BATTERY WATERING TECHNOLOGIES

English: 1-11

Direct Fill Link+

Direct Fill Link with Bluetooth Enabled Flow Meter

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Direct Fill Link with Bluetooth Enabled Flow Meter

PART NUMBERS: DFMETER (Flow Meter Only), DF72PLUS, DF72FPLUS, DF72GPLUS, DFHOSCPLUS, DFHOSCNFPLUS, DFHOSCNPLUS, DFHOSE-STPLUS, DFHOSE-STFPLUS

- **When working in hazardous environments, always exercise appropriate safety precautions.**
- **Always wear personal protective equipment (goggles, gloves, etc.) to protect yourself from sulfuric acid.**
- **Only water after charging.**
- **Read instructions in entirety before use.**

Upon receipt, examine your equipment for visible damage. The flow meter is a precision measuring instrument and should be handled as such. If any items appear damaged or missing, contact BWT at 336-714-0448.

POWER SOURCE REQUIREMENTS

This flow meter on the Direct Fill Link+ requires DC power. For this application, the power is provided by (2) AAA size Alkaline batteries and the Bluetooth module requires a CR2477 3V lithium cell battery, both are installed at the factory.

TOOLS AND MATERIALS NEEDED

Phillips screwdriver

SPECIFICATIONS

Operating Temperature: +32°F to +120°F (0°C to +48°C)

Storage Temperature: +32°F to +120°F (0°C to +48°C)

Internal Power Supply: (2) Alkaline AAA batteries @ 1.5-volts each and (1) Lithium Cell CR2477 @ 3 volts

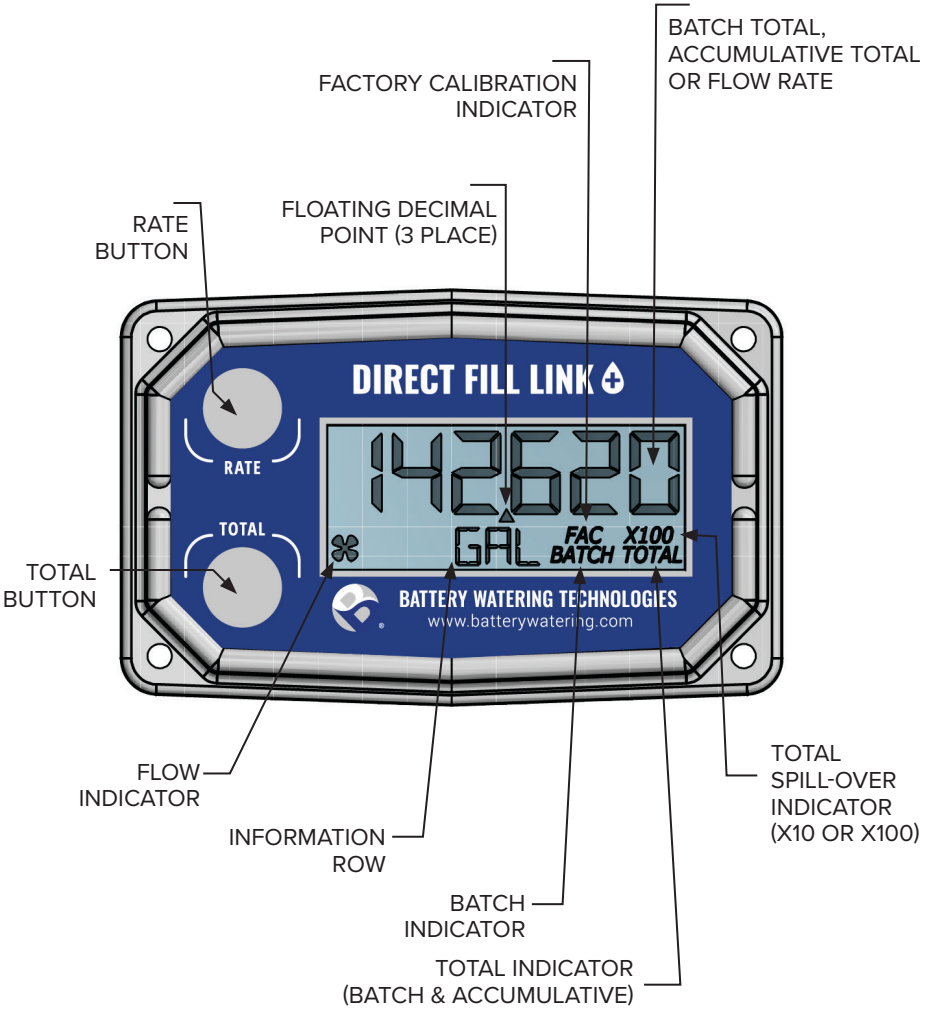
Battery Life: 1+ years

Flow Rate Range: 0.25-3.0 gallons/minute or 1-11 liters/minute

NOTE: **The flow meter's unit of measure is gallons by default. Please contact BWT if you prefer to display in liters.**

FLOW METER DISPLAY FEATURES

Familiarize yourself with the flow meter features before use.



FLOW METER DISPLAY

All operations are revealed on the LCD screen using the large 6-characters in the top row and smaller characters and symbols in the second row. These characters and symbols indicate information regarding totals, flow, calibration, units of measure and operational messages.

NOTE: The following sequence of displays will only show when replacing the batteries. BWT recommends replacing the batteries annually.

GETTING STARTED

When batteries are initially installed or replaced, the initialization routine will start the LCD display blank, then display “HELLO” on the top row and “Q9Disp” on the information row for one second.

SOFTWARE VERSION

The LCD will then display “HELLO” on the top row and “FW Vxx” on the information row for one second. The Vxx will be the version of the software installed on the display. Example: “FW V03” indicates firmware version 3 installed on the display.

DETECT BLUETOOTH

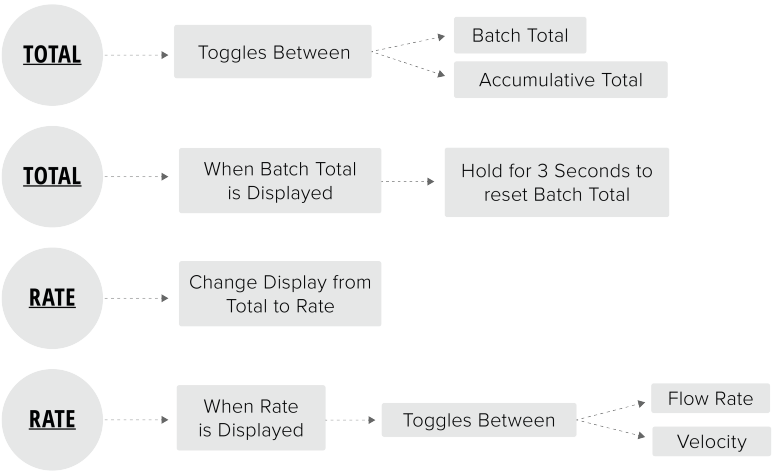
The LCD will then display the "Detect Blue T".

DIRECT FILL LINK+ ID NUMBER FOR BLUETOOTH

The LCD will then display the Direct Fill Link+ ID on the information row every 10 seconds. This ID # is needed to connect to the FRED app.

NOTE: The ID number will only contain characters 0-9 and A-F.

BUTTON USAGE MAP



BUTTON OPERATION

TOTAL Button: Toggle between batch total and accumulative total.

When a total is displayed, momentarily pressing **TOTAL** button toggles the top row of large display digits between batch total and accumulative total. The information row will change to the proper units and the corresponding icons will also be shown, i.e. TOTAL or BATCH TOTAL.

ACCUMULATIVE TOTAL - GALLONS

BATCH TOTAL - LITERS

NOTE: **The flow meter's unit of measure is gallons by default. Please contact BWT if you prefer to display in liters.**

BATCH TOTAL RESET

TOTAL Button: Batch total reset.
When a batch total is displayed, press and continue to hold **TOTAL** button for 3 seconds; the software will display a three second count down, then reset the batch total to zero.

If **TOTAL** button is released prior to count down completion, the software returns to batch total screen.

After countdown completes, display will show 0.000 until user releases **TOTAL** button.

After the **TOTAL** button is released, the display will return to the Batch Total screen and will begin calculating the total, if flow is detected.

DISPLAY CHANGE | TOTAL TO RATE

RATE Button: Change display from total to rate.
When a total is displayed, momentarily pressing the **RATE** button changes the top row of large display digits from a total to a rate display. The information row will change to the proper units and the corresponding icons will also be shown, i.e. GPM, L, etc.

To go back to a total when a rate is displayed, press **TOTAL** and the display changes to the last shown total, either accumulative or batch. The information row will change to the proper unit and the corresponding icons will also be shown, i.e. TOTAL or BATCH TOTAL.

DISPLAY CHANGE | RATE TO VELOCITY

RATE Button: Change display from rate to velocity.
When a rate is displayed, momentarily pressing the **RATE** button toggles the display between flow rate and velocity. The information row will change to the proper units and the corresponding icons will also be shown.

FLOWRATE

VELOCITY

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
DISPLAY IS INACCURATE	Meter operated below minimum flow rate.	Increase flow rate.
	Meter partially clogged with debris.	Remove meter. Clean carefully. Make sure rotor spins freely and water supply is free of debris.
	Sealant material wrapped around meter rotor.	If applicable, remove rotor. Make sure rotor spins freely and water supply is free of debris. .
DISPLAY IS FADED OR BLANK	Batteries weak, dead, or not connected.	Check and replace batteries.
	Computer defective.	Contact the factory.
NORMAL FLOW RATE BUT DISPLAY DOES NOT SHOW COUNT	Rotor stuck or damaged.	Remove meter. Make sure rotor spins freely.
	Sealant material wrapped around rotor.	Remove meter. Make sure rotor spins freely.
	Computer defective.	Contact the factory.
REDUCED FLOW RATE AND DISPLAY DOES NOT SHOW COUNT	Meter clogged with debris.	Remove meter. Clean carefully. Make sure rotor spins freely and water supply is free of debris.
	Below minimum flow rate.	Increase flow.

BATTERY INFORMATION

The flow meter is shipped with (2) alkaline AAA size batteries (1.5-volts each) and (1) lithium CR2477 (3 volts) installed.

RECOMMENDED BATTERY REPLACEMENTS

Alkaline (AAA size, 1.5-volts each)
Energizer, Alkaline, E92 or En92
Duracell, Alkaline, Mn2400

Lithium CR2477 size (3-volts)
Panasonic, Sony or Toshiba

NOTE: It is recommended to replace the batteries every year.

If the flow meter's readout should become dim, blank or the low battery message appears (see below), the **AAA** batteries should be replaced.

If the **AAA** battery life is sufficiently low, "**LOWBAT**" will be displayed in the message area on the bottom row of characters. This low battery message will be displayed automatically without running a diagnostic battery check.

NOTE: When batteries are disconnected or fail, the flow meter memory will retain the batch total, accumulative total, factory calibration curve, and field calibration curve indefinitely.

The **CR2477** lithium battery level is displayed in FRED. See the "FRED Integration" section of this manual for more information.

Do not mix brands or technologies.
Do not mix old and new batteries.
Do not use rechargeable batteries.

STORING WHEN NOT IN USE

Removing the batteries before storing the flow meter will extend battery life since the flow meter is always on (either standby or active) when the batteries are installed.

BATTERY REPLACEMENT

1. Remove the (4) corner screws attaching the flow meter electronics and Bluetooth module to the meter and lift away from the meter.
2. Remove the **AAA** batteries from the display and then the **CR2477** 3V lithium cell battery from the Bluetooth module.
3. Check the battery terminals and remove any corrosion.
4. Install the new batteries, preferably starting with the **AAA** cell battery. For the **AAA** batteries, make sure the positive posts are positioned correctly. When the batteries are installed correctly, the flow meter powers on automatically and the display will show information.
5. Install the **CR2477** battery with the positive side up.
6. Make sure the seal is fully seated before placing the flow meter electronics back on the turbine. Make sure wires aren't obstructing the seal. Tighten the (4) screws previously removed.
7. Do not clean exterior of flow meter assembly with Isopropyl Alcohol, use a damp cloth as needed.

NOTE: It is recommended to replace the batteries every year.

WARRANTY

This product is warranted against defects in workmanship and materials for a period of one year from date of shipment.

Battery Watering Technologies

FRED

Facility Resourced Equipment Data

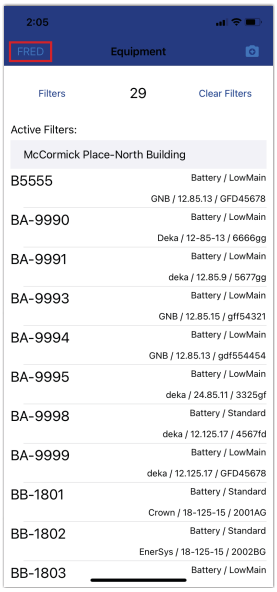
FRED INTEGRATION

The Direct Fill Link+ is designed to be used with the FRED application by BWT.

SETTINGS

To sync your Direct Fill Link+ go to the menu and select settings. Toggle the "**Connect Direct Fill Link+**" and the **Direct Fill Link+ ID** number field will appear. Type in the ID number shown on the flow meter screen, it is displayed every 10 seconds in the information row.

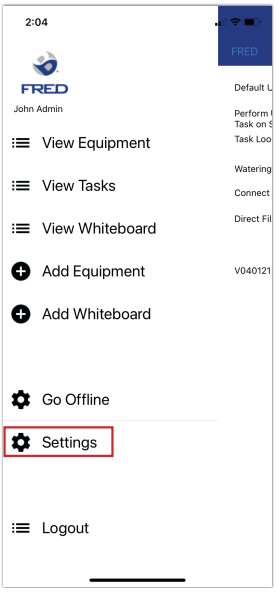
To assign the default global unit of measure use the "**Watering Units**" toggle switch to select either gallons or liters.



HOME PAGE / VIEW EQUIPMENT

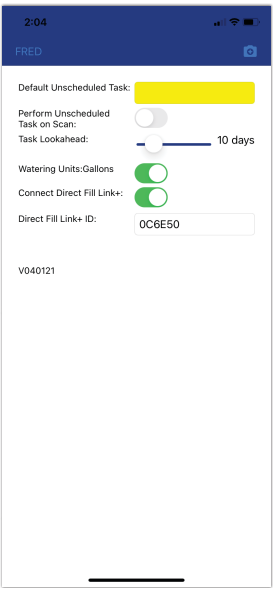
Select the menu

Top Left "FRED" Button



MENU

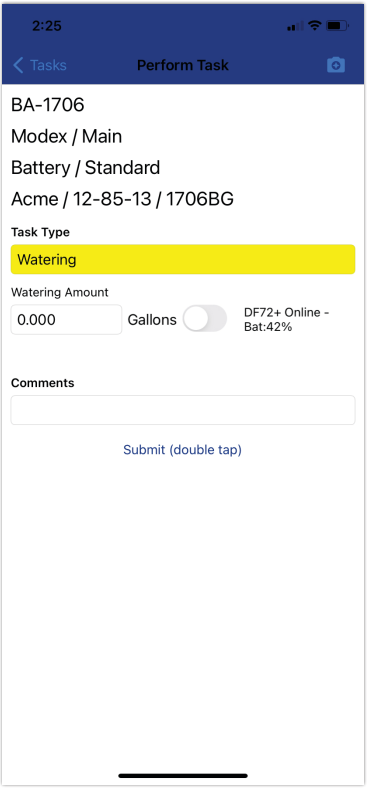
Select settings



SETTINGS

PERFORMING TASKS

When a watering task is selected and a Direct Fill Link+ is connected the watering amount will be automatically recorded.
If you need to switch your units of measure from the global default, toggle the switch to change units. Both units are always recorded.
If a Direct Fill Link+ is connected, the (**CR2477**) battery level is displayed, i.e. "**DF72+ Online - Bat: 42%**".
NOTE: BWT recommends replacing the **CR2477** battery at 20%.
If the ID number is put in incorrectly or out of range,
"**No DF72+ Match**" will be displayed.
If the ID is left blank "**No DF72+ ID**" will be displayed.



PERFORM TASK

Battery Watering Technologies

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Direct_Fill_Link_Plus_INS
Rev. 03 | 0521
Patent Pending