<div align="center">**ATV630 Programming Instructions – WaterTec Irrigation**</div>

Wiring
Connect incoming power to L1-L2-L3
For single phase input use L1 & L2 only.
Note: Connectors on VFD are rated for copper conductors only
Connect motor to T1-T2-T3

4-20ma Transducer Wiring
Blue Wire (-) – to AI2
Brown Wire (+) – to +24vac

On/Off Switch – or some other trigger to activate drive
One wire to +24vac
One wire to DI1
Use 2 position switch for ON/OFF
Use 3 position switch for HAND/OFF/AUTO when connecting to an external device such as irrigation timer or remote

Other Inputs
Setpoint selects – up to 4 setpoint connected between +24vac to DI2 and DI3
Reference Potentiometer – connected between +24vac and AI1. Disable internal reference and set to AI1, current, with minimum and maximums set accordingly.

If this is a single phase input drive, first step is to disable input phase loss
1   Main Menu
2   Error & Warning Handling
3   Uncheck input phase loss
4   Depending on the firmware version, you may need to power cycle the drive if the display remains RED, in fault mode.

Programming
Note: These programming notes are for basic single pump use, with a 4-20mA transducer. There are endless other options available. Please consult programming manual for more information. https://www.se.com/ca/en/download/document/EAV64318/

1   Press home key to show **Main Menu**

2   Select **1. Simply Start**

3   Go through simply start parameters
    a. **Motor Standard** – select 60Hz
    b. **Nominal Motor Power** – enter motor nameplate HP
    c. **Nominal Motor Voltage** – enter nameplate voltage
    d. **Nominal Motor Current** – enter nameplate current
    e. **Nominal Motor Frequency** – enter nameplate frequency
    f. **Nominal Motor Speed** – enter nameplate RPM
    g. **Control** – enter 2-wire
    h. **Maximum Frequency** – normally 60Hz
    i. **Autotuning** – select enable to complete auto tuning procedure
    j. **Motor Thermal Current** – enter current x service factor
    k. **Acceleration** – enter acceleration in seconds
    l. **Deceleration** – enter deceleration in seconds
    m. **Low Speed** – enter minimum Hz (30hz for submersible, 15hz for centrifugal)
    n. **High Speed** – enter maximum Hz (60hz is standard)

4   Return to Main Menu

5   Select **5. Complete Settings**
    a. Select **5.5 Command and Reference**
        i. **2-Wire Type** – change to level
        ii. HMI Command
            1. Disabled for no control
            2. Stop for only stop key control
            3. Bumpless for full control
        iii. If HMI is set to bumpless, use the LOC/REM button to toggle between manual control (HMI) and automatic control (TERM) as shown in the top right corner of the display. HMI will not follow your setpoint.
    b. Select **5.6 Pump Functions**
        i. Select **PID Control**
            1. Select **PID Feedback**
                a. **Type of Control** – select pressure
                b. **PID Feedback Assign** – select A2
                c. **AI2 Type** – select current

d. **AI2 Min Value** – 4mA
            e. **AI2 Max Value** – 20mA
            f. **Min PID Feedback** – 0psi (transducer minimum)
            g. **Max PID Feedback** – 200psi (transducer maximum)
            h. **Min Fbk Warning** – 0psi
            i. **Max Fbk Warning** – 200psi
        2. Select **PID Reference** Tab
            a. **Internal PID Ref** – select yes
            b. **Min PID Process** – 0psi
            c. **Max PID Process** – 200psi
            d. **Internal PID Ref** – set desired setpoint
        3. Select **Settings** Tab
            a. Change settings as required to fine tune PID control
            b. Gain may need to be increased or decreased

6 Note: If the 3rd and 4th buttons on the keypad are not working, remove the keypad from the drive. Reinstall keypad and buttons will work again. This is only an issue on initial power up.

7 Go back to **pump functions**
    a. Select **Sleep/Wake**
        i. **Sleep Detect Mode** – select power
        ii. **Sleep Min Speed** – set sleep speed in horsepower
        iii. **Sleep Delay** – set time at min speed before sleeping
        iv. You will need to fine tune the sleep horsepower while pump is running. Step 9.5 will allow you to see the actual HP while the pump is running, and you are in the sleep setpoint screen
    b. Select **Wakeup** Tab
        i. **Wakeup mode** – feedback
        ii. **Wakeup Process Level** – set PSI to wake up at
        iii. **Wakeup Delay** – set a delay if desired

8 Go back to Main Menu

9 Select **8. My Preferences**
    a. Select **8.4 Customization**
        i. Select **Display Screen Type**
            1. Choose **List**
            2. Select **Param** Tab
            3. Choose desired parameters
                a. Uncheck Pre-ramp frequency
                b. Check motor frequency
                c. Check motor current
                d. Check ACV motor output power
                e. Check PID reference
                f. Check PID feedback
            4. Go back to the previous menu
            5. Select **Param bar select**
                a. Uncheck pre-ramp frequency
                b. Check ACV motor output power

10 Return to Main Menu
11 The "House" key always takes you to the main menu. Pressing ESC will show the Display List

If 3rd and 4th buttons below the display aren't working, disconnect and reconnect the keypad. This will resolve the problem.

Other function to set:

Pump functions > Pipe fill mode (8.16)
        Pump will ramp up to **pipe fill speed** and remain there until either the **pipe fill pressure** is achieved or the **pipe fill time** has run out.
        Speed will increase from **pipe fill speed** to calculated speed according to **setpoint ramp** that is set in the **PID Set** menu

Pump monitoring > Dry run (8.23)
        Enter the correct HP required at 2 known operating points. This is usually the minimum operating speed and maximum operating speed.
        Enter a % variance that is allowed from the line between these 2 points before dry run is activated
        A dry run fault requires power down to reset

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