TONICK TRANSLATOR DECODER SIGNALLING UNIT

INSTRUCTION MANUAL

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THE TONICK TRANSLATOR
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The Tonick Translator is a new concept in decoder signalling. By altering plug-in jumper links and selecting a decoder type from a menu, different types can be controlled.

The Translator has an RS485 serial communications link. This supports a 'multi-drop' protocol where up to 32 Translators can share the same communications cable. This allows a Master Controller to send non-decoder-specific on and off commands. These can then be 'translated' into the particular protocol for the type of decoder fitted. Some examples of Master Controllers are the Tonick RainMaker RM-1 and the Logic Aquarius PC control system.

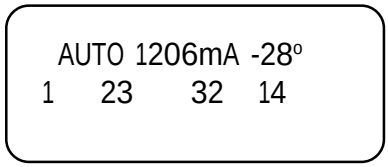
To provide resistance in the event of a nearby lightning strike, the Translator has two levels of security. The first is a Lightning Protection Unit connected in series with the field cable to the decoders. The second is an optically isolated RS458 communications link. The former provides a shunt to a number of earth stakes and also a series current limiter to reduce surges entering the Translator. The second provides voltage isolation of the Translator from the Master Controller and from other Translators on the same signal cable.

Each Translator has its own keyboard and backlit LCD display. This allows configuration changes, electrical monitoring of the field cable and station diagnostic tests.

The modular contruction of the Translator using plug-in boxes, allows fault-finding by substitution and easy expansion of the control system. Indeed, it is possible to run more than one decoder type from the same Master Controller which is useful when more than one course is being controlled.

Important Note:

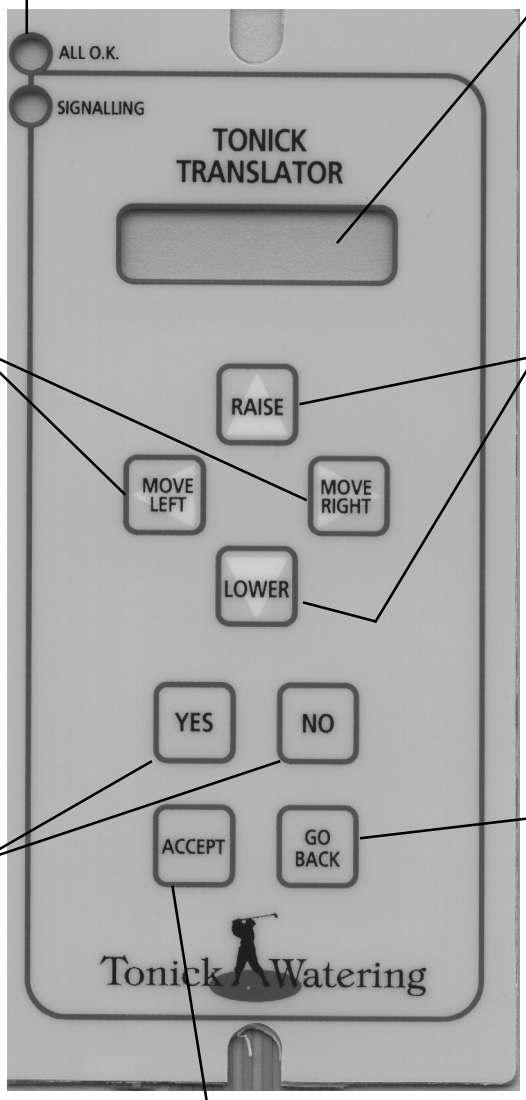
Automatic. THIS IS THE NORMAL DISPLAY WHEN THE CONTROLLER IS RUNNING TRANSLATORS. The mA figure is the line current and the +-º is the phase angle. The station numbers running (if any) are shown on the bottom line. *The control system will not run properly unless the word 'AUTO' is visible on all Translators connected in the system.* Press 'GoBack' to leave AUTO and enter the Main Menu. Press 'GoBack' to leave the Main Menu and re-enter AUTO.



THE TONICK TRANSLATOR KEYBOARD

The 'AllOK' green LED should be on, except for a flicker sometimes. The red 'Signalling' LED comes on as a decoder command goes out on the field cable.

The LCD is 2 lines of 16 characters. The cursor or marker is a thin horizontal line beneath the entry selected.



'Move Left/Right' keys are used to select between items or menus. The 'Accept' key confirms changes or allows entry to a selected menu. 'GoBack' aborts or leaves the menu.

'Raise/Lower' keys are used to increase or decrease numeric values. Holding the key down will accelerate the change.

The 'Yes/No' keys are used to answer yes/no? questions.
In **Manual On/Off** the 'Yes' key turns the station on and 'No' key turns it off.

