



PDI-E24LEDA
Modular High Definition
Healthcare-grade LED Television



Document Number: PD196-275R3



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	This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.
	This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

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

This Service Manual is intended for use by qualified service persons possessing an adequate background in electrical equipment, electronic devices, and mechanical systems. In any attempt to repair a major product, personal injury and property damage can result. The manufacturer or seller maintains no liability for the interpretation of this information, nor can it assume any liability in conjunction with its use. When servicing this product, under no circumstances should the original design be modified or altered without permission from PDi. Unauthorized modifications will not only void the warranty, but may also lead to property damage or user injury.

	Ce symbole indique qu'une tension dangereuse constituant un risque de choc électrique est présente dans cet appareil.
	Ce symbole indique qu'il existe des instructions d'utilisation et d'entretien importantes dans la documentation accompagnant cet appareil.

	AVERTISSEMENT	
RISQUE DE CHOC ELECTRIQUE, NE PAS OUVRIR!		
AVERTISSEMENT: AFIN DE REDUIRE LE RISQUE DE CHOC ELECTRIQUE, NE PAS RETIRER LE COUVERCLE. L'APPAREIL NE CONTIENT AUCUN COMPOSANT SUSCEPTIBLE D'ÊTRE RÉPARÉ PAR L'UTILISATEUR. CONFIER L'ENTRETIEN À DU PERSONNEL QUALIFIÉ		

Cette installation doit être effectuée par un technicien qualifié et doit être conforme à tous les codes locaux. Lire et suivre les consignes de sécurité avant de procéder à l'installation.

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Regulatory Information

FCC
 This equipment has been tested and found to comply with the limits pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential or commercial 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 of 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.

Underwriters Laboratories



The model PDI-E24 Hospital Grade TV Receiver is a specialized television. This TV is intended for entertainment and educational purposes for use in a hospital, a nursing home, a medical-care center, or a similar health-care facility in which installation is limited to a non-hazardous area in accordance with the National Electrical Code.

This device is safety tested and listed by the Underwriters Laboratories as a product suitable for use in health care facilities in both the United States and Canada.

Energy Star



PDi Communication Systems, Inc. has voluntarily partnered with the US government as part of the ENERGY STAR® program in support of energy efficiency initiatives. The US EPA has authority over the ENERGY STAR program. As an ENERGY STAR partner, PDi Communication Systems, Inc. has determined that, in the as-shipped factory default condition, this healthcare television product meets the energy efficiency guidelines. Changes to the default as-shipped television configuration and settings, such as enabling certain optional features and functionalities, may increase energy consumption beyond the limits required for ENERGY STAR qualification. ENERGY STAR is a registered mark owned by the US government. For more information, visit www.energystar.gov.

ESD Notice (Electrostatic Discharge)

Today's electronics are electrostatic discharge (ESD) sensitive. ESD can weaken or damage the electronics in a manner that renders them inoperative or reduces the time until their next failure. Connect an ESD wrist strap to a ground connection point or unpainted metal in the product. Alternatively, you can touch your finger repeatedly to a ground connection point or unpainted metal in the product. Before removing a replacement part from its package, touch the anti-static bag to a ground connection point or unpainted metal in the product. Handle the electronic control assembly by its edges only. When repackaging a failed electronic control assembly in an anti-static bag, observe these same precautions.

Product Safety Servicing Precautions

1. **POWER SOURCE** Use only a power source indicated for use with this product. This TV will operate on AC voltage. To avoid personal injury, disconnect the power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks.
2. **REPLACEMENT Replace** only with the part number specified.
3. **VOLTAGE CHECKS Exercise** care when making voltage and waveform checks to prevent costly short circuits from damaging the unit.
4. **METAL OBJECTS** Be cautious of lost screws and other metal objects to prevent a possible short in the circuitry.
5. **SAFETY CHECKS** This hospital grade television requires special safety checks before returning to service. Observe and follow the "Safety Check" section in this service manual.



