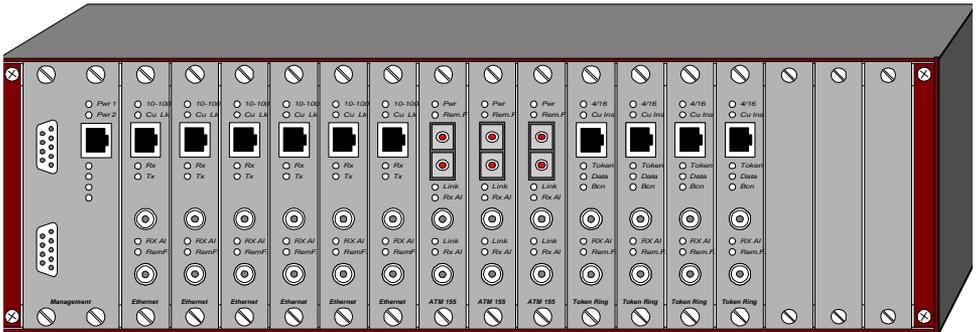




CityLIGHT™ 3U Chassis



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**FEDERAL COMMUNICATIONS COMMISSION
AND
CANADIAN DEPARTMENT OF COMMUNICATIONS
RADIO FREQUENCY INTERFERENCE STATEMENTS**

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

NORMAS OFICIALES MEXICANAS (NOM) ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

CERTIFICATION NOTICE FOR EQUIPMENT USED IN CANADA

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications-network protective, operation, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly (extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility—in this case, your supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION:

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The LOAD NUMBER (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices, subject only to the requirement that the total of the load numbers of all the devices does not exceed 100.

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1. SPECIFICATIONS

Specifications for LCL210A CityLIGHT 3U Chassis

CHASSIS	
DIMENSIONS	3U HIGH, 19-INCH RACKMOUNTABLE 38.2 x 43.9 x 13.2 cm; 15" x 17.3" x 5.2" (L x W x H)
WEIGHT	3.8 kg; 8 lb., 6 oz. (3U CHASSIS WITH BACKPLANE, NO PSU)
CONTACT CLOSURES	30V 0.5A DC
FAN AIRFLOW	14.2 LITERS/SEC; 30 FT ³ /MIN
CONNECTORS	AC INPUT IEC320 INLET
ENVIRONMENTAL	Operating: 32 to 104°F (0 to 40°C) Storage: 14 to 158°F (-10 to +70°C)
HUMIDITY	MAX. 95% (NON-CONDENSING)
CHASSIS FAN	
DIMENSIONS	2.5 x 6.1 x 6.1 cm; 1" x 2.4" x 2.4" (L x W x H)
FAN AIRFLOW	8.7 LITERS/SEC; 18.4 ft ³ /MIN

Specifications for PS210 110/220V AC Power-Supply Unit

AC PSU	
Input Voltage	90-260V AC (UNIVERSAL)
Input Frequency	47 HZ TO 63 HZ
Input Current (maximum)	1.4A AT 240V AC, OR 3.5A AT 115V AC

INRUSH CURRENT START AT 25°C)	(COLD	<60A
POWER FACTOR CORRECTION		>0.97
EFFICIENCY		>60% AT NOMINAL LINE AND RATED LOAD
COMPLIANCE		UL1950 cUL1950 CE 73/23/EEC CE 89/336/EEC FCC Pt 15 Limit B
DIMENSIONS		16.7 x 15 x 8.6 cm; 6.6" x 5.9" x 3.4" (L x W x H)
WEIGHT		1.5 kg; 3 lb., 5 oz.

Specifications for PS211 48V DC Power-Supply Unit

DC PSU		
INPUT VOLTAGE		42-58V DC (NOMINAL 48V DC)
INPUT CURRENT (MAXIMUM)		8.8A
EFFICIENCY		>60% AT NOMINAL LINE AND RATED LOAD
FAN AIRFLOW		14.2 LITERS/SEC; 30 FT ³ /MIN
CONNECTORS		DC INPUT, SCREW TERMINALS
ENVIRONMENTAL		Operating: 32 to 104°F (0 to 40°C) Storage: 14 to 158°F (-10 to +70°C)
HUMIDITY		MAX. 95% (NON-CONDENSING)

COMPLIANCE

UL1950

cUL1950

CE 73/23/EEC

CE 89/336/EEC

FCC PT 15 LIMIT B

DIMENSIONS

16.7 x 15 x 8.6 cm; 6.6" x 5.9" x 3.4" (L x W x H)

WEIGHT

1.5 kg; 3 lb., 5 oz.

