

# WS-C3650-48PQ-L

## Datasheet



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### Overview

Cisco Catalyst WS-C3650-48PQ-L is the next generation of enterprise-level stable access layer switch and integrates with 48 POE+ Ethernet ports and 4 x 10G SFP uplink ports in LAN Base feature set.

### Quick Specs

Figure 1 shows the appearance of WS-C3650-48PQ-L.



Table 1 shows the Quick Specs.

|   |                                      |
|---|--------------------------------------|
| Product Code                                | WS-C3650-48PQ-L                      |
| Enclosure Type                              | Rack-mountable - 1U                  |
| Feature Set                                 | LAN Base                             |
| Uplink Interfaces                           | 4 x 10G SFP+ uplinks                 |
| Ports                                       | 48 x 10/100/1000 POE+ Ethernet ports |
| Available PoE Power                         | 390W                                 |
| Maximum stacking number                     | 9                                    |
| Stack bandwidth                             | 160Gbps                              |
| Forwarding Performance                      | 130.95Mpps                           |
| Switching Capacity                          | 176Gbps                              |
| RAM   | 4 GB                                 |
| Flash Memory                                | 2 GB                                 |
| Number of AP per switch/stack               | 50                                   |
| Number of wireless clients per switch/stack | 1000                                 |
| Dimensions                                  | 44.5 x 48.6 x 4.4 cm                 |
| Package Weight                              | 17.49 Kg                             |

### Product Details

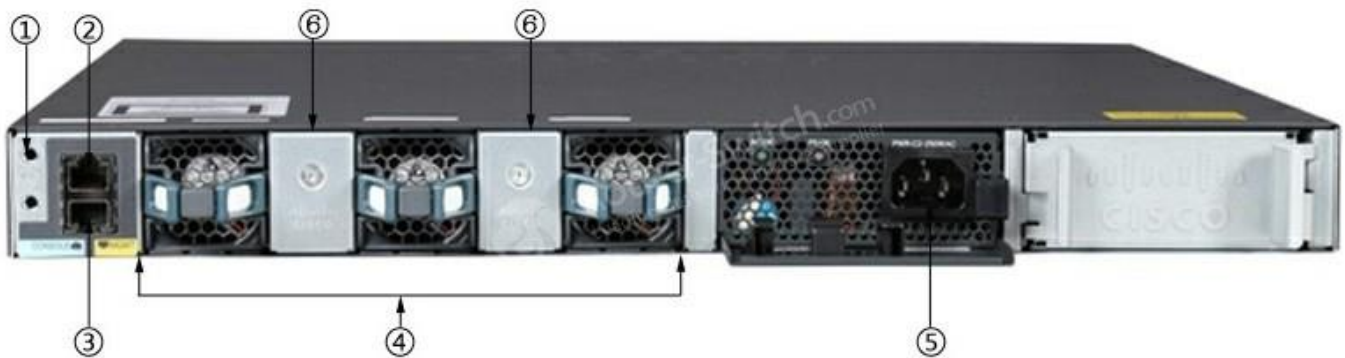
Figure 2 shows the front view of WS-C3650-48PQ-L.



Note:

- There are 48 10/100/1000 POE+ Ethernet ports on the front panel.
- The unlink interfaces support 4 x 10G SFP+ uplinks.

Figure 3 shows the back panel of WS-C3650-48PQ-L.



Note#

- (1) Ground connector (2) CONSOLE (RJ-45 console port) (3) MGMT (RJ-45 10/100/1000 management port) (4) Fan module  
(5) Power supply modules (6) Stacking modules

Figure 4 shows the StackWise-160 Kit.

The Cisco Catalyst 3650 supports an optional stacking module that is based on the Cisco StackWise-160 technology which allows stacking up to 9 switches.