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PDI-E24LEDA-NK Specifications

PANEL	
Diagonal Size	23.6" (59.8cm)
HDTV compatible	Yes
Aspect Ratio	16:9
Native Display Resolution	1920 x 1080
Contrast Ratio	1200:1
Viewing Angle	160° V / 170° H
Response Time	8.5 ms
Color Depth	16.7M
Luminance (nits)	250
Backlight Lamp Life (hours)	30,000
Backlight Type	LED
VIDEO BROADCASTING	
ATSC/NTSC/Clear QAM	Air VHF/UHF, CATV, IRC,HRC
MPEG4/Pro:Idiom	Yes
FM Tuner	88.1 – 107.9 MHz
Supported Formats	1080p/1080i/720p/576p/576i/480p/480i
AUDIO	
Speakers/Audio Output Power	2 x 3W RMS
Analog Channels	Mono/Stereo/SAP
Digital Channels	Multilingual
Tone Control Balance	Yes
HEALTHCARE SPECIFIC FEATURES	
Internal Speaker Disable	Yes
Min/Max Volume Limiter	Yes
Start/Power-on Volume	Yes
Selectable Pillow Speaker	+12VDC, +5VDC, OFF, -5VDC
Universal Pillow Speaker Recognition	Yes
Auto Power On	Yes
Channel Enable/Disable	Yes
Bed A/B/C/D	Yes
Programmable Source Selection	Yes
Direct Access to Source from Pillow Speaker	Yes
Progressive Scan	Yes
Parental Control (V-CHIP)	Yes
USB Clone Programmable	Yes
2D Digital Comb Filter	Yes
Sleep Timer	Yes
Factory Reset	Yes
OSD Language	English/French/Spanish
A/V INPUT/OUTPUT	
AC	IEC Male, Hospital-grade
USB Port	Yes
RF Input	Yes
HDMI/HDCP Input	Yes, 2
VGA Input	Yes
PC Audio Input	Yes
Composite Input with L/R Audio	Yes
CCI/MTI/MPI Smart Plug	Yes
DVD Module Port	Yes
Pillow Speaker Output	YES, 3 conductor 1/4" female
Service Port	Yes
POWER	
Source	120V +/- 15%, 60HZ
Max Consumption	40W
Standby Consumption – Normal/Low	<15W/<1W
REGULATORY	
UL/UL 60065 Annex Q	Yes
FCC Title 15, Part 47, Subpart B	Yes
Energy Star 6.0	Yes
CEC	Yes
UNIT CHARACTERISTICS	
Cabinet Color	Black Gloss
Mount Pattern	100 x 100MM VESA, 4MM Thread
Weight (kgs) (with Stand)	10 lbs (4.52 kg)
Unit Dimensions Inches (WxHxD) (cm)	22 x 13.8 x 2.2 (55.8 x 35.0 x 5.7)

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Disinfecting and Cleaning

The E24LEDA should be disinfected before performing any service. The following procedure is only a recommendation. Your hospital or company may have a different procedure to follow.



Caution: Before using any cleaning or disinfecting agent on the ELED units, perform a spot check by wetting a small area of the cabinet. Verify the agent does not discolor or deteriorate the cabinet.

1. The ELED unit has been designed to withstand up to a 5% chlorine based disinfectant. Many alcohol and ammonia based disinfectants have also been tested with success. Apply the cleaner or disinfectant per its recommended instructions.

Note: Most disinfectants require a waiting time following application and prior to wipe-down.

2. The manufacturer recommends isopropyl alcohol for the cleaning of the LCD screen.

Checking Points to Consider

Dynamic picture adjustments to Brightness, Contrast, Color, and Tint are available using the IR Remote Control, Part number PD108-420, using the SETUP/Picture menu.

1. Check the appearance of the replacement panel and circuit boards for both physical damage and part number accuracy.
2. Check the model label. Verify model names and board model matches.
3. Check details of defective condition and history. Contact PDi with serial number for details.

Product Identification

Product Label

The E24 is easily identified using the product label located on the back cabinet housing.

Serial Number Format Explanation



1. The first two digits compose the year of manufacture. 2013 would be 13.
2. The second two digits compose the week of manufacture. 26 would be week 26.
3. The single alphabetic character represents the place of manufacturing.
4. The next three alphanumeric characters compose the unique model ID.
5. The next character is the revision level.
6. The next five digits compose the serial number starting with the first unit produced in the current year.

