![TechLogix Networx logo]

User Manual

TL-FO2-HDC2

300m Uncompressed 4K/60 HDMI & Control Fiber Optic Extender Set

Preface

Read this user manual carefully before using this product. Pictures shown in this manual are for reference only; the actual product may vary.

This manual is only for operation instruction only and not for any maintenance or repair.

Trademarks

Product model and logo are trademarked. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without prior written consent.

FCC Statement

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. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

SAFETY PRECAUTIONS

To insure proper operation, please read all instructions carefully before using the device. Save this manual for further reference.
● Unpack the equipment carefully and save the original box and packing material for possible future shipment
● Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
● Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
● Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
● Refer all servicing to qualified service personnel.
● To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
● Do not remove the housing of the device, as opening or removing housing may expose you to dangerous voltage or other hazards.
● Install the device in a place with adequate ventilation to avoid damage caused by overheating.
● Keep the device away from liquids.
● Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the device immediately.
● Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
● Unplug the power cord when left unused for a long period of time.
● If disposing of the unit, do not burn or mix with general household waste. The device must be disposed of per local regulations for electronic recycling.

Table of Contents

Introduction

The TL-FO2-HDC2 is an HDMI 2.0 (18G signal) with HDCP 2.2 support fiber optic extender that can reach up to 300 meters (984 ft) over a duplex OM3 cable with common LC terminations. The unit supports HDMI video resolutions up to 4K@60, HDR video, IR or RS232 pass-through controls, multichannel audio, as well as ARC with optional optical audio embedding and/or de-embedding. The TL-FO2-HDC2 is also compatible with HDMI 1.3/1.4 content with HDCP 1.3/1.4 content protection.

The TL-FO2-HDC2 supports two ARC connection modes: HDMI and S/PDIF, which results in four options to pass audio from the display to the head end. When the receiver is set to HDMI, audio from the display will pass to the transmitter via the HDMI output port. When the receiver is set to S/PDIF, audio from the display will pass to the transmitter via the S/PDIF optical audio port. When the transmitter is set to HDMI, audio from the receiver will be provided on the HDMI input port. When the transmitter is set to S/PDIF, audio from the receiver will be provided on the S/PDIF optical audio port.
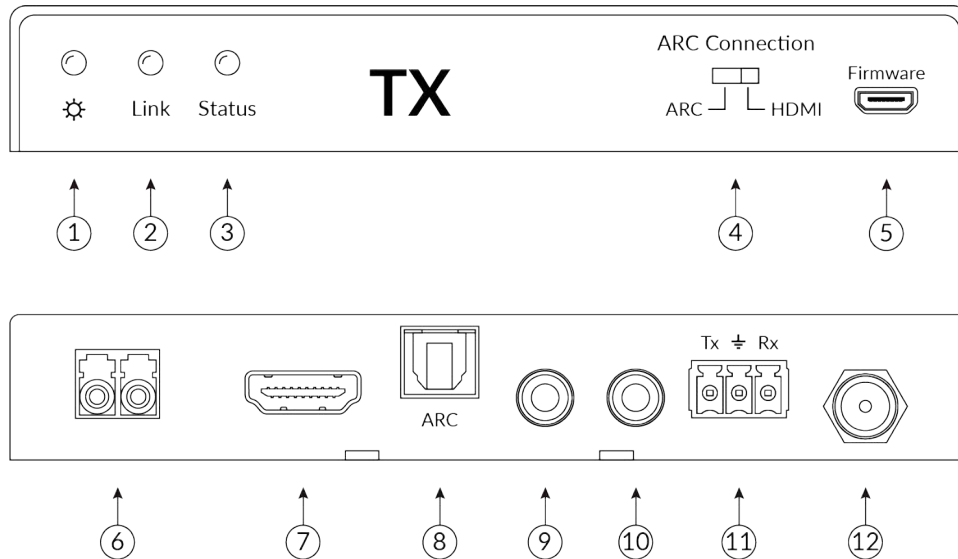
Features at a Glance

