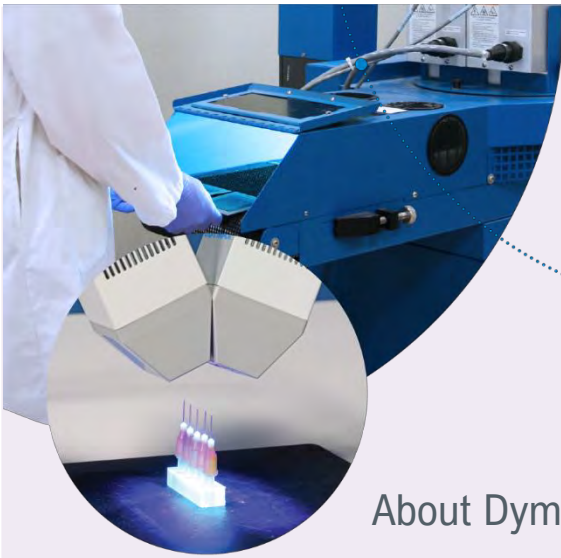


# BlueWave® MX-MIM

Controller for BlueWave®  
MX-Series Systems  
User Guide





## About Dymax

Light-curable adhesives. Systems for light curing, fluid dispensing, and fluid packaging.

Dymax manufactures industrial adhesives, light-curable adhesives, epoxy resins, cyanoacrylates, and activator-cured adhesives. We also manufacture a complete line of manual fluid dispensing systems, automatic dispensing systems, and light-curing systems. Light-curing systems include LED light sources, spot, flood, and conveyor systems designed for compatibility and high performance with Dymax adhesives. Dymax adhesives and light-curing systems optimize the speed of automated assembly, allow for in-line inspection, and increase throughput. System designs enable stand-alone configuration or integration into your existing assembly line.

The information contained within this guide is subject to change without notice. Please note that most dispensing and curing system applications are unique. Dymax does not warrant the fitness of the product for the intended application. Any warranty applicable to the product, its application, and use is strictly limited to that contained in the Dymax standard Conditions of Sale. Dymax recommends that any intended application be evaluated and tested by the user to ensure that desired performance criteria are satisfied. Dymax is willing to assist users in their performance testing and evaluation. Data sheets are available for valve controllers or pressure pots upon request.

# Contents

<b>Introduction</b> .....	<b>5</b>
Where to Get Help .....	5
<b>Safety</b> .....	<b>5</b>
<b>Product Overview</b> .....	<b>6</b>
Network Data Formats .....	6
<b>Unpacking</b> .....	<b>6</b>
Parts Included .....	6
<b>Connections</b> .....	<b>7</b>
Input Power .....	8
Interlocks .....	8
Emitters 1-4 .....	10
Ethernet Port .....	11
<b>Installation</b> .....	<b>11</b>
DIN Rail Mounting (Grounded).....	11
<b>Factory Reset Button</b> .....	<b>15</b>
<b>Set Up &amp; Web Interface Access</b> .....	<b>15</b>
Setting Up Network IP Address .....	15
Controlling Emitters via the Web Interface .....	16
<b>EtherNet/IP</b> .....	<b>19</b>
EtherNet/IP Adapter Parameters .....	19
<b>PROFINET</b> .....	<b>22</b>

<b>Web Guide .....</b>	<b>24</b>
Log In Page.....	24
Main Page.....	24
Network Configuration Page .....	25
Diagnostics Alarm Log Page .....	26
Diagnostics Page .....	28
Emitter Control Page.....	32
Configuration Mode.....	33
<b>Troubleshooting .....</b>	<b>43</b>
<b>MX-4E Extension Module .....</b>	<b>45</b>
Alarm Codes: MX-4E.....	47
<b>Parts and Accessories .....</b>	<b>48</b>
Spare Parts .....	48
Accessories .....	49
<b>Specifications .....</b>	<b>50</b>
<b>Warranty .....</b>	<b>51</b>
<b>Index .....</b>	<b>51</b>

# Introduction

Dymax prepared this user guide for experienced machine control and industrial automation engineers. Users should be experienced in EtherNet/IP or PROFINET protocols.

## Where to Get Help

Dymax Customer Support and Application Engineering teams are available by phone in the United States, Monday through Friday, from 8:00 a.m. to 5:30 p.m. Eastern Standard Time. You can also email Dymax at [info@dymax.com](mailto:info@dymax.com). Contact information for additional Dymax locations can be found on the back cover of this user guide.

Additional resources are available to ensure a trouble-free experience with our products:

- Detailed product information on [dymax.com](http://dymax.com)
- Dymax adhesive product data sheets on our website
- Safety data sheets (SDS) provided with shipments of Dymax materials

## Safety



**WARNING!** *Under NO circumstances should the interconnect cable from the controller to the LED emitter be connected or disconnected while power to the unit is on. This procedure is usually called “hot swapping” and should not be performed as it could cause damage to the controller or the emitter. Always power down the equipment before disconnecting or connecting any of these devices.*



**WARNING!** *If you use this UV LED light control injury can result from exposure to high-intensity light. For UV LED safety guidelines refer to the safety guide supplied with your BlueWave MX-series emitters.*

# Product Overview

The BlueWave® MX-MIM UV Curing Controller provides control and monitoring of Dymax MX-Series Emitters using EtherNet/IP or PROFINET communication to provide command and control of all functions. This provides a common platform many machine builders trust to ensure equipment operations and process management with high speed communications.

It comes in a standard 35mm DIN rail mountable configuration. It supports discrete safety interlocks for all channels to emitters and a master interlock for full protection.

The system is easily configurable with off the shelf applications and can be integrated with a large variety of PLC devices to support any level of system complexity.

## Network Data Formats

The controller will automatically detect EtherNet/IP or PROFINET connections.

## Unpacking

When your BlueWave MX-MIM arrives, remove all equipment from packaging and verify contents.

Please retain packing materials in the event the unit needs to be returned. Inspect unit for any damage or loose parts. Notify Dymax customer service of any issues prior to installation to prevent damage to associated equipment.

## Parts Included

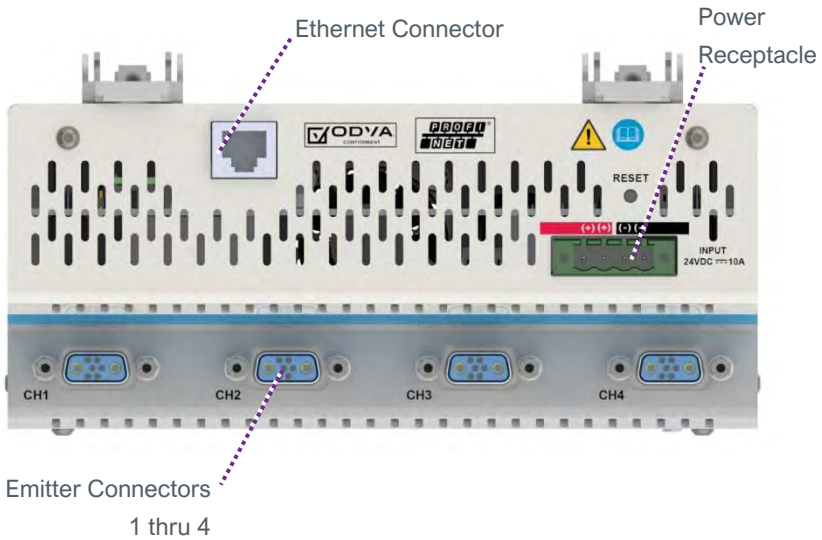
The following items are included with each BlueWave MX-MIM controller purchase:

- BlueWave MX-MIM Controller (Qty. 1)
- Interlock Plug, 2 x 5 (Qty. 1)
- Power Plug, 4-Position (Qty. 1)
- USB Drive (Qty. 1)

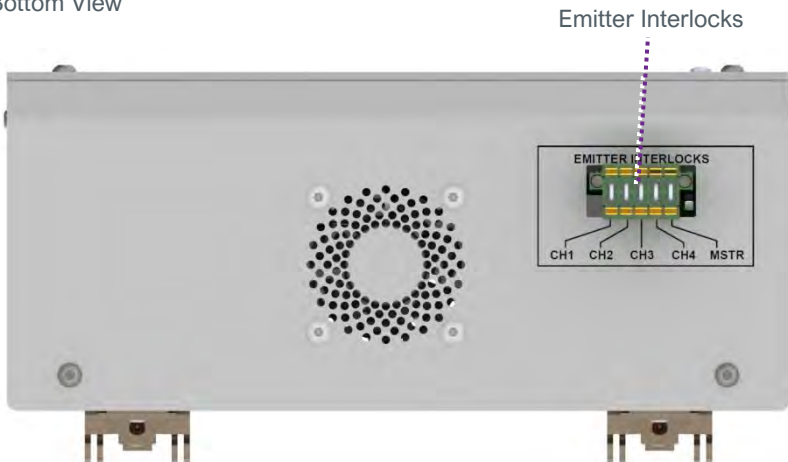
# Connections

Based on the installation needs, review the connections to be made as part of a planned installation utilizing any safety features required.

**Figure 1.**  
BlueWave MX-MIM - Top View



**Figure 2.**  
Bottom View



## Input Power

A 24-volt DC (10A maximum) power supply is connected to the BlueWave MX-MIM through the supplied 4-position power plug. The power inputs are reverse polarity protected. Two connections each are provided for the +24V and 24V return to allow for daisy chaining of power input.

