



Consolidator+

MasterClass

Week 2 – Flow Applications

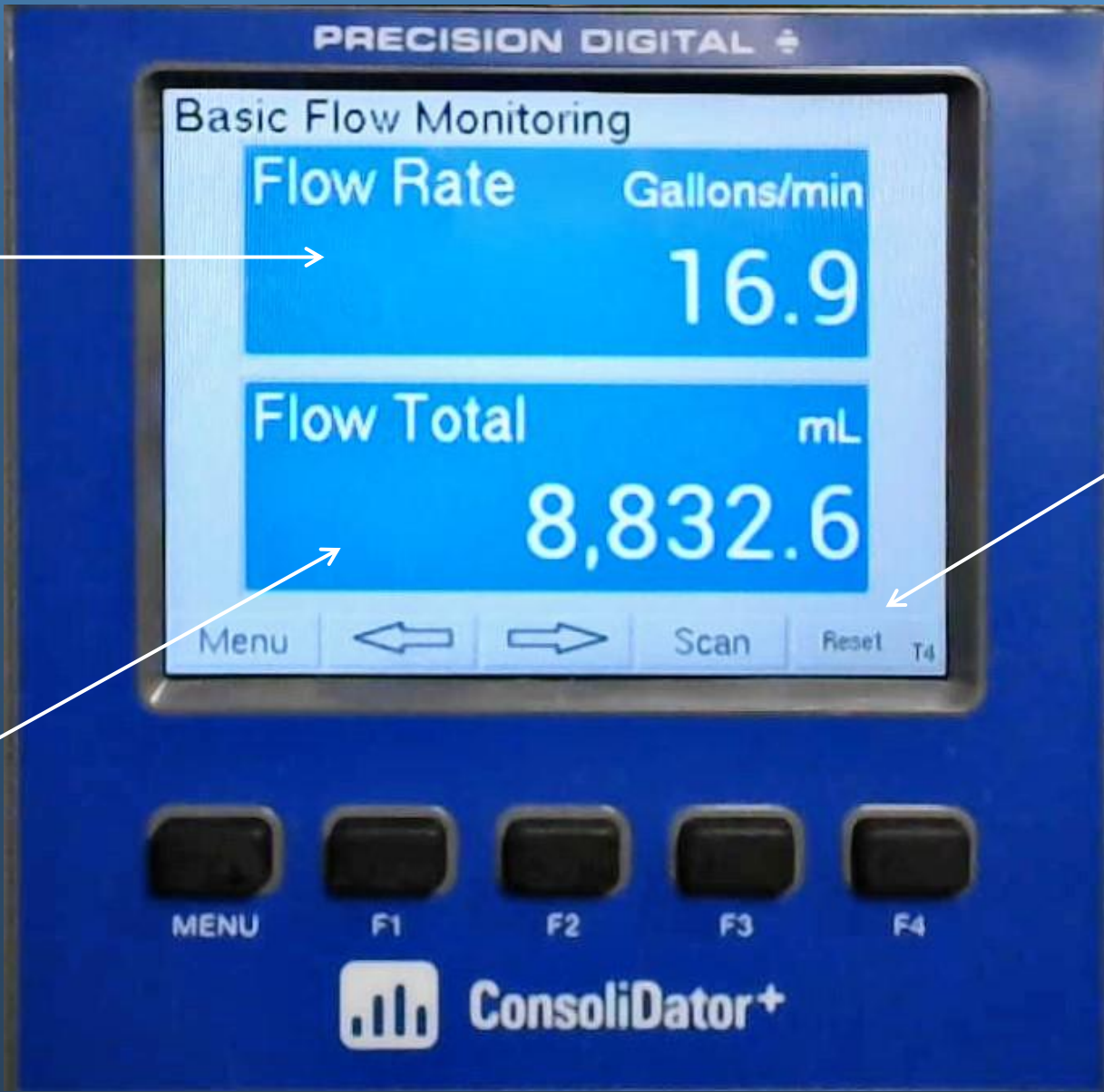
Today's Key Topics

- Basic Flow Monitoring
- Advanced Open Channel Flow
- Input Types
- Data Logging
- Multiple Totals Per Channel
- Non-Resettable Totals
- Real-Life Application Example



ConsoliDator+

MasterClass



You can monitor flow rate in ANY engineering unit, including custom units, per second, minute, hour, or day!

Although our rate is in GPM, we can see our total in any engineering unit we want!

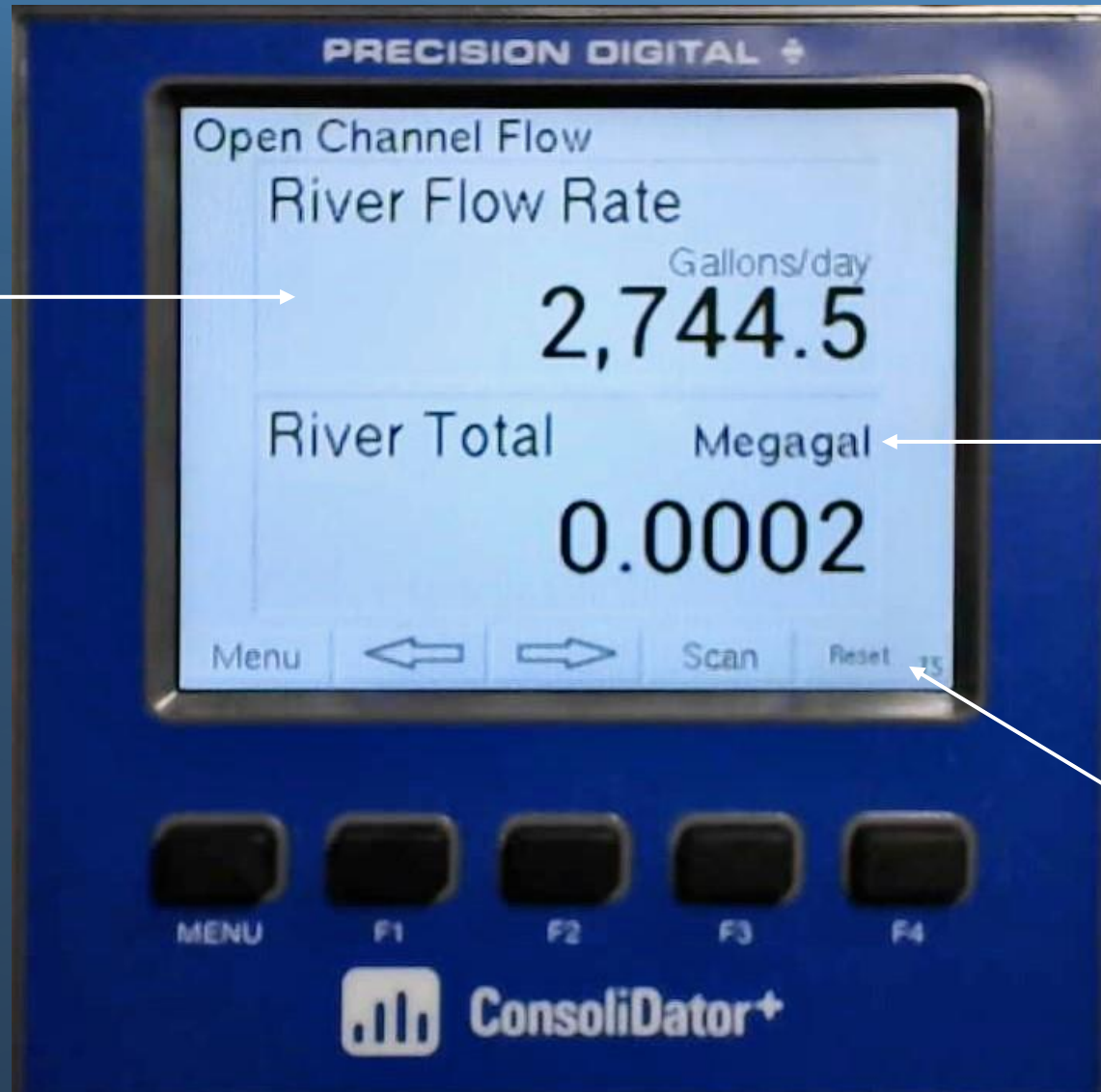
We can use a “Soft Key” to reset the total shown on the screen.

In this case, we must also CONFIRM our decision to ensure there are no accidental resets.

That confirmation feature CAN be turned off!

Using the open channel flow formulas for weirs and flumes found in your ISCO handbook, we can calculate flow rates based off a level signal.

In fact, the formulas needed are already programmed, and the user just fills in the variables!



Even with flow totals, we can use custom engineering units if what you need isn't found in the library internal to the device.

I created the unit "Mega gallons" to represent the total flow without having any giant numbers on the screen!

Like the last screen, a Soft Key can be used to reset the total

Consolidator+ v2.1.2-PREDIG

Connected Multivariable Controller
UID: UTD7-96HG-GKJU-PYCG
Model: TK9000-XYZ
FW: SFT144 - v2.100

File Connections About

Channels

- 1. Water Flow Rate
- 2. Oil Flow Rate
- 3. Milk Velocity
- 4. MILK RATE
- 5. Flow Rate
- 6. Head Height
- 7. River Flow Rate**
- 8. Flow Rate

Totals

Timers

Alarms

Inputs

Outputs

Screens

- 1. Why Milk and Oil?
- 2. Basic Flow Monitoring

Channel 7

Display Tag: 7. River Flow Rate Color Scheme: Default

Name for the Channel, 15 characters max.

Function: Parshall Flumes Bargraph 0% 0.0

Formula: $Q = K H^n$ 100% 100.0

Constant K: 0.992

Head: 6. Head Height Inch

Exponent: 1.547

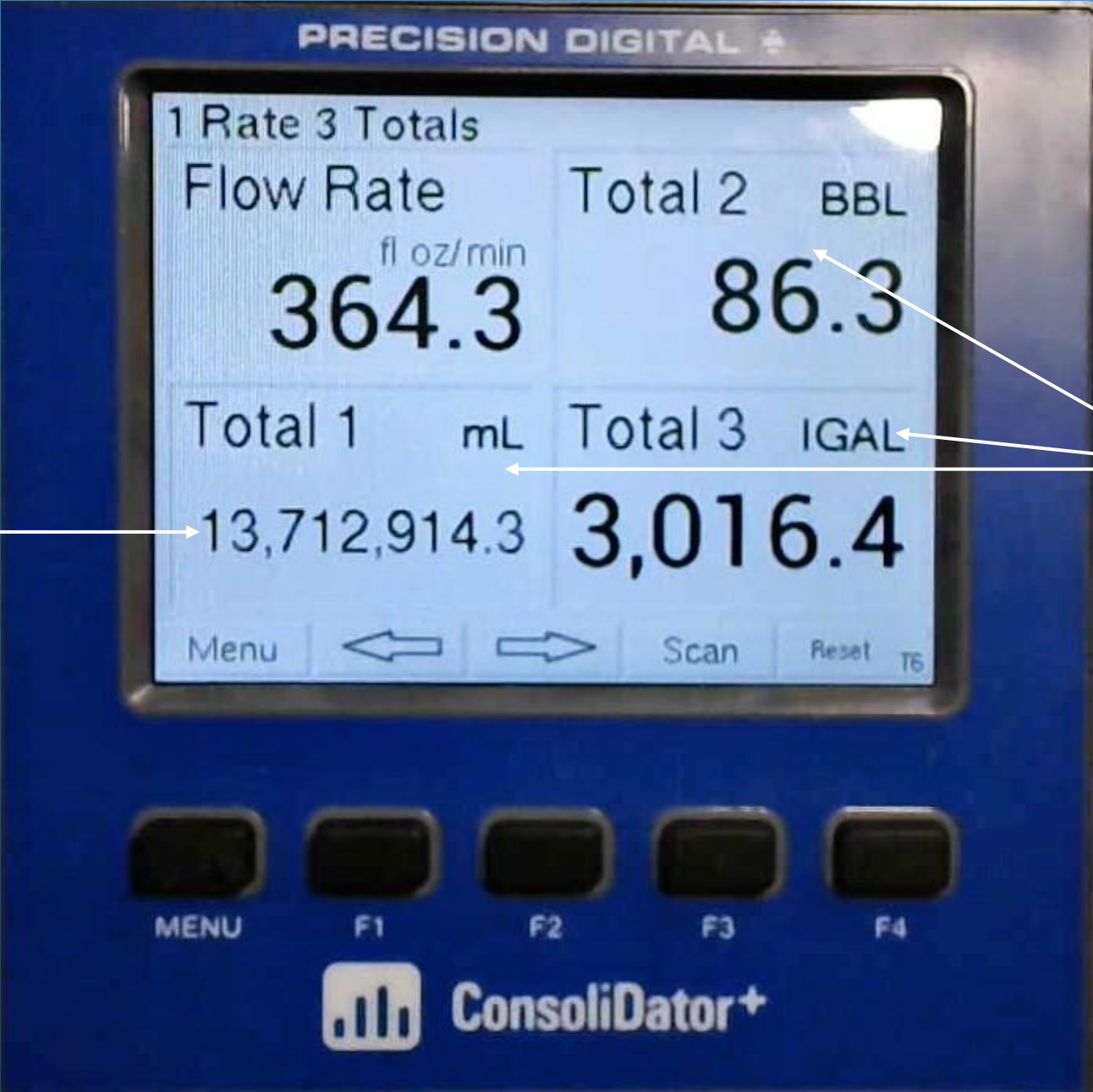
Units: Gallons/day Decimals: 1 + -

New Copy Delete

Formula for open channel flow using Parshall Flumes. This formula is pre-programmed into the unit.

User defines a “Head Height” using a separate channel that is scaled 0 – X”

The “Constant K” and “Exponent” variables are automatically filled out for you depending on the “Function” (type of weir or flume) you choose for the channel, but they CAN be changed by the user!



Since the ConsoliDator+ uses commas, displaying and reading LARGE numbers is no longer an issue.

On previous flow products, we did not have the ability to show commas

Just like we saw with the level screens last week, you can program multiple totals based on ONE total

And, the unit of measure can be completely unique, and the ConsoliDator+ will do the unit conversion automatically!

CANNOT do that with a ProVu!

Again, we can name our screens ANYTHING we want! – Even if we want to ask a rhetorical question!

You will notice THREE unique color profiles for each “product” we are monitoring.

These color profiles are created by the user!



I made sure each total aligned with the correct flow rate.

But, to make monitoring the flow of various materials as SIMPLE AS POSSIBLE for the user, they can always color code their products!

Plus, it look pretty cool too, huh?



Now, if someone setup this type of screen “incorrectly”, they may see their totals and flow rates out of order.

Although this is easily corrected, you can see how color coding your flow rates and totals can be beneficial and makes it as easy as possible to monitor the process!

A user can configure an alarm for either a flow rate, or a flow total.

On this screen, I programmed an alarm for the flow rate (velocity) of the milk...

Do you know WHY there would be an alarm for high flow velocity of milk?

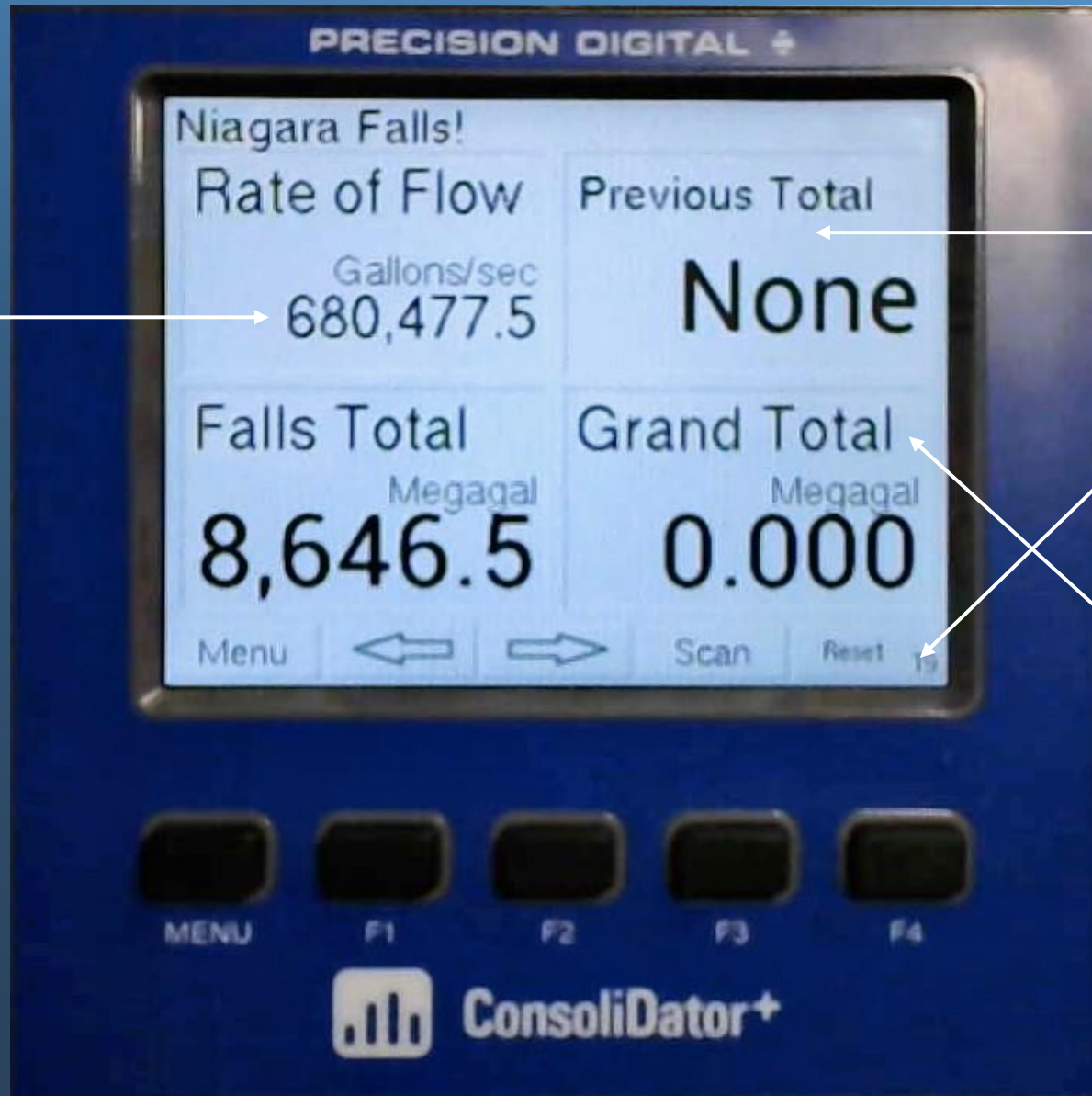


Now, if someone setup this type of screen “incorrectly”, they may see their totals and flow rates out of order.

Although this is easily corrected, you can see how color coding your flow rates and totals can be beneficial and makes it as easy as possible to monitor the process!

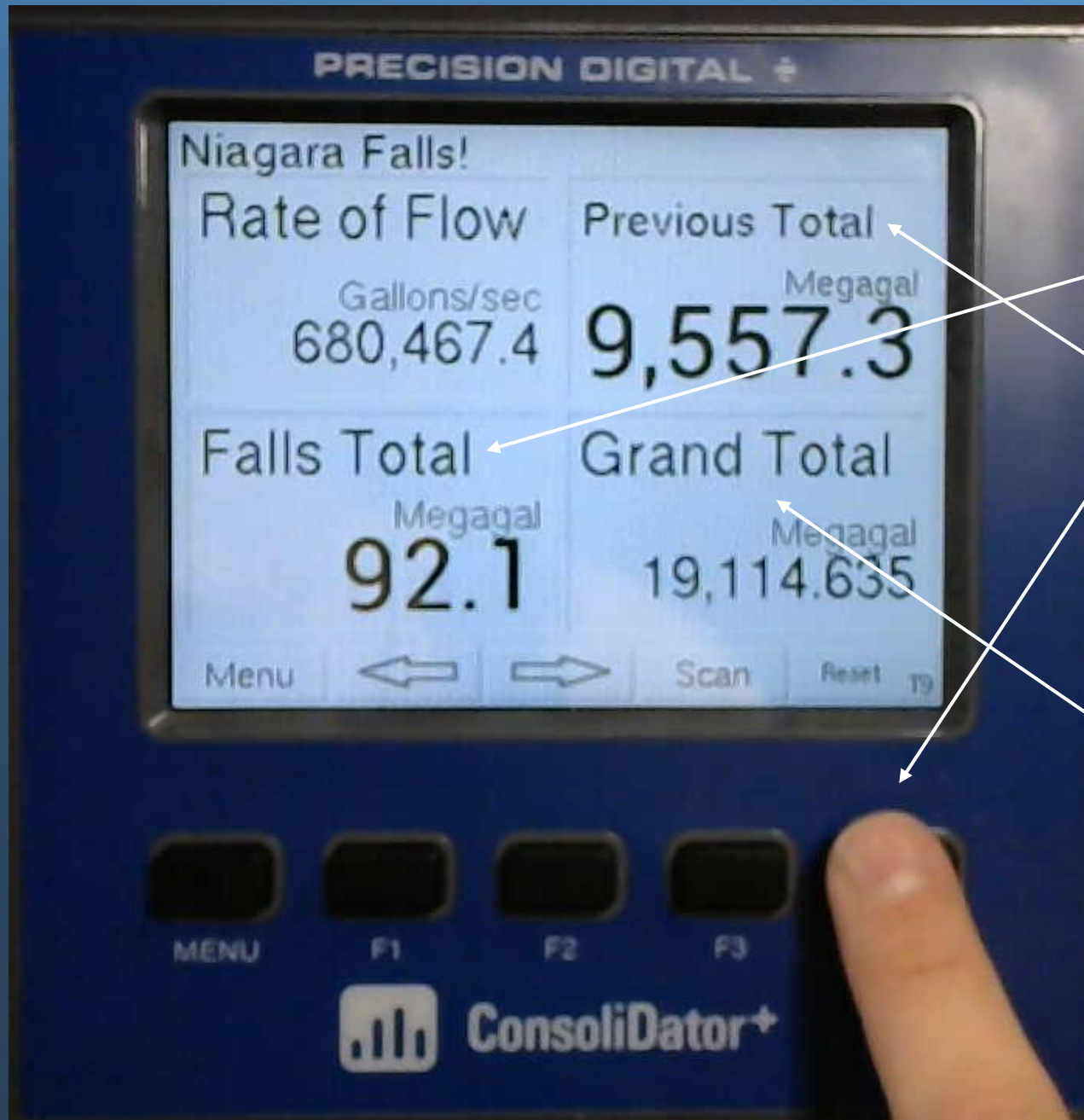
Believe it or not, according to "History's Greatest Mysteries" on History Channel, this is the ACTUAL flow rate of Niagara Falls!

That is a TON of water... or maybe more than a ton!



The "Falls Total" is just totalizing off the "Rate of Flow". But if I reset the "Falls Total", that number will get added to the "Previous Total" until the next time I reset the "Falls Total".

The "Grand Total" is actually a NON-RESETTABLE total that is totalizing based off the "Previous Total". So, the only totalizer continually increasing is the "Falls Total"



Each time my finger presses the "F4" Soft Key, the "Falls Total" resets to 0.

The "Previous Total" will grab the "Falls Total" number BEFORE you reset it, and it will display that there until the next time I press F4!

At the same time, every time I press the F4 button, the number that was in "Previous Total" gets added to the "Grand Total"

PRECISION DIGITAL +

Niagara Falls!

Rate of Flow

Gallons/sec
680,500.1

Previous Total

Megagal
394.5

Falls Total

Megagal
118.8

Grand Total

Megagal
20,377.676

Menu



Scan

Reset T9

MENU

F1

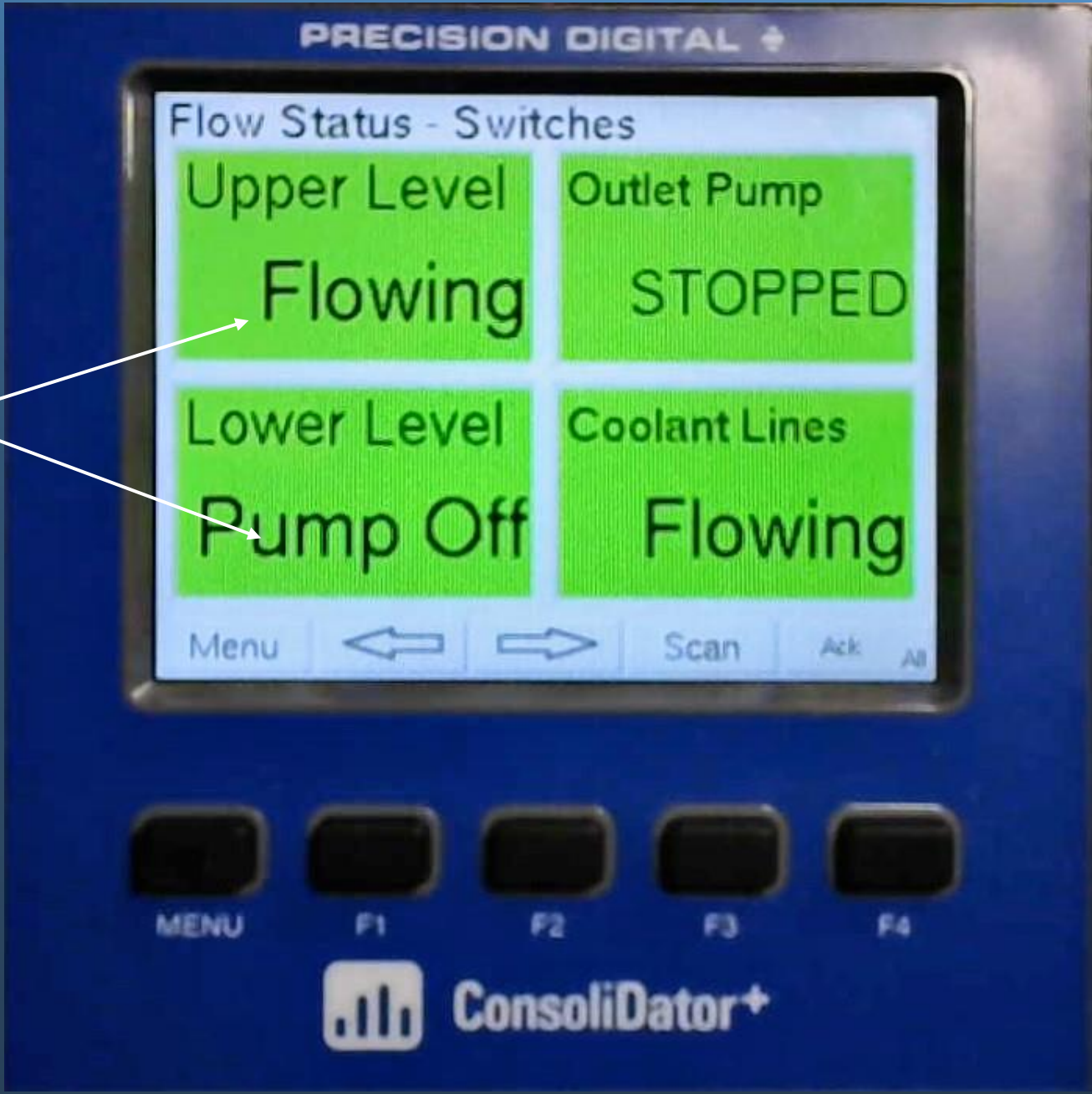
F2

F3

F4



Consolidator+



This screen is all about flow status based on an input from several flow switches.

The wording you see on each channel is completely custom, made by me.



In this example, let's suppose the operator pressed a button to turn a pump on.

Well, the outlet pump says it's running (or, at least it received power), but the upper level isn't getting any flow!

You cannot see it on the slide, but the "Upper Level" channel has not only turned red, but it is flashing to catch the operator's attention.

They could also have a relay tied to that alarm that gets wired to an audible alarm.

That would mean the operator gets a visual alarm, an audible alarm, and the ConsoliDator+ TELLS them exactly what's wrong, and where.