- Transmit HDMI, IR and RS232 over dual LC fiber optic cable
- Full, uncompressed 18 Gbps HDMI video
- Compatible with single mode (SM) and multimode (MM) fiber
- HDMI 2.0 / HDCP 2.2
- Supports HDR, ARC, EDID, CEC, deep color, and all digital audio formats
- Includes IR accessories & mounting hardware

Package Contents
- [1] Transmitter
- [1] Receiver
- [2] Mounting kits
- [2] Power supplies (international)
- [1] IR emitter
- [1] IR receiver
- [2] 3-Pin terminal blocks
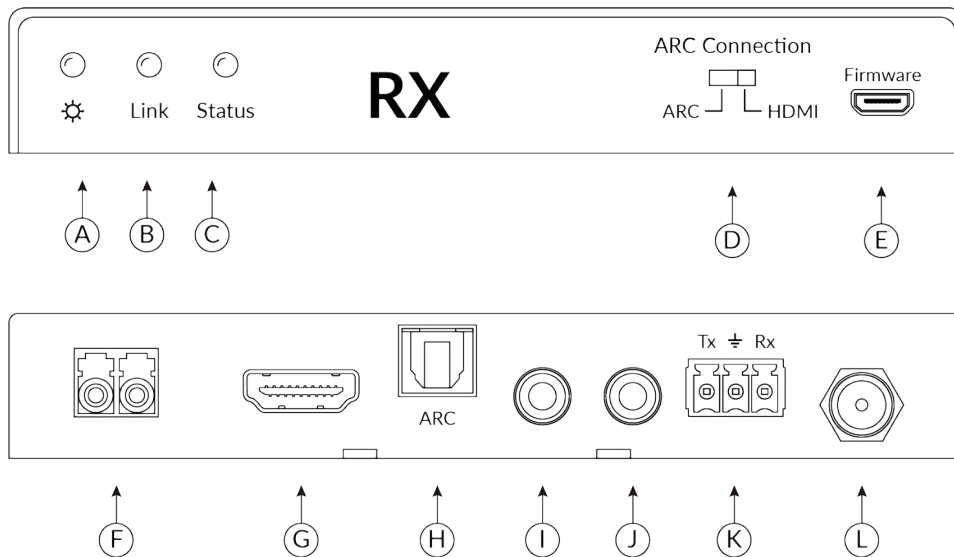- [8] Rubber feet
- [1] Fiber test cable

Panel Descriptions
Transmitter

	Name	Description
1	Power LED	OFF: No power • RED: DC power present
2	Link LED	Optical link status indicator • OFF: no link • GREEN: link successful • Blinking GREEN: link abnormal
3	Status LED	HDCP compliant indicator • OFF: no HDMI traffic (no picture) • GREEN: traffic with HDCP • Blinking GREEN: traffic without HDCP
4	ARC Connection Switch	Select ARC output as HDMI or analog/optical
5	Firmware Port	Used for future firmware updates
6	Optical Out Port	Dual LC connectors to connect to the Optical Out port on the transmitter.
7	HDMI Input	Connect to an HDMI display
8	Audio Output	Optical audio (up to 5.1)
9	IR In	Connects to a 5V IR receiver (with carrier); signals tranmitted to the remote receiver. *NOTE*: Use TL-IR-CC if connecting to a third party control system.
10	IR Out	Connects to a 5V IR emitter (with carrier); signals are transmitted from the remote receiver
11	RS232	RS232 control connector
12	24V DC Input	Connect with DC12V power adaptor.

