

REVISION LIST

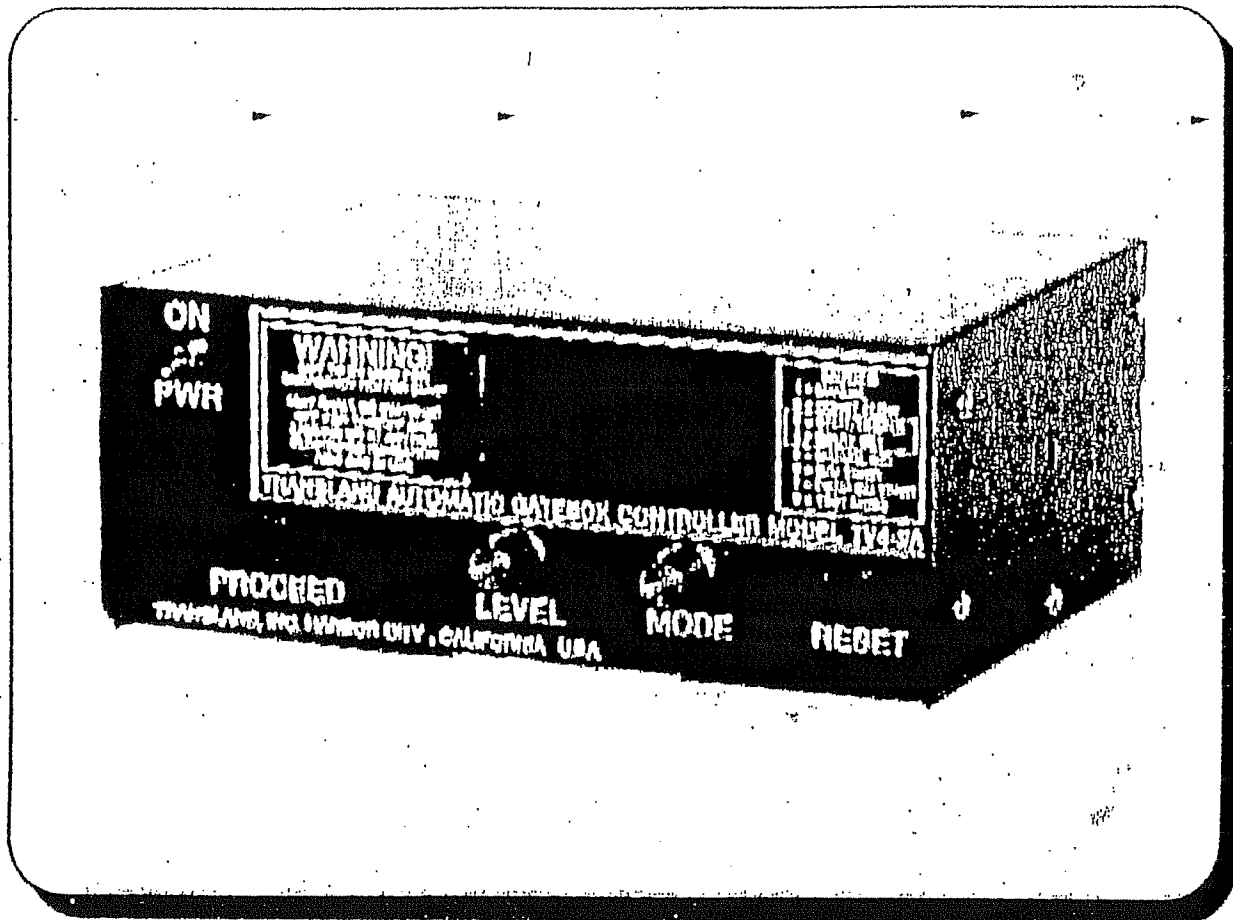
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Version

By

[illegible]

TRANSLAND FIRE DOOR CONTROLLER



INSTALLATION AND OPERATIONS MANUAL



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Overview and Description

This system is a microprocessor based electronic controller intended for use with the Transland™ 10"X40" hydraulic operated gate or any similar system using a 3 wire electro hydraulic or pneumatic control system. The design intent was to produce a system to meet the needs of the light airtanker (SEAT) industry for a simple to use and reasonably priced drop controller that would provide accurate coverage level (gallons per 100 ft. sq.) control within the limits allowed by the physical size of the gate opening that equal or exceed the specifications of the "Airtanker 1990" criteria. Additional consideration was for easy upgradeability to meet the requirements of "Airtanker 2000", at the lower coverage levels available to the Transland gate, as well as adequate accuracy and versatility to be used for conventional ag dry material dispersal at the higher rates. With proper installation and maintenance, repeatable opening accuracy of about $\pm 1/10$ " is possible. Additional circuitry is also included to provide automatic control of foam injector equipment.

Operationally, the system is designed to be simple to operate while allowing maximum versatility in drop selection. For fire operations there are three primary and one backup mode of operation. These are:

1. Manual open. Pull trigger to open, release to close.
2. Manual open with automatic "modified" constant flow.
3. Toggle/timed drop. Select level and delay, depress trigger to start. Door will open to level selected, remain open for the preset time interval, then close.

Backup mode is used if a failure occurs in the door position sensing circuits or linkages and allows continued operation with acceptable accuracy should this occur during a "fire bust".

An additional mode is available for use in dry material application or for fine tuning of liquid drops, such as spreader applied very high volume mixtures. This mode reads out in absolute position sensor increments and, depending on installation, will deliver opening accuracy of $<1/10$ inch with good reliability.

In version 4-2 the displays and settings in mode 1 (manual open) are fully user programmable, giving the ag operator the option of using this mode for frequently used settings, such as commonly used fertilizer rates, etc. which can be programmed in for instant recall.

