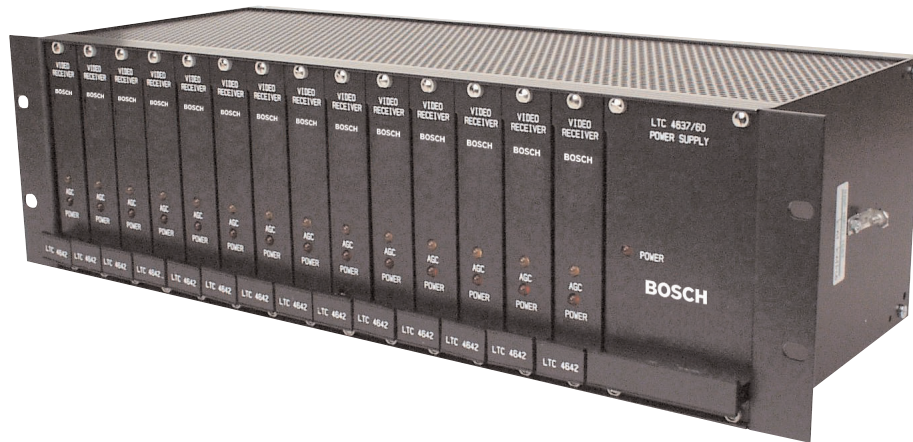


LTC 4600 Series



Security Systems

EN | Instruction Manual
Fiber Optic
Transmission System

BOSCH

Important Safeguards

1. **Read, Follow, and Retain Instructions** - All safety and operating instructions should be read and followed before operating the unit. Retain instructions for future reference.
2. **Heed Warnings** - Adhere to all warnings on the unit and in the operating instructions.
3. **Attachments** - Attachments not recommended by the product manufacturer should not be used, as they may cause hazards.
4. **Installation Cautions** - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only manufacturer-recommended accessories, or those sold with the product. Mount the unit per the manufacturer's instructions. Appliance and cart combination should be moved with care. Quick stops, excessive force, or uneven surfaces may cause the appliance and cart combination to overturn.
5. **Cleaning** - Unplug the unit from the outlet before cleaning. Follow any instructions provided with the unit. Generally, using a damp cloth for cleaning is sufficient. Do not use liquid cleaners or aerosol cleaners.
6. **Servicing** - Do not attempt to service this unit yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
7. **Damage Requiring Service** - Unplug the unit from the main AC power source and refer servicing to qualified service personnel under the following conditions:
 - When the power supply cord or plug is damaged.
 - If liquid has been spilled or an object has fallen into the unit.
 - If the unit has been exposed to water and/or inclement weather (rain, snow, etc.).
 - If the unit does not operate normally, when following the operating instructions. Adjust only those controls specified in the operating instructions. Improper adjustment of other controls may result in damage, and require extensive work by a qualified technician to restore the unit to normal operation.
 - If the unit has been dropped or the cabinet damaged.
 - If the unit exhibits a distinct change in performance, this indicates that service is needed.
8. **Replacement Parts** - When replacement parts are required, the service technician should use replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electrical shock or other hazards.
9. **Safety Check** - Upon completion of servicing or repairs to the unit, ask the service technician to perform safety checks to ensure proper operating condition.
10. **Power Sources** - Operate the unit only from the type of power source indicated on the label. If unsure of the type of power supply to use, contact your dealer or local power company.
 - For units intended to operate from battery power, refer to the operating instructions.
 - For units intended to operate **with External Power Supplies**, use only the recommended approved power supplies.
 - For units intended to operate with a limited power source, this power source must comply with EN60950. Substitutions may damage the unit or cause fire or shock.
 - For units intended to operate at 24VAC, normal input voltage is **24VAC**. Voltage applied to the unit's power input should not exceed 30VAC. User-supplied wiring, from the 24VAC supply to unit, must be in compliance with electrical codes (Class 2 power levels). Do not ground the 24VAC supply at the terminals or at the unit's power supply terminals.
11. **Coax Grounding** - If an outside cable system is connected to the unit, ensure that the cable system is grounded. U.S.A. models only - Section 810 of the National Electrical Code, ANSI/NFPA No.70, provides information regarding proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
12. **Grounding or Polarization** - This unit may be equipped with a polarized alternating current line plug (a plug with one blade wider than the other). This safety feature allows the plug to fit into the power outlet in only one way. If unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to arrange replacement of the obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternately, this unit may be equipped with a 3-wire grounding plug (a plug with a third pin, for grounding). This safety feature allows the plug to fit into a grounding power outlet only. If unable to insert the plug into the outlet, contact an electrician to arrange replacement of the obsolete outlet. Do not defeat the safety purpose of the grounding plug.
13. **Lightning** - For added protection during a lightning storm, or when this unit is left unattended and unused for long periods of time, unplug the unit from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power line surges.

For Indoor Product

1. **Water and Moisture** - Do not use this unit near water - for example, in a wet basement, in an unprotected outdoor installation, or in any area classified as a wet location.
2. **Object and Liquid Entry** - Never push objects of any kind into this unit through openings, as they may touch dangerous voltage points or short out parts that could result in a fire or electrical shock. Never spill liquid of any kind on the unit.
3. **Power Cord and Power Cord Protection** - For units intended to operate with 230VAC, 50Hz, the input and output power cord must comply with the latest versions of IEC Publication 227 or IEC Publication 245.
Power supply cords should be routed so they are not likely to be walked on or pinched. Pay particular attention to location of cords and plugs, convenience receptacles, and the point of exit from the appliance.
4. **Overloading** - Do not overload outlets and extension cords; this can result in a risk of fire or electrical shock.

For Outdoor Product

Power Lines - An outdoor system should not be located in the vicinity of overhead power lines, electric lights, or power circuits, or where it may contact such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching power lines or circuits, as this contact might be fatal. U.S.A. models only - refer to the National Electrical Code Article 820 regarding installation of CATV systems.

For Rack-mount Product

1. **Ventilation** - This unit should not be placed in a built-in installation or rack, unless proper ventilation is provided, or the manufacturer's instructions have been adhered to. The equipment must not exceed its maximum operating temperature requirements.
2. **Mechanical Loading** - Mounting of the equipment in a rack shall be such that a hazardous condition is not achieved due to uneven mechanical loading.

Safety Precautions

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol indicates the presence of uninsulated "dangerous voltage" within the product's enclosure. This may constitute a risk of electric shock.



The user should consult the operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Attention: Installation should be performed by qualified service personnel only in accordance with the National Electrical Code or applicable local codes.



Power Disconnect. Units with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. The power cord is the main power disconnect for all units.

FCC & ICES INFORMATION

(U.S.A. and Canadian Models Only)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules and ICES-003 of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer, or an experienced radio/TV technician for help.

Intentional or unintentional changes or modifications, not expressly approved by the party responsible for compliance, shall not be made. Any such changes or modifications could void the user's authority to operate the equipment. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: [How to Identify and Resolve Radio-TV Interference Problems](#). This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Sécurité

	ATTENTION RISQUE D'ÉLECTROCUTION. NE PAS OUVRIR !	
ATTENTION : POUR ÉVITER TOUT RISQUE D'ÉLECTROCUTION, N'ESSAYEZ PAS DE RETIRER LE CAPOT (OU LE PANNEAU ARRIÈRE). CET APPAREIL NE CONTIENT AUCUN COMPOSANT SUSCEPTIBLE D'ÊTRE RÉPARÉ PAR L'UTILISATEUR. CONFIEZ LA RÉPARATION DE L'APPAREIL À DU PERSONNEL QUALIFIÉ.		
	Ce symbole signale que le produit renferme une « tension potentiellement dangereuse » non isolée susceptible de provoquer une électrocution.	
	Ce symbole invite l'utilisateur à consulter les instructions d'utilisation et d'entretien (dépannage) reprises dans la documentation qui accompagne l'appareil.	
	Attention : l'installation doit exclusivement être réalisée par du personnel qualifié, conformément au code national d'électricité américain (NEC) ou au code d'électricité local en vigueur.	
	Coupage de l'alimentation. Qu'ils soient pourvus ou non d'un commutateur ON/OFF, tous les appareils reçoivent de l'énergie une fois le cordon branché sur la source d'alimentation. Toutefois, l'appareil ne fonctionne réellement que lorsque le commutateur est réglé sur ON. Le débranchement du cordon d'alimentation permet de couper l'alimentation des appareils.	

