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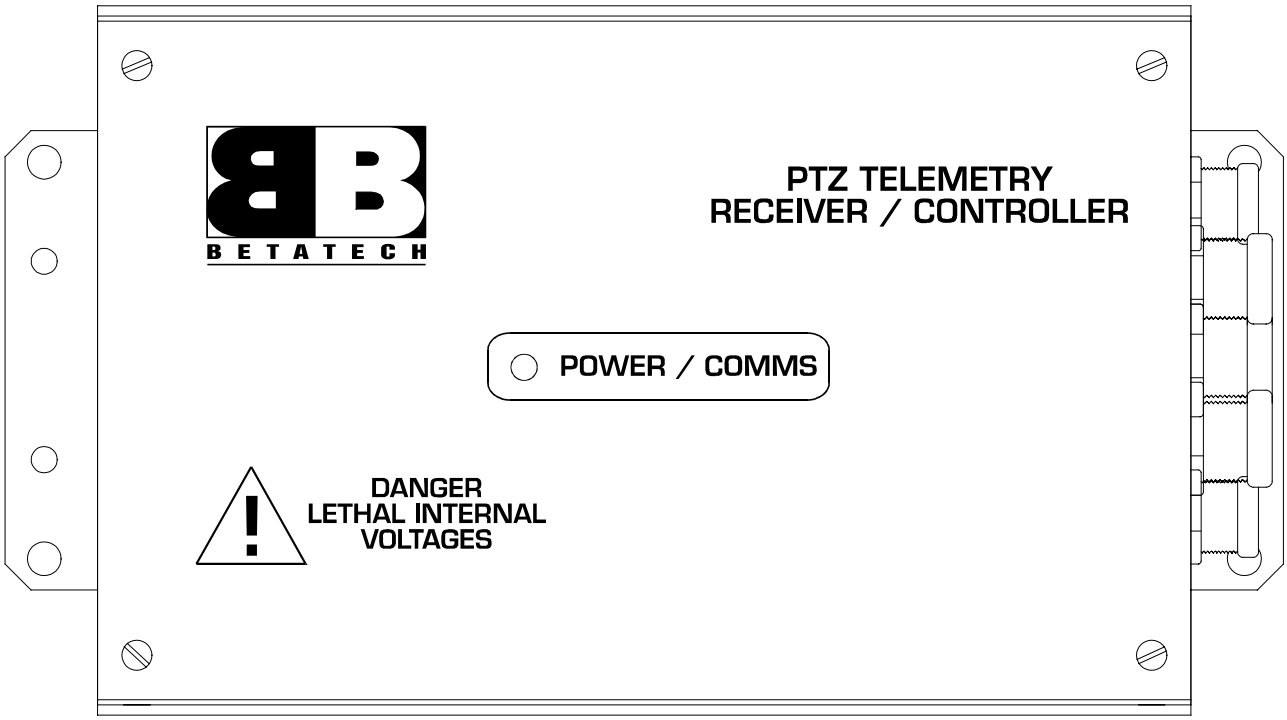
BETATECH

PAN TILT ZOOM TELEMETRY RECEIVER

USER MANUAL



Revision 4.05 –26 October 1999

IMPORTANT SAFETY INFORMATION

This equipment uses a mains supply voltage which can be lethal if correct safety procedures are not adhered to.

This equipment must be earthed.

Depressing the test switch can cause the Pan / Tilt unit connected to this equipment to move. Ensure that such movement will not endanger people or equipment.

1. INTRODUCTION

The Betatech pan tilt zoom (PTZ) telemetry receiver allows for the control of pan tilt (PT) heads and zoom lenses via a serial RS 485 data link.

The PTZ receiver consists of two printed circuit boards, a main control board (bottom) and a PT head interface board (top). The PT interface board is available in AC and DC versions, allowing for the control of virtually all PT head types.

2. CONNECTIONS

Great care must be taken in the connection of the PTZ telemetry receiver. There are many connections, which, if erroneously connected, could cause severe damage to the PTZ telemetry receiver, the PT head and the lens. Double check all connections before switching on the mains power.

Fig 1 shows the general layout of the PTZ receiver circuit board.