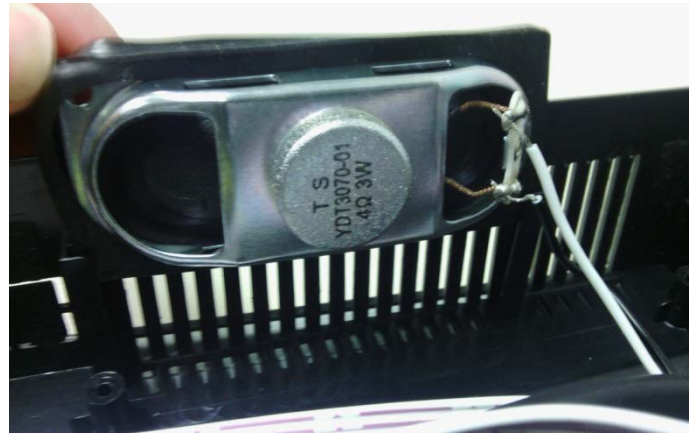
Back Cover

1. Remove (4) screws from the back cover.
2. Remove back cover starting at top of TV, being careful not to break tabs and avoid connectors on main board. Avoid putting strain on cables connecting the front and rear pieces.



Speakers

The speakers **PD164-045** slide into the rear cabinet as shown.



Board Removal

(The I/O frames must be removed at the same time as the boards)

The main board **PD128-1740** is secured with (3) screws.

The pillow speaker board **PD128-1752** is secured with (1) screws

The power and LED driver board **PD128-1775** is secured with 4 screws.

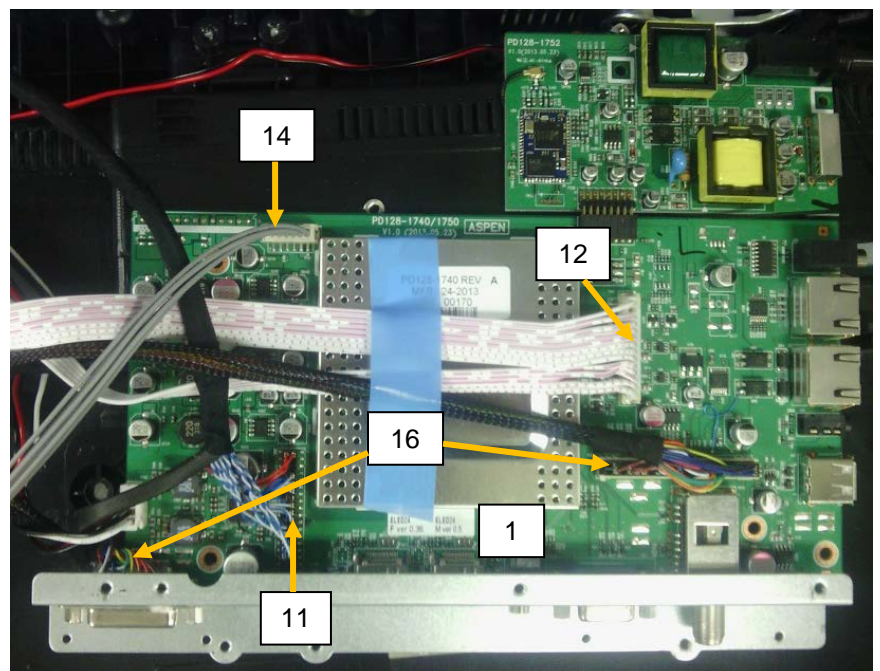
The IR board is held in place with 2 plastic tabs. Gently lift up on the board to remove from the LCD assembly (Item 6).