Receiver

	Name	Description
A	Power LED	OFF: No power RED: DC power present
B	Link LED	Optical link status indicator • OFF: no link • GREEN: link successful Blinking GREEN: link abnormal
C	Status LED	HDCP compliant indicator • OFF: no HDMI traffic (no picture) • GREEN: traffic with HDCP • Blinking GREEN: traffic without HDCP
D	ARC Connection Switch	Select ARC input as HDMI or analog/optical
E	Firmware Port	Used for future firmware updates
F	Optical In Port	Dual LC connectors to connect to the Optical Out port on the transmitter.
G	HDMI Output	Connect to an HDMI display
H	Audio Input	Optical audio (up to 5.1)
I	IR In	Connects to a 5V IR receiver (with carrier); signals tranmitted to the remote receiver. *NOTE*: Use TL-IR-CC if connecting to a third party control system.
J	IR Out	Connects to a 5V IR emitter (with carrier); signals are transmitted from the remote receiver
K	RS232	RS232 control connector
L	24V DC Input	Connect with DC12V power adaptor.

System Connection

Usage Precautions

System should be installed in a clean environment that has a proper temperature and humidity.

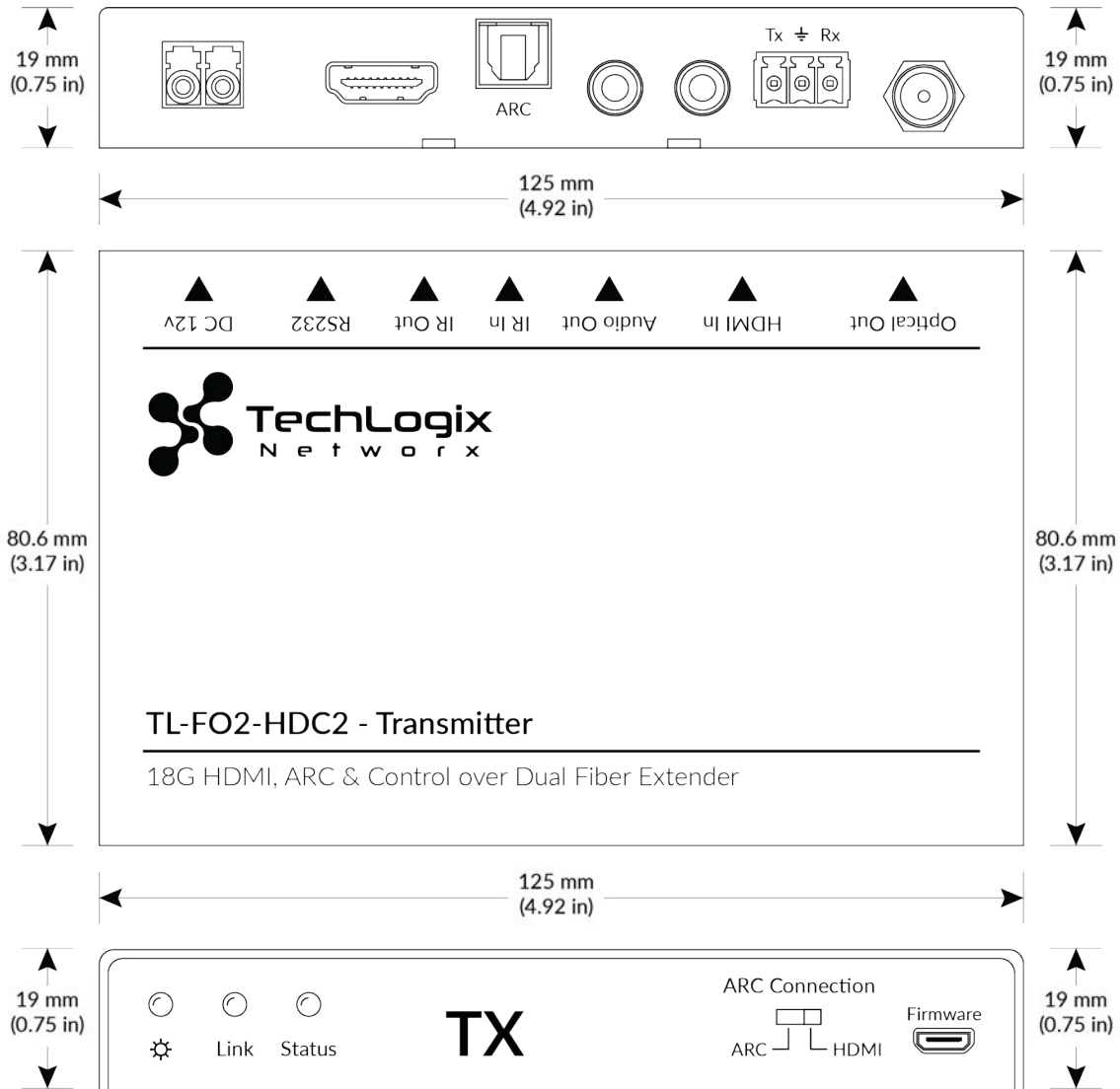All of the power switches, plugs, sockets and power cords should be installed properly.

