



AXISOFT

USER MANUAL

Version 2.3

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1 INTRODUCTION

This document is the functional specification for the AxiSoft Process Control part of AxiBatch Concrete Batching System.

1.1 License Agreement

The AxiSoft software is licensed to the end user to be installed on one computer per individual license. This software requires registration whereby the installed computer ID is required.

1.2 Publishing Rights

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1.4 Definitions

FULL RUNNING	When a Hopper is first to start and will be discharged.
PART RUNNING	When the 2nd Hopper has started, it is Part Running. Cement will not be batched until the Cement hopper is empty in the Full Running batch. 2nd Hopper will not discharge until the 1st Hopper has completed it's discharge which is when the 2nd Hopper will become Full Running.
MOXA DEVICE SERVER	A Serial Device Server connecting to AxiSoft via an Ethernet port. Can usually have 1 to 16 serial ports being serviced.
MOXA ioLogik	industrial Ethernet remote I/O configured using ioSearch software. AxiSoft uses these modules to control solenoids and motors and to read status of devices.

1.5 Features

AxiSoft is designed to run on a Microsoft Windows operating system. The AxiSoft software package was written using Microsoft C# and requires Net Framework 4 to run. This software should run on most Microsoft operating systems that use NetFramework 4, which includes XP Service Pack3 and Windows 7, 8 and 10.

1.6 Drivers Available

Remote Scale Displays

LED100

EZMargqee LED Displays

Ranger D640

Ranger D840

AxiTrek In-Cab Display

Scales

Ranger 5000 and 400 Series

Ranger 5100 Batch Series

I/O

Moxa ioLogik E2210 - 12x 24VDC Inputs / 8x Transistor Outputs (0.5A)

Moxa ioLogik E1214 - 6x 24VDC Inputs / 6x Isolated Relay Outputs (2A)

Moxa ioLogik E1210 - 16 x 24VDC Inputs

Note: Any inputs can be configured as a Counter (i.e. Water & Additive pulses)

1.7 Recommended Computer Requirements

1.7.1 Minimum Hardware Requirements (in addition to standard PC specs)

- Intel Core i7-4790 Processor (Quad Core) – eg <http://www.dell.com/au/business/p/optiplex-9020-desktop/fs>
- 16GB Memory
- 256GB Solid State Drive (SSD) – boot up drive
- 1TB Hard Disk
- Wireless Card
- 2x Ethernet Ports (for 2 LAN networks)
- CD/DVD Drive
- USB Keyboard / mouse
- Hi-Res 1GB Graphics Card with capacity for 2 monitors
- 2x Hi-Res 24" Colour Monitors
- 1400VA UPS with under 5ms transfer time – eg <http://www.anyware.com.au/categories/power/uninterruptable-power-supplies/ups-domestic-office/ds1400.html>

1.7.2 Software Requirements

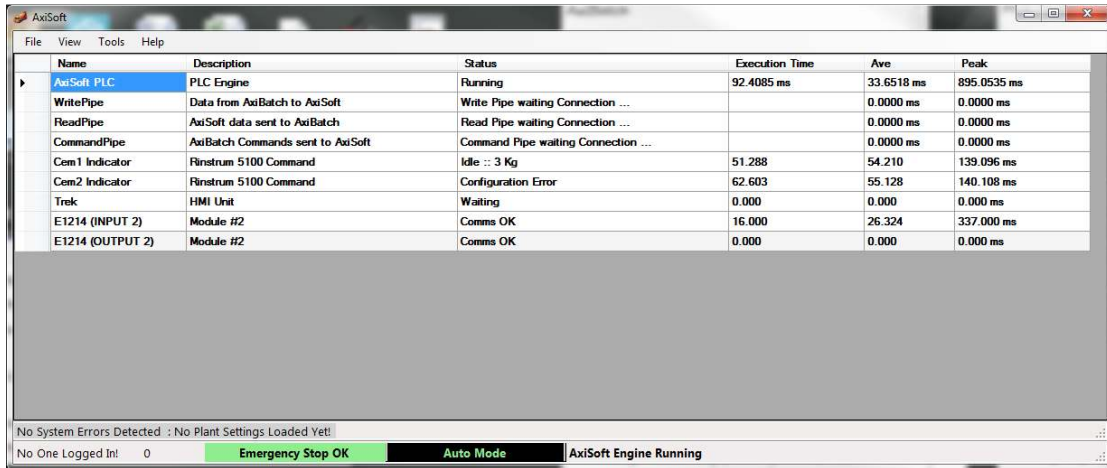
- Windows 7 or 10 Professional (do not use Windows 8)
- Microsoft Office (with Excel, Word and Outlook)
- Avast Antivirus

One Ethernet connection is for connecting all the IO Modules, scales and remote displays. The other connection is for connection to the office network. This will alleviate unnecessary traffic on the office network.

2 AXISOFT SOFTWARE

2.1 Launching AxiSoft

Double Clicking the AxiSoft Server icon on the desktop will launch the AxiSoft Server software. The screen below will be displayed.



2.2 Logging In

AxiBatch software identifies three user levels and their passwords for authentication and protection.



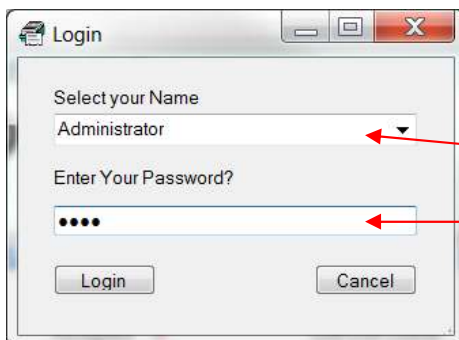
Level 1 Operator user name only gains access to viewing Reports.



Level 2 Administrator user name has access to the same functions as the operator plus access to most of the settings.



Level 3 Technician user name gains full access..



Level 1 - Operator
Level 2 - Administrator
Level 3 - Technician

Password Required

The Server software will automatically come with 3 user names. They are Operator, Administrator and Technician.

You will need the Administration / Technician level to be able to configure most functions.

3 AXISOFT SETUP

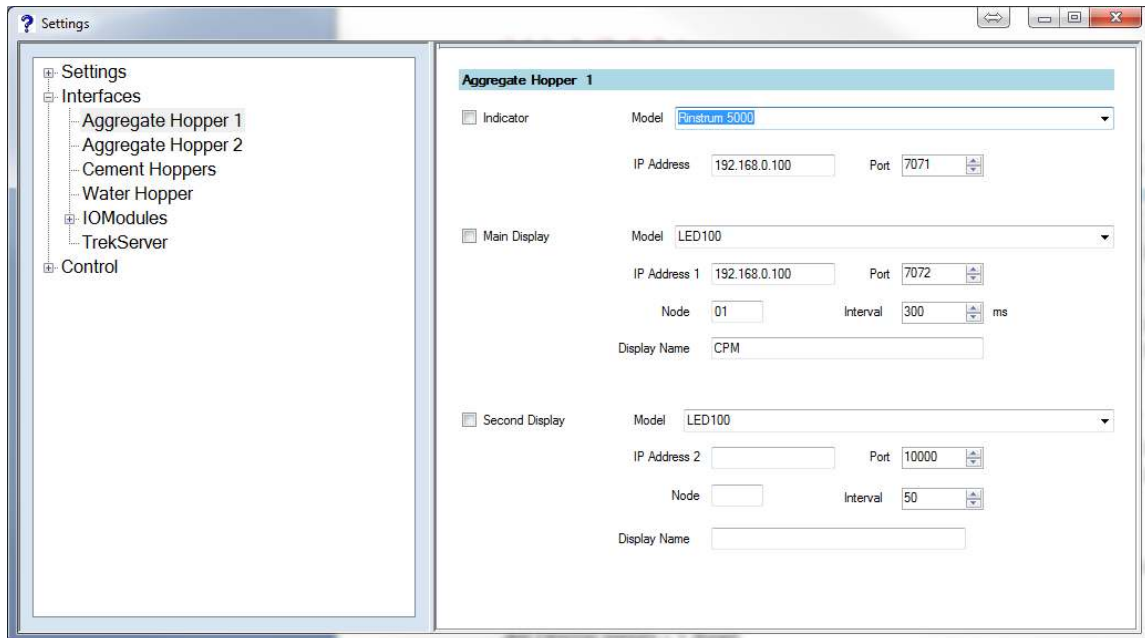
To setup the AxiSoft settings it is necessary to login with an appropriate level in order to gain access to the "Settings" page.

To gain access to the settings screen click on Tools => Settings.

3.1 Hoppers

This applies for setting up Aggregate Hopper 1 / 2, Cement and Water Hoppers.

Indicator - Check this to enable the Indicator to work.



Model

- Select "Rinstrum 5000" for continuous weights for R5000/R5100 & R5200 units
- Select "Rinstrum 5100 Command" for command control only for R5100 & R5200 units when in command mode
- Select "Rinstrum 5100 Weights" for continuous weights for R5100 & R5200 units only when in command mode (this is slower than 'Rinstrum 5000' mode).

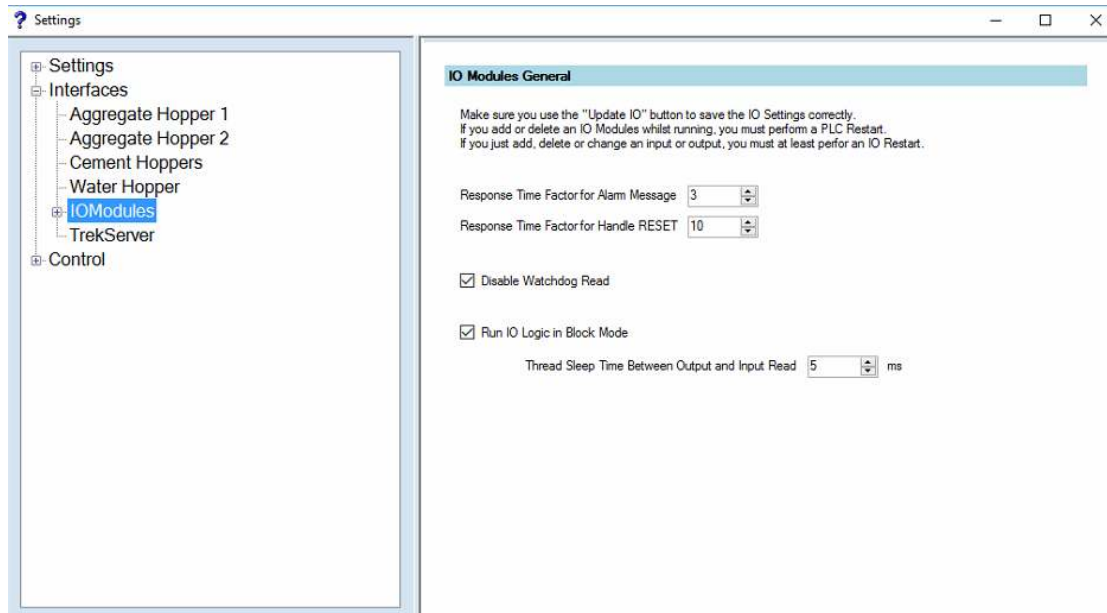
IP Address - the IP address of the MOXA Serial Device Server.