**[For a quick start or review, refer to the Quick Info
Box on the last page of this manual.]**

Installation

There are three main units to the system: a computer unit, a relay box, and a position sensor box. The computer unit has one 9 pin Amp connector and one 4 pin Amp connector. For the computer unit, refer to list for connections to the 9 pin Amp plug. The relay box has one 9 pin Amp connector. Refer to list for connections.

ALL THREE UNITS REQUIRE A GOOD GROUND AT THE MOUNTING POINT!!!

This is critical for proper operation and can be achieved either through the mounting screws or by a **SHORT**, heavy gauge ground strap from one of the mounting screws on the unit case to a reliable ground. The number 2 pin on the CPU unit will suffice for ground provided it is wired with 18 ga. wire a maximum of 24 inches to a good ground.

Wiring: Cable kits are supplied for connection between sensor box and computer and between computer and relay box. Additional wiring should be completed with aircraft quality wire using the supplied sockets for the Amp connectors. Minimum wire size is listed next to each connection.

COMPUTER UNIT 9 PIN AMP CONNECTOR LIST

| | |
|-------------|------------------------------------|
| Pin 1..... | 24-28 volt power (22 ga. min) |
| Pin 2..... | Primary ground (20 ga. min) |
| *Pin 3..... | Alt ground (Black & Main) |
| Pin 4..... | Foam injector control (18 ga. min) |
| Pin 5..... | Foam injector control (18 ga. min) |
| Pin 6..... | Trigger switch (22 ga. min) |
| *Pin 7..... | Arm advise line (red) |
| *Pin 8..... | Close command line (white) |
| *Pin 9..... | Open command line (green) |

*Note: these lines are connected with the supplied cable to wire colors indicated

COMPUTER/SENSOR UNITS 4 PIN AMP CONNECTOR LIST

| | |
|------------|------------------------|
| Pin 1..... | 12-14 Volt Power (Red) |
| Pin 2..... | N/C |
| Pin 3..... | Sensor Data (Green) |
| Pin 4..... | Ground (Black & Main) |

Note: One end of this cable is supplied completed. The other end is left unfinished for routing and trimming. Ends for sensor cable are wired the same and are interchangeable. White wire is trimmed and left unconnected.

RELAY BOX 9 PIN AMP CONNECTOR LIST

| | |
|---|--|
| *Pin 1..... | Open command from main unit (Green) |
| *Pin 2..... | Close command from main unit (White) |
| Pin 3..... | No connection |
| *Pin 4..... | Arm advise line to main unit (Red) |
| *Pin 5..... | Ground (Black & Main wires) |
| Pin 6..... | Arm power from arm switch (18 ga. min) |
| Pin 7..... | To hyd. system motor control (18 ga. min) |
| Pin 8..... | To hyd. system close solenoid (18 ga. min) |
| Pin 9..... | To hyd. system open solenoid (18 ga. min) |
| *note: these lines are connected with the supplied cable to wire colors indicated | |

SENSOR UNIT

The sensor unit is connected to the door via a cable or linkage. A 1/4"X28 thread shaft connects to the internal sensor. Data and power are transmitted to the CPU via shielded cable (supplied) one end of which is completed. This cable should be routed and cut to size, then assembled as follows:

| | |
|--------------|-------|
| RED: | Pin 1 |
| GREEN | Pin 3 |
| BLACK & MAIN | Pin 4 |

Optimum full range travel for the sensor is 90 degrees. Resolution is 256 increments per 360 degrees rotation, or 64 increments per 90 degrees. Allowable range for full travel is 90 degrees +/- approx. 15 degrees. A spring pre-load is recommended for the linkage to eliminate "slack" errors. Maximum data speed for the unit is greater than 720 degrees per second, although in version 4.2, speed is software limited to approximately 360 degrees per second.

Typical installation schematic

Note: Hydraulic controls are aircraft solenoids.