Press the 'GoBack' key to re-enter 'AUTO' from the Main Menu. The *Translator will not communicate with the RM-1 unless in 'AUTO'.*

'GoBack' aborts or leaves the menu.

It is necessary to press the 'Accept' key if changes are to be inplemented. If not pressed, the old figures will be preserved.
This key allows entry into a selected menu. 'GoGack' returns from the menu.

The Tonick Translator must be in 'AUTO' to work with the RM-1 controller. This state is indicated by the word "AUTO" in the top left hand portion of the LCD. Press 'GoBack' to leave this state and enter the Main Menu. 'GoBack' from the Main Menu re-enters 'AUTO'.

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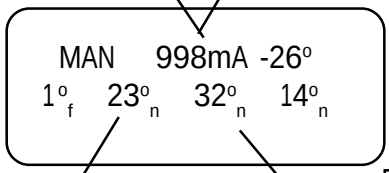
THE AUTOMATIC MODE AND MAIN MENU OPTIONS.

In general, press ‘Accept’ to confirm a new value. Pressing ‘GoBack’ without ‘Accept’ will preserve the old.

AUTO 1206mA -28° 1 23 32 14	**Automatic**. THIS IS THE NORMAL DISPLAY WHEN THE CONTROLLER IS RUNNING. The mA figure is the line current and the +-° is the phase angle. The station numbers running are shown on the bottom line. Press ‘GoBack’ to enter
<- -> scrolls Automatic=< GoBack>	Main Menu. This is the initial screen when entering the main menu by pressing ‘GoBack’ <--MoveLeft & MoveRight--> scroll through these menu items. Pressing ‘BoBack’ will return to AUTO which allows comms to work with the RM-1.
<- -> scrolls Manual On/Off	Main Menu. When accepted, this function enables manual on or off of up to 4 invidual stations on this cable. ‘Accept’ enters this mode. When in, ‘GoBack’ returns to the main menu.
<- -> scrolls Zone Test	Main Menu. When accepted, this function performs an on/off test of every station on this cable. The sensitivity defines the minimum change of current for successful switching. ‘Accept’ enters this mode. When in, ‘GoBack’ returns to the main
<- -> scrolls View Failures	Main Menu. When accepted, this function allows viewing of stations that failed during a zone test. This has no effect on failure information stored in the RM-1 controller. ‘Accept’ enters this mode. When in, ‘GoBack’ returns to the main
<- -> scrolls Sensitivity	Main Menu. The sensitivity in mA defines the minimum change of current which defines successful on/offs witching. ‘Accept’ enters this mode. When in, ‘Accept’ stores the new figure, ‘GoBack’ returns to the main menu.
<- -> scrolls View Addresses	Main Menu. When accepted, this function allows viewing of the actual decoder address for each station. ‘Accept’ enters this mode. When in, ‘GoBack’ returns to the main menu.
<- -> scrolls Select Cables	Main Menu. When accepted, this function sets the cable number or numbers that this Translator responds to. ‘Accept’ enters this mode. When in, ‘Accept’ stores the new cable number(s), ‘GoBack’ returns to the main menu.
<- -> scrolls Decoder Type	Main Menu. When accepted, this function sets the decoder type that will be signalled by this Translator. The jumpers must be set correctly too. The Translator will not register the change until it powers up again. When in, ‘Accept’ stores the new decoder type, ‘GoBack’ returns to the main menu.

Manual On/Off of up to four stations.

This function allows turning on or off up to four stations attached to the Translator. ‘GoBack’ returns to the main menu. From that menu, ‘GoBack’ returns to Automatic.



This is the field cable current and the phase difference between current and voltage. With solenoid(s) on, the phase angle will go -ve. The line current will increase by 100-300mA per solenoid.

Every time the ‘Accept’ key is pressed, another current reading is taken and displayed. No other action is taken on the ‘Accept’ key.