Port - The port number assigned in the MOXA device for that indicator.

3.2 Remote IO Modules

This section describes the setup of the IO Modules.

3.2.1 IO Modules General Settings



3.2.1.1 Response Time Factor for alarm Message

No longer used

3.2.1.2 Response Time Factor for Handle Reset

No longer used

3.2.1.3 Disable Watchdog Read

If running IO modules in ASYNCH mode will stop the program from checking for the Watchdog bit. Typically should not be checked, and checked if you are testing or wanting more speed and have a very reliable network.

3.2.1.4 Run IO Logic in Block Mode

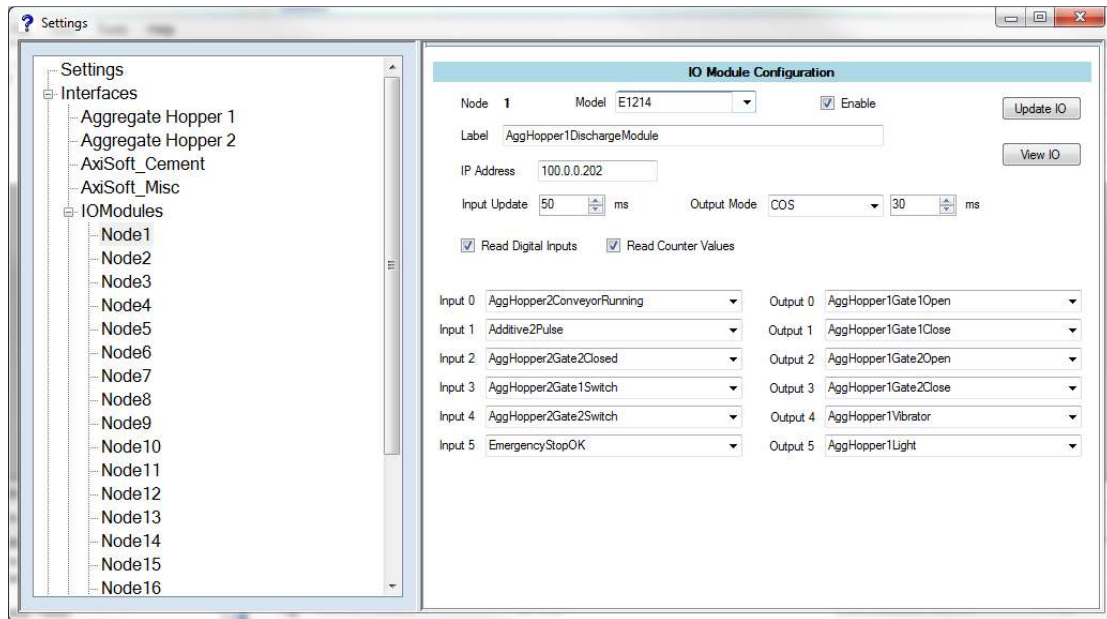
If this is checked will run IO modules in blocking mode, not it Asynch Mode. Use this for modules that have a minimum Firmware of V2.3 Build 15031013. These modules have an automatic watchdog reset and blocking mode does

not monitor the watchdog bit and does not reset. This is the preferred mode to use.

3.2.1.5 Thread Sleep Time Between Output and Input Read

This time in milliseconds between when a Read Block is finished and before a Write Block is executed and is only used If Blocking Mode is checked.

3.2.2 IO Modules Settings



3.2.2.1 E1210

This module consists of 16 Digital Inputs.

3.2.2.1.1 Input Modes

All Digital Inputs - 1 Read

Counter Values - 2 Reads (2nd Read reads the Status of the Counters - Stopped/Running).

3.2.2.1.2 Output Modes

Should be set up for Change Of State - Only used if Controlling Counters.

3.2.2.2 E2210

This module consists of 12 Digital Inputs and 8 Transistor Outputs.
This module has high speeds of communication transactions.
Input Read Transactions are about 4ms.
Output Write Transactions are about 5ms.

3.2.2.2.1 Input Modes

1st Read - Takes Output Status and Counter Status if required.
2nd Read - Takes Counter Values otherwise will read Digital Input Status.
3rd Read - Takes Digital Input Status if Reading Counters as well.

3.2.2.2.2 Output Modes

Should be set up for Change Of State for efficiency.

3.2.2.2.3 Module Configuration

This module requires no modification of the Modbus Registers.

Only the configure inputs for Counters if required.

3.2.2.3 E1214

This module consists of 6 Digital Inputs and 6 Relay Contact Free Outputs
This must be used to interface to Additive Meters ME2008 using Outputs

Input Read Transaction Time - 18ms
Output Write Transaction Time - 15ms

3.2.2.3.1 Input Modes

1st Read - Takes Output Status / Input Status and Counter Values
2nd Read - Takes Counter Status

Counter Status will only be read before an Additive/Water is batched to ensure the Counter is in the START state. It is also read whilst monitoring the IO with IO Viewer.

3.2.2.3.2 Output Modes

Should be set up for Change Of State for efficiency.

3.2.2.3.3 Module Configuration

This module requires the following Modbus Register modifications using the Moxa 'ioSearch' software (see ioSearch section below).

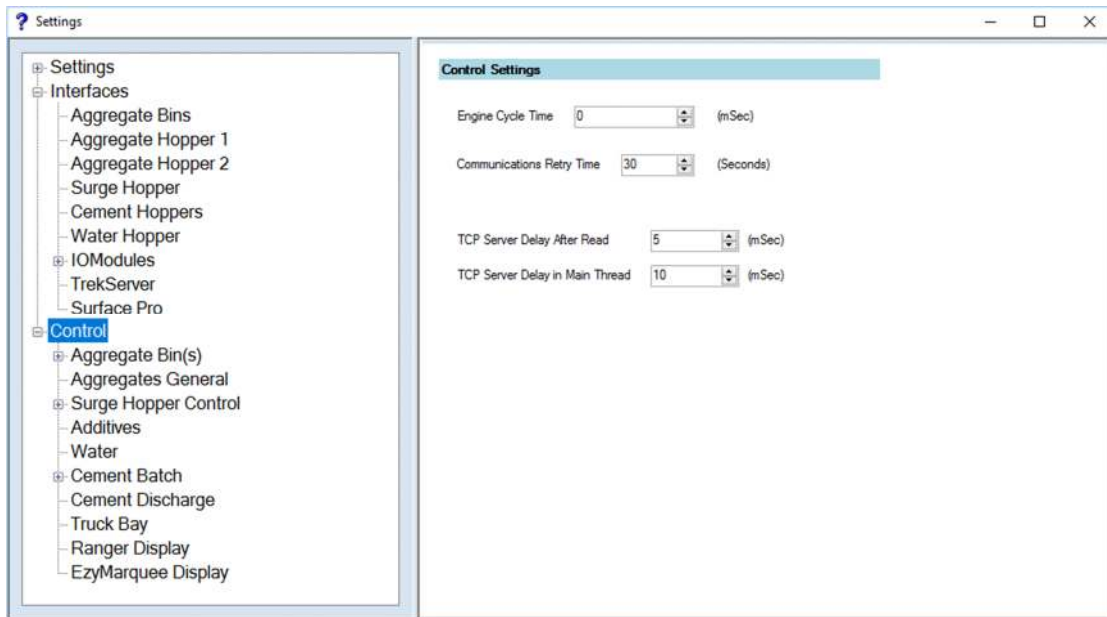
DO (Relay) (Ch0-5)	0032	03:HOLDING REGISTER	40033
DI Value	0033	03:HOLDING REGISTER	40034
DI COUNTER	0039	03:HOLDING REGISTER	40040

Only configure inputs for Counters if required.

All Outputs should be configured as follows:

- Power On Setting should be set to "OFF"
- Safe Status Setting should be set to "OFF"
- In General Settings the Watchdog needs to be enabled & set to 3sec.

3.3 Control Settings



3.3.1 Engine Cycle Time

Sets the Engine Cycle Time. Leaving it a zero the engine will cycle as fast as it can.

If you set it 100ms, it will cycle and wait until 100ms has timed before cycling again.

3.3.2 Communication Retry Time

Is the retry time before communications to the device's indicator is re-tried after a fault. Do not set lower than 30 seconds.

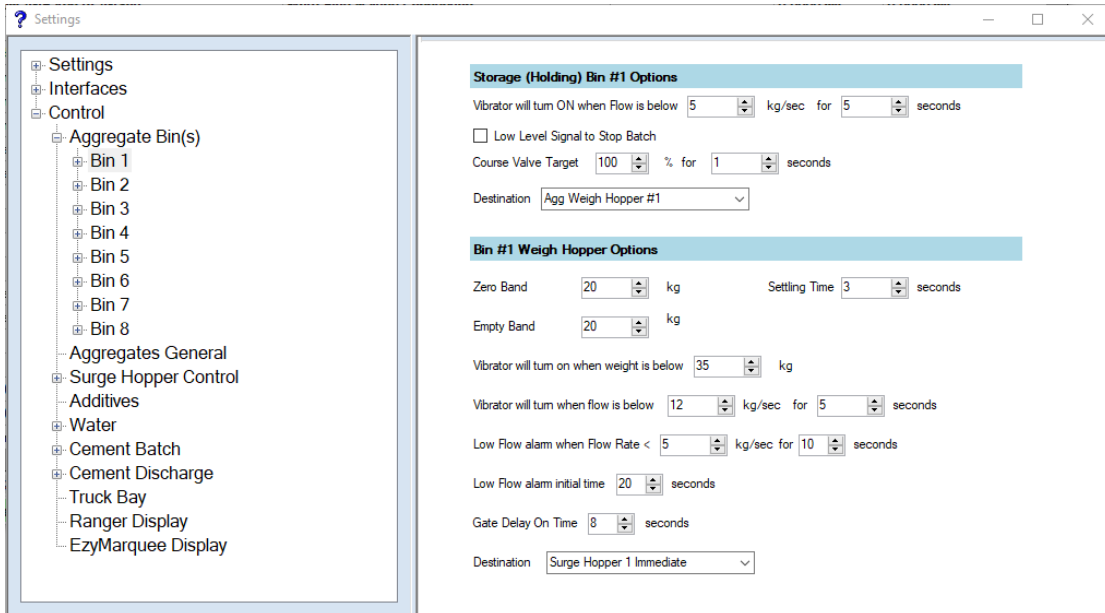
3.3.3 TCP Server Delay After Read

Time in milliseconds after a TCP Server has read a weight reading that the driver will be blocked before another attempted read. The more time you have the more time that is allocated for other drivers.

