

**MOLYNX  
SYSTEMS**



**RX-DC17-P-PCB  
17 Function Preset DC Telemetry  
Receiver**

**INSTALLATION INSTRUCTIONS  
RX-DC17-P-PCB**

Before attempting to connect or operate this product, please read these instructions completely

Williams Electronics Ltd  
Tel: +44 (0)2921 660 234

www.w-e.co.uk  
Fax : +44 (0)2921 660 270,

Email : sales@w-e.co.uk



Whilst every effort has been made to ensure that all information contained in this document is correct at the time of publication, due to our policy of continuous product improvement, the company reserves its right to change any information contained herein without notice.

Williams Electronics Limited trading as MOLYNX Systems.

## Important Notes

### SELECT SUITABLE EQUIPMENT!

Please ensure that all equipment is suitable for the application and the environment for which it is intended. Ensure all applicable specifications are adhered to. Please take particular care that inter-connected equipment is fully compatible with each other and suitable for such use. Check load ratings, dimensions, etc.

### SECURELY MOUNT THE ASSEMBLY!

Ensure that each part of the assembly is securely attached. Always use the recommended or supplied fixing screws. Failure to comply with the aforementioned could result in the unit coming loose from the supporting structure and falling, with resultant damages or injury to anyone or anything struck by the falling unit.

### INSTALL OUT OF REACH!

This equipment is designed to be installed out of reach of the user, or anyone who will come into casual contact with the installation. Be sure to provide suitable access equipment to ensure the safety of installation or service personnel working on the equipment.

### INSTALL CORRECTLY!

The installation should be made by a qualified installer. Specific tools may be required for installation purposes dependant upon the site in which the assembly is to be installed. Use the appropriate tools.

Refer to local and national standards for wiring and follow recommendations. The installation should be in compliance with local codes. Check that correct cable types are used.

**WARNING: This apparatus must be connected to Earth!**  
**ALWAYS CHECK VOLTAGE LABELS BEFORE APPLYING POWER TO THE UNIT**  
**DO NOT CARRY OUT ELECTRICAL INSTALLATIONS IN WET WEATHER CONDITIONS**

An appropriate disconnection device must be fitted when installing electrical supply.

Always disconnect and remove the power before working on the installation.

Ensure the power CANNOT be re-connected by external sources while the unit is being worked upon.

## PREVENTATIVE MAINTENANCE!

Although the unit contains no user serviceable parts it is recommended that the following checks be carried out on a routine basis;

1. One month after installation and every six months thereafter, check the tightness and security of all external fastenings (i.e. the whole CCTV installation).
2. Every six months check electrical cables for signs of wear. Replace where necessary. Regular checks should be performed to ensure that the cables are not fouling on any obstruction.

## RS485 Type Transmission (twisted pair)

<b>Signal Specification:</b>	EIA RS485 electrical interface, uni-directional @ 2400 baud.
<b>Cable Recommendations:</b>	Twisted pair cable is essential for the telemetry signals with all video signals using coaxial cable.
<b>Typical distance:</b>	3km maximum transmission distance with a suitably rated cable, e.g. Belden 8205 twisted pair. For distances below 1km, most twisted pair cable will be suitable Refer to cable manufacturers data for further information and NACOSS (NACP20) guidelines for greater technical detail. Refer to technical specification <b>TS-060-2</b> for information regarding RS485 cabling guidelines.

## TELEMETRY TERMINATION

### Termination of RS485 transmission network

Termination of an RS485 communications network is achieved using the jumper connector supplied with the (twisted pair) "D" type sub-board. It is important to match the impedance of the load to the characteristic impedance of the transmission line so that the receiver absorbs the signal and does not reflect stray signals, which may disrupt the data. That is why the two furthest ends of the transmission line must be terminated in a "daisy chain" network.

The PLW231 has a 120-Ohm terminating resistor in circuit with **JP1**.

When the jumper connector is not in use simply position the jumper onto one pin of **JP1** for safekeeping.

