

ILS OPL and ILS Max

*Installation, Programming, &
Troubleshooting*

Beta

Scope of presentation

1. Operational overview
2. Operating modes
3. Physical installation: mounting, plumbing, tubing
4. Wiring
5. MNet programming
6. Troubleshooting

Operational overview

ILS Max uses peristaltic metering pumps and diaphragm transport pumps. The ILS Max uses a conductivity cell between the peristaltic pumps and transfer pumps to verify that chemical is flowing; this is called "Proof of Flow", or POF. This allows it to autopriming, since it can start a feed and run them chemical until it detects a change in conductivity.

The ILS Max measures the rate of water usage from the break tank by the transport pumps prior to a feed. Using this as a baseline, it then takes the difference between baseline water usage without chem, and reduced water usage with chemical, to calculate the volume of chemical injected into the water stream. This allows it to perform autocalibration.

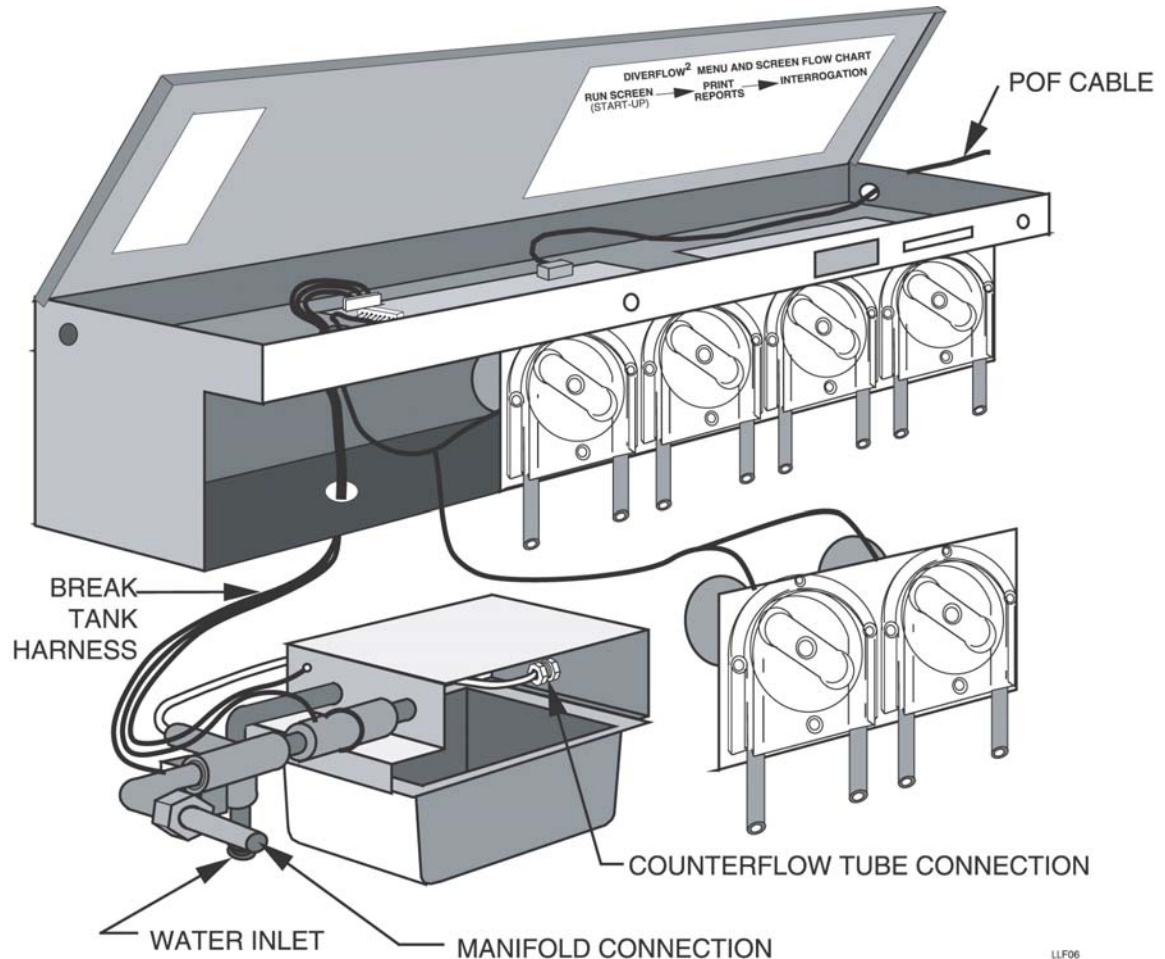
While the chemical transports to the washer, the chemical pump reverses briefly, pulling water up into the pump tube to limit chemical exposure. The pumpbox receives a signal from any POD cells that are installed confirming delivery of chemical to the washer.

Operating modes

Mode	E & XL	ILS OPL	ILS Max
Relay mode	n/a		
Smart relay mode	Data: chemical use by pump, total chemical use if with data PCB. Requires TR8000 if using 7 or 8 chemicals, otherwise either TR6 or TR8.	Data: load counting (but not by formula), machine on time, turnaround and excess time, total chemical use. Requires 2nd TR7000 AC if more than 6 chemicals to expand to 7 or 8.	Data: load counting (but not by formula), machine on time, turnaround and excess time, total chemical use. Requires 2nd TR7000 AC if more than 6 chemicals to expand to 7 or 8.
Enhanced relay mode	n/a		Smart relay mode with trigger combos to select pumps 7-10
Formula mode	Data: Load counts, chemical use by pump, total chemical use if with data PCB. Works with either TR6000 or TR8000.	Data: Load counting, machine on time, turnaround and excess time, chemical use by classification, total chemical use. Requires one TR7000 AC + FS1600 per washer.	Data: Load counting, machine on time, turnaround and excess time, chemical use by classification, total chemical use. Requires one TR7000 AC + FS1600 per washer.
Latched mode	Formula mode with trigger lockout until formula end indicated	Formula mode with trigger lockout until formula end indicated	Formula mode with trigger lockout until formula end indicated
Automatic mode	n/a	Uses signal combinations to call up to 32 functions, instead of having different formulas programmed.	Uses signal combinations to call up to 32 functions, instead of having different formulas programmed.
Sequence mode	Performs dose steps via drain signal	n/a	n/a
AFS	n/a	n/a	Trigger length sets formula #.
TAFS	Uses multiple triggers + set formula trigger to determine formula number, and tracks loads through tunnel modules. Data: chemical use, no formula counts.	n/a	n/a
PDCI	n/a	n/a	n/a

Pumpbox assembly and mounting

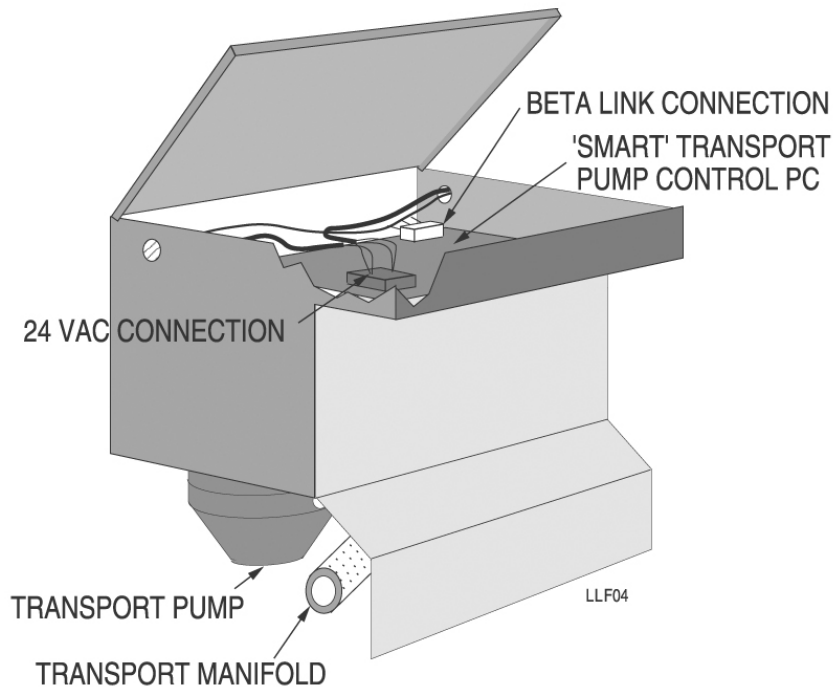
- Lie unit on its back and attach the breaktank
- Add bushing to pumpbox
- Route wire harness from breaktank through bushing and connect to PCB as shown
- Using a level, mark holes on wall for mounting rails at chest height over chemical drum storage area
- Drill holes and mount rails
- Hang unit on mounting rails



The ILS Max transport pumps operate up to about 200' or 67 meters, assuming the transport tubing is elevated to about 3 meters or 10' above the wash aisle.

Note: the ILS OPL breaktank is preassembled onto the main module.

ILS Max auxiliary pump & transport pump mounting

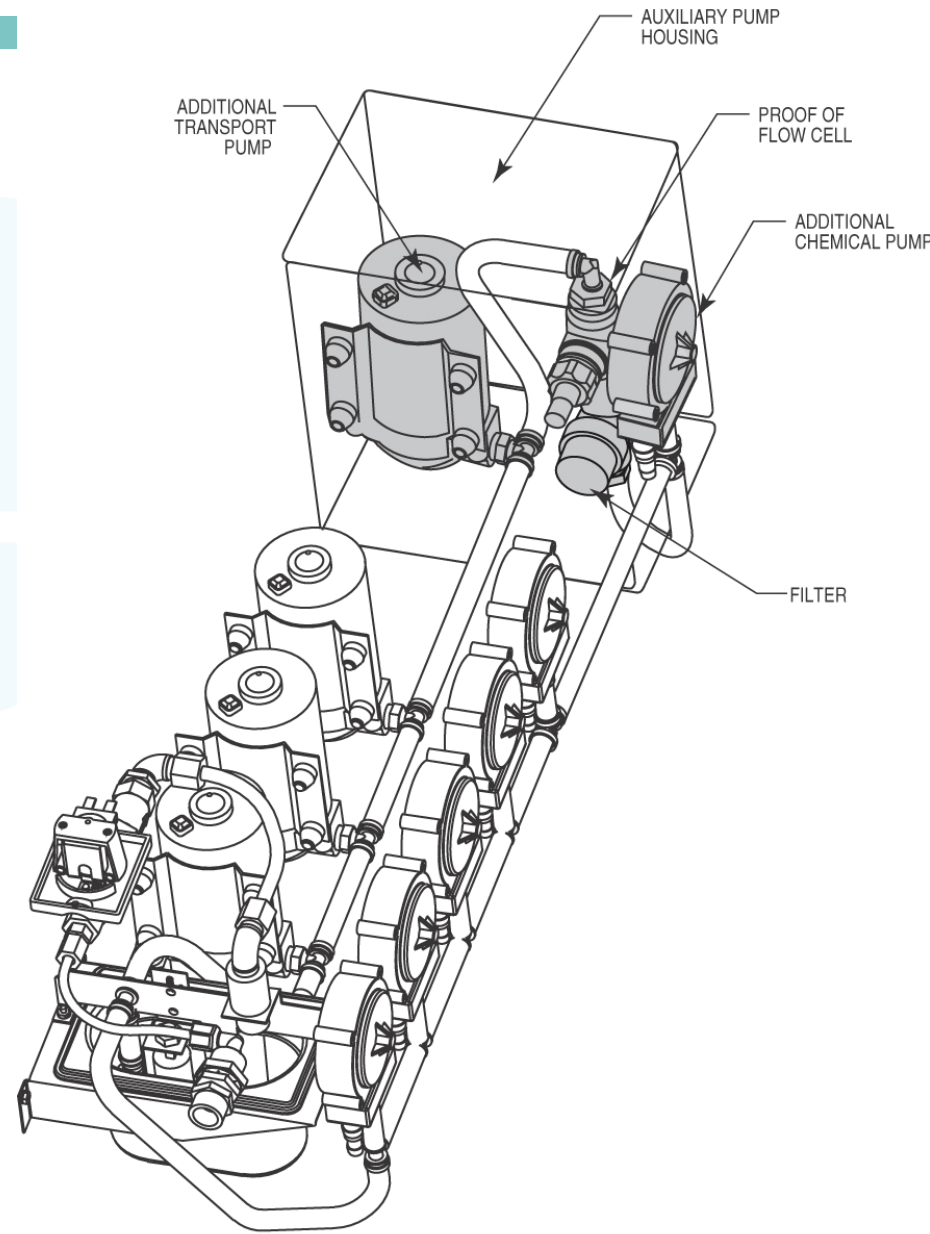


- Add bushings between any aux box(es) as well as transport pump boxes and main pump box to protect wires
- Hang aux chemical pump boxes on rail to right of main pump box
- Hang transport pumps (sometimes referred to as smart pumps) on rail to right of aux boxes
- Attach wire harness to relay PCB pump terminal
- First transport pump module takes power from harness on main PCB and then hooks to next transport pump module

Transport pumps are diaphragm pumps, operating at 2.4GPM. Some older ILS Max's have 1.65 GPM transport pumps.

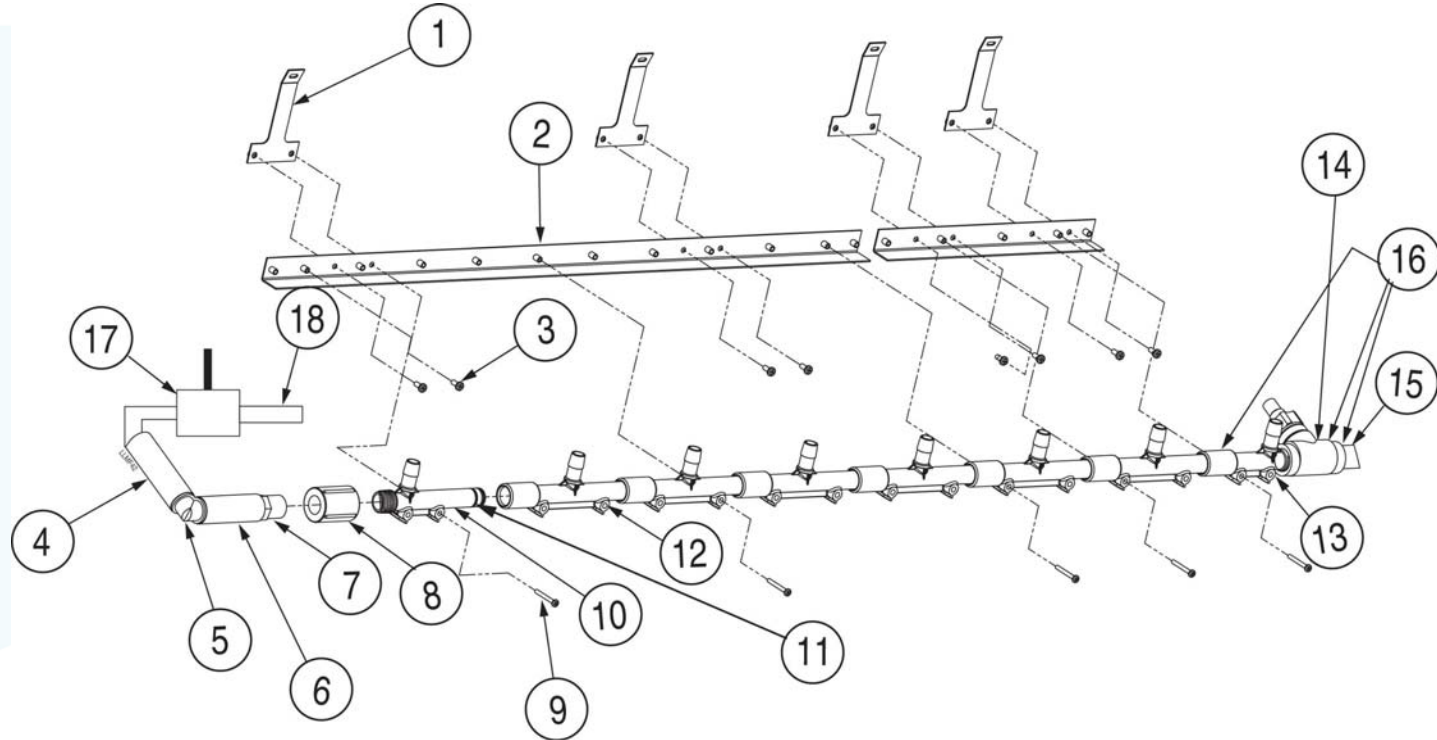
ILS OPL auxiliary box mounting

- Aux box(es) are required for more than 5 chemicals or more than 3 washers
- Replace plugs between pump boxes with bushings.
- Hang the auxiliary pump housing(s) to the right of the pump box.
- Route wire harness through aux boxes.
- Plug the wire harnesses into the connectors on the upper right of the pump box's PCB. The connection point determines the pump number of the particular pump. Use the following connections depending on whether you are adding one, two or three auxiliary pump housings:
 - Plug the first (or only) harness into EXP 1.
 - Plug the second harness (or last of two) into EXP 2.
 - Plug the rightmost harness into EXP 3.



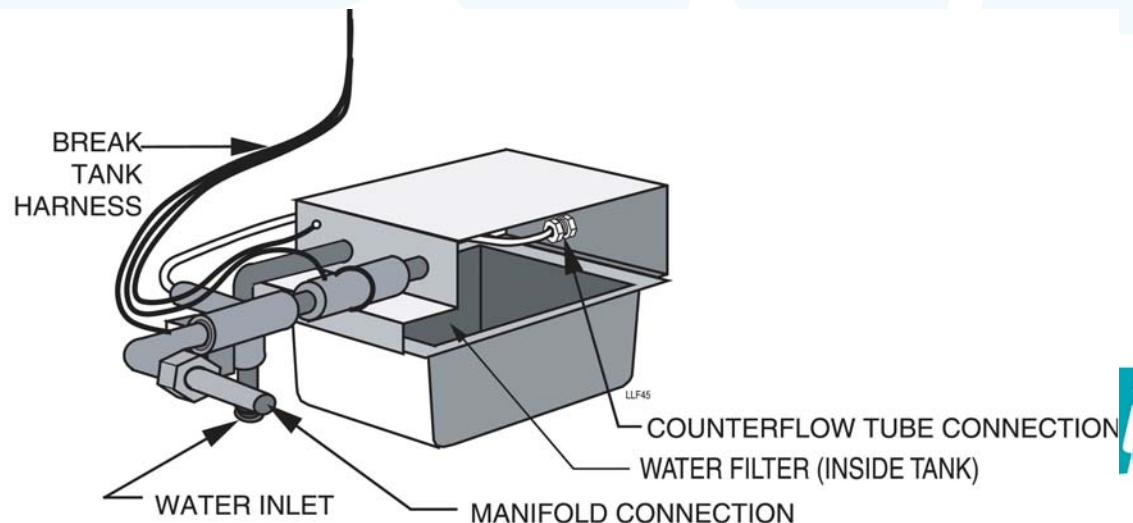
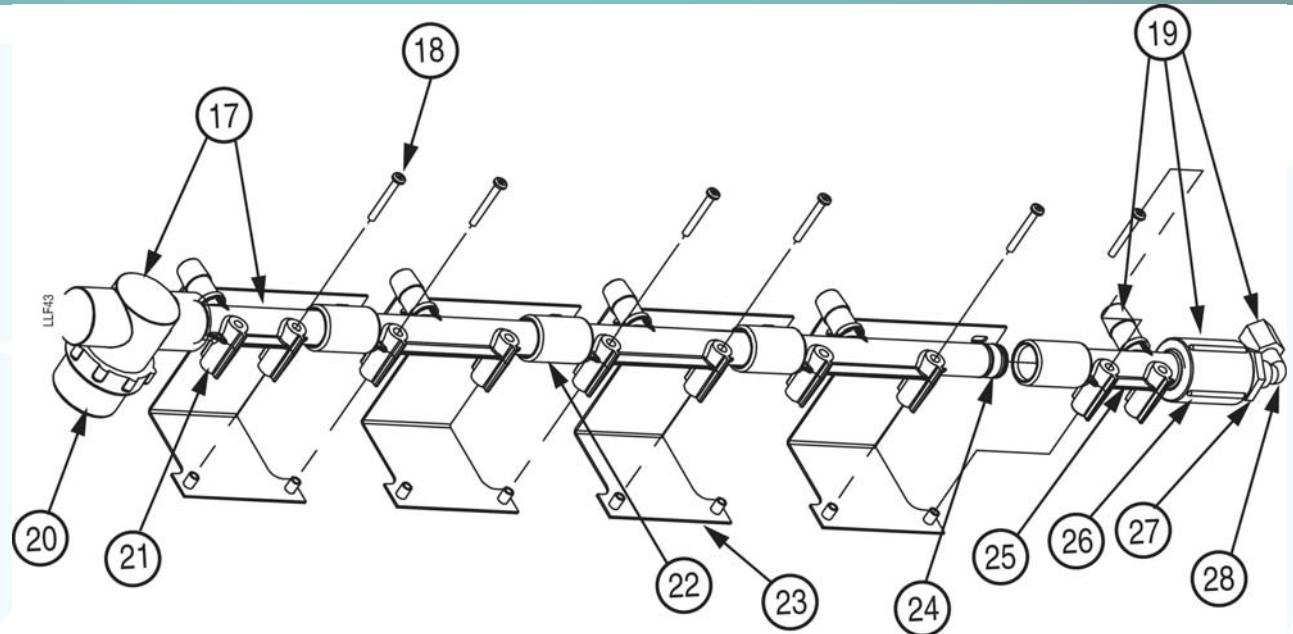
ILS Max manifold assembly

- Mount brackets ① under chemical pump screws 2 & 5, and between each set of transport modules
- Attach manifold support bar ② to brackets under main pumpbox
- Build manifold from left to right starting with item ④ and continuing to item ⑩
- Put orings on manifold parts, building manifold to the right and adding the POF cell, clear pipe for spotting bubbles, and water filter



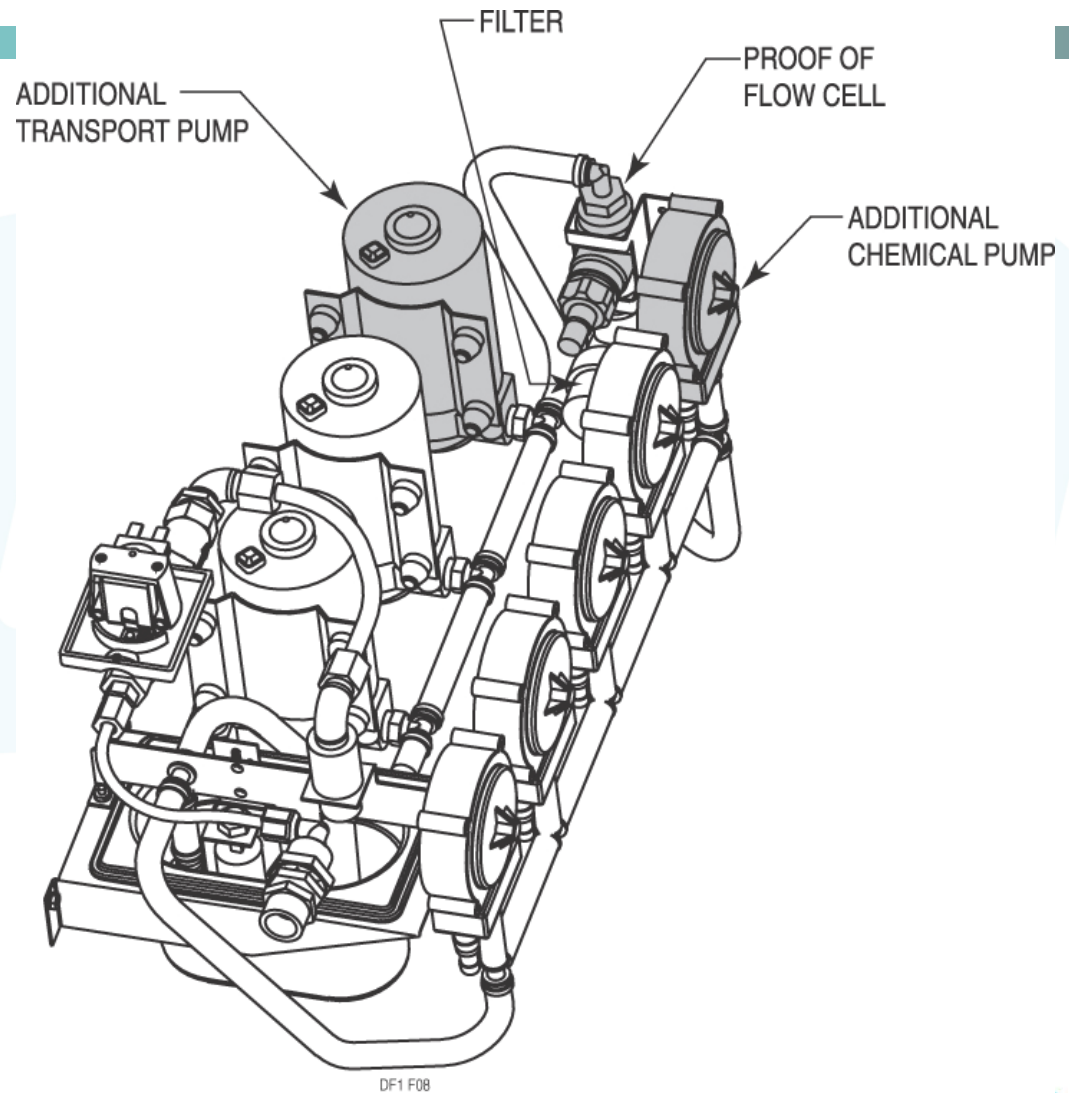
ILS Max manifold

- Screw manifold onto brackets, with at least one screw on the end of each bracket
- Attach elbow fitting item 28 to end of transport pump side of manifold shown on the right
- Attach 0.25" OD polyflow balance pressure counter-flow tube from end of transport manifold section back to beginning
- Connect POF cable to relay PCB



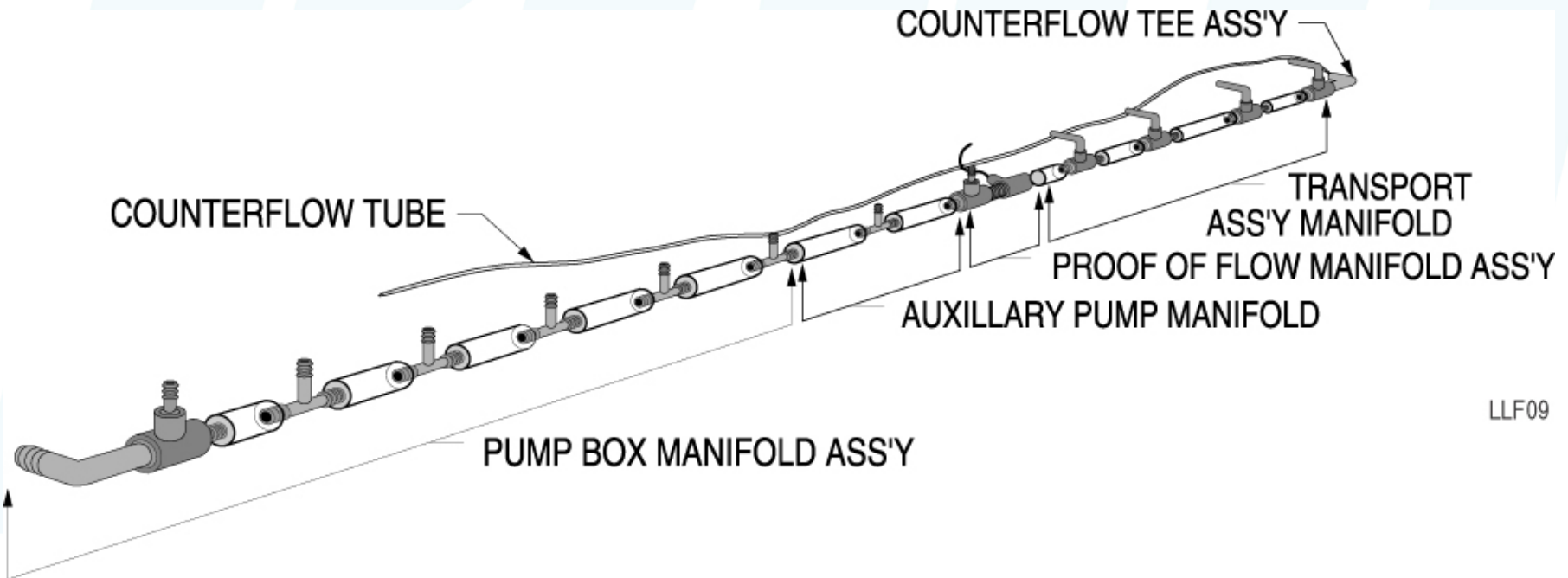
ILS OPL manifold

- The main part of the manifold is preassembled
- For each aux box, add tubing and T fittings in the same manner as the preassembled part
- Move the POF conductivity cell to the last aux box, as shown



Tubing

- Run tube from chemical drums to pumps
- No footvalves are used
- Run transport lines from transport pumps to washers; using the same numbers for the transport pumps and the washers will keep things straightforward; always retighten connections one week after the install as they will loosen



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Picture shows ILS Max manifold

ILS OPL and ILS Max

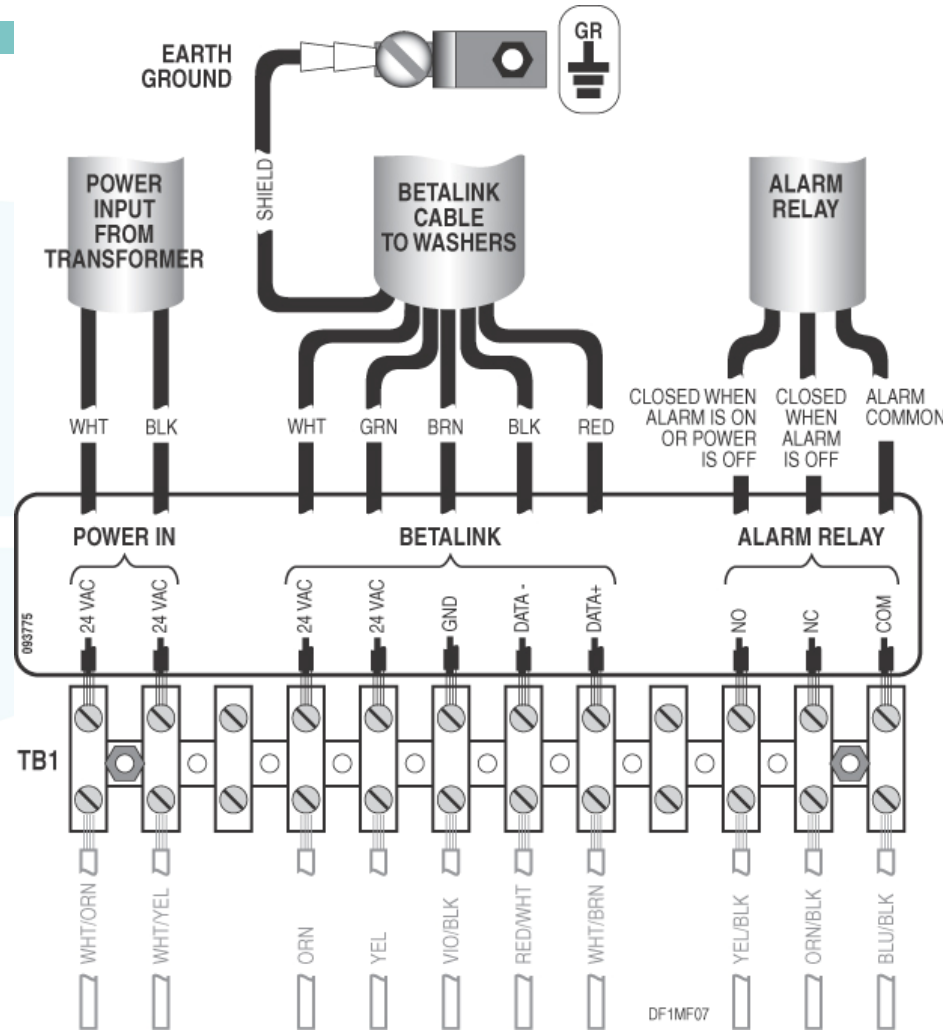
Wiring

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Power Wiring

- ILS OPL and Max require 24 VAC power and grounding
- If 120V power supply
 - Wire one wire from power input to transformer to H1 & H3, the other wire to H2 & H4
 - Transformer output is taken from X1 and X4, and X2 and X3 are tied together
- If 240V power supply
 - Wire power input to H1 and H4, and H2 and H3 are tied together
 - Transformer output is taken from X1 and X4, and X2 and X3 are tied together

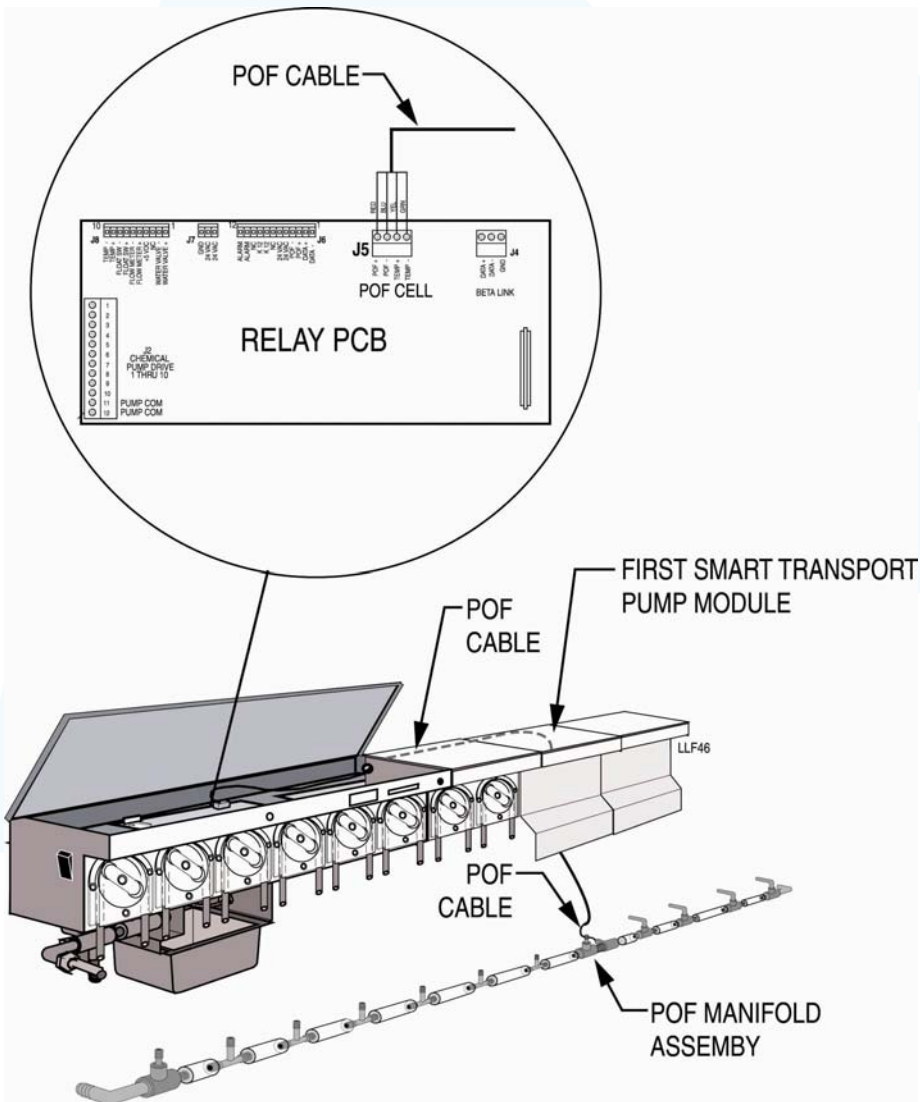
Note that it's much easier to wire the transformer before hanging it on the wall, and the transformer should never be left on the ground or mounted where it could be doused with water.



ILS OPL connections are shown above; ILS Max connections are similar



POF proof of flow wiring



Route POF wires

- **ILS OPL:** Feed the POF cable through the bottom of the pumpbox
- **ILS Max:** Feed the POF cable through the bushing in the top right back of the pumpbox, and route down the wire channel in the back, behind the PCB's

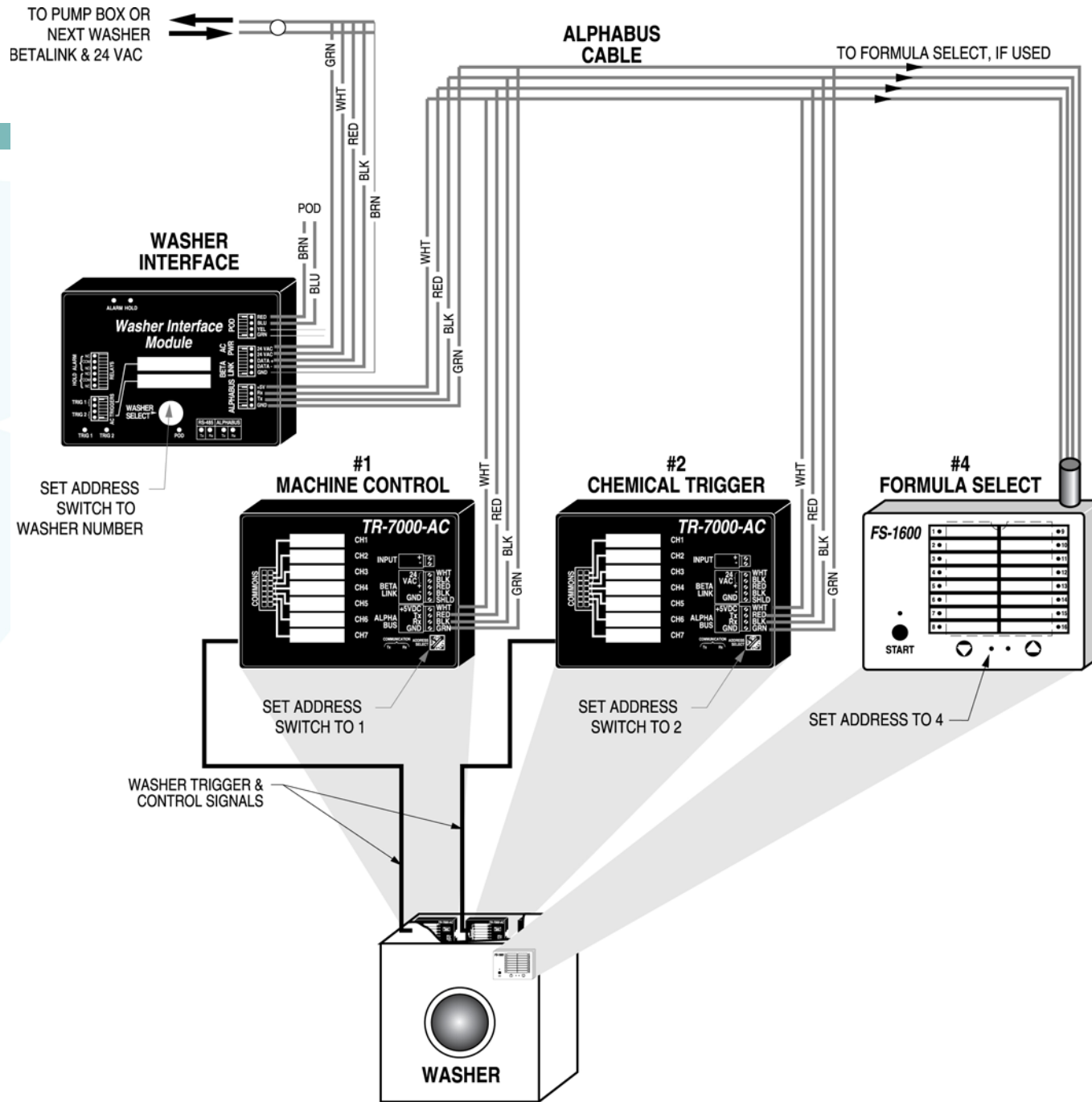
Remove POF connector from PCB

Attach cable wires to the connector in the following order

- | | | |
|----------|---|--------------|
| • Green | 1 | Temperature |
| • Yellow | 2 | Temperature |
| • Blue | 3 | Conductivity |
| • Red | 4 | Conductivity |

ILS Max signals

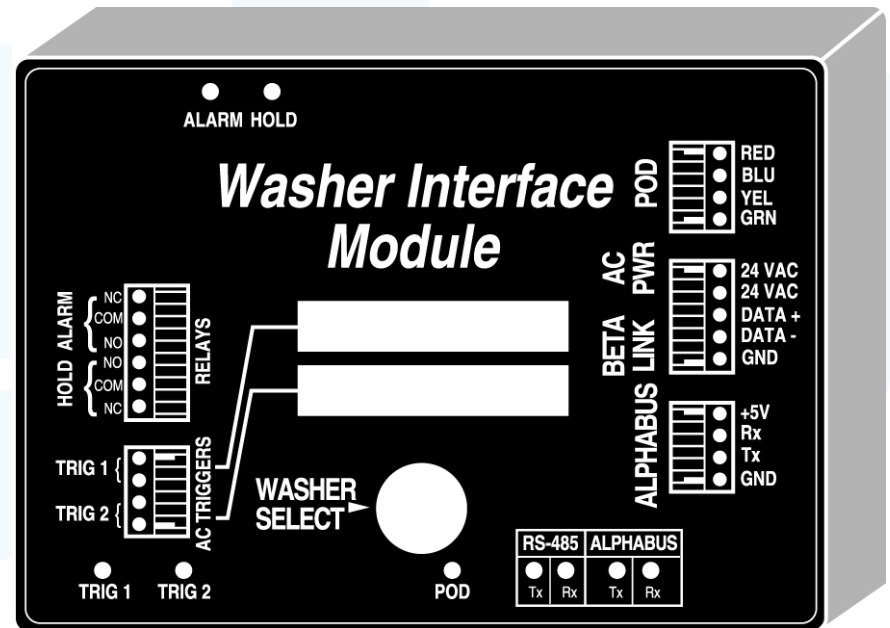
- **Alphabus:** Goes between TR7000 and WIM
- **Betalink:** communication between ILS Max and each washer interface module
- **Addressing:**
 - **WIM address** = washer number
 - **TR7 #1** data inputs: set address to 1
 - **TR7 #2** Triggers: set address to #2 (if only using 1xTR7, set to address #2)
 - **TR7 #3:** Only required if over 7 chem triggers used; set address to 3
 - **FS1600:** set to 4



ILS Max WIM wiring

- **Washer Interface Modules (WIM)**

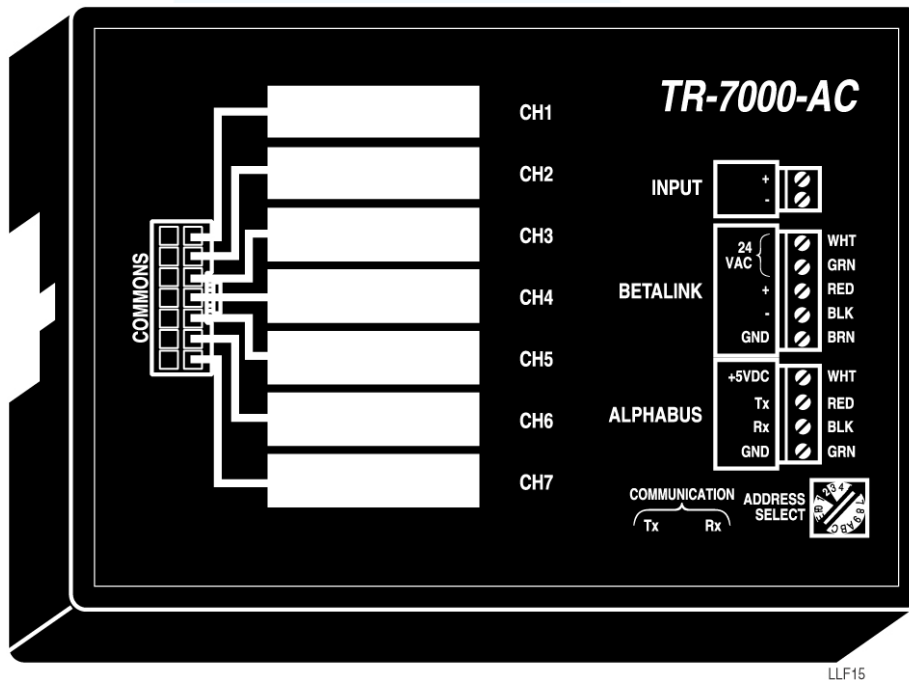
- Install one WIM in each washer
- WIM is a Betalink connection
- Run 24 VAC + & -, Data + & -, and GND to pump box
- You can connect all WIM direct to pumpbox, or link one to the next (daisy chain); it works either way since each WIM has a number or address so the pumpbox knows which is which)
- Connect BetaLink cable shield's to one another if daisy chaining them together, with the end in the pumpbox connecting to shield/screen connection 4. Note: Never attach the cable shield at both ends.



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Never run cables over florescent lights, motors, or other prospective sources of electrical noise as these can cause communication errors or other problems

ILS Max TR7000 wiring: Formula & Relay mode



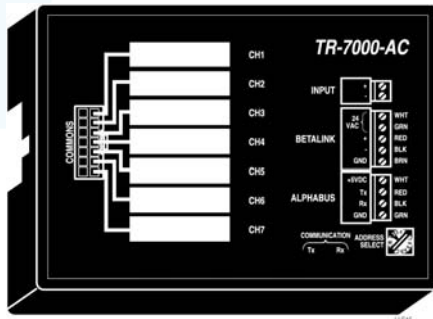
- Install TR7000's in each washer
- Attach Alphasbus +5V, Rx, Tx, GND from TR7000 to WIM
- Set address on bottom right corner of TR7
- TR7000 #1=machine functions; set TR7 to address #1:
 - T1: Washer on
 - T2: Drain
 - T3: Cold fill
 - T4: Hot fill
 - T5: Steam
- TR7000 #2=chemical triggers; set TR7 to address #2.
 - If in formula mode, T7 can be used as the AFS trigger input
- TR7000 #3= chemical triggers 7+ (usually not used, though required for AFS in relay mode, which attaches to Module #3 T5

Note that only one TR7000 is required for system operation. When using only one TR7000 with ILS Max, route machine on and drain signals to T1 and T2 on the WIM.

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TR7000 wiring, Automatic mode

- TR7000 #1 is optional; no TR7000 #3 is used in automatic mode.
- TR7000 #2=chemical triggers; set TR7 to address #2
- If an older chart controlled washer, use a strobe signal on T1 of TR7 #2.
 - Program load classification setups to track loads rather than using an AFS trigger.
- If a newer microprocessor washer, no strobe signal is required. Wire your chemical function triggers into T2-T6
 - If you're using an AFS trigger, wire it into T7.

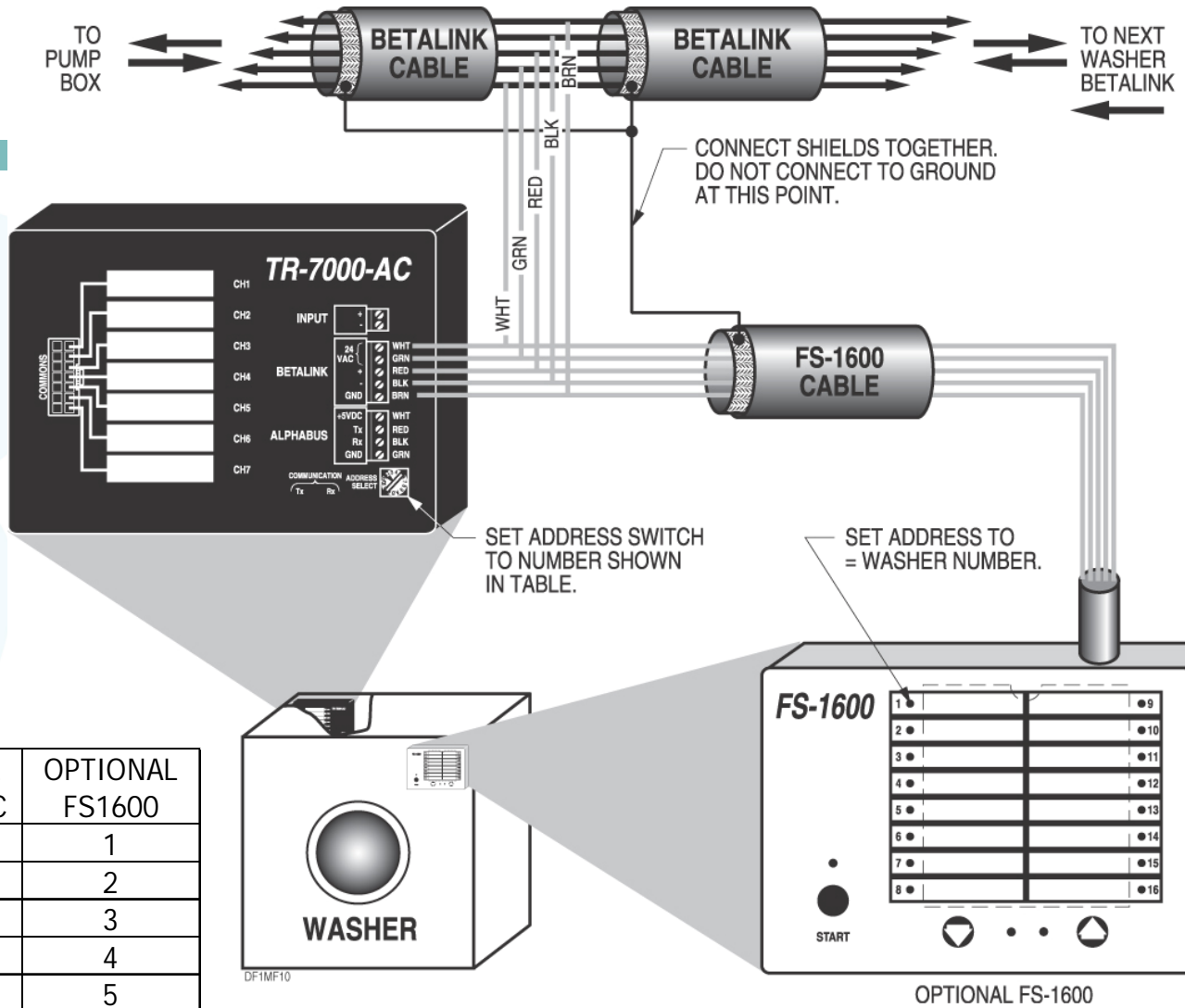


Function	T2	T3	T4	T5	T6
1	----	----	----	----	----
2	ON	----	----	----	----
3	----	ON	----	----	----
4	ON	ON	----	----	----
5	----	----	ON	----	----
6	ON	----	ON	----	----
7	----	ON	ON	----	----
8	ON	ON	ON	----	----
9	----	----	----	ON	----
10	ON	----	----	ON	----
11	----	ON	----	ON	----
12	ON	ON	----	ON	----
13	----	----	ON	ON	----
14	ON	----	ON	ON	----
15	----	ON	ON	ON	----
16	ON	ON	ON	ON	----
17	----	----	----	----	ON
18	ON	----	----	----	ON
19	----	ON	----	----	ON
20	ON	ON	----	----	ON
21	----	----	ON	----	ON
22	ON	----	ON	----	ON
23	----	ON	ON	----	ON
24	ON	ON	ON	----	ON
25	----	----	----	ON	ON
26	ON	----	----	ON	ON
27	----	ON	----	ON	ON
28	ON	ON	----	ON	ON
29	----	----	ON	ON	ON
30	ON	----	ON	ON	ON
31	----	ON	ON	ON	ON
32	ON	ON	ON	ON	ON

ILS OPL signals

- Alphas: Usually not used
- Betalink: communication between TR7000 and pumpbox
- Addressing:
 - TR7000AC: Uses number from table below
 - FS1600 = washer #

WASHER #	TR7AC	OPTIONAL 2ND TR7AC	OPTIONAL FS1600
1	1	2	1
2	3	4	2
3	5	6	3
4	7	8	4
5	9	a	5
6	b	c	6



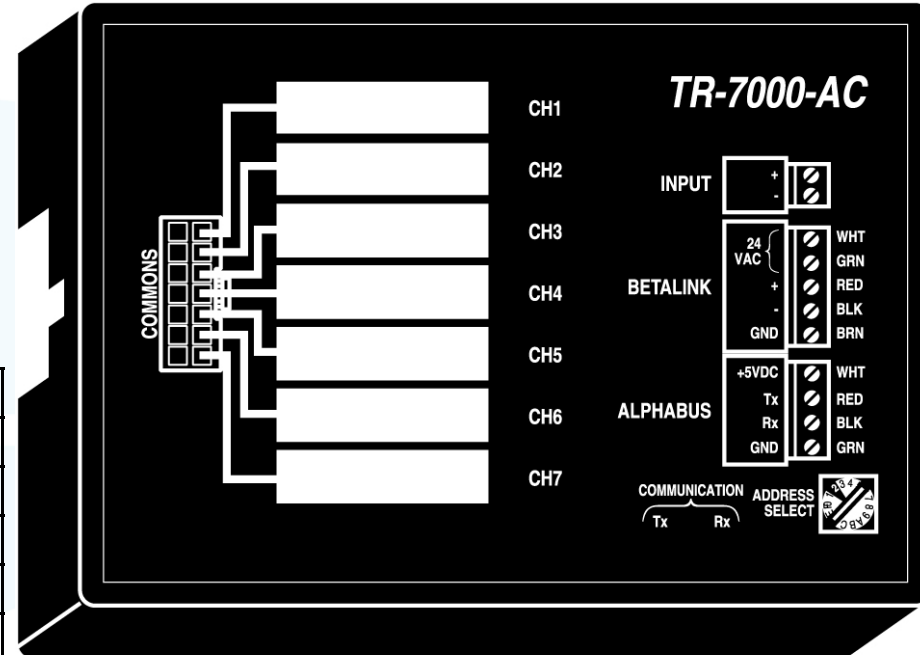
Note: if POD or washer hold is required, wire as ILS Max per "ILS Max Emulation mode"



ILS OPL TR7000 wiring

- Install TR7 AC in each washer
- Run Betalink from TR7 to pumpbox
- Wire signals as follows

First TR7000 AC		Optional 2nd TR7000AC	
Trigger	Function	Trigger	Function
1	Chem Trig 1	1	Drain
2	Chem Trig 2	2	Cold fill
3	Chem Trig 3	3	Hot fill
4	Chem Trig 4	4	Steam
5	Chem Trig 5	5	Unused
6	Chem Trig 6	6	Reuse drain
7	Machine On	7	Reuse fill

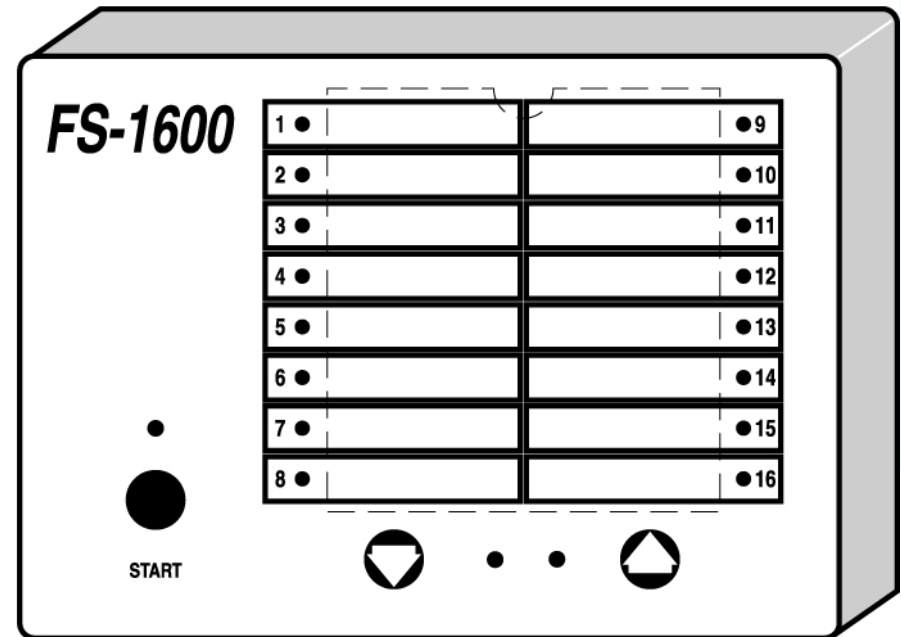


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Note: Trigger 1 corresponds to pump 1, etc., in relay mode. 3 pump actions per trigger available in formula mode.

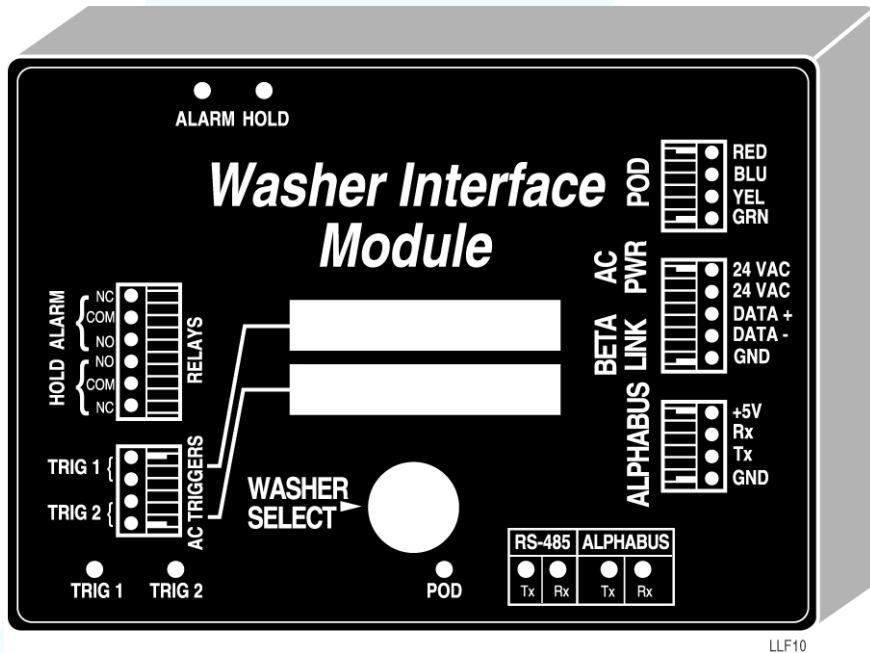
FS1600 formula selector

- The FS1600 is used for formula selection by the laundry workers; it is not required for a relay mode washer, or advanced installs using AFS, PDCI, or automatic mode
- ILS OPL: Attach to TR7000AC with Betabus
- ILS Max: Attach to WIM with Alphasbus
 - Remove back cover and change connections from Betalink to alphasbus
 - Hold down the up and down arrows simultaneously to highlight the formula number to #4; this selects the alphasbus address



Originally designed for ILS OPL, the FS1600 internal wires must be switched to Alphasbus for it to work with ILS Max

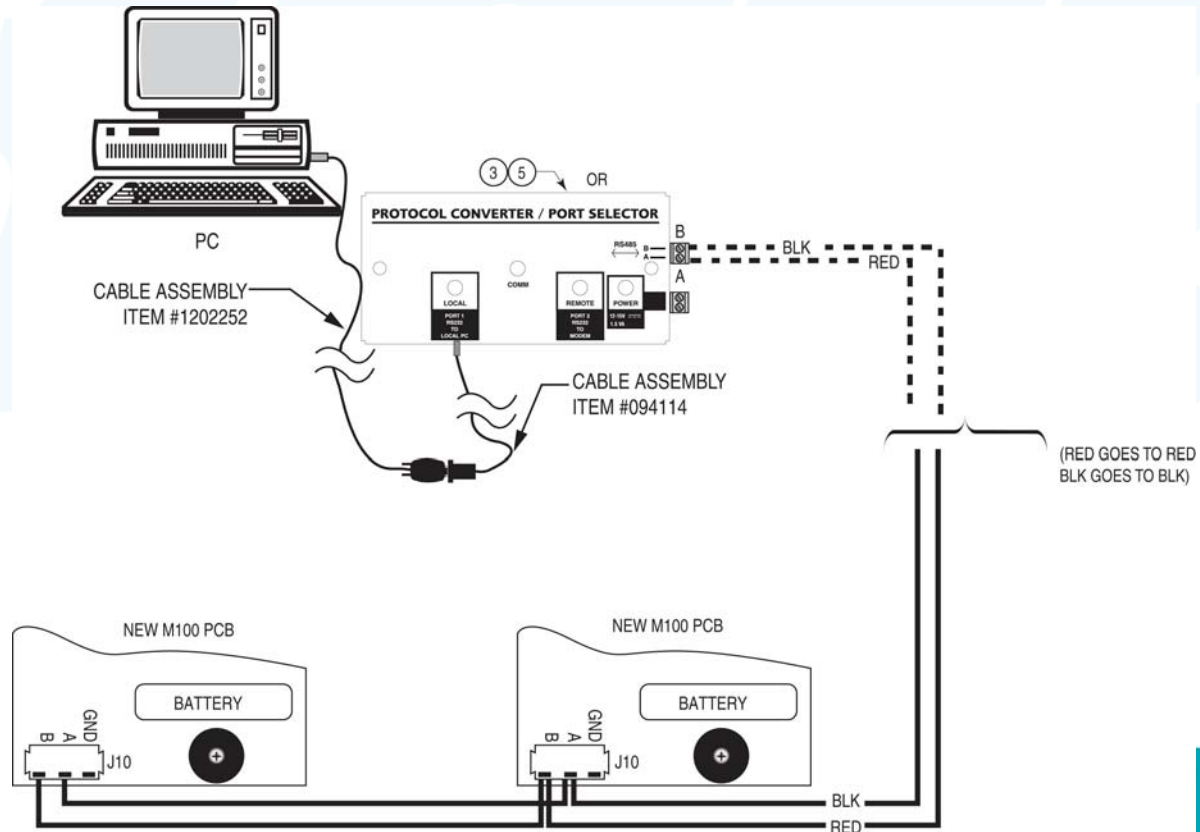
Washer hold wiring



- **Washer hold** allows you to pause washers to ensure the chemical doesn't arrive too late in the wash cycle, maximizing the number of washers you can install your ILS Max on
- **Chart washer**: Route one leg of washer chart motor power to WIM HOLD COM connection, out to motor from HOLD NC
- **Microprocessor**: Most have washer hold connection on terminal block, usually COM and NC on WIM are right connections but sometimes NO needs to be used
- **Last resort**: Run washer hold wires to relay, and tie it to washer hot fill, cold fill, and level. This will cause it to wait for the level signal to be restored, without it being able to increase water flow, until you've added the requisite chemical.

DiverNet wiring

- ILS OPL & ILS Max communicate with computers via a protocol converter
- Wire all ILS OPL & ILS Max and Summit E systems with data PCB's to a protocol converter
- Connect cable from protocol converter to computer or modem



ILS OPL and ILS Max

Programming via computer software

Beta

MNet installation and log on



Log On

Choose the user log on name:

Default Supervisor

Enter Password:

OK

Cancel



Release Code Dialog

There are 25 days left in your trial period.

Your Serial Number: C3000000306

Your Machine ID: A870A33C

Please call Customer Service with the above information to get your Release Code:
(410) 228-5111 x307 in N. America, Asia Pacific and Latin America
+44 1582 702191 in Europe, Middle East and Africa

Enter Release Code:

Continue with Trial

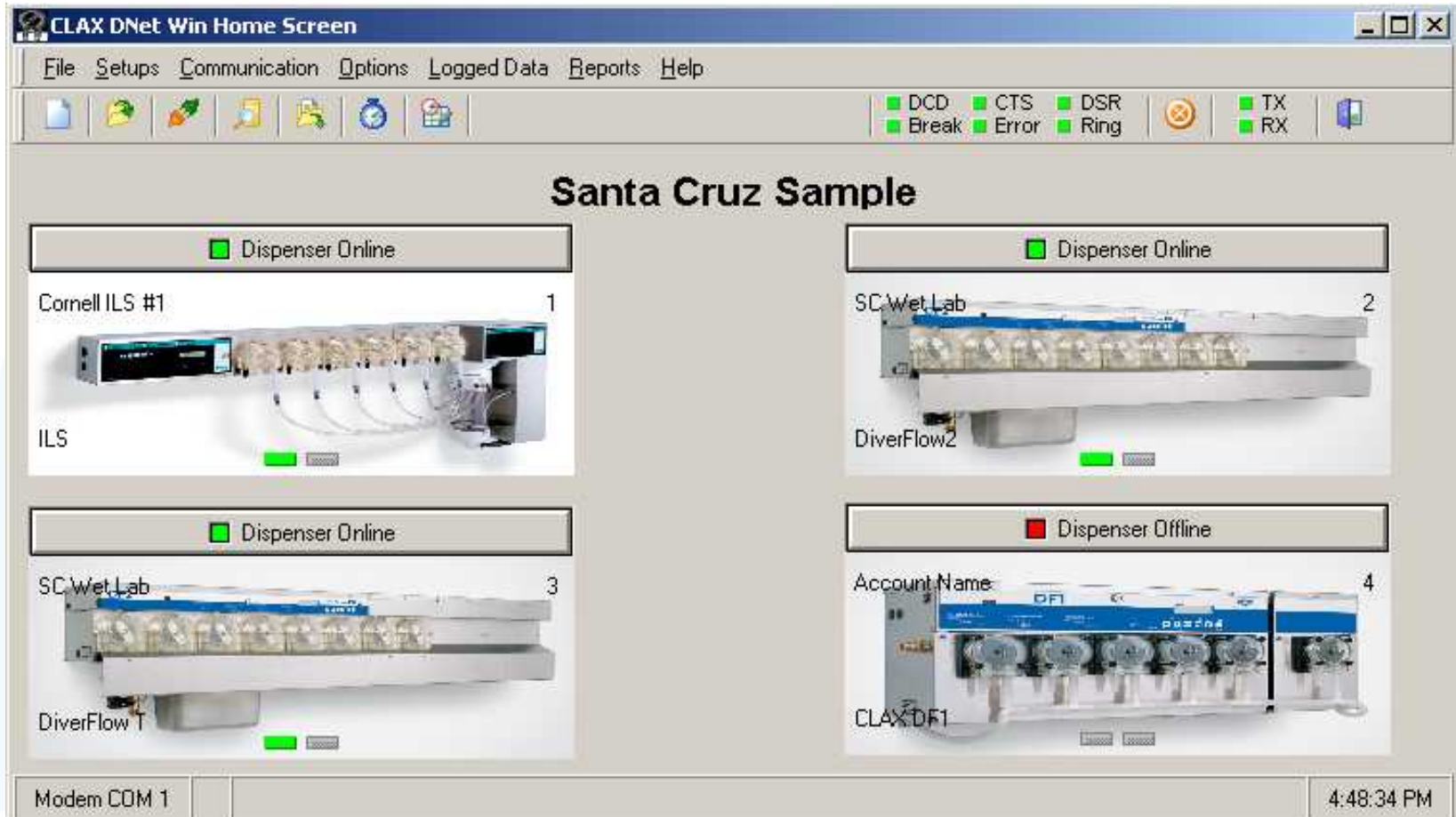
Register Code

- Install on a laptop you can carry to laundry accounts
- Log on as "Default supervisor", using default password zaybx
- Contact Beta customer service by email, fax, phone, or leave voicemail to get a release code
- *Note: ILS OPL requires DNet; MNet will communicate with everything the same as DNet, except ILS OPL*



Beta

MNet home screen



- The home screen allows you to monitor all the dispensers in the account, clicking on them to download data or modify their programming
- Programming takes place in the drop down "Setup" menus



Create new account

- **Ignore chain name field**
- Enter site name and other details; these will print out on reports for the customers, making the reports more professional-looking

Create New Account

Account Site Information

Chain Name: Site Directory:

Site Name:

Contact:

Street:

City:

State: Zip Code:

Phone: () -

Modem: () -

Password:

New Chain

Browse

Create

Cancel

General account setup

General Account Setups

File Dispenser Communicate

Send Retrieve

Dispenser TX RX

One Of Each

Dispenser

Network ID: 01

Account Name: Account Name

Name: CLAX DF1

Firmware: v 0.00

Active: False

Units of Measure

Metric (milliliters, etc.)

US (ounces, etc.)

Shift Start Times

Shift 1: 8:00 AM

Shift 2: 4:00 PM

Shift 3: 12:00 AM

Setups Last Changed: 15 Jan 2004

Break Tank

Calibration: 0 milliliters [More](#)

Grand Total Flush: 0 Liters

No Active Port 3:49:04 PM

- Click on dispenser picture to access account setups
- For "Account name" use dispenser name or number (ILS Max #1, ILS Max #2, etc)
- Enter shift times
- Choose metric (ml) or standard (oz)
- Use a different network ID for each dispenser in the account (from 01 to 99)

Chemical setup

Chemical Setups

File Dispenser Chemical Pump Communicate

Send Retrieve Dispenser Chemical Pump TX RX

Sample DF2 Site

Network ID: 01 CLAX DF2 Chemical Name: Alkaline

Pump Number: 1

Chemical Cost: \$2.9000 per Liter Minimum Water Temperature: 41F/5C

POF/POD Threshold: On

Maintenance

Service Data	Service Date	Run Hours
Peristaltic Pump:	10 Nov 1998	33
Pinch Tube:	10 Nov 1998	33

Pump Speed Calibrations

Fast: 170

Slow: 84

milliliters per minute

Not Connected 3:50:42 PM

- Enter chemical names and the price the laundry pays for the chemical
- Turn POF/POD off for hydrogen peroxide

Washer/transport pump setup

- Check “communication enabled”
- Check “strip chart enabled” (only for first week of operation to track everything for troubleshooting)
- Select system type = Smart pump system
- Select triggering mode
- Transport time=leave set at 0; ILS OPL & ILS Max will automatically set this based on time it takes for chemical to travel from POF to POD
- For machine on, sewer drain, hot water, and cold water select either NORMAL or REVERSE
- Usually steam, reuse drain, and reuse fill signals aren't used

The screenshot shows the 'Washer / Transport Pump Setups' window for a 'New wet lab'. The interface includes a menu bar (File, Dispenser, Washer, Communicate), a toolbar with 'Send' and 'Retrieve' buttons, and status indicators for 'Dispenser' and 'Washer' with various control icons. The main configuration area is titled 'New wet lab' and contains the following fields and options:

- Network ID:** 05, **DiverFlow2**
- Washer Number:** 01, **Washer Name:** Washer Name 1
- System Type:** Smart Pump System
- Trigger Mode:** Relay Mode
- Hold Mode:** Off
- Communication Enabled:**
- Strip Chart Enabled:**
- Transport Time:** 0 seconds
- Signal Logic:** Machine On: Normal, Reverse
- Maintenance:**
 - Transport Pump Service Data:** Replacement Date: 15 Aug 2005, Run Hours: 0
 - Pump Speed Calibrations:** Flow Rate: 0.0000 Liters per minute, Number of Pumps: 0
- Operational Modes:**
 - Sewer Drain:** Normal, Reverse
 - Cold Water:** Normal, Reverse
 - Reuse Drain:** Normal, Reverse, Special
 - Hot Water:** Normal, Reverse
 - Steam:** Normal, Reverse
 - Reuse Fill:** Normal, Reverse, Special
- Status:** Not Connected, **Time:** 4:02:44 PM

Load classification setup

Load Classification Setup

File Dispenser Washer Communicate

Send Retrieve Dispenser Washer TX RX

Sample DF2 Site

Network ID: 01 CLAX DF2 Washer Number: 01 Washer Name: ELLIS #1 400lb

#	Classification	Run Time	Drain Count	Trig 1 Count	Trig 2 Count	Trig 3 Count	Trig 4 Count	Trig 5 Count	Weight
1	Shirts	13	4	0	1	0	0	0	600
2	COL. VISA TOPS	25	5	1	1	0	1	0	350
3	WHT. VISA TOPS	38	7	1	1	1	1	0	350
4	COL. GARMENTS	28	7	3	2	0	1	0	400
5	WHT. GARMENTS	45	10	1	1	1	1	0	400
6	SHEETS	22	6	1	1	1	0	0	375
7	SLIP/TERRY/CRT	31	7	1	2	1	1	0	400
8	STAIN TREAT COL	83	12	1	1	1	1	0	500
9	WHT. COTTON NAPS	45	10	2	2	1	1	0	425
10	BAR MOPS/DISH	47	11	3	2	1	1	0	500
11	COL. VISA NAPS	26	6	1	1	0	1	0	350

Not Connected 4:12:32 PM

- Program formula names so they show up on reports
- Program expected runtime and weight for each formula; these will be used to report chemical cost per lb/kg and excess washer run time
- Program # of drains and triggers for each formula; these will be used together with the washer on/off signal to do load counts
- If AFS is used, drain counts and trigger counts need not be programmed



Trigger setup: formula mode

Feed Triggering Setup

File Dispenser Washer Trigger Communicate

Send Retrieve Dispenser Washer TX RX

Sample DF2 Site

Network ID: 03 CLAX DF2 Washer: 08 MILNOR #8 100lb Formula Normal

Formula #: 1 Name: GARMENT W/OVER

Formula

Trigger	Pump # / Dose		Pump # / Dose		Pump # / Dose		Pump#	Chemical Name
1.	1	32	2	3	0	0	1.	Alkaline
2.	0	0	0	0	0	0	2.	Detergent
3.	3	12	0	0	0	0	3.	Bleach
4.	6	6	0	0	0	0	4.	Sour
5.	4	2	0	0	0	0	5.	Unused
6.	0	0	0	0	0	0	6.	AntiChlor
							7.	Starch
							8.	Mildewcide
							9.	Chemical Name 9
							10.	Chemical Name10

Doses are in milliliters

Not Connected 4:25:36 PM

- Program up to three pump actions per trigger, per formula:
- For each trigger row, add each pump you want to run and the volume to be pumped
- Change the formula number and repeat for each formula
- *To prevent erroneous triggering, triggers must come on for two seconds before they are considered valid, and are locked out for 45 seconds after they occur to prevent erroneous retriggering*

Trigger setup: relay mode

- Enter call rate: volume to be pumped = call rate X trigger time
- Enter max trigger time in case trigger is stuck on due to washer error

Feed Triggering Setup

File Dispenser Washer Trigger Communicate

Send Retrieve Dispenser Washer TX RX

Sample DF2 Site

Network ID: 03 CLAX DF2 Washer: 09 ELLIS #9 800lb Relay Mode

Trigger	Chemical Name	Call Rate	Maximum Trigger Time
1	Alkaline	7	100
2	Detergent	3	100
3	Bleach	8	100
4	Sour	1	100
5	Unused	0	100
6	AntiChlor	1	100
7	Starch	6	100
8	Mildewcide	1	100
9	Chemical Name 9	10	100
10	Chemical Name10	10	100

Call Rate in milliliters per second of trigger on time.

Maximum Trigger Time in seconds.

Not Connected 4:28:36 PM

Trigger setup: automatic mode

The screenshot shows the 'Feed Triggering Setup' window for 'Sample DF2 Site'. The interface includes a menu bar (File, Dispenser, Washer, Trigger, Communicate), a toolbar with 'Send' and 'Retrieve' buttons, and control buttons for 'Dispenser' and 'Washer' (stop, play, and TX/RX indicators). The main area contains the following fields and controls:

- Network ID: 01, CLAX DF2
- Washer: 01, ELLIS #1 400lb, Automatic Strobeless
- Function #: [Empty]
- Name: Prewash light
- Chemical Name and Dose in milliliters table:

Chemical Name	Dose in milliliters
Alkaline	20
Detergent	40
[Empty]	0

At the bottom, the status is 'Not Connected' and the time is 4:31:27 PM.

- Program the function name
- Program the 1-3 chemicals and their amounts that will be pumped when the function is triggered
- Note that you can use a different set of functions for each washer

ILS OPL and ILS Max

Troubleshooting

Beta

Troubleshooting

General Principals

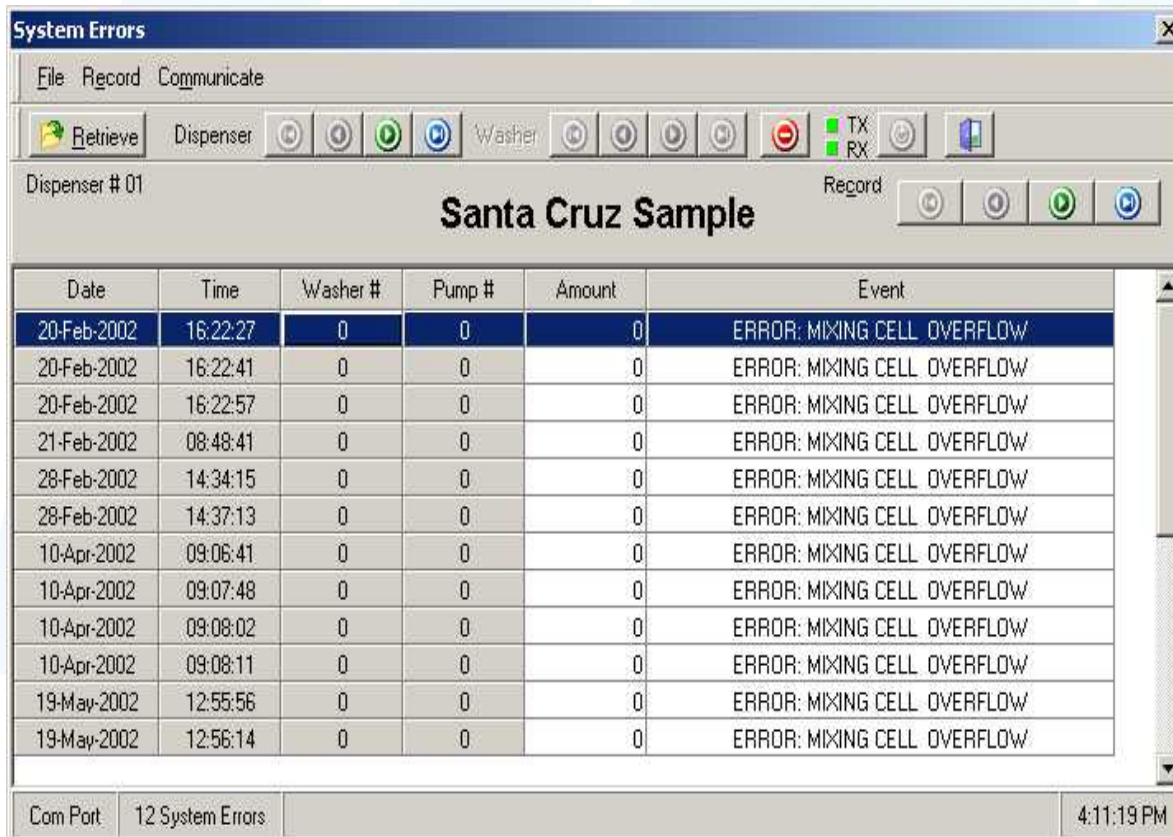
- Never be without a key to allow system access.
- Use 'known good component', 'suspect component' swap method.
- Most problems are not circuit board related, but are related to air leaks, programming, wiring, and COM port settings
- Keep good spares available for diagnostics and replacement.

First Steps

1. First step should be to use system events to find errors
2. Use interrogation mode to check self diagnostic screens.
3. To enter **test mode** for manual priming of pumps, turn key to 'program', and turn power off, keeping the button pressed as you restore power:
 - ILS Max: Hold down the menu button
 - ILS OPL: Hold down the blue button on the PCB

Finding air leaks

- Air leaks can be the source of transport pump errors on the report
- Low transport pump flow rates can be caused by air leaks
- Check manifold for bubble leaks from fitting connections
- If there are no air leaks replace transport pump



The screenshot shows a software window titled "System Errors" with a menu bar (File, Record, Communicate) and a toolbar with buttons for "Retrieve", "Dispenser", "Washer", and "Record". The window displays "Dispenser # 01" and "Santa Cruz Sample". Below this is a table with columns for Date, Time, Washer #, Pump #, Amount, and Event. The table lists 12 instances of "ERROR: MIXING CELL OVERFLOW" occurring between February 20, 2002, and May 19, 2002. The status bar at the bottom indicates "Com Port 12 System Errors" and the time "4:11:19 PM".

Date	Time	Washer #	Pump #	Amount	Event
20-Feb-2002	16:22:27	0	0	0	ERROR: MIXING CELL OVERFLOW
20-Feb-2002	16:22:41	0	0	0	ERROR: MIXING CELL OVERFLOW
20-Feb-2002	16:22:57	0	0	0	ERROR: MIXING CELL OVERFLOW
21-Feb-2002	08:48:41	0	0	0	ERROR: MIXING CELL OVERFLOW
28-Feb-2002	14:34:15	0	0	0	ERROR: MIXING CELL OVERFLOW
28-Feb-2002	14:37:13	0	0	0	ERROR: MIXING CELL OVERFLOW
10-Apr-2002	09:06:41	0	0	0	ERROR: MIXING CELL OVERFLOW
10-Apr-2002	09:07:48	0	0	0	ERROR: MIXING CELL OVERFLOW
10-Apr-2002	09:08:02	0	0	0	ERROR: MIXING CELL OVERFLOW
10-Apr-2002	09:08:11	0	0	0	ERROR: MIXING CELL OVERFLOW
19-May-2002	12:55:56	0	0	0	ERROR: MIXING CELL OVERFLOW
19-May-2002	12:56:14	0	0	0	ERROR: MIXING CELL OVERFLOW

Troubleshooting triggers

- Checking the trigger records, especially while running a load, can show which triggers aren't coming on when you expect them
- Cycle records shows total number of triggers and drains per load

Washer Trigger Events

File Record Communicate

Retrieve Running Strip Dispenser Washer TX RX

Dispenser # 01 Washer # 01 Record

Santa Cruz Sample

Date	Time	Washer On	Trig 1	Trig 2	Trig 3	Trig 4	Trig 5	Trig 6	Trig 7	Form 1	Form 2	Form 3
20-Feb-2002	16:22:41	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	ON	[-]
20-Feb-2002	16:22:57	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	ON	[-]
30-Dec-189	00:00:00	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
30-Dec-189	00:00:00	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
30-Dec-189	00:00:00	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
30-Dec-189	00:00:00	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
30-Dec-189	00:00:00	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
30-Dec-189	00:00:00	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
30-Dec-189	00:00:00	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
30-Dec-189	00:00:00	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]

Com Port 89 Washer Trigger Events 4:09:12 PM

Alarm Messages: Feed Rejected

Message	Meaning	Action Required
Feed Rejected Pump Box Offline	The pump box will not feed chemicals during a manual chemical pump calibration.	Do not perform a manual calibration while the wash aisle is active.
Feed Rejected Washer Drain Open	Drain status has changed.	Check washer setup drain polarity.
Feed Rejected Washer Off	Washer status has changed.	Check washer setup machine on polarity.
Feed Rejected Washer Not Selected	Network error.	Check pump setup.
Feed Rejected Data Link Erratic	Unreliable communication to washer	Check BetaLink cable and washer module connections.
Feed Rejected Transport Pump Error	Pump did not run, or current is too high.	Check pump motor, PCB, wiring and connections.
Feed Rejected Transport System Error	Transport system flow rate is below limits prior to a chemical feed.	Check the transport tube for blockage or air leaks.
Feed Rejected Unknown Formula	A chemical request has been received in PDCI formula mode, but the dispenser doesn't know what type of cycle is running.	Check washer setup. May be caused by operator error or power outage.
Feed Rejected Low Water Temperature	The water supply is too cold for the selected chemical.	Check the hot water supply temperature valve setting and temperature probe at POF.
Feed Rejected Water Supply Problem	Transport water flow failed or the break tank is empty during a chemical feed.	Check the break tank, water supply pressure, float switches, inlet valve, filter, transport pump, motors and chemical pumps.

Alarm Messages: Feed Aborted

Message	Meaning	Action Required
Feed Aborted Water Supply Problem	Transport water flow failed or the break tank is empty during a chemical feed.	Check the break tank, water supply pressure, float switches, inlet valve and filter.
Feed Aborted Transport System Error	Transport system flow rate below limits during chemical feed.	Check transport tube for blockage or air leaks. Check manifold filter and transport pump.
Feed Aborted Chemical Pump Error	Pump did not run, or current is too high.	Check pump motor, PC board, wiring and connections.

Alarm Messages: Other

Message	Meaning	Action Required
Proof of Flow Failure	Chemical not detected at pump box	Check supply drums for chemical level. Check suction tube, uptake hose and pump tube for air leaks and blockage.
Proof of Delivery Failed	Chemical not detected at washer. Applies only to ILS Max emulsion systems.	Check transport tube for leaks or breaks. Check POD cell for air. Clean POD cell.
Relay Mode Trigger Time Limited Exceeded	Too much chemical requested.	Check washer control and washer setup.
Feed Rejected High Water Temperature	Water temperature is > 150°F or 70°C.	Check cold water supply and temperature valve setting.
Delivery: Transport System Error	Transport system flow rate below limits after a chemical feed.	Check transport tube for air leaks and blockage. Check the manifold filter and transport pump.
Delivery: Water Supply Problem	Transport water flow failed or the break tank is empty after a chemical feed.	Check break tank, water supply pressure, float switches, inlet valve and filter.
Worn Chemical Pump Tube	Tube needs to be replaced soon.	Replace pinch tube and reset date changed.
Washer Network Link Lost	Unable to communicate with washer.	Check BetaLink wires, remote modules, connections, network and setup.

Errors from hydrogen peroxide

• Peroxide has low conductivity so the POF and POD cells won't see it, unless a conductive material is added during manufacture to it. If you are getting POF and POD errors, turn off POD and POF in the chemical setups screen. System events will show "POD assumed."

• If you don't turn it off and it's not conductive, errors will result as the system won't see the change in conductivity.

Date	Time	Washer #	Pump #	Amount	Event
20-Feb-2002	16:22:26	0	0	0	MANUAL MEMORY PURGE: LOGGED DATA CLEARED
20-Feb-2002	16:22:27	0	0	0	ERROR: MIXING CELL OVERFLOW
20-Feb-2002	16:22:32	0	0	0	ILS SYSTEM OFF
20-Feb-2002	16:22:39	0	0	0	ILS SYSTEM ON
20-Feb-2002	16:22:39	0	0	0	MANUAL MEMORY PURGE: SET UP DATA CLEARED
20-Feb-2002	16:22:41	0	0	0	ERROR: MIXING CELL OVERFLOW
20-Feb-2002	16:22:48	0	0	0	ILS SYSTEM OFF
20-Feb-2002	16:22:55	0	0	0	ILS SYSTEM ON
20-Feb-2002	16:22:55	0	0	0	MANUAL MEMORY PURGE: SET UP DATA CLEARED
20-Feb-2002	16:22:57	0	0	0	ERROR: MIXING CELL OVERFLOW
20-Feb-2002	16:24:41	1	0	0	WASHER RE-ENABLED FROM NETWORK
20-Feb-2002	16:24:41	2	0	0	WASHER DISABLED FROM NETWORK

The System Events screen will show all events and errors, but not all trigger logs, as shown above for the Beta ILS. "POF Failure" is usually due to lack of conductivity as with peroxide or air leaks.

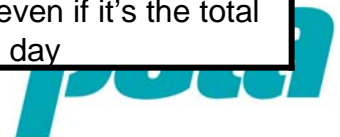


MNet

Symptom	Cause	Solution
No communication with computer	<ol style="list-style-type: none"> 1. Wiring from dispenser to protocol converter 2. Protocol converter power 3. Network address 4. MNet COM setting 5. USB driver not installed 	<ol style="list-style-type: none"> 1. Verify wires connected correctly to protocol converter (if reversed, there will be no communication; this may result in the protocol converter light being on continuously. A blinking light on the protocol converter COMM indicates information is going back to the PC from the dispenser) 2. Ensure protocol converter power light is on. If it's not, attach power supply. 3. Turn key to enter program mode, Press <> arrows 3x to reach "Network ID", and change it to 00. Note that the software doesn't check for high numbered addresses unless it's polling parameters are changed, so if the address of the dispenser is 7 it might not be detected when polling the network. 4. If MNet can't locate washers, the issue is probably that the COM port number is set incorrectly in MNet. To check which computer port number should be used in Windows, click on start, settings, control panel, and system. A window will show up; click on the hardware tab on the device manager button. In the device manager menu, scroll down to ports and click on the + to open it up; it will show you the correct port number to use in MNet. Do not change the setting in the computer's device manager; change it in MNet only. 5. Be sure to install the USB cable driver that comes with the USB wire on any computer that'll use the wire.

MNet

Symptom	Cause	Solution
Unidentified loads	1.Drain signal counts incorrect, or signal flickers 2.Trigger counts programmed incorrectly, or signal flickers	If a microprocessor machine, you can use a trigger for AFS, or automatic formula selection, to log triggers If a chart based machine, program Load Classification Setups If Load Classification Setups are programmed, troubleshoot them using cycle records
Production summary parameter screen not completely visible	Corrupted WINSTATE.INI file	The winstate.ini file stores window size settings which differ from the default original setting. Delete this file from the C:\ILS ManageNet_311 directory to restore the default settings.
Loads not logged with AFS	Machine on signal not connected	Connect machine on signal
Loads logged too long with wrong chemicals with AFS	Machine on signal not connected	Connect machine on signal, or ignore cycle records data. Correct chemical amounts will be dosed for the various formulas activated by the AFS signal, however all amounts will be logged under the formula number active when the dispenser power was toggled off and on
Load pump volume too large	1.Call rate setting 2.No machine on signal	1.If the relay mode call rate setting is accidentally set to be too large, you'll get more chemical than you expect 2.If the machine on signal doesn't turn off in between cycles, the system will count the total volume pumped as being during one cycle, even if it's the total volume until the washer is powered down, such as a whole day



Communication Problems

- First check interrogation mode for correct status,
- Check smart pumps, Washer Interface Modules (WIM), TR7000, FS1600 selectors for correct addresses. Note that ILS OPL and ILS Max addresses are not all set in the same manner; setting them the wrong way is a frequent mistake.
- Check both Betalink and alphas Rx,Tx lights on all modules; if the lights aren't on a wiring problem is likely.
- Check all Beta and alpha lines for continuity and that every connection is correct and tight. Check for heat near any cable and proximity to florescent lights, welding or other source of dirty power, EMI/RFI.
- Check for stable 5VDC on alphas.
- Check for miswiring Rx to Tx (TR7 to WIM)
- Verify system is grounded
- If the communication cables are draped over motors or other electrical devices, reroute them to eliminate electrical noise, and check that the shielding of the Betalink cables is properly connected in the pumpbox but not on the other end, to minimize electrical noise
- Swap (changing addresses) with known good module.

Peristaltic pumps

Symptom	Cause	Solution
Pump runs backwards	Miswired pump	Reverse wire connections on back of pump
Pump noisy	Nearing end of life	Replace pump
Early tube failure	1. Hydraulic issue	1. Verify suction lines of recommended diameter; using a smaller ID suction will reduce tube life
	2. Chemical not compatible with tube	2. Check chemical compatibility chart for the chemical in question (for example, use a viton or solvent resist tube with any delimonene)
Pump doesn't run	1. Addressing	1. If pumps for one washer don't run, verify the TR7 and any WIM modules are addressed correctly
	2. Trigger too short	2. Be sure trigger comes on for at least 2 seconds in formula mode, at least 1/2 second for relay mode
	3. Drive issue	3. Trigger pump and check voltage output at both the PCB (main PCB on ILS OPL, relay PCB on ILS Max) for the drive output. If there's no drive output, check programming. If there is a drive output, check voltage at the pump to be sure it's receiving the voltage and the cable isn't damaged. Replace the pump if it's receiving voltage but not running.
	4. Rollers not secured to shaft	4. If axle/shaft turns but pump not running, remove the front pump plate and ensure the lock nut securing the rollers to the shaft is tight, tightening it if loose. You should be able to turn the shaft and rollers with you hand; if it doesn't turn, try replacing the motor as it may indicate a jam in the gearbox.
	5. System waiting for unlatch signal	5. If no pumps run, verify common is correctly hooked up, and verify you
	6. No machine on signal	6. ILS OPL and Max require a machine on signal, or it will not repond to

Transport pump

- If a transport pump fails to run:
 - Verify it's correctly addressed
 - Verify drive wires are hooked up correctly
- If either 1.5 GPM or 3 GPM have a flowrate of under 60%, they should be inspected for air leaks. If no air leaks are found, it could be the pump is nearing the end of its life and needs to be replaced.
- If pumps are failing too soon:
 - Ensure continuous water supply
 - Verify no air leaks
 - Verify water temperature in specifications, check for debris in the valves (valve kit available) and add a 20 mesh filter prior to transport pumps.
- When to change? Change out the transport pump when it's weeping or the flowrate falls by about 40%, to 1.8 GPM (from 3 GPM) or 0.9 GPM on older 1.5 GPM transport pumps.
- Transport pump stuck on:
 - The most likely cause of a transport pump being stuck on is a fried pump driver fet. This could be caused by a short, from lose wires in the box, loose screws being left in the box, or an intermittent short in the transport pump drive wiring (check wiring and replace any damaged wires or cover places where the wire shield has worn off with electrical tape)

Blown Relay PCB's

- Over the years there have been sporadic complaints that the relay PCB fails.
- The blown PCB occurs when too much current is drawn:
 - From a short to ground on the motor: *Usually occurs when changing a motor with the power on and having a short against the grounded pumpbox, which unlike having a short within the motor, won't have protections vs. the short*
 - From a short to ground on the alarm relay on ILS OPL & ILS Max (*ILS has protection against this*)
 - It's remotely possible drawing too much current with tandem pumps could cause the problem, but this would also require a component on the PCB that protects the PCB from too much current draw to fail (we have no confirmed incidence of this occurring yet)
- Our corrective action for this is to recommend customers use a 2 amp fuse (preferably slow blow) along with any alarm device on the ILS Max alarm relay

ILS OPL and ILS Max Introduction

Beta