3.3.4 TCP Server Delay in Main Thread

Time in milliseconds that a TCP Server will be blocked for at each cycle. Use in combination with "TCP Server Delay after Read" to achieve the best performance.

3.4 Aggregate Bin Storage or Holding Bin

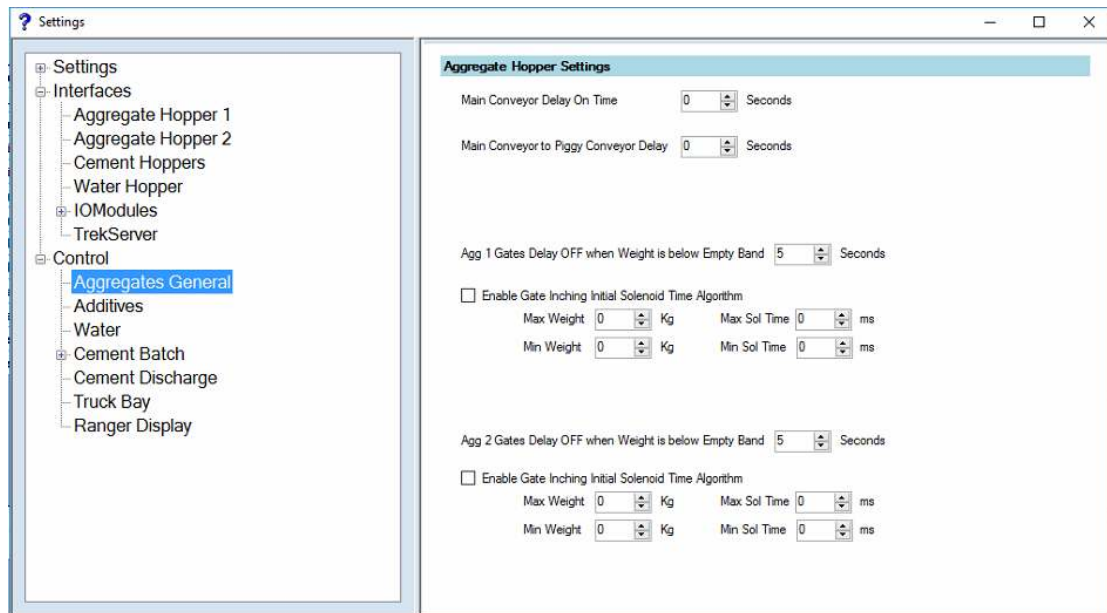


The following shows options for Storage or Holding Bin

Destination – Select #Bin1 if going from a Holding Hopper to a Bin Weigh Hopper, select “Agg Weigh Hopper #1” is going from a Holding Hopper to an Aggregate Hopper 1, select “Agg Weigh Hopper #2” is going from a Holding Hopper to an Aggregate Hopper 2

Note that a Holding Hopper can have a Course Valve and a Trim Valve and has no Load Cells, so its destination must be a hopper with load cells.

3.5 Control Aggregates Settings



3.5.1 Main Conveyor Delay On Time (Warning Bell Time)

If this time is set to 0 the main conveyor will start straight away. If a time is set then the Main Conveyor will be delayed by this time, however during this time is when the Warning Bell is sounded.

3.5.2 Main Conveyor to Piggy Conveyor Delay

This is delay on time for the secondary conveyor to start after the Main Conveyor. The main conveyor feedback must be on if it is configured for the piggy back conveyor to run.

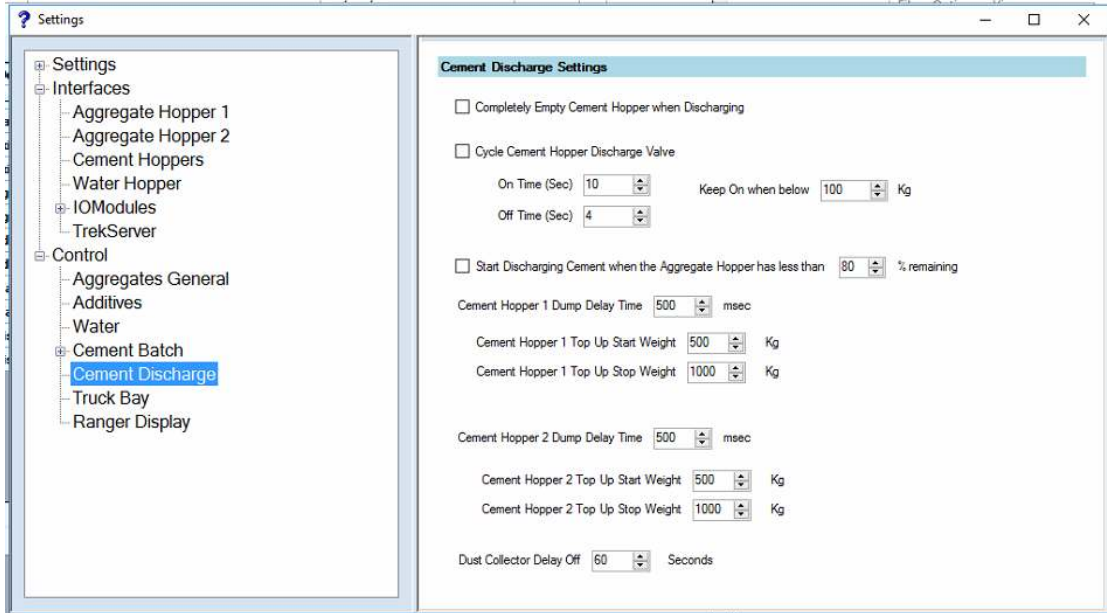
3.5.3 Agg1 or 2 Gates Delay OFF when Weight is below Empty Band

When the weight falls below the Empty Band weight, they must stay on for this minimum time before they close.

3.5.4 Enable Gate Inching Initial Solenoid Time Algorithm

This will enable the initial inching algorithm. Usually there is a set initial time that is sent by AxiBatch in milliseconds. The algorithm will provide a linear equation to calculate the initial solenoid opening time based on the weight in the hopper before opening the solenoid. Typically the more weight in the hopper the longer the initial time you want to use as it will harder to open. The values will be experimental and will vary from site to site. You may want to start with a Max Weight of around 10000kg and a min weight of 1000kg, with solenoid times of 500ms to 1000ms.

3.6 Control Cement Discharge Settings



3.6.1 Completely Empty Cement Hopper when Discharging

When checked this will make sure all the Contents of the Cement Hopper is emptied during discharge.

3.6.2 Cycle Cement Hopper Discharge Valve

When checked will open the discharge valve for the Open Time and closed for the Close Time. But will keep open when below a certain weight. This applies only to the CemHopper1Gate output (I.e. Non Inching Valve)

3.6.3 Start Discharging Cement when the Aggregate Hopper has less than X % remaining

When enabled Cement will not discharge unless less than X% of Aggregate is remaining. I.e. if set to 90% , then Cement will be enabled to discharge when there is 89% or less of Aggregate in the Hopper remaining.

3.6.4 Cement Hopper X Dump Delay Time

When Cement Discharge is enabled this is the Delay time before the Cement Discharge gates will open.

3.6.5 Cement Hopper X Top Up Start & Stop Weights

This is the start up weight when a Silo will start to transfer it's cement to this Hopper. The Silo must have its mode set to "Auto Top Up" and it's destination must be this Hopper. The transfer will stop once the hopper weight is above the "Top Up Stop Weight". When discharging to Truck from the hopper AxiSoft will unload only the Recipe weight. Make sure the "Completely empty Cement Hopper Weight" is set to OFF.

3.6.6 Dust Collector Delay Off

Dust Collector delay Off time. When discharging has finished for longer than this time this is the time the Dust Collector will turn off.

3.7 Cement Batch General Settings

Cement Batching general Settings.

Possible configurations

- Cement Hopper 1 is Batching (Silo's 1, 3 & 4) can be batched to Cement Hopper 1 and Cement Hopper 2 is a Silo (Silo 2).
- Cement Hopper 1 is Batching and Cement Hopper 2 is Batching
- Cement Hopper 1 is a Silo, and Cement Hopper 2 is a Silo

3.7.1 Common Silo Filter Delay Off

Delay Off time to turn off the common Silo Filter when Silo is not running out Cement. Output it controls is 'SiloFilter'

3.8 Cement Silo's 1 to 4 Settings

Silo Settings.

3.8.1 Outlet Valve On Delay

Delay On Time for Silo Outlet Valve to open.

3.8.2 Auger On Delay

Delay On Time for Silo Auger to start and is usually after the Outlet valve is open if configured. (Currently Not Used or programmed in)

3.8.3 Mode

Silo Mode can be Normal or Auto Top Up.

In Normal Mode cement is Batched to it's destination Hopper.

In Auto Top Up mode the Destination Cement Hopper is topped up from this Silo. See Cement Hopper settings for the Start and Stop Top Up weights.

3.8.4 Destination

Destination Hopper this Silo will send it's Cement to.

"Truck" does not do anything but just a reminder that this Silo is not used as AxiBatch has it settings that the Silo is a Cement Hopper.

3.8.5 Slide Valve Mode

Silo Slide Valve Mode, Default is Normal

Normal - Slide valve is always on when discharging into Hopper

Pulsed - Slide Valve is Pulsed when discharging into the Hopper using the Pulse On and Pulse Off Times

The Slide Valve Delay on is the delay on time before it will open the Slide Valve.

3.8.6 Silo Filter Delay Off Time

Not currently used or programmed in. Future for controlling the Silo Filter.

3.9 Water Settings

TBF

3.10 Truck Bay Settings

Check

'Run Display in AUTO mode' to send aggregate data to the Remote Display when system is in AUTO mode

'Run Display in Off mode' to send aggregate data to the Remote Display when system is in not in AUTO or MANUAL mode. Leave off if you need the display to re-power.

'Run Display in MANUAL mode' to send aggregate data to the Remote Display when system is in MANUAL mode

Set the Green Lamp Delay off time to save power!

3.11 Backup Settings

To backup settings use File => Save Settings.

Then use the file dialog box to save Settings file to a desired location.