# 17 Function Preset DC Telemetry Receiver

## INSTALLATION INSTRUCTIONS

### General Description

The RX-DC17-P-PCB is a compact 17 function preset telemetry receiver, compatible with Pelco D Telemetry.

Additionally, the RX-DC17-P-PCB offers preset positioning of the pan, tilt, zoom and focus functions.

Up to 93 preset positions may be stored in the receiver (check transmitter capability).

A test button provides a comprehensive test facility to ease installation and maintenance.

### Contents Of Box

- 1 x Printed circuit board assembly
- 4 x Stick-on board mounting pillars
- 4 x Screw on board mounting pillars
- 1 x Installation Instructions



### Before Installation Ensure That;

1. The contents of box are correct.
2. The installation instructions are read thoroughly.
3. The correct tools are used when installing.
4. The complete assembly is mounted and tested in the workshop prior to use on site.

### Receiver Options/Functions

1. Part number RX-DC17-P-PCB.

## Operation

### Pelco D commands (tested using a KBD300A)

- Pan, tilt, zoom, focus, iris, auto iris and auxiliary functions of, wash, wipe, camera and lamps.
- 93 preset positions per camera head assembly.
- Self test facility
- RS485 Pelco D protocol. 2400, N,8, 1

Function	Preset / Keystroke Needed	Function	Preset / Keystroke Needed
Wash On 5 seconds	Preset 99 or 1 then AUX on	Preset Store (1 -93)	Number then hold preset button for 2 seconds
Wipe On	Preset 98 or 2 then AUX on	Preset Recall (1 – 93)	Number then preset button
Wipe off	Preset 98 or 2 then AUX Off	CAMERA RESET	Preset 94 or 9 then AUX ON
Cam On	Preset 97 or 3 then AUX On	Preset Tour of Presets 1,2,3,4 repeated (5 sec dwell)	Pattern or 1 Pattern
Cam Off	Preset 97 or 3 then AUX Off	Preset Tour of Presets 1 , 2 repeated (5 sec dwell)	2 Pattern
Lamps On	Preset 96 or 4 then AUX On	Preset Tour of Presets 1 , 2, 3 repeated (5 sec dwell)	3 Pattern
Lamps Off	Preset 96 or 4 then AUX Off	Preset Tour of Presets 1----9 repeated (5 sec dwell)	n Pattern (n = 1 to 9)
Aux Relay On	Preset 95 or AUX On		
Aux Relay Off	Preset 95 or AUX Off		

### Resetting Telemetry Receivers

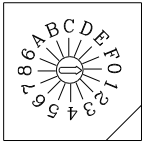
**Note:** It is extremely important to reset the telemetry receiver.

The reset operation must be performed whenever Pan & Tilt head end-stop positions are altered.

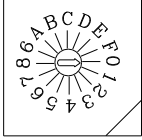
To reset camera 1. Enter the camera number on the telemetry controller. From the controller press Preset 94 (or 9 then AUX ON). The Pan & Tilt head then commences a 20 to 30 second reset sequence.

Test Modes

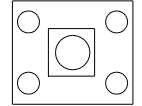
Self Test



SW1 ADDRESS



SW2 EXTENDED ADDRESS



SW3 TEST BUTTON

Turn Address switch **SW1** to "0" and press the test button **SW3**. All receiver functions will be sequentially activated automatically for approximately 5 seconds in the following order.

Address Switch Sw1 - Test Sequence

Pan Right	Iris Open
Pan Left	Iris Close
Tilt Up	Wash
Tilt Down	Wipe
Focus Far	AUX 1
Focus Near	Camera
Zoom In	Lamps
Zoom Out	

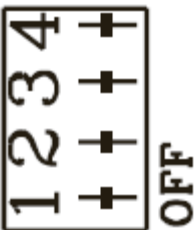
Individual Function Tests

To test each function in turn set **SW1** from 1 through to F and press the test button **SW3**, as shown.