All devices should be connected before powering on the devices.

Port 1 of the transmitter connects to Port 2 of the receiver. Port 2 of the transmitter connects to port 1 of the receiver.
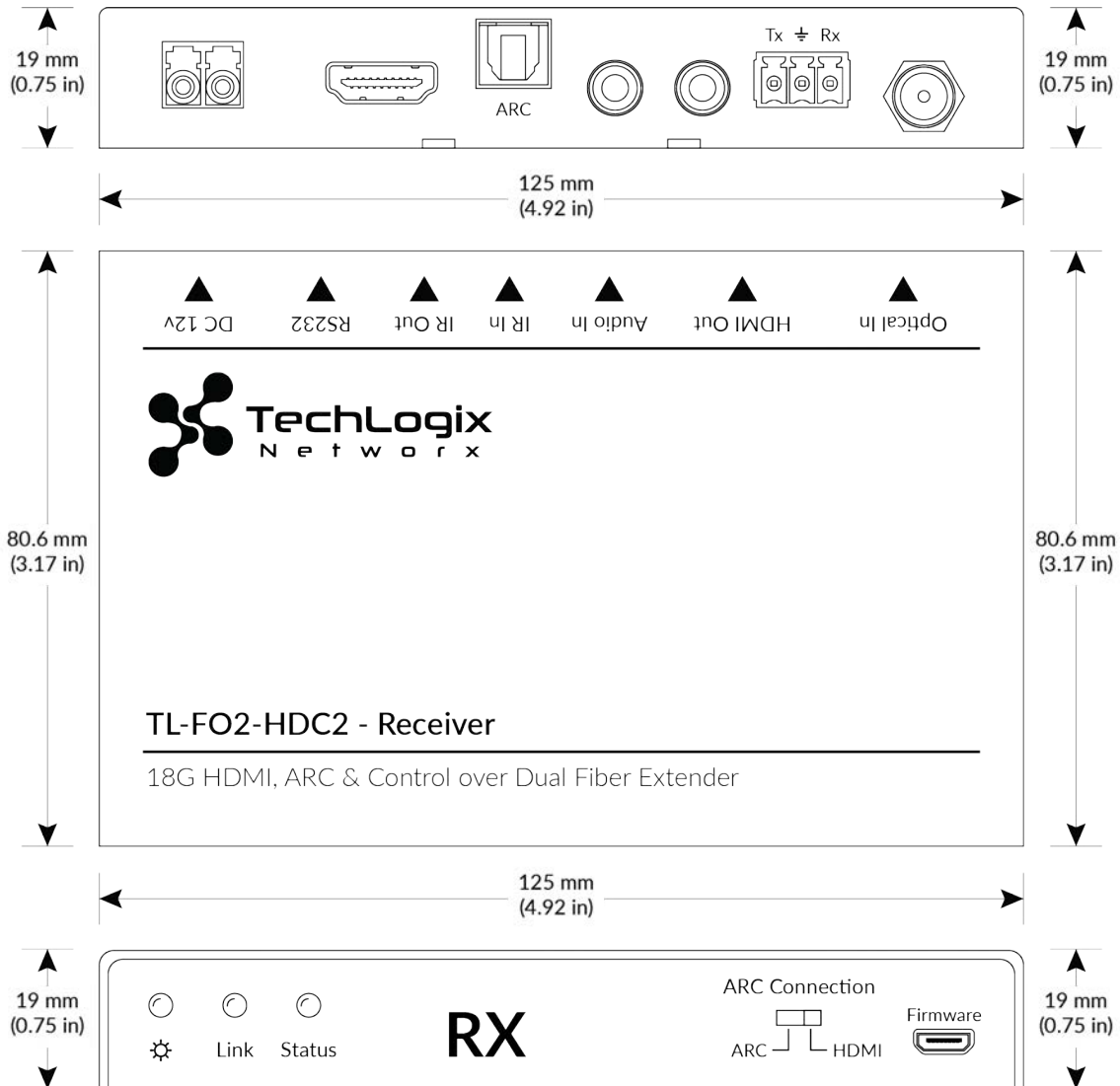
Connection Procedure