3.12 Restoring Settings

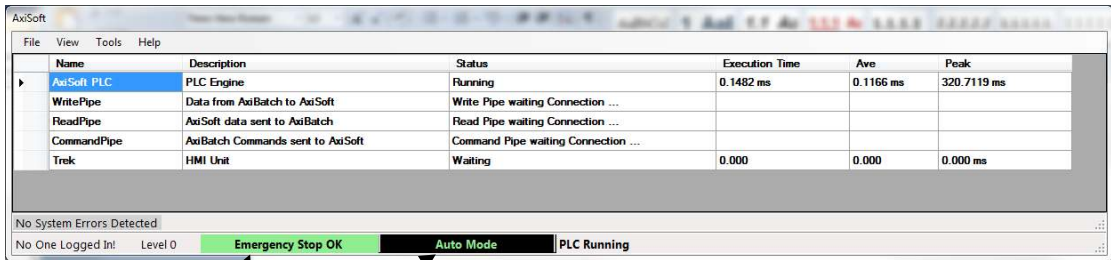
To restore settings use Tools => Restore => Settings.

Then use the file dialog box to locate and restore from the previously saved Settings file.

4 AXISOFT ALARMS

The following sections describe alarming and fault finding.

4.1 Main Display

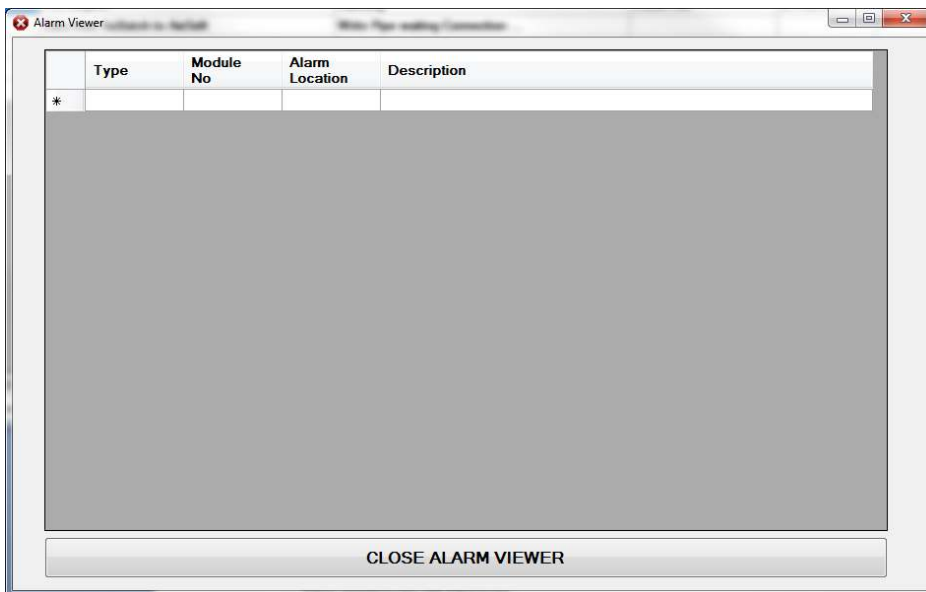


Emergency Stop Status, will show OK if not configured as an input. If configured could show that the Emergency Stop circuit has activated.

Mode Status. Will show Auto Mode, Manual Mode, Off Mode or Software Manual Mode.

The main grid shows the status of the PLC Engine, and connection status to AxiBatch software.

4.2 Alarm Summary



Alarm Summary displays all active alarms. Right click on the Alarm to either view more details or to acknowledge it.

5 DEVICES

5.1 RANGER 5000 or 5100

Activity	R5000	R5100	Comment
Discharge Table Control	Yes	No	However can use R5100 as R5000
Pause Cement	Yes	Yes	
Abort Cement	Yes	Yes	
Direct Auger Control	From AxiSoft	From R5100	Additional costs if R5100
Inflight Control	Yes	Yes	
Possible Overweight	Yes	Unlikely	Possible Overweight

MOXA Serial Device Servers (aka Serial-Ethernet converters) must be used to connect AxiSoft to these indicators – see Moxa setup section below.

5.1.1 Indicator Setup

Use the first serial port on the indicator for communications.

In summary, set to Protocol A and to AUTO HI. The BAUD Rate, Data Bits, Stop Bits, Parity must match the MOXA and the Terminator used must be '03' which is the ETX character.

Note: Full Setup ZERO and SET key for 2 seconds

If using drop in weight make sure that the Direction for the Material is set to "Under" otherwise set to "Over".

Item	Display	Set To
Serial Output 1	(Ser1)	Auto.Hi
Auto Output Format (Auto Transmit Options - Aut.OPT)	(TYPE)	Auto.A (default)
Auto output Source	(Src)	rdg / DISP (Display)
Start Character	(St.Chr)	02 (STX) or 00 (NULL)
End Character 1	(End.ch1)	03 (ETX) or 13 (CR)
End Character 2	(End.ch2)	00 (NULL) or 10 (LF)
Baud Rate	(bAUd)	9600 (default)
Bitmap Pattern	(bitS)	N81-2- (default)

		No Parity, 8 data Bits, 1 Stop Bit, no terminator resistor, RS232, no handshake
For R5100 Command or Weights Only mode		
Serial Output 1	(Ser1)	NET
NET.OPT	(ADDRES)	01 for Cement Hopper 1 02 for Cement Hopper 2
	(TYPE)	NEt.A

Quick Setup (Safe Setup for a R5000)

- Press Gross/Net for more than 2 seconds to enter Safe Setup mode
- Press the ZERO button to scroll thru the groups, until you get to "Serial:
- Press the TARE button to step through the items in that group
- Most items will be default but Serial 1 needs to be set up to Auto.hi and Serial 2 needs to be set up to auto.lo
- Use GROSS button to display item or digit and use PRINT button to change entry
- To exit press ZERO key until END appears and then press ITEM to exit and save

5.1.2 Moxa Device Server Setup

In Network settings, set the IP Address and set IP Configuration to "Static".

In serial Settings, set Interface to RS232 only and the Baud Rate and Data parameters must match the Indicator. Also set Flow Control to "None".

In Operation Settings, set:

- Operation Mode to 'TCP Server Mode'
- Local TCP Port to same Port as in AxiSoft (must not be used anywhere else!)
- TCP Alive Time to "1" minute
- Max Connections to "1"
- 'Delimiter 1' to "03" and Enable it (ETX Character).

When using Command Mode set:

- 'Delimiter 1' to "d" and Enable it (CR Character)
- 'Delimiter 2' to "a" and Enable it (CR Character).

5.1.3 Serial Cables

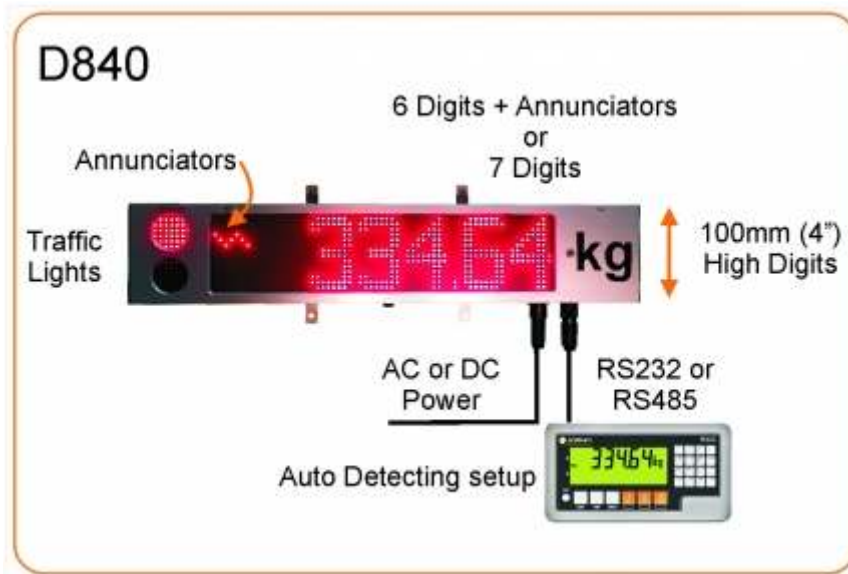
This applies to Aggregate Hopper 1 / 2, Cement and Water Hoppers.

Indicator	Pin (Indicator)	5 Pin Adapter	Moxa	Pin (Moxa)	5 Pin Adapter
TxD	3	3	RxD	2	1
RxD	2	1	TxD	3	3
G	5	5	G	5	5

Note: 5-pin adapter can be purchased from Axion, and is cabled up using screw terminals.

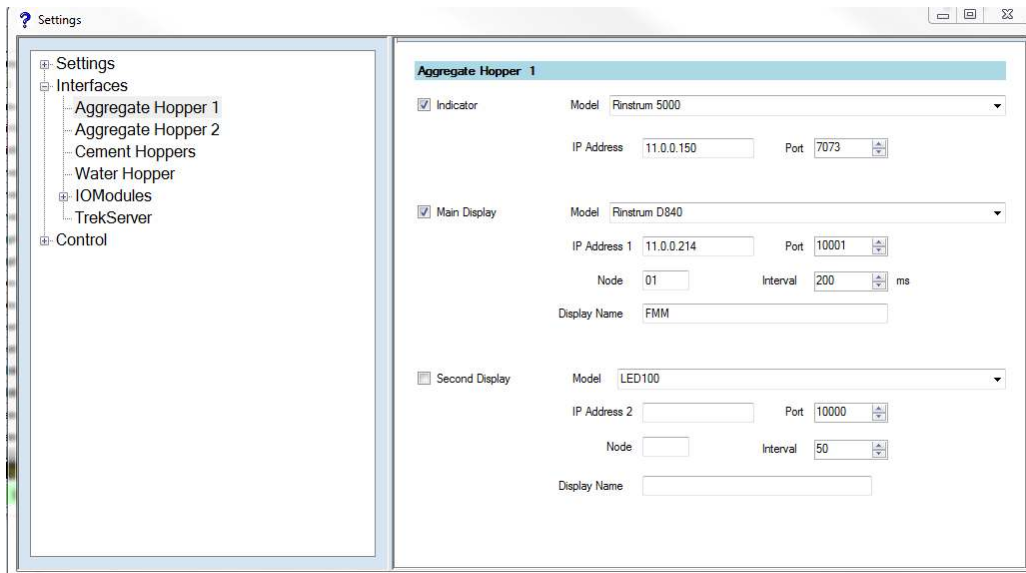
5.2 RINSTRUM D840

This device is a Remote Display Indicator for displaying Aggregate information to the Front End Loader driver. It will only display the first 6 letters of the material code alternating between weight and code.