Sicherheitshinweise

	VORSICHT ELEKTRISCHE SPANNUNG. NICHT ÖFFNEN!	
VORSICHT: UM EINEN ELEKTRISCHEN SCHLAG ZU VERMEIDEN, IST DIE ABDECKUNG (ODER RÜCKSEITE) NICHT ZU ENTFERNEN. ES BEFINDEN SICH KEINE TEILE IN DIESEM BEREICH, DIE VOM BENUTZER GEWARTET WERDEN KÖNNEN. LASSEN SIE WARTUNGSARBEITEN NUR VON QUALIFIZIERTEM WARTUNGSPERSONAL AUSFÜHREN.		
	Das Symbol macht auf nicht isolierte „gefährliche Spannung“ im Gehäuse aufmerksam. Dies kann zu einem elektrischen Schlag führen.	
	Der Benutzer sollte sich ausführlich über Anweisungen für die Bedienung und Instandhaltung (Wartung) in den begleitenden Unterlagen informieren.	
	Achtung! Die Installation sollte nur von qualifiziertem Kundendienstpersonal gemäß jeweils zutreffender Elektrovorschriften ausgeführt werden.	
	Unterbrechung des Netzanschlusses. Geräte mit oder ohne Netzschalter haben Spannung am Gerät anliegen, sobald der Netzstecker in die Steckdose gesteckt wird. Das Gerät ist jedoch nur betriebsbereit, wenn der Netzschalter (EIN/AUS) auf EIN steht. Wenn das Netzkabel aus der Steckdose gezogen wird, ist die Spannungszuführung zum Gerät vollkommen unterbrochen.	

Precauciones de Seguridad

	ATTENZIONE PERICOLO DI SCOSSA ELETTRICA. NON APRIRE.	
PRECAUCIÓN: PARA DISMINUIR EL RIESGO DE DESCARGA ELÉCTRICA, NO RETIRE LA CUBIERTA (NI LA PARTE POSTERIOR). NO EXISTEN PIEZAS DE RECAMBIO EN EL INTERIOR DEL EQUIPO. EL PERSONAL DE SERVICIO CUALIFICADO SE ENCARGA DE REALIZAR LAS REPARACIONES.		
	Este símbolo indica que existen puntos de tensión peligrosos sin aislamiento dentro de la cubierta de la unidad. Estos puntos pueden constituir un riesgo de descarga eléctrica.	
	El usuario debe consultar las instrucciones de funcionamiento y mantenimiento (reparación) en la documentación que se suministra con el aparato.	
	Atención: la instalación la debe realizar únicamente personal cualificado de conformidad con el National Electric Code o las normas aplicables en su país.	
	Desconexión de la alimentación. Las unidades con o sin interruptores de encendido/apagado reciben alimentación eléctrica siempre que el cable de alimentación esté conectado a la fuente de alimentación. Sin embargo, la unidad sólo funciona cuando el interruptor está en la posición de encendido. El cable de alimentación es la principal fuente de desconexión de todas las unidades.	

Veiligheidsmaatregelen

	VOORZICHTIG GEVAARVOOR ELEKTRISCHE SCHOK. NIET OPENEN!	
VOORZICHTIG: OPEN DE BEHUIZING OF DE ACHTERKANT VAN HET APPARAAT NIET. ZO VERMINDERT U HET RISICO OP ELEKTRISCHE SCHOKKEN. IN HET APPARAAT BEVINDEN ZICH GEEN ONDERDELEN DIE U ZELF KUNT REPAREREN. LAAT SERVICE EN ONDERHOUD UITVOEREN DOOR GEKwalificeerd PERSONEEL.		
	Dit symbool geeft aan dat er binnen in het apparaat ongeïsoleerde, gevaarlijke spanning aanwezig is die mogelijk elektrische schokken kan veroorzaken.	
	De gebruiker dient de bedienings- en onderhoudsvoorschriften te raadplegen in de documentatie die werd meegeleverd met het apparaat.	
	Attentie: het apparaat mag alleen door gekwalificeerd personeel worden geïnstalleerd. De installatie dient in overeenstemming met de nationale elektrische richtlijnen of de van toepassing zijnde lokale richtlijnen te worden uitgevoerd.	
	Spanning uitschakelen. Apparatuur met of zonder aan-uitschakelaar staat onder spanning zolang de stekker is aangesloten op de wandcontactdoos. De apparatuur is uitsluitend in werking als de aan-uitschakelaar aan staat. Het netsnoer is de "hoofdschakelaar" voor alle apparatuur.	

Sicurezza

	ATTENZIONE PERICOLO DI SCOSSA ELETTRICA. NON APRIRE.	
ATTENZIONE: PER RIDURRE IL RISCHIO DI SCOSSE ELETTRICHE NON RIMUOVERE LA COPERTURA (O IL PANNELLO POSTERIORE). L'UNITÀ NON CONTIENE COMPONENTI INTERNI RIPARABILI DALL'UTENTE. PER QUALSIASI INTERVENTO, RIVOLGERSI A PERSONALE TECNICO QUALIFICATO.		
	Questo simbolo indica la presenza di "tensione pericolosa" non isolata all'interno del contenitore del prodotto. Ciò comporta un potenziale rischio di scosse elettriche.	
	Si consiglia di consultare le istruzioni operative e di manutenzione (interventi tecnici) contenute nella documentazione fornita con il dispositivo.	
	Attenzione: l'installazione deve essere effettuata esclusivamente da personale tecnico qualificato in conformità con il National Electrical Code o con le normative locali vigenti.	
	Scollegamento dell'alimentazione. Le unità dotate o sprovviste di interruttori ON-OFF vengono alimentate quando si inserisce il cavo nella presa dell'alimentazione. L'unità è tuttavia in funzione solo quando l'interruttore ON-OFF si trova nella posizione ON. Il cavo di alimentazione costituisce il dispositivo di scollegamento dell'alimentazione principale per tutte le unità.	

Medidas de Segurança

	CUIDADO RISCO DE CHOQUE ELÉCTRICO. NÃO ABRIR!	
CUIDADO: PARA REDUZIR O RISCO DE CHOQUE ELÉCTRICO, NÃO RETIRE A TAMPA (OU A PARTE POSTERIOR). NO INTERIOR, NÃO EXISTEM PEÇAS QUE POSSAM SER REPARADAS PELO UTILIZADOR. REMETA A ASSISTÊNCIA PARA OS TÉCNICOS QUALIFICADOS.		
	Este símbolo indica a presença de "tensão perigosa" não isolada dentro da estrutura do produto, o que pode constituir risco de choque eléctrico.	
	O utilizador deve consultar as instruções de funcionamento e manutenção (assistência) nos documentos que acompanham o aparelho.	
	Atenção: a instalação deve ser executada apenas por técnicos qualificados da assistência, de acordo com o código eléctrico nacional ou os códigos locais aplicáveis.	
	Corte de corrente. As unidades com ou sem interruptores ON-OFF (ligar/desligar) recebem corrente sempre que o fio de alimentação está introduzido na fonte de alimentação; contudo, a unidade apenas está operacional quando o interruptor ON-OFF está na posição ON. O fio de alimentação destina-se a desligar a corrente em todas as unidades.	

安全预防措施

	CAUTION RISK OF ELECTRIC SHOCK. DO NOT OPEN!	
注意：为避免受到电击，不要拆除机盖（或后盖）。用户不得擅自维修里面的部件。有关维修事项，请咨询合格的维修人员。		
	此符号表示产品机壳内存在未绝缘的“危险电压”。这可能导致电击。	
	用户应参照设备附带的操作和维护（维修）说明。	
	注意：安装须由合格的维修人员遵照美国国家电工标准或相关电气规则进行。	
	断开电源。在电源线插入电源时，配备或未配备 ON-OFF 开关的设备都已通电；但设备只有在 ON-OFF 开关处于 ON 位置时才能工作。对于所有设备，电源线是断开电源的主要方式。	

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1 UNPACKING

This electronic equipment should be unpacked and handled carefully. In addition to a copy of these instructions, check for the following items:

1. Stand-alone units:
 - Individual LTC 4600 or LTC 4700 Series Module, and associated Power Supply
2. Rack-mount units:
 - Individual LTC 4600 or LTC 4700 Series Rack Plug-in Module
 - Rack / Power Supply Card Cage
 - Card Cage with integral Power Supply and applicable AC Power Cord

If an item appears to have been damaged in shipment, replace it properly in its carton and notify the shipper. If any items are missing, notify your Bosch Security Systems, Inc. Sales Representative or Customer Service.