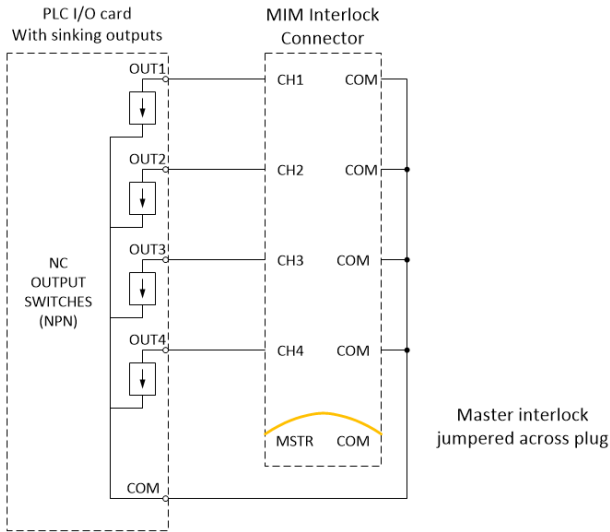
## Interlocks

The interlock inputs provide a means to interrupt power to an emitter when an interlock connection is opened. One interlock per emitter is provided. In addition, a master interlock is provided which will interrupt power to all four emitters when its connection is opened regardless of the individual emitter interlocks. Upon loss of an interlock connection, emitter operation will cease, and an alarm will be set. This is a safety feature that interrupts power to the emitter and does not rely on firmware controls. Upon restoring the interlock connection, power will be applied to the emitter and it will be re-initialized but will not activate the UV light until commanded to do so by the user.

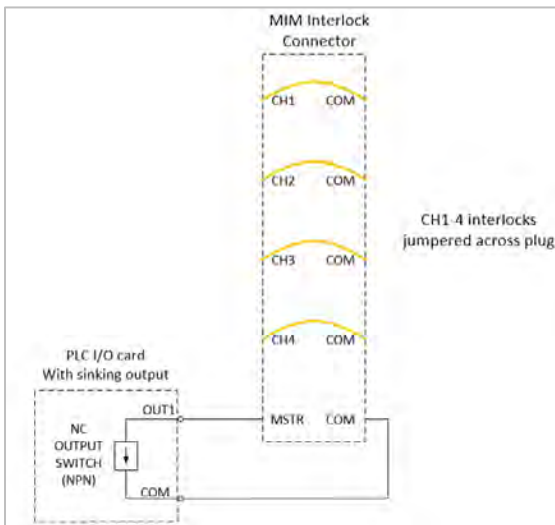
Interlock connections are made through the supplied 2 x 5 locking interlock plug, PN 43536. The plug is shipped with jumpers in place to enable operation. A normally closed switch or a “sinking output, NPN device” may be connected to the desired interlock in place of the jumpers as illustrated in Figure 3, Figure 4, and Figure 5.



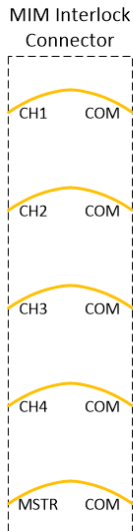
**Figure 3.**  
Controlling 4-Emitter Channels with Individual Interlocks



**Figure 4.**  
Controlling 4-Emitter Channels with Master Interlock Alone



**Figure 5.**  
All Emitter Channels and Master Interlock  
Defeated with Jumpers



## Emitters 1-4

Power and communication are supplied through an emitter interface cable via one of the four emitter interface connectors located on the front/lower tiered portion of the enclosure. Please refer to “Parts & Accessories” for available cable lengths. Each cable connector end provides a screw-down retention feature to ensure positive connections are maintained during operation.



**CAUTION:** *Power to the controller must be off when connecting or removing the emitter interconnect cables.*

## Ethernet Port

One 10/100 EtherNet port provides communications across the user's network to the host PLC. The use of **shielded cables is required** to ensure reliable communications (Table 1).

**Table 1.**  
Communication

LED	Color	Description
Left LED: Speed Indicator	Amber or Green	Amber ON: Operating as a Gigabit connection (1000-Mbps)
		Green ON: Operating as a 100-Mbps connection
		OFF: Operating as a 10-Mbps connection
Right LED: Link/Activity Indicator	Green	Blinking: There is activity on this port
		OFF: No link is established

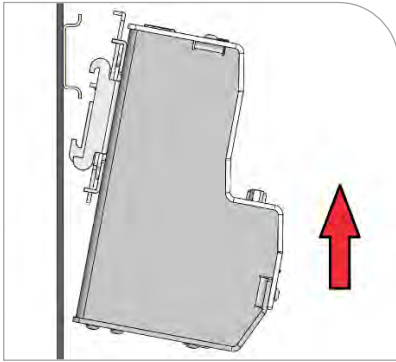
## Installation

### DIN Rail Mounting (Grounded)

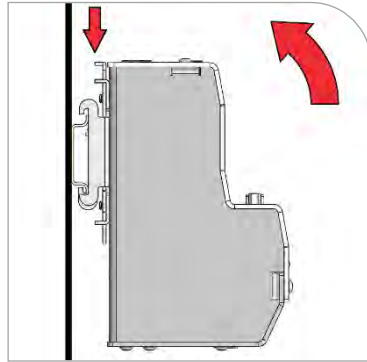
1. Position the unit below the 35mm DIN rail, with the top tilted slightly outwards, then lift upwards until the bottom of the DIN rail clip is engaged. (Figure 6)
2. Tilt top of the unit back until the DIN rail rests in the clip, then release. The clips are spring loaded so they will pull the unit downward slightly and engage the rail. (Figure 7)

**NOTE:** 1-inch minimum distance on clearance of vents. The DIN rail must also be grounded.

**Figure 6.**  
DIN Rail Mounting – Step 1

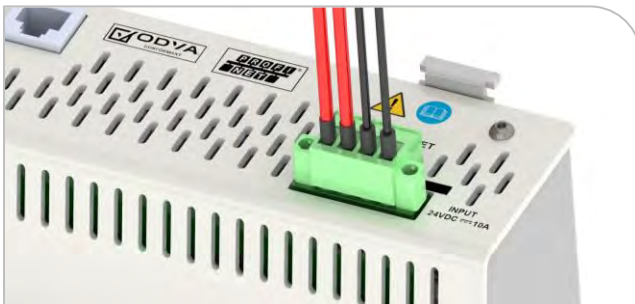


**Figure 7.**  
DIN Rail Mounting – Step 2



3. Turn **OFF** the customer-supplied 24V DC supply prior to connecting to unit.
4. Wire the 24V DC supply to supplied power plug. The chassis must be grounded.
5. Insert the power plug PN 43541 into the DC power receptacle (Figure 8)
6. Install the interlock plug, PN 43536 (Figure 9).
7. Configure the interlock plug by removing the pre-inserted jumpers that are not required based on the Interlocks section of this user guide. Connect the desired interlock switches as needed.

**Figure 8.**  
Power Plug



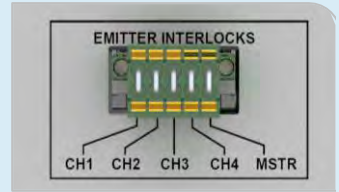
8. Plug in the **shielded** Ethernet Cable(s) to the RJ45 port(s). (Figure 10)
9. Connect the selected emitters to the desired channel connectors. (Figure 11)



**CAUTION:** Power to the BlueWave MX-MIM controller must be off when connecting or removing the emitter interconnect cables.

**NOTE:** The emitter cables require a minimum bend radius of four inches to ensure the conductors are not damaged. The minimum clearance distance for the interconnect harness is five inches (Figure 12). There is 1-inch minimum clearance on vents (Figure 13).

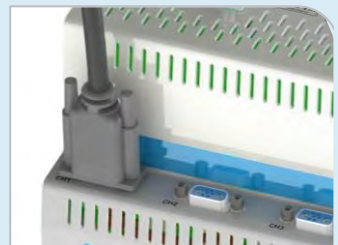
**Figure 9.**  
Emitter Interlock Plug



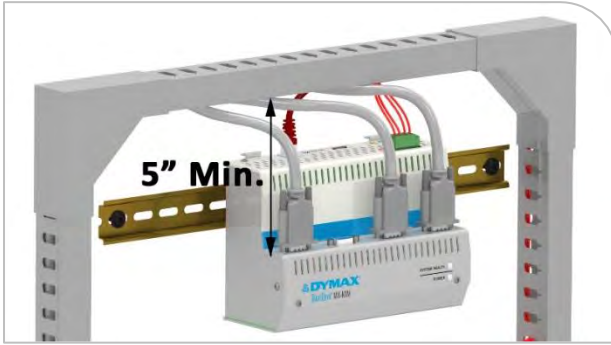
**Figure 10.**  
Shielded Ethernet Cable in RJ45 Port