2. PRODUCT OVERVIEW

CityLIGHT is a modular, chassis-based system that provides SNMP management of both local and remote transceivers for all of the major LAN protocols.

Specifically designed for Telco applications, CityLIGHT has a unique feature set that addresses all of the management and installation problems encountered by providers of LAN extension in the link between the customer's site and the central office.

The main features of CityLIGHT are as follows:

SNMP management of the transceivers

Transceiver support for all major LAN protocols

Modular chassis design options

Wavelength Division Multiplexed (WDM) options for all transceiver cards

Sideband SNMP™ communication to each transceiver

SNMP management of transceivers supporting non-LAN protocols (e.g. ESCON)

Hot-swappable interface cards on all chassis options

Hot-swappable power-supply units on the 3U chassis

Redundant 110/220V AC and 48V DC power-supply options for all chassis types

Contact closure alarm indication

VT100/220 console interface

SLIP/modem interface

Single-mode optical interfaces with up to 60km drive distance

2.1 Chassis

The CityLIGHT 3U Chassis is for use within the central office, local point of presence of a service provider, or any location where multiple managed fiber links are required.

The chassis provides the following features:

- i) It can house up to 16 LAN transceiver cards for up to 16 links
- ii) The transceiver cards can be installed in any transceiver slot, regardless of their protocol type
- iii) Support for an optional SNMP card in a pre-defined slot
- iv) The transceiver cards and the SNMP card are hot-swappable
- v) Hot-swappable dual power supplies
- vi) 48V DC or 90-264V universal AC plug-in power supplies
- vii) Internal cooling fan

The CityLIGHT 3U Chassis is a standard 3U high, 19-inch rackmountable unit.



Figure 1 - CityLIGHT 3U Chassis

2.2 Power-Supply Unit

The CityLIGHT 3U Chassis provides for the mounting of two power-supply units (PSU). To provide a redundant power-supply, both PSUs must be fitted; however the CityLIGHT system can operate with only one PSU.

Two PSU types are available:

PS210: 110/220V AC

PS211: 48V DC

If two PSUs are being fitted, both units must be of the same type; the chassis will support either AC power supplies or DC power supplies.

The PSUs are hot-swappable and operating the locking key mechanism on the rear panel will turn the power supply off before the unit can be removed from the CityLIGHT 3U Chassis.

In the situation when a redundant AC PSU is fitted, each PSU can be supplied from a different phase of the AC supply, so that in the event of the failure of one phase of the AC supply the CityLIGHT system will continue to operate.

If a redundant PSU is fitted and both PSUs are operating correctly then they will share the load.

Each PSU is fitted with a green LED. When illuminated this indicates that the PSU is functioning normally. If the LED is extinguished and power is correctly supplied, this indicates that either the PSU has been turned off via the locking key or that the PSU is faulty and should be returned to your supplier.

NOTE: Before contacting the supplier, always check the power cable and socket to which it is connected. Most 'power fail' faults are attributed to simple operator errors during commissioning.

The AC input to the PSU is via an IEC320 connector. The DC input is via screw terminals. To connect the DC power, connect the positive lead to the terminal marked +ve and the negative lead to the terminal marked -ve. Some 48V supplies are marked 0V and +48V; others are marked -48V and 0V. In either case the more positive lead must be connected to the +ve terminal and the more negative lead to the -ve terminal.

A fan is fitted to each PSU for cooling. In the event of the fan failing or stalling, a DC fail signal is produced and the PSU will shut down. If the fan failure was due to an obstruction, then once the obstruction is removed the PSU will restart after approximately seven to eight seconds.

The PSU will also shut down if a short-circuit or an overload condition occurs; when the fault is removed, the PSU will automatically restart.

Each PSU provides a signal indicating that it is operating normally. A tachometer signal is also provided to give an indication of the fan speed. Both of these can be monitored via the SNMP agent and associated terminal.

2.3 Cooling Fan

The CityLIGHT 3U Chassis has a cooling fan located on the right of the rear panel. The speed of the fan is continually monitored and an alarm is generated if the fan malfunctions or its speed falls below a pre-set limit.