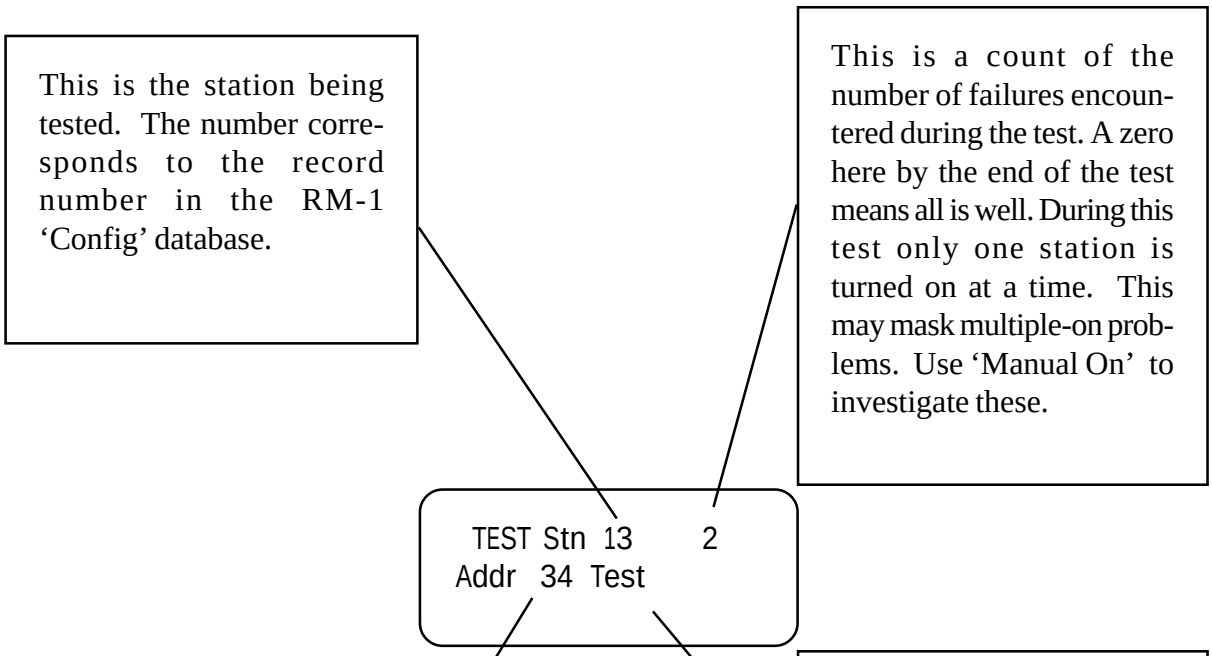
This is the station number that can be switched, which is shown by the underline cursor. **Yes’ key turns it on, ‘No’ turns it off.** Alter the station number using the ‘Raise/Lower’keys. ‘‘MoveLeft’ & ‘MoveRight move the selection.

The station is on when the indicator reads ‘°n’ and off when it reads ‘°f’. If the station fails to switch, the indicator will not change. The sensitivity figure determines whether switching is recognised. When the change of current is greater, the change is deemed successful. A failure in this mode will not be recorded in the failures, as in zone test.

When the ‘GoBack’ key is pressed, the line is disconnected so all decoders will turn off. After entry into this mode, the line will not be connected until the first decoder is commanded on. Until the line is connected the current and phase readings will not be meaningful. To measure the decoder standby currents on the line, turn just one on with the ‘Yes’ key, then off again with the ‘No’. The current can then be inspected. The phase angle will be +ve or at least less than -10°. When a solenoid comes on the phase should change by at least 25° more -ve. e.g. before +5°, after -20°.

Zone Test ofAll Stations on the Cable.

This function does a test of all stations attached to the Translator, turning just one station on at a time. 'GoBack' returns to the Main Menu. From that menu, 'GoBack' returns to Automatic.



This is the station being tested. The number corresponds to the record number in the RM-1 'Config' database.

This is a count of the number of failures encountered during the test. A zero here by the end of the test means all is well. During this test only one station is turned on at a time. This may mask multiple-on problems. Use 'Manual On' to investigate these.