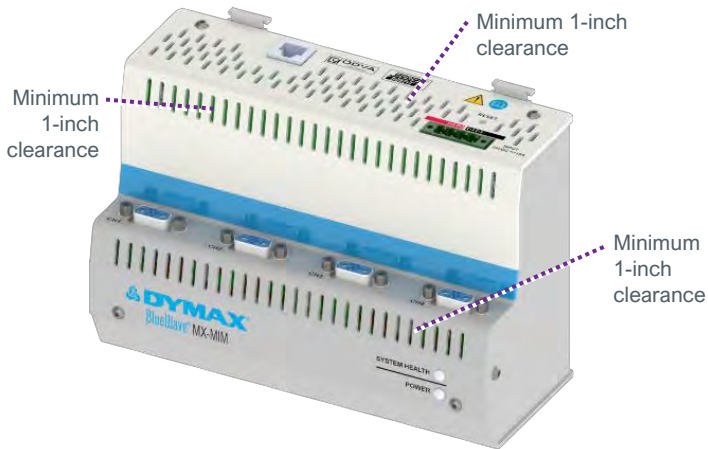
**Figure 11.**  
Channel Connectors



**Figure 12.**  
Interconnect Harness Clearance



**Figure 13.**  
Vent Clearance



10. Turn 24V DC supply ON.

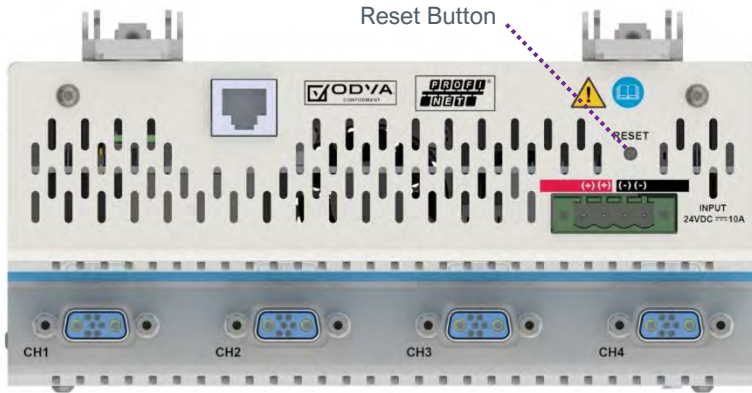
11. Review the system front panel LED indicators.

- Initial state: system health = red, power = green
- After 15 seconds: system health = green, power = green

**NOTE:** If indicators are not correct, please refer to the Troubleshooting Section.

# Factory Reset Button

**Figure 14.**  
Factory Reset Button



There is a recessed reset button that can be accessed using a straightened paper clip or similar device.

If the reset button is pressed for 5 -> 10 seconds and released, the BlueWave MX-MIM unit will reset.

If the reset button is pressed for more than 10 seconds and released, the BlueWave MX-MIM unit will reset unit and reset to the default IP address 192.168.1.1.

## Set Up & Web Interface Access

### Setting Up Network IP Address

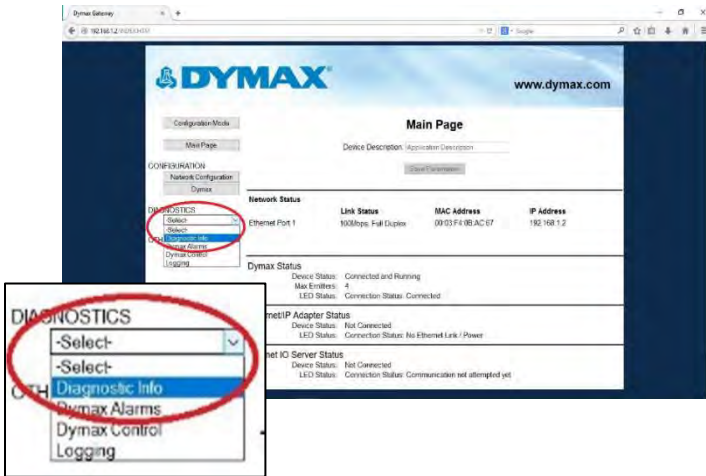
**NOTE:** Pertinent files can be found on the portable USB storage device provided with your unit. There are two Tech Tips describing applications that can be used to set up an IP address. Users may employ other methods they are familiar with to set up an IP address.

- Set up IP address using PRONETA ([Tech Tip TT075](#))
- Set up IP address using IP Setup ([Tech Tip TT076](#))

## Controlling Emitters via the Web Interface

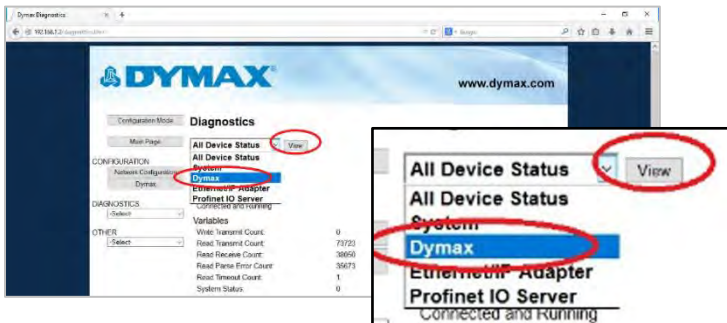
1. Open a web browser and type in the IP address of the desired Dymax device.
2. Login as username: “Admin” and password: “Admin”
3. Verify that the Dymax device main web page opens.
4. Under DIAGNOSTICS, select “Diagnostic Info”.

**Figure 15.**  
Diagnostics Menu



5. Select Dymax and click “View”.

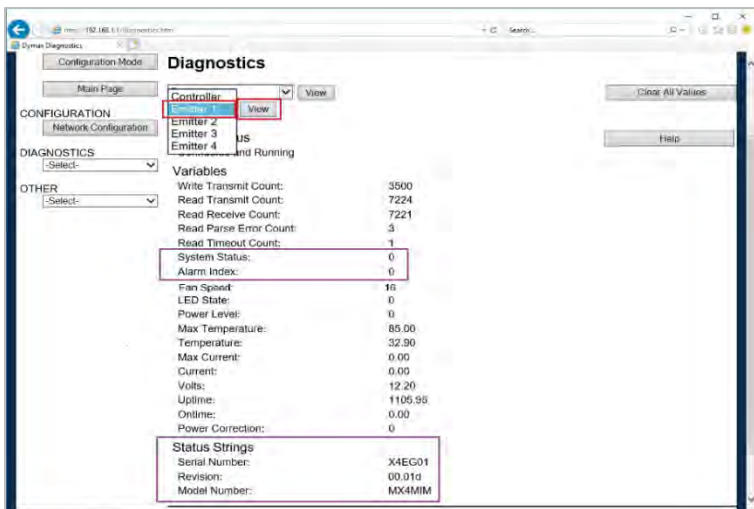
**Figure 16.**  
Select Dymax





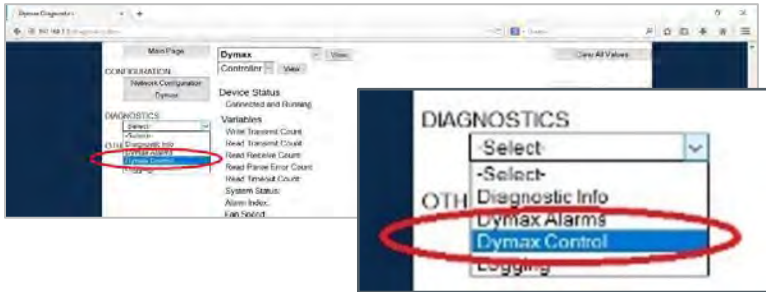
6. Verify the system status and alarm index are both 0. (Figure 17)
7. To verify the serial number, model type, and firmware revision of your emitter(s) and controller use the drop-down arrow. These can be compared to the labeling on each individual device.
8. Select the next emitter from the drop down and click “View”.
9. Repeat for all emitters.

**Figure 17.**  
Verify Diagnostics



- Under DIAGNOSTICS, select “Dymax Control”.

**Figure 18.**  
Diagnostics Menu



- Verify that all connected emitters can be turned ON/OFF via ON/OFF selection. Selecting the appropriate radio button on/off, press the Update Emitters Button and observe the emitter illumination.
- Verify that the intensity for all connected emitters can be modified via the power level settings (Figure 19). Adjust power level, press Update Emitters Button and verify with radiometer that power levels increase or decrease as commanded.

**Figure 19.**  
Emitter Controls



# EtherNet/IP

**Note:** Electronic Data Sheets (EDS) files can be found on the thumb drive provided. The EDS file conveys the identity information required for a network tool to recognize the device.