1. Connect an HDMI source (such as a set top box) to the **HDMI IN** port of the transmitter with an HDMI cable.
2. Connect **OPTICAL OUT** port of the transmitter to **OPTICAL IN** port of the receiver using a duplex fiber optic cable with LC connectors.
3. Connect an HDMI display to **HDMI OUT** port of the receiver with an HDMI cable.
4. If IR control is required, perform the following:
    a. Connect the IR emitter to the **IR OUT** port on either the transmitter or receiver.
    b. Connect the IR receiver to the **IR IN** port on either the transmitter or receiver.
5. If RS232 control is required, connect the RS232 port of the devices to be controlled to the receiver or the transmitter.
6. If Ethernet (LAN) support is required, connect the devices to the Ethernet ports.
7. If ARC (audio return channel) from the display to the source is required:
    a. Receiver side:
        i. HDMI audio: Slide the ARC Connection switch to HDMI.
        ii. Optical audio: Slide the ARC Connection switch to ARC. Connect a standard optical audio cable to the adapter.
    b. Transmitter side:
        i. HDMI audio: Slide the ARC Connection switch to HDMI.
        ii. Optical audio: Slide the ARC Connection switch to ARC. Connect a standard optical audio cable to the adapter.
8. Connect the DC12V power adaptors to the transmitter and receiver.

Panel Drawings
Transmitter

19 mm
(0.75 in)

ARC

Tx ⏚ Rx

19 mm
(0.75 in)

125 mm
(4.92 in)

DC 12v   RS232   IR Out   IR In   Audio Out   HDMI In   Optical Out

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N e t w o r x

80.6 mm
(3.17 in)

80.6 mm
(3.17 in)

TL-FO2-HDC2 - Transmitter

18G HDMI, ARC & Control over Dual Fiber Extender

125 mm
(4.92 in)

19 mm
(0.75 in)

☼   Link   Status

TX

ARC Connection

ARC   HDMI

Firmware

19 mm
(0.75 in)

Receiver

19 mm
(0.75 in)

ARC

Tx ÷ Rx

19 mm
(0.75 in)

125 mm
(4.92 in)

DC 12v   RS232   IR Out   IR In   Audio In   HDMI Out   Optical In

TechLogix
N e t w o r x

TL-FO2-HDC2 - Receiver

18G HDMI, ARC & Control over Dual Fiber Extender

80.6 mm
(3.17 in)

80.6 mm
(3.17 in)

125 mm
(4.92 in)

19 mm
(0.75 in)

Link   Status

RX

ARC Connection

ARC ⌐ ¬ HDMI

Firmware

19 mm
(0.75 in)

Specifications

Transmitter Input/Output

HDMI Input	1 HDMI Receptacle
Optical Output	2 LC Ports
ARC Output	1 Optical Audio Port
IR Input/Output	2 3.5mm TRS Ports
RS232	1 3-pin Removable Terminal Block
12V DC	1 5.5mm OD/2.5mm ID Threaded Barrel Connector
ARC Audio Selector	1 2-position Switch

Receiver Input/Output

HDMI Output	1 HDMI Receptacle
Optical Input	2 LC Ports
ARC Input	1 Optical Audio Port
IR Input/Output	2 3.5mm TRS Ports
RS232	1 3-pin Removable Terminal Block
12V DC	1 5.5mm OD/2.5mm ID Threaded Barrel Connector
ARC Audio Selector	1 2-position Switch

