Please take time to read this installation and user document.
There is a lot of useful information on the varied and useful things that this controller can do.
Complex control algorithms on the inside makes for a simple to use controller on the outside.

One of the most useful applications is the DIAGNOSTICS mode which is explained fully on P.10 with a sub paragraph FAULY VALVE. Please read this section as I have left LINK 3 in situ, which automatically runs a valve diagnostic test for open circuit and short circuit valves whenever an irrigation cycle is called.

I have done this from my own experience of having to repair a fault on a 16 station situated in a glass house in the middle of a June heat wave. The transformer was burnt out and the failure is always due to a shorted cable or faulty low resistance solenoid valve. You may ask ‘why didn’t the control fuse blow’ the answer is because of residual low cable resistance or low coil resistance, not sufficient current to blow the fuse but enough current to ‘cook’ the transformer leading to premature and permanent failure. I replaced the transformer and two pints of water in me. Having no wish to stay and wilt further, I fitted link 3, run the irrigation sequence and as if by magic station 7 flashed and beeped at me, which when I metered the coil came up as 8 ohms when it should have been 40 ohms. Upon renewing the coil the controller functioned as designed.

The moral of this tale is to leave link 3 fitted, it will save you the cost of replacing the transformer, it will quickly identify your faulty valve or valve wiring and it will save your precious time wandering around the glass house, usually in the middle of a heat wave, manually turning on valves.

You can of course choose to remove link 3, the controller will work fine but with no output diagnostics.

ELECTRONIC & TECHNICAL SERVICES Ltd

INSTALLATION AND USER MANUAL

E&TS IRRIGATION CONTROLLERS

Thank you for purchasing an ETS Irrigation controller

If treated in accordance with the following instructions it should give a long and trouble free service.

OPERATIONAL FEATURES

1) The backlit alphanumeric clock display is easy to read in all light conditions.
2) 8 programmable starts per day, seven days per week; a total of up to 56 starts per week.
3) Those starts can be set for each day from 1 up to 8 in any sequence, or for a week at a time with “day omission.”
4) It is recommended that no more than 2 valves be connected per station in serial configuration and one valve connected per station in parallel configuration. Each valve is individually time in the parallel configuration.
5) Valve base times from 10s of minutes to 1 second, or to 0.2 seconds for misting.
6) Various types of rainfall sensor can be attached and used to over-ride or integrate external irrigation.
7) Continual cycling is available for misting. No difficult programming is required. Simply connect the Mist controller output into the terminal block labelled “Latched input.” Weaning can be achieved by fitting an ETS Mist Wean controller.
8) An irrigation cycle can be initiated by an external start device which connects the terminal blocks “labelled Mom latch.”
9) Watering by ‘hand’ when a solenoid valve is connected to the ‘Hand watering’ terminal block and to the Common terminal.
Pump can be selected from the front panel to run or to be turned off
Feed Valve, if available can also be selected.
10) When the panel is running the pump can be turned on or off from the front panel by pushing the tactile switch labelled ‘pump’. The pump ‘state’ will be stored in memory and applied the next time that the panel runs
11) Error checking systems continuously monitor the condition of the rotary switches and look for open or shorted solenoid valve circuits. A built-in sounder, Status LED and station indicator give warning of any error condition, pulsing at a rate specific for the error condition.
12) The duration of all irrigation times can be altered manually by the “Percentage $\pm$ control” between -90% and +100%.
13) Evaporation or humidity sensors with an output of 0-5Vdc or 0-20mA dc are sampled, integrated and averaged. The algorithm calculates the adjusted irrigation time per station from the output of the sensor.
14)Stations are ‘skipped’ if set above zero with no valve attached. The error checking system will warn of an open circuit valve at the end of the irrigation cycle.
15) The Feed valve can be programmed to any station in serial and to banks of four in parallel

MOUNTING AND WIRING UP THE CONTROLLER
REFER TO FIGURES 3 and 4

On the 16 station controllers remove the four screws holding the front panel to the rear enclosure. On the 24/32/48 station controllers loosen the two screws labelled hinge and remove the other two screws. Gently lift the lid of the box upwards and towards you and twist to the left so that the mounting screws click into slots and act as hinge
.
WITH GREAT CARE for 16 station controllers remove the two flat ribbon cables from their respective sockets. 24 to 32 station controllers remove the three flat ribbon cables and for 48 station controllers remove the four flat ribbon cables. On the 48 station controller one of the two 20 way cables is colour coded to the socket. Please note these are 'keyed' and can only be inserted one way. Refit the cables when wiring complete
DISCONNECT CABLES FROM THE REAR PANEL
NOTE. Removal of the 24/32 and 48 station front panel is only possible after removal of flat ribbon cables. Remove the hinge screws to facilitate this action.
The controller should be mounted on a flat surface and secured by bolts screwed through the mounting brackets attached to the box. Note there are a number of mounting positions on the rear enclosure, choose the two that are most suitable for mounting. The 16 station controller also has provision for mounting through the rear of the box, refer to Fig 4.
Do not make other holes in the box for this purpose and preferably use the **mounting brackets attached.**

The ETS controllers should be wired in accordance with FIG.3.

IMPORTANT

Ensure that the mains supply is disconnected before wiring the controller.

Ensure that the mains supply is clean, and that there are no inductive loads such as large pumps or motors on the same supply. It is recommended that the controller be wired directly to the main distribution board.
We recommend that you protect the controller with an RCD rated at 2 Amps.

Connect:-

The 240Vac live (brown) wire to the fused terminal block labelled L,
The neutral (blue) to the terminal block labelled N,
The earth (green and yellow) to the terminal block labelled E.

Ensure that the Earth terminal runs to a bonded metal pipe or to a dedicated earth rod, and that the impedance to earth is <5 Ohms.

CONNECTING SOLENOID VALVES

Connect the solenoid valve 1 to terminal 1, solenoid valve 2 to terminal 2, and so on for the remaining valves.
Connect the other wire from each of the solenoids to a common return. The terminal blocks for this are labelled **COMM.**

In the U K it is a statutory requirement that you keep all the low voltage cables clear of the 240vac high voltage supply, in accordance with the Low Voltage Directive. Please take care to do this!