Connection of the PTZ telemetry unit is as follows:

- The PTZ receiver is mains powered. With reference to Fig 3, connect the 220 VAC to the screw terminals marked "220 VAC LIVE IN", "220 VAC NEUTRAL IN" and "EARTH IN" on the PTZ driver board. Note that these connections are not marked on the DC driver board. Should it be necessary to operate the PTZ telemetry receiver from a different supply voltage, please contact your nearest Betatech dealer for further information.
- **For use with an AC PTZ head** ensure that the AC driver board is installed. This board is labeled "PTZ AC DRIVER".
    1. **If the PT head is 220 VAC powered**, connect JP1 "220 VAC FUSED LIVE OUT" and "220 VAC FUSED NEUTRAL OUT" to JP2 "AC1 PAN, TILT AND AUX 1&2 LIVE FEED" and "AC1 PAN, TILT AND AUX 1&2 NEUTRAL FEED".
    2. **If the PT head is 24 VAC powered**, connect JP1 "24 VAC LIVE OUT" and "24 VAC NEUTRAL OUT" to JP2 "AC1 PAN, TILT AND AUX 1&2 LIVE FEED" and "AC1 PAN, TILT AND AUX 1&2 NEUTRAL FEED".
    3. Should auxiliary outputs 2 and 3 be required, connect the required voltage feed (either 220 VAC or 24 VAC) from JP1 to the AC2 feed. Note that this circuit is independent of AC1. It is therefore possible to power the AC1 circuit with a different AC voltage to AC2.
    4. Connect the pan and tilt motors to the connections shown in Fig 3.
- **For use with a DC PTZ head** ensure that a DC driver board is installed. This board is labeled "PTZ DC DRIVER" as shown in Fig 3. Connect the pan and tilt motors to the connections shown in Fig 3.
- Connect the lens to the connections shown in Fig 2. Ensure that the lens polarity is correct so that the lens function directions are not reversed. If an auto-iris lens is used, no iris connection to the PTZ telemetry is required, the auto iris control signals are generated by the camera and must be connected as described in the camera / zoom lens technical literature.
- Connect the RS485 communications to the "RS485+", "RS485-" and "GROUND" connections shown in Fig 2. Ensure that the polarity is correct. The RS485 connections are internally protected against limited overvoltages. In areas where there is a high risk of lightning, such as when the unit is used outdoors with long cable runs, it is recommended that additional external RS485 lightning protection devices are installed.
- Should preset positioning be required, connect the lens and pan tilt head feedback potentiometers to the relevant connections on the PTZ telemetry RX. It is essential that the feedback pots are connected to provide position reference voltages which increase when the PT telemetry provides an increasing control signal. Feedback voltages must be as follows:
    * Increasing for pan right, decreasing for pan left
    * Increasing for tilt up, decreasing for tilt down
    * Increasing for zoom in, decreasing for zoom out
    * Increasing for focus near, decreasing for focus far
    * Increasing for iris open, decreasing for iris close

    The "FB VREF+" and "GND" (GROUND REFERENCE x FOR PRESETS) connections provide the excitation voltage which must be connected across the feedback potentiometer. The potentiometer wiper then provides a voltage which is proportional to the position of the lens / pan / tilt. The wiper for each function must be connected to the FEEDBACK input on the bottom board connections as shown in figure 2. Note that two separate excitation signals are provided. These are internally connected and the dual connections allow for one reference connection to the pan / tilt head and one to the lens.
- External Betatech devices, which utilise the Philips I^2C protocol, may be connected to the I^2C interface connector. This allows for the connection of additional alarm inputs, auxiliary outputs and local keyboard control.

2.1. Configuration for Auto-Pan

Should the system be required to operate in auto-pan mode, it is necessary to tie the input marked as "TAMPERSW" to "GROUND". In this mode Auxiliary output 1 cannot be operated by means of the Aux 1 control on the PCK. When operating Aux 5 (AutoPan), the Aux 1 output will be activated. When Aux 5 is toggled off, or any pan operation is initiated, the system will exit auto-pan mode. Aux 1 must be connected to the auto-pan input of the Pan Tilt head.

Note that when configured for auto-pan, the operation of the aux 1 output is limited in test mode to prevent driving the pan motor and aux 1 output simultaneously.

CHECK ALL CONNECTIONS AGAIN BEFORE SWITCHING ON!!

2.1. Alarm Preset Recall

Alarms may be handled by attaching an I2C input unit (set to address zero) to the PTZ. A contact closure on inputs 1 to 16 will cause preset position 1 to 15 to be recalled.

If input 16 is tied active, then contact opening on inputs 1 to 15 will cause preset positions 1 to 15 to be recalled.

