and fan speeds.

Plus, with Auto Restart, if the power goes out, your unit automatically turns on after it is restored. Easy breezy.

PERFORMANCE

- 24,000/24,500 BTU
- Cooling EER (BTU/Watts) 9.4/9.4
- Dehumidification (Pts/Hr) 6.8
- Est. Cooling Area 1,560 sq. ft.

PERFORMANCE

BTU Performance 24,000/24,500
EER 9.4/9.4
Energy Star •
Dehumid. (Pts/Hr) 6.8
Dry Air Flow (CFM) 590/530/484 (High, Mid, Low Speed)
dBA Level (Indoor/Outdoor) 65/67, 60/64, 57/62 (High, Mid, Low Speed)
Est. Cooling Area (SQ. FT.) 1,560

FEATURES

Thermostat Control Thermistor
Air Direction 4-Way
Remote Controller •
Energy Saver Function •
Timer 24 Hr, On/Off
Fan Speed Cooling 3

MATERIALS/FINISHES

Available Colors White

ELECTRICAL RATINGS

Voltage/Hz 208/230
Watts 2,550/2,600
Rated Amps 12.7/11.7

DIMENSIONS

Product (WxHxD) 26” x 17 11/16” x 28”
Shipping (WxHxD) 29 1/8” x 22 7/16” x 30 7/16”
Net Weight 129 lbs.
Shipping Weight 147 lbs.
Stuffing Quantity (20ft/40ft) 84/192

LIMITED WARRANTY

1 Year Parts and Labor

UPC CODES

LW2513ER 048231 368605
Window Air Conditioner

LW1813HR

CELEBRATE BEING INDECISIVE

Temperatures don’t always match up with their corresponding season. Which is why we’ve created an energy efficient, single unit air conditioner and heater. It provides seasonal heating and cooling so you can feel comfortable all year round, no matter the season. And with 18,000 BTUs, it can heat up to 550 square feet, or cool up to 1,000 square feet.

PERFORMANCE
• 17,500/18,000 BTU Cooling
  9,800/12,000 BTU Heating
• Cooling EER (BTU/Watts) 9.7/9.7
• Dehumidification (Pts/Hr) 5.5
• Est. Cooling Area 1000 sq. ft.

FEATURES
• Seasonal Heating & Cooling
• Multiple Cooling/Heating Speeds
• 4-Way Air Direction
• Remote Control
• Timer 24 Hr. On/Off

PERFORMANCE

| BTU Performance (Cooling) | 17,500/18,000 |
| BTU Performance (Heating) | 9,800/12,000 |
| EER | 9.7/9.7 |
| Dehumid. (Pts/Hr) | 5.5 |
| Dry Air Flow (CFM) | 430 |
| dBA Level (Indoor/Outdoor) | 55/63 |
| Est. Cooling Area (SQ. FT.) | 1,000 |

FEATURES

| Thermosstat Control | Thermistor |
| Air Direction | 4-Way |
| Remote Controller | • |
| Auto Swing | • |

Energy Saver Function •
Timer 24 Hr., On/Off
Fan Speed Cooling/Heating 2/2
Fan Only Speed 2
Compressor Rotary

In Door Fan Type
Blower Type Air Discharge Side by Side
Outdoor Vent/Exhaust •

Chassis Type Slide In
Out LW1813HR

MATERIALS/FINISHES
Available Colors White

ELECTRICAL RATINGS
Voltage/60Hz 208/230
Watts 1,800/1,850 (Cooling)
Watts (Heating) 3,100/3,670
Rated Amps (Cooling) 9.0/8.3
Rated Amps (Heating) 15.0/16.0

DIMENSIONS

Product (WxHxD) 26’ x 16 27/32” x 30 5/16”
Shipping (WxHxD) 29 3/8” x 21 3/16” x 33”

Net Weight 136 lbs.
Shipping Weight 150 lbs.
Stuffing Quantity (20ft/40ft) 84/176

LIMITED WARRANTY
1 Year Parts and Labor

UPC CODES
LW1813HR 048231 368636
Window Air Conditioner

LW1213HR

SOME LIKE IT HOT.
SOME LIKE IT COLD.
If you’re cold, you’re cold — even if it’s May. That’s why we’ve created seasonal heating and cooling. You’re getting all of the things you love about an air conditioner with 12,000 BTUs, a stylish remote and multiple speeds. Only now, you can heat rooms up to 450 square feet, as well as cool rooms up to 550 square feet.

PERFORMANCE
• 11,500/12,000 BTU Cooling
9,200/11,200 BTU Heating
• Cooling EER (BTU/Watts) 9.8/9.8
• Dehumidification (Pts/Hr) 3.3
• Est. Cooling Area 550 sq. ft.