Position 0	Self test	Position 8	Zoom Out
Position 1	Pan Right	Position 9	Iris Open
Position 2	Pan Left	Position A	Iris Close
Position 3	Tilt Up	Position B	Wash
Position 4	Tilt Down	Position C	Wipe
Position 5	Focus Far	Position D	Aux 1
Position 6	Focus Near	Position E	Camera
Position 7	Zoom In	Position F	Lamps

Example SW1 set to 4, test button pressed; **TILT DOWN** operates

FUNCTION SWITCH SETTINGS



SW4 Option Settings

Set Dip-switch 1 to ON to support continuous rotation pan with SIN-COS potentiometer feedback.  
 Set Dip-switch 2 to ON will disable preset positioning on ZOOM and FOCUS.  
 Dip switches 3 and 4 are used for Load compensation.  
 The settings may need adjusting dependent upon load.

*If set too low the units minimum speed will be increased.  
 If set too high the unit may not reach its preset positions reliably.*



3	4	LOAD
OFF	OFF	LIGHT
OFF	ON	MEDIUM
ON	OFF	HEAVY
ON	ON	HEAVYSET

LED indicators:

- GREEN** (Valid Data) When lit indicates that valid data is being received from the transmitter unit. During the receiver **reset** procedure the LED will stay **OFF**.
- RED** (Power) When lit indicates power is being applied to the board.

RS485 Telemetry Transmission Connection

Twisted Pair cable from transmitter: + and - (2-pin connector on sub-module), fit JP1 for RS485 termination.

**Receiver Address Settings**

**Addressing the Receiver (channel / camera No.)**

Receiver / Camera addresses can be set from 1 to 256 using SW1 and SW2. (SW2 sets the "bank" of 16 receivers.) The table shown is an example and represents just a small number of the addresses. The table and the examples below explain the switch settings for various addresses.

Address	SW1	SW2	Address	SW1	SW2
1	0	0	11	A	0
2	1	0	12	B	0
3	2	0	13	C	0
4	3	0	14	D	0
5	4	0	15	E	0
6	5	0	16	F	0
7	6	0	17	0	1
8	7	0	18	1	1
9	8	0	19	2	1
10	9	0	20	3	1