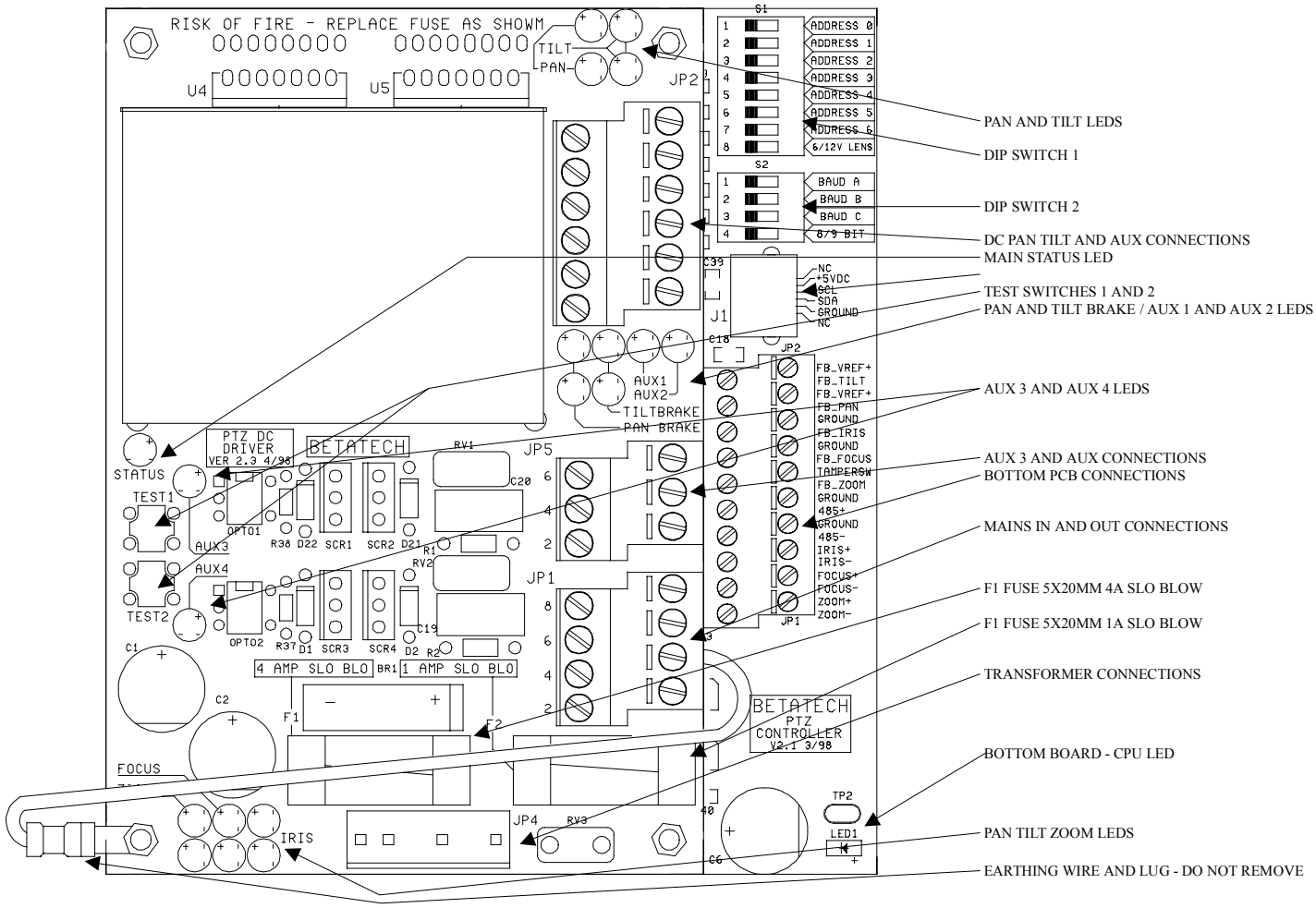
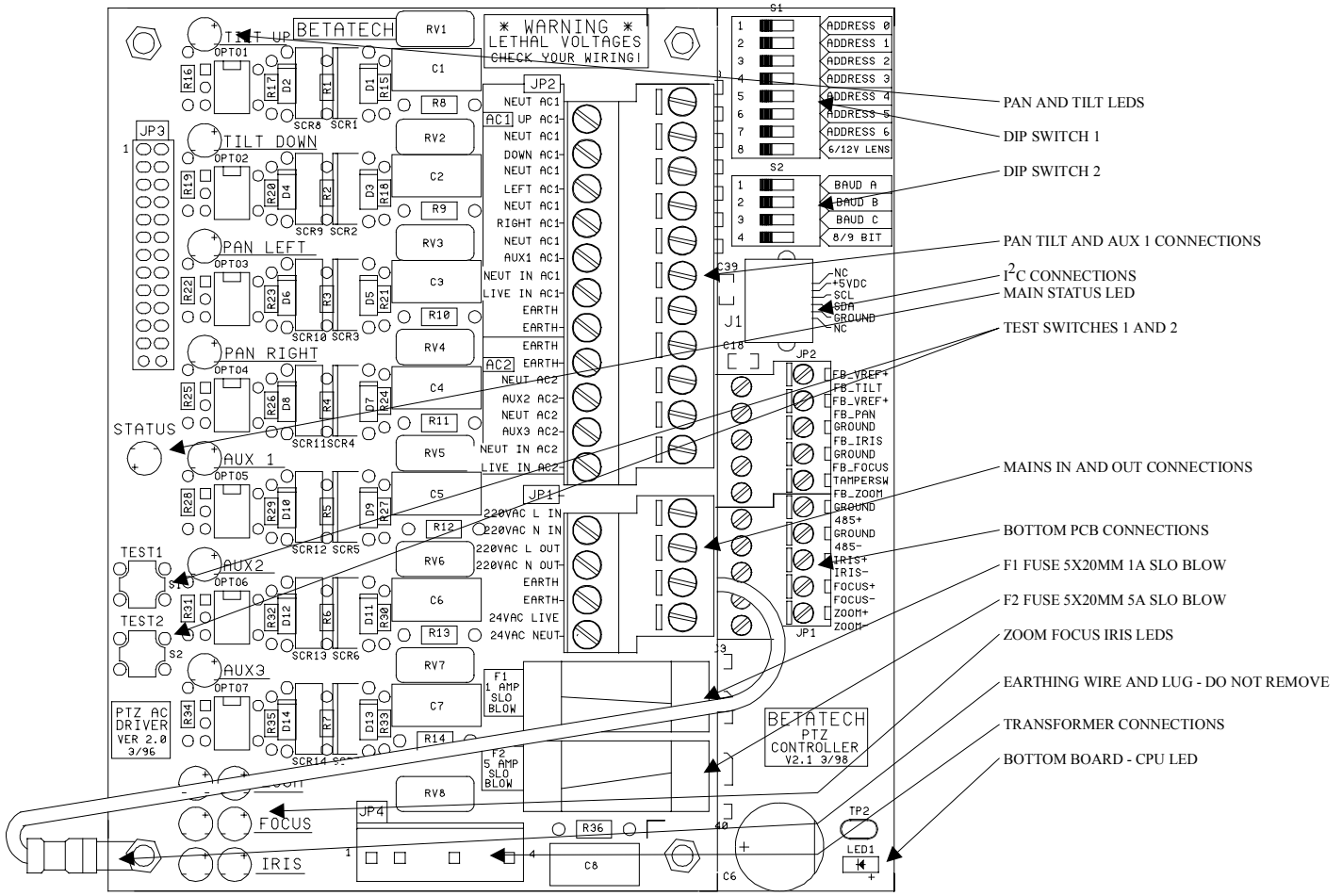