## The Modules, Licenses and Accessories

Table 2 shows some recommended modules, licenses and accessories of this switch.

| Models           | Description   |
|------------------|---|
| C3650-STACK-KIT= | Cisco Catalyst 3650 Stack Module Spare                  |
| L-C3650-48-L-S   | C3650-48 LAN Base to IP Base Electronic RTU License     |
| L-C3650-48-L-E=  | C3650-48 LAN Base to IP Services Electronic RTU License |
| PWR-C2-640WAC=   | 640W AC Config 2 Secondary Power Supply                 |
| CAB-CONSOLE-RJ45 | Console Cable 6ft with RJ45 and DB9F                    |
| CAB-CONSOLE-USB  | Console Cable 6 ft with USB Type A and mini-B           |

### Get more information

Do you have any question about the Cisco C3650-48PQ-L switch?

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## Specification

| WS-C3650-48PQ-L Specification               |  |
|---|--|
| Enclosure type                              | Rack-mountable - 1U  |
| Ports                                       | 48 x 10/100/1000 (POE+) + 4 x 10G SFP+   |
| Network management Interface                | · Ethernet management port: RJ-45 connectors, 4-pair Cat-5 UTP cabling<br>· Management console port: RJ-45-to-DB9 cable for PC connections |
| Available PoE Power                         | 390W   |
| Switching Capacity                          | 176Gbps  |
| Maximum stacking number                     | 9  |
| Stack Bandwidth                             | 160Gbps  |
| Forwarding Performance                      | 130.95Mpps   |
| FNF entries                                 | Disabled (IP base license required)  |
| Maximum VLANs IDs                           | 255  |
| MAC Address Table Size                      | 32K  |
| CPU   | Multicore CPU  |
| RAM   | 4 G  |
| Flash Memory                                | 2 G  |
| Wireless                                    |  |
| Number of AP per switch/stack               | 50   |
| Number of wireless clients per switch/stack | 1000   |
| Total number of WLANs per switch            | 64   |
| Wireless bandwidth per switch               | up to 40Gbps   |

|  |  |
|--|--|
| Supported Aironet AP series                | 3700, 3600, 3500, 2600, 1600, 1260, 1140, 1040   |
| <b>Expansion / Connectivity</b>            |  |
| Console ports                              | USB (Type-B), Ethernet (RJ-45)   |
| Expansion Slot(s)                          | power redundant slot   |
| Accessory & Rack Mount Kits                | <ul style="list-style-type: none"> <li>· ACC-KIT-T1: Accessory kit</li> <li>· RACK-KIT-T1: Rack mount kit</li> <li>· 4PT-KIT-T1: Extension rails and brackets for four-point mounting</li> </ul>   |
| Stacking module & cable                    | <ul style="list-style-type: none"> <li>· C3650-STACK-KIT: Stack Module</li> <li>· STACK-T2-50CM: StackWise-160 stacking cable with a 0.5 m length</li> <li>· STACK-T2-1M: StackWise-160 stacking cable with a 1.0 m length</li> <li>· STACK-T2-3M: StackWise-160 stacking cable with a 3.0 m length</li> </ul>   |
| Power supply                               | PWR-C2-1025WAC   |
| Power Device                               | Power supply - redundant - plug-in module  |
| Power Redundancy                           | optional   |
| Voltage range (Auto)                       | 100V-240V  |
| Power Consumption of standalone (in Watts) | 107.4 (max)  |
| <b>Miscellaneous</b>                       |  |
| Width                                      | 17.5 Inches (44.5 cm)  |
| Depth                                      | 17.625 Inches (44.8 cm)  |
| Height                                     | 1.73 Inches (4.4 cm)   |
| Shipping Weight                            | 17.49 Kg   |
| Rack Mounting Kit                          | optional   |
| MTBF in hours                              | 383,760  |
| Compliant Standards                        | <ul style="list-style-type: none"> <li>· IEEE 802.1D Spanning Tree Protocol</li> <li>· IEEE 802.1p CoS Prioritization</li> <li>· IEEE 802.1Q VLAN</li> <li>· IEEE 802.1s</li> <li>· IEEE 802.1w</li> <li>· IEEE 802.1X</li> <li>· IEEE 802.1X-Rev</li> <li>· IEEE 802.11</li> <li>· IEEE 802.1ab (LLDP)</li> <li>· IEEE 802.3ad</li> <li>· IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports</li> <li>· IEEE 802.3 10BASE-T</li> <li>· IEEE 802.3u 100BASE-TX</li> <li>· IEEE 802.3ab 1000BASE-T</li> <li>· IEEE 802.3z 1000BASE-X</li> <li>· RMON I and II standards</li> <li>· SNMP v1, v2c, and v3</li> </ul> |
| <b>System software / license</b>           |  |
| System software                            | IOS LAN Base (Upgradable)  |
| EnergyWise license                         | ENERGY-MGMT, ENERGY-MGT-100-K9   |
| Software license                           | <ul style="list-style-type: none"> <li>· C3650-48-L-S : LAN Base to IP Base RTU paper license</li> <li>· C3650-48-L-E: LAN Base to IP Services RTU paper license</li> <li>· L-C3650-48-L-S: LAN Base to IP Base RTU electronic license</li> <li>· L-C3650-48-L-E: LAN Base to IP Services RTU electronic license</li> </ul>  |

