DATALOGIC

M-Series
QuickStart Guide

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Technical Support

If you have technical questions about the operation of any Datalogic product, contact your distributor or Datalogic. Please have the following information available before you call:

• The model and serial number of the device, located on the bottom of the unit. The version number of the Impact software you are running, found in the title bar of the software.

• The type and version number of the operating system software you are running on the client computer.

Introduction

Thank you for using Datalogic M-Series vision system. This guide provides a brief overview to help you get started with your new system. For more detailed instructions, please refer to the Reference Guide (843-0093) and the M-Series Processor and Camera Guide (843-0148). It is important that you note the cautions and warnings in these manuals.

Safety Precautions

⚠ **Warning:** There are no user-serviceable parts inside the Datalogic hardware. To avoid electrical shock, never open the case. Opening the case or removing the tamper-proof sticker will void the product warranty.

⚠ **Avertissement**: Il n'y a aucune partie utilisateur-utile à l'intérieur du matériel d'Datalogic. Pour éviter le choc électrique, n'ouvrez jamais la valise. L'ouverture de la valise ou l'élimination de l'autocollant inaltérable videra la garantie de produit.

⚠ **Mounting Warning:** Mount the processor with the front or back of the unit facing down. For safety, do NOT mount the processor with the filter side down. Mounting with the fan side down is acceptable only if approved metal screen filters have been installed in all fan exhausts.

Metal Screen Filter Installed

Metal Screen Filter NOT Installed. Do NOT mount fan side down
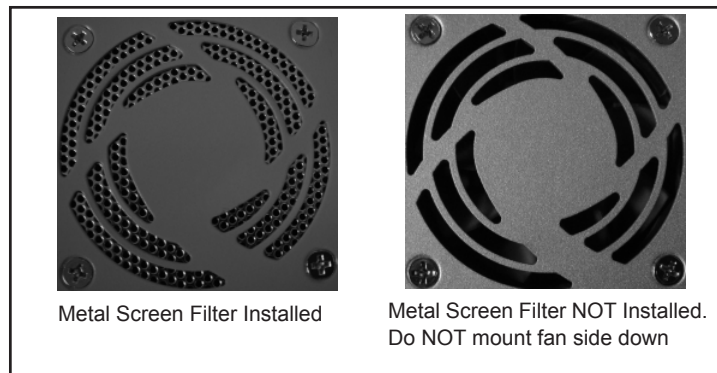
- Read all of the following instructions before setting up your system. **Save this document for later use.**

- Follow all warnings and instructions in this manual and in other user guides shipped with your hardware components.

- To avoid damage to the vision system and its components, *never* plug in or unplug a cable when the power is on. Always turn off the power supply before you make cable changes.

- Never use the system if a power cable has been damaged. Do not allow anything to rest on a power cable and keep them away from traffic.

- The air inlets and exhausts on the top and sides of the unit are for ventilation. Do not block or cover these openings or insert anything into these openings. Metal screen filters may be installed in the fan exhausts.

- Do not expose the vision system to moisture, rain, or snow, and do not use it near water. If a component gets wet unplug it.

- To avoid injury, never open the case. Opening the case or removing the tamper-proof sticker will void the product warranty.

⚠ **Service Personnel Only - Caution:** Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to battery maker's instructions.

Unpack the M-Series Hardware

When your system arrives, check the shipping cartons for wrinkled or damaged corners, holes through the cardboard, or other signs of rough handling or abuse. If you find any signs of damage, ask the delivery service to make a note on the delivery receipt describing the damage.

Carefully remove the system unit, cameras, cabling, and accessories from the shipping package. Place all equipment you unpack on a table and inspect each item. Report any damage to the carrier immediately. Save all packing materials so you can repack the shipment in case you need to move or ship it.

Temperature precautions: If your system arrives in very cold or hot weather, allow all the equipment to reach room temperature before plugging it in. Exposing a cold device to a warm room causes condensation that could damage the system if power is applied too soon. If condensation forms, wait for it to dry completely.