FIGURE 1 - GENERAL LAYOUT



back

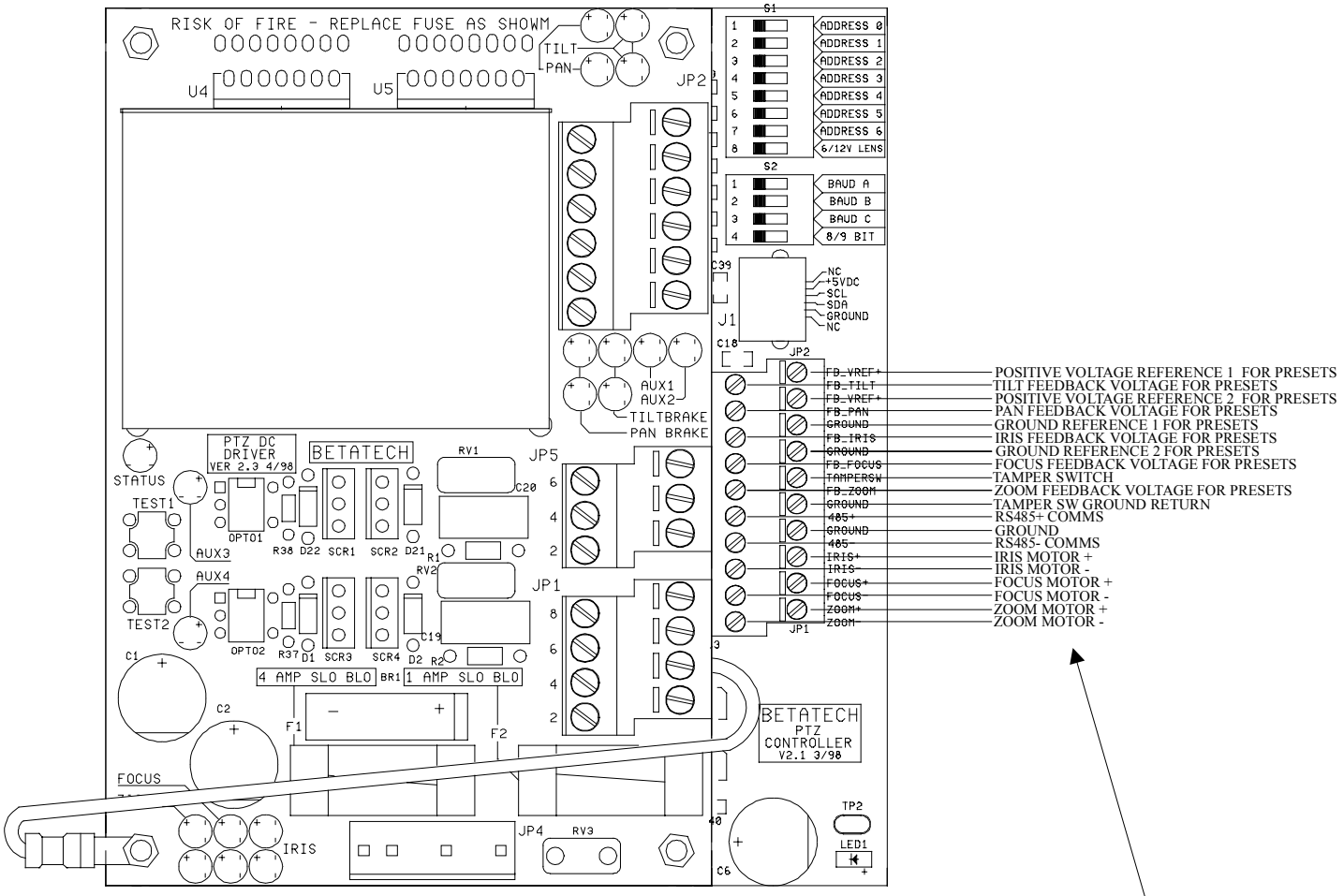