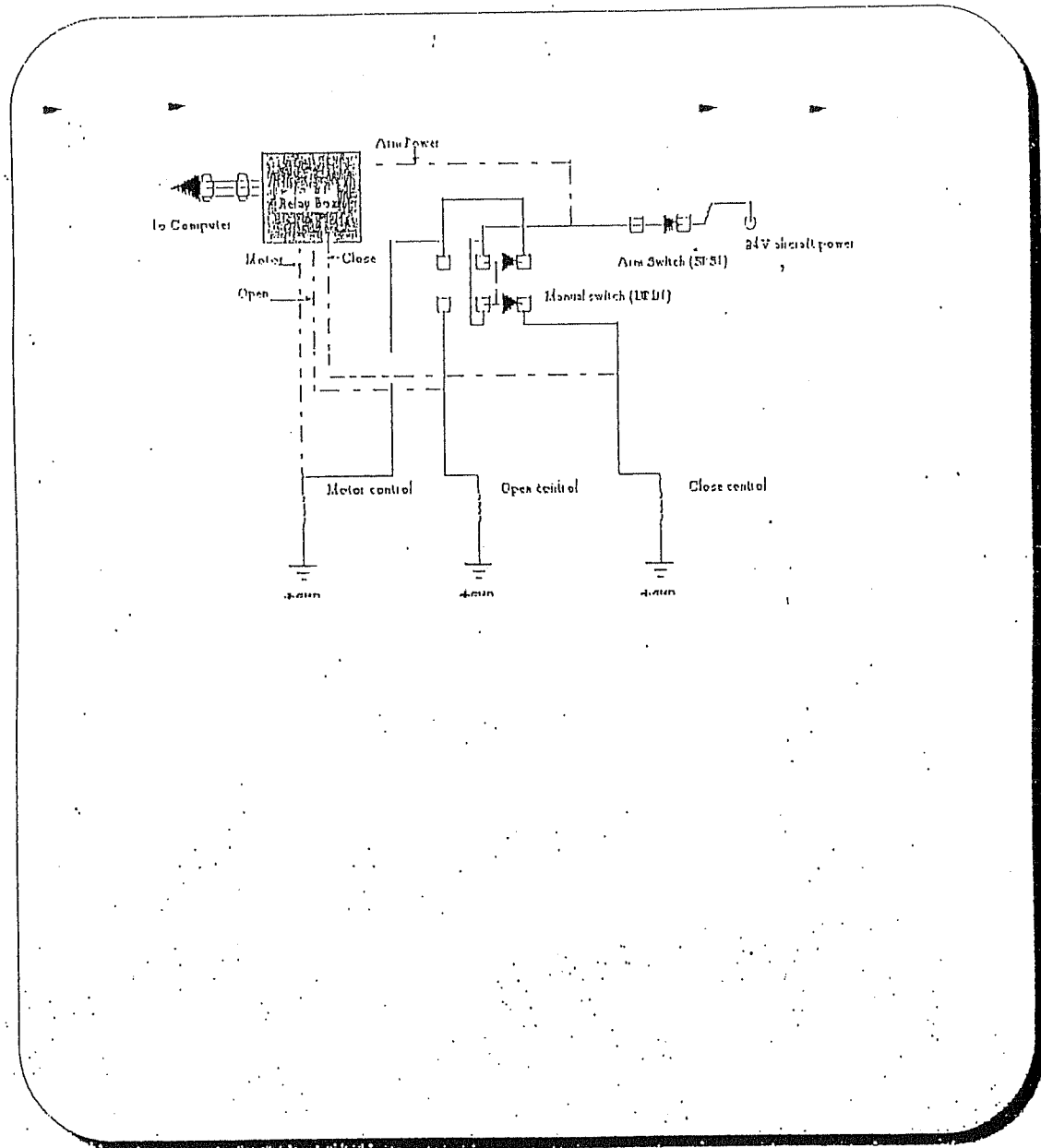


fig 1

CONFIGURATION

Configuration and programming are accomplished from the front panel via a programming mode. Programming is relatively straight forward, although very critical for proper operation. It is recommended that the procedure be read through completely before programming is attempted and that a list of data to be entered be prepared and all data be entered in one session, then checked thoroughly for correctness. It is also recommended that the person doing the programming read the operation section thoroughly and understand normal operation PRIOR to programming the unit.

WARNING!!!
ERRORS IN PROGRAMMING CAN CAUSE ERRATIC AND
UNPREDICTABLE PERFORMANCE. VERIFY ALL ENTRIES
CAREFULLY!!!

NOTE:

The unit is shipped with all default programming installed. Those who do not require all the features available may find that operation will be adequate for their needs using only the default program values. Or, some may find it worthwhile to use the default values for a time to become familiar with the operation of the unit.

In any case, only the registers which need to be altered for a given use should be changed. If problems then occur, the default values can be reprogrammed to restore operation to a known state.

During programming you will be altering the contents of selected memory locations, or registers, inside the processor. When finished, you will command the processor to write the modified memory to a permanent storage chip inside the unit (EEPROM). The EEPROM memory is read by the processor at power up each time the unit is turned on and the data used to control the functions of the unit. There are 70 registers available to be programmed (01..70), however, only 62 are currently used. The remainder are available for future optional expansion and are ignored by the processor. The EEPROM chip can be rewritten up to one million times and has a retention span of over 40 years. It requires no maintenance or backup power.

Each register contains and can be programmed with a number between 0 and 255. HOWEVER, some registers have an allowable limit less than this and MUST be programmed within the legal range.

A complete listing of all registers, their functions, and their allowable limits is contained in Table 1. Table 2 contains a list of the preset default settings that are pre-programmed into the unit at shipment. With these settings, it is expected that the unit will function marginally well in any installation, although probably not optimally. They are included as a starting point for reference during setup of a new installation and to allow first tests to be conducted prior to full setup and programming.

Briefly, the programming sequence is as follows:

1. Turn power OFF

2. Press and hold the proceed button and turn power ON.
3. The display will show [01--blank]
4. Release the proceed button. Unit is now in program select mode.
5. Select the desired register to view or change (01--70) with the level knob. The level display will show the register number selected. The mode window will remain blank and the mode control will be inactive. Do not select register 00. It has a special function described later.
6. Push reset to set. Unit is now in the program set mode. The contents of the selected register are now displayed as a 3 digit number in the level and mode windows. For example, if the register content is 125, the display will show [12--5].
7. Select the desired value with the level knob (mode knob is inactive). Any number between 000 and 255 may be entered and will display as [00--0] to [25--5].
8. Push the proceed button. The unit will return to the program select mode, the mode window will blank, the selected register number will display in the level window, and the last number displayed in step 7 will be written to temporary memory.
9. Repeat steps 5-8 for all registers desired. Any register skipped will remain unchanged from the last value permanently programmed and registers can be changed in any order at random or changed as often as needed in any session.
10. Select register 00. This register cannot be written to. It is the program control register. From register 00, press proceed to make any changes permanent OR press reset to abort the session. If proceed is pushed the display will show [77--7] briefly to indicate that a successful write to permanent memory has been completed, then the unit will reset to normal power on status. If reset is pushed the display will show [00--0] briefly to indicate that the programming was aborted, then the unit will reset to normal power on status. NOTE: if reset is pushed to abort the programming, any changes made will be lost as the last permanent program will be read into the processor, overwriting the changed data.