Processor Specifications

This section lists the general operating specifications for the M-Series Processors.

Processor Operating Environment		
Model	MX20** and MX40	MX80
Dimensions	7.8 w x 3.3 h x 6.5 d (in) 200 w x 85 h x 165 d (mm)	9.06 w x 3.23 h x 8.11 d (in) 230 w x 82 h X 206 d (mm)
Weight	4.8 lb. (2.16 kg)	6.61 lb. (3 kg)
Input Power*	10 to 30VDC ----, Max. 10A; Min 3.5A	10 to 30VDC ----, Min 5A
Temperature Humidity	0° to +55° C (+32° to +131° F) 0% to 90% (non-condensing)	0° to +55° C (+32° to +131° F) 0% to 90% (non-condensing)
Safety Compliance	CE/FCC, RoHs, IP30, UL (MX20 UL Pending)	CE/FCC, RoHs, IP30, UL
Minimum Soft- ware Version	MX20 - 10.5.0 MX40 - 10.0.0	10.4.0

*NOTE: The MX20 and MX40 processors require approximately 3.5A @ 24VDC. Datalogic recommends using a 24 VDC power supply capable of providing 3.5A current. The M-Series processors run most efficiently at this voltage which is commonly used in many manufacturing environments.
The MX80 processor requires approximately 5A @ 24VDC. Datalogic recommends using a 24 VDC power supply capable of providing 5A current. This voltage is commonly used in many manufacturing environments.

**The MX20 processor can accommodate a maximum of two cameras. The maximum image size of each camera is two Megapixels. (The calculation is: maximum width in pixels * maximum height in pixels < 2,500,000.)

Installing Impact Software

NOTE: The M Device Software is intended for installation only on a Datalogic M-Series processor. You must install it directly on the processor you intend to use. You cannot install it remotely.
When a new processor is powered on the first time, a monitor, keyboard, and mouse must be connected to the processor to approve the license agreement.

All the required software was installed on the M-Series processor at the factory. If you want to change the system configuration, you will need to connect an optional monitor, mouse, and keyboard to the processor. For more details, refer to the M-Series Hardware Guide and Impact Reference Guide. If your system does not work when you are finished with the setup, review the instructions and diagrams to make sure you made all connections properly.

Resetting the M-Series Processor

To reset the M-Series Processor, press the Reset button on the processor's front panel. See "MX20 and MX40 Front Panel Connections" on page 8 and "MX80 Front Panel Connections" on page 9.

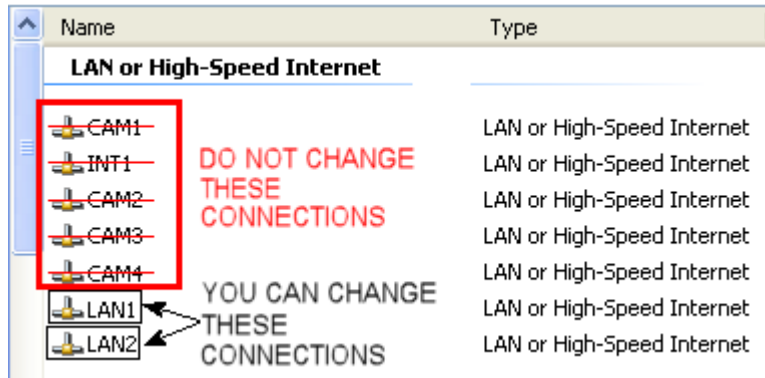## Changing the Camera's IP Address

1. Connect to the device with VPM.
2. Select the Settings tab.
3. Click the General System Object.
4. Select the General radio button.
5. Enter the desired IP address in the IP Address field.

6. Press the Tab key.
7. When the Reboot dialog is displayed, click OK.

Changing the M-Series Processor's IP Address (Windows XP)

IMPORTANT NOTE: Change only the Local Area Connection named LAN1 or LAN2. These correspond to Ethernet Ports 1 and 2 on the front of the processor.
DO NOT change any of the other Local Area Connections. Changing any other connection can cause the M-Series cameras to stop functioning.