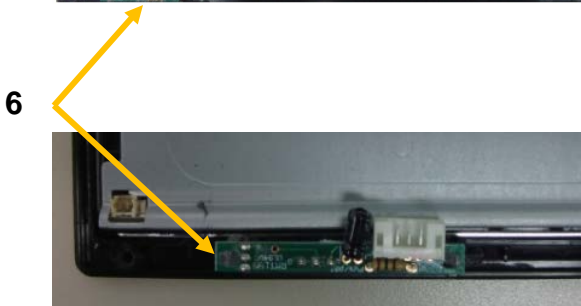
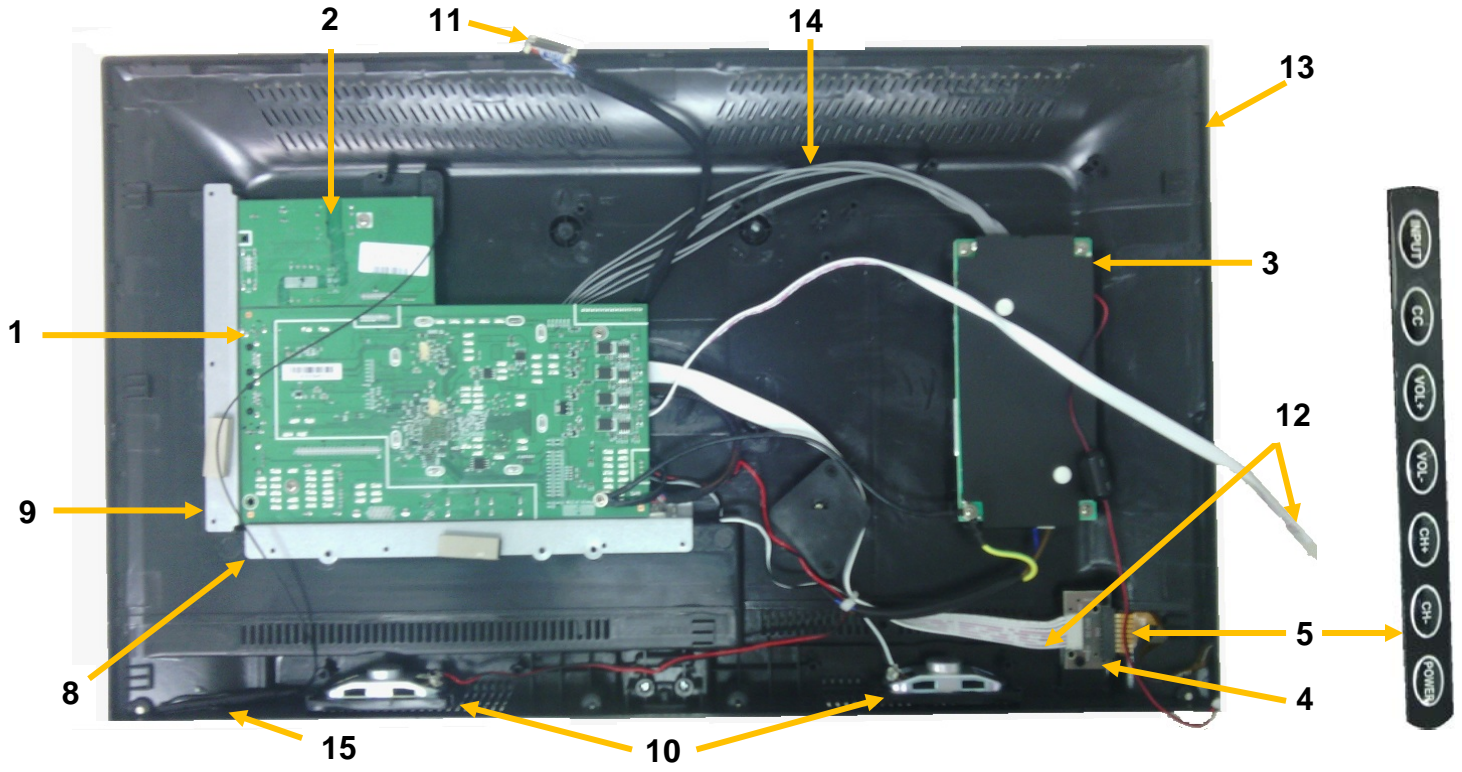
The keypad board **PD128-1774** is secured with (2) screws