The shipping carton is the safest container in which the unit may be transported. Save it for possible future use.

2 SERVICE

If the unit ever needs repair service, the customer should contact the nearest Bosch Security Systems, Inc. Service Center for return authorization and shipping instructions.

Service Centers

USA

Phone: 800-366-2283 or 717-735-6638

Fax: 800-366-1329 or 717-735-6639

CCTV Spare Parts

Phone: 800-894-5215 or 408-956-3853 or 3854

Fax: 408-957-3198

E-mail: BoschCCTVparts@ca.slr.com

Canada

Phone: 514-738-2434

Europe, Middle East & Asia Pacific Region

Phone: 32-1-440-0711

For additional information, see

www.boschsecuritysystems.com.

3 DESCRIPTION

The LTC 4600 and LTC 4700 Series are transmission systems that provide efficient, high quality video and data transmission via multimode fiber optic cable for improved CCTV system performance. Signals are immune to ground loops, radio frequency interference (RFI), electromagnetic interference (EMI), and cross talk because the video carrier is infrared light, and is transmitted through a nonconductive fiber optic cable. Interference-free operation ensures reliable service. Unlike microwave, wire, and coaxial cable transmission systems, fiber optic transmission is difficult, if not impossible, to tap. And, since fiber optic cable is nonconductive and does not radiate a signal, it is difficult to detect and locate. These compact devices are available in a surface mount enclosure or in a modular style package that can be rack-mounted using an optional EIA 19" compatible rack unit.

3.1 Model Summary

A list of available models is shown below. Complete specifications can be found on the LTC 4600 Series Data Sheet that can be downloaded from www.boschsecuritysystems.com.

Model No.	Description / Use
LTC 4641, LTC 4642 Series	Single Channel Video Transmissions
LTC 4744, LTC 4745 Series	4-Channel Video Transmissions
LTC 4630, LTC 4631 Series	Bilinx™ Video/Data Transmissions
LTC 4628, LTC 4629 Series	Video/Biphase Data Transmissions
LTC 4671 Series	RS-485 Allegiant/Divar™/System4 Keyboard Data Transmissions
LTC 4651 Series	RS-232 / Biphase Data Transmissions
LTC 4681, LTC 4682 Series	10/100Base-T Ethernet Data Transmissions
LTC 4637 Series	Card Cage Enclosure for Rack-mount Models

4 INSTALLATION

4.1 Installing Rack-mount Modules

1. Install the LTC 4637 Series card cage unit as described in a later section of this document.
2. Install the fiber optic plug-in module into any available slot of the LTC 4637 Series rack-mount card cage. Certain modules, such as the LTC 4744 and LTC 4745 units are double width, so they require two (2) available rack-mount slots.
 - Push the module in completely, so that the 3-pin connector on the rear of the card engages the 3-pin connector on the back plane.
 - Each fiber optic plug-in module is equipped with a power LED indicator that illuminates when power is applied to the rack unit.
3. Fasten the module into place by tightening the front panel captive screws into the appropriate mating holes with a small flat blade screwdriver.
4. Connect the applicable video and/or data connections to the appropriate connectors, located either on the front or rear of the module. Refer to the example diagrams later in the individual sections.

4.2 Installing Stand-alone Modules

1. Choose an appropriate flat surface where the stand-alone module can be conveniently mounted, then mark the locations of the keyhole slots on the mounting flanges.
 - The LTC 4641 Series Video Transmitter is small enough to be installed inside a camera housing. If applicable, mount the module in a convenient location where it will not obstruct access to other items in the housing.
2. Install the appropriate mounting screws (not supplied) into the keyhole locations. Allow sufficient leeway under the screw head for the module to be mounted.
 - For the LTC 4641 Series Video Transmitter, a single mounting hole is provided to secure the module.
3. For modules other than the LTC 4641 Series, position the module over screw heads, slide to one side, and then tighten screws.
4. Connect the cable from the supplied power supply to the power input terminals on the module.
5. Connect the supplied power supply to an appropriate power source.
6. Connect the applicable video and/or data connections to the appropriate connectors on the module. Refer to example diagrams for exact details.

4.3 LTC 4641, LTC 4642 Series Modules for Video Transmission

4.3.1 Indicators / Operation

1. The POWER LED illuminates when AC power is applied to the unit.
2. LTC 4642/60 and LTC 4642/50 units: The Video Out / AGC LED illuminates GREEN when a video signal is being received, or RED if a video signal is not present.

Typical Configurations:

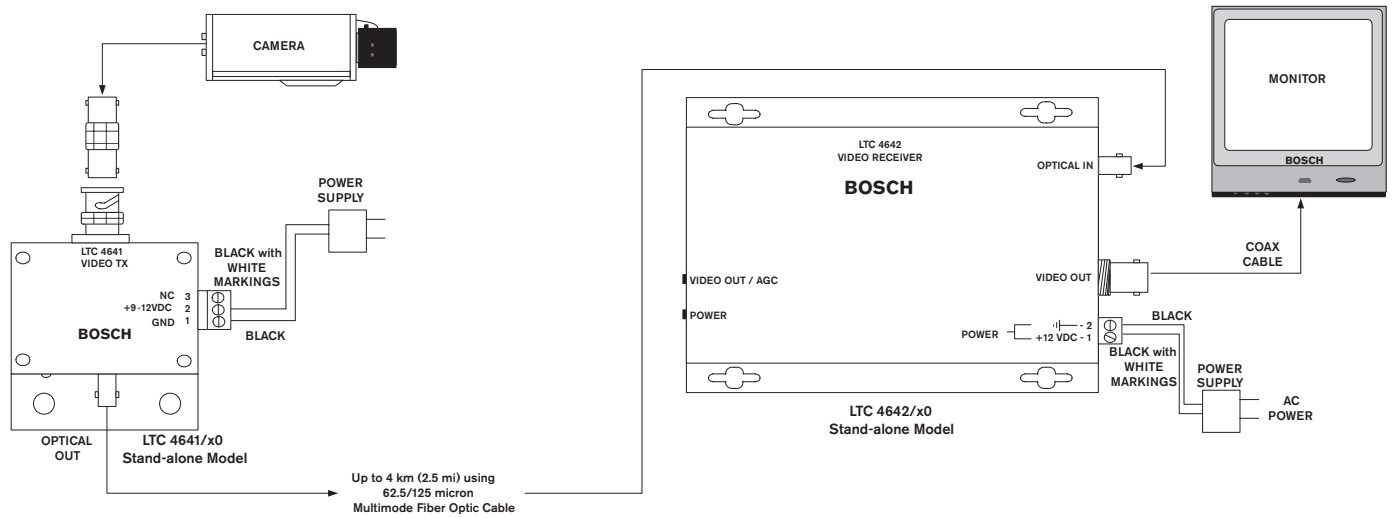


Figure 1 LTC 4641 Series Stand-alone Transmitter and LTC 4642 Series Stand-alone Receiver