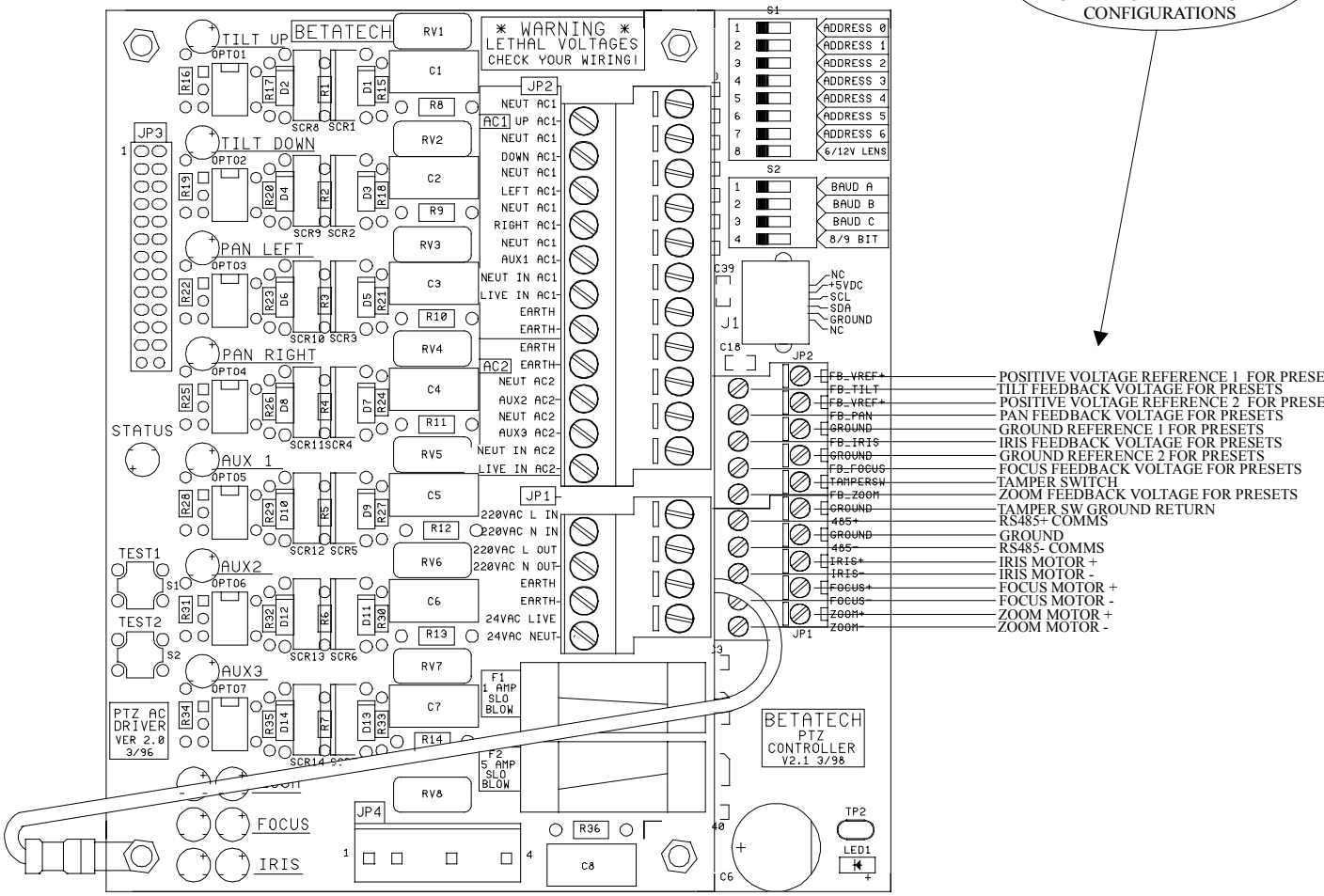