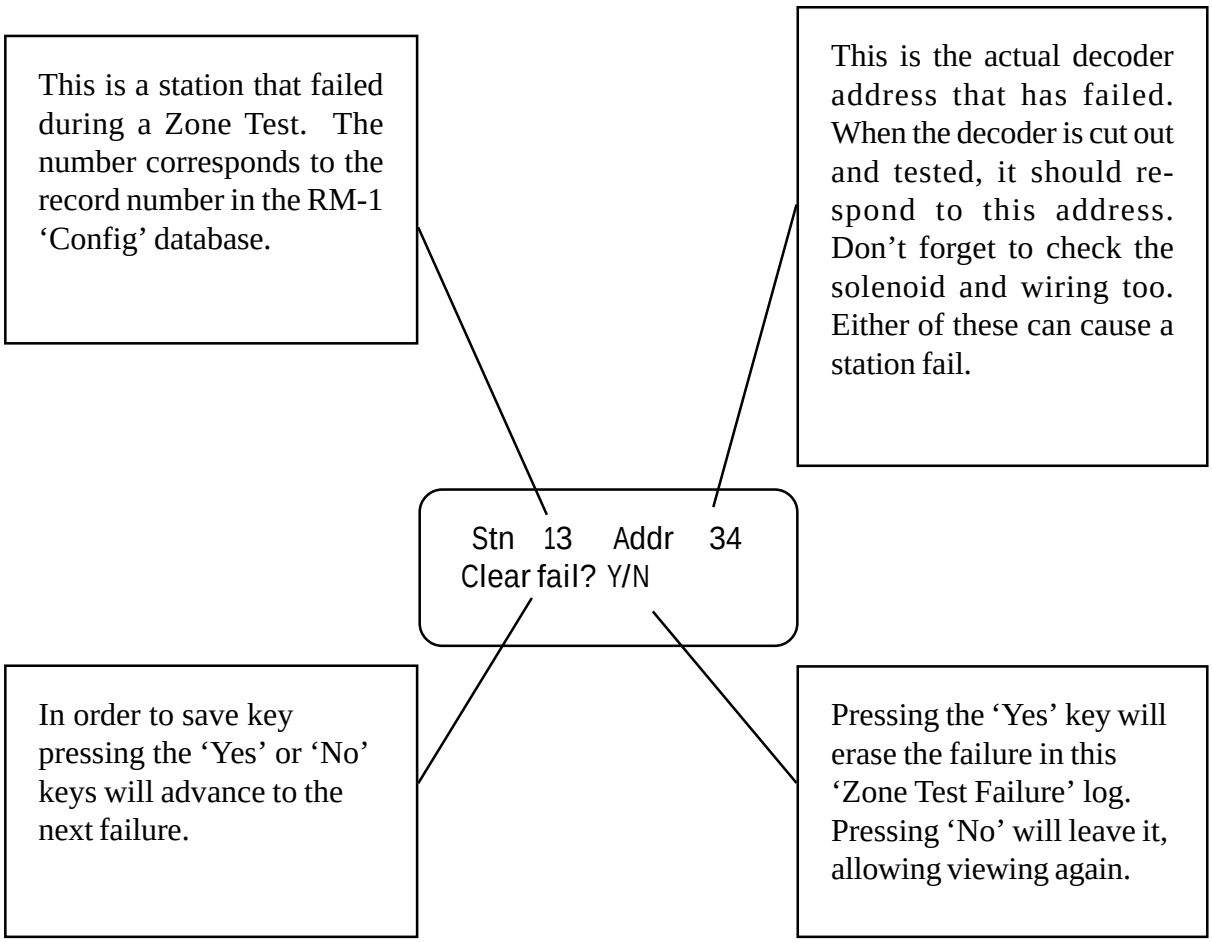
This is the actual decoder address going out on the signalling system. On Wright Rain Mk III etc. it may be a long number

During the testing sequence the messages are **Test, On, Off.** If the decoder fails it will say **Fail**. During the test the display may indicate **O'load** for more than 2A line current, or in extreme cases **Fused**. There are no replaceable fuses in the controller, just automatically reseting ones. When the load is removed they will reset.

When the 'GoBack' key is pressed, the line is disconnected so all decoders will turn off. After entry into this mode, the line will not be connected until the first decoder is commanded on. The failures may be viewed by entering the 'View Failures' menu item. Press 'GoBack' to go back to the main menu then 'MoveRight' and 'Accept' to enter 'View Failures'. Any failure logged during Zone Test will *not* be registered in the main RM-1 controller. Failures there are reserved for those encountered during normal watering. They in turn will *not* be logged in the ZoneTest failures area in the Translator.

View Failures from a Zone Test.

This function allows viewing and/or resetting of all stations attached to this Translator that failed during a Zone Test. 'GoBack' returns to the Main Menu. From that menu, 'GoBack' returns to Automatic.



Any failure logged during Zone Test will be stored for viewing using this function. However these failures will *not* be registered in the main RM-1 controller. Failures there are reserved for those encountered during normal watering. They in turn will *not* be logged in this ZoneTest failures area in the Translator. Pressing 'GoBack' will return to the Main Menu.

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Alter Current Change Sensitivity.

This function allows viewing and/or changing of the sensitivity of the current increase/decrease threshold. This threshold determines whether a station is deemed to have switched. 'GoBack' returns to the Main Menu. From that menu, 'GoBack' returns to Automatic.

The value of sensitivity can be varied from about 50mA to nearly 500mA. Around 100mA is a normal value. Most solenoids draw around 150mA to 300mA.

Minimum change
60 mA

Increase or decrease this value with the 'Raise/ Lower' keys. Holding either down will accelerate the rate of change.