## EtherNet/IP Adapter Parameters

**Table 2.**  
Input/Output Assemblies Available (Defaults Highlighted)

Instance	Name	CIP Data Type
Class (Instance 0)	Revision	UINT
	Max instance	UINT
101 (0x65)	T2O (Input) Controller + 4 Emitters (See Table 4 for bytes 0 to 115)	USINT[116]
113 (0x71)	O2T (Output) Controller + 4 Emitters (See Table 3 for bytes 0 to 7)	USINT[8]
198 (0xC6)	Input only heartbeat	Heartbeat
199 (0xC7)	Listen only heartbeat	Heartbeat
Unused (n)	Configuration	

**Table 3.**  
O2T (Output) Assembly Data Format

Byte	Data Type	Description (Command – Field)	Value Reference
0	BYTE	Set emitter LED state Bit 0: Emitter 1 ... Bit 3: Emitter 4	Turn emitter LED ON/OFF  Bit set to 1 == ON Bit set to 0 == OFF
1	SINT	Reset Unit	Transition from 0 to 1 will reset the unit
2	SINT	Reset Alarms	Transition from 0 to 1 will reset alarm state
3	SINT	Reserved	
4	SINT	Set Emitter 1 Power Level – Power Level	Set Emitter 1 Power Level (1-100)
5	SINT	Set Emitter 2 Power Level – Power Level	Set Emitter 2 Power Level (1-100)
6	SINT	Set Emitter 3 Power Level – Power Level	Set Emitter 3 Power Level (1-100)
7	SINT	Set Emitter 4 Power Level – Power Level	Set Emitter 4 Power Level (1-100)

**Table 4.**  
T2O (Input) Controller + 8 Emitters Data Format

Byte	Data Type	Description (Command – Field)	Value Reference
0-3	SINT[4]	Echo DataEch	
4	SINT	Get Controller Status – System Status	0 == No Alarms; 1 == MINOR Alarm; 2 == MAJOR Alarm
5	SINT	Get Controller Status – Alarm Index	See Table 9 for Specific Alarm Details
6-7	SINT[2]	Reserved	
8-11	REAL	Get Controller Status – MaxTemp	Controller Maximum Temperature Ever Recorded
12-15	REAL	Get Controller Status – Temp	Controller Present Temperature
16-19	REAL	Get Controller Status – Volts	Controller Present 12V Reading
20	SINT	Get Emitter 1 Status – Alarm Index	See Systems Alarms Section for Specific Alarm Details
21	SINT	Get Emitter 1 Status – Set Fan Speed	0 - 100%
22	SINT	Get Emitter 1 Status – LED State	0 == LED is OFF; 1 == LED is ON
23	SINT	Get Emitter 1 Status – Power Level	Emitter Present Power Level Setting
24-27	REAL	Get Emitter 1 Status – Max Temp	Emitter Maximum Temperature Ever Recorded
28-31	REAL	Get Emitter 1 Status – Temp	Emitter Present Temperature
32-35	REAL	Get Emitter 1 Status – Max Current	Emitter Maximum Current Draw Ever Recorded
36-39	REAL	Get Emitter 1 Status – Current	Emitter Present Current Draw
40-43	SINT[4]	Emitter 1 Reserved	
44-67	SINT[24]	Emitter 2	See Emitter 1 (Bytes 20 -43)
68-91	SINT[24]	Emitter 3	See Emitter 1 (Bytes 20 -43)
92-115	SINT[24]	Emitter 4	See Emitter 1 (Bytes 20 -43)

# PROFINET

**Table 5.**  
PROFINET IO Server Configuration (Defaults Highlighted)

Slot #	Name	CIP Data Type
1	Module 0x31 (Input) Controller + 4 Emitters See Table 7 for bytes 0 to 115	SINT[116]
2	Module 0x41 (Output) Controller + 4 Emitters See Table 6 for bytes 0 to 7	SINT[8]

**Table 6.**  
Output Slot Definition

Byte	Data Type	Description (Command – Field)	Value Reference
0	BYTE	Set Emitter LED State Bit 0: Emitter 1 ... Bit 3: Emitter 4	Turn Emitter LED ON/OFF  Bit set to 1 == ON Bit set to 0 == OFF
1	SINT	Reset Unit	Transition From 0 to 1 Will Reset the Unit
2	SINT	Reset Alarms	Transition From 0 to 1 Will Reset Alarm State
3	SINT	Reserved	
4	SINT	Set Emitter 1 Power Level – Power Level	Set Emitter 1 Power Level (1-100)
5	SINT	Set Emitter 2 Power Level – Power Level	Set Emitter 2 Power Level (1-100)
6	SINT	Set Emitter 3 Power Level – Power Level	Set Emitter 3 Power Level (1-100)
7	SINT	Set Emitter 4 Power Level – Power Level	Set Emitter 4 Power Level (1-100)

**Table 7.**  
Input Slot Definition

Byte	Data Type	Description (Command – Field)	Value Reference
0-3	SINT[4]	Echo DataEch	
4	SINT	Get Controller Status – System Status	0 == No Alarms; 1 == MINOR Alarm; 2 == MAJOR Alarm
5	SINT	Get Controller Status – Alarm Index	See Table 9 for Specific Alarm Details
6-7	SINT[2]	Reserved	
8-11	REAL	Get Controller Status – MaxTemp	Controller Maximum Temperature Ever Recorded
12-15	REAL	Get Controller Status – Temp	Controller Present Temperature
16-19	REAL	Get Controller Status – Volts	Controller Present 12V Reading
20	SINT	Get Emitter 1 Status – Alarm Index	See Systems Alarms or Table 9 for Specific Alarm Details
21	SINT	Get Emitter 1 Status – Set Fan Speed	0 – 100%
22	SINT	Get Emitter 1 Status – LED State	0 == LED is OFF; 1 == LED is ON
23	SINT	Get Emitter 1 Status – Power Level	Emitter Present Power Level Setting
24-27	REAL	Get Emitter 1 Status – Max Temp	Emitter Maximum Temperature Ever Recorded
28-31	REAL	Get Emitter 1 Status – Temp	Emitter Present Temperature
32-35	REAL	Get Emitter 1 Status – Max Current	Emitter Maximum Current Draw Ever Recorded
36-39	REAL	Get Emitter 1 Status – Current	Emitter Present Current Draw
40-43	SINT[4]	Emitter 1 Reserved	
44-67	SINT[24]	Emitter 2	See Emitter 1 (Bytes 20 -43)
68-91	SINT[24]	Emitter 3	See Emitter 1 (Bytes 20 -43)
92-115	SINT[24]	Emitter 4	See Emitter 1 (Bytes 20 -43)

# Web Guide

## Log In Page

Default username and password is Admin/Admin.

See page 37 to change username and password.

**Figure 20.**  
Log In Page



## Main Page

**Device Description<sup>1</sup>:** User defined description string.

**Network Status:** Displays status of the connect Ethernet network.

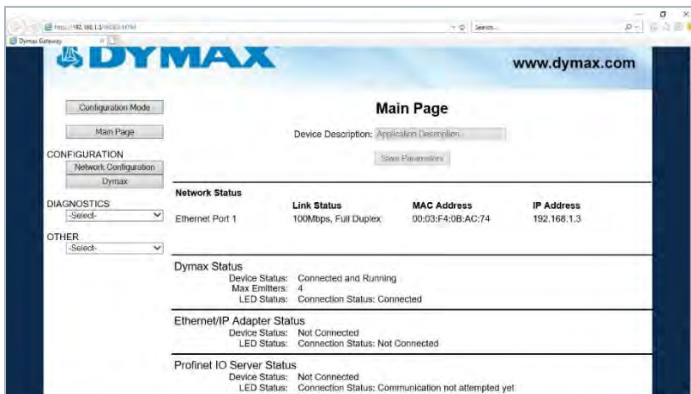
**Dymax Status:** Display status of communications link to hardware.

**EtherNet/IP Status:** Displays status of communication link to an EtherNet/IP Adapter.

**PROFINET IO Status:** Displays status of communication link to a PROFINET IO Server.

**Figure 21.**

Dymax Device Main Page



<sup>1</sup> These parameters can only be modified in configuration mode.



## Network Configuration Page

**MAC Address:** Displays the MAC address of the device.

**Ethernet Link<sup>1</sup>:** Displays the network link configuration.

**IP Setting<sup>1</sup>:** Displays the network IP setting mode.

**IP Address<sup>1</sup>:** Displays the network IP address.

**Subnet<sup>1</sup>:** Displays the network subnet mask.

**Default Gateway<sup>1</sup>:** Displays the network default gateway.

**DNS Gateway<sup>1</sup>:** Displays the network DNS gateway.

**Figure 22.**  
Network Configuration Page



*It is recommended to leave the DNS gateway set to 0.0.0.0 and the Ethernet Link as auto-negotiate. If configuring the gateway to use email, the DNS gateway must be set.*

<sup>1</sup> These parameters can only be modified in configuration mode.

# Diagnostics Alarm Log Page

**Device Index:** ALM0 – Controller, ALM1 – Emitter1, ALM2 – Emitter2 ...

**Alarm Index:** Alarm index number.

**Alarm Time:** The time in UpTime that the alarm occurred.

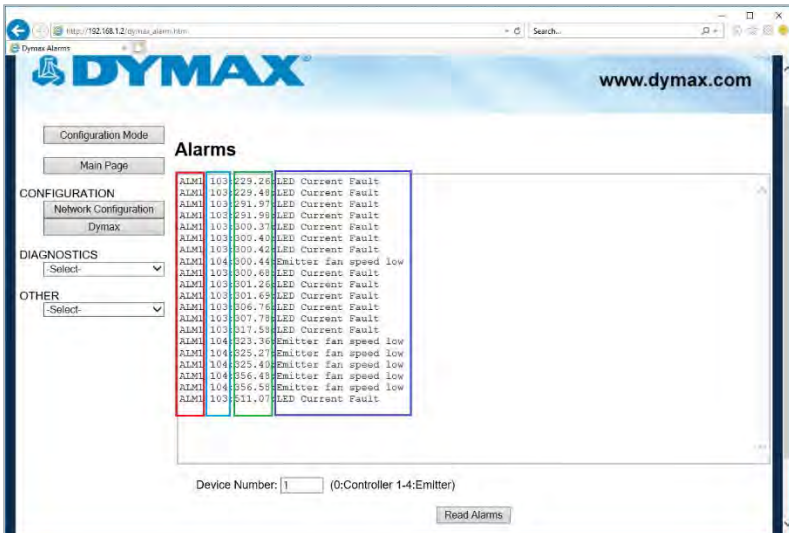
**Alarm Description:** Written description of the alarm.