|                           |  |
|---------------------------|--|
| Access Point Licenses     | <ul style="list-style-type: none"> <li>· L-LIC-CT3650-UPG: Primary upgrade license SKU for Cisco 3650 wireless controller (e-delivery)</li> <li>· L-LIC-CTIOS-1A: 1 access point adder license for Cisco IOS Software based wireless controller (e-delivery)</li> <li>· L-LIC-CTIOS-1A: 1 access point adder license for Cisco IOS Software based wireless controller (e-delivery)</li> <li>· LIC-CTIOS-1A: 1 access point adder license for the Cisco IOS Software based wireless controller (paper license)</li> </ul>   |
| Features                  | <ul style="list-style-type: none"> <li>· EEM · RPS Support · IP service-level agreements (SLAs) · Advanced IP unicast routing protocols</li> <li>· Jumbo Frames · VLANs · Voice Vlan · VTPv2 · CDPv2 · LLDP · 802.3ad LACP and PAgP</li> <li>· PVST/PVST+</li> <li>· 802.1W/802.1S · Port Fast/Uplink Fast · Dynamic Trunking Protocol (DTP) · port CoS Trust and Override</li> <li>· Trusted Boundary · ACL Classification · ingress Policing · Auto QoS · Per VLAN policies · 802.1p queues</li> <li>· Scheduling · Priority Queuing · Configure CoS Priority Queues · Configure CoS Priority Queues</li> <li>· Configure Queue Weights · Configure Buffers and Thresholds · Class &amp; Policy Maps · Modify CoS and DSCP Mapping</li> <li>· Weighted Tail Drop · IGMPv1,v2,v3 and MLDv1, v2 · DHCP server · DSCP transparency · HSRP, VRRP, BGP</li> <li>· RIPv1, v2 EIGRP, PIM OSPF, OSPFv3, EIGRPv6, BGPv4, IS-ISv4 · VRF-lite · PIM-SM/DM, PIM sparse-dense mode, SSM · Flexible Netflow</li> </ul> |
| Advanced Network security | <ul style="list-style-type: none"> <li>· Port security · DHCP snooping · Dynamic ARP inspection (DAI) · IP source guard</li> <li>· The Unicast Reverse Path Forwarding (uRPF)</li> <li>· Bidirectional data support on a SPAN · User authentication</li> <li>· Private VLAN · Router and VLAN ACLs · complete identity and security</li> <li>· Multidomain authentication · MAC address notification</li> <li>· IGMP filtering · Cisco security VLAN ACL</li> <li>· Secure Shell (SSH) Protocol, Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3)</li> <li>· Port-based ACLs · TrustSec SXP · IEEE 802.1ae</li> <li>· TACACS+ and RADIUS authentication · Cisco standard and extended IP security router ACLs</li> <li>· Bridge protocol data unit (BPDU) Guard</li> <li>· Spanning Tree Root Guard (STRG) · Wireless end-to-end security</li> </ul>  |