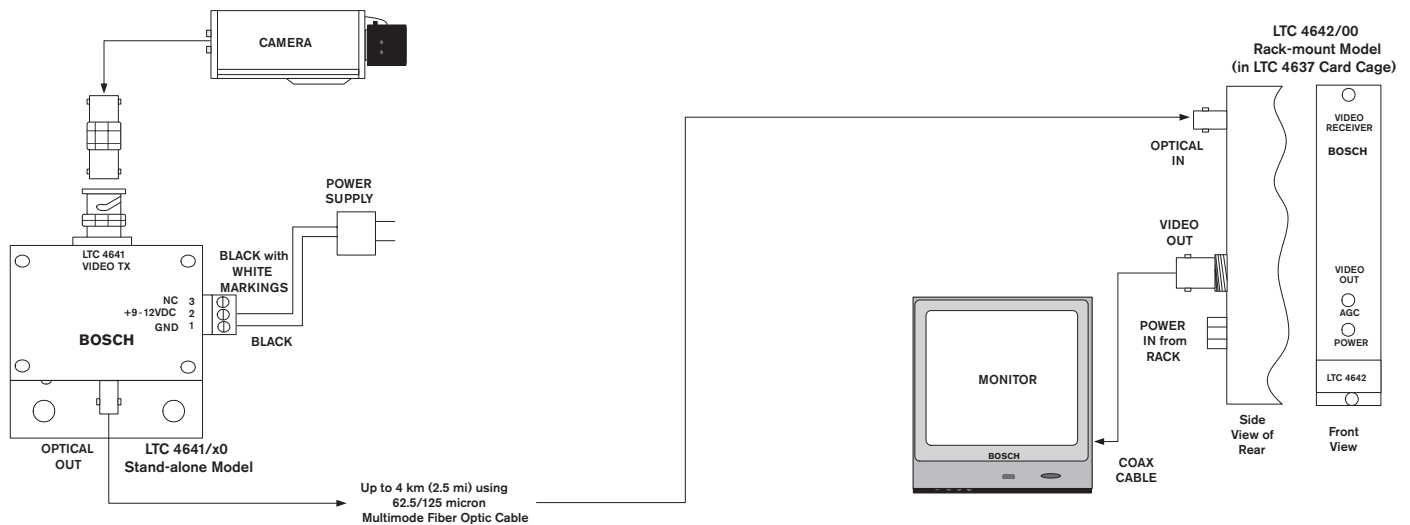


Figure 2 LTC 4641 Series Stand-alone Transmitter and LTC 4642 Series Rack-mount Receiver

4.4 LTC 4744, LTC 4745 Series Modules for Simultaneous 4-Channel Video Transmission

4.4.1 Indicators / Operation

1. The POWER LED illuminates when AC power is applied to the unit.
2. LTC 4744/00 units: Although this module provides both front and rear mounted BNC input connectors for installation convenience, each input channel is capable of accepting only a single video signal.

NOTE: Avoid simultaneously connecting video signals to both the front BNC and rear BNC of the same channel. Also, since each video channel is factory terminated to 75Ω , unused BNCs should not be used for loop-through video connections.

3. LTC 4744/60, LTC 4744/50, and LTC 4744/00 units: The respective CAMERA ON LED illuminates when a video signal is connected to its input.
4. LTC 4745/60, LTC 4745/50, and LTC 4745/00 units: The LOCAL VIDEO ON LED illuminates when the respective channel of the unit is providing a video signal output. The REMOTE VIDEO ON LED illuminates when a video signal is connected to the respective input of the LTC 4744 Series transmitter.

Typical Configuration:

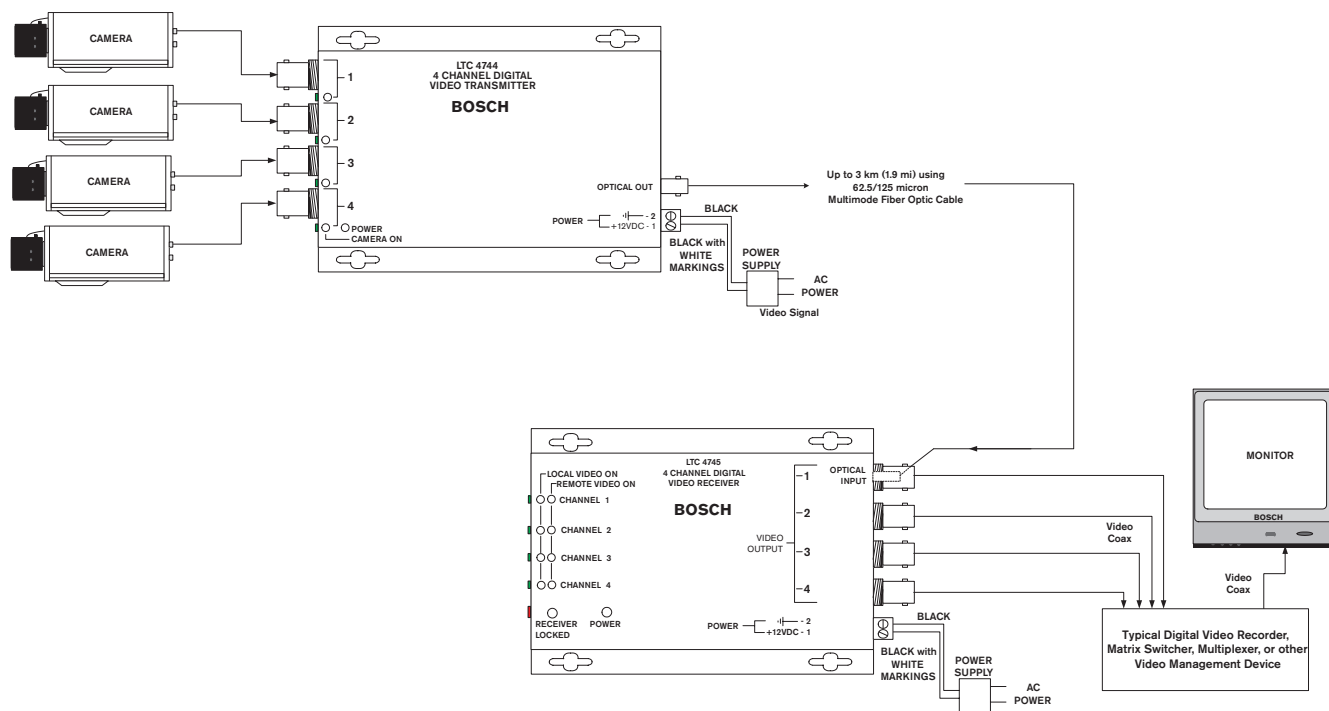


Figure 3 LTC 4744 Series Stand-alone Transmitter and LTC 4745 Series Stand-alone Receiver

4.5 LTC 4630, LTC 4631, Series Modules for Bilinx Video/Data Transmissions

4.5.1 Important Considerations

1. To ensure proper Bilinx communications, the video output of the LTC 4631 Series module must be terminated into a proper 75Ω load. If improper video looping connections are used, erratic or no camera P/T/Z control may result.
2. Do not exceed the published distance specification for Bilinx communications. Erratic or no camera P/T/Z control may result. Refer to the data sheet for product specifications.
3. Although these modules are compatible with Bilinx *up-the-coax* communication technology found in Bosch Security System products, compatibility is not guaranteed when used with similar technologies employed by other manufacturers.

4.5.2 Indicators / Operation

1. The POWER LED illuminates when AC power is applied to the unit.
2. LTC 4631 Series units: Once the video signal and fiber optic connections have been completed, the state of the VIDEO OUT and AGC LED indicators should be examined. If both are GREEN, test the VIDEO OUT LED action by temporarily removing the video signal from the LTC 4630 module. The LED should turn RED.

If necessary, adjust the AGC control in small increments until the correct LED actions are obtained. Marginal signal strengths are indicated by an AMBER color LED, and a RED LED indicates video loss, or that further adjustments are needed. The adjustment is sensitive. Adjust the control too high, and the VIDEO OUT LED may remain lit even when the video signal is removed or lost. If adjusted too low, the VIDEO OUT LED may remain RED even if a video signal is present.