**Examples;**

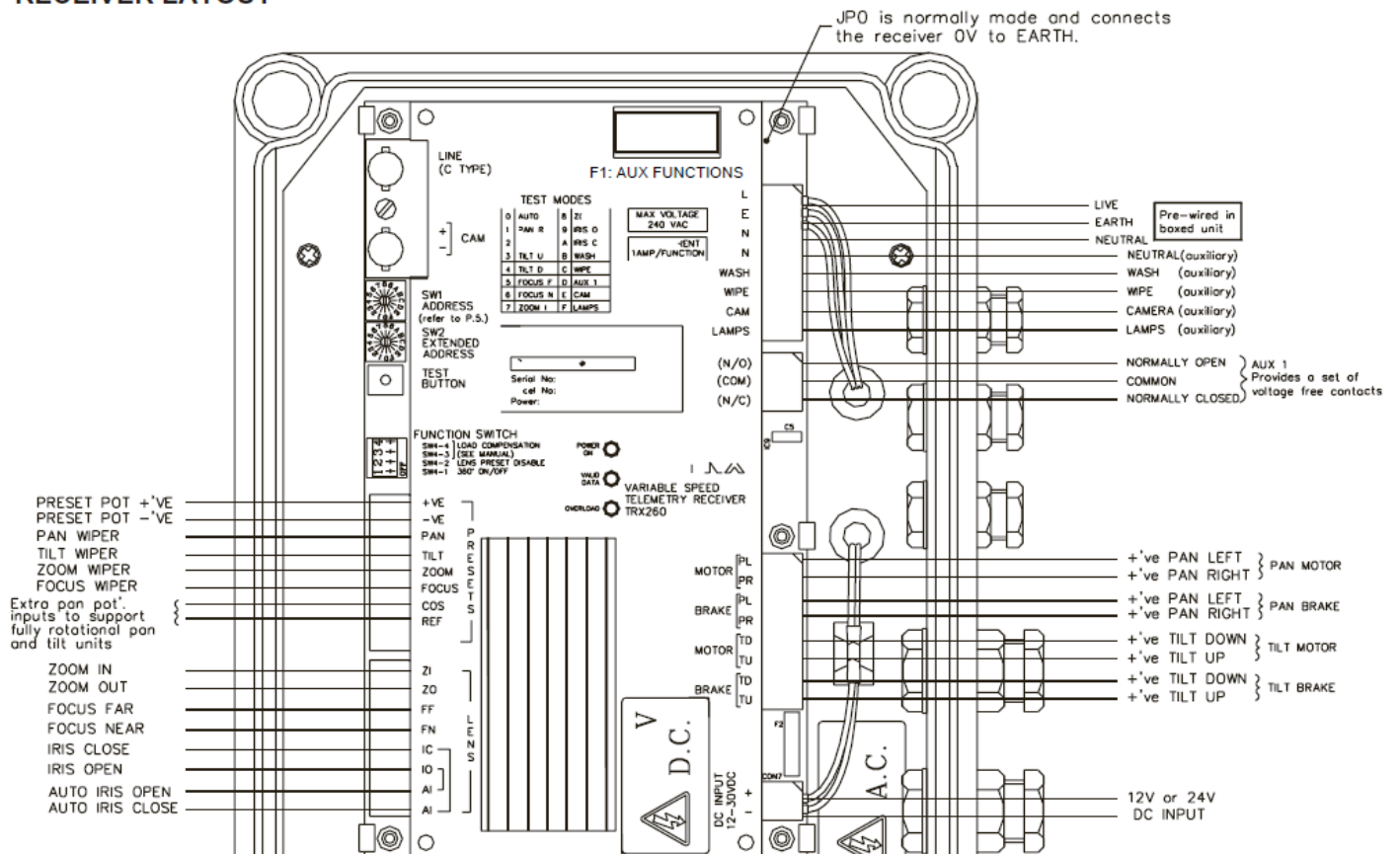
- Address 35 : SW1=2 SW2 = 2 (SW2 denotes 2nd bank of 16)
- Address 117 : SW1=4 SW2=7 (SW2 denotes 8th bank of 16)
- Address 256 : SW1=F SW2=F (SW2 denotes 16th bank of 16)

← 1<sup>st</sup> bank of 16

← 2<sup>nd</sup> bank of 16

**Receiver PCB Connection Layout**

**RECEIVER LAYOUT**



## Connection Details

### Cable Recommendations

A readily accessible disconnect device shall be incorporated in the building installation wiring. This device should ensure 2 pole disconnection with a minimum contact separation of 3mm.

As part of the building installation, protect the unit with a fuse or circuit breaker rated at 6 Amps.

The recommended mains supply cable for this unit is 0.75 mm<sup>2</sup>. The preferred cable type is **0.75mm<sup>2</sup>**, 3-core round flex (3183Y). **This equipment must be earthed.**

**Recommended Pan/Tilt unit cable** - 24/0.2mm, (**0.75mm<sup>2</sup>**) Olflex® "YY" PVC insulated, grey PVC sheathed, 7 core (6 + Earth), 8.1mmØ nominal, or similar.  
16/0.2mm, (0.5mm<sup>2</sup>) minimum conductor size @ 230/240v 3A.

Use separate cables from the 7 and 4 pin connectors on the pan and tilt unit to the receiver.

**Pan and tilt motor cable** - 16/0.2mm<sup>2</sup> minimum conductor size.

**Pan and tilt preset pot' cable** - 7/0.2mm<sup>2</sup> in overall screen.

Screened cable should be used for all preset pot.' connections with the *screen connected to EARTH at the receiver end* only. The screen will reduce the risk of noise affecting the potentiometers.

**Lens functions:** 7/0.2mm<sup>2</sup> with overall screen.

**Note:** Always keep cables as short as possible to prevent/ reduce R.F interference.

Electrical installation methods should comply with current national regulations and site regulations. The installation should only be carried out by technicians qualified to the appropriate level.

### Supply Inputs

**Board only:** 24V – V DC 3Amps max Maximum load capacity: 1Amp per function

12V DC for lens functions. (Focus control, Iris control, Zoom control.)