FEATURES
• Seasonal Heating & Cooling
• Multiple Cooling/Heating Speeds
• 4-Way Air Direction
• Remote Control
• Timer 24 Hr. On/Off

PERFORMANCE
BTU Performance (Cooling) 11,500/12,000
BTU Performance (Heating) 9,200/11,200
EER 9.8/9.8
Dehumid. (Pts/Hr) 3.3
Dry Air Flow (CFM) 265
dBA Level (Indoor/Outdoor) 51/57
Est. Cooling Area (SQ. FT.) 550

FEATURES
Thermostat Control
Air Direction
Remote Controller
Energy Saver Function
Timer
Fan Speed Cooling/Heating
Fan Only Speed
Compressor
In Door Fan Type
Type Air Discharge Side
Outdoor Vent/Exhaust
Chassis Type

MATERIALS/FINISHES
Available Colors
White

ELECTRICAL RATINGS
Voltage/60Hz 208/230
Watts 1,170/1,220 (Cooling)
2,900/3,500 (Heating)
Rated Amps (Cooling) 5.8/5.5
Rated Amps (Heating) 14.0/15.3

DIMENSIONS
Product (WxHxD) 23 5/8” x 14 31/32” x 22 1/16”
Shipping (WxHxD) 27 1/16” x 18 1/8” x 23 5/8”
Net Weight 87 lbs.
Shipping Weight 93 lbs.
Stuffing Quantity (20ft/40ft) 135/297

LIMITED WARRANTY
1 Year Parts and Labor

UPC CODES
LW1213HR 048231 368629
# SUBMITTAL EH070CAV / UH070CAV

**Slim Duct, single zone split system**

## Specifications

<table>
<thead>
<tr>
<th><strong>Job Name</strong></th>
<th><strong>Purchaser</strong></th>
<th><strong>Location</strong></th>
<th><strong>Reference</strong></th>
<th><strong>Approval</strong></th>
<th><strong>Construction</strong></th>
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</table>

<table>
<thead>
<tr>
<th><strong>Unit Designation</strong></th>
<th><strong>Schedule #</strong></th>
</tr>
</thead>
</table>

### Performance

- **Nominal Capacity**: Cooling (Hr/h): 24,000 / 27,000, Heating (Btu/h): 6,500 / 7,000
- **Capacity Range**: Heating (Btu/h): 7,000 - 37,000
- **EER**: 15.7 / 10.2
- **SEER**: 9.2
- **Condensate Output (gph)**: 5.6

### Power

- **Voltage (V/L):** 1/208-230 / 60Hz
- **Max. Breaker**: 35 A
- **Min. Circuit Ampacity**: 23 A

### Dimensions

- **W X H X D (inches)**
  - Indoor Unit: 43 3/8 X 17 3/8 X 23 5/8
  - Outdoor Unit: 34 5/8 X 31 3/8 X 12 1/4
- **Weight (lbs.)**
  - Indoor Unit: 125
  - Outdoor Unit: 270
- **Supply duct connection (inches)**: 6 X 41/34
- **Return duct connection (inches)**: 6 5/8 X 58 1/8
- **Condensate Connection**: OD 1 1/4”, ID 1”

### Heat Exchanger

- **Indoor & Outdoor Unit**: Type: Aluminum Fin - Copper Tube
- **Pipe Diameter**: 1/4 inch

### Sound Pressure Level (dB)

- **Indoor Unit (A)**: 36
- **Outdoor Unit (A)**: 52

### Operating Temperatures

- **Cooling**: 14.6 ± 1.15° F
- **Heating**: -2.7 ± 1.75° F

### Pipe Connections

- **Indoor & Outdoor**: High side (flared): 1/4”
- **Low side (flared)**: 3/8”
- **Maximum Line Set Length**: 60’
- **Maximum Vertical Separation**: 20’
- **Oil Trap**: Every 26’ of vertical separation

### Refrigerant

- **Type**: R410A
- **Control Method**: Electronic Expansion Valve
- **Factory Charge (oz)**: 57.0
- **Charged for Additional Refrigerant**: 0.1 oz R22

### Compressor

- **Manufacturer**: Samsung
- **Type**: DC, Inverter Driven, Twin Rotary, RELA (A)

### Evaporator Fan

- **Air Volume (CFM)**: Cooling (high): 568, Heating (high): 568
- **Input Static Pressure**: Standard/Max: (WCC): 0.69 / 0.125

### Condenser Fan

- **Motor**: 1/2 HP, 120 V, 60 Hz
- **Output**: 140 V, 3 Amps
- **FLA**: 0.65

### Accessories

- **Samsung condenser pump**: MDP-E075SEE
- **Wireless Remote Control**: Wireless remote: MRT-AH01U
- **Wires from receiver to unit**: MRW-10AU, MRW-4050U
- **Line sets - insulated and flared, interconnecting cables included**: 25’ - IL2500, 50’ - IL5000

### Safety Certifications

- ETL & ETLc

### Warranty

- 5 Years compressor, 3 Years parts, 120 Years limited labor

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### Notes

- **Low ambient control built in**
- **Outdoor unit shall provide 208/230V power to indoor unit via 14AWG X 3 interconnect power cable**
- **Wired controller ships as standard**

### Construction

- **Indoor unit chassis shall be constructed from galvanized steel**
- The outdoor unit shall be galvanized steel with a baked on powder coated finish for durability.