Typical Configuration:

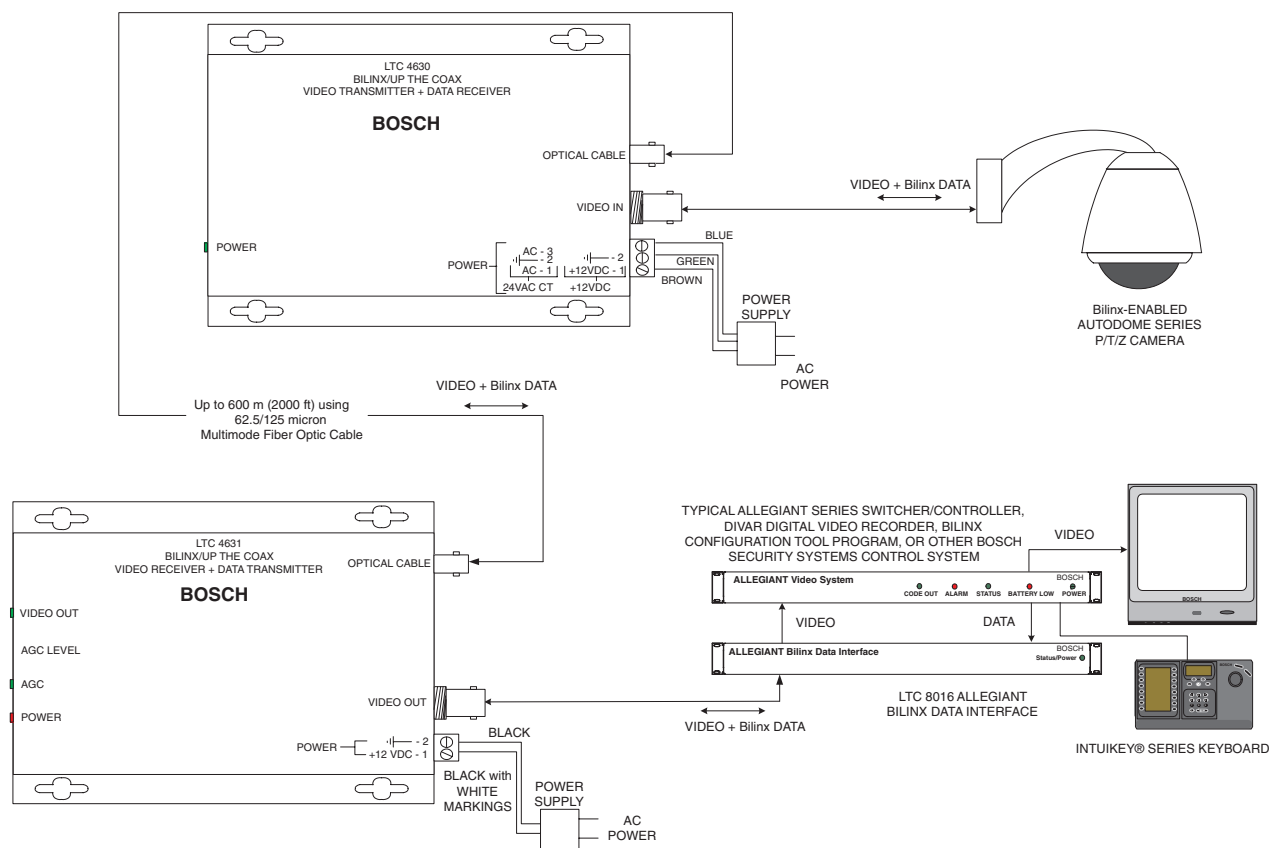
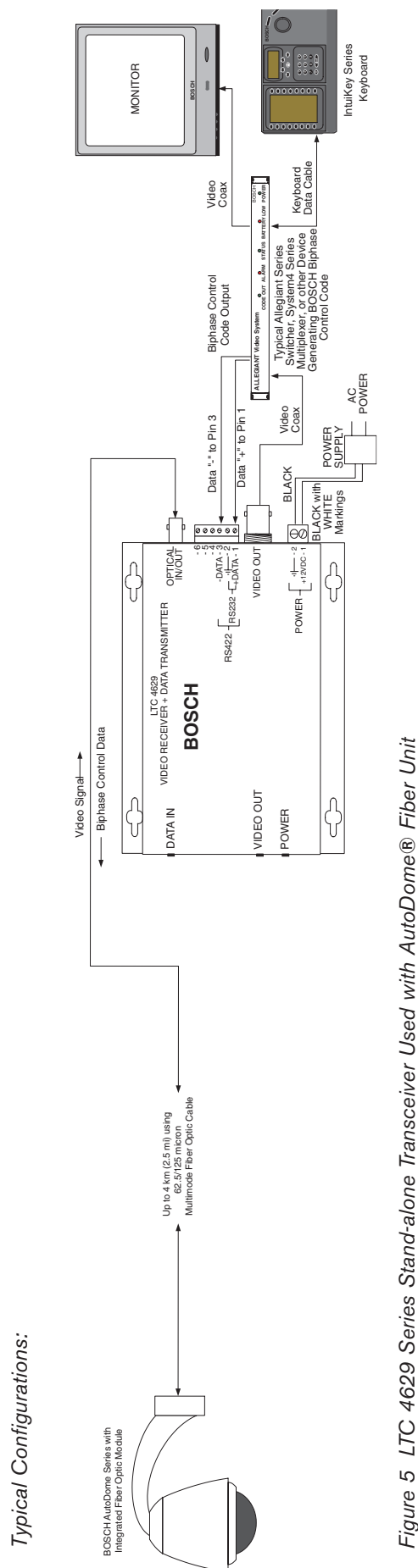


Figure 4 LTC 4630 Series and LTC 4631 Series Stand-alone Bilinx Transceivers

4.6 LTC 4628, LTC 4629 Series Modules for Video + Bosch Biphasic Control Code Transmission

4.6.1 Indicators / Operation

1. The POWER LED illuminates when AC power is applied to the unit.
2. LTC 4628/60, LTC 4628/50, and LTC 4628/00 units: The VIDEO PRESENT LED illuminates GREEN when a valid video signal is present, or RED if no video is being received. The DATA RECEIVE LED illuminates RED when no data is received, and flashes YELLOW as data is received.
3. LTC 4629/60, LTC 4629/50, and LTC 4629/00 units: The VIDEO OUT LED illuminates GREEN when a valid video signal is present on the LTC 4628 Series Transmitter, or RED if no video is present. The DATA IN LED illuminates RED if no data is being received on the optical signal, and flashes YELLOW as data is received.