CONNECTING THE PUMP

The pump cannot be driven directly from the controller. Use an appropriate relay with a 24Vac coil, and connect the relay coil across terminals **PUMP** and **COMM.**

CONNECTING THE FEED VALVE

Connect the solenoid valve across the terminal block labelled **FEED** and the return to **COMM**

REMOTE STOP, LOW RESERVOIR CUT OUT. Refer Fig. 3

A closed contact across the terminals labelled **Lo res/0V**, **Lo res** will suspend the program. The alarm led will flash and the sounder will beep on/off until the low reservoir fault condition is removed. The program will continue from point of suspension.
If a float switch is fitted in the water reservoir and connected to the **Lo res** contacts, the program will be suspended when the water level in the reservoir drops below the float switch, causing contact closure. The program will remain suspended until the water level increases above the float switch and opens the contacts.

REMOTE STARTS

There are two kinds of remote starts: momentary and cycling/latched.
1. A momentary start device, such as a closed contact or the output from an Evaporimeter wired across terminals labelled **MOMENTARY** and **common arrow point** will start an irrigation program once. The clock display will thereupon read **Manual Start** for no more than four seconds. **Manual Start** indicates that the start has been form an external source
2. A latched or cycling start can be initiated by a suitable device wired across terminals labelled **LATCH** and **common arrow point.** The controller will operate the program for as long as these contacts are closed and can be used for misting, multiple cycling and for pulsed irrigation programs.The display will constantly read **Manual Start**.

HAND WATERING

A permanent 24v AC supply is available across **HANDWATER** and **COMM**. When this supply is healthy the LED labelled **ValveSupply OK** is illuminated.
Hand watering can be accomplished in two ways:
i) pump, selected by pushing the **Pump Control** push button.
ii) pump and feed (where applicable) by selecting **Feed Valve** push button.
The pump and feed valve can be turned on/off by repeated pushes on their respective buttons.
The feed valve will always turn off when the pump is turned off.
The manual start from the clock is inhibited when hand watering, the automatic start sequence from the clock is not affected.

OPERATIONAL FEATURES IN DETAIL:

Initial Automatic audit.

When power is applied the controller signs on with a signature tune. This indicates that the program is fully functional. The **power/int sample** led will be illuminated, indicating a healthy 5Vdc power supply

SETTING THE DIGITAL CLOCK (refer to clock setup procedure)

You can set the 24 hour seven day digital time clock to the local time; days, hours x10, hours, minutes x10, and minutes. The battery-backed time base is crystal-controlled and highly accurate; the local time is updated every minute. If the mains power should fail, the re-chargeable battery back-up will ensure accurate time keeping for a minimum of seven days.

There are 8 automatic programmable start times. Start times can be set individually or in blocks. The sequence program can be started automatically or manually from the clock. The clock can be reset manually and a new time and day can be programmed if so desired.

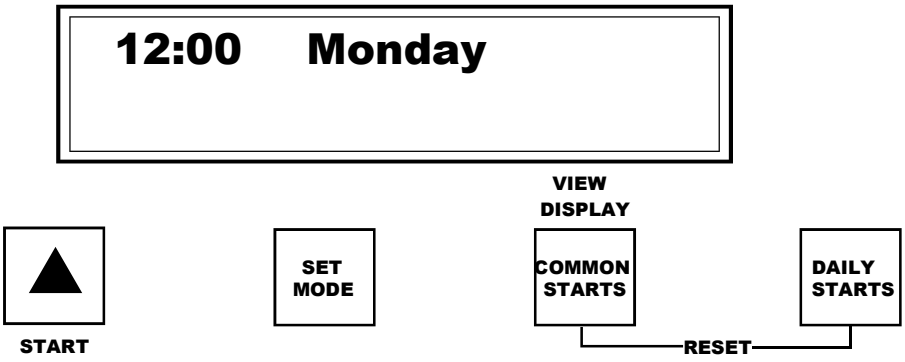
The clock program operates a number of safeguards to provide a high degree of fail-safe operation. If the clock software detects a problem, the MINS the MINSx10 and the DAY displays will be visible while the error is being corrected automatically.

If in the unlikely event that the clock completely 'freezes' and pushing the clock set buttons has no effect, turn off mains power and remove the jumper labelled **CLOCK SUICIDE RESET** located on the rear of the alphanumeric clock board **FIG.1**. This will remove all power from the clock, wait for 2 seconds and replace jumper and reapply power. All stored information will have been lost, the clock will have to be re programmed.

Your clock will have been set at the factory, and the local time should not require setting. However should you wish to alter the time, or simply familiarise yourself with the workings, here is a step by step guide:
Note: if you reset the clock, or if the clock has never been set, the display will flash. This is perfectly normal.
Setting the time is the only complicated procedure on this controller. However, if you can set an alarm clock you will have absolutely no problem in setting this one. The clock displays the time in the 24 hour format.
Clock access is inhibited when an irrigation sequence is running.

TIME <u>DOES NOT</u> AUTOMATICALLY ADJUST FOR BST AND GMT

Digital Clock Setup Procedure



The seven day real time clock features four dual function push buttons used to set the day, time, common and or daily starts allocated to selected days

▲ incremental change or Manual Start

SET MODE Select function

COMMON STARTS Program for Common Starts or return to real time

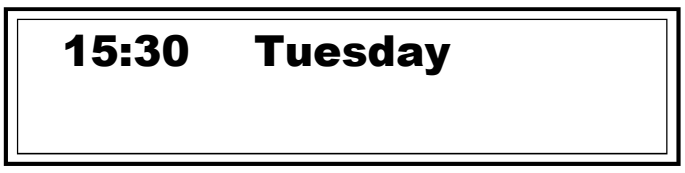
DAILY STARTS Program for individual Daily Starts or starts sequence

By default for a new clock hours, minutes and days will flash and display 12:00 Monday

FOR EXAMPLE Setting the local time to 15:30 Tuesday

Push SET MODE Days > push Flash. ▲ Days > push Select SET MODE Hours > push Flash. ▲ Hours > push select

SET MODE Minutes > push Flash ▲ Minutes > push select SET MODE To set **OR** > push Start times COMMON STARTS And hold to return to real time



Real Time Display

Start Time Display

Setting Start Times

Set the real time clock, for day hours and minutes, for example the day is Tuesday and the time is 15:30

AS AN EXAMPLE WE WILL SET THE START TIME FOR TUESDAY 06:30

push SET MODE Start Days > push Flash ▲ Start Days > push Select SET MODE Start Hours > push Flash ▲ Set Hours Select

Push SET MODE Start Minutes > push Flash ▲ Start Minutes > push Select COMMON STARTS For the same start for every day **OR**

push DAILY STARTS to select a unique start time for that day.