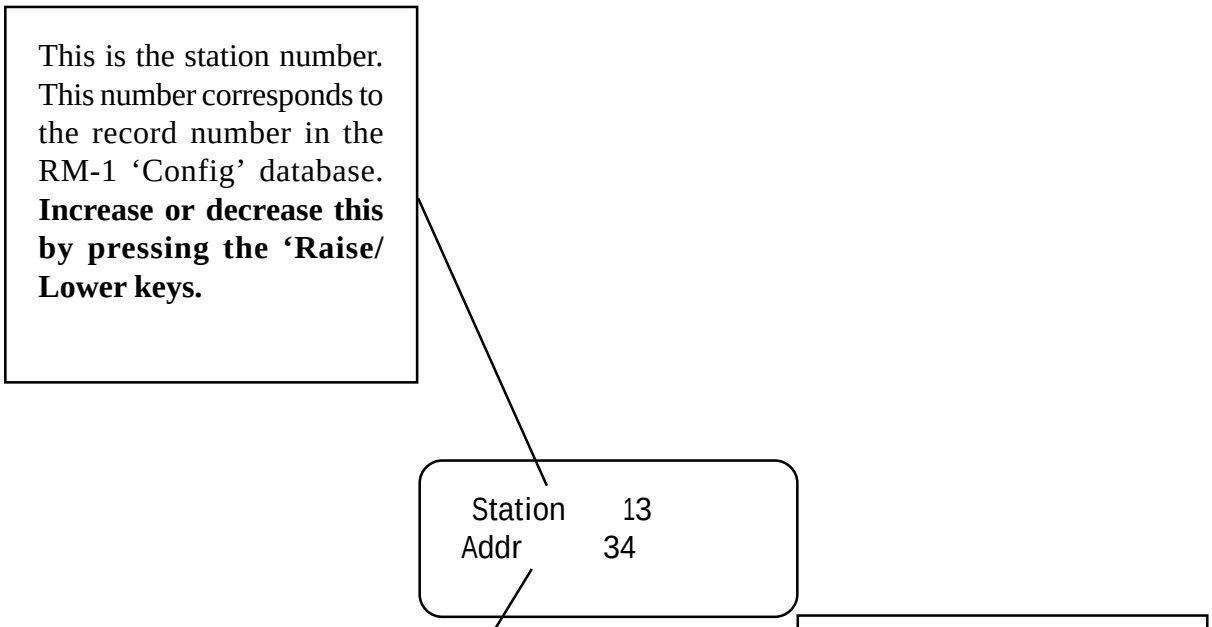
Pressing the 'Accept' key will save the new value. Pressing 'GoBack' without 'Accept' will restore the original value.

The Translator uses this minimum change of current to determine whether a station has switched on or off sucessfully. Setting the sensitivity threshold too low will result in noise and jitter on the current reading giving false results. Similarly, setting the threshold too high might fail stations with low current solenoids at the end of long lines.

Pressing 'GoBack' will return from this function to the Main Menu. If the edited value is to ke accepted, press the 'Accept' key before 'GoBack'.

View actual decoder Addresses.

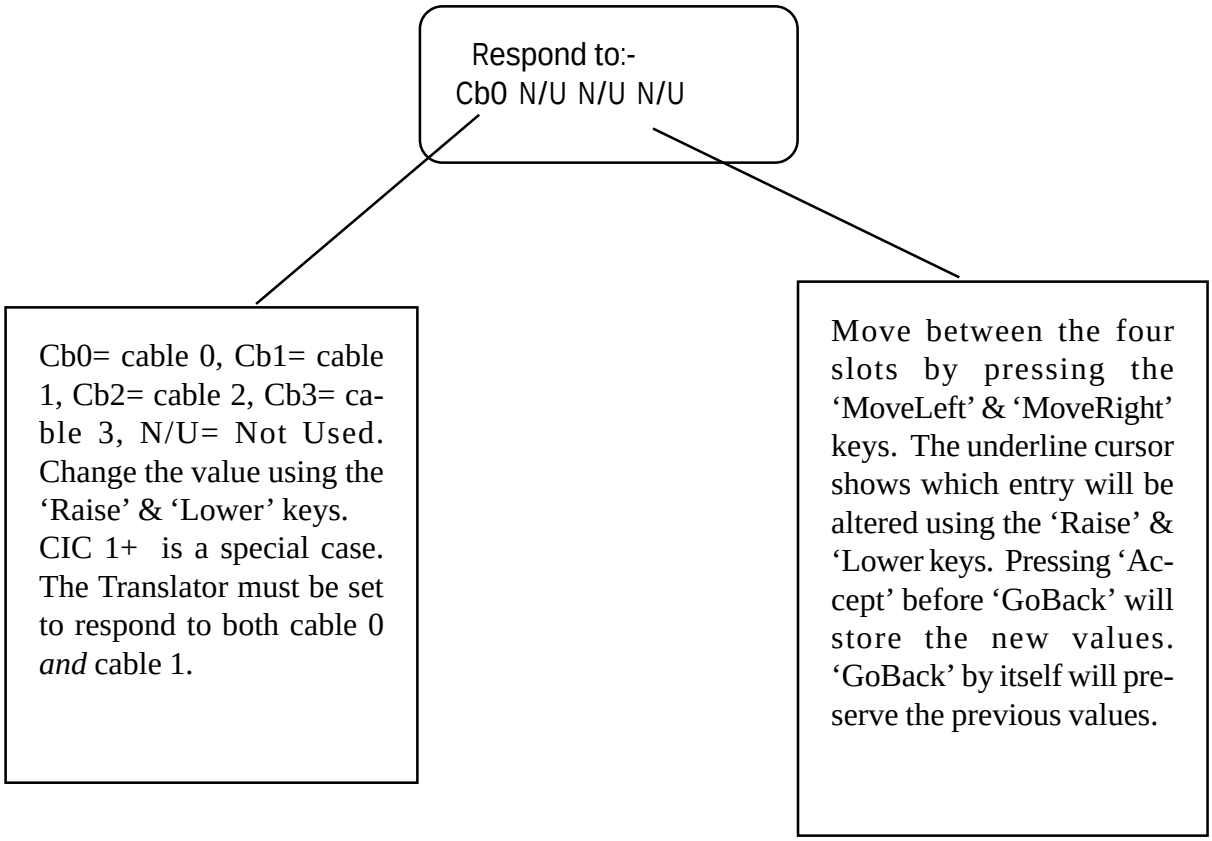
This function allows viewing the actual decoder address of each station attached to this Translator. No editing may be done of these values. 'GoBack' returns to the Main Menu. From that menu, 'GoBack' returns to Automatic.