**Device Select:** Device of alarm log to read: 0 – Controller, 1 – Emitter1, 2 – Emitter2  
....

**Read Alarms:** Pressing this button causes the system to read the alarm log of the selected device.

*NOTE: 20 most recent alarms will be displayed.*

**Figure 23.**  
Alarms Page



## System Alarms

(index 1)	Emitter1-4 Light guide not installed
(index 2)	Emitter1-4 interconnect cable (not logged)
(index 4)	Controller Temperature Failure (> 78 C)
(index 5)	Emitter1-4 Error (Open LED, shorted LED, Inductor over-current)
(index 6)	Emitter1-4 Firmware error (not logged)
(index 7)	Emitter1-4 lost comms
(index 8)	Emitter1-4 Interlock De-asserted (not logged)
(index 9)	Interface 1 Lost comms. (Lost comms with RTA device)
(index 10)	System MIM Buffer Failure
(index 11)	System MIM Command Failure
(index 12)	System Emitter Buffer Failure
(index 13)	System Emitter Command Failure
(index 14)	Controller Voltage Failure (< 11V or > 14V)
(index 15)	Controller FRAM Failure
(index 16)	Controller FAN Failure
(index 19)	System Overloaded (not logged)
(index 100)	Emitter1-4 LED Over-temperature (> 80 C)
(index 103)	Emitter1-4 LED Over/Under current (based on power level)
(index 104)	Emitter1-4 Fan Failure
(index 110)	Wand1 Temperature Failure (>90C)
(index 111)	Wand2 Temperature Failure (>90C)
(index 112)	Wand3 Temperature Failure (>90C)
(index 113)	Wand4 Temperature Failure (>90C)
(index 114)	Wand1 Fault
(index 115)	Wand2 Fault
(index 116)	Wand3 Fault

- (index 117) Wand4 Fault
- (index 118) Wand1 Lost Comms
- (index 119) Wand2 Lost Comms
- (index 120) Wand3 Lost Comms
- (index 121) Wand4 Lost Comms

## Warnings

- (index 17) Controller Temperature Warning (> 69 C) (not logged)
- (index 18) Controller FAN Warning (not logged)

## Diagnostics Page

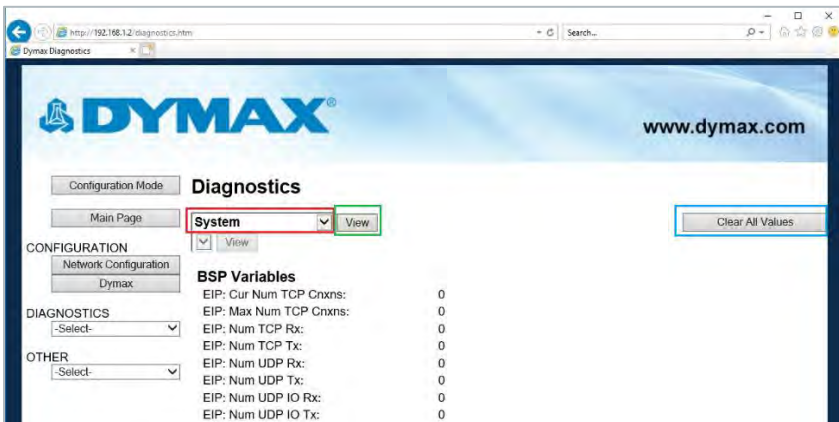
### System Information

**System Index:** Select the device info system to be viewed.

**View:** Retrieve device info for selected system.

**Clear All Values:** Resets all status parameters to 0.

**Figure 24.**  
Diagnostics Page



## EtherNet/IP Adapter

**System Index:** Select the device info system to be viewed.

**View:** Retrieve device info for selected system.

**Clear All Values:** Resets all status parameters to 0.

**Figure 25.**  
Diagnostics Page – Ethernet/IP Adapter



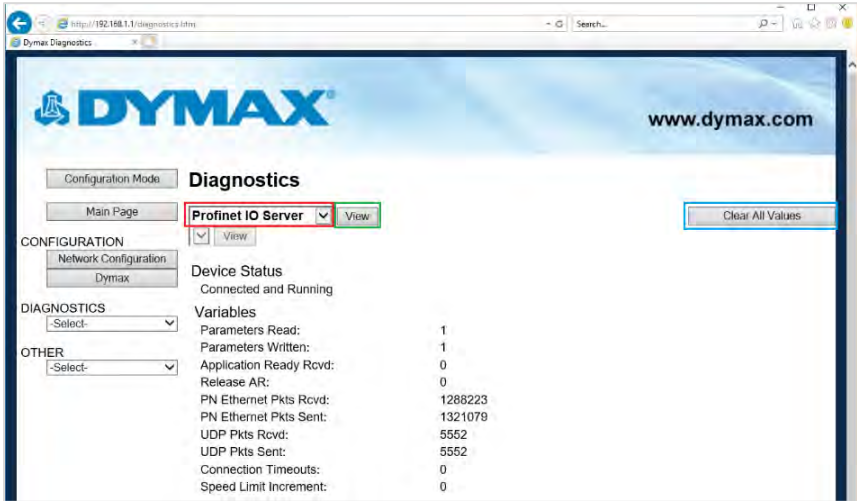
## PROFINET IO Server

**System Index:** Select the device info system to be viewed.

**View:** Retrieve device info for selected system.

**Clear All Values:** Resets all status parameters to 0.

**Figure 26.**  
Diagnostics Page - PROFINET IO Server



## Dymax Information

**System Index:** Select the device info system to be viewed.

**View:** Retrieve device info for selected system.

**Clear All Values:** Resets all status parameters to 0.

**Device Select:** Select the device info device to be viewed.

**View:** Retrieve device info for selected device.

**Write Transmit Count:** Number of write packets transmitted.

**Read Transmit Count:** Number of read packets transmitted.

**Read Receive Count:** Number of read packets received.

**Read Parse Error:** Number of bad read packets.

**Read Time Count:** Number of read timeouts.

**System Status:** 0 – No alarms, 1 – Minor alarm, 2 – Major alarm

**Alarm Index:** 0 – No alarms, see manual for alarm details.

**Fan Speed:** Set fan speed 0 – 100%

**LED State:** 0 – OFF, 1 – ON (N/A for controller device).

**Power Level:** Power Level Setting 1 – 100% (N/A for controller device).

**Max Temperature:** Maximum temperature this device has operated under.

**Temperature:** Present operating temperature for this device.

**Max Current:** Maximum current draw this device has operated under (N/A for Controller Device).

**Current:** Present operating current draw for this device (N/A for controller device).

**Volts:** Present operating voltage level for this device (N/A for emitter devices).

**UpTime:** Total time in hours that this device has been Running.

**OnTime:** Total time in hours that this emitter LED has been on (N/A for controller device).

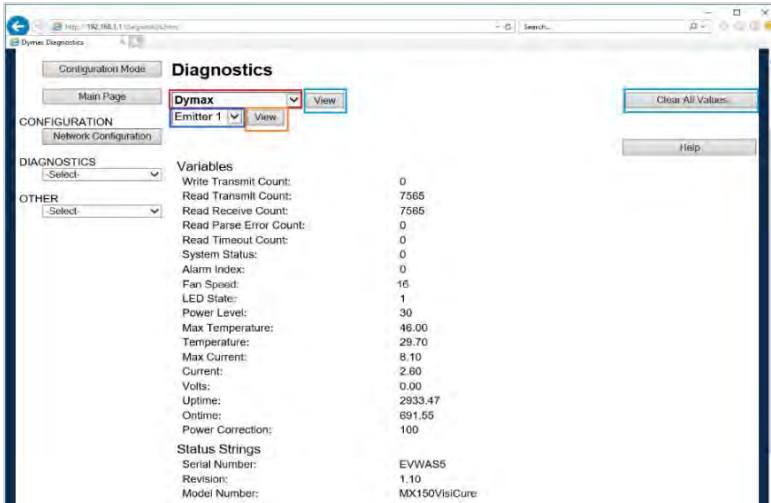
**Power Correction:** Device calibration setting (N/A for controller device).