|  |   |
|--|---|
| Management   | <div>• BRIDGE-MIB · CISCO-AUTH-FRAMEWORK-MIB</div> <div>• CISCO-BGP4-MIB, BGP4-MIB · CISCO-BRIDGE-EXT-MIB</div> <div>• CISCO-BULK-FILE-MIB · CISCO-CABLE-DIAG-MIB</div> <div>• CISCO-CALLHOME-MIB · CISCO-CEF-MIB</div> <div>• CISCO-CIRCUIT-INTERFACE-MIB</div> <div>• CISCO-ENTITY-VENDORTYPE-OID-MIB</div> <div>• CISCO-CONTEXT-MAPPING-MIB</div> <div>• CISCO-DEVICE-LOCATION-MIB · CISCO-DHCP-SNOOPING-MIB</div> <div>• CISCO-EIGRP-MIB</div> <div>• CISCO-EMBEDDED-EVENT-MGR-MIB</div> <div>• CISCO-ENTITY-FRU-CONTROL-MIB · CISCO-ENTITY-SENSOR-MIB</div> <div>• ENTITY-MIB · CISCO-ERR-DISABLE-MIB</div> <div>• CISCO-CONFIG-COPY-MIB · CISCO-FLOW-MONITOR-MIB</div> <div>• CISCO-FTP-CLIENT-MIB · CISCO-HSRP-EXT-MIB</div> <div>• CISCO-HSRP-MIB · CISCO-IETF-ISIS-MIB</div> <div>• CISCO-IF-EXTENSION-MIB · CISCO-IGMP-FILTER-MIB</div> <div>• CISCO-CONFIG-MAN-MIB · CISCO-IP-CBR-METRICS-MIB</div> <div>• CISCO-IPROUTE-MIB · CISCO-IP-STAT-MIB</div> <div>• CISCO-IP-URPF-MIB · CISCO-L2L3-INTERFACE-CONFIG-MIB</div> <div>• CISCO-LAG-MIB · CISCO-LICENSE-MGMT-MIB</div> <div>• CISCO-MAC-AUTH-BYPASS-MIB · CISCO-MAC-NOTIFICATION-MIB</div> <div>• CISCO-MDI-METRICS-MIB · CISCO-FLASH-MIB · CISCO-OSPF-MIB</div> <div>• CISCO-OSPF-TRAP-MIB · CISCO-PAE-MIB · CISCO-PAGP-MIB</div> <div>• CISCO-PIM-MIB · CISCO-PING-MIB · CISCO-PORT-QOS-MIB</div> <div>• CISCO-PORT-SECURITY-MIB · CISCO-PORT-STORM-CONTROL-MIB</div> <div>• CISCO-POWER-ETHERNET-EXT-MIB · CISCO-PRIVATE-VLAN-MIB</div> <div>• CISCO-PROCESS-MIB · CISCO-PRODUCTS-MIB · CISCO-RF-MIB</div> <div>• CISCO-RTP-METRICS-MIB · CISCO-RTTMON-MIB</div> <div>• CISCO-SMART-INSTALL-MIB</div> <div>• CISCO-SNMP-TARGET-EXT-MIB · CISCO-STACKMAKER-MIB</div> <div>• CISCO-MEMORY-POOL-MIB · CISCO-STP-EXTENSIONS-MIB</div> <div>• CISCO-SYSLOG-MIB · CISCO-TCP-MIB · CISCO-UDLDP-MIB</div> <div>• CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB · CISCO-VLAN-MEMBERSHIP-MIB</div> <div>• CISCO-VTP-MIB · EtherLike-MIB</div> <div>• HC-RMON-MIB · IEEE8021-PAE-MIB · IEEE8023-LAG-MIB</div> <div>• IF-MIB · IGMP-MIB · IGMP-STD-MIB · IP-FORWARD-MIB</div> <div>• IP-MIB · IPROUTE-STD-MIB · LLDP-EXT-MED-MIB</div> <div>• LLDP-MIB · NOTIFICATION-LOG-MIB</div> <div>• OLD-CISCO-MEMORY-MIB · CISCO-CDP-MIB</div> <div>• POWER-ETHERNET-MIB · RMON2-MIB</div> <div>• RMON-MIB · SNMP-COMMUNITY-MIB · SNMP-FRAMEWORK-MIB</div> <div>• SNMP-MPD-MIB · SNMP-NOTIFICATION-MIB · SNMP-PROXY-MIB</div> <div>• SNMP-TARGET-MIB · SNMP-USM-MIB · SNMPv2-MIB</div> <div>• SNMP-VIEW-BASED-ACM-MIB · TCP-MIB · UDP-MIB</div> <div>• CISCO-IMAGE-MIB · CISCO-STACKWISE-MIB</div> <div>• AIRESPMACE-WIRELESS-MIB · CISCO-LWAPP-IDS-MIB</div> <div>• CISCO-LWAPP-AP-MIB · CISCO-LWAPP-CCX-RM-MIB</div> <div>• CISCO-LWAPP-CLIENT-ROAMING-MIB</div> <div>• CISCO-LWAPP-DOT11-CCX-CLIENT-DIAG-MIB</div> <div>• CISCO-LWAPP-DOT11-CCX-CLIENT-MIB</div> <div>• CISCO-LWAPP-DOT11-CLIENT-CCX-REPORTS-MIB</div> <div>• CISCO-LWAPP-DOT11-CLIENT-MIB · CISCO-LWAPP-DOT11-MIB</div> <div>• CISCO-LWAPP-DOWNLOAD-MIB · CISCO-LWAPP-LINKTEST-MIB</div> <div>• CISCO-LWAPP-MFP-MIB · CISCO-LWAPP-MOBILITY-EXT-MIB</div> <div>• CISCO-LWAPP-QOS-MIB · CISCO-LWAPP-REAP-MIB</div> <div>• CISCO-LWAPP-ROGUE-MIB · CISCO-LWAPP-RRM-MIB</div> <div>• CISCO-LWAPP-SI-MIB · CISCO-LWAPP-TSM-MIB</div> <div>• CISCO-LWAPP-WLAN-MIB · CISCO-LWAPP-WLAN-SECURITY-MIB</div> |
| Technical Support and Services                             | <div>• Cisco SMARTnet Service · Cisco Smart Foundation Service · Cisco SP Base Service</div> <div>• Cisco Focused Technical Support Services</div>  |
| Environmental Ranges                                       |   |
| With AC power supply<br>Operating environment and altitude |   |
| Operating temperature up to 5000 ft (1500 m)               | 23°F to 113°F (-5°C to +45°C)   |
| Operating temperature up to 10,000 ft (3000 m)             | 23°F to 104°F (-5°C to +40°C)   |
| Short-term exception at sealevel with single fan failure   | 23°F to 113°F (-5°C to +45°C)   |
| Short-term exception up to 5000 feet (1500 m)              | 23°F to 122°F (-5°C to 50°C)  |