FIGURE 2 - CONNECTIONS TO BOTTOM PCB AC AND DC



NOTE CONNECTIONS ON BOTTOM BOARD ARE THE SAME FOR BOTH AC AND DC DRIVER BOARD CONFIGURATIONS

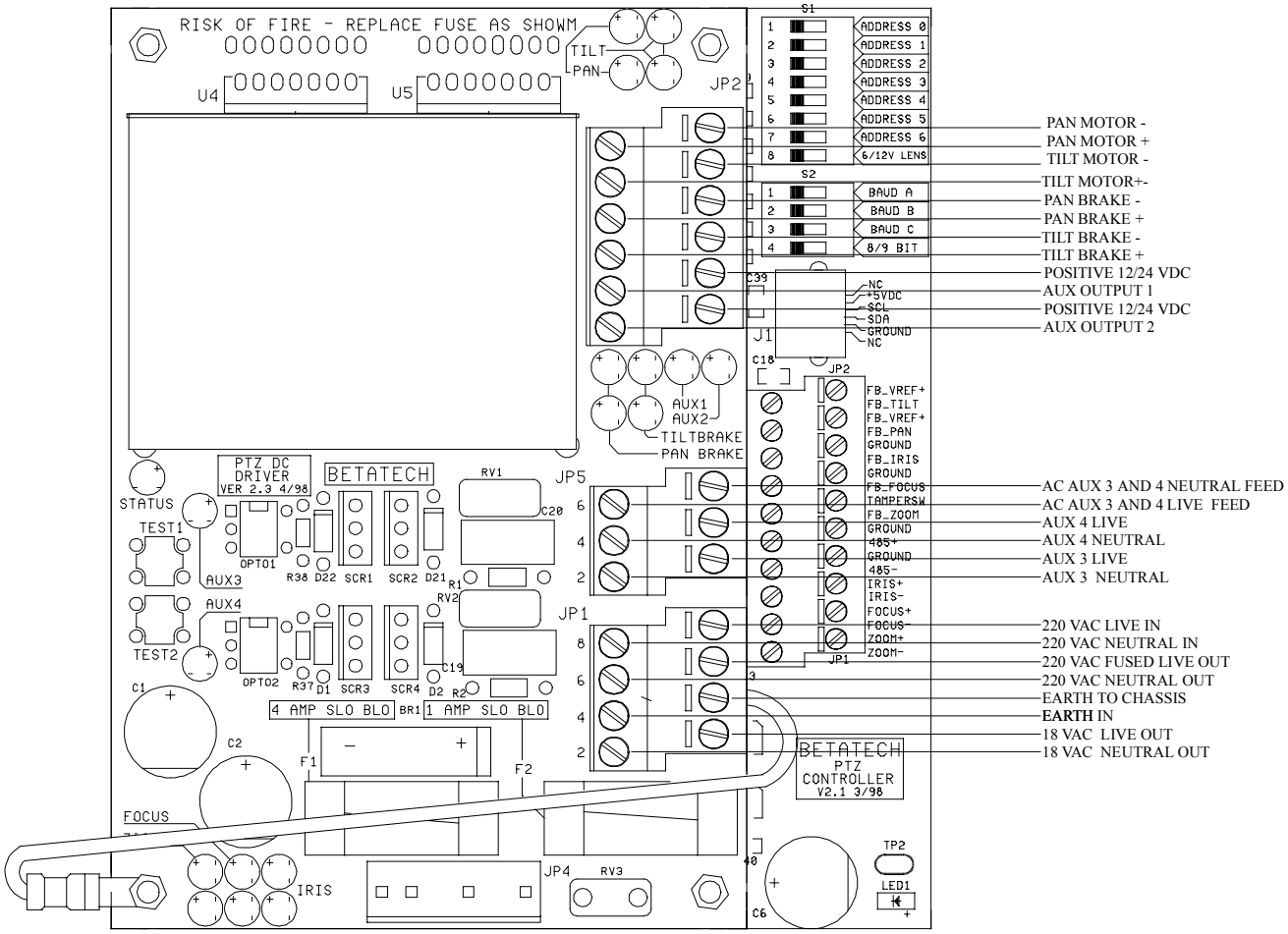
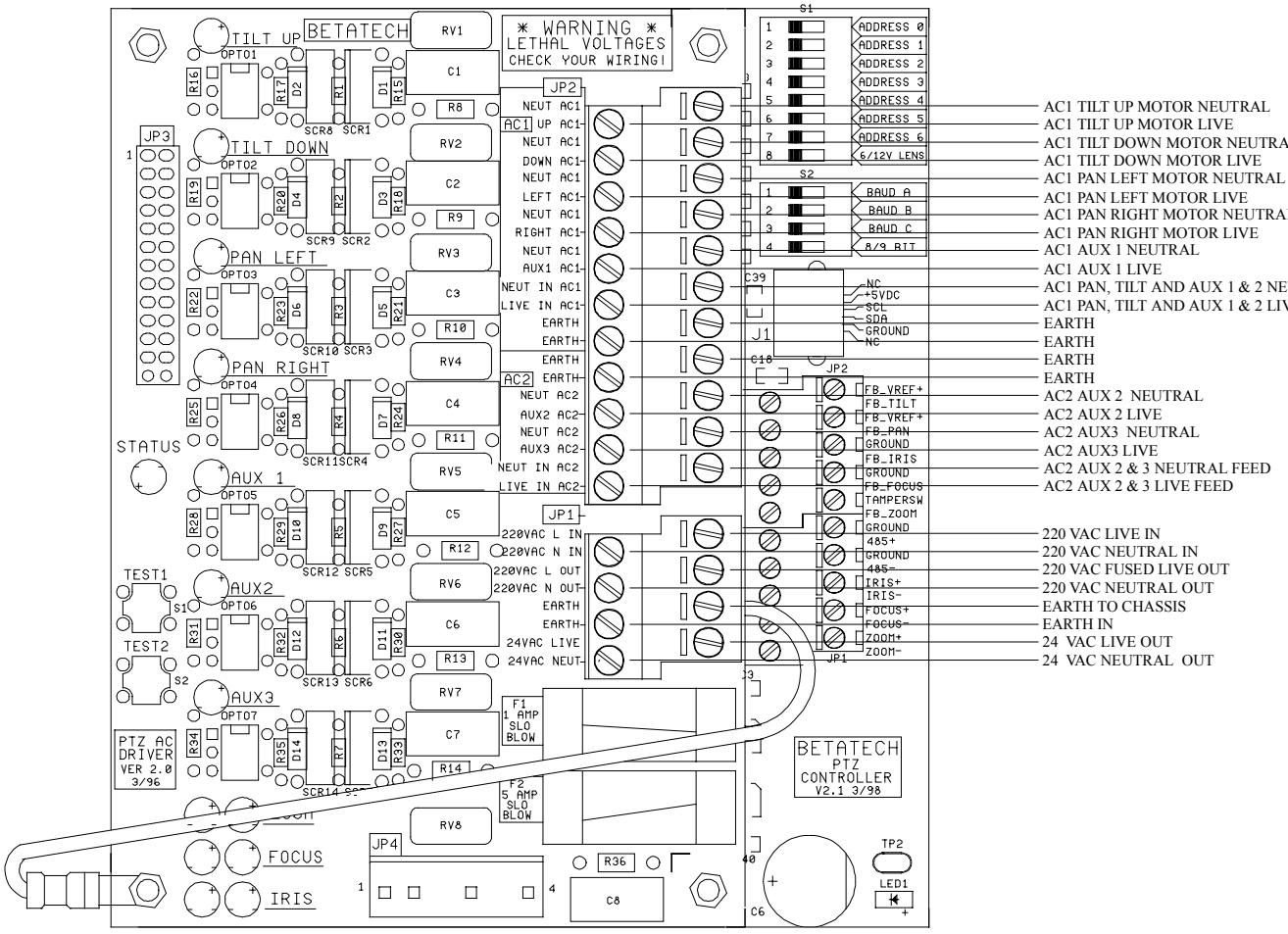