Memory read failure:

If the processor is unable to read from the permanent memory chip or if the data retrieved is corrupt, a critical memory read failure will occur. This will only happen at power up or upon exit from program mode. Should this occur the display will show [33---3] briefly, then exit to program mode. The unit cannot be operated until reprogrammed.

When the EEPROM is written to, the processor generates a checksum which is stored along with the programmed data. When the EEPROM is read at power up a new checksum is computed from the retrieved data and compared with the one stored during the write process. If an error has occurred the processor will repeat the read process up to 255 times or until the checksums match. If it fails to obtain a match after 255 tries, the processor will vector to program mode, assuming that the data is corrupt and requires reprogramming. All data should be reprogrammed. If the memory read failure continues to occur after reentry of the data, this indicates that a failure has occurred in the EEPROM chip or associated circuitry and the unit requires repair.

Table 1

Register program assignments

| <u>Reg. Number</u> | <u>Function</u> |
|--------------------|--|
| 1..7 | Maximum level allowed for modes 1..7 respectively. |
| 8..14 | Minimum level allowed for modes 1..7 respectively. |
| 15 | Open sequence timeout value |
| 16 | Close sequence timeout value |
| 17 | Overcenter sequence timer value |
| 18..22 | NOT USED |
| 23 | Maximum sensor count |
| 24 | Lead time (in counts) |
| 25 | Power on mode. Range is 1 to 8. |
| 26 | Power on level. Range is within limits for mode selected in register 25. |
| 27 | NOT USED |
| 28..37 | Display values for the levels selected in modes 1, 2, 3. See notes. |
| 38..47 | Sensor values for the levels selected in modes 1, 2, 3. See notes. |
| 48..57 | Constant flow delay times for levels in mode 2. In 1/100's of second |
| 58..67 | Constant flow increments for levels in mode 2. In 1/100's of second |
| 68..70 | NOT USED |

Register descriptions:

- 1..7 These registers control the maximum number of levels allowed for each mode. For modes 1,2,3 the legal range is 002 to 010. I.E. there are 10 possible coverage levels for these modes. The door settings and displays for these 10 levels are programmed in registers 28..67. For modes 4..7 the legal range is 099 or less and greater than the setting assigned in 8..14.
- 8..14 These registers control the minimum level number to be used with modes 1..7. Legal range is 001 to 009 for modes 1,2,3 (recommend 001) and 000 to 099 for modes 4 through 7. Each register MUST be a value less than that assigned in 1..7.
- 15 This register controls the maximum time the computer will allow the open relays to engage in the event of a failure in the sensing system or hydraulic system. Time is in 1/100 of a second increments and legal range is 001 to 255. RECOMMENDED range is 100 to 255 (1 sec to 2.55 sec). This setting should be started at the default and adjusted gradually, if needed.
- 16 Controls the Max time the computer will allow the close relays to engage in the event of a failure. MUST BE larger than the time in register 15 to allow for proper closing. Is in 1/100 second intervals and legal range is 001 to 255. 150 or larger is recommended.
- 17 Controls the time the close relays will remain engaged after the door is fully closed to allow for positive overcentering of the cam. Time is in 1/100 sec increments and legal range is 001 to 255. Normal range will usually be from 050 (.5 sec) to 200 (2.00 sec).
- 23 This register tells the computer the maximum range of travel for the door and sensor unit. Determine this value as follows: Close the door fully with the manual switch. Select mode 8 and push reset to clear the display. Open the door fully with the manual switch and note the number displayed. Repeat several times.

If the count number varies by more than 1 or 2, there is slop in the linkage which should be corrected. Record the lowest number obtained and enter in this register. Note: This number will automatically be transferred to the max level for Mode 5.

24. This register controls the lead time the computer will allow for the door to stop on opening. It is measured in counter increments. It is provided to compensate for the time required for the relays and valves to function after the stop open command has been issued by the computer. Legal range is 000 or larger and recommended range is 000 to 004. If very fine openings are required it should be set at 000, since an open setting of less than the lead time here will result in no open command being issued. In any event, it should be noted that the system relays and valves will function at different speeds depending on temperature, electrical system voltage and age or condition and absolute door speed will be affected by load and g force. All of these will affect opening accuracy.
25. This register controls which mode the unit will go to on power up. Legal Range is 001 to 008, corresponding to modes 1 through 8. Set this to the mode you anticipate using most frequently.
26. Controls the level (in the mode selected above) that the unit will go to on power up.
- 28 to 37. These are what will be displayed in modes 1,2,3 for the 10 possible levels in those modes. Legal range is 000 to 099 and the last two digits (with a decimal point) are what will display in the level window when the corresponding level is selected. I.E. if 005 is entered in #28, then mode 1 level 1 will display as [0.5--1]. If 099 is entered in #29 then mode 1 level 2 will display as [9.9--1]. The default settings for these in table 2 are based on fire coverage levels from 0.5 to 4.0, however they can be changed in any way to suit individual needs.
- 38 to 47. These are the counter increments that will be used by modes 1,2,3 to control the door opening for the 10 allowable levels in these modes. I.E. assume that #28 above is programmed with 005 and that #38 here is programmed with 007. When in mode 1,2, or 3, if the level knob is rotated, when the level display reads [0.5--] then the door open setting will be 7 counter increments. Legal range is 001 to the max count in #23. Note: if this number is less than the lead number in #24, then no open will occur.
- 48 to 57. These are the delay times used by mode 2 to determine the interval between opening increments. They are in 1/100 second increments. I.E. if #48 is programmed to 150, then when in mode 2, level 1 (display programmed in #28) and the trigger pulled and held, the door will open to the setting programmed in #38, pause for 1.50 second then start to open again for the time set below in #58. Legal range is 001 to 255. Recommended range is .30 (.3 second) or greater.
- 58 to 67. These are the constant flow increments used by mode 2 to determine the time the door will incrementally open for each constant flow increment, they are in 1/100 second intervals. I.E. if #48 above is set to 100 and #58 here is set to 003, then every 1 second during the drop the door will start opening further for .03 seconds.