Parts List

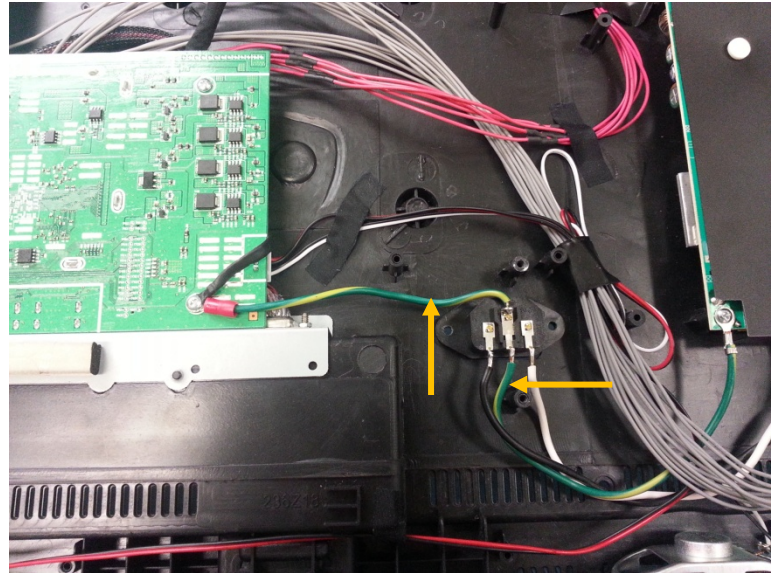
1. PD128-1740 MAIN BOARD
2. PD128-1752 PILLOW SPEAKER BOARD
3. PD128-1775 POWER AND LED DRIVER BD
4. PD128-1774 KEYPAD BD
5. PD134-241 KEYPAD
6. PD128-1783 IR BOARD
7. PD289-140 24" ASSEMBLY LCD PANEL
8. PD180-011 RF I/O FRAME
9. PD180-012 PILLOW SPEAKER I/O FRAME
10. PD164-045 SPEAKERS
11. PD106-795 LVDS CABLE
12. PD106-803 IR/KEYPAD CABLE
13. PD133-930 CABINET
14. PD106-799 POWER CABLE
15. WI-FI ANTENNA
16. PD106-761 44-26 PIN D-SUB CABLE

FRONT SIDE OF BOARDS





1. IEC green wire ground scheme.



2. Panel and back cable connections.



Basic Troubleshooting Steps

Factory Reset Procedure

Many times issues can be resolved by performing a factory reset on the TV. Press and hold down “CC” button on TV and press and hold down “Last” on the remote. Hold both down simultaneously until TV displays a reset message on screen.

Symptom

Check

TV DEAD (No Power)	<ul style="list-style-type: none"> • Verify AC power cord is fully seated into TV's power socket • Verify AC plug is connected to a powered AC outlet • Check Power cable for voltage. • Replace power and LED driver board (PD128-1775) • Replace main board (PD128-1740) if red LED is lit.
NO COLOR	<ul style="list-style-type: none"> • Tune TV to another channel. Check for color • Adjust color settings in Setup/Picture menu • Verify correct AC line voltage is used to power TV • Verify correct signal type is set in Setup/Channels menu • Perform Auto Program • Replace LVDS cable (PD106-795) • Replace main board (PD128-1740) • Replace panel (PD289-140)
CANNOT TUNE TO A DESIRED CHANNEL	<ul style="list-style-type: none"> • Verify TV is connected to a coax cable that has RF signal • Verify channel is programmed into current service level • Tune to channel with remote • Tune to channel with TV keypad • Verify correct Signal type is set in Setup/Channels menu • Verify Channel Memory Override is enabled in Setup/Channels. • Verify Channel Lock is disabled • Replace main board (PD128-1740)
TV KEYPAD INOPERATIVE	<ul style="list-style-type: none"> • Verify TV is powered • Check TV operation with remote control • Disconnect pillow speaker jumper cable and recheck keypad • Verify that DATA cable is seated correctly to main chassis connector • Replace glass/keypad (PD134-241) • Replace main board (PD128-1740)
SNOWY PICTURE	<ul style="list-style-type: none"> • Verify TV RF signal level is (0 to+10dbmv at the TV) • Tune to another channel • Verify correct Signal type is set in Setup/Channels Manual • Replace LVDS cable (PD106-795) • Replace main board (PD128-1740)
NOISY PICTURE	<ul style="list-style-type: none"> • Verify TV RF signal level is (0 to+10dbmv at the TV) • Tune to another channel • Turn off nearby equipment if possible and isolate noise source • Move TV and cables to minimize or eliminate noise. • Replace main board (PD128-1740)