**Serial Number:** Device serial number.

**Revision:** Device revision.

**Model Number:** Device model number.

**Figure 27.**  
Diagnostics Page - Dymax



## Emitter Control Page

**Emitter1 On/Off:** Allows the user to turn Emitter1 on or off.

**Emitter1 Power:** Allows the user to turn adjust the power level for Emitter1 (5 – 100%).

**Emitter2 On/Off:** Allows the user to turn Emitter2 on or off.

**Emitter2 Power:** Allows the user to turn adjust the power level for Emitter2 (5 – 100%).

**Emitter3 On/Off:** Allows the user to turn Emitter3 On or Off.

**Emitter3 Power:** Allows the user to turn adjust the power level for Emitter3 (5 – 100%).

**Emitter4 On/Off:** Allows the user to turn Emitter4 On or Off.

**Emitter4 Power:** Allows the user to turn adjust the power level for Emitter4 (5 – 100%).

**Update Emitters:** Updates all emitters to above settings.

**Reset Alarms:** Resets all system alarms.



**Figure 28.**  
Emitter Control Page



**NOTE:** This page is only available when the device is not being controlled by Ethernet protocol commands.

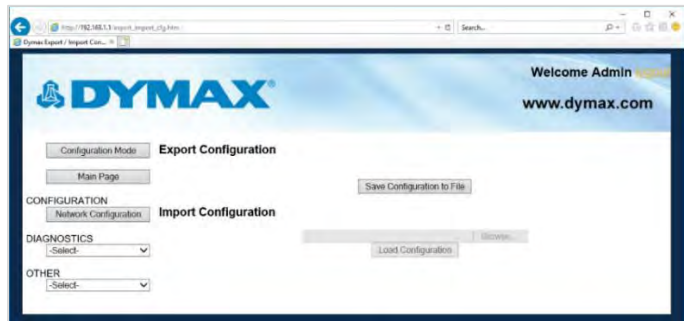
## Configuration Mode

### Export/Import Configuration

**Save Configuration:** Save the current system configuration to a file.

**Load Configuration<sup>1</sup>:** Load a saved configuration into the system.

**Figure 29.**  
Export/Import Configuration Page



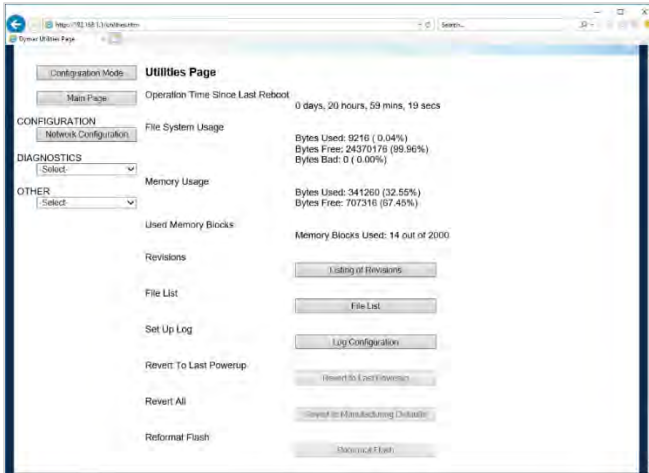
<sup>1</sup> These parameters can only be modified in configuration mode.

## Utilities

<b>Operation Time:</b>	How long the device has been running for this cycle.
<b>File System Usage:</b>	The amount of data used, free, and bad in the flash file system.
<b>Memory Usage:</b>	The amount of data used and free in the BlueWave® MX-MIM device.
<b>Used Memory Blocks:</b>	The amount of memory blocks used and available.
<b>Revisions:</b>	Advances to the display the catalog number and the revision of software.
<b>File List:</b>	Advances to the list of all files stored in the flash file system.
<b>Log Configuration:</b>	Advances to the log configuration page (page 35).
<b>Revert to Last Powerup<sup>1</sup>:</b>	Reverts all settings that have been changed in the current configuration mode to the previously powered up settings.
<b>Manufacturing Defaults<sup>1</sup>:</b>	Reverts all settings, excluding network settings, back to factory default.
<b>Reformat Flash<sup>1</sup>:</b>	Reverts all settings, excluding network settings, and clears all files in the flash file system.

<sup>1</sup> These parameters can only be modified in configuration mode.

**Figure 30.**  
Utilities Page



## Log Configuration

**Enable:** Enable or disable the logging feature.

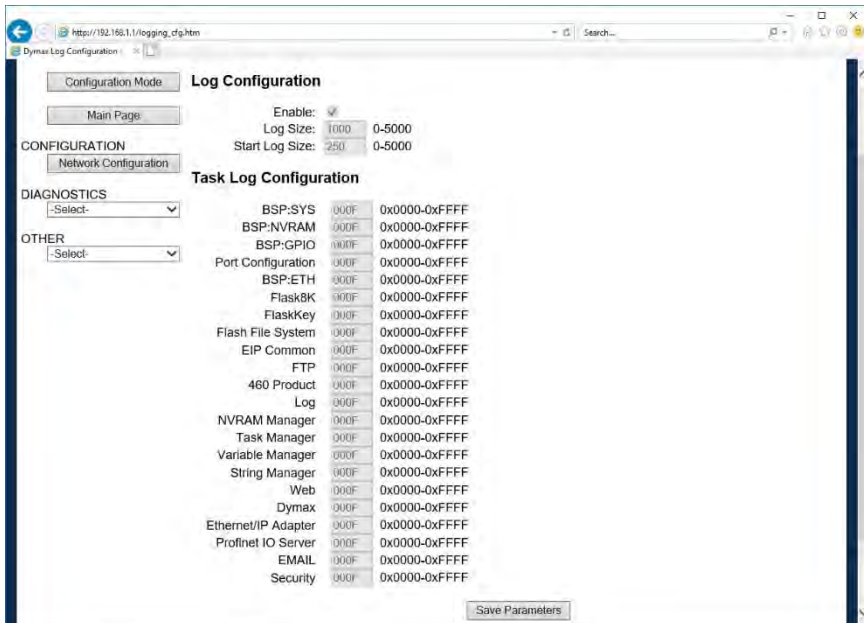
**Log Size:** Total number of log messages that will be captured.

**Start Log Size:** Total number of log messages to always display. If set to 250 and log size is set to 1000, then the first 250 logs will always be displayed and the remaining 750 will be the most current 750 logs available.

**Task Log Configuration:** Each task listed below represents a different process the product has. You have the ability to turn on certain capture filters that the diagnostics logging page will display. Each bit within the 16-bit value displayed represents a different capture filter.

Bit 0: Start Up	Bit 1: Error	Bit 2: Event
Bit 3: Assertion	Bit 4: BSP Comms	Bit 5: Prot Comms
Bit 6: dbprintf	Bit 7: Alarm	Bit 8..15: Reserved

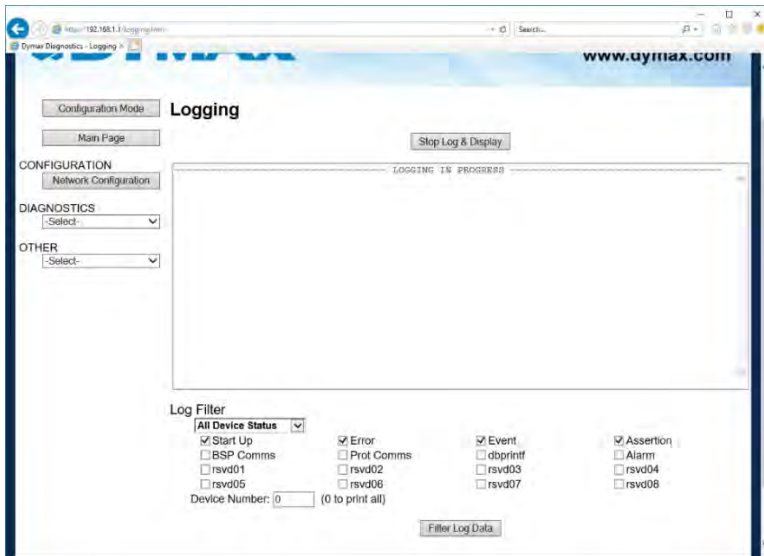
**Figure 31.**  
Log Configuration Page



## Logging

The diagnostics logging page will help troubleshoot any issues that may come about. To display the captured log data, click the Stop Log and Display Button. You can change what is displayed by changing the log filters on the bottom of the page. The displayed log information is based on the log capture filters configured in Figure 32 of this document. Once you stop the log, the gateway will not be logging any current messages. To resume, click the Clear Display & Start Log Button.

**Figure 32.**  
Logging Page



## Security Configuration

To setup security on the BlueWave MX-MIM, navigate to *Other > Security Configuration*. You can configure security for 3 administrators, 5 users, and 1 guest.

### THIS IS NOT A TOTAL SECURITY FEATURE

The security feature offers a way to password protect access to diagnostics and configuration on the network. The security feature does not protect against “Air Gap” threats. If the gateway can be physically accessed, security can be reset. All security can be disabled if physical contact can be made. From the login page, click the reset password button twice. You will be forced to do a hard reboot (power down) on the device within 15 minutes of clicking the button. This process should be used in the event a password is forgotten.

**NOTE:** Only admins have configuration access to all web pages.

**Log Out Timer:** The system will automatically log inactive users off after this period of time.

**NOTE:** A time of 0 means that the user will not be automatically logged off. Instead, they must manually click the logout button.

**Username:** Enter a username, max of 32 characters.

**Password:** Enter a password for the username, max of 32 characters, case sensitive.

**Re-Enter Password:** Enter the password a second time.

**E-mail:** In case the password was forgotten, a user can have their password e-mailed to them if e-mail was configured.

**Hint:** A helpful reminder of what the password is.

**Figure 33.**  
Security Configuration Screen

The screenshot shows the Security Configuration screen. At the top, there is a 'Security Configuration' header with a 'Help' button. Below this, a 'Log Out Timer' is set to 5 minutes, with a range of 0-15 min. The screen is divided into three main sections: Admin Configuration, Admin Contact Information, and User Configuration.