Supported Audio, Video, and Control

Compatible Video Signals	All SD, HD, and other resolutions up to - 4K/60 Hz / RGB and 4:4:4 8 bit (HDR) - 4K/60 Hz / 4:2:2 10 bit (HDR) - 4K/60 Hz / 4:2:0 10 bit (HDR)
Video Compliance	HDMI 2.0, HDMI 1.4, DVI 2.0 (Pixel clock up to 594 MHz)
Digital Content Protection	HDCP 1.2 / HDCP 2.2 Compatible
Embedded Audio	LPCM, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD
ARC (Audio Return Channel)	Up to 6-channel audio
Supported RS232 Baud Rates	2400, 4800, 9600, 19200, 38400, 57600, 115200
Supported IR Carrier	33 to 55 kHz

Fiber Optic Transmission Characteristics

Required Cable Type	Duplex OM3 or OM4
Maximum Bandwidth	35 Gbps
Maximum Distance	300m (984 ft)
Signal Compression	None

Chassis and Environmental

Product Construction	Painted aluminum
Product Dimensions (W*H*D)	125 mm (4.92 in) x 19 mm (0.75 in) x 86 mm (3.17 in)
Product Operational Chassis Temperature	35 to + 44°C (95 to + 111 °F)
Environmental Operating Temperature	0 to + 45°C (32 to + 113 °F)
Environmental Operating Humidity	10% to 90%, non-condensing
Environmental Storage Temperature	-20 to +70°C (-4 to + 158 °F)
Environmental Storage Humidity	10% to 90%, non-condensing

Power and Regulatory

Power Input	12V DC
Power Supply Input	100-240V AC at 50/60 Hz; 0.5A Max
Power Supply Output	12V DC at 1 A
Maximum Power Consumption	6 watts
ESD Protection	Human-body Model: ±8kV Air-gap discharge and ±4kV Contact discharge
Regulatory Compliance	FCC, CE, RoHS, WEEE

Other

Warranty	Three years
Diagnostic LEDs	Link, Status, and Power
Included Accessories	IR Receiver (2 ea), IR Transmitter (2 ea), Mounting Ears (4 ea), Rubber Feet (8 ea), 12V 1A DC Power Supply (2 ea), 3-pin 3.5mm Terminal Block (2 ea), DE-9 to 3-pin RS232 Cable (2 ea)

Troubleshooting and Maintenance

No image on display

- Ensure that the display device has been set to the correct input.
- Ensure that the HDMI cables used for both the source/transmitter and the receiver/display are properly connected and are working. Test the HDMI cables directly from a source to display and ensure their operation.
- Ensure that the fiber optic cable has not been damaged and that it has been terminated correctly with LC connectors on both ends. A temporary length of fiber optic cable can be used for testing to ensure that the devices are all compatible and working properly.
- Ensure proper grounding of the power supply.

Color loss or poor picture quality:

- Ensure that the HDMI cables used for both the source and transmitter and the receiver and display are properly connected and are of good quality. Test the HDMI cables directly from a source to display and ensure their picture quality.
- Ensure proper grounding of the power supply.
- If the static becomes stronger or picture quality becomes worse when connecting the video connectors, this may be due to improper grounding.
- Check the grounding and make sure all the components are properly grounded to a common ground. Improper grounding may cause damage to the receiver.

After-sales Service

Product Limited Warranty: We warrant that our products will be free from defects in materials and workmanship for **three years.**

Warranty coverage may be voided when:
The warranty period has expired
The factory applied serial number has been altered or removed from the product
There is damage, deterioration or malfunction caused by:
Atypical wear and tear
Use of supplies or parts not meeting the specifications
No certificate or invoice as the proof of warranty
Damage caused by force majeure
Non-authorized service

Technical Support: When contacting TechLogix support, please have the following information available:
Product part number
Installation and sale date
Detailed failure information