FIGURE 3 - CONNECTIONS TO TOP PCB AC AND DC



3. EXCLUSION ZONES

It is possible to set up exclusion zones, into which the PTZ may not be directed. In order for this feature to be available, the PTZ MUST be equipped with feedback potentiometers on pan and tilt. Eight exclusion zones are available.

When auxiliary output 63 is switched on, the exclusion zones are overridden and the PTZ may be freely pointed to any direction. Turning the auxiliary output off, once again limits PTZ movement. Note that when the PTZ is first switched on, the PTZ is excluded from pointing into the specified areas.

Setting up of the exclusion zones is carried out as follows:

- Turn on auxiliary output 64.
- Set two opposite corners for the zone(/s).
- Turn off auxiliary output 64.

While in setup mode the exclusion zones are set up by storing and recalling preset positions. The following table describes the operation for storing / recalling certain positions:

Zone Number	Clear Zone	Set / Recall Top Left	Set / Recall Bottom Left	Set / Recall Top Right	Set / Recall Bottom Right
1	Store 11	Pos 21	Pos 31	Pos 41	Pos 51
2	Store 12	Pos 22	Pos 32	Pos 42	Pos 52
3	Store 13	Pos 23	Pos 33	Pos 43	Pos 53
4	Store 14	Pos 24	Pos 34	Pos 44	Pos 54
5	Store 15	Pos 25	Pos 35	Pos 45	Pos 55
6	Store 16	Pos 26	Pos 36	Pos 46	Pos 56
7	Store 17	Pos 27	Pos 37	Pos 47	Pos 57
8	Store 18	Pos 28	Pos 38	Pos 48	Pos 58

4. SWITCH SETTINGS

4.1. Address Selection

Set DIP switch 1, switches 1 to 7 to the required address of the PTZ. This would usually match the camera number in the system. The actual switch setting is the binary representation of the address. The following table shows the first few addresses:

Switch 1 / 8, marked "6/12V Lens" must be set to "on" for a 6 or 8 volt lens or "off" for a 12 volt lens.

Address	SW 1/7	SW 1/6	SW 1/5	SW 1/4	SW 1/3	SW 1/2	SW 1/1
Switch Legend	Address 6	Address 5	Address 4	Address 3	Address 2	Address 1	Address 0
1	off	Off	off	off	off	off	on
2	off	Off	off	off	off	on	off
3	off	Off	off	off	off	on	on
…							
127	On	On	On	On	On	On	On

4.2. Baud Rate Selection

DIP switch 2 is used for baud rate selection. Set Switch 2/1 and 2/2 and 2/3 to match the baud rate of the device which generates the PTZ control data as follows:

* = > Indicates the default setting of 19.2 KBaud

The software automatically detects either an AC or DC driver board.

Switch 2/4 (marked "8/9 bit") is used to set the unit to operate with different serial communication protocols. For normal operation with Betatech control equipment, this switch should be "off".

Baud Rate	SW2/3 (BAUD C)	SW2/2 (BAUD B)	SW 2/1 (BAUD A)
600 baud	off	off	off
1200 baud	off	off	on
2400 baud	off	on	off
4800 baud	off	on	on
9600 baud	on	off	off
19.2 K baud *	on	off	on
57.6 K baud	on	on	off
57.6 Kbaud	on	on	on

5. RESTORING DEFAULT PARAMETERS

The PTZ telemetry receiver stores many parameters internally. Should it be necessary to restore these values to the default factory settings, the following procedure should be followed. Note that the default values loaded, may be modified by setting the address switch prior to restoring defaults.

- Switch the power to the PTZ telemetry receiver off.
- Set the address DIP switch for the required default settings
- Hold down both test buttons (located on the AC or DC driver board). While holding the buttons down, switch the power to the PTZ telemetry receiver on. The power / indication LED will come on briefly and then go off for about 1 second. The factory default settings will have been restored. Note that the existing preset positions which are stored in the unit will be unchanged after this procedure.
- Set the DIP switch to the required PTZ address.

The following table indicates the functions of the address DIP switch ***when the defaults are restored.***

Switch Position	Off (Default)	On	Function
S1/8	15 seconds	60 seconds	Sets the maximum time which the PTZ will search for a preset position. If the position is not found after this period, the PTZ will automatically stop.
S1/7	Slow. The PTZ will start decelerating further away from the preset position.	Fast. The PTZ will start decelerating closer to the preset position.	Sets the reduction in speed when the PTZ approaches preset positions.
S1/6	Slow	Fast	Sets the rate of increase in speed when the PTZ is controlled via a fixed speed controller.

S1/5	S1/4	S1/3	Minimum Pan / Tilt speed when approaching preset position
Off	Off	Off	25%
Off	Off	On	4%
Off	On	Off	6%
Off	On	On	8%
On	Off	Off	10%
On	Off	On	16%
On	On	Off	35%
On	On	On	55%

6. SYSTEM TESTS

To enter test mode press test switch 2. Pressing the test switch repeatedly causes the unit to cycle through various test modes as follows:

If, during a test, the TEST 1 button is pressed, the current test will pause at the current step. Pressing the TEST 1 button will cause the test to advance to the next step.

The PTZ telemetry receiver will automatically be returned to normal operating mode when any valid serial message is received. Alternatively it is necessary to cycle through all test modes (using the TEST 2) switch, until the power / status LED indicates that the PTZ is out of test mode.

Test Mode	**POWER / STATUS LED**	**Function**
0	On, flashes briefly when serial message is received	Normal operation
1	Flashes off briefly once per second	Cycle through all functions individually
2	Flashes off briefly twice per second	Toggle all functions simultaneously
3	Flashes off briefly 3 times per second	DC variable speed test as per “1”
4	Flashes off briefly 4 times per second	DC variable speed as per “2”
5	Flashes off briefly 5 times per second	Cycle through all aux outputs

On completion of the tests ensure that the unit is returned to normal operating mode.