**Admin Configuration**

Admin	Username	Password	Re-enter Password	Email	Hint
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	Not Configured	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	Not Configured	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	Not Configured	<input type="text"/>

**Admin Contact Information**

**User Configuration**

User	Username	Password	Re-enter Password	Email	Hint
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	Not Configured	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	Not Configured	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	Not Configured	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	Not Configured	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	Not Configured	<input type="text"/>

At the bottom of the screen, there is a 'Save Parameters' button.

## Security Configuration-Security Levels

Each webpage in the gateway can have a separate security level associated with it for each user.

Security Levels:

- **Full Access:** Capability to view and configure a web page.
- **View Access:** Capability to view a web page but cannot configure parameters.
- **No Access:** No capability of viewing the web page and page will be removed from navigation.

**Figure 34.**  
Advanced Security Configurations

User 1: user	Web Page	Security
User 2:		
User 3:		
User 4:	All Web Pages	No Access <input type="button" value="Set"/>
User 5:		
Guest		
Web Page	Security	
Main Page	Full Access <input type="button" value="Set"/>	
Network Configuration	Full Access <input type="button" value="Set"/>	
Diagnostic Info	Full Access <input type="button" value="Set"/>	
Dymax Control	Full Access <input type="button" value="Set"/>	
Dymax Alarms	Full Access <input type="button" value="Set"/>	

## Security - Log In

- Username:** Name of the user to login.
- Password:** Password of the user to login.
- Log In:** If login is successful, the user will be redirected to the main page.
- Send Password to Email:** Sends the specified user's password to the email configured for that user.
- Display Hint:** Displays the hint specified for the user if one was set up.

**Reset Password:**

This is used to reset security settings. Confirm reset password must be selected to confirm this action. Once confirmed, there is a 15-minute window to do a hard reset of the gateway by physically removing and restoring power from the gateway. Once power is restored, you may navigate to the IP address of the gateway as normal.

**Figure 35.**  
Security Log In

**Security Log In**  
Application Description

Username: Admin  
Password:

Log In

Display Hint      Reset Password

Admin Contact:  
Admin Contact Information Goes Here

**Security - Log Out**

Once a user is done with a session they may click “logout” at the top of any page. The user may also be logged out for inactivity based off of the log out timer specified during the configuration.

**Figure 36.**  
Log Out Button



***NOTE: Closing the browser is not sufficient to log out.***



## Email Configuration

**NOTE:** IT Support will be required

**WARNING:** This system will NOT work with TLS encryption.

Using 3<sup>rd</sup> party relay or Office 365 SMTP relay is not advised. Using Google SMPT relay will require firewall rules changes, which may create a security issue. To setup e-mails on the BlueWave® MX-MIM, navigate to *Other > Email Configuration*. You can configure up to 10 email addresses.

**SMTP Mail Username:** The email address that the SMTP server has set up to use.

**SMTP Mail Password:** If authentication is required, enter the SMTP Server's password (Optional).

**SMTP Server:** Enter the name of the SMTP server or the IP address of the server.

**From Email:** Enter the email that will show up as the sender.

**To Email:** Enter the email that is to receive the email.

**Email Group:** Choose a group for the user. This is used in other web pages.

Click "Save Parameters" to commit the changes and reboot the gateway.

**Figure 37.**  
Email Configuration

Number of Emails to Configure: 1 0-10

Setup Email(s)

User	SMTP Mail Username	SMTP Mail Password	SMTP Server	From Email	To Email	Email Group
1						Group A ▼

Save Parameters

Send Test Email(s)

## Committing Changes to the Settings

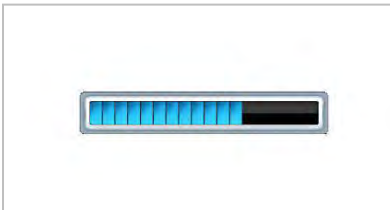
All changes made to the settings of the BlueWave® MX-MIM in Configuration Mode will not take effect until the device is restarted via the webpage. Changes will not be stored if the device power is removed prior to a reboot.

**NOTE:** *The device does not need to be restarted after every change. Multiple changes can be made before a restart, but they will not be committed until the gateway is restarted.*

When all desired changes have been made, press “restart now”.

The webpage will redirect to our rebooting page (Figure 38).

**Figure 38.**  
Rebooting Page



The reboot can take up to 20 seconds. You will know the save was successful if the red box is no longer present.

If the IP address has not been modified, the device will automatically redirect to the main page.

If the IP address was modified, a message will appear at the top of the page to instruct the user to manually open a new webpage at that new IP.

# Troubleshooting

**WARNING!** Only qualified maintenance personnel should attempt the following procedures.

**Table 8.**  
Troubleshooting Chart for BlueWave MX-MIM

Problem	Possible Cause	Corrective Action
Controller does not power up	Improper wiring of power input.	Verify wiring from 24V supply to the input block on the top of the unit.
	Improper grounding.	The DIN rail is primary ground for the chassis and electrical function. Ensure rail is grounded.
Commands for emitter control do not appear to function	LED intensity adjustment set to 0% or too low.	Verify intensity setting through interface.
	Interlock is open.	Verify interlock jumpers or external controls are in place. Verify PLC command structure.
	Interface cable connections loose or damaged.	Check connections and condition of interface cable.
	Activating wrong channel.	Verify correct channel is being activated.
	LED head is not connected to the correct port/channel.	Verify that the head is connected to the desired port/channel.
Controller is operating normally and the emitter suddenly stops producing light	Various alarm conditions.	Verify alarms.
	Interlock is open.	Verify interlock jumper or external control has not been opened/defeated. Verify PLC command structure.
Emitter intensity is very low	LED intensity adjustment set incorrectly.	Verify intensity setting through interface.

**Table 9.**  
Alarms Chart for BlueWave MX-MIM

Alarm #	Alarm/Warning Description	Cause/Corrective Action
1	MX-150 Lightguide Alarm	Verify lightguide is installed correctly and fully seated.
2	Emitter Interconnect Cable	Verify emitter interconnect cable installation. Verify minimum clearance (5 inches) is not exceeded. Check for bent pins on all D-SUB connections. Replace emitter interconnect cable.
4	Controller Temperature Alarm >78°C	Reduce obstructions from controller airflow. Check air flow and look for fan obstructions. Check vent min clearance distance (1 inch). Reduce ambient temperature of controller.
5	Emitter LED	Return emitter to Dymax.
6	Emitter Firmware	Return emitter to Dymax.
7	Emitter Lost Comms	Verify emitter interconnect cable installation. Verify minimum clearance (5 inches) is not exceeded. Replace emitter interconnect cable.
8	Emitter Interlock is open	Verify interlock jumper or external control has not been opened/defeated. Verify PLC command structure.
9-15	Internal Failure	Return emitter to Dymax.
16	Controller Fan Alarm	Return controller to Dymax.
17	Controller Temperature Warning >69°C	Reduce obstructions from controller airflow. Check air flow and look for fan obstructions. Check vent min clearance distance (1 inch). Reduce ambient temperature of controller.
18	Controller Slow Fan Warning	Check 24 VDC supply is within tolerance. Check air flow and look for fan obstructions.
19	System Overload	Contact Dymax.

**Table 9 Continued.**

Alarms Chart for BlueWave MX-MIM

Alarm #	Alarm/Warning Description	Cause/Corrective Action
100	Emitter Temperature Alarm >80°C	Reduce obstructions from emitter airflow. Reduce ambient temperature of emitter. Reduce Emitter intensity setting. Check that emitter vent holes are not blocked. Check vent min clearance distance (1.5 inches).
103	Emitter Bad LED	Return emitter to Dymax.
104	Emitter Fan Alarm	Return emitter to Dymax.
110-113	BlueWave® QX4 LED Head 1-4 Temperature >90°C	Reduce intensity setting. Improve airflow to BlueWave QX4 LED head. Reduce ambient temperature.
114-117	BlueWave QX4 LED Head 1-4 Fault	Return wand to Dymax.
118-121	BlueWave QX4 LED Head 1-4 Lost Comms	Verify wand cable installation. Replace wand extension cable. Check cable connections on both wand and controller ends. Inspect wand connector for damage.

## MX-4E Extension Module

Please refer to the MX-4E User Guide for detailed operating instructions.

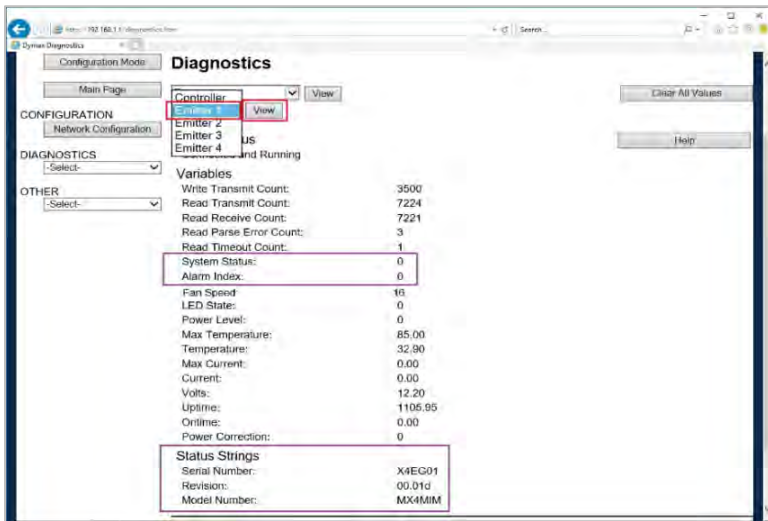
The MX-4E is an expansion module that will interface with Dymax MX-series multichannel controllers, as well as with the BlueWave MX-MIM machine interface module, to utilize existing BlueWave QX4 LED heads.