2.4 Contact Closures

The CityLIGHT 3U Chassis has contact closures located on the rear of the unit. There is one set of contact closures for the whole system, and these are used in conjunction with the trap enable function to effect their operation. If an event results in a change of state trap being generated, the contact closures will correspondingly change state.

The contact closures consist of 3 screw terminals with the center one common and one pair “normally open”, the other “normally closed”. Any error condition, including loss of power to one or both PSUs, causes the contact closures to operate.

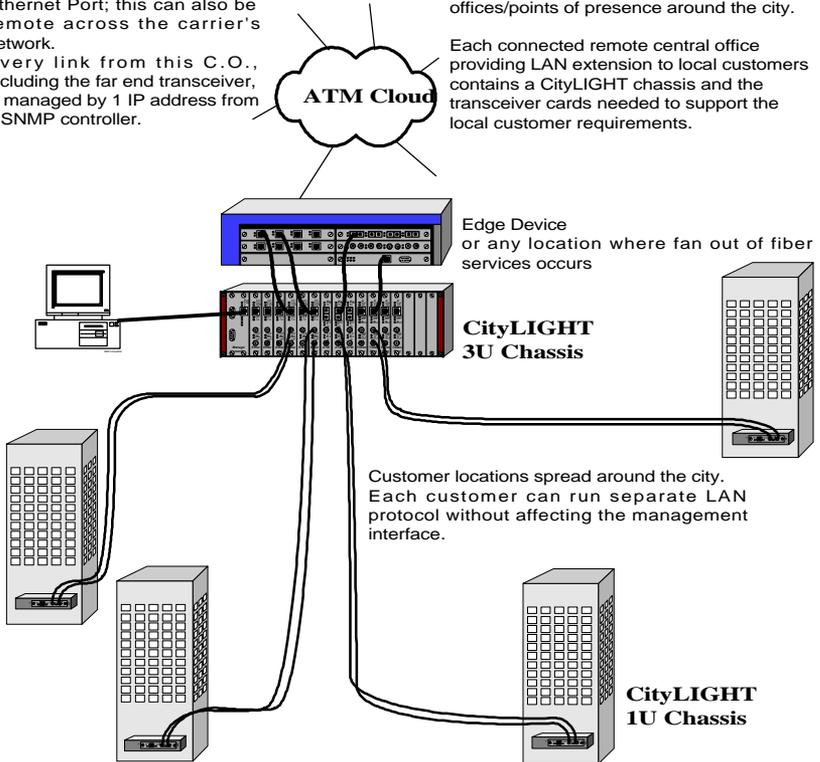
3. TYPICAL APPLICATION

The CityLIGHT system is intended for use between the central office or a local point of presence and the end user premises, or in any location where fiber links fan out to remote sites.

SNMP Management in-band via Ethernet Port; this can also be remote across the carrier's network. Every link from this C.O., including the far end transceiver, is managed by 1 IP address from 1 SNMP controller.

ATM cloud connecting to other central offices/points of presence around the city.

Each connected remote central office providing LAN extension to local customers contains a CityLIGHT chassis and the transceiver cards needed to support the local customer requirements.



4. INSTALLATION

The following procedures cover the installation of the CityLIGHT 3U Chassis, its power-supply units, and its cooling fan. The installation of the individual transceiver cards (or SNMP card) into the CityLIGHT 3U Chassis is briefly detailed below but also covered in their respective manuals.

4.1 Tools Required

To install a CityLIGHT 3U Chassis, you will need a Pozidrive and a flat-bladed screwdriver.

4.2 Rackmounted Chassis

The rackmount kit contains two rackmount brackets and eight screws. These enable the CityLIGHT 3U Chassis to be fitted to a standard 19-inch rack.

NOTE: The CityLIGHT 3U Chassis has two positions at which the rackmount brackets can be attached. These are either at the front or in the middle of the side panels. The position at the middle of the side panels is normally used to provide greater support when the CityLIGHT 3U Chassis is fully loaded.

The procedure for fitting the brackets is:

- 1) Place the bracket on the side of the CityLIGHT 3U Chassis in the required position so that the four screw holes on the chassis and the bracket are lined up.
- 2) Insert the four screws and tighten. Repeat for the opposite side.
- 3) Insert the CityLIGHT 3U Chassis into the 19-inch rack.
- 4) When installing the transceiver cards (or SNMP card) into the chassis, observe static handling procedures. Locate the relevant card into the guide rails in the chassis and push the card firmly until it engages with the connector on the backplane. Tighten the thumb screws by hand. The screws may be gently further tightened with a flat-bladed screwdriver if desired.

