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Symbol Technologies, Inc.

Invention No. 55,3 1,955,269 (Japan); . 55,358; 62,539; 69,060; 69,187 (Taiwan); No. 1,601,796; 1,907,875; an Patent 367,299; 414,281; 367,300; 367,298; UK 2,072,832; France 81/03938; Italy 1,138,713

5,861,615; 5,874,720; 5,875,415; 5,900,617; 5,902,989; 5,907,146; 5,912,450; 5,914,476; 5,917,173; 5,920,059; 5,923,025; 5,929,420; 5,945,658; 5,945,659; 5,946,194; 5,959,285; 6,002,918; 6,021,947; 6,047,892; 6,050,491; 6,053,413; 6,056,000; 6,065,678; 6,067,297; 6,068,190; D305,885; D341,584; D344,501; D359,483; D362,453; D363,700; D363,918; D370,478; D383,124; D391,250; D405,077; D406,581; D414,171; D414,172; D418,500; D419,548; D423,468; D424,035

This product is covered by one or more of the following U.S. and foreign Patents U.S. Patent No. 4,460,120; 4,496,831; 4,593,186; 4,603,262; 4,607,156; 4,652,750; 4,673,805; 4,736,095; 4,758,717; 4,816,660; 4,845,350; 4,896,026; 4,897,532; 4,923,281; 4,933,538; 4,992,717; 5,015,833; 5,017,765; 5,021,641; 5,029,183; 5,047,617; 5,103,461; 5,113,445; 5,130,520; 5,140,144; 5,142,550; 5,149,950; 5,157,687; 5,168,148; 5,168,149; 5,180,904; 5,216,232; 5,229,591; 5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791; 5,250,792; 5,260,553; 5,262,627; 5,262,628; 5,266,787; 5,278,398; 5,280,162; 5,280,163; 5,280,163; 5,280,164; 5,280,488; 5,304,786; 5,304,788; 5,306,900; 5,321,246; 5,324,924; 5,337,361; 5,367,151; 5,373,148; 5,378,882; 5,396,053; 5,396,055; 5,399,846; 5,408,081; 5,410,139; 5,410,140; 5,412,198; 5,418,812; 5,420,411; 5,436,440; 5,444,231; 5,449,8491; 5,449,849; 5,471,042; 5,478,998; 5,479,000; 5,479,002; 5,479,441; 5,504,322; 5,519,577; 5,528,621; 5,532,469; 5,543,610; 5,545,889; 5,552,592; 5,557,093; 5,578,810; 5,581,070; 5,589,679; 5,589,680; 5,608,202; 5,612,531; 5,619,028; 5,627,359; 5,637,852; 5,664,229; 5,564,803; 5,765,139; 5,608,202; 5,612,531; 5,619,028; 5,627,359; 5,637,852; 5,664,299; 5,638,803; 5,767,500; 5,789,729; 5,698,835; 5,705,800; 5,714,746; 5,723,851; 5,734,152; 5,734,153; 5,742,043; 5,745,794; 5,754,587; 5,415, 5,705,800; 5,714,746; 5,723,851; 5,734,152; 5,734,153; 5,742,043; 5,745,794; 5,754,587; 5,762,516; 5,763,863; 5,767,500; 5,789,728; 5,789,721; 5,882,877; 5,861,178; 5,811,787; 5,815,811; 5,821,519; 5,821,520; 5,823,812; 5,828,050; 5,850,078; 5,861,615; 5,874,720; 5,875,415; 5,900,617; 5,902,592,893,812; 5,924,205; 5,91,477; U.S. Patent No. 5,861,615; 5,874,720; 5,875,415; 5,900,617; 5,902,989; 5,907,146; 5,912,450; 5,914,478