Push either > Short push and release COMMON STARTS

OR > push and hold DAILY STARTS

When successfully programmed a new start **St2** is displayed and hours and minutes will show **06:30.** ready for the next start time. The start time is not cleared as this saves programming from **00:00.**

The 2nd start time for instance may be **08:30**

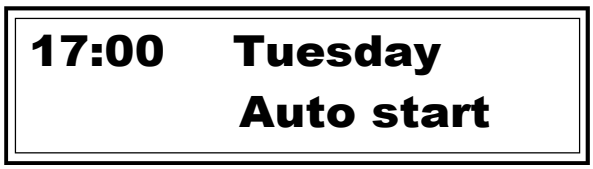
Repeat for all eight starts. It is not necessary to allocate all eight starts. If only four starts are all that is required leave 5 - 8 blank. By default all start times are set to **00:00** as **00:00** is not a permissible start time.

NOTE that the same start time cannot be allocated to all eight starts.

You can check all start times by pushing DAILY STARTS which scans through all the seven day eight starts.

It is possible to reprogram any start time and day by pushing the Daily Starts button and scrolling through to the desired day and by pushing the SET MODE start hours and minutes can be selected and adjusted

By pushing ▲ followed by programming either the Common or Daily Starts push button.



Automatic programmed start for 17:00 hours

Manual start initiated by pushing ▲

NOTE programming using Common Starts short push and release.
Programming using Daily Starts push and hold until next start time is displayed.
All start times inhibited when setting date and start times.
To return to real time push and hold Common Starts until current day and time displayed.
To reset all programmed data push and hold Common and Daily starts until display flashes.

SETTING THE IRRIGATION CYCLE

Setting the irrigation cycle is very simple.
1) Set the time base required by turning the TIME BASE rotary switch to the desired time base:- 0.2SECS, SECS, SECS X 10 , MINS, or MINS X 10.
2) Set the station multiplier to the desired setting from 0 to 9. When a particular knob is set to zero, that valve will not be operated, and the controller moves through to the next set station. For example, if the TIME BASE is set to SECS and STN 1 is set to 3 Valve 1 will be on for 3 seconds.
3) Set all remaining stations in the same manner.

SEQUENTIAL OPERATION

This mode is normally used on smaller controllers. To run it, remove the jumper from the terminals labelled **PARALLEL** (located on the lower left centre of the rear board, as shown in fig. 2).
When the program runs, the LED for station 1 will be illuminated and voltage will be supplied to valve 1, which should open! At the end of the time set, LED 1 will extinguish and valve 1 will close. The program will sequence to station 2, the LED for which will be illuminated, and valve 2 should open. This process is repeated for each station in turn.

PARALLEL OPERATION

This mode is particularly useful for larger controllers. To run it, fit the jumper to the terminals labelled **PARALLEL**, as above. Four stations will operate at the same time, each for the length of time set when it was programmed.
When a program starts, the LED's for stations 1, 2, 3 and 4 will be illuminated and the respective 4 valves will open. As the stations time out the respective station indicator and valve will close. If all the stations are set to the same time all valves and station indicators will open and close together.
With the 16 station controller bank 1 stations 1 to 4 come on first followed by bank 2 stations 5 to 8, bank 3 stations 9 to 12 and finally bank 4 stations 13 to 16. 24 through to 48 stations operate in the same manner

PROGRAMMING FOR FEED.

The software allows the **FEED VALVE** to be programmed for every station. The **FEED** can be programmed on or off. When the panel is in a quiescent state pushing the **ADVANCE** button will illuminate station one and the **FEED VALVE** led indicators. If feed is to be applied on station one push the **ADVANCE** button, **FEED VALVE** led will flash twice and the sounder will beep twice, station two led indicator is now illuminated. If feed is not required on this station, push the **FEED VALVE** push button, **FEED VALVE** led will flash once, then extinguish and the sounder will beep once, push the **ADVANCE** button, station three indicator will be illuminated. Carry on programming in this manner to the sixteenth station.
In parallel the feed valve is common to the bank of four stations.
Once programming is complete, push the ADVANCE button to check stored **FEED VALVE** data. Stored **FEED VALVE** data is retained indefinitely in the event of a power failure.
Note that when the feed valve has been selected in a sequence, the **FEED** led flashes twice, the sounder beeps twice. If feed has not been selected the **FEED** led does not flash and the sounder is silent.

INITIATION OF AN IRRIGATION CYCLE

An irrigation cycle can be initiated in three ways:
1)By a timed automatic start.
2)By a manual start.
3)By a remote start.

A timed start from the digital clock has been explained in: SETTING THE DIGITAL CLOCK.
When the clock initiates a start, the display will show both the real time and what it is doing, displayed for example as **Auto Start 1** This will be displayed for up to 4 seconds when the action is cleared from the display, which reverts to local time.
The manual start from the clock is inhibited when hand watering, the automatic start sequence from the clock is not affected.

EXTERNAL STARTS

Any device which makes contact across the terminals labeled **MOM LATCH** or **LATCH** can be used to start the irrigation program remotely. **MOM** is generally used for starting irrigation programs, whilst **LTH** is generally used to start Misting or cycling programs.

PROGRAM ADVANCE

When the irrigation program is running, pushing the Program **ADVANCE** button will advance the program to the next station. In parallel the next bank is selected.

ALTERING PROGRAM SETTINGS

These can be done whilst the program is running, simply by increasing or decreasing the station time, or by selecting a new time base. If you want one station to stop operating, simply set the knob to 0.

PUMP

The pump output is selected by pushing the **PUMP CONTROL** button when the program runs. This state is always remembered even when the panel is turned off. This also applies if the pump has been programmed off. The PUMP led indicator is lit when the pump is running. This output can also be used to operate a master valve, a fertilizer injector or similarly related equipment.