4.3 Standalone Chassis

If the CityLIGHT 3U Chassis is to be used as a standalone chassis, place it on a secure flat surface. Make sure the chassis is within reach of the necessary connections.

4.4 Power-Supply Unit

NOTE: If only a single PSU is to be installed, it may be installed in either of the two PSU slots. For consistency, a single PSU is always shipped (located in the right-hand slot as viewed from the rear of the chassis).

The following procedure is for the installation of a PSU:

- 1) Remove the three screws securing the blanking plate of the PSU slot on the rear of the CityLIGHT 3U Chassis. Unplug the fan and remove the blanking plate.
- 2) Insert the PSU into the slot.
- 3) Push the PSU firmly until it engages with the connector inside the CityLIGHT 3U Chassis.
- 4) Only two screws are used to locate the PSU. Insert these and tighten.
- 5) Connect the supply to the PSU (either 90-264V AC or 48V DC).

NOTE: 48V DC supplies at the installation site may be marked 0V and +48V or -48V and 0V. In either case, connect the more positive lead to the terminal marked +ve and the more negative lead to the terminal marked -ve, (i.e. if you have 0V and -48, connect the 0V lead to the +ve terminal and the -48V lead to the -ve terminal. If you have 0V and +48V, connect the +48V lead to the +ve terminal and the 0V lead to the -ve terminal).

- 6) Turn the locking key to secure and enable the PSU. Make sure the green LED illuminates and the PSU cooling fan starts.

The following procedure is for the removal of a PSU:

- 7) Turn the locking key to release the PSU. Make sure the green LED goes out and the PSU cooling fan stops.

NOTE: The DC PSU is connected using ring crimps on the supply lead, affixed to a terminal block. Before disconnecting the supply lead, ensure that it is isolated from the supply.

- 8) Disconnect the supply from the PSU (either AC or DC).
- 9) Remove the two screws from the PSU.
- 10) Pull the PSU out of the slot in the CityLIGHT 3U Chassis.
- 11) If a replacement PSU is not to be fitted, install the PSU blanking plate and fan in the PSU slot. Connect the fan and secure the plate to the CityLIGHT 3U Chassis with the three screws.

NOTE: If fitted, the CityLIGHT 3U Card monitors the status of the PSUs via two LEDs located on its front panel.

Pwr 1 LED monitors the right-hand PSU.

Pwr 2 LED monitors the left-hand PSU (as viewed from the rear of the chassis).

4.5 Chassis Cooling Fan

The following procedure is for the replacement of a chassis cooling fan:

- 1) Remove the four screws securing the backing plate (holding the fan) to the CityLIGHT 3U Chassis and lower the backing plate out of the chassis.
- 2) Unplug the fan from the chassis and remove the fan from the backing plate.
- 3) Locate and secure the replacement fan on the backing plate and remake the electrical connection.
- 4) Raise the backing plate into position and insert the four screws and tighten.

NOTE: If a redundant PSU is not fitted, an additional cooling fan is fitted in the vacant slot. The procedure to replace this fan is as above except the backing plate is secured with three screws.

4.6 Contact Closures

Contact closures operate whenever power is lost or when an event causing an enabled trap message to be sent occurs. Error conditions result in the contact closures having the normally open pair closed and the normally closed pair open.

The terminal or the SNMP agent has to be used to ascertain the source of the fault condition. Only when all fault conditions are removed will the contact closures revert to their normal state.

The contact closures are rated to 30V 0.5A DC.

4.7 User-Serviceable Parts

The chassis is fitted with fans for thermal management and is intended to be operated with all covers fitted.

To ensure that all components are adequately cooled, do not operate the unit for extended periods without having either modules or the supplied blanking plates fitted in the front of the rack.

5. TECHNICAL SUPPORT

If you fail to resolve your problem and require more help, please contact Black Box Technical Support at 724-746-5500 with the following information:

1. Unit type.
2. Unit serial number.
3. Environment lay-out. Include hubs, bridges and routers (with model numbers), estimated cable lengths (between equipment), and type of cable used.
4. A description of the problem you are experiencing.
5. List of tests performed.



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