Maximum load capacity: 50mA per function.

**Notes:** Lens functions have *slow start, half speed* operation electronically switched.

**AUX1** terminals provide a set of voltage free change-over contacts. (N/O, N/C & Common).

### Pan and Tilt Unit Connection to Receiver.

#### Example Pan and tilt connections:

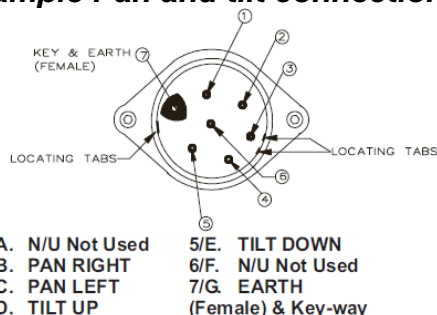
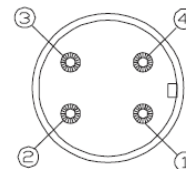


FIG.5.a.

1. Potentiometer +ve
2. Potentiometer -ve
3. PAN Wiper
4. TILT Wiper

FIG.5.b.



**Notes:** (Refer to Pan/Tilt Unit instructions)

1. **SEPARATE CABLES** must be used for connecting the Pan and Tilt Control connector to **CON5** and the 4 pin preset pot' connector to **CON2**.
2. **SCREENED CABLE** must be used between the preset pot' connector and **TB3**,
3. The screen must be connected to EARTH at the receiver **ONLY**.

### Lens to Receiver Connections

Refer to the following Figures and Receiver Layout Connections.

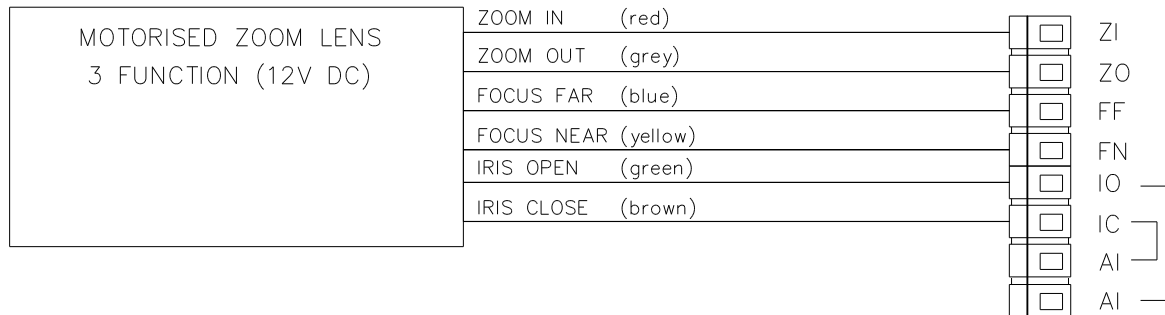
The diagrams represent lens / receiver interconnections. The telemetry receiver requires a four or six wire lens system, i.e. two wires from each motor (zoom, focus, and iris) with no *common* connection.

A "4 wire to 3 wire" lens converter is available please contact technical support.