The system information display from the diagnostics screen in the BlueWave MX-MIM will indicate the configuration of the expansion module and the BlueWave QX-4 LED heads will be identified by type (RediCure®, PrimeCure®, VisiCure®, or none).

The model number field, located under the status strings heading at the bottom, will reflect a code: **QX-aa-bb-cc-dd**.

- aa through dd reflect the wavelength of the attached heads
- RC=RediCure, PC=PrimeCure, VC=VisiCure, and NA= No head Found

**Figure 39.**  
Diagnostics Screen



Expansion module hours are accumulated but will not reset when a BlueWave QX-4 head is replaced. It is suggested to monitor BlueWave QX-4 LED head hours separately for process control. The MX-4E is tracked as “Emitter” under Run Hours.

## Alarm Codes: MX-4E

2	No MX-4E found at Power up.
6	MX-4E Wrong Firmware
7	Controller Lost Comms with MX-4E.
8	Emitter Interlock is Open
103	LED Current Draw is Wrong for Set Intensity
110	MX-4E Wand1 Over Temperature
111	MX-4E Wand2 Over Temperature
112	MX-4E Wand3 Over Temperature
113	MX-4E Wand4 Over Temperature
114	MX-4E Wand1 Fault
115	MX-4E Wand2 Fault
116	MX-4E Wand3 Fault
117	MX-4E Wand4 Fault
118	MX-4E Wand1 Lost Comms
119	MX-4E Wand2 Lost Comms
120	MX-4E Wand3 Lost Comms
121	MX-4E Wand4 Lost Comms

# Parts and Accessories

## Spare Parts

Item	Part Number
<b>Emitters</b>	
BlueWave MX-150, VisiCure (405 nm)	42338
BlueWave MX-150, PrimeCure (385 nm)	42337
BlueWave MX-150, RediCure (365 nm)	42336
BlueWave MX-250, VisiCure (405 nm)	42808
BlueWave MX-250, PrimeCure (385 nm)	42807
BlueWave MX-250, RediCure (365 nm)	42806
BlueWave MX-275, VisiCure (405 nm)	43102
BlueWave MX-275, PrimeCure (385 nm)	43098
BlueWave MX-275, RediCure (365 nm)	43094
<b>Cables</b>	
Interconnect Cable, 12 Inches	43453
Interconnect Cable, 2 Meter	42287
Extended Interconnect Cable, 10 Meter	43010
Extended Interconnect Cable, 20 Meter	43011
<b>Spare Parts</b>	
Interlock Plug, 2 x 5	43536
Power Plug, 4 Position	43541



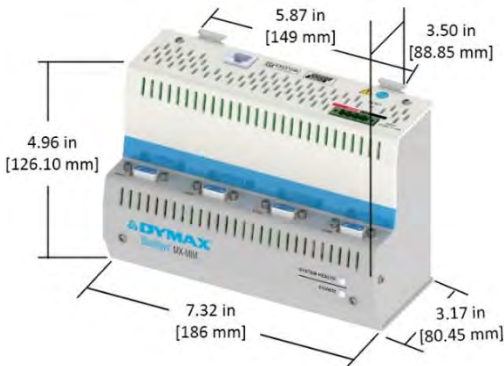
## Accessories

Item	Part Number
<b>MX-4E Expansion Module Components</b>	
MX-4E Expansion Module	43617
<b>BlueWave QX4 Parts</b>	
LED Head, RediCure (365 nm)	43163
LED Head, PrimeCure (385 nm)	43162
LED Head, VisiCure (405 nm)	43161
ø3-mm Lens, Spot	43164
ø5-mm Lens Spot	43165
ø8-mm Lens, Spot	43166
Connection Cable, 0.5 M Extension	41563
Connection Cable, 1.0 M Extension	41564
Connection Cable, 1.5 M Extension	41565
Connection Cable, 2.0 M Extension	41566
<b>Radiometer</b>	
ACCU-CAL™ 50-LED Radiometer	40505

# Specifications

Property	Specification
<b>Power Supply Input</b>	24 VDC $\pm$ 1% @ 10A Max (300W supply recommended)
<b>Emitter Channels</b>	Supports up to four MX-series emitters
<b>Network Interface</b>	One 10/100 base-T Port Supports EtherNet/IP, and PROFINET Please Note: Device Level Ring (DLR) is not supported
<b>Physical Dimensions</b>	4.96" H x 7.32" W x 3.50" D
<b>Mounting</b>	DIN Rail; 35-mm top-hat style
<b>Weight</b>	2.035 lbs.
<b>Cooling</b>	Internal fan, no filter
<b>Operating Environment</b>	Indoors, +10 to +40°C, 0-80% relative humidity, non-condensing at sea level Not qualified for outdoor use
<b>Storage Conditions</b>	-20 to +50°C, 0-80% relative humidity, non-condensing, at sea level
<b>Short Term Transport</b>	-40 to +50°C

**Figure 40.**  
Dimensions



# Declaration of Conformity

**Figure 41.**

Declaration of Conformity - CE



### EU Declaration of Conformity

Manufacturer:  
 Dymax Corporation  
 318 Industrial Lane  
 Torrington CT 06790, USA

Product description:  
 Model name(s):

BlueWave® MX MIM Machine Interface Module  
 BlueWave® MX-MIM

*This product complies with the following relevant Union Harmonization Legislation:*

<b>Applicable EU Directives:</b>	<b>Applicable Harmonized Standards:</b>
Electromagnetic Compatibility Directive(2014/30/EU)	EN65011:2016/A1:2017/A11:2020 EN 61000-3-2:2014 Class A EN 61000-3-3:2013 EN 61326-1:2013
Low Voltage Directive(2006/95/EC)	EN 61010-1:2010/AMD1:2019
RoHS Directive 2011/65 EU (2015/863)	EN IEC 63000:2018

**Declaration:**  
 This declaration of conformity is issued under the sole responsibility of the manufacturer.  
 Signed for and on behalf of:

  
 Name

6/5/2023  
 Date

Torrington, CT  
 Location


CE

Authorized Signatory:  
 Toby Trudeau  
 Engineering Manager, Equipment  
 Dymax Corporation  
 Torrington CT, USA

  
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**Figure 42.**  
Declaration of Conformity - UKCA



## UK Declaration of Conformity

**Manufacturer:**  
 Dymax Corporation  
 318 Industrial Lane  
 Torrington CT 06790, USA

**Product description:** BlueWave® MX-MIM Machine Interface Module  
**Model name(s):** BlueWave® MX-MIM

*This product complies with the following relevant UK Legislation:*

<p><b>Applicable UK Legislation:</b></p> <p>Electromagnetic Compatibility Regulations 2016</p> <p>Electrical Equipment Safety Regulations 2016</p> <p>The Restriction of the Use of Certain Hazardous Substances in Electrical And Electronic Equipment Regulations 2012</p>	<p><b>Applicable Harmonized Standards:</b></p> <p>EN55011:2016/A1:2017/A11:2020            EN 61000-3-2:2014 Class A            EN 61000-3-3:2013            EN 61326-1:2013            EN 61010-1:2010/AMD1:2019            EN IEC 63000:2018</p>
--	--

**Declaration:**  
 This declaration of conformity is issued under the sole responsibility of the manufacturer.  
 Signed for and on behalf of:


  
 Name

6/5/2023  
 Date

Torrington, CT  
 Location



**Authorized Signatory:**  
 Tabby Trudeau  
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# Warranty

From date of purchase, Dymax Corporation offers a one-year warranty against defects in material and workmanship on all system components with proof of purchase and purchase date. Unauthorized repair, modification, or improper use of equipment may void your warranty benefits. The use of aftermarket replacement parts not supplied or approved by Dymax Corporation, will void any effective warranties and may result in damage to the equipment.

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# Index

- Accessories, 48, 49
- Alarm Codes, 47
- Alarms, 26, 44
- Connections, 7
  - Emitters, 10
  - Ethernet Ports, 11
  - Input Power, 8
  - Interlocks, 8
- Contact Information, 5
- Declaration of Conformity, 51
- Dimensions, 50
- DIN Rail Mounting, 11
- Email Configuration, 41
- Help, 5
- Installation, 11
- Network Data Formats, 6
- Parts List, 6
- Product Overview, 6
- Profinet, 22
- Rebooting Page, 42
- Safety, 5
- Security, 37
  - Levels, 39
  - Log In, 39
  - Log Out, 40
- Set Up, 15
- Spare Parts, 48, 49
- Troubleshooting, 43
- Unpacking, 6
- Warranty, 54
- Web
  - Alarms Page, 26
  - Diagnostic Page, 28
  - Emitter Control Page, 32
  - Log In Page, 24
  - Main Page, 24
  - Network Configuration, 25
  - Utilities Page, 34





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MAN101DA 3/19/2024