|   |                                 |
|---|---------------------------------|
| Short-term exception up to 10,000 feet (3000 m)                           | 23°F to 113°F (-5°C to 45°C)    |
| <b>With DC power supply<br/>Operating environment and altitude (NEBS)</b> |                                 |
| Operating temperature up to 6000 ft (1800 m)                              | 23°F to 113°F (-5°C to +45°C)   |
| Operating temperature up to 10,000 ft (3000 m)                            | 23°F to 104°F (-5°C to +40°C)   |
| Operating temperature up to 13,000 ft (4000m)                             | 23°F to 95°F (-5°C to 35°C)     |
| Short-term exception up to 6,000 feet (1800 m)                            | 23°F to 131°F (-5°C to +55°C)   |
| Short-term exception up to 10,000 feet (3000 m)                           | 23°F to 122°F (-5°C to +50°C)   |
| Short-term exception up to 13,000 feet (4000 m)                           | 23°F to 113°F (-5°C to +45°C)   |
| Short-term exception at sealevel with single fan failure                  | 23°F to 113°F (-5°C to +45°)    |
| Storage environment   | -40°F to 160°F (-40°C to 70°C)  |
| Operating altitude  | Up to 16,400 Feet (Up to 5000m) |
| Storage altitude  | Up to 16,400 Feet (Up to 5000m) |
| Operating relative humidity   | 5% to 96% noncondensing         |
| Storage relative humidity   | 5% to 96% noncondensing         |
| Short-term exception at sealevel with single fan failure                  | 23°F to 113°F                   |
| Storage environment   | -40°F to 160°F                  |



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