STATUS

When all is healthy the **TIMER/PULSE** led will flash at the time base rate, for instance if the time base is set to 1 second the **TIMER/PULSE** led will flash at 1 second intervals.

SINGLE STATION (serial) SINGLE BANK (parallel)

Initiate an irrigation cycle. Push the **ADVANCE** to select the station or bank to be irrigated. Push the **FEED VALVE** push button once, the sounder and Alarm led will bleep and flash twice. The selected station/bank will irrigate once and when complete the irrigation cycle wil reset. **This feature has to be selected every time an irrigation cycle is initiated.**
Note pushing the **FEED VALVE** during the irrigation cycle will reset the irrigation cycle after the current station has finished watering.

DIAGNOSTICS (prevention of glass house flooding)
These are carried out automatically when the program is initiated. The program checks for open circuit switches. At the end of the irrigation cycle the faulty switch is identified by the station indicator. If station 3 switch is faulty, station 3 led and sounder will beep and flash twice. This applies to all 16 stations. Once the fault condition has been rectified sounder and led will turn off.
However even with a faulty switch, irrigation can safely continue. The software will identify the faulty station and will apply a limited amount of irrigation. In serial this is 50% of the time base, i.e. if switch 3 were faulty and the time base set to 10 secs, irrigation would be applied for 5 seconds.
In parallel this is 10% or in the example above 1 second.
This process ensures that the glass house is not flooded but there is limited irrigation on the faulty station.
Once the faulty switch has been identified rotate the switch vigorously to the left and right, this switching action should clean the contacts. An application of WD40 may also help. To do this , pull off cap and 'squirt' down the flat of the spindle. Wipe off excess oil.

FAULTY VALVE (on 16 stations and above)

To select this function, insert the 2 way jumper taped to the logic board (Fig. 2) into link 3 header labelled VALVE TEST. If not required leave VALVE TEST header empty. If not fitted the controller will skip the valve test routine.

In **SERIAL** - If a faulty valve is detected either open circuit or short circuit, the station and valve are skipped and the next station is selected. At the end of the irrigation cycle the faulty valve is identified by the station indicator. If the valve on station 3 is faulty, station 3 led and sounder will beep and flash three times. This applies to all 16/48 stations. Once the fault condition has been rectified sounder and led will turn off.
Upon initiation of an irrigation cycle automatic error checking for all outputs occurs. In serial this consists of a 120mSec sequential pulse to all outputs. Outputs whose stations are set to zero are not checked.
In parallel, each output is checked as above in serial mode and then all outputs in a bank of four are checked (all four led's in the bank are on for 120mSec) for over current.
In serial mode short circuit or open circuit conditions give an error warning of 3 beeps and 3 alarm led flashes.

In **PARALLEL** where 1 or 3 stations are safely powering 3 valves with the 4th station open circuit (no valve), the 4th station indicator will flash 3X and alarm sounder will beep 3X. If one of the stations (1 to3) is short circuited (faulty valve) error warning will be 3 flashes and 3 beeps (open circuit) followed by 4 flashes and 4 beeps (short circuit).

If all or one of the stations are left open circuit all station indicators will flash 3X and 3beeps followed by 4 flashes and 4 beeps. The valve detection circuit will provide a common error for both short and open circuit.

PERCENTAGE ADDITION/SUBTRACTION

To select % addition/subtraction place jumper into MAN header on FIG.2

The operator can use a potentiometer labelled %, mounted on the front panel, to increase or decrease all valve times between SCALE +100% and SCALE -90%. On hot days you would increase the % control on dull overcast days you would decrease the % control.

When the control is set to “CALIBRATED” the irrigation time is the multiplication time shown on the timer scale as described above. Thus
1. if the time on station one was set to 1 and the time base set to 10 SECS, the % control set to CALIBRATED the irrigation time will be 10 secs.
2. If the % control were set to +100% the irrigation time would be 20 secs.
3. If the% control were set to -90% the irrigation time would be 1 second.

The % control will work on the 10 SECS, MINS and MINSX10 time bases, but it has no effect on the 0.2 SECS and SECS time base.
Because of the integration software, if the percentage is adjusted prior to an irrigation cycle the **RESET** button must be pushed, otherwise the percentage would be ‘averaged’. This is explained in greater detail in the integration section.

INTEGRATION

To select integration place jumper into AUTO header on FIG.2 and disconnect the lead from HDR 6, if fitted

Simply put, this allows appropriate sensors to adjust the percentage addition/subtraction control described above, automatically and in response to actual conditions..
A 0-5V dc signal is sampled every 5 minutes, indicated by a pulse of the **POWER/INT SAMPLE** led. up to a maximum of 42 hours. The controller monitors a signal from an evaporation device such as a Solarimeter an Evaposensor , Waterbug or a Delta T device over a set period, usually the period between the controller start times. If all parameters have been set up accurately such as the time base and multiplication factor on the station, the algorithm converts the voltage input into an accurate frequency and automatically calculates the exact amount of irrigation time to compensate for the evaporation period. If sampling exceeds 42 hours, which in effect means that no irrigation has been applied for this period, all information is cleared and the process repeats. The signal from the sensor is sampled, digitised and stored every 5 minutes over a maximum period of 42 hours. If during this period an irrigation cycle is initiated the sum of the digitised samples is divided by the number of samples taken and the resulting average is used to adjust the watering times.

Connect the output of your device to the terminals labelled INTEGRATOR and LOWRES/0V terminals located on the output board, refer to FIG.3

Quick Start:

1) Connect controller to the valves, pump and mains supply(refer to the relevant sections in the installation manual)
2) Set the time base
3) Set each station switch, remember the 0 – 9 positions on the switch x the time base. If time base set to 10 SECS and the station switch to 3 the irrigation time is 30 Secs
4) Push the reset button
5) Push the start button, refer FIG 1, digital clock will show Manual Start for a max of 4 seconds.
6) Controller runs.