TABLE 2

Recommended Default Register Settings

| | |
|--------------|--------------|
| 1. 008 | 29. 010 |
| 2. 008 | 30. 015 |
| 3. 008 | 31. 020 |
| 4. 099 | 32. 025 |
| 5. 055 | 33. 030 |
| 6. 099 | 34. 035 |
| 7. 099 | 35. 040 |
| 8. 001 | 36. 000..099 |
| 9. 001 | 37. 000..099 |
| 10. 001 | 38. 007 |
| 11. 000 | 39. 013 |
| 12. 001 | 40. 020 |
| 13. 003 | 41. 026 |
| 14. 001 | 42. 003 |
| 15. 160 | 43. 039 |
| 16. 230 | 44. 046 |
| 17. 100 | 45. 053 |
| 18. .22 N/A | 46-47. 053 |
| 23. 055 | 48-50. 255 |
| 24. 000 | 51-52. 150 |
| 25. 001 | 53-54. 100 |
| 26. 001..008 | 55-57. 255 |
| 27. N/A | 58-67. 003 |
| 28. 005 | |

These settings will produce the following displays and functions:

Mode 1: 8 levels displayed as 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0. Openings of 7, 13, 20, 26, 33, 39, 46, 53 counter increments.

Mode 2: Levels, displays and openings same as Mode 1. Constant flow delays of 2.55, 2.55, 2.55, 1.50, 1.50, 1.00, 1.00, and 2.55 seconds respectively and constant flow increments of .04 second in each case.

Mode 3: Same as Mode 1

Mode 4: Timer range of 0 to 9.9 seconds delay

Mode 5: Counter intervals from 1 to Max count

Mode 6: Timer intervals from .03 seconds to .99 seconds

Mode 7: Foam timer intervals from 0.1 minutes to 9.9 minutes

OPERATING:

WARNING!

THIS UNIT IS NOT TO BE USED AS AN EMERGENCY HOPPER DUMP SYSTEM.

UNIT WILL BE SWITCHED OFF FOR TAKEOFF AND LANDING OR AT ANY TIME WHEN THE AIRCRAFT IS OUTSIDE THE INTENDED DISPERSAL AREA.

UNIT WILL BE SWITCHED OFF AT ANY TIME ELECTRONIC NAVIGATION AIDS ARE IN USE, EXCEPTING ONLY ELECTRONIC SWATH AIDS.

NOTE:

On initial power up the unit will post one or both of the "70" or "81" messages. Read the section on messages prior to operation.

Controls are as follows:

1. Power switch
2. Mode select knob
3. Level select knob
4. Reset push button
5. Proceed push button

The display consist of the following:

1. LEVEL display. Left part of display window and two digits with a decimal point. Reads from 0.0 to 99 depending on function.
2. MODE display. Right part of display window, it has 1 digit and reads from 0 to 9.
3. ARM WARNING LIGHT. This is the decimal point to the right of the MODE display. When system is armed, this light will blink rapidly.

The MODE and LEVEL select knobs are the continuous rotation, detented type and can be turned continuously in both directions and the RESET and PROCEED buttons are momentary push buttons. The MODE knob selects the current operating mode, which is displayed in the MODE window. With software version 4.2 there are 8 modes (1..8). The LEVEL knob controls the level window, which may indicate a retardant coverage level, a time delay, a gate stop setting, or a foam injector run time, depending on the mode selected.

Operating modes for version 4.2 are as follows:

Mode 1: Manual coverage level. Select desired coverage level with level knob. Door will open when trigger is pulled, and close when it is released. Level range and display are user programmable in the program mode.

Mode 2: Semi-Constant flow coverage level. Select desired coverage level. Door will open when trigger is pulled and close when it is released. Door will incrementally open farther during extended drops to compensate for reduced head pressure in tank. On split drops, the door will reopen to the previous constant flow setting. If a constant flow increment has occurred, the mode display will flash, meaning that the CPU thinks a partial load has been dropped and it will open to the appropriate (larger) opening when the trigger is pulled next time. Push reset or switch modes to clear this constant flow memory when reloading. Level range is same as Mode 1.

Mode 3 & 4: Toggle/timed drops. Mode 3 & 4 are the same and work together. Each mode controls a different aspect of the drop. When the trigger is pulled, the drop will proceed automatically as programmed by the mode 3 & 4 displays. In Mode 3, you select the desired coverage level for the drop. In Mode 4, you select the duration of the drop. The drop can be made with the display set in either Mode 3 or Mode 4 and will be the same. The Mode 3 readout is coverage level, as in Modes 1 & 2. The Mode 4 readout is in seconds and tenths. This sets the time the door will remain open after it has reached the setting entered in Mode 3. For example, select Mode 3, level 1.5 and Mode 4, level 2.1. When the trigger is pulled the door will open to coverage level 1.5 and remain there for 2.1 seconds prior to beginning to close. Additionally, if any setting other than zero is entered in the Mode 4 display, the Mode 3 mode display will flash to alert the operator that a delayed drop has been selected.

NOTE:

When a timed drop is selected, the trigger should be pulled and released quickly. If it is held, a repeat drop cycle will begin at the end of the close cycle. In effect, the door will go into a "full auto" sequence, opening and closing repeatedly until the trigger is released.