1. In the Start menu, right click on My Network Places and select Properties.
2. Right click Local Area Connection LAN1 or LAN2 and select Properties.
3. On the General tab, select Internet Protocol (TCP/IP) and click Properties.
4. On the General tab, select Use the following IP address.
5. Enter the desired IP address.
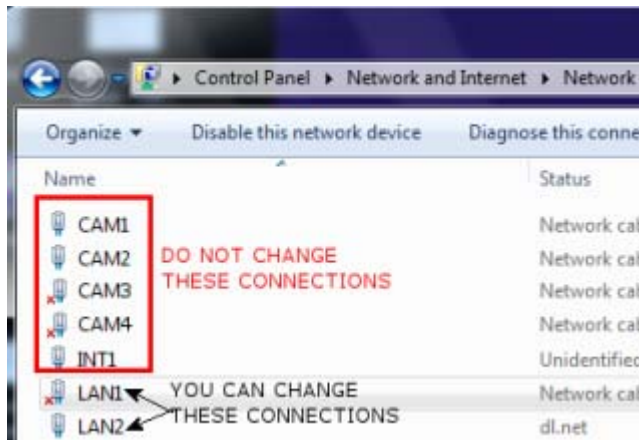6. Click OK to close all the open dialog windows.

Changing the M-Series Processor's IP Address (Windows 7)

IMPORTANT NOTE: Change only the Local Area Connection named LAN1 or LAN2. These correspond to Ethernet Ports 1 and 2 on the front of the processor.
DO NOT change any of the other connections. Changing any other connection can cause the M-Series cameras to stop functioning.
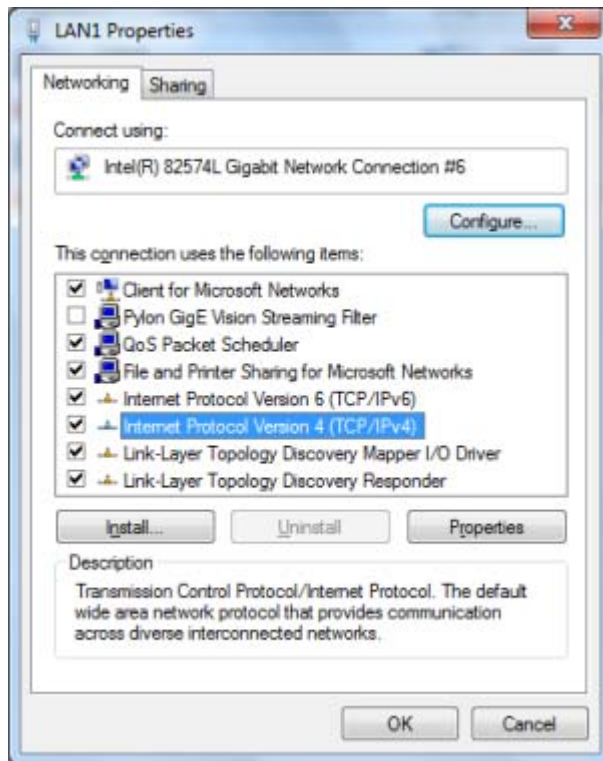
1. In the Start menu, click on Control Panel.
2. Under Network and Internet, click on View Network Status and Tasks.
3. On the left side of the screen, click Change Adapter Settings.
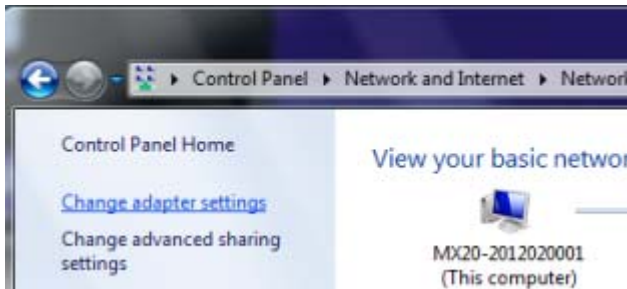