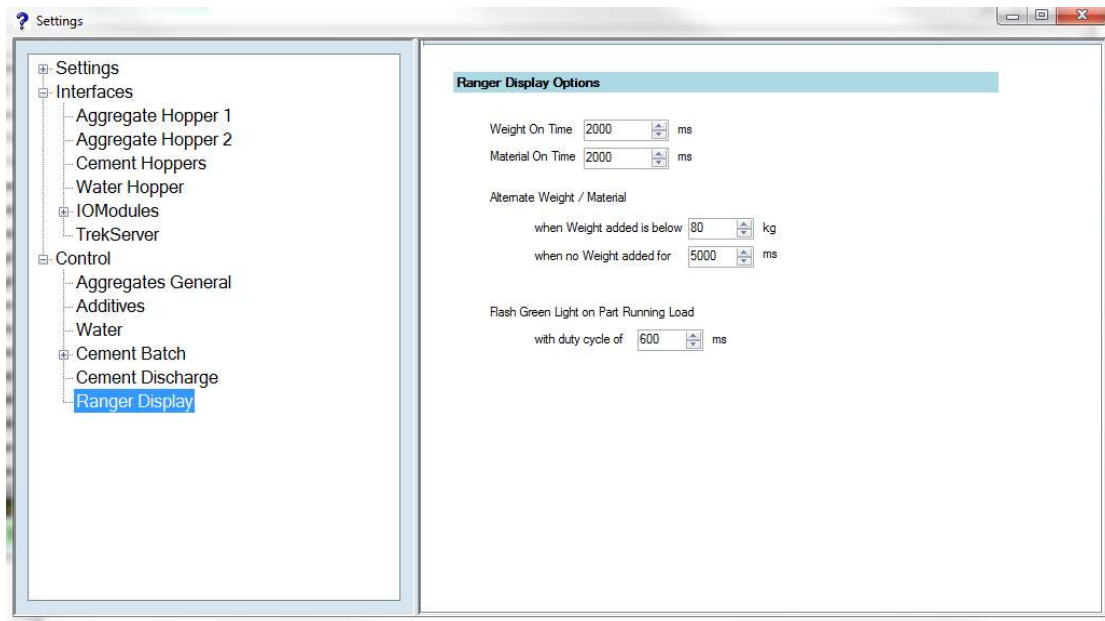


5.2.1 D840 AxiSoft Setup

- Select "Rinstrum D840" for the Model
- Always select Port 10001
- Enter correct IP Address
- Node Number is irrelevant for the D840
- Display Name is also irrelevant



Under the Control->Ranger Display section you have additional options.



Weight On Time - the time period the Weight is displayed when alternating between weight and material

Material On Time - the time period the Material Code is displayed when alternating between weight and material

Will Alternate between Weight and Material Code when weight is below a certain amount (80 kg) or when no weight has been added for (5000 ms).

Flash Green light when on Part Running load with duty cycle of 600ms. If set to zero will not flash on a part running load. (It will not come on at all)

5.2.2 Setting up the D840 IP Address

Use the Lantronix Device Installer software to do this. (Min V4.4)
 You can download this from

http://ltxfaq.custhelp.com/app/answers/detail/a_id/644

Connect the D840 to your router. The router should automatically assign an IP address to it using DHCP.

Run the Lantronix Device Installer software to locate the unit.
 (Lantronix folder -> DeviceInstaller)

If the Multiple network adapters prompt comes up you need to select yes, and then choose the network adapter your D840 is connected to.

Use the Assign IP button to change the IP address for the Customer.

5.2.3 Wiring the D840

Power Connector (240VAC)

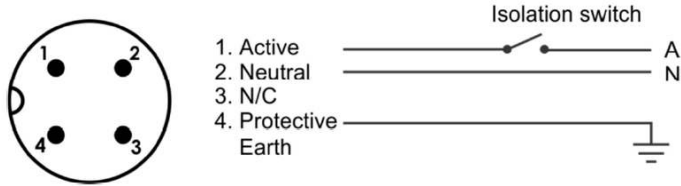
L Terminal - Active Red 240VAC

N Terminal - Neutral 240VAC

E - Earth (may show earth symbol)

Use an AC power source of 110-240VAC. The *Protective Earth* pin 4 MUST be connected to AC mains earth for both safety and EMC regulation compliance.

AC Power Connection



Use a power cable of min 0.75mm²(AWG 20) to max 2.5mm² (AWG 14)

Ethernet Connection

D840 Pin 1 - Ethernet Tx+ White/Orange (Pin 1)

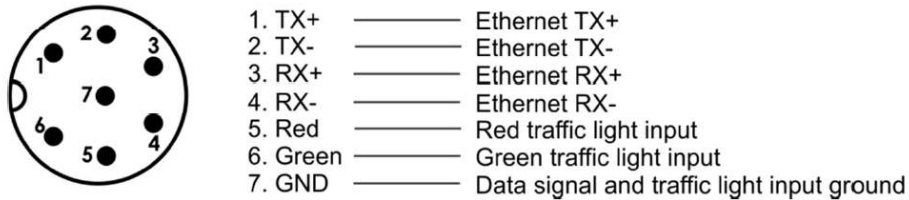
D840 Pin 2 - Ethernet Tx- Orange (Pin 2)

D840 Pin 3 - Ethernet RX+ White/Green (Pin 3)

D840 Pin 4 - Ethernet RX- Green (Pin 6)

Note: The display listens on port 10001. Use this port with the assigned IP to connect to the display.

Communications Connection (Ethernet)



Note – Do not worry about using Pins 5 and 6 for traffic lights as these lights can be controlled via the AxiSoft program.

5.3 EzMarquee

This device is a Remote Display Indicator for displaying Aggregate information to the Front End Loader driver. It can display the first 10 letters of the material code at the same time as displaying weight.

5.3.1 EzMarquee AxiSoft Setup

Select "EZMarquee" for the Model

Always select Port 49999

Enter correct IP Address

Node Number is irrelevant for the EZMarquee

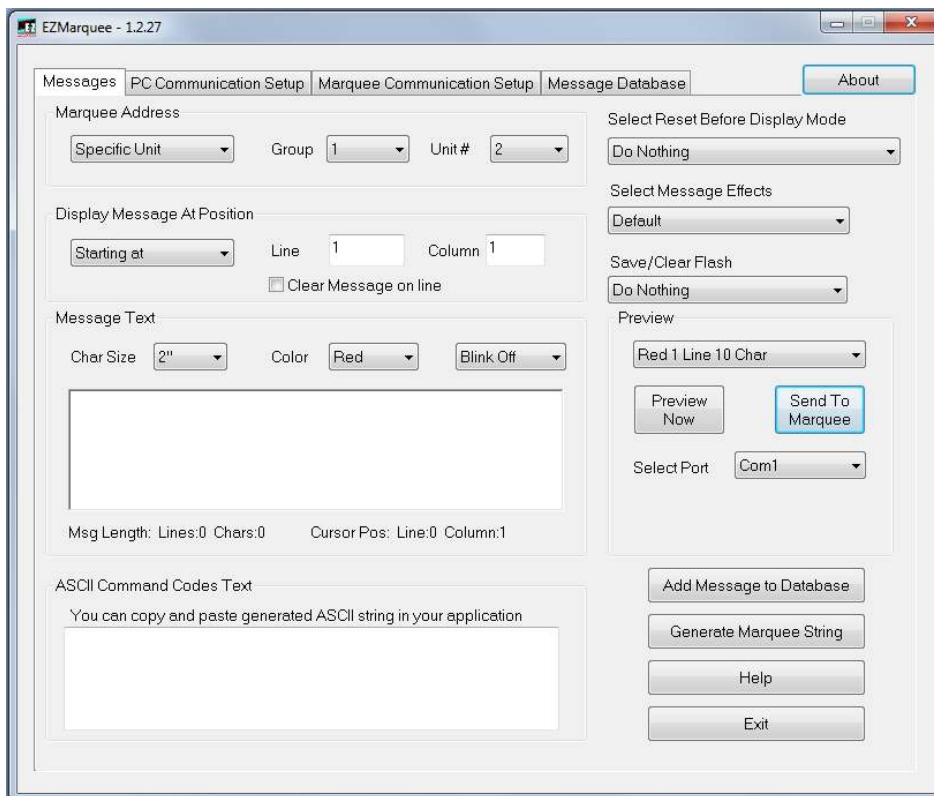
Display Name is displayed with weight in non batching conditions (10Char)

5.3.2 Setting up the IP Address

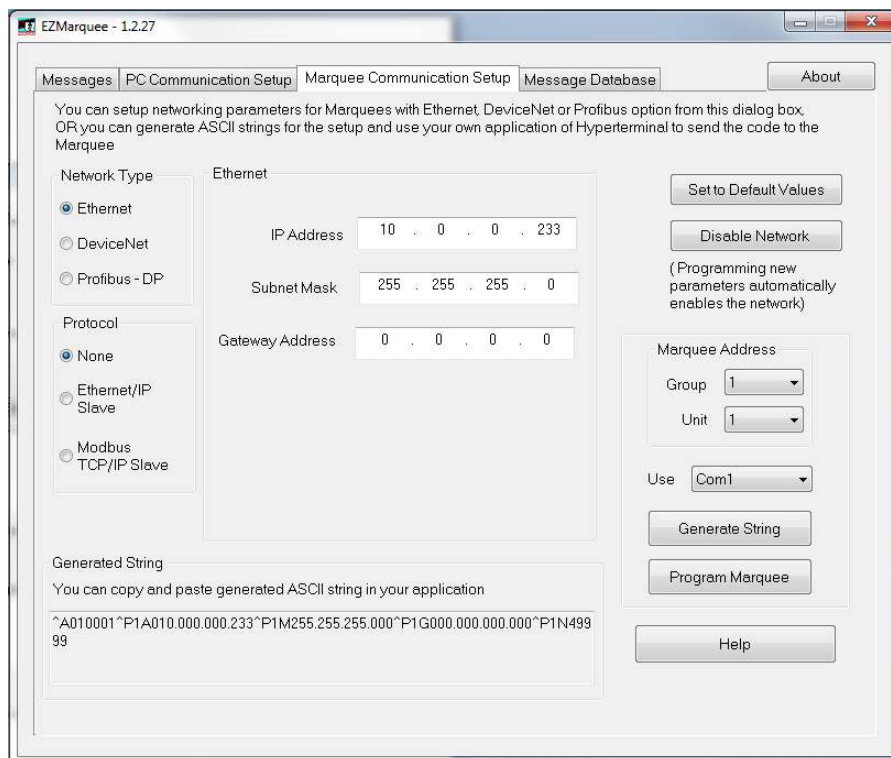
Use the EZMarquee software Min V1.2.27

(Contact <http://www.balmoral.net.au/> for this)

You need to connect via a serial cable first.



Go to the "Marquee Communication Setup"



Select the correct COM Port

The serial port default baud rate is 9600 baud, 8 Data Bits, No Parity and 1 Stop Bit

(Select the correct parameters if necessary, in the PC Communication Setup)

On the "Marquee Communication Setup"
select "Ethernet" for Network Type

5.4.1.1 Changing IP Address (with PC on same network as ioLogik)

Select the module on the left pane and select "Ethernet Configuration" under Overview->Network Settings.