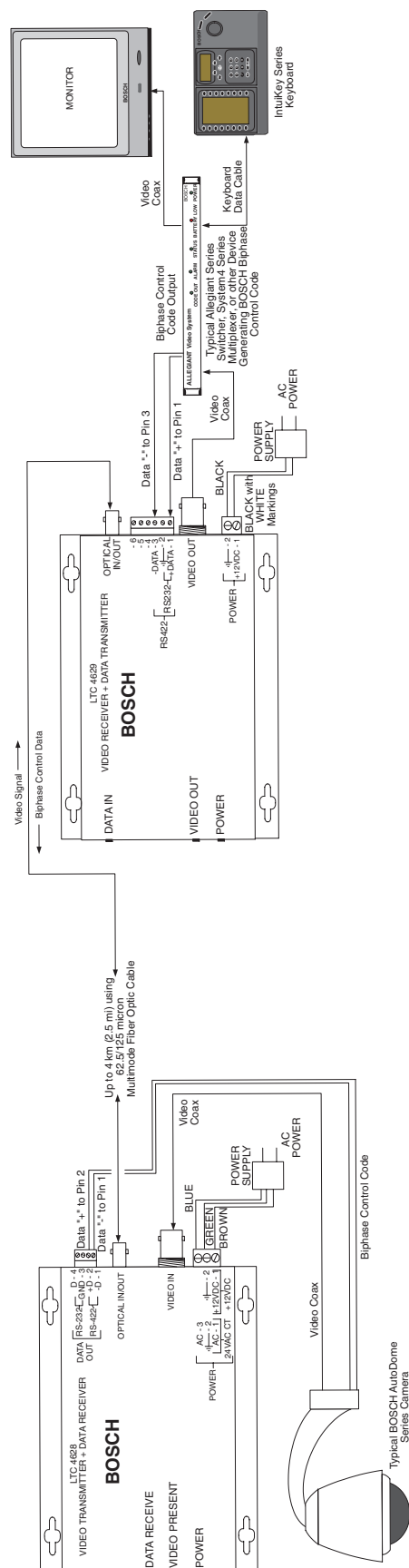


Figure 6 LTC 4628 and LTC 4629 Series Stand-alone Transceivers

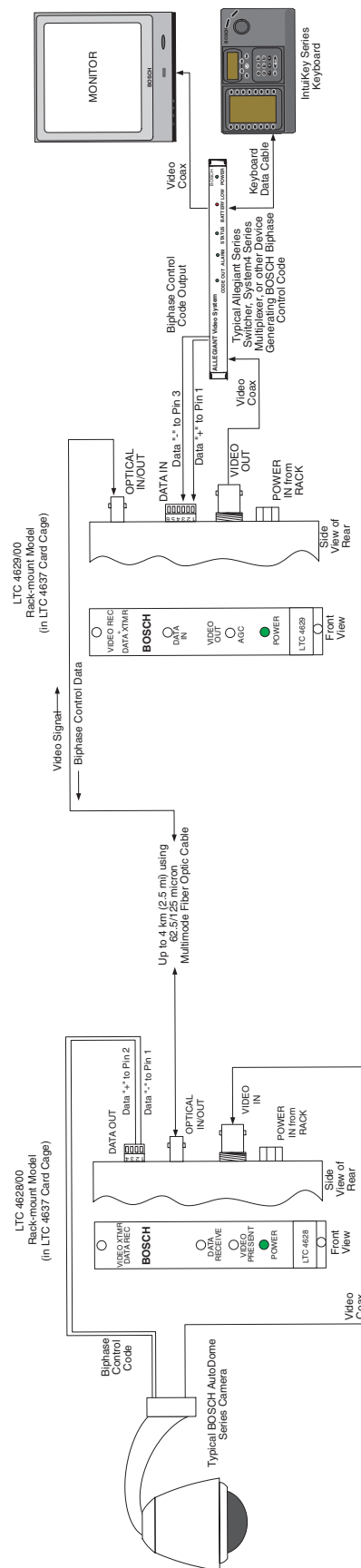


Figure 7 LTC 4628/00 and LTC 4629/00 Rack-mount Transceivers

4.7 LTC 4671 Series Modules for System4 / Allegiant Keyboard Transmission

1. The supplied 120Ω resistor must be installed across the external data connections when these fiber optic modules are used with certain controller devices. Follow the guidelines below, however, because of differences between the hardware of new and old controller units, these cases are not absolute. If a configuration does not work when first connected without using a termination resistor, try adding the termination resistor across the data connections of the fiber optic module located at the controller site.

A termination resistor is typically required when a module is connected to the following controller devices:

- Allegiant LTC 8100 Series main CPU bays
- Allegiant LTC 8200 Series main CPU bays
- Allegiant LTC 8300 Series main CPU bays
- Allegiant LTC 8900 Series main CPU bays
- LTC 8714 Series Allegiant Keyboard Expander accessory units sold prior to 2002
- LTC 2604 Series Multiplexer Keyboard Expander

A termination resistor is typically NOT required when a module is connected to the following controller devices:

- Allegiant LTC 8500 Series main CPU bays
- Allegiant LTC 8600 Series main CPU bays
- Allegiant LTC 8800 Series main CPU bays
- LTC 8714 Series Allegiant Keyboard Expander accessory units sold during or after 2002

If the supplied resistor is damaged or lost, any locally obtained conventional 1/4 watt carbon resistor between 120Ω and 390Ω should suffice.

2. The POWER LED will light when AC power is applied to the unit.
3. The DATA XTMR LED will flash as the external data received by the unit is being optically transmitted.
4. The DATA REC LED will flash as optical data is being received by the unit.

Typical Configuration:

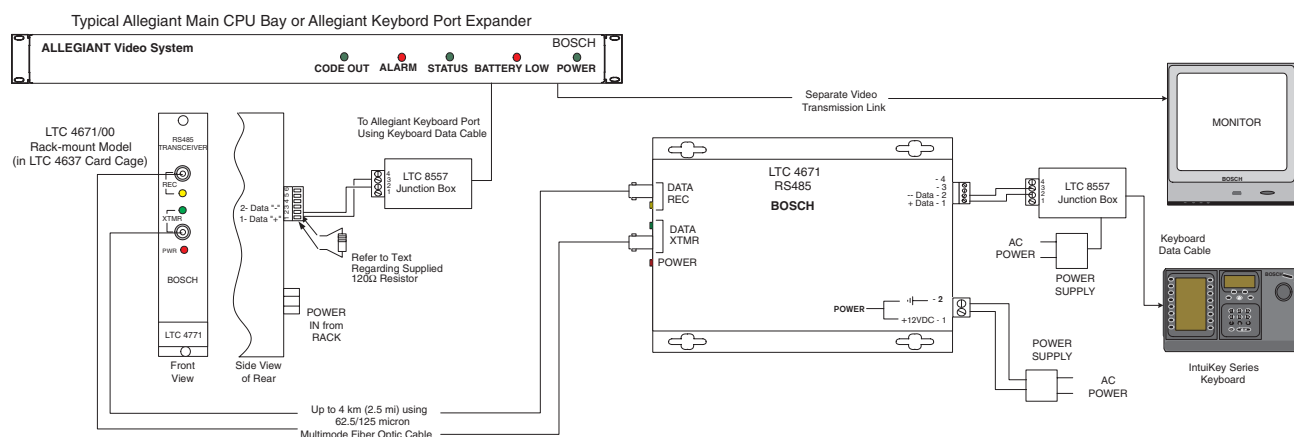


Figure 8 LTC 4671 Series Stand-alone Transceiver and LTC 4671 Rack-mount Transceiver

4.8 LTC 4651 Series Modules for Bosch Biphasic Control Code or RS-232 Transmission

4.8.1 Indicators / Operation

1. The POWER LED will light when AC power is applied to the unit.
2. The TRANSMIT LED flashes as the external data received by the unit is optically transmitted.
3. The RECEIVE LED flashes as optical data is received by the unit.

Typical Configurations:

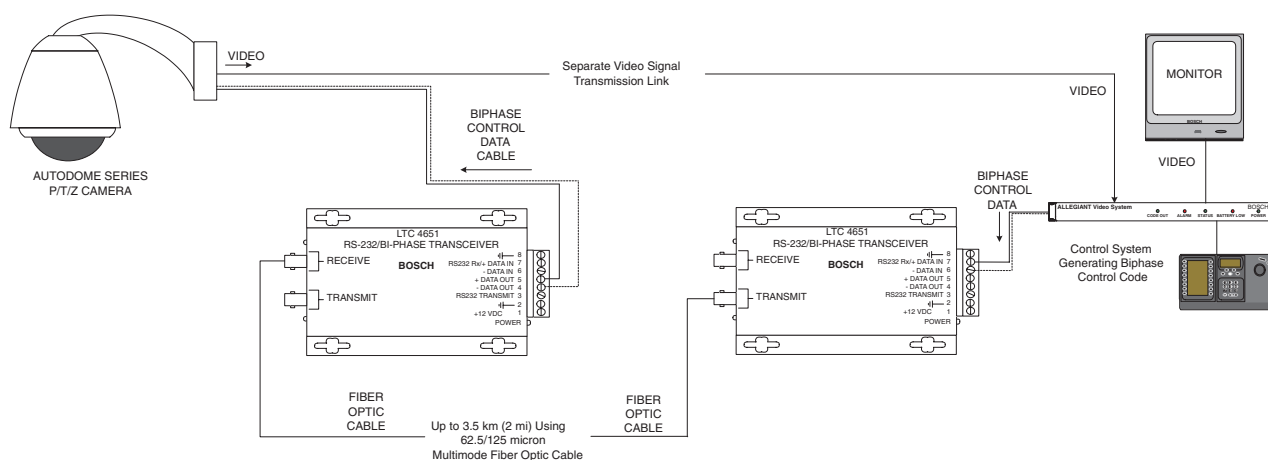


Figure 9 LTC 4651 Series Stand-alone Transceivers – Biphasic Code Transmission

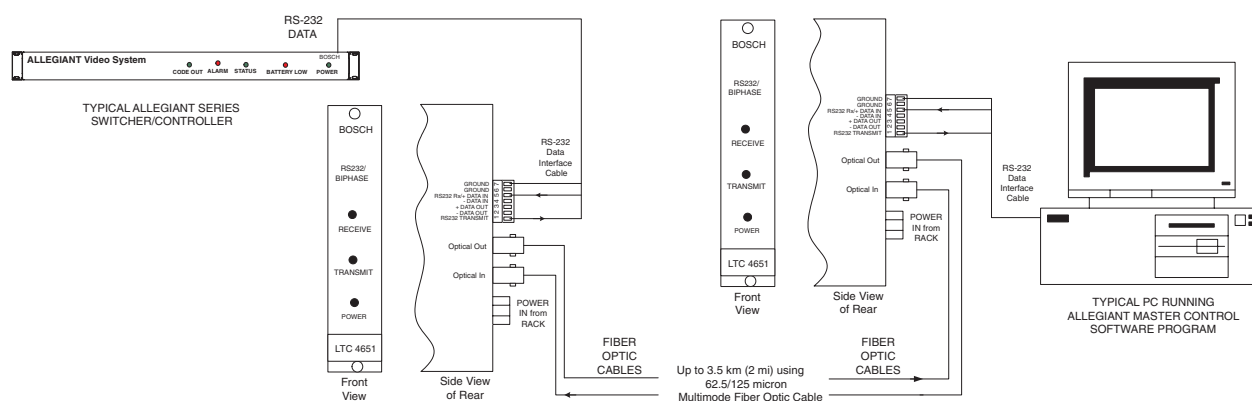


Figure 10 LTC 4651 Series Rack-mount Transceivers – RS-232 Transmission

4.9 LTC 4681, LTC 4682 Series Modules for Ethernet Data Transmission

NOTE: Although the LTC 4681 and the LTC 4682 are both transceivers, one of each type must be used to create a working ethernet fiber optic link. It does not matter which model is used at a particular side of a configuration.

4.9.1 Indicators / Operation

1. Set Dip Switches as Follows:

- a) Dip Switch 1: AUTO NEGOTIATE – Recommended setting is UP. When active, speed and twisted pair connection type (**mdi** or **mdi-x**) is automatically sensed. When disabled, a cross over cable must be used, and both ends of the link must be fixed at the same speed and duplex setting.
- b) Dip Switch 2: SPEED – This setting applies only when AUTO NEGOTIATE is disabled. This setting forces the connection speed to either 10Mbps (UP position) or 100Mbps (DOWN position). The recommended setting is 100Mbps.

- c) Dip Switch 3: DUPLEX – This setting applies only when AUTO NEGOTIATE is disabled. This setting forces the connection type to either half duplex (UP position) or full duplex (DOWN position). The recommended setting is Full Duplex.

2. The POWER LED illuminates when AC power is applied to the unit.
3. The FIBER LINK LED illuminates when a valid optical link is established.
4. The AUTO NEGOTIATE ON/OFF LED illuminates to indicate that Dip Switch 1 is set to AUTO NEGOTIATE mode.
5. The LED at the top left of the RJ-45 ethernet connector illuminates GREEN when a valid ethernet connection link is established.
6. The LED at the top right of the RJ-45 ethernet connector illuminates GREEN to indicate a 100Mbps connection speed. If the LED illuminates ORANGE, the connection speed is 10Mbps.

Typical Configuration:

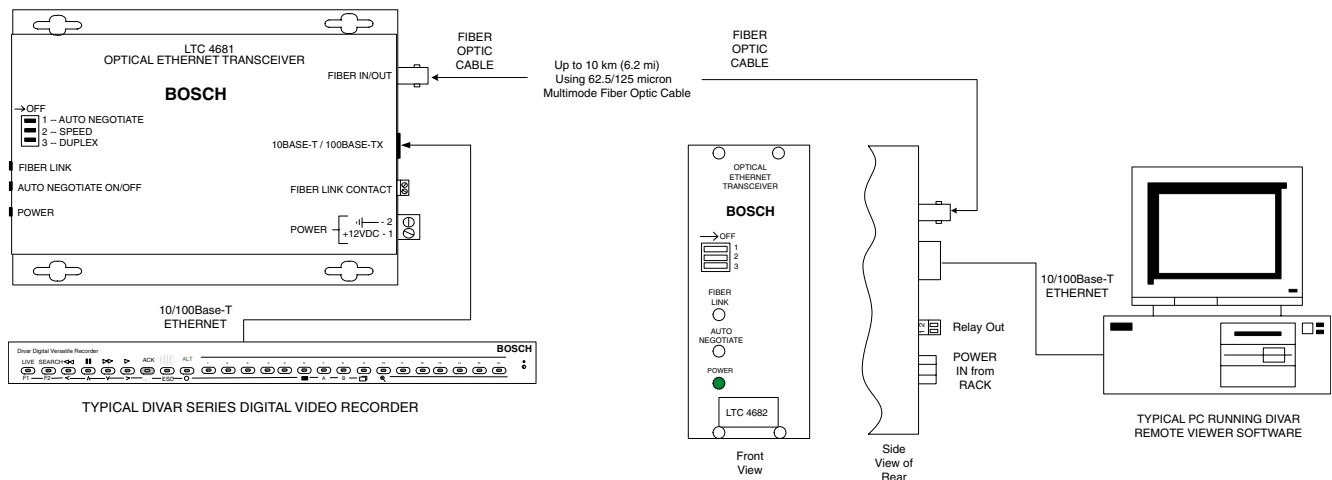


Figure 11 LTC 4681 Series Stand-alone Transceiver and LTC 4682 Rack-mount Transceiver

4.10 LTC 4637 Series Rack-mount Card Cage

4.10.1 Installation

1. Install the LTC 4637 Series Rack-mount into a standard EIA 19in. rack, using user-supplied rack-mounting hardware. Be careful to not damage exposed objects on the back of the card cage unit.
2. Verify that the rear panel AC voltage selector switch is set to match the available AC mains voltage.
3. Connect the supplied AC voltage line cord between the rear of the power supply and the appropriate AC voltage source.
4. Fiber optic plug-in modules can be installed into any of the available 14 slots of the card cage. Most modules require only a single slot width, but others, such as the LTC 4644 and LTC 4645 Series, require two slot widths.
5. If desired, LTC 4600/00 blank panels (ordered separately) may be installed to cover unused slots. A single blank panel covers a single slot opening.
6. Refer to the sections of this manual for specific installation instructions regarding the plug-in modules.

4.10.2 Indicators

1. LTC 4637 Series front panel LED illuminates when AC power is applied to the unit.
2. Each fiber optic plug-in module is equipped with a POWER LED indicator that illuminates when power is applied to the rack unit.

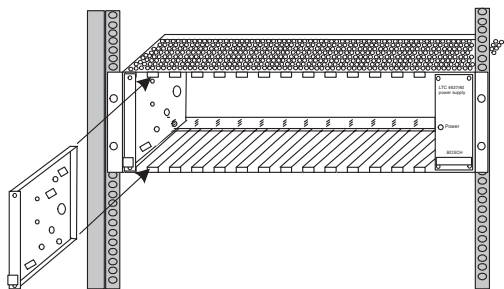


Figure 12 LTC 4637 Series Typical Installation

4.10.3 LTC 4637 Maintenance / Service Information

1. The power supply is fused with a 1A slow blow fuse. To replace the fuse, remove the AC power line cord from the power supply, and carefully pry out the fuse module above the AC connector.
2. The 3-pin connector on the rack supplies a 20VAC center tapped voltage, and is the only electrical connection from the back plane to a plug-in module. Each plug-in module contains its own fuse, so in the unlikely event of a module failure, the other modules in the rack remain unaffected.
3. The power supply is modular in construction, and can be replaced in the event of damage or failure. To remove the power supply from the rack:
 - a) Disconnect the AC line cord and power supply cable from the circuit board back plane, located on the rear of the card cage.
 - b) Loosen the four (4) screws located at the front of the power supply using a small flat blade screwdriver. Slide the power supply out of the card cage.
 - c) Reverse the above procedure to install the power supply into the card cage.