Mode 5: Counter select drop. Works exactly like mode 1 except level select is in position counter increments. This can be thought of as gate stops in a conventional Transland gate. The display range is user programmable from 1 to the maximum sensor range. If the setup was done properly, this will give an accuracy of about 1/10 to 1/4 inch in door position, depending on the mechanics of the particular installation.

Mode 6: Backup timed mode. Only to be used if the position counter or linkage has failed. The level display reads out in .01 second increments from .01 to .99. (user programmable) This value is the time the CPU will command the OPEN relays to engage. Adjusting this time will allow approximate control of drops. NOTE: the computer has no way to tell where the door is in this mode. A fast opening door will hit the stops prior to shut off of the system if the longer times are selected! Some ground practice will be required to get a feel for openings vs. time setting for a given installation.

Operation is the same as Mode 1, pull to open, release to close. As an example, if Mode 6 level 50 is entered and the trigger is pulled, the door open relay will close for 1/2 second (.50 sec.). The door will open for .50 seconds and stop at that point. The exact opening is affected by load, installation, G forces, etc. and is only approximate. When the trigger is released the door close relay will close for .50 seconds plus a safety factor (added to allow full close against head pressure in the tank) plus the overcentering delay set during configuration.

POSITION COUNTER FAILURE!!!

If the sensor fails, the door will go to full open, or, in the event of a partial failure, to a higher setting than programmed. This usually will only result in a higher level and shorter line than planned, and possibly more pitchup than expected. If, however, a timed drop was selected, the trigger pulled and released to start the drop, and a failure occurs, the door will cycle to full open and remain there for a maximum of 2.55 seconds from the START of the drop, then close. This may or may not amount to a full load. As with any aircraft or door system, no fire drop should be started unless the exit route can be flown with a load on board!!!! The 2.55 seconds (or less) is the user programmed time out setting for the CPU open cycle. I.E., if a drop is started and the open cycle is not completed in the programmed time, it will be aborted, and the close cycle will start when the trigger is released. If it is already released, (a Mode 3 or 4 drop) the close starts immediately. Pulling the trigger during the close cycle, or after, will immediately reopen the door fully.

Mode 7: Foam injector control mode. NO DROPS CAN BE MADE FROM THIS MODE. The level display reads out in minutes and tenths with a range of 0.1 minutes (6 sec.) to 9.9 minutes. (user programmable) To inject foam: select this mode, then select the time the injector should run for the amount desired in the level display. Push proceed. The foam injector will start and the level display will flash to indicate injection is in progress. The level control will not function when display is flashing. To cancel, push reset. Injection will terminate and the display will stop blinking. When injection has been started, any other mode can be selected and will function normally, including drops, without affecting the injector. It is "set and forget". It will continue to run until the selected time has expired. To verify if injection is completed or to modify the setting, simply return to Mode 7 and check for a blinking display, push reset to stop, modify the time as desired, and push proceed to restart. Example: You select a 5 minute inject cycle, switch to Mode 1 and complete a drop. Returning to Mode 7 you see the display blinking. The injection was not completed prior to the drop. Push reset to cancel the remaining time, and push proceed to restart another cycle. Or, you start a cycle, then get cancelled. Return to Mode 7, push reset, to stop, then dump the load and/or land.

NOTE: If a cycle is started then stopped, it will ALWAYS restart at the full time shown. You cannot stop a cycle in the middle, then restart it for the remainder of the time. It will restart at the full time for a new cycle.

Mode 8: Sensor test mode. NO DROPS CAN BE MADE FROM THIS MODE. Tests the position counter. Display reads from 0 to 99. When Mode 8 is selected, any movement of

the door will increment the display. This is raw counter output, and will only increase, not decrease. If the count "rolls over" past 99, the display will start over at zero. Push reset at any time to reset display to zero. This mode is used for counter checks and initial setup. The level knob is inactive in this mode since the level window displays sensor information only.

MESSAGES

On initial power up if the arm switch is on the unit will flash the "81" message and suspend initialization until the system is disarmed. This is to prevent inadvertent door functioning in the event of a stuck trigger switch. Following this, the unit will request a trigger function check with a "70" message. Pull the trigger switch and release. The "70" message will clear AFTER the switch is released and the unit will proceed to normal operation.

MESSAGES:

3 messages are available in software version 4.2 to alert the pilot to a possibly hazardous situation or to request action. These are output by the computer in the level display and are indicated by a flashing display. In general, a "7X" message indicates a request for some action by the pilot, and an "8X" message is an alert to a possible problem.

REQUESTS:

"70" Power up trigger test request. This will occur on initial power up to check trigger function. Pull trigger briefly bypass. If the "70" message does not clear when trigger is pulled, there is a failure in the trigger system which must be repaired prior to operation.

WARNINGS:

- "81" This warns the pilot that the system is armed on initial power up. Unarm system to bypass the message.
- "82" This warns the pilot that the trigger is pulled (or has failed and is shorted to ground) and the CPU cannot go to the armed state. (since a drop would occur immediately) This message will occur only in the unarmed state and will clear only if the trigger is released. This message **SHOULD NOT** be used as a trigger test. Proper trigger function is determined by the "70 request" function. The CPU considers the "82 warning" as a critical error and will suspend all other operations until it is cleared, resulting in timing errors in other system functions, such as the foam inject mode.

MEMORY READ FAILURE:

If the processor is unable to read from the permanent memory chip or if the data retrieved is corrupt, a critical memory read failure will occur. This will only happen at power up or upon exit from program mode. Should this occur the display will show [33 3] briefly, then exit to program mode. The unit cannot be operated until reprogrammed. Refer to CONFIGURATION section for details.