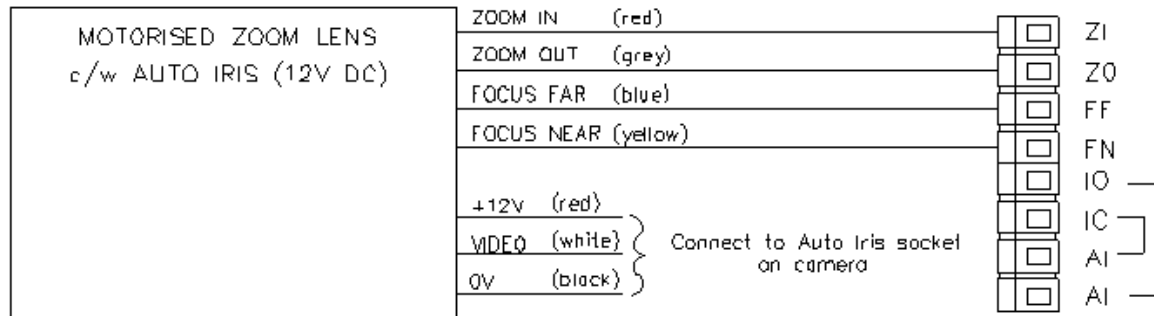
**Notes:**

1. If pots are fitted to the lens and SW4-2 is set to OFF the lens will preset position as normal.
2. If there are no pots fitted to the lens, the zoom and focus wiper connections must be wired to the PRESET POT -'ve on the auxiliary terminal block of the receiver unit.
3. If SW4-2 is set to OFF the lens will zoom out and focus far when preset positions are selected. If SW4 -2 is set to ON the lens preset positioning functions are disabled.

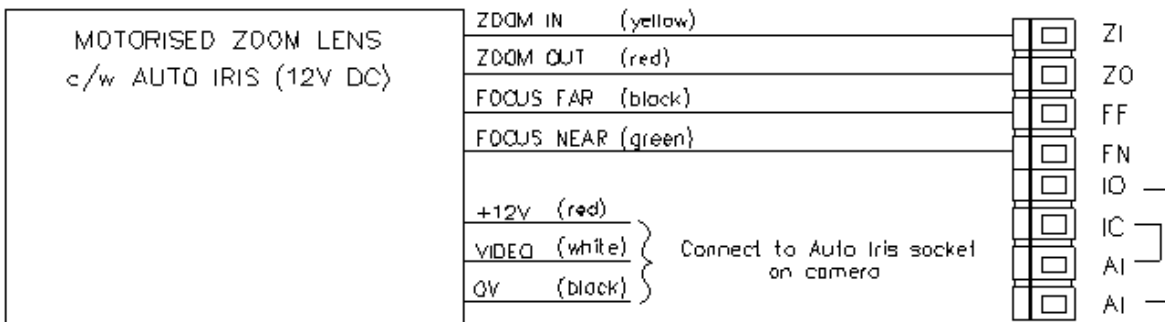
**FIG.4.a ~ 3 Function Motorised Zoom Lens Interconnection**



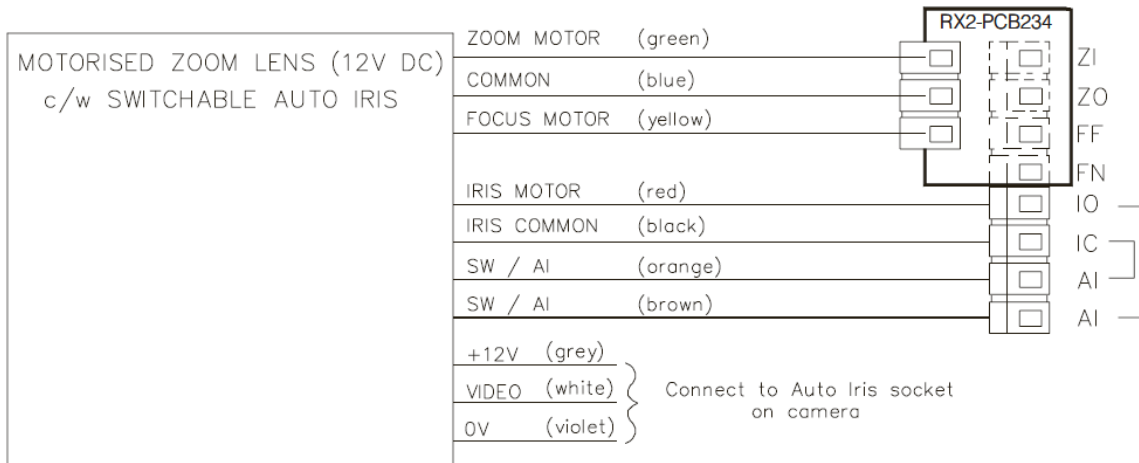
**FIG.4.b ~ Motorised Zoom Lens with Auto-Iris**