5 REPLACEMENT PARTS

TC120PS – Power Supply for 120VAC Stand-alone Modules

TC220PS – Power Supply for 230VAC Stand-alone Modules

6 TROUBLESHOOTING

Video Links:	
Video Problems	• Verify that a valid video signal is being applied to the transmitter module • Verify the integrity of the coax connections between devices and fiber modules • Verify that the correct fiber cable is being used (i.e., multimode only) • Verify that the length of the fiber optic cable and associated splices do not exceed the allowable optical loss budget
Power Problems	• Verify the power cable connections between modules and power pack • Verify that the power pack is connected to the appropriate AC power source
Data Links:	
Data Transmission Problems	• Verify the polarity of data connections between devices • If data transmission is not working over the fiber link, verify that a direct connection between the associated products operates correctly • Verify the integrity of the data cable connections between devices and fiber modules • Verify that the correct fiber cable is being used (i.e., multimode only) • Verify that the length of the fiber optic cable and associated splices do not exceed the allowable optical loss budget • When using LTC 4671 Series RS-485 modules, review the text regarding the usage of termination resistor
Power Problems	• Verify power cable connections between modules and power pack • Verify that the power pack is connected to the appropriate AC power source
LTC 4637 Series Rack-mount Configurations:	
Power LED on the Power Supply Fails to Light	• Verify that the AC line cord is connected to an appropriate AC voltage source • Check and/or replace the AC fuse located near the AC connector on the rear of the power supply
Power LED on all Plug-in Modules Fails to Light	• Verify that the power supply cable to the circuit board back plane (located on the rear of the card cage) is properly connected
Power LED on Individual Plug-in Modules Fails to Light	• Verify that affected plug-in modules are properly seated onto the back plane 3-pin connector • Verify that fuses on the affected plug-in modules are intact. If not, return for repair.

7 DIMENSIONAL OUTLINES

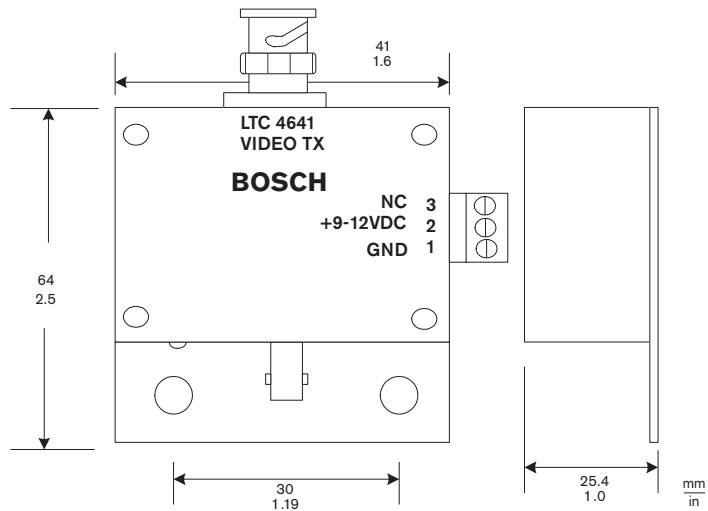


Figure 13 Stand-alone Modules: LTC 4641/60, LTC 4641/50

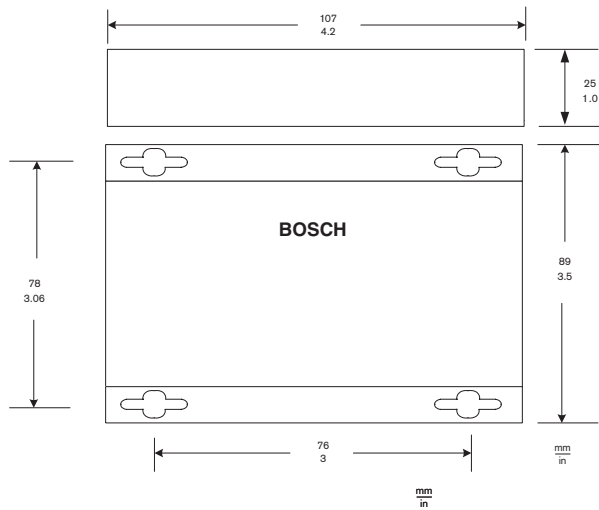


Figure 14 Stand-alone Modules: LTC 4642/50, LTC 4642/60, LTC 4651/60, LTC 4651/50

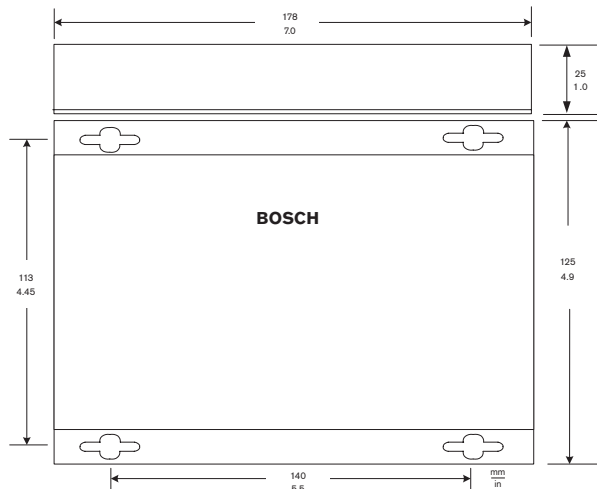


Figure 15 Stand-alone Modules: LTC 4744/50, LTC 4744/60, LTC 4671/60, LTC 4671/50, LTC 4628/60, LTC 4628/50, LTC 4629/60, LTC 4629/50, LTC 4681/60, LTC 4682/50, LTC 4630/50, LTC 4630/60, LTC 4631/50, LTC 4631/60

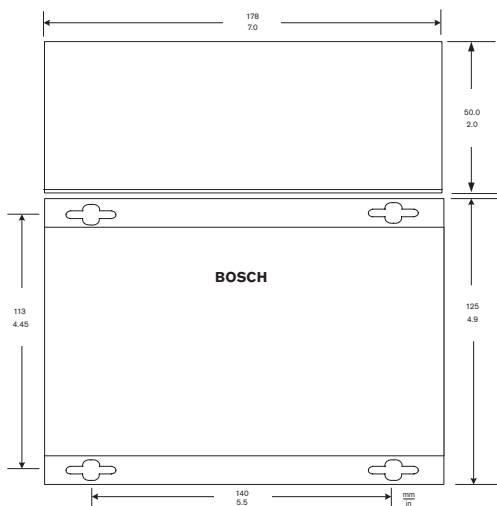
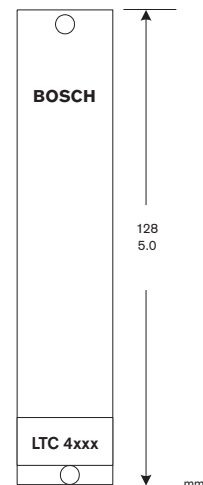
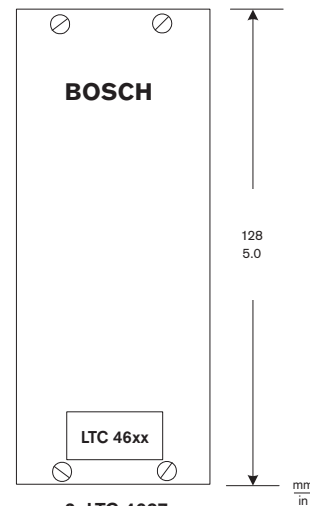


Figure 16 Stand-alone Modules: LTC 4745/50, LTC 4745/60



1 LTC 4637
Rack Width

Figure 17 Rack-mount Modules: LTC 4600/00, LTC 4642/00, LTC 4651/00, LTC 4671/00, LTC 4628/00, LTC 4629/00, LTC 4681/00, LTC 4682/00, LTC 4630/00, LTC 4631/00



2 LTC 4637
Rack Widths

Figure 18 Rack-mount Modules: LTC 4744/00, LTC 4745/00

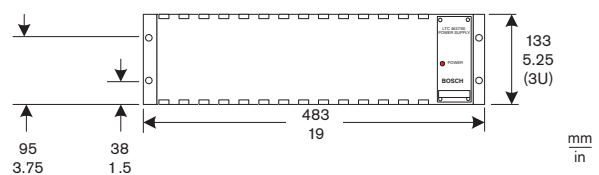


Figure 19 Card Cage: LTC 4637/60, LTC 4637/50

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