TRANSLAND PN 83850 CPU DEFAULT PROGRAMMING

PROGRAMMING NOTES

Use this chart to record programmed register values.
(6-16-03) Now in CPU

| Reg # | Value Entered | Reg # | Value Entered |
|-------|-----------------------------------|-------|---------------|
| 1 | 008 | 36 | 000 |
| 2 | 008 | 37 | 000 |
| 3 | 008 | 38 | 005 |
| 4 | 009 099 | 39 | G10 |
| 5 | 042 | 40 | 015 |
| 6 | 099 | 41 | 020 |
| 7 | 099 | 42 | 025 |
| 8 | 001 | 43 | 030 |
| 9 | 001 | 44 | 035 |
| 10 | 001 | 45 | 042 |
| 11 | 000 | 46 | 000 |
| 12 | 001 | 47 | 000 |
| 13 | 003 | 48 | 020 |
| 14 | 001 | 49 | 020 |
| 15 | 160 | 50 | 020 |
| 16 | 230 | 51 | 020 |
| 17 | 100 | 52 | 020 |
| 18 | 000 | 53 | 020 |
| 19 | 000 | 54 | 020 |
| 20 | 000 | 55 | 020 |
| 21 | 000 | 56 | 000 |
| 22 | 000 | 57 | 000 |
| 23 | 042 | 58 | 030 |
| 24 | 000 | 59 | 030 |
| 25 | 002 001 002 | 60 | 030 |
| 26 | 001 | 61 | 030 |
| 27 | 000 NA | 62 | 030 |
| 28 | 005 | 63 | 030 |
| 29 | 010 | 64 | 030 |
| 30 | 015 | 65 | 030 |
| 31 | 020 | 66 | 000 |
| 32 | 025 | 67 | 000 |
| 33 | 030 | 68 | 000 |
| 34 | 035 | 69 | 000 |
| 35 | 040 | 70 | 000 |

NOTE: REGISTERS 5, 23 AND 45 MUST BE IDENTICAL
REGISTERS 18-22, 27, AND 68-70 ARE NOT USED

PROGRAMMING NOTES

Use this chart to record programmed register values.

Reg # Value Entered

1
2
3
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Reg # Value Entered

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QUICK INFO

- This system uses an electro-mechanical sensor connected to a computer to control the movement of a gate box or aircraft fire door.
- The computer has 6 different modes available to control the opening and closing sequence and these are displayed in the mode window and are selected by the mode control knob.
- The amount of opening is referred to as the level, and is displayed in the level window and controlled by the level control knob.
- The level is determined by the number of sensor (counter) increments. This is an arbitrary number that relates only to the degrees of rotation of the sensor shaft, NOT any real measurement of door opening. The sensor or count range is from zero to a maximum at full open, which will vary between installations but will remain fixed for a particular installation, except for minor changes due to wear, seal swelling, adjustments, etc. The typical maximum is usually in the 50 to 60 count range.
- Mode 5 can be thought of as the basic operating mode. The level display in Mode 5 reads out in counter increments directly. This can be thought of in the same way as the gate stop scale on a conventional ag dry handle, I.E., an arbitrary scale used for reference.
- Modes 1, 2, and 3 also use counter increments to control the opening, but the number of increments and the display are programmable by the user. There are 10 pre-programmable levels available which are shared by all three modes. For example, you determine that an opening of 31 increments equals a fire coverage level of 2.5. You can program one of the 10 levels for 31 increments and the display for that level to 2.5. The display can be calibrated in any unit convenient to your operation, I.E., coverage level, pounds per acre, inches of opening, etc.
- Mode 1 is a simple open mode, the door opens when the trigger is pulled and closes when it is released. Modes 2, 3, and 4 are fire specific modes. Mode 2 provides for incremental step opening during a drop to help compensate for reduced head pressure in the hopper. Modes 3 & 4 are for timed drops, with Mode 3 selecting the level and Mode 4 the duration.
- Mode 6 is a backup mode. The position sensor is ignored and the amount of opening is controlled by a timer. The level display in this mode reads out in 1/100's of a second from .01 to .99 (this range is programmable by the user) and is the time the open relays will engage when the trigger is pulled.
- Mode 7 is provided to allow automatic timing of foam injector equipment. The level display reads out in minutes and tenths. Injection is started by pressing the proceed button and stops at the indicated time, or can be aborted by pressing the reset button.
- Mode 8 is a sensor test mode. The level display will show an increasing count any time the sensor shaft is rotated.

