

## APPLICATION NOTE

### HOW TO REPLACE A TW-2 WITH A TONICK DEMI-RAIN

There are a large number of TW-2 irrigation controllers, built by Watermation, still in use. Watermation itself ceased trading two years ago, making TW-2 upkeep and repair a problem. This application note describes a way of replacing a TW-2 with a Tonick Demi-Rain controller, achieving better performance at a much lower cost.

#### Comparison of Features:

<b>TW-2</b>	<b>Demi-Rain</b>
One or four zones; 100 2-wire decoders per zone.	One zone; 100 2-wire decoders maximum.
Only one decoder active per zone.	Four decoders active per zone.
A permanently on decoder stops the watering cycle showing just "E".	Watering cycle continues, faulty decoder flagged for later inspection.
Three watering programs with four starts per day.	Six watering programs with eight starts per day.
No water-budget method of globally altering watering time.	Water budget of 10% - 250% settable on each start.
Pre-water option allows some control over prevention of water run-off . Adds to station watering time.	Each program can be divided into 1, 2 or 3 applications to reduce water run-off. Does not alter station watering time.
No readout of field wiring current or phase angle.	Readout of current and phase to help spot differences in conditions.
No lightning protection on mains input. No provision for earth stake protection of field wiring.	Plug-in lightning protection module and earth stake for comprehensive lightning damage protection.
No control over watering order; set by decoder addresses.	Full control over watering order for each program.
Outdated 1970's electronic technology; some components will go obsolete.	Latest 21 <sup>st</sup> Century technology. Smaller size, more features, less money.
Upgrade to flow management or PC means scrapping whole controller.	Upgrade to flow managed RM-1 or Aquarius PC with little redundancy.

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If the TW-2 only has just one zone connected (or is a single zone version), then the Demi-Rain maybe fitted with no changes to the system. It is not necessary to change the original Watermation Mk 1 decoders providing one decoder active per cable is not a limitation. However, any newer Tonick TW/WM decoders mixed in with the originals may be turned on with an original, provided the Watermation is turned on first. This is easily achieved by inserting the original's address first in the list for that watering step in the Demi-Rain's program.

At first sight, the Demi-Rain may not seem suitable to replace a multi-zone TW-2; after all the Demi-Rain has only one zone. However, because the Demi-Rain can switch up to four decoders on at once, it can be functionally equivalent to a four zone TW-2. If the previously separate TW-2 field cables are connected in parallel, Tonick TW/WM 'Watermation' decoders are used and each has been given a unique decoder address, then the Demi-Rain will be able to activate one decoder on each cable at the same time.

To decide whether this substitution could take place the following questions must be answered:

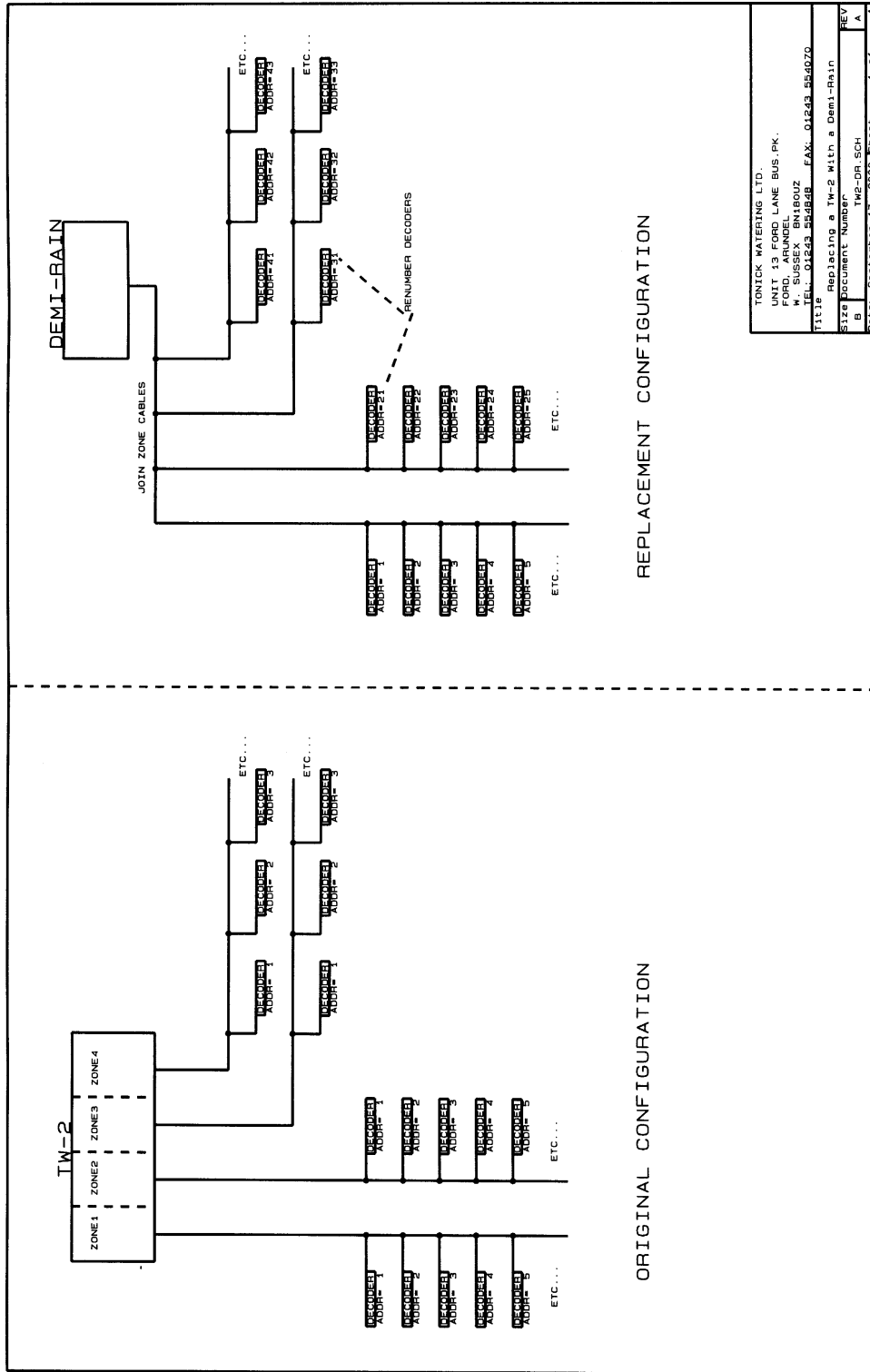
1. Are there less than 100 stations across all four TW-2 zones? (The UK average is 60 stations).
2. Are all the decoders currently fitted Tonick TW/WM? If not, would the client consent to changing out the remaining Watermation originals?
3. Are all the decoder addresses unique? If not, would the client consent to the work of renumbering them and refurbishing the cable joints at the same time?

If all are yes, then the multi-zone TW-2 can be replaced by a much lower cost Demi-Rain. If no, then consider using the more powerful, multi-zone Rainmaker RM-1 and Translators.

The figure on the following page illustrates the conversion required to effect the change.

Note: No Tonick or Aquarius PC controller will operate the Watermation MK. 2 decoder that was produced briefly before Watermation ceased trading. If identification is in doubt, please contact Tonick.

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Title Replacing a Tw-2 with a Demi-Rain  
 Size Document Number TW2-DR SCH  
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 Date September 17, 2000 Sheet 1 of 1