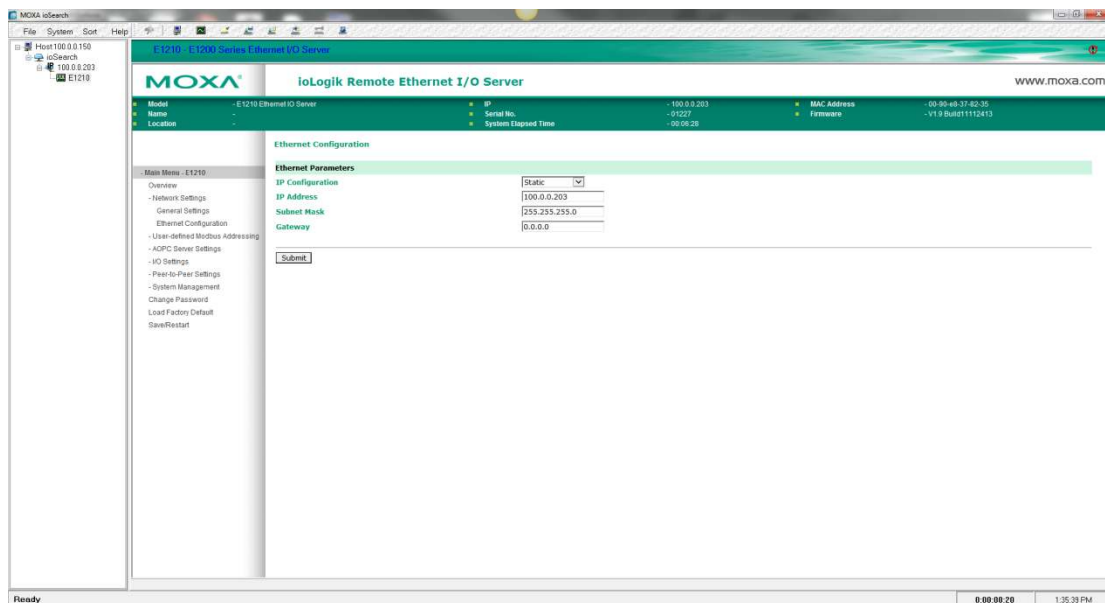
Set

- the IP Configuration to "Static"
- the IP address to what you need etc...

Press "Submit"

Press "Save/Restart"

Exit Software and Start again.



OR if no page appears

Select Module, then right click and select "Change IP address".

5.4.1.2 Changing IP Address (with PC on different network to ioLogik)

Run ioSearch software. Select the modules you want to read and press "Start Search".

New modules will be detected as a 192.168.127.254

Change your adapter IP to 192.168.127.150 (for example)

Select the module Part Number (Eg. E1214) and right click on it.

Select "Change IP Address"

Click into the "IP Address" field

Type in the new IP Address.
Press the small button inside the field on the right.

Press the "Submit" button and select "Yes"

Wait for IO Server to Restart Message will appear,
When finished press "OK"

Press "Exit" button.

It will ask you for a new search. Press "Yes".
Press "Start Search"
Module should now appear with new IP address.

Repeat until all modules are done.

Change your Ethernet adapter (PC) back to the original IP address.

5.4.1.3 E1214 Setup

The E1214 needs to be set to the following

DO (Relay) (Ch0-5)	0032	03:HOLDING REGISTER	40033
DI Value	0033	03:HOLDING REGISTER	40034
DI COUNTER	0039	03:HOLDING REGISTER	40040

1. Press on the Module IP Address (Left pane). On the right Pane the Main Screen will appear

2. Select "Digital Inputs/Outputs" under Main Menu - E1214 => Overview => User Defined Modbus Address
3. Check "Enable User-defined Modbus Addressing" the user defined fields and function codes fields will be enabled
4. Change DI Value from 0000 to 0033 and Input Status to Holding Register
5. Change DI Counter from 0016 to 0039 and Input Register to Holding Register
6. Press "Submit"
7. Press "Save/Restart"

Example

Main Menu - E1214

Overview

- Network Settings
- General Settings
- Ethernet Configuration
- User-defined Modbus Addressing
- Digital Inputs/Outputs
- Default Address
- AOPC Server Settings
- I/O Settings
- DI Channels
- DO Channels
- Peer-to-Peer Settings
- SNMP Settings
- System Management
- Change Password
- Load Factory Default
- Save/Restart

Enable User-defined Modbus Addressing

User-defined Modbus address							
No.	Description	User-defined Start Address (DEC)	Function Code	Read/Write	Reference Address (DEC)	Total Channels	Data Type
1	DO (Relay) Value	<input type="text" value="0000"/>	01:COIL STATUS	RW	<input type="text" value="00001"/>	6	1 bit
2	DO (Relay) Pulse Status	<input type="text" value="0016"/>	01:COIL STATUS	RW	<input type="text" value="00017"/>	6	1 bit
3	DO (Relay) Value All Channel (Ch0-Ch5)	<input type="text" value="0032"/>	03:HOLDING REGISTER	RW	<input type="text" value="40033"/>	1	1 WORD
4	DI Value	<input type="text" value="0033"/>	03:HOLDING REGISTER	RW	<input type="text" value="40034"/>	6	1 WORD
5	DI Counter Value (Double Word)	<input type="text" value="0039"/>	03:HOLDING REGISTER	RW	<input type="text" value="40040"/>	6	2 WORD
6	DI Value All Channel (Ch0-Ch5)	<input type="text" value="0048"/>	04:INPUT REGISTER	R	<input type="text" value="30049"/>	1	1 WORD
7	DI Counter Start/Stop	<input type="text" value="0256"/>	01:COIL STATUS	RW	<input type="text" value="00257"/>	6	1 bit
8	DI Counter Clear	<input type="text" value="0272"/>	01:COIL STATUS	RW	<input type="text" value="00273"/>	6	1 bit
9	P2P Connect Status	<input type="text" value="4096"/>	02:INPUT STATUS	R	<input type="text" value="14097"/>	6	1 bit
10	P2P Output Safe Status	<input type="text" value="4112"/>	02:INPUT STATUS	R	<input type="text" value="14113"/>	6	1 bit
11	Clear P2P Output Safe Status	<input type="text" value="4128"/>	01:COIL STATUS	RW	<input type="text" value="04129"/>	6	1 bit
12	Clear Watchdog alarm	<input type="text" value="4144"/>	01:COIL STATUS	RW	<input type="text" value="04145"/>	6	1 bit

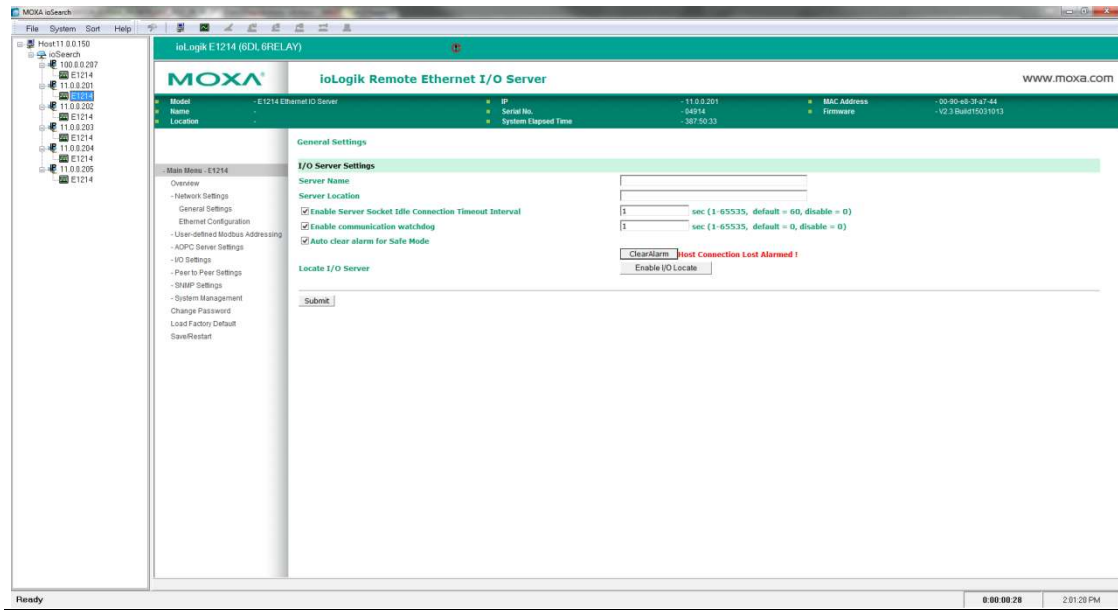
Note

Change 15 DO (Relay) Pulse Count from 0036 to 0074 (for newer firmware versions)

5.4.1.4 E1214 Output Settings

In Network Settings => General Settings:

- Enable the "Enable Server Socket Idle Connection Time Interval" and set to 1 second
- Enable the "Communication watchdog" and set to 1 second.
- Enable the "Auto clear alarm for safe mode"
- Press "Submit" when finished.



In IO Settings => DO Channels, select each output channel (Eg. DO-00)

- Main Menu - E1214

- Overview
- Network Settings
 - General Settings
 - Ethernet Configuration
- User-defined Modbus Addressing
- AOPC Server Settings
- I/O Settings
 - DI Channels
 - DO Channels
- Peer-to-Peer Settings
- SNMP Settings

[Refresh page](#)

DO Channel	Mode	Status	ON Width
DO-00	DO	OFF	--
DO-01	DO	OFF	--
DO-02	DO	OFF	--
DO-03	DO	OFF	--
DO-04	DO	OFF	--
DO-05	DO	OFF	--

For each Output set the "Safe Status Setting" to "OFF" for all Outputs. Submit for all outputs.

If the output is to CLOSE an Inching Valve, you can set this to "ON" to prevent spillage in case of a network issue.

At the end:

Select Save/Restart (Bottom left menu) and then press Submit to save your changes.

DO Channel 0 Settings

Mode	DO Status	OFF Width*	ON Width*	Pulse Count	Pulse Start
1. Current Setting					
DO	OFF				
2. Power On Setting					
	OFF				
3. Safe Status Setting					
	OFF				
4. Power On Delay 0 Sec(Max:300)					
<input type="checkbox"/> Apply to all DO channels					
5. Alias Name					
Alias name of channel					
DO					
Alias name of "OFF" status					
OFF					
Alias name of "ON" status					
ON					
6. Relay Count					
Relay Counter Value: 1162					

NOTE: Pulse width unit = 1.5 s, range = 1-65535.