CONTROLLER CARE

Very low maintenance required.
At the end of season keep the mains power applied, this will prevent damp entering and corroding metal parts.
To keep the rotary switch contacts clean turn fully to both end stops, **DO NOT USE FORCE.**
DON'T use sharp or pointed objects to push the tactile switches, use fingers only

Alarm Conditions

1) Low reservoir 1 beep, continuous, Lo Res led lit
2) Faulty switch 2 beeps, alarm led and station indicator flashes twice.
3) Serial, open circuit valve/short circuit valve 3 beeps, alarm led and station indicator flashes 3X
4) Parallel Open or short circuit valve a combination of 3 and 4 beeps, 3 and 4 alarm led flashes.

ELECTRICAL SPECIFICATIONS.
Operates from a 240V ac mains supply.
Integral 600mA mains suppression filter.
F2 Mains fused input rated at 500mA slow blow 5 x 20mm
Low voltage processor supply F3 rated at 1A quick blow 1 amp 5x20mm
16 Station 24Vac ouput run at 1.5amps fused at 2amps F4 5x20mm
24 to 48Station 24Vac output run at 2 amps fused at 3amps F4 5x20mm
Valve common is bonded to Earth
Rechargeable clock battery
Plastic double insulated enclosure, size 240mm x 190mm x 90mm
Valve alarm limits <70mA >2 amps

Fig. 1

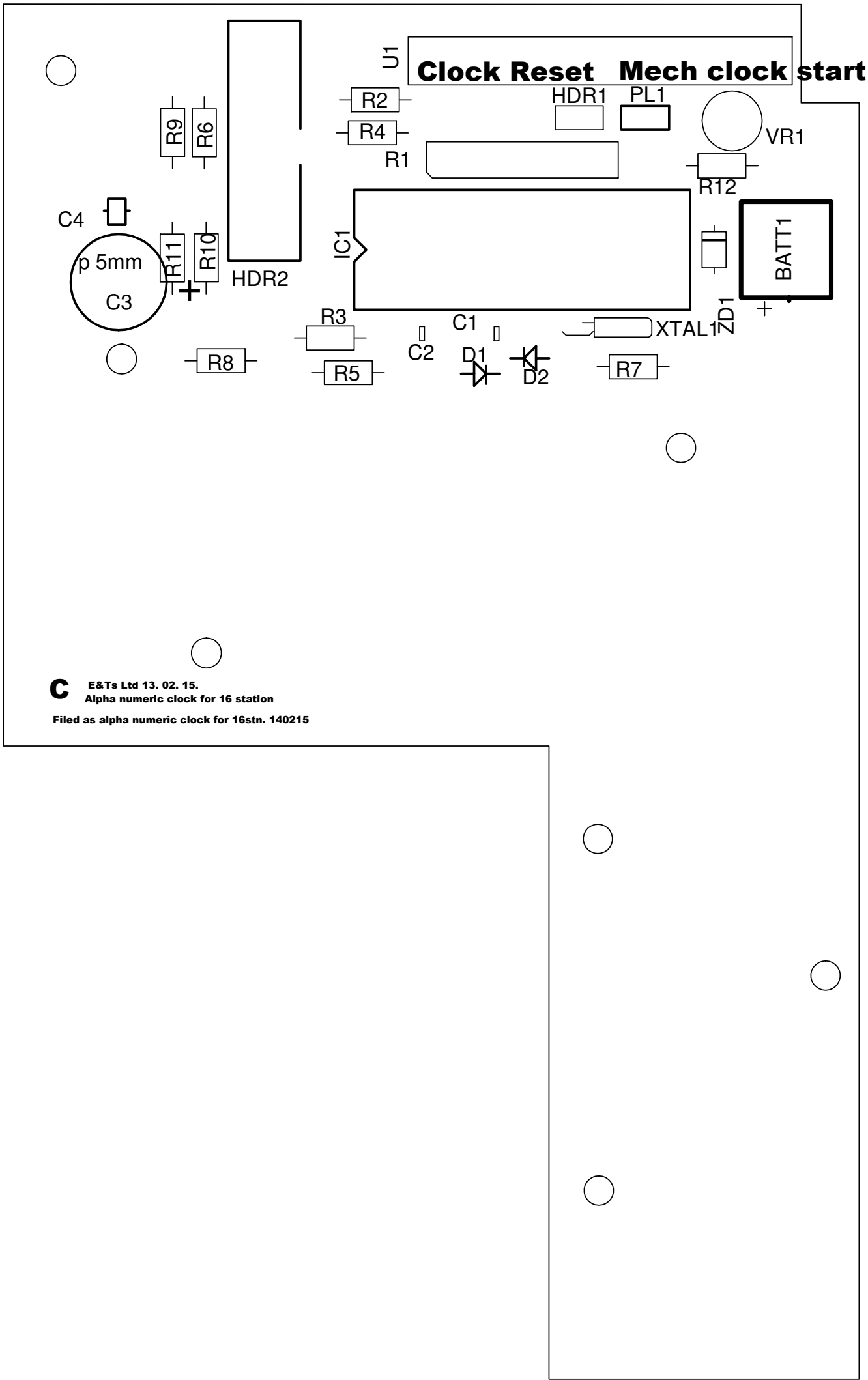

Clock Reset
Mech clock start
U1
HDR1
PL1
R2
R4
R1
VR1
R12
R9
R6
C4
p 5mm
C3
R11
R10
HDR2
IC1
BATT1
ZD1
R3
C1
C2
D1
D2
XTAL1
R8
R5
R7
c
E&Ts Ltd 13. 02. 15.
Alpha numeric clock for 16 station
Filed as alpha numeric clock for 16stn. 140215

Fig 2

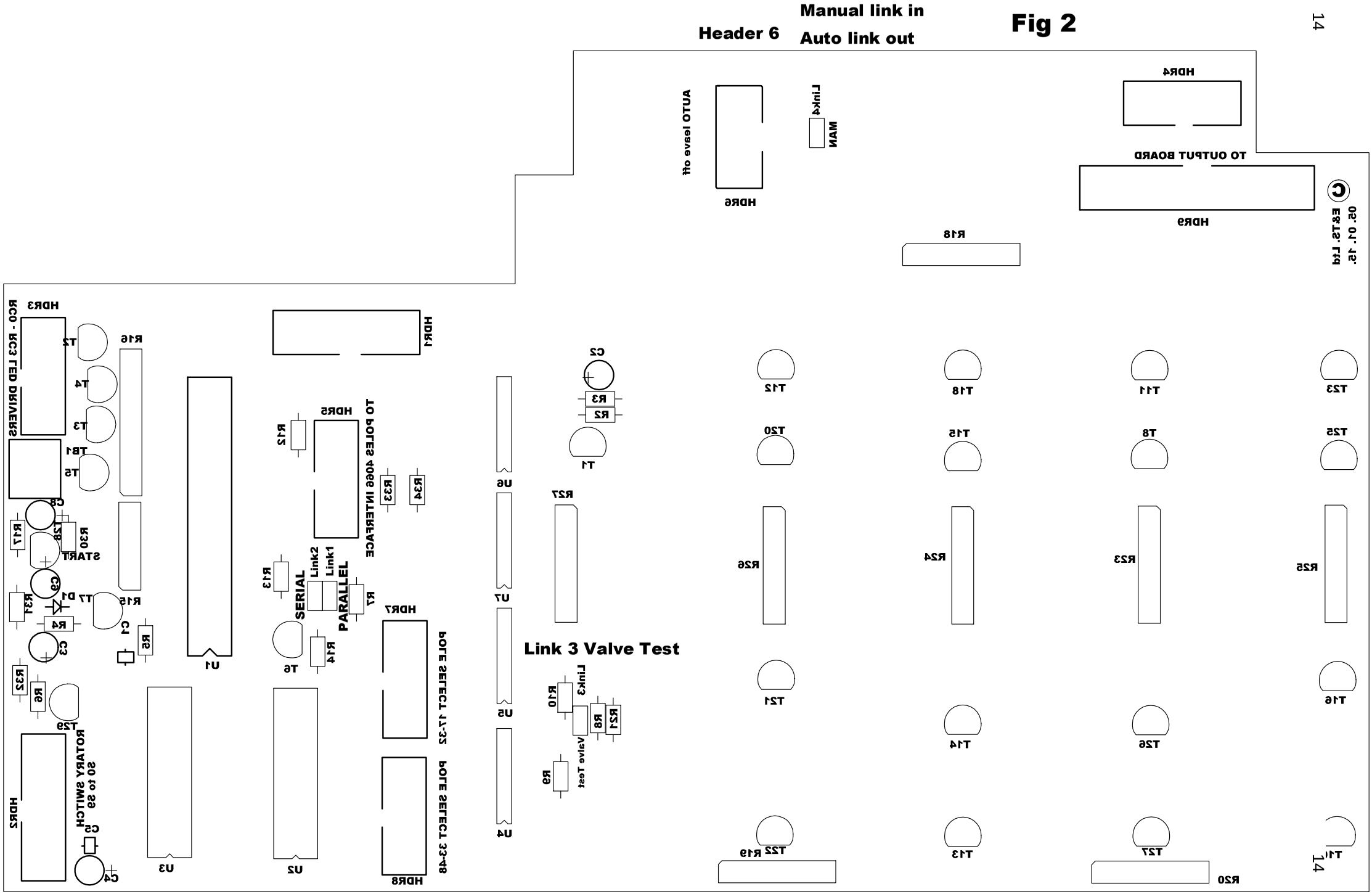
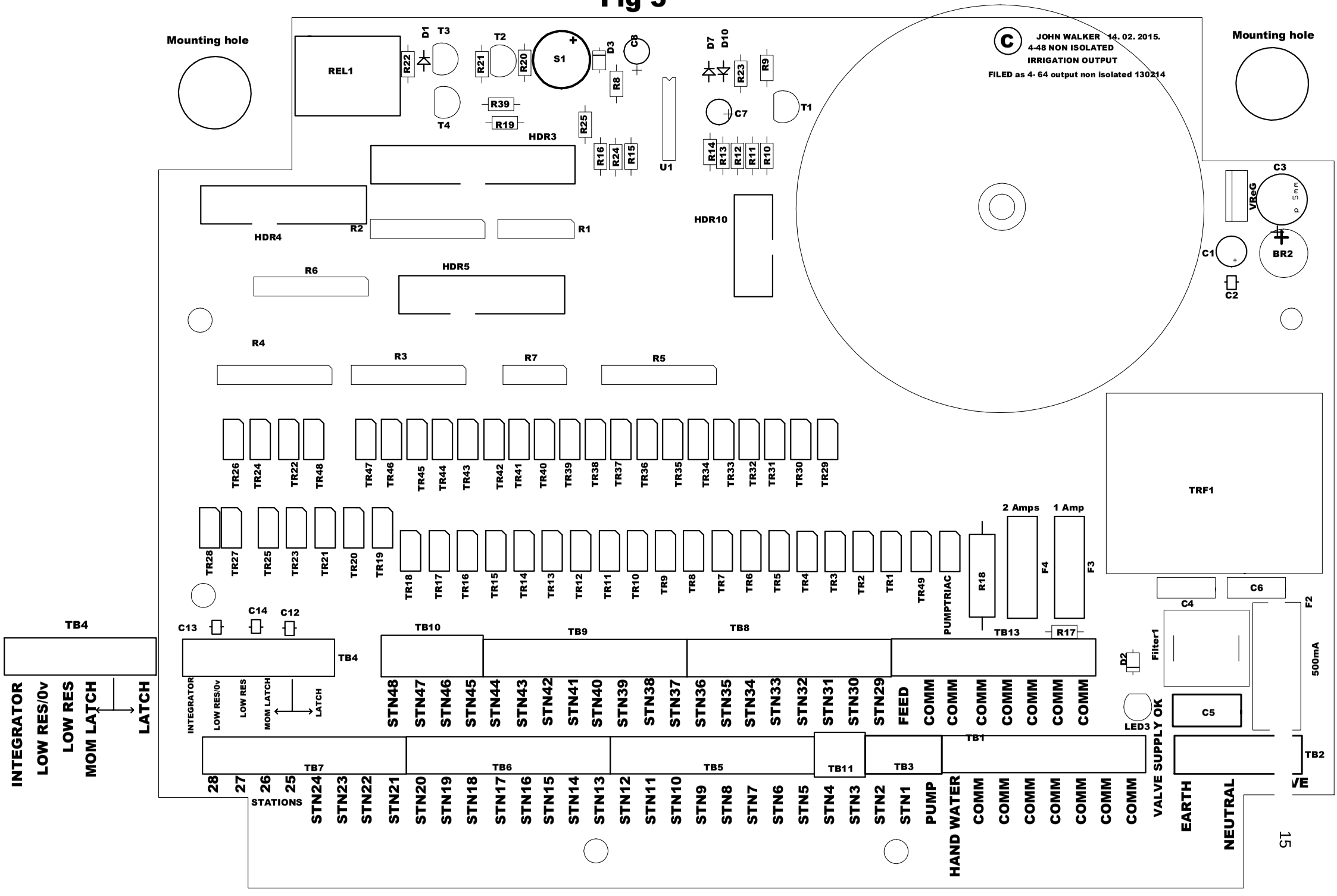

Manual link in
Auto link out
Header 6
Link 3 Valve Test
SERIAL
PARALLEL
Link2
Link1
START
ROTARY SWITCH
TO OUTPUT BOARD
TO PORTES 4006 INTERFACE
PORTE SELECT 17-32
PORTE SELECT 33-48
HDR1
HDR2
HDR3
HDR4
HDR5
HDR6
HDR7
HDR8
HDR9
R18
R20
R19
U1
U2
U3
U4
U5
U6
U7
T1
T2
T3
T4
T5
T6
T7
T8
T11
T12
T13
T14
T15
T16
T18
T20
T21
T22
T23
T25
T26
T27
T29
R2
R3
R4
R5
R6
R7
R8
R9
R10
R13
R14
R15
R16
R21
R23
R24
R25
R26
R27
R30
R31
R32
R33
R34
R35
C1
C2
C3
C4
C5
C8
C9
D1
TB1
Link3
Valve Test
Link4
MAN
AUTO leave off
E&L 5.10.95
C

Fig 3


Mounting hole
Mounting hole
JOHN WALKER 14. 02. 2015.
4-48 NON ISOLATED
IRRIGATION OUTPUT
FILED as 4- 64 output non isolated 130214
REL1
S1
U1
HDR3
HDR4
HDR5
HDR10
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R39
T1
T2
T3
T4
D1
D2
D3
D7
D10
C1
C2
C3
C4
C5
C6
C7
C8
C12
C13
C14
BR2
VReG
Filter1
LED3
TRF1
F2
F3
F4
2 Amps
1 Amp
500mA
PUMPTRIAC
TR1
TR2
TR3
TR4
TR5
TR6
TR7
TR8
TR9
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TR49
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TB6
TB7
TB8
TB9
TB10
TB11
TB13
INTEGRATOR
LOW RES/0v
LOW RES
MOM LATCH
LATCH
STN48
STN47
STN46
STN45
STN44
STN43
STN42
STN41
STN40
STN39
STN38
STN37
STN36
STN35
STN34
STN33
STN32
STN31
STN30
STN29
FEED
COMM
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COMM
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COMM
STATIONS
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STN24
STN23
STN22
STN21
STN20
STN19
STN18
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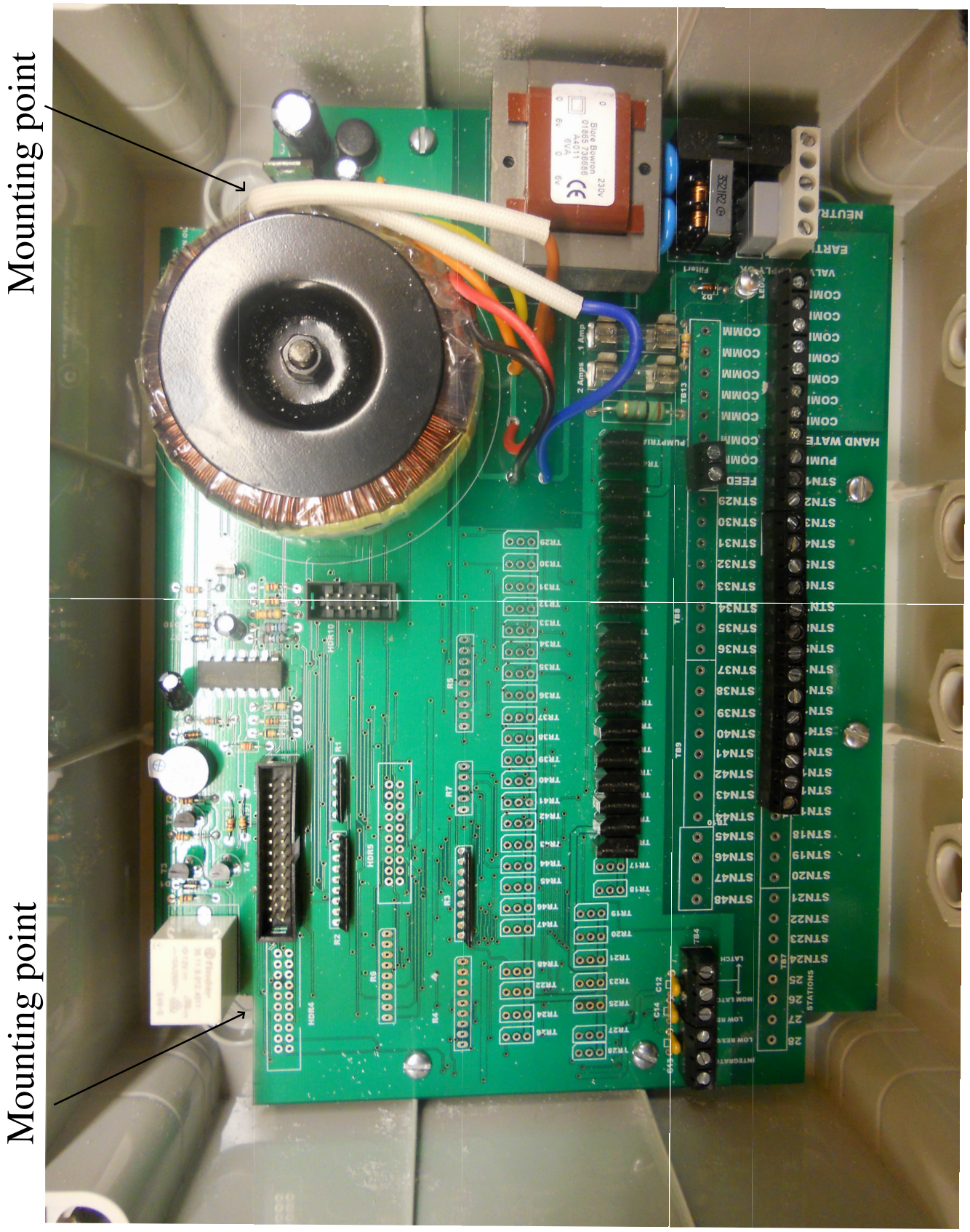
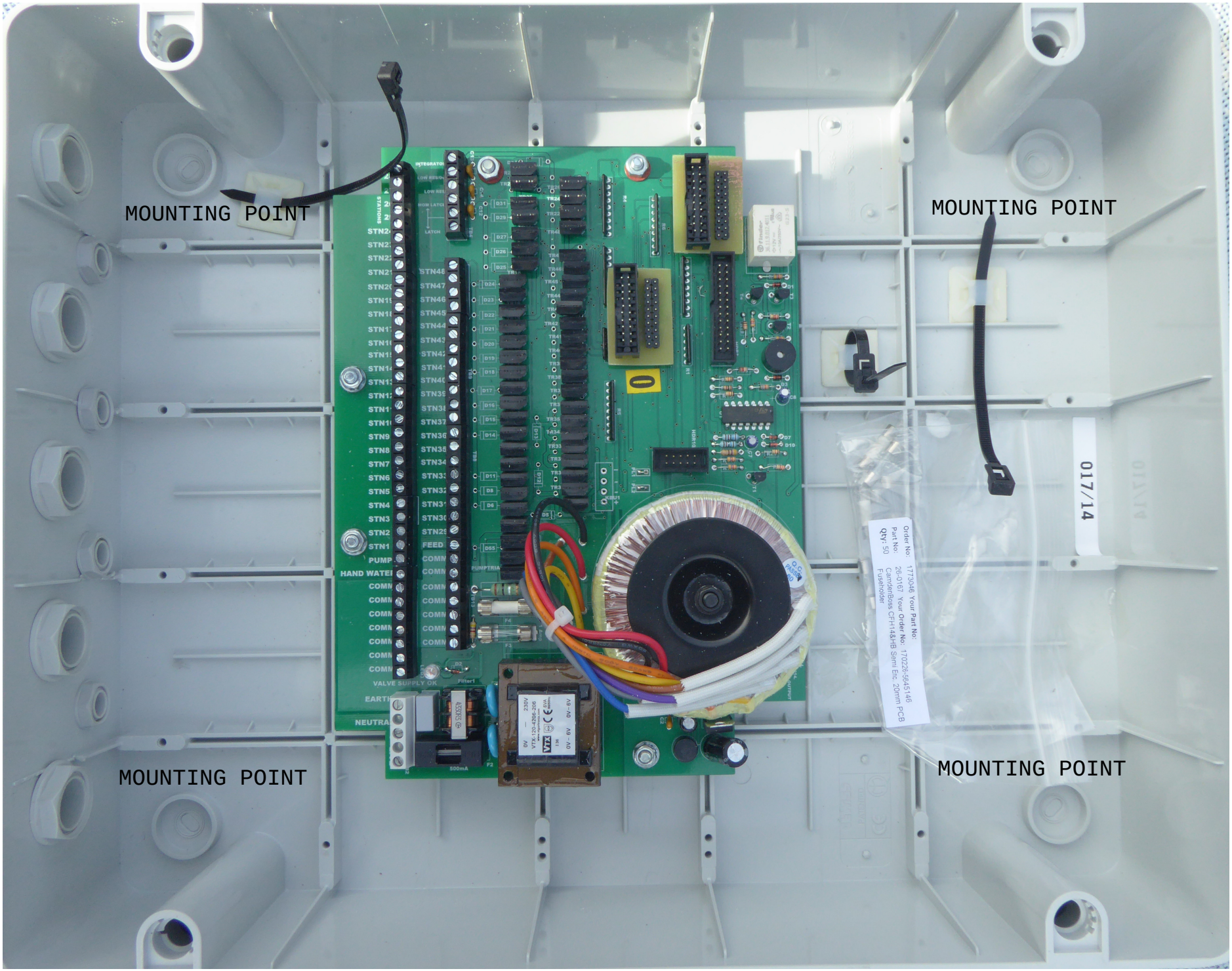
STN16
STN15
STN14
STN13
STN12
STN11
STN10
STN9
STN8
STN7
STN6
STN5
STN4
STN3
STN2
STN1
PUMP
HAND WATER
COMM
COMM
COMM
COMM
COMM
COMM
COMM
VALVE SUPPLY OK
EARTH
NEUTRAL
VE

Fig. 4





MOUNTING POINTS FOR 24 TO 48 STATION CONTROLLERS

ELECTRONIC & TECHNICAL SERVICES LTD.

40 ACREVILLE ROAD, BEBINGTON,
WIRRAL. CH63 2HY
TEL/FAX: 0151 645 8491
www.ets-controls.co.uk
email john@ets-controls.co.uk

DECLARATION OF CONFORMITY

Name of manufacturer or supplier:	E&TS Ltd
Full postal address including country of origin:	40 Acreville Rd, Bebington, Wirral CH63 2HY U.K.

Description of product:
Conforms to the following product specifications:

Low Voltage Directive 2006/95/EC
Standard EN61558-1:2005

Safety EN 60950-1:2006+AC:2011+A11:2009+A1:2010+A12:2011+A2:2013
IEC 60950-1:2005+A1:2009+A1:2012+A2:2012

EMC and harmonised European and national standards

Standard	**2004/108/EC**
Emissions	EN6100-3-2/3/4
Immunity	EN61000-4-2/3/4/5/6/8/11/13/14
	EN61000-6-2

RoHS
This designated product is in conformity with the European Directive:
2011/65/EU
And does not contain substances which are listed as hazardous in EEE RoHS 2

Place of Issue: Bebington

Date: 15. 08. 2014

Name of authorised representative: John W Walker
Position of authorised representative: Managing Director
Declaration:
I declare that as the authorised representative, the above information in relation to the supply/manufacture of this product is in conformity with the stated standards and other related documents following the provisions of EEC Directives.

Signature of authorised representative:……..

NOTES