PICTURE OK, NO PILLOW SPEAKER SOUND	<ul style="list-style-type: none"> • Verify pillow speaker is fully inserted into TV's speaker jack • Try a different pillow speaker • Verify TV is not muted. Adjust for maximum volume • Replace pillow speaker board (PD128-1752) • Replace main board (PD128-1756)
BLACK OR DIM PICTURE, SOUND OK	<ul style="list-style-type: none"> • Check for on-screen menu and adjust for maximum brightness and contrast • Verify DATA connector is seated on main board • Verify Backlight connectors are plugged in and secure • Replace board, Power/LED driver (PD128-1775) • Replace LVDS cable (PD106-795) • Replace main board (PD128-1740) • Replace panel (PD289-140)
PICTURE OK, NO SPEAKER SOUND	<ul style="list-style-type: none"> • Verify TV is not muted. Verify cable is seated into main chassis and into IR board • Verify pillow speaker is not being used • Verify TV speaker has not been disabled for the current Service Level in the Sound/Internal Speaker Enable menu • Replace speaker (PD164-045) • Replace pillow speaker board (PD128-1752) • Check sound. If there is still no sound, replace the main board (PD128-1740)
LOW VOLUME OR VIBRATION IN SPEAKER	<ul style="list-style-type: none"> • Check for missing or loose screw in speaker

Reassembly

Reassemble the unit in reverse manner as the disassembly paying special attention to:

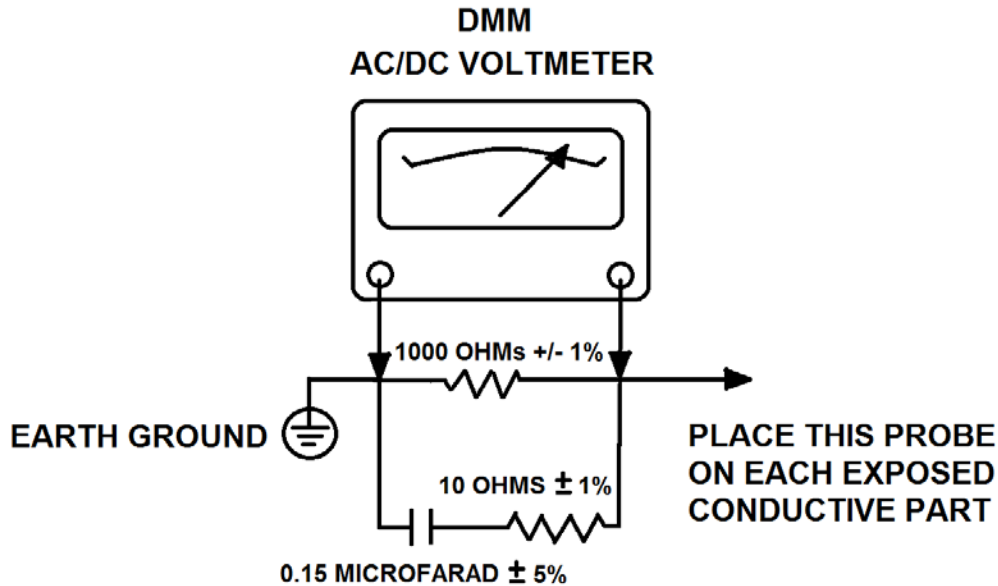
- All parts removed in the repair of the TV are reassembled in original manner.
- Wires are dressed in a way not to be damaged by reassembly.
- All circuit boards should be mounted to the back panel with screws (DO NOT over torque).

Safety Checks

Leakage Current

After re-assembly of the unit, always perform a leakage test on all exposed conductive parts such as metal connectors, chassis, and mount.

With the unit powered, the following circuit should be connected from earth ground to each exposed conductive part on the repaired unit. A DMM is placed in parallel with this circuit to measure AC rms or DC voltage. If leakage currents are greater than the maximum allowed, inspect the TV for insulation or component breakdowns.



The maximum allowed leakage current depends on the type of power the unit receives and whether the unit is within reach of the patient bed/chair.

TV Type	Max Leakage Current	Max DMM Voltage Reading
Footwall TV (120VAC grounded wall outlet)	500µA AC rms	500mV AC rms
12VDC Arm Mount TV (PDI-750XL power supply)	100µA DC	100mV DC
28VAC Arm Mount TV (PDI-750A 750B or 772HE power supply)	50µA AC rms	50mV AC rms

Contact Information

For any questions with servicing PDi televisions contact our Service Department at:

PDi Communication Systems, Inc.
 40 Greenwood Ln.
 Springboro, OH 45066 USA

800-628-9870