WARNING: Be sure to Save/Restart your settings.

IMPORTANT

Wait until it is back then Power Off and then On the unit.

5.4.1.5 Setting an Input to be a Counter

AxiSoft has several inputs that are Counter Type inputs. These must be configured as Counters in the Input Module.

E.g. E1214 Input 02 is an Additive Pulse

1. Go to the DI Channels (Main Menu E1214 => Overview => I/O settings => DI Channels)
2. Click on DI-02

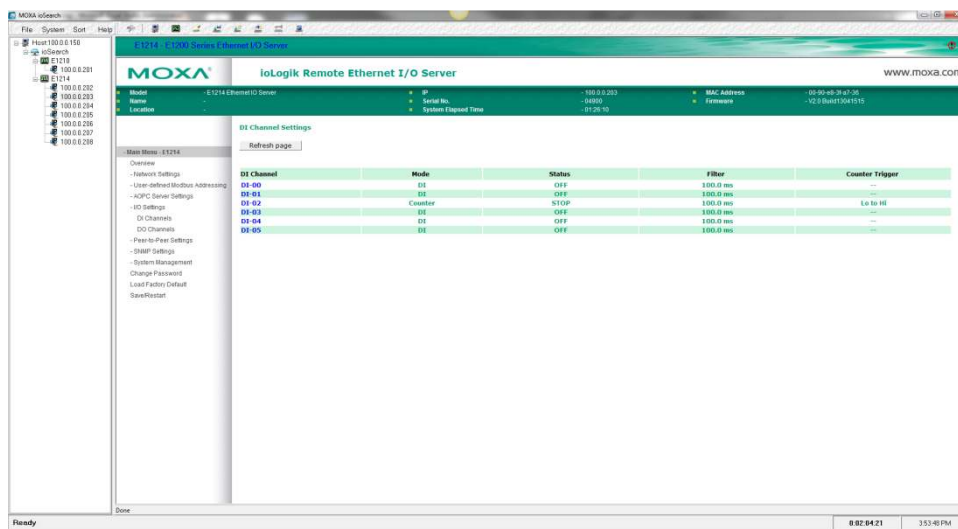
3. In item 1 change the current setting from DI to Counter
4. For Filter set to 1ms
5. Counter Trigger should be Lo to Hi
6. Check on "Counter Start/Enable" on items 1,2 & 3
7. Press "Submit"
8. Press "Close".

DI Channel 0 Settings

Mode	Filter	Counter Trigger	Counter Start/Enable
[1. Current Setting]			
Counter	1	Lo to Hi	<input checked="" type="checkbox"/>
[2. Power On Setting]			
			<input checked="" type="checkbox"/>
[3. Save Counter On Power Failure]			
			<input checked="" type="checkbox"/>
[4. Counter Initial Value Settings]			
Counter Initial Value	0		<input type="checkbox"/>
[5. Reset Counter]			
			<input type="checkbox"/>
[6. Clear overflow]			
			<input type="checkbox"/>
[7. Counter Scaling]			
[Slope-intercept Formula]			
<input type="checkbox"/> Counter Scaling Enable			
Result=Count Difference * 0 + 0			
Update every 0 sec			
[8. Apply to all]			
<input type="checkbox"/> Apply to all DI channels			
[9. Alias Name]			
Alias name of channel			
DI-00			
Alias name of "OFF" status			
OFF			
Alias name of "ON" status			
ON			
		<input type="button" value="Submit"/> <input type="button" value="Close"/>	
Note1:	Filter unit=1ms, range=1~65535.		
Note2:			
Sensor Type	-> Wet Contact (Source or Sink) and Dry Contact.		
Dry Contact	-> OFF : Open. -> ON : Short to GND.		
Wet Contact (Sink/NPN)	-> OFF : 10 - 30VDC. -> ON : 0 - 3 VDC.		
Wet Contact (Source/PNP)	-> OFF : 0 - 3 VDC. -> ON : 10 - 30VDC.		

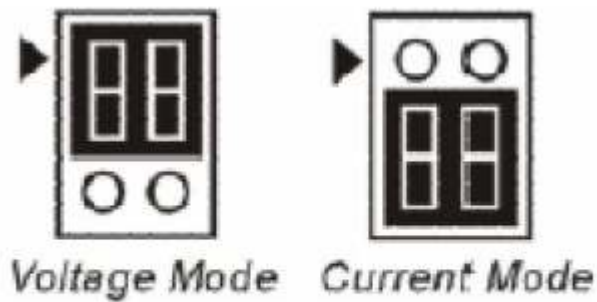
WARNING: Be sure to Save/Restart your settings.

The input should have "counter" in the Mode column.



5.4.1.6 E1240 Analog Input Module Settings

To set to current input set to Current mode as in the diagram below.



The default setting is Voltage Mode.

6 OUTPUTS

This section describes all Outputs available to the system and how they function.

Those highlighted in orange are for future and may not be functional.

6.1 Control of Outputs

The order of control priority for outputs is as follows:

1. Forced On/Off (Highest Priority) (These are on individual basis)
2. Manual Control (External Hardwired Switches - Must have a Manual Mode input)
3. Software Manual Control (Software Manual Control Panel)
4. Automation (from Sequences, Auto Input is not necessary and this will always be case when the 1st 3 options are not in effect).

6.2 Storage / Holding Bin Outputs

Name	Operation Description
StorageBin1Gate	Valve(s) to transfer material from Storage Bin 1 to Weigh Bin 1, this valve can be pulsed based on load size
StorageBin1GateTrim	Trim Valve(s) to transfer material from Storage Bin 1 to Weigh Bin 1, this valve can be pulsed based on load size and can operate independent of the StorageBin1Gate
StorageBin1Vibrator	Storage Bin 1 Vibrator

6.3 Aggregate Weigh Bin Outputs

Name	Operation Description
Bin1Gate1	Normal Operating Gate from Bin 1 to Conveyor or Agg Hopper
Bin1Gate2	Normal Operating Gate 2 from Bin 1 to Conveyor or Agg Hopper
Bin1Gate1Open	Gate 1 Inching Valve Open Signal to Conveyor or Agg Hopper
Bin1Gate1Close	Gate 1 Inching Valve Close Signal to Conveyor or Agg Hopper
Bin1Gate2Open	Gate 2 Inching Valve Open Signal to Conveyor or Agg Hopper
Bin1Gate2Close	Gate 2 Inching Valve Close Signal to Conveyor or Agg Hopper
Bin1Vibrator	Bin 1 Vibrator
Bin1GateTrim	Future

6.4 Aggregate #1 Hopper Outputs

This applies to Aggregate Hopper 1 / 2, Cement and Water Hoppers.

Name	Operation Description
Agg1Conveyor	Operates the Conveyor running from the Aggregate Hopper 1 onto the Main Conveyor. Will start after the Warning Siren delay {AxiSoft:Warning Bell Delay} has ended, and complete at the end of the Discharge after a time delay {AxiBatch : Conveyor Delay Off}. Will only run when in the Discharge Cycle and Agg1Main is Full Running.
Agg1Lamp	Operates when Batching Aggregates into Hopper (Agg1 Sequence Steps 1 to 7) and is Agg1 is Full Running.
Agg1Vibrator	Operates when the Flow Rate (discharge) has a Low Flow or once the Weight in the Hopper falls below X Kg until it reaches below the Empty Band {All Settings in AxiBatch}
Agg1Gate1	On/Off Gate (Single Solenoid)
Agg1Gate1Open	For Inching Gates (Open Pulse)
Agg1Gate1Close	For Inching Gates (Close Pulse)
Agg2Gate2	On/Off Gate (Single Solenoid)
Agg2Gate2Open	For Inching Gates (Open Pulse)
Agg2Gate2Close	For Inching Gates (Close Pulse)
Agg3Gate3	On/Off Gate (Single Solenoid)
Agg3Gate3Open	For Inching Gates (Open Pulse)
Agg3Gate3Close	For Inching Gates (Close Pulse)

6.5 Aggregate #2 Hopper Outputs

Name	Operation Description
Agg2Conveyor	Operates the Conveyor running from the Aggregate Hopper 2 onto the Main Conveyor. Will start after the Warning Siren delay {AxiSoft:Warning Bell Delay} has ended, and complete at the end of the Discharge after a time delay {AxiBatch : Conveyor Delay Off}. Will only run when in the Discharge Cycle and Agg2Main is Full Running.
Agg2Lamp	Operates when Batching Aggregates into Hopper (Agg2 Sequence Steps 1 to 7) and is Agg2 is Full Running.
Agg2Vibrator	Operates when the Flow Rate (discharge) has a Low Flow or once the Weight in the Hopper falls below X Kg until it reaches below the Empty Band {All Settings in AxiBatch}
Agg2Gate1	On/Off Gate (Single Solenoid)
Agg2Gate1Open	For Inching Gates (Open Pulse)
Agg2Gate1Close	For Inching Gates (Close Pulse)
Agg2Gate2	On/Off Gate (Single Solenoid)
Agg2Gate2Open	For Inching Gates (Open Pulse)
Agg2Gate2Close	For Inching Gates (Close Pulse)
Agg2Gate3	On/Off Gate (Single Solenoid)
Agg2Gate3Open	For Inching Gates (Open Pulse)
Agg2Gate3Close	For Inching Gates (Close Pulse)

6.6 Aggregate Hopper Common Outputs

Name	Operation Description
AggHopperMainConveyor	Operates the main Conveyor running from the Aggregate Hopper into the Truck chute. Will start after the Warning Siren delay {AxiSoft:Warning Bell Delay} has ended, and complete at the end of the Discharge after a time delay {AxiBatch : Conveyor Delay Off}. Will only run when in the Discharge Cycle and Agg1Main or Agg2Main is Full Running.
AggConveyorWarningBell	Operates at the start of the Discharge Cycle and for period of time {AxiSoft:Warning Bell Delay}. Also occurs in Manual Mode.