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## gednlatory Compliance

Any changes or modifications to Symbol Technologies equipment not expressly user to obtain license or authorization before using the equipment. The majority of Symbol RF devices are type approved and do not require the in the locations into which they are sold and will be labeled as required. Symbol RF products are designed to be compliant with the rules and regulations

approved by Symbol Technologies could void the user's authority to operate

### Radio Frequency Interference Requirements .tnemqiupe edt

interference in which case the user will be required to correct the interference at Operation of this equipment in a residential area is likely to cause harmful instruction manual, may cause harmful interference to radio communications. radio frequency energy and, if not installed and used in accordance with the commercial environment. This equipment generates, uses, and can radiate protection against harmful interference when the equipment is operated in a Rules and Regulation. These limits are designed to provide reasonable This device has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the Federal Communications

in a particular installation his own expense. However, there is no guarantee that interference will not occur

If the equipment does cause harmful interference to radio or television

Belgium outside, the equipment is to be restricted to the 2.460 - 2.4835 GHz

France, the equipment is to be restricted to the 2.4465 - 2.4835 GHz

The European variant is intended for use throughout the European Economic Area,

operating near users at stand-alone desktop or similar autennas that are mounted externally at remote locations or To comply with FCC and Industry Canada exposure requirements,

• European standards dictate maximum radiated transmit power of 100mW

configurations must operate with a minimum separation of 20 cm from all persons.

Cet appareil numérique de la Classe A respecte toutes les exigences du Reglement sur le

This Class A digital apparatus meets the requirements of the Canadian Interference-causing Equipment Regulations.

Kadio Frequency Interference Requirements - Canada

of the following measures: • Re-orient or relocate the receiving antenna. • Connect the separation between the equipment and receiver. • Connect the separation between the equipment and receiver. the user is encouraged to try to correct the interference by one or more reception, which can be determined by turning the equipment off and on,

Operation in Italy requires a user license.

however authorization for use restricted as follows:

European Economic Area

EIRP and frequency range 2.400 - 2.4835 Ghz.

trequency range

trequency range.

Warning

the receiver connected.

Materiél Brouilleur du Canada.

Tel: 011-44-118-945-7000 or 1-516-738-2400 ext. 6213 Outside Morth America, contact Symbol at: Symbol Technologies Technical Support 12 Ooklands Park; Berkshire, RG41 2FD, United Kingdom

Inside North America, contact Symbol at: Symbol Technologies, Inc. One Symbol Placa, Holtsville, New York 11742-1300 And Symbol Placa, Holtsville, New York 11742-1300

Senior Director, Regulatory (title)

0168 The equipment also carries the Class  $\boldsymbol{2}$  equipment identifier

BABT, Claremont House, 34 Molesey Road, Walton-on-Thames, KT12 4RQ

Annex IV of Directive 1999/5/EC has been followed with the involvement of the following Motified Body(ies):

The conformity assessment procedure referred to in Article 10(5) and detailed in

that the above named product is in conformity to all the essential requirements of

EN 60950: 1992 Incl Amdt 1-4, 11 - Safety of Information Technology Equipment ETS 300 826 (November 1996) Radio; Wideband 2.4GHz Spread Spectrum ETS 300 826 (November 1997) EMC: 2.4GHz wideband transmission systems

To which this product relates, is in conformity with the following standards and/or other

We, Symbol Technologies Inc. of One Symbol Plaza, Holtsville, NY 11742-1300, USA declare under our sole responsibility that the product

Spectrum24, LA-302C, 2Mbps Type II Radio Card without microprocessor

We hereby declare that all essential radio test suites have been carried out and

North American Contacts

Telephone: 1-800-653-5350; Fax: (516) 563-5410; Email: support@symbol.com

access to all technical disciplines within Symbol become available for further assistance and access to all technical disciplines within 24 hours or one business day. Responses by email,

If Symbol cannot solve the problem immediately within its tiered, technical-support center,

contact for any technical problem, question or support issue. The Support Center operates all year, 24 hours a day, statfed by full-time professional

Symbol Technologies is committed to providing its customers with world-class customer service and technologies is committed to providing its customer customer

MMP

Symbol Technologies EMEA, Symbol Place, Winnersh Triangle, Berkshire, RG 41 5TP, UK

The technical documentation relevant to the above equipment can be made available

(signature of authorised person)

(date)

**()** 

7 September 2000

Telephone: 1-516-738-2400/1-800-5CAN 234; Fax: 1-516-738-5990

International Contacts

Symbol Support Center:

ax or telephone.