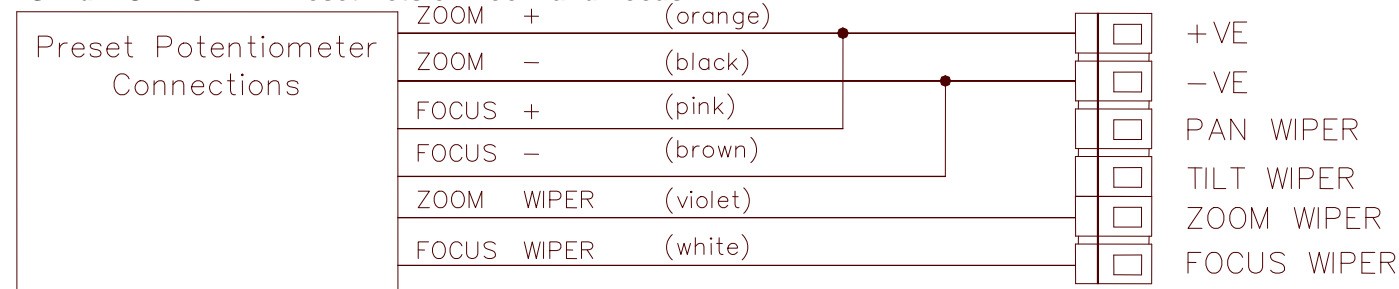
**FIG.4.c ~ Motorised Zoom Lens with Switchable Auto-Iris**



**FIG.4.d ~ Motorised Zoom Lens with Switchable Auto-Iris**



**FIG.4.d ~ OPTIONAL: Preset Pots on Zoom and Focus**



## TROUBLE SHOOTING and TESTING

PCB's leave the factory fully tested and operational, if a fault does occur check all system interconnections before assuming faulty electronics. Check the twisted pair/coaxial cable between the PTZ and the telemetry receiver unit. Ensure correct inter-connection between telemetry receiver and the controller. Verify link and switch settings are correct.

- **Has the RED "POWER ON" LED illuminated?**
- Check all the FUSE are OK
- **Has the GREEN "VALID DATA" LED illuminated?**
- If not check the twisted pair signal cables have been installed correctly. "D" type: +ve data to + terminal, -ve data to - terminal (reverse twisted pair for a quick check).

### Video present - no control

Ensure the valid data indicator is lit when valid data is sent (GREEN LED).

If it does not light up after data wires have been connected try and reverse the twisted pair.

### Preset positions not operating correctly

Ensure the receiver is reset before programming any preset positions.

Ensure there is +5V DC at CON2 for the pot supplies. Ensure that the preset pot' wires (wiper and supply) have been connected in the correct polarity. The voltage across the pot' should change smoothly between 0.5V and 5V when the pan and tilt head is operating between its limit settings.

If the pan/tilt movement is not smooth, check the cables and interconnections.

Ensure immunity from noise interference, screened cable must be used.

The receiver board **MUST BE RESET** if any system installation or set-up changes are made to the pan and tilt receiver assembly. Once the receiver has been reset, all Preset Positions must be re-programmed.

**If All The Above Checks Have Been Carried Out And The Card Is Still Not Functioning Correctly Please Contact Our Technical Support Department.**

## SPECIFICATIONS

### Dimensions

L	W	H	Weight
PCB ~ 194mm	112mm	30mm	0.5kg

### Mechanical Specifications

**Mounting Details:** PCB – 5 x 4mm dia. holes.

**Weight:** Printed circuit board: 500g

**Operational:** Operating temperature: -20°C to +40°C. (Ta = +25°C)

MTTR: 30 Mins MTBF: 30,000hrs at Ta

### Electrical Specifications

#### Power Requirements:

Optional ,24V to 30V DC (3amps total max.)

#### Fuse Ratings :

Board Fuse : F0.25AH (250mA 250 V AC 5x20 Type (F), HBC)

Auxiliary Functions : T2AH250 (2 A 250 V AC 5x20 Type (T),HBC)

Pan and Tilt Functions : 2A