6.7 Truck Bay Outputs

Name	Operation Description
TruckBayRedLight	Indicates not to Remove Concrete Truck from Truck Bay
TruckBayGreenLight	Indicates that the Concrete Truck can leave the Truck bay
TruckBayMiniSock	Solenoid to swing Mini Sock into Place when a Mini Truck is detected in a Batch
TruckBayBigSock	Solenoid to swing Big Sock into Place when a Big Truck is detected in a Batch
TruckBaySockInchUp	Solenoid that inches the Sock up
TruckBaySockInchDown	Solenoid that inches the Sock down

6.8 Silo Outputs

Name	Operation Description
Silo1Gate	
Silo2Gate	
Silo3Gate	
Silo4Gate	
Silo1SlideValve	
Silo2SlideValve	
Silo3SlideValve	
Silo4SlideValve	
Silo1FillValve	
Silo2FillValve	
Silo3FillValve	
Silo4FillValve	
Silo1Auger	
Silo2Auger	
Silo3Auger	
Silo4Auger	

6.9 Cement Hopper #1 Outputs

Name	Operation Description
CemHopper1 Gate	
CemHopper1 GateOpen	
CemHopper1 GateClose	
Cem1 Vibrator	
Cem1 Auger	Will operate when Cement Hopper 1 is dumping in steps 2 and 4 (jog). If input CemHopper1 InAuto is used then Auger will only operate if this is energised

Cem1Airation	
Cem1DustExtractor	

6.10 Water Outputs

Name	Operation Description
WaterStart	Will energise for X seconds at start of batching water. Used for ME995-7 Water Batch Controller.
WaterStop	Will energise for X seconds at end of batching water. Used for ME995-7 Water Batch Controller.
WaterReset	Will energise for X seconds before start of batching water. Used to reset the ME995-7 Water Batch Controller.
WaterRun	Will energise during the Batching of Water, after the initial Water Delay on timer has elapsed
WaterPump	Will energise during the Batching of Water, after the initial Water Delay on timer has elapsed
WaterValve	Will energise during the Batching of Water
WaterHopperValve	Will energise during the Batching of Water
WaterHopperValveOpen	Will pulse during the Batching of Water based on flow
WaterHopperValveClose	Will pulse during the Batching of Water based on flow
WaterHeaderTankValve	Will energise when not in discharge mode and when not batching water when the Hopper level is below the minimum start value
WaterSourceTown	Energises when the “WaterSourceRecipeSwitch” input is energised and WaterSource in recipe is set to Town Or “WaterSourceRecipeSwitch” input is Off and both the “WaterSourceRecycleSwitch” and “WaterSourceTownSwitch” inputs are Off or the “WaterSourceTownSwitch” is on If Water Mode is set to Water Hopper TopUp or Batch then these valves will only energise with the above conditions and when the Main Hopper Batch Sequence is running to Batch or Topup water
WaterSourceRecycle	Energises when the “WaterSourceRecipeSwitch” input is energised and WaterSource in recipe is set to Recycle Or “WaterSourceRecipeSwitch” input is Off and the “WaterSourceRecycleSwitch” input is on and the “WaterSourceTownSwitch” input is Off If Water Mode is set to Water Hopper TopUp or Batch then these valves will only energise with the above conditions and when the Main Hopper Batch Sequence is running to Batch or Topup water
WaterSpray	Will energise while the Main Conveyor is Running

6.11 Additive Outputs

Name	Operation Description
Add1Run	Output to Run Additive #1 Pump via ME2008
Add2Run	Output to Run Additive #2 Pump via ME2008
Add3Run	Output to Run Additive #3 Pump via ME2008
Add4Run	Output to Run Additive #4 Pump via ME2008
Add5Run	Output to Run Additive #5 Pump via ME2008
Add6Run	Output to Run Additive #6 Pump via ME2008
Add7Run	Output to Run Additive #7 Pump via ME2008
Add8Run	Output to Run Additive #8 Pump via ME2008
AdditivesReset	Used to reset the Counters on the ME2008 Additive Controller

7 INPUTS

This section describes all Inputs available to the system and how they function. Those highlighted in orange are for future and may not be functional.

7.1 Common Inputs

Name	Operation Description
Emergency Stop OK	Emergency Stop Circuit is Made
SwitchAutoMode	Auto Mode Switch (If Manual and Auto does not exist system will always maintain auto mode)
SwitchManualMode	Manual Mode Switch (must have Auto Switch if you have Manual)
SwitchPause	Pause Sequence Push Button (Used in Auto Mode)
AggHopperMainConveyorRunning	Main Conveyor Running Signal (can incorporate overload)
AggHopperMainConveyorOverload	Overload on the Main Conveyor
AggHopperMainConveyorSwitch	Will Control the Main Conveyor (and Piggy Back conveyors) in Manual Mode
AggHopperMainConveyorBeltProx	Proximity that senses the Belt Sprocket Tag
TruckBaySockInchUpButton	Button to Inch the Sock Up
TruckBaySockInchDownButton	Button to Inch the Sock Down
TruckBayDoorClosed	Truck Bay Door is closed
SockInPlace	Sock is in Position
OKToDumpButton	Button near Truck Bay to inform the system that it is ready to dump into the Truck
AirCompressorPressureGood	Energised means enough air pressure to batch

7.2 Remote Inputs

Name	Operation Description
RemoteAck	Remote button that will acknowledge Over Weight alarms for Aggregates
RemoteRetry	Remote button that will allow a retry of Under Weight alarms for Aggregates or will restart a Paused system
RemotePause	Remote Button that will PAUSE the batching or discharging
RemoteAbort	Remote button that will acknowledge Under Weight alarms and abort to the next material or will acknowledge an Over Weight alarm by taking the overweight value to the next material

7.3 Aggregate #1 Hopper Inputs

Name	Operation Description
AggHopper1ConveyorRunning	Conveyor Associated to only Agg Hopper 1 is Running
AggHopper1ConveyorOverload	Conveyor Associated to only Agg Hopper 1 has Tripped
AggHopper1Gate1Closed	Proximity feedback switch indicating the gate is closed
AggHopper1Gate2Closed	Proximity feedback switch indicating the gate is closed
AggHopper1Gate3Closed	Proximity feedback switch indicating the gate is closed
AggHopper1Gate1Switch	Manual Switch to Open Gate 1 (Pulse)
AggHopper1Gate2Switch	Manual Switch to Open Gate 2 (Pulse)
AggHopper1Gate3Switch	Manual Switch to Open Gate 3 (Pulse)
AggHopper1Gate1VibSwitch	Manual Switch to Open Gate 1 (Pulse) and Vibrate Hopper
AggHopper1Gate2VibSwitch	Manual Switch to Open Gate 2 (Pulse) and Vibrate Hopper
AggHopper1Gate3VibSwitch	Manual Switch to Open Gate 3 (Pulse) and Vibrate Hopper
AggHopper1Gate1Pos1	Proximity feedback switch indicating the gate is in position 1 (Low Speed)
AggHopper1Gate1Pos2	Proximity feedback switch indicating the gate is in position 2 (Medium Speed)
AggHopper1Gate1Pos3	Proximity feedback switch indicating the gate is in position 3 (High Speed)
AggHopper1Gate2Pos1	Proximity feedback switch indicating the gate is in position 1 (Low Speed)
AggHopper1Gate2Pos2	Proximity feedback switch indicating the gate is in position 2 (Medium Speed)
AggHopper1Gate2Pos3	Proximity feedback switch indicating the gate is in position 3 (High Speed)
AggHopper1Gate3Pos1	Proximity feedback switch indicating the gate is in position 1 (Low Speed)
AggHopper1Gate3Pos2	Proximity feedback switch indicating the gate is in position 2 (Medium Speed)
AggHopper1Gate3Pos3	Proximity feedback switch indicating the gate is in position 3 (High Speed)
AggHopper1GatePos1Switch	Future
AggHopper1GatePos2Switch	Future
AggHopper1GatePos3Switch	Future

7.4 Cement #1 Hopper Inputs

Name	Operation Description
CemHopper1GateClosed	Cement Hopper Gate is Closed
CemHopper1GatePos1	Feedback Position 1
CemHopper1GatePos2	Feedback Position 2
CemHopper1GatePos3	Feedback Position 3
CemHopper1GateSwitch	Manual Switch to open Cement Hopper Outlet Gate or Auger
CemHopper1GateVibSwitch	Manual Switch to open Cement Hopper Outlet Gate or Auger and the Cement Vibrator
CemHopper1GatePos1Switch	Manual Switch to Open Gate to certain Position (used for Inching Gates). Position could be feedback or a Pulse Time. If not used only the 1st Pulse time is used.
CemHopper1GatePos2Switch	
CemHopper1GatePos3Switch	
CemHopper1InAuto	If there is an Auto/Off/Manual switch for the Cement Hopper then this input is used to enable Cement Hopper outputs such as outlet valves and Augers

7.5 Cement #2 Hopper Inputs

Name	Operation Description
CemHopper2GateClosed	Cement Hopper Gate is Closed
CemHopper2GatePos1	Feedback Position 1
CemHopper2GatePos2	Feedback Position 2
CemHopper2GatePos3	Feedback Position 3
CemHopper2GateSwitch	Manual Switch to open Cement Hopper Outlet Gate or Auger
CemHopper2GateVibSwitch	Manual Switch to open Cement Hopper Outlet Gate or Auger and the Cement Vibrator
CemHopper2GatePos1Switch	Manual Switch to Open Gate to certain Position (used for Inching Gates). Position could be feedback or a Pulse Time. If not used only the 1st Pulse time is used.
CemHopper2GatePos2Switch	
CemHopper2GatePos3Switch	
CemHopper2InAuto	If there is an Auto/Off/Manual switch for the Cement Hopper then this input is used to enable Cement Hopper outputs such as outlet valves and Augers

7.6 Water Inputs

Name	Operation Description
WaterPulse	Usually comes from a Flow Meter (typically an output from the ME995-7 Water Batch Controller)
WaterValveClosed	Future
WaterValveOpen	Future
WaterPumpRunning	Future
WaterHopperSupplyValveOpen	Future
WaterHopperSupplyValveClosed	Future
WaterHopperSupplyPumpRunning	Future
WaterHopperHighLevel	Future
WaterHopperHighHighLevel	Future
WaterHopperLowLevel	Future
WaterSourceTownSwitch	Switch to tell the Town Water Valve to energise
WaterSourceRecycleSwitch	Switch to tell the Recycle Water Valve to energise
WaterSourceRecipeSwitch	Switch to tell the Town or Recycle Water Valve to energise based on the Recipe

7.7 Additive Inputs

Name	Operation Description
Add1Pulse	Additive #1 Tank Flow Pulse from Me2008
Add2Pulse	Additive #2 Tank Flow Pulse from Me2008
Add3Pulse	Additive #3 Tank Flow Pulse from Me2008
Add4Pulse	Additive #4 Tank Flow Pulse from Me2008
Add5Pulse	Additive #5 Tank Flow Pulse from Me2008
Add6Pulse	Additive #6 Tank Flow Pulse from Me2008
Add7Pulse	Additive #7 Tank Flow Pulse from Me2008
Add8Pulse	Additive #8 Tank Flow Pulse from Me2008

7.8 Analog Inputs

Name	Operation Description (these are scaled using the iosearch software from Moxa)
Silo1Radar	Cement Silo 1 Level
Silo2Radar	Cement Silo 2 Level
Silo3Radar	Cement Silo 3 Level
Silo4Radar	Cement Silo 4 Level