25157

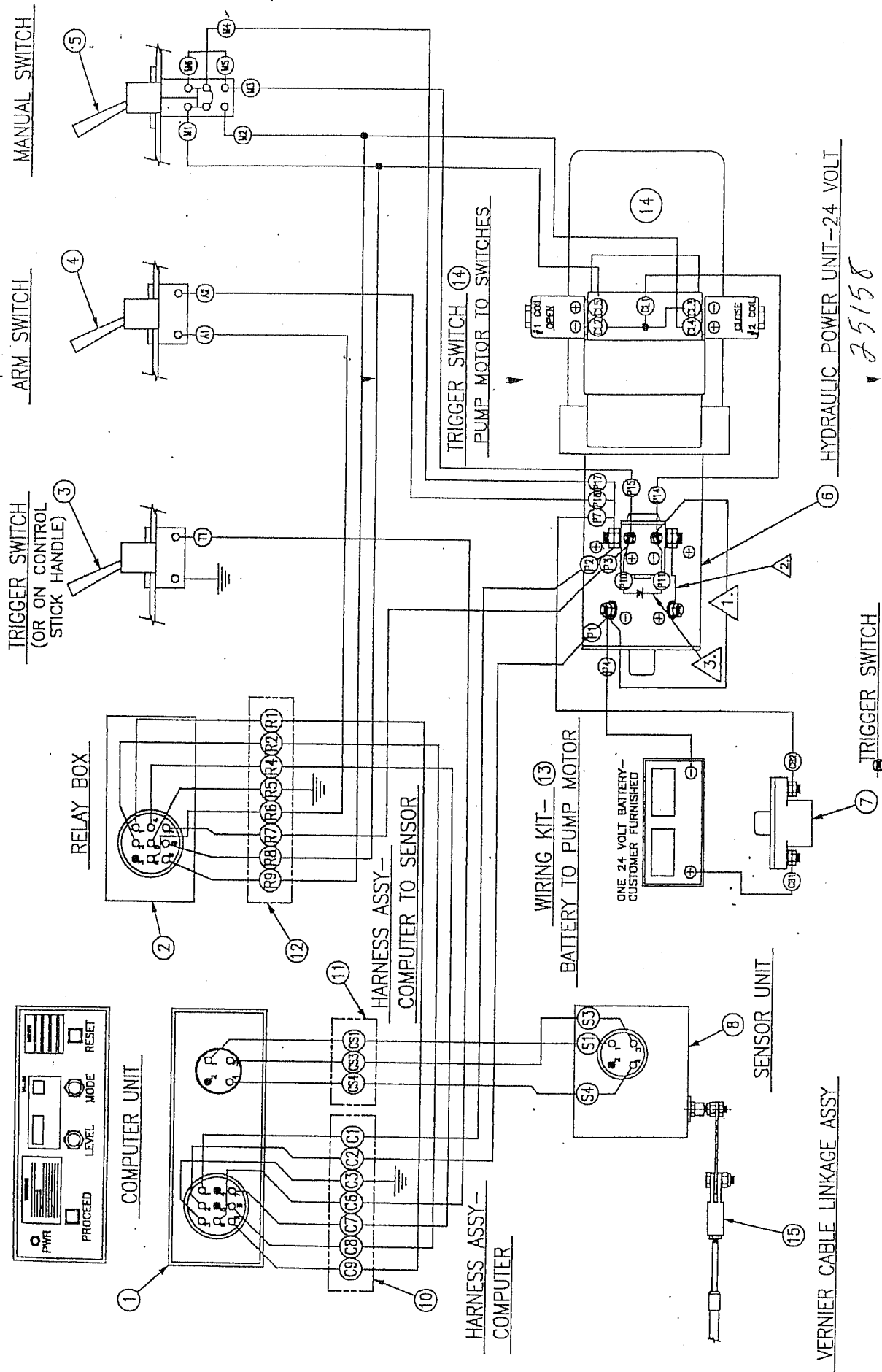
Sheet 1 of 2

ELECTRONIC SYSTEM—
24 VOLTS,
FIRE GATE COMPLETE KIT

NOTES (UNLESS OTHERWISE SPECIFIED):

1. INSTALL JUMPER FROM SOLENOID NEGATIVE TERMINAL TO MOTOR NEGATIVE TERMINAL.
2. INSTALL "HOT" WIRE FROM SOLENOID TO "HOT" TERMINAL ON MGTOR, REPLACING EXISTING COPPER STRAP.
3. REPLACE STOCK SOLENOID WITH SILVER CONTACT SOLENOID. INSTALL DIODE. BE SURE TO MARK "PLUS" SIDE OF DIODE.

| 15 | 25182 | 1 | VERNIER CABLE LINKAGE ASSY | |
|----------|----------|-----------|-----------------------------------|-------------------------|
| 14 | 25181 | 1 | WIRING KIT—PUMP MOTOR TO SWITCHES | |
| 13 | 25180 | 1 | WIRING KIT—BATTERY TO PUMP MOTOR | |
| 12 | 25179 | 1 | HARNESS ASSY—RELAY BOX | |
| 11 | 25178 | 1 | HARNESS ASSY—COMPUTER TO SENSOR | |
| 10 | 25177 | 1 | HARNESS ASSY—COMPUTER, C1—C9 | |
| 9 | 85872 | 1 | MANUAL (NOT SHOWN) | WISHCO |
| 8 | 83849 | 1 | SENSOR UNIT | WISHCO |
| 7 | 83862 | 1 | CIRCUIT BREAKER | AVIAL PDLM-105-1 |
| 6 | 86505 | 1 | HYDRAULIC POWER UNIT | DELTA POWER HYD. HP-208 |
| 5 | 83866 | 1 | MANUAL SWITCH | SELECTA SS20BC-BG |
| 4 | 83865 | 1 | ARM SWITCH | ARCOLECTRA TS-31 |
| 3 | 83864 | 1 | TRIGGER | SELECTA SS213-13-BG |
| 2 | 83852 | 1 | RELAY BOX | WISHCO |
| 1 | 83850 | 1 | COMPUTER UNIT | WISHCO V4-2A |
| ITEM NO. | PART NO. | NO. REQD. | DESCRIPTION | MATERIAL |
| | | | | SIZE |



ELECTRONIC SYSTEM-
24 VOLTS,
FIRE GATE COMPLETE KIT

25158

KILL 25164 HOLE (X2)
 AS 1/4" NPT NEW PORTS AS'S

LP1 #

25165 HOSE, REF. FROM
 POWER UNIT TO FIREWALL.

CALL ATTACH POINT FOR 25164 LINESAGE, PER
 PRESSURE RELIEF VALVE, ITEM Q, TO
 COCKPIT CONTROL.