Technical Specialists.

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Identification mark:

Directive 1999/5/EC.

normative documents.

Declaration of Conformity

Spectrum24

AP-3020/AP-3021

symbol

Spectrum 🎕

**Access Point** 

**Quick Reference Guide** 

<del>symb</del>ol ww.symbol.com

Customer Support

tor inspection on application to:

### Introduction

The Ethernet Access Point (AP) provides a bridge between Ethernet wired LANs and Spectrum24 wireless networks. It provides transparent access between Ethernet wired networks and radio-equipped mobile units (MUs). MUs include all of Symbol Spectrum24

terminals, scanners, third-party devices and other equipment. The AP provides 1 and 2 Mbps data transfer rates on the radio network.

AP-3020/AP-3021 Product Reference Guide from the Symbol Technologies Web page: http: www.symbol.com.

#### Precaution

Before installing the AP verify the following: • The location for the unit is dry and dust free. Install in wet or dusty areas

- only with additional protection. The environment has a temperature range between -20° C and 55° C If attaching to a wired Ethernet, keep AP on the same subnet

### Requirements

The minimum installation requirements for a single-cell, peer-to-peer

network are a power outlet and an antenna. **Note:** Use and test the radio network with an MU.

The AP supports a 10Base-T unshielded twisted pair (UTP) standard.

## **Power Options**

Standard power supply -115/230VAC, 50/60Hz. US line cord Part Number: 50-24000-006 Part Number: 23844-00-00

Remote power distribution system, - See application note AP-PS-01 located on the Symbol Technologies Web page.

# Attaching the Antenna(s)

Antenna coverage is analogous to lighting. Users might find an area lit from far away not Uniform antenna placement in an area (it sharply might minimize coverage and create dark areas. Uniform antenna placement in an area (like an even placement of light bulbs) provides even, efficient coverage.

- Place the antenna using the following guidelines:
- Install the antenna as high as practical.
- Orient the antenna vertically for best reception. Point the antenna downward attaching the antenna to the ceiling. The AP requires one antenna and can use two. Two antennas provide diversity that can
- improve performance and signal reception. 1. Attach antennas to ANTENNA connectors on the back of the AP. For a single antenna,
- use the PRIMARY ANTENNA connector. 2. Refer to antenna documentation for mounting.

The standard antenna performs well in most office environments. Obtain additional or higher performance antennas from Symbol. Contact a Symbol sales representative to order the following models:

standard rubber antenna

Product Reference Guide.

- ML 2499-AP A1-00 single high performance antenna ML 2499-HP A1-00 ML 2499-D V A1-00 twin high performance diversity antennas ML 2499-PSA1-00
- mountable F-plane antenna •

Symbol continues to add antenna options for Spectrum24 devices. Contact Symbol sales representative for available antenna options. If installing two antennas, enable the Antenna Selection in the User Interface. Refer to Access Point Installation in the Spectrum24 Access Point AP-3020/AP-3021

## Antenna Extension Cables

Symbol offers extension cables for AP antenna. Some range loss occurs when increasing the distance between the antenna and the AP.

Model	Length	Loss	Range Loss	
25-19371	6 ft.	2.0 dB	5%	
25-19371-02	12 ft.	4.0 dB	10%	
To order extension cables contact a Symbol representative.				

# **Hardware Installation**

Mounting the AP

The AP rests on a flat surface or attaches to any hard, flat, stable surface. Position the AP at any angle. Use the standard-mounting kit provided. Users can obtain a universal wall-mounting bracket (ML-2499-APB1-00) and an AP-3020 adapter bracket (12-20436-01) from Symbol for attaching the AP and antennas to the wall or ceiling. Contact a Symbol sales representative to order.

Choose an option based on environment.

- Resting flat Rests on the four rubber pads on the underside of the AP. Place on a surface clear of • debris and away from traffic. Attaching on the wall in any direction. Rests on screws. Orient the AP in any position on the wall.