### Heat Exchanger

- **The heat exchanger shall be mechanically bonded fin to copper tube**

### Refrigerant System

- **The compressor shall be hermetically sealed, inverter controlled, twin BLDC Rotary**
- **Refrigerant flow shall be controlled by ECV (electronic expansion valve) at outdoor unit**

### Indoor Fan

- **Indoor fans are twin backward curved centrifugal Siemens type with a single BLDC motor**
- **Three fan speed settings and auto setting**

### Controls

- **Control signal shall be DDC type signal**
- **Interconnect control wiring shall be 16AWG X 2 shielded wire between outdoor and indoor units**
- **Unit shall be operated via wired or wireless controller**

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[QuietSide.com](http://www.QuietSide.com)
## Product Specifications

### General Data

<table>
<thead>
<tr>
<th>Type</th>
<th>Wall Mounted System</th>
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<tbody>
<tr>
<td>Operating Mode</td>
<td>Heat Pump</td>
</tr>
<tr>
<td>Number of Zones</td>
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</tr>
<tr>
<td>Multi-Zone Compatible</td>
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<tr>
<td>System Code</td>
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### Performance Data

<table>
<thead>
<tr>
<th>Nominal Capacity (BTU)</th>
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<td>Cooling Capacity (BTU)</td>
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<tr>
<td>Heating Capacity (BTU)</td>
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<tr>
<td>HSPF</td>
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</table>

### Dimensions

| Maximum Line Length (Feet) | 50                                          |
| Liquid Connection Size (Inches) | 1/4                                 |
| Suction Connection Size (Inches) | 3/8                                    |
| Product Height (Inches)      | 21 1/2                                    |
| Product Width (Inches)       | 31 1/8                                    |
| Product Length (Inches)      | 11 1/4                                    |
| Product Weight (Pounds)      | 69                                         |

### Warranty

| Parts Warranty (Years) | 3                                           |
| Heat Exchanger Warranty (Years) | 5                                        |

## Samsung Specifications

### AQV12NSDX

### General Data

<table>
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<tr>
<th>Type</th>
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<td>Operating Mode</td>
<td>Heat Pump</td>
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<tr>
<td>Multi-Zone Compatible</td>
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<tr>
<td>Installation Location</td>
<td>Outdoor</td>
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<tr>
<td>Heating Capacity (BTU)</td>
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<td>Moisture Removal (Pints/Hour)</td>
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<tr>
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<td>HSPF</td>
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<tr>
<td>Cooling Power Consumption (Watts)</td>
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<td>Heating Power Consumption (Watts)</td>
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<tr>
<td>Minimum Sound Level (dB)</td>
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### Electrical Data

| Voltage (Volts) | 208-230 |

## Samsung Specifications

### AQV12NSD

### General Data

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<td>Remote Control</td>
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<td>Heating Power Consumption (Watts)</td>
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<tr>
<td>Maximum Air Flow (CFM)</td>
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### Electrical Data

<table>
<thead>
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<th>Voltage (Volts)</th>
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<tbody>
<tr>
<td>Phase</td>
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<tr>
<td><strong>Appendix 1</strong></td>
<td>141</td>
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<tr>
<td>----------------</td>
<td>-----</td>
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<tr>
<td><strong>Frequency (Hertz)</strong></td>
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<tr>
<td><strong>Dimensions</strong></td>
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<tr>
<td>Liquid Connection Size (Inches)</td>
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<td>Suction Connection Size (Inches)</td>
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<tr>
<td>Product Height (Inches)</td>
<td>11 1/4</td>
</tr>
<tr>
<td>Product Width (Inches)</td>
<td>32 1/2</td>
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<tr>
<td>Product Length (Inches)</td>
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<td>Product Weight (Pounds)</td>
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<td><strong>Warranty</strong></td>
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<td>Parts Warranty (Years)</td>
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<tr>
<td>Heat Exchanger Warranty (Years)</td>
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</table>
APPENDIX 2A: HORIZONTAL VIEW OF GROUND FLOOR [46]
APPENDIX 2B: HORIZONTAL VIEW OF FIRST FLOOR [46]
APPENDIX 2C: HORIZONTAL VIEW OF SECOND FLOOR [46]
APPENDIX 2D: CROSS SECTION OF HOUSE A-A [46]
CURRICULUM VITAE

Name: Ing. ALMABROK ABDOALHADE ALMABROK
Born: 01 November 1965 in BANIWALID

Education:
2002 - 2004 Master’s degree. MSc. Faculty of Electrical Power Engineering and Communication. Brno University of Technology
2008 - Doctoral Study. Faculty of Electrical Power Engineering and Communication. Brno University of Technology

Professional experience:
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Teaching experience:
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Membership in organizations:
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IEEE, Power Engineering Society

List of Publication: