

# Contents: M714\_Browser

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## Safety



### Electrical Shock Hazard

Opening the controller enclosure with the controller plugged in, exposes the user to AC line voltages on the lower of the two controller circuit boards.



### USER WARNING : CAUTION

Water Treatment Controllers operate steam and water valves and may pump hazardous, corrosive and toxic chemicals. Opening the controller enclosure exposes user to the risk of electrical shock at power line voltages.

Understand fully the implications of the control setpoints, interlocks and alarms that you select. Harm to personnel and damage to equipment may result from mis-application.

Unplug or turn OFF the AC power to the controller if you have any concerns regarding safety or incorrect controller operation and notify supervisory staff.

### INDIVIDUAL CONTROLLERS

Controllers are supplied in many different configurations.

The **HELP** section in the M714\_User manual contains the information for terminating the sensors supplied with each controller.

The **HELP** section in the M714\_User manual depicts the installation plumbing header showing the sensor set supplied with each controller.

View is HOME for the controller. Return to HOME by

**View**

or

**Cancel**

**Location Name**
**System Name**

View

---

Sensors

---

Controls

---

Alarms

---

System

---

Communicate

---

HELP

12:16:24 2003-11-06 User No.1 Refresh

**Sensors & Controlled Outputs**

G: Tower Conductty	990	uS		
2: Tower Bleed	ON	277.5	minutes	
3: Biodispersant A5	OFF	30.2	minutes	
M: Boiler Conductty	239	uS		
6: B1 Blowdown	ON	73.0	minutes	
O: Tower Make-up	11800	gal		
1: Inhibitor Pump	OFF	27.6	minutes	

**Monitoring Sensors**

A: Effluent pH	7.06	pH		
B: Hotwater ORP	16.96	mV		
H: Temperature	76.86	F		
I: Steam Demand	15048	LBH		
N: Condensate Cond.	15.0	uS		
P: Tower Bleed	3600	gal		
S: T1 Flowswitch	ON	277.5	minutes	

**Outputs with Timed Controls**

4: Biocide T12	ON	101.3	minutes	
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### Letters 'A' to 'Z' : Inputs

Displays the value of analog sensors, volume today for water meters, state for contact sets.  
Locates sensor inputs in the controller enclosure.

### Numbers '1' to '10', C1 to C8 : Outputs

Displays the state of the pump or valve and run time.  
Locates relay 1..10 outputs in the controller enclosure.  
C1..C8 are 4-20mA outputs. Current mA level displayed.

Controlling sensors are grouped with the relays that they control followed by Monitoring Sensors, Relays controlled by Time and Unused Outputs.  
The View auto-configures as the user modifies controls, enables & disables I/O, adds feed events...

The left side **Services** menu responds immediately when a menu item is selected.

## 1.2 Controls Services

Select



**Location Name** **System Name**

- View
- Sensors
- Controls
- Alarms
- System
- Communicate
- HELP

### Outputs-Controls

Select Activity

Select an Output

Diagnostic

Configure

Alarms

Timed Events

Naming & Timing

Variable Cycles

Feed Verification

1:Inhibitor Pump

1:Inhibitor Pump

2: Tower Bleed

3: Biocidispersant A5

4: Biocide T12

5: Relay output 5

6: E1 Blowdown

7: Relay output 7

8: Relay output 8

9: Relay output 9

10: Relay output 10

C1: 4-20mA Output C1

Submit

Cancel

Select an Activity and an Output from the pull down and



Activity	Activity Services	Notes
Diagnostic	Prime, state, setpoint, special control status, run stats, biocide day	1.
Configure	Setpoint, Control Equation, Interlocks, Blocking, Special Controls	2.
Alarms	Feed limit timers, action on alarm and clear alarms.	3.
Timed Events	Biocide timing, start and run times, frequency	
Naming & Timing	Modify Name, Log period, Timed Event Cycle, Disable Output	5.
Variable Cycles	Set 3 Make-up Conduct. Ranges & Cycles. Set Max. Tower Conductivity	
Feed Verification	Option: Set Verify meter location and cycles of concentration method	7.

### Notes

1. Best tool to find out what's happening with your control. Very useful with special controls.
2. View current settings & Modify. Select Variable Cycles & Feed Verification (optional).
3. Clear Alarms ends Priming, Biocide Events & Lockouts. Zeroes time owed.
5. Event Cycle may be set to 1,7 or 28 days for each relay.
7. Set the A..Z locations used for ppm and tank inventory logging.

## 1.2.1 Setpoints

Select

**Controls**

Activity = Configure

Location Name	System Name
<div style="border: 1px solid black; padding: 5px;"> <p>View</p> <p>Sensors</p> <p><b>Controls</b></p> <p>Alarms</p> <p>System</p> <p>Communicate</p> <p>HELP</p> </div>	<p><b>Configure</b></p> <p style="background-color: #0000FF; color: white; padding: 2px;">1: Inhibitor Pump</p> <p>Control by: <input type="text" value="O"/></p> <p>Measure volume <input type="text" value="100"/> gal</p> <p>Then Turn ON for <input type="text" value="20"/> seconds</p> <p>Interlocked by <input type="text" value="S:T1 Flowswitch"/></p> <p>Blocking Relays <input type="text" value="2: Tower Bleed"/></p> <p>Feed Verify <input checked="" type="radio"/> YES <input type="radio"/> NO</p> <p style="text-align: center;"> <input type="button" value="Submit"/> <input type="button" value="Cancel"/> <input type="button" value="Refresh"/> </p>

Displays current Settings. Modify and

**Submit**

Field	Function	Notes
Control by:	Letter(s) of sensor(s) controlling the relay. Example: watermeter 'O'	1.
Measure volume	Every 100 gallons measured on water meter 'O'	2.
Then turn ON for	Turns ON the Inhibitor Feed pump for 20 seconds.	3.
Interlocked by	Flowswitch or Contact set(s), must be closed for Relay to turn ON	4.
Blocking Relays	This relay will NOT turn ON when the blocking relay is ON	5.
Feed Verify	Optional ppm, fail-to-feed & tank level services turned ON	

### Notes

1. Setpoints vary with controlling sensor type. Control equations combine more than one sensor.
2. Analog sensors, A..N, show Turn ON setpoint in place of Measure Volume.
3. Analog sensors show Turn OFF setpoint. ON time accumulates while volume increases.
4. Interlocks may be ANDed or OR'd in more complex control schemes.
5. This example prevents inhibitor from pumping down the drain when the bleed is ON.

## 1.2.2 Timed Events

Select



Activity = Timed Events

Location Name
System Name

View

Sensors

Controls

Alarms

System

Communicate

HELP

Timed Events
Events Added

7. Relay output 7

Select Activity

Add an Event  
 Edit an Event  
 Delete an Event  
 Delete all Events

Edit or Delete

Day 1 @ 04:00 for 120 minutes ▾

Add or Edit

Start Day

1

1-28

Start Time

4:00

HH:MM

ON Time

120

minutes

Event frequency

Once  
 Alternate Weeks  
 Weekly

Pull down displays current Timed Events. Modify and



Field	Function	Notes
Select Activity	Options limited to 'Add an Event', if no events exist.	
Edit or Delete	1-28 events may be set on each relay 1..10.	
Start Day	Day 1 is Sunday for 28 and 7 Day Event Cycles.	3.
Start Time	24 Hour clock from 00:00 to 23:59.	
ON Time	Pump run time from 1 to 1440 minutes. 1440 minutes = 1 day.	
Event frequency	Frequency options vary with Event Cycle: 1,7 or 28 Days.	

### Notes

3. One day event cycles are always Day 1.

The **Red 'Events Added' Message** above the **Blue** header, confirms a previous activity or advises you of problems.

## 1.2.3 Special Controls

Select Controls Activity = Configure

Location Name
System Name

View

Sensors

Controls

Alarms

System

Communicate

HELP

### Configure

2: Tower Bleed

Control by:	<input type="text" value="G"/>	
Turn ON setpoint	<input type="text" value="210.00"/>	uS
Turn OFF setpoint	<input type="text" value="200.00"/>	uS
Interlocked by	<input type="text" value="none"/>	
Blocking Relays	<input type="text" value="none"/>	
Control Type	<input type="text" value="Rising Setpoint"/>	
Special Control	<input type="text" value="Holding Time"/>	
Period		minutes
Variable Cycles		
Feed Verify		

Pull down displays special control options. Select and Submit

Control	Function
Bleed & Feed	Select Bleed Solenoid Relay and % of Feed time in every 300 seconds of Bleed
Bleed then Feed	Select Bleed Solenoid Relay and % of Feed time after Bleed ends.
Captured Sample	Boiler blowdown option – refer to 1.2.4
Percentage Time	Set % of ON time every 300 seconds. Stops accumulating on an open interlock.
Prebleed-Lockout	Select Bleed Solenoid, Prebleed time & conductivity, Lockout after Prebleed
Time Modulation	Set period. ON time decreases as the Turn OFF setpoint is approached.
Holding Time	Controlling sensor value is averaged over user set period.
Timed Cycling	Feed for user set time then wait period. Used in slow-to-respond processes.

**1.2.4 Boiler Blowdown Timing**

Select **Controls** Activity = Configure

**Location Name** **System Name**

**Configure**

6: B1 Blowdown

Control by:

Turn ON setpoint  uS

Turn OFF setpoint  uS

Interlocked by

Blocking Relays

Control Type

Special Control

Sampling time  seconds

Measure time  seconds

Blowdown time  seconds

Re-sample delay  minutes

Fail-to-Sample

Variable Cycles  YES  NO

Displays current Captured Sample timing. Modify and **Submit**

Field	Function	Notes
Sampling Time	Blowdown valve ON to acquire new sample at conductivity sensor.	1.
Measure Time	Valve OFF. Control decision made only at end of Measure.	2.
Blowdown Time	Valve ON if conductivity > Setpoint at end of Measure.	
Re-sample delay	Valve OFF if conductivity < Setpoint at end of Measure.	
Fail-to-Sample	Optional thermal switch at conductivity sensor	

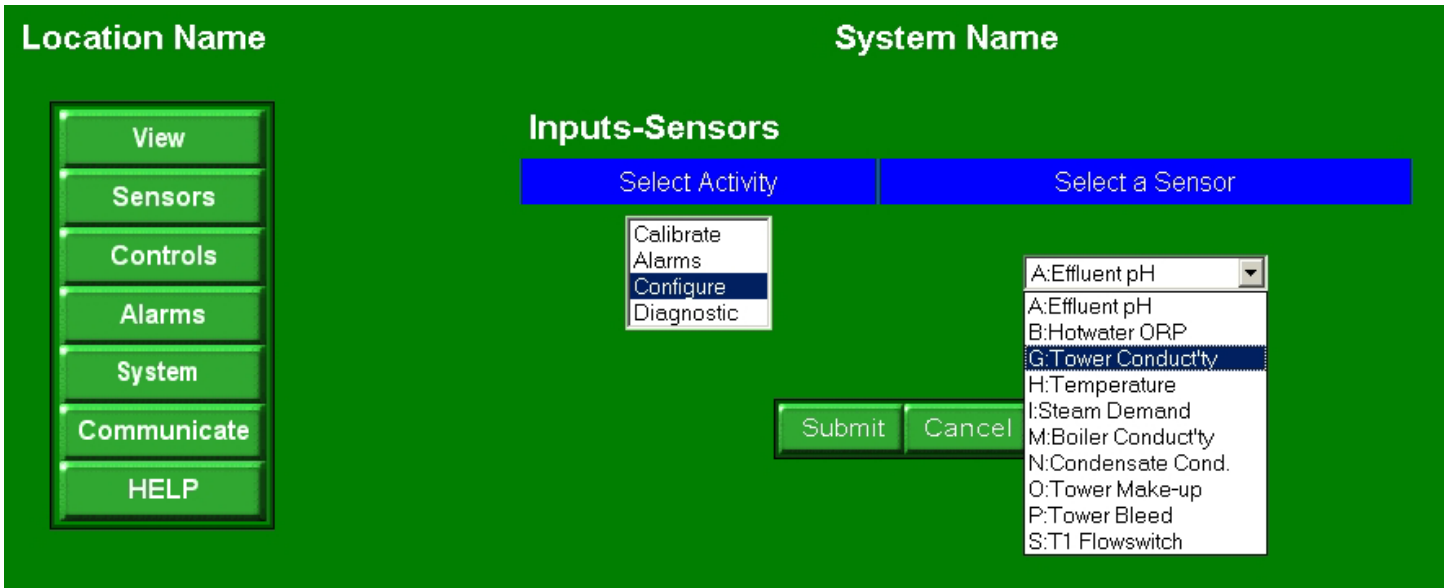
**Notes**


1. Conductivity sensor installed on surface blowdown line, upstream of blowdown valve.
2. Measure-Blowdown sequence repeats until conductivity below setpoint.



## 1.3 Sensors Services

Select 



Select an Activity and a Sensor from the pull down and 

Activity	Activity Services	Notes
Calibrate	Single point for A..N., Key Value for Manual Entry, Reset to Factory	1.
Alarms	Set & View High & Low Alarm & Action On Alarm	2.
Configure	Naming, units, resolution, compensation type, log period, disable input	3.
Diagnostic	State, driver type, log stats, current & default OFFSETs & GAINS.	4.

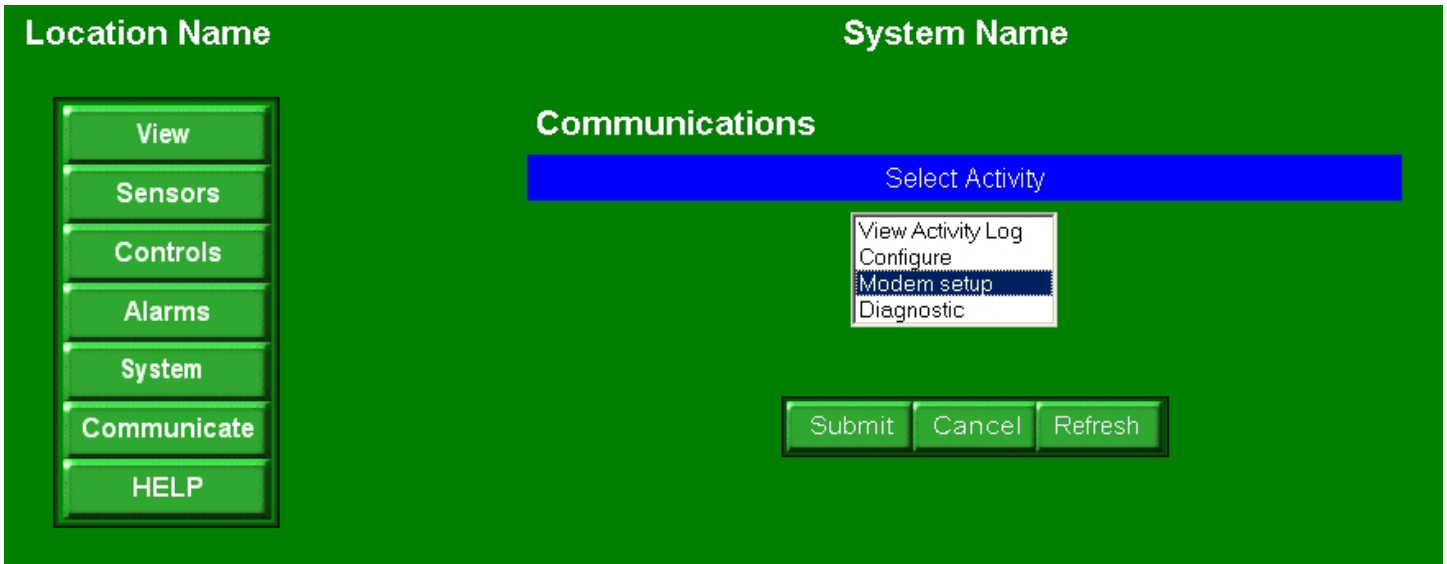
### Notes


1. Calibration method varies with sensor type. 4-20mA inputs are 2 point calibration.
2. Analog sensors A..N include 'Delay on Alarm' to suppress transients. Contact set alarms have both ON Time and a No Flow Alarm that trips on OFF time. Action on Alarm may set Alarm Relay and/or Dial-out on modem equipped controllers
3. View and/or modify. Add and/or modify Thermal, Manual and Rate-to-Volume compensation. Verify Corrosion Rate, Calculated (ppm) and Inventory type compensation.
4. Displays sensor mV levels, driver card ID levels, current compensation type



## 1.5 Communicate

Select 



Select an Activity and 

Activity	Activity Services	Notes
View Activity Log	Log of hardware changes, control modifications	
Configure	View-Modify IP, Netmask, Gateway, HTML & Telnet Ports. View MAC	2.
Modem Setup	Set up to 4 dial-out phone numbers, set pager message & pager delay	
Diagnostic	Force dial-out, Carrier detect state, Mirror LCD. View refresh time	4.

### Notes

- Requires Admin password. Includes modem ringcount and initialization.  
View-modify controller location timezone with respect to GMT:  
PACIFIC = -8, MOUNTAIN= -7, CENTRAL= -6, EASTERN= -5.
- 
- 
- Display the User view of the controller four line LCD character display.  
Includes Parser mirror for encoded URL & telnet API developers.

## 1.6 System Services

Select

Select a system service and

Selection	Services	Notes
Diagnostic	Fuse, power supply status, S/N, Firmware version, AC current, Options	
Enable I/O	Select from lists of disabled Inputs A..Z & Outputs 1..10, C1..C8	
Login-Logout	Logout Sets user to 'Public', Displays current user & userid set.	3
Alarms	Clear all alarms, Active Alarm table with cause & date, time tripped	
Time & Date	Modify Date, Time & day of week.	
Upgrade	Enter code to reset passwords and/or add Ethernet & FV options.	
System Alarms	Select Alarm Relay & Dial-out options for each system level alarm.	
Configure	Metric units, Keypad password switch, Load & Save Configuration.	8
Passwords	Changes password for current user, case sensitive.	9

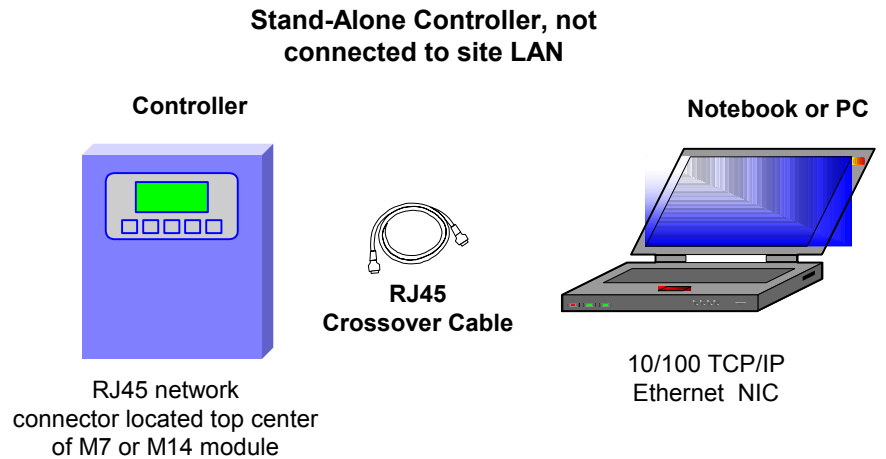
### Notes

- 3. Browser will auto-logout after 30 minutes of no user activity
- 8. Admin password required
- 9. Keypad userid passwords are limited to A..Z caps & 0..9.

## 2.1 LAN Communications

Controllers not connected to a network may be browsed using a crossover cable and a notebook's or local PC's browser

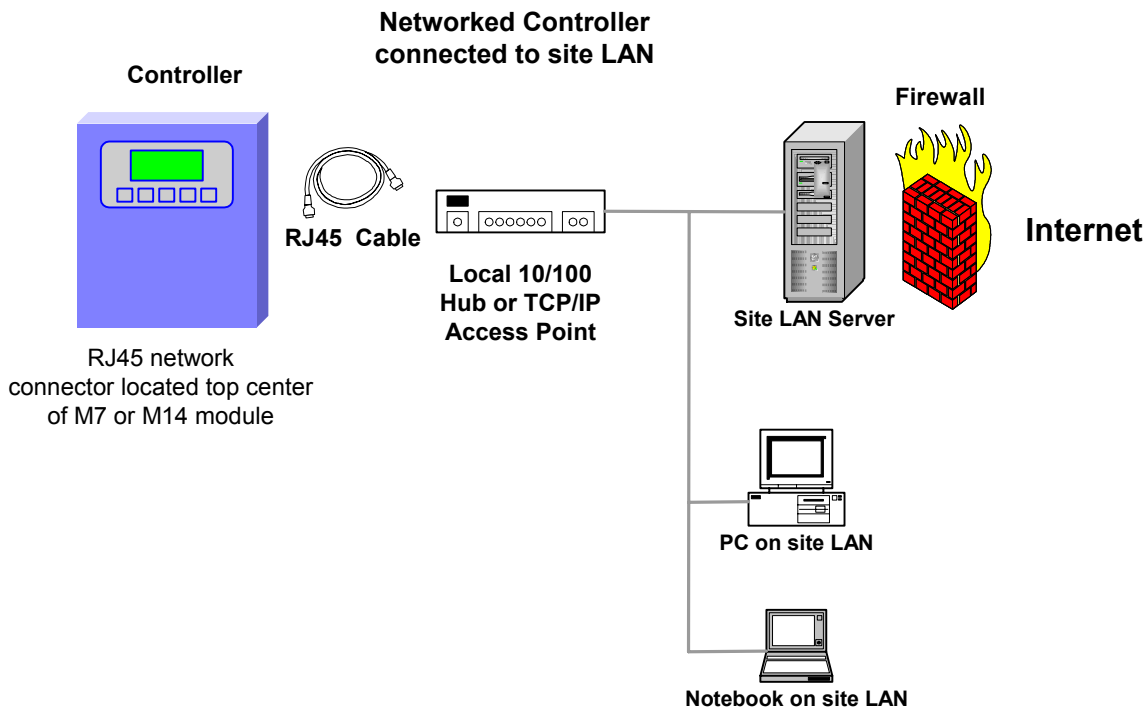
Refer to Section 3.1 for detail on notebook browser set-up.



Controllers use a static IP address to communicate using TCP/IP 10 base T.

Site IT provides LAN IP addresses and they may also wish to modify the ports used for HTML (default 80) and Telnet (default 23) . They may also require the controller MAC.

Key ENTER @ System and DOWN to 'LAN Setup' to view & modify IP, Netmask & Gateway. MAC, HTML & Telnet ports are view only. Ports can be modified using a browser connection.



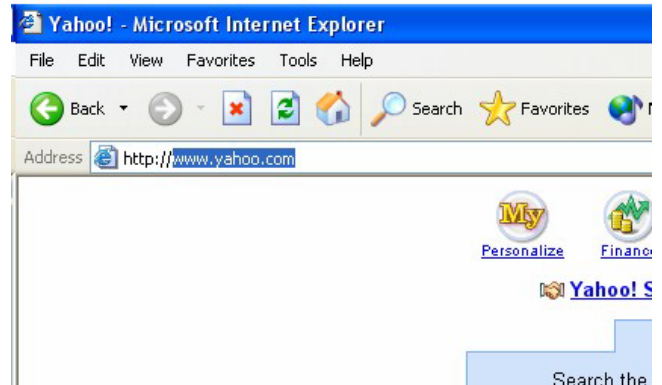
**CAUTION:** Exercise caution in making the controller Internet accessible. At a minimum, modify the factory default passwords for Admin and Users 1-7, before making a controller Internet accessible.

Open your browser.

Most users will select the Internet Explorer icon on their PCs or notebook's desktop.

Your browser will connect or try to connect you to your Home page.

In this example YAHOO is the Home page.  
Your Home page may differ.

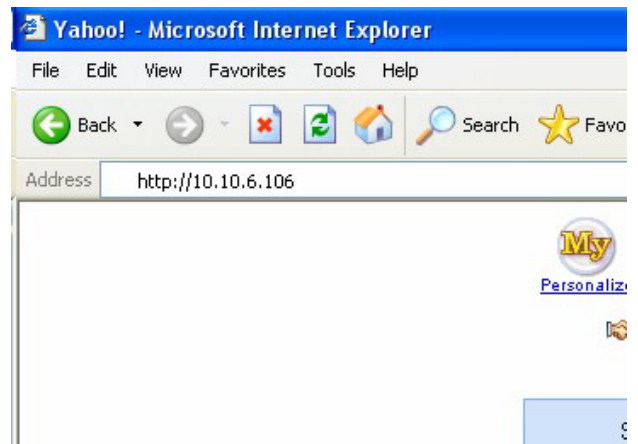


Edit the address line of your browser, inserting the controller IP address and keying ENTER

In this example the IP address is 10.10.6.106.

If you do not know the address of your controller, refer to section 2.3 View –Modify IP Address.

If you've previously connected to the controller, the browser will supply likely addresses as you type.

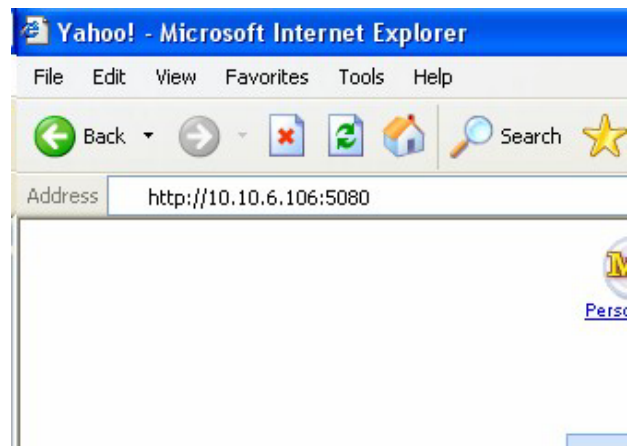


If the controller browser port has been changed from the default Port 80, you'll need to add :Port# to the controller address.

In this example, the port has been changed to 5080

### NOTEBOOK – CROSSOVER CABLE USERS

If you are at the controller, you'll see the green LINK light ON when the crossover cable is connected & your notebook is ON



The yellow ACTIVE light will flicker as the controller serves up the initial View display.  
If you don't connect, refer to Appendix, App. Note AN\_T004.

2.3 View-Modify IP Address 1 of 2

Key ENTER at System:

**WARNING: Only site IT staff can assign IP Addresses, Netmasks & Gateways**

Key DOWN to LAN Setup and key ENTER

Key DOWN to view the LAN parameters

Current Address is 10.10.6.106  
Key ENTER to modify  
Example on Page 2

Current Netmask is 255.255.255.0  
Key ENTER to modify

Current Gateway is 10.10.6.19  
Key ENTER to modify

Browser port is Default, Port 80  
Browser connect to modify

```
System:2003-11-06 ↵
S/N: M0386034
Alarms: 16:38:11 ↑
D G 2 Sys
```



```
System:
Configure ↑
Time & Date
LAN Setup ↵
```



```
System:
LAN Setup.....
IP Address
10.10.6.106 ↵↓
```



```
System:
LAN Setup.....
Netmask
255.255.255.0 ↵↕
```



```
System:
LAN Setup.....
Gateway
10.10.6.19 ↵↕
```



```
System:
LAN Setup.....
Browser-HTML Port
80 ↕
```

Down arrow icon Continued on Page 2

**2.3 View-Modify IP Address 2 of 2**

Telnet port is Default, Port 23  
Browser connect to modify

MAC Address may be required by network admin.  
View only.

EXIT to return to System: display.

**WARNING:** Only site IT staff can assign IP Addresses

Key ENTER to modify IP Address

Key UP DOWN to change each of the four address numbers

then key RIGHT, to edit the next number

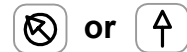
Key ENTER to modify or EXIT to leave IP unchanged

ENTER or EXIT displays current IP address

```
System:
LAN Setup.....
Telnet Port
      23
```



```
System:
LAN Setup.....
MAC Address
00:90:c2:c1:8c:42
```



**Modifying the IP Address**

```
System:
LAN Setup.....
IP Address
10.10.6.106
```



```
System:
IP Address.....
168.013.031.106
```

← Executes 0 Exits



```
System:
LAN Setup.....
IP Address
168.013.031.106
```



## 3.1 Browsing a non-LAN Controller 1 of 3

### 1. Overview – Application Note AN\_T004

‘Crossover’ cables are used to browse the controller when the controller is not connected to the site Ethernet LAN. They are widely available. Comp USA is a typical vendor.

If the controller were connected to the site LAN, you’d browse it from one of the PCs on the LAN.

Connecting to a controller using a ‘crossover’ cable requires that the notebook and the controller be on the same subnet. This application note details set-up verification.

### 2. NETMASK & IP Internet Protocol Addresses

Assuming that the controller NETMASK is the default 255.255.255.0.

The first three numbers of the controller and the notebook IP addresses must be the same.

For example; if the controller IP = 10.10.6.106 (default) the notebook IP could be 10.10.6.100.

If any of the first three numbers don’t match, you won’t be able to use a crossover cable to browse the controller.

### 3. Finding & Editing the controller’s IP

Key ENTER at **System:** 2003-04-10 (Today’s date)

Key DOWN to **LAN Setup** & key ENTER.

Displays the default controller IP = 10.10.6.106

If you wish to edit the controller IP, Key ENTER.

**Warning:**

**Do not change the IP, Netmask or Gateway of any controller connected to a local LAN. The system administrator will have assigned these numbers.**

### 4. Verify the controller’s Browser Port#

Key ENTER at **System:** (Today’s Date)

Key DOWN to **LAN Setup** & key ENTER.

Key DOWN to Browser-HTML Port.

If the Port = 80 (default), ignore. It’s also your browser’s default Port#.

If not 80, note the Port#, you’ll need to add it to your IP. Refer to step 6.

## 3.1 Browsing a non-LAN Controller 2 of 3

### 5. Finding your Notebook's IP

#### WINDOWS XP

Select **Start -> Control Panel -> Network Connections -> NetworkBridge**

Double click: **NetworkBridge**,

Select: **General -> Properties -> Internet Protocol (TCP-IP) -> Properties -> Alternate Configuration**

Check: **User Configured**

Assuming that the **User Configured** fields are blank. Set the IP address = **10.10.6.100**, assuming that the controller IP address (See Section 3.) is **10.10.6.106**. Set the Subnet mask = **255.255.255.0** & select **OK**.

Any pair of Notebook & Controller IPs will work if:

1. The first three numbers are the same
2. The last numbers are never '0' or '255'

#### WINDOWS 98 & ME

Select: **Start -> Settings -> Control Panel -> Network**

You may have several options under **Network**, Select the **TCP-IP** option which is NOT dial-up. & then select IP Address (This tab is usually the default)

#### Option 1. 'Obtain an IP Address Automatically' is Checked

If you connect your notebook to your company's LAN, you'll likely have 'Obtain an IP Address Automatically' checked. Select 'Specify an IP Address', set the IP Address to 10.10.6.100 and Subnet Mask to 255.255.255.0.

Select OK, Your notebook may restart.

**Note:** Once you have finished browsing the controller, check 'Obtain an IP Address Automatically' so you can log back into your corporate LAN.

#### Option 2. 'Specify an IP Address' is Checked

Use the controller keypad (See Section 3.) to set the controller the IP where the first 3 numbers match the notebook IP and the third number is any number but '0' or '255'

For example: If you notebook is 12.135.120.58, make the controller 12.135.120.68

#### Warning:

**Do not change the IP, Netmask or Gateway of any controller connected to a local LAN. The system administrator will have assigned these numbers.**

### 3.1 Browsing a non-LAN Controller 3 of 3

#### 6. Browsing the Controller

1. Connect a crossover cable to your notebook's RJ45 Ethernet network jack and the controller's RJ45 network jack located in the center, front of the top controller circuit board.
2. The green **LNK**, link light will turn ON beside the controller jack, indicating you have a connection.
3. Double click on the Internet Explorer desktop icon and enter 10.10.6.106, or the current controller IP in the browser **Address** line & key ENTER.
4. If your controller's Browser-HTML Port is NOT 80, add **:Port#** to the IP. For example, if the controller Browser-HTML Port = 5080, the browser Address line would be 10.10.6.106:5080.
5. The yellow **ACT**, active light on the controller will flicker as the controller serves the VIEW home page.
6. If the yellow ACT light does not turn ON, there is an error in setup, IP address or port#. If the green **LNK** light is not ON, it's likely that you are not using a crossover cable.

### 3.2 Technical Support 1 of 2

[ Insert OEM contact, site information ]

#### **On-Line Help**

Internet HELP is linked in real time by browser users with internet accessible controllers.

#### **Keypad User Manual**

Download **M714\_user** from [www.aquatrac.com](http://www.aquatrac.com)  
A copy of M714\_user is shipped with each controller.

#### **Controller – Sensor Set**

The installation instructions for specific controllers are detailed in the M714\_user manual shipped with the controller in the HELP section YELLOW pages.

#### **Controller Technical Manual**

Download **M714\_tech** from [www.aquatrac.com](http://www.aquatrac.com)

#### **Upgrade Kits**

Controls can be added to installed controllers.  
Upgrade kits include sensor(s), entry fitting(s), driver card and installation instructions.

## 3.2 Technical Support 2 of 2

### Fusing

Protects	Rating / Type	Manufacturer – Vendor
<b>Power Relays</b> Fuse 1-5 & Fuse 6-10	6.3 Amps @ 120VAC 3.15 Amps @ 250VAC 5mm x 20mm, Fast Acting	Littlefuse, Type 217, 250VAC Digikey Part# F953-ND Digikey Part# F950-ND  <a href="http://www.digikey.com">www.digikey.com</a> 1-800-344-4539
<b>Controller – Modem</b>  Control Fuse	1 Amp @ 120VAC ½ Amp @ 250VAC	Cooper Bussmann, PC-TRON, PCC Series, 250VAC Digikey Part# 283-2118-ND Digikey Part# 283-2120-ND  <a href="http://www.digikey.com">www.digikey.com</a> 1-800-344-4539

### Controller Parts

Part#	Description
Fuses-M	120VAC Fuse Kit, 20 x 6.3A Relay Fuses, 4 x 1 Amp control fuses
Cable-Xover	Crossover cable, Controller RJ45 to Notebook NIC
Mod-LCD4	Replacement 4x20 LCD Display
Mod-M3000	Micro controller module
Mod-M7	Seven analog, Six digital input module
Mod-M14	Fourteen analog, Twelve digital input module
Mod-PR5	Five power relay, power module
Mod-PR10	Ten power relay, power module
Modem	Modem, serial cable & power cube
PBOX4	120VAC Four Plug box, flex conduit & fittings, pre-wired
PBOX2	120VAC Two Plug box, flex conduit & fittings, pre-wired
H-SEN6	Sensor entry gland, six cable seal