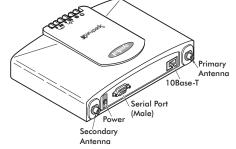
## **Connecting the Power Adapter**

The power adapter connects to the rear of the AP and to the power outlet.

- Verify that the power adapter matches the country-of-use adapter.
  Plug power adapter cable into the socket on the AP back.
- Plug adapter into outlet. When the Status indicator on the front of the AP flashes consistently and the Wireless LAN Activity indicator begins flickering the AP is functional and ready to associate with MUs. The AP works in a default configuration without user intervention after setup.
  - Refer to Access Point Installation in the Spectrum24 Access Point AP-3020/AP3021 Product Reference Guide for complete installation instructions. Refer to the AP LED indicators to verify proper AP operation.

## **Network Connection**

Locate connectors for Ethernet, antenna and power on the back of the AP.



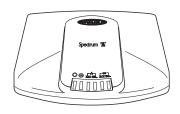
Ethernet configurations vary according to the environment. Determine the Ethernet wiring to connect the AP. 10Base - T UTP or wireless mode single cell. **Note:** The site survey determines the APs to install and their location.

### 10Base-T UTP

- Use a 10Base-T connection for multiple APs or an AP attached to a wired
- UTP Ethernet hub. Normal 10Base-T limitations apply. 1. Plug the data cable RJ-45 connector into the AP RJ-45 connector.
- Plug the other end of the data cable into the LAN access port (possibly a hub or wall connection).
  Add additional APs as needed.

## **LED** Indicators

The top-panel LED provide a status display indicating transmission, error conditions and other activity. The indicators are:



© Status	One flash per second indicates normal operation. A steady on/off, or irregular flashing indicates a fault condition.
Serial	Flashing indicates serial port activity.
Wired LAN attached	On indicates a valid 10BaseT Ethernet Connection.
Wired LAN In Use	Flashing indicates data transfers using a wired connection.
((p))	On indicates an MU is associated with the AP.
((仲)) 1010	Flickering indicates beacons and data transfer with MUs.

## **Specifications Physical Characteristics:**

Dimensions:	1.25″ H x 5.5″ L x 7.25″ W (3.18 cm H x 14.97 cm L x 19.69 cm W)
Weight: (w/power supply)	1 lb (0.454 kg)
Operating Temp:	-4°F to 131 °F (-20 °C to 55 °C)
Humidity:	10% to 95% non-conditioning
Shock:	40 g, 11mS, half- sine
ESD	meets CE-Mark
Drop	Withstands up to a 30 in. (76 cm) drop to
	Concrete with possible surface marring.

Hop Rate

Hop Sequences

## **Radio Characteristics:**

Frequency Range Frequency Hoppir

ng	2500 MHz. Hops	

country dependent; within 2400 MHz to 79 standard 35 in France 27 in Spain 23 in Japan 20 in Belgium (outdoor) 29 in Mexico configurable 79 (per IEEE 802.11)

Radio Data Rate Radio Power Output 1Mbps Range

2 Mbps Range

TX Maximum ERP

Modulation TX Out of Band Emissions

# **Network Characteristics:**

**Driver Support** Ethernet Frame Filtering Packet Rate

Ethernet Connection Serial SNAP

1 and 2 Mbps per channel 100mW and 500mW versions open environment - over 1000 ft. (303 m) typical office or retail environment - between 180 and 250 ft. (54.5 to 75.7 m) open environment - 500 ft. (152 m) typical office or retail environment - between 125 and 175 ft. (38 to 53 m) US: FCC part 15.247 Europe: ETS 300,328 Japan: RCR STD-33 Binary GFSK US: FCC part 15,247, 15205, 15,209 Europe: ETS 300,328 Japan: RCR STD-33

CDI v1.6, NDIS v2.01 DIX, Ethernet II and IEEE 802.3 14,400 frames per second filtering and forwarding 10Base-T (RJ-45) PS/AT serial port - DB9-RS-232, 19200 bps Version 1, MIB-II and Symbol MIB