The actual decoder address for each station number is held only in the Translator(s) not the RM-1. All Translators hold the same table, but will act on only those items relevent to their assigned cable number(s). This allows moving a Translator onto a different field cable for fault-finding. Only the Translator's cable number need be edited during the swap. It is therefore imperative that the communications between the RM-1 and all the Translators be operative during a Config database edit.

Respond to Cable Numbers.

This function allows editing the cable number(s) that the Translator will control . 'GoBack' returns to the main menu. From that menu, 'GoBack' returns to Automatic.



Cb0= cable 0, Cb1= cable 1, Cb2= cable 2, Cb3= cable 3, N/U= Not Used. Change the value using the 'Raise' & 'Lower' keys.
CIC 1+ is a special case. The Translator must be set to respond to both cable 0 *and* cable 1.

Move between the four slots by pressing the 'MoveLeft' & 'MoveRight' keys. The underline cursor shows which entry will be altered using the 'Raise' & 'Lower keys. Pressing 'Accept' before 'GoBack' will store the new values. 'GoBack' by itself will preserve the previous values.

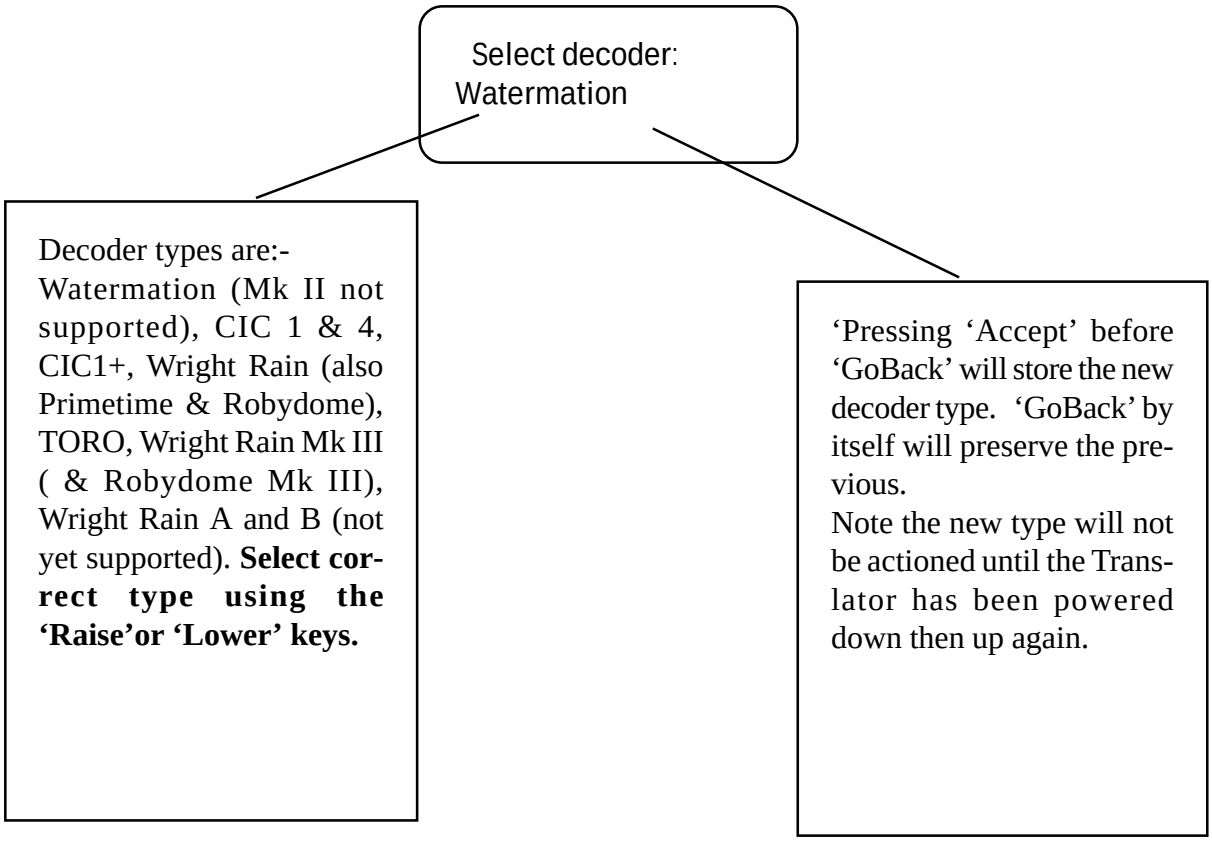
Normally a Translator will be set to just one cable. All other slots will be set to N/U.

CIC 1+ is a special case. The Translator must be set to respond to both cable 0 *and* cable 1. Zone 1 decoders are allocated to cable 0 in the RM-1 and zone 2 are allocated to cable 1.

Fault-finding can be assisted by moving a Translator onto a different field cable. Only the Translator's cable number here need be edited during the swap. The apparent station failures disappear if the original Translator was faulty. If they do not, it is decoder, wiring or solenoid failure on that field cable.

Set Decoder Type.

This function allows editing the decoder type that the Translator will control . 'GoBack' returns to the main menu. From that menu, 'GoBack' returns to Automatic.

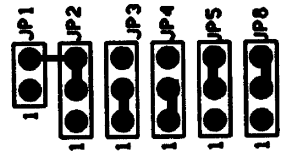


Decoder types are:- Watermation (Mk II not supported), CIC 1 & 4, CIC1+, Wright Rain (also Primetime & Robydome), TORO, Wright Rain Mk III (& Robydome Mk III), Wright Rain A and B (not yet supported). **Select correct type using the 'Raise'or 'Lower' keys.**

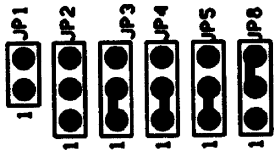
'Pressing 'Accept' before 'GoBack' will store the new decoder type. 'GoBack' by itself will preserve the previous.
Note the new type will not be actioned until the Translator has been powered down then up again.

Make sure the jumpers on both the Translator boards are set correctly according to the decoder type selected. Refer to the 'Jumper Settings' sheet.

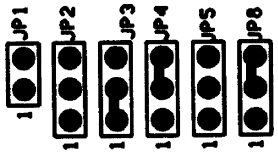
Tonick Translator. Jumper settings for Main Power Board (TRSIG) and jumpers for CPU board (TRINP).



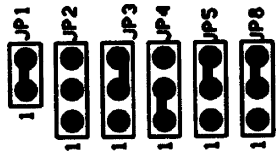
All Wright Rains, Primetime and



TORO



Watermation



All CICs

Procedure:

Unplug the top module from its base. Disassemble the Translator module by prising off the bottom grey plate.

Partially remove both cards as a pair. Reach in and pull off the keyboard connector tail from the TRINP board. Remove the cards fully. Open them out still connected together.

Identify the TRSIG board. It has the 16 contact fingers on it. Locate the jumpers pins in the middle of the board. Fit the shorting links where indicated by the vertical bars on the diagrams above according to the decoder type.

Identify the TRINP board. It has the large square integrated circuit chip on it and the LCD attached at right angles.

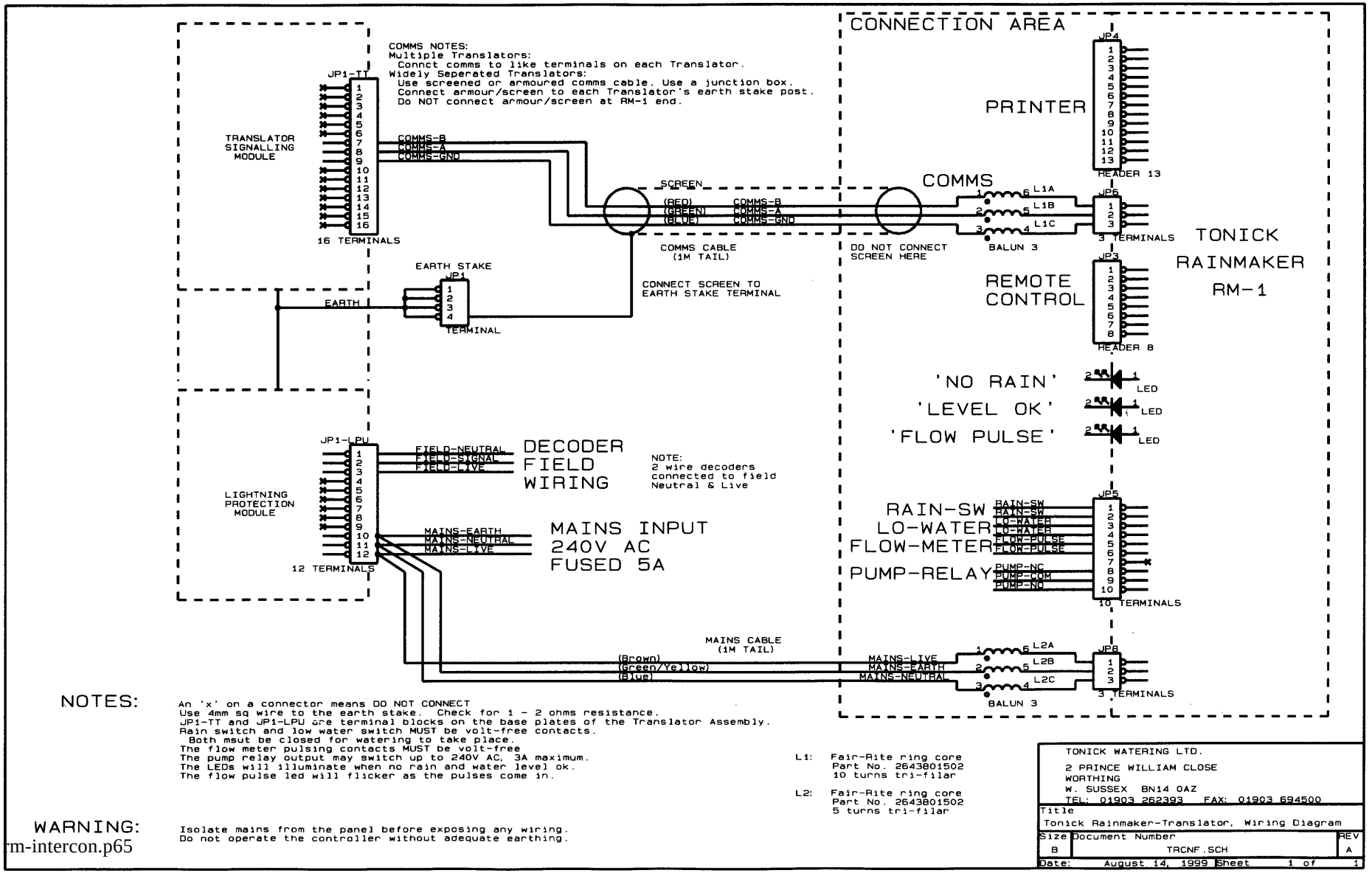
Locate the jumper JP6. Fit the shorting link as per the table below. All other links do not change with decoder type.

Re-insert the boards partially into the case. Re-connect the keyboard tail onto the pins marked 'KBD'. The dull metallic side of the tail goes towards the edge of the board. Slide the boards all the way in. Ensure the LEDs and LCD line up with the holes in the front panel.
Reassemble the grey bottom plate and snap it into place.

Plug the Translator back into its base and power up. Using its keyboard and LCD press the 'GoBack' key to come out of AUTO. Press the 'MoveLeft' or 'MoveRight' keys to select the "Decoder Type" menu. Press the 'Accept' key to enter and use the 'Raise/Lower' keys to select the correct decoder. Press 'Accept' then 'GoBack' then 'GoBack' again into AUTO. Remove and re-apply power to action the change.

Wright Rain etc.	JP6 pins 2-3
TORO	JP6 pins 1-2
Watermation	JP6 pins 1-2
CIC1 & 4, CIC1+	JP6 pins 2-3

INTERCONNECTION OF RM-1 AND TRANSLATOR(S)



TRANSLATOR LAYOUT AND CONNECTIONS

Translators translate general purpose station on/off commands from the RM-1 into the specific codes and signals to control a wide variety of existing decoder types currently in use. One Translator is used to energise each seperate cable. Up to 4 can be connected to one RM-1

Mounting:

They can be mounted on a flat wall or board using the 4 fixing holes, one on each corner of the backplate.

Environment:

Non-condensing and free of drips. 0-40 degrees C with a free air passage above and below the Translators. If mounted in an external enclosure, it must be ventilated and preferably blown. It is recommended they are kept energised over the winter.

Location:

Translators can be up to several Km from the RM-1 provided suitable comms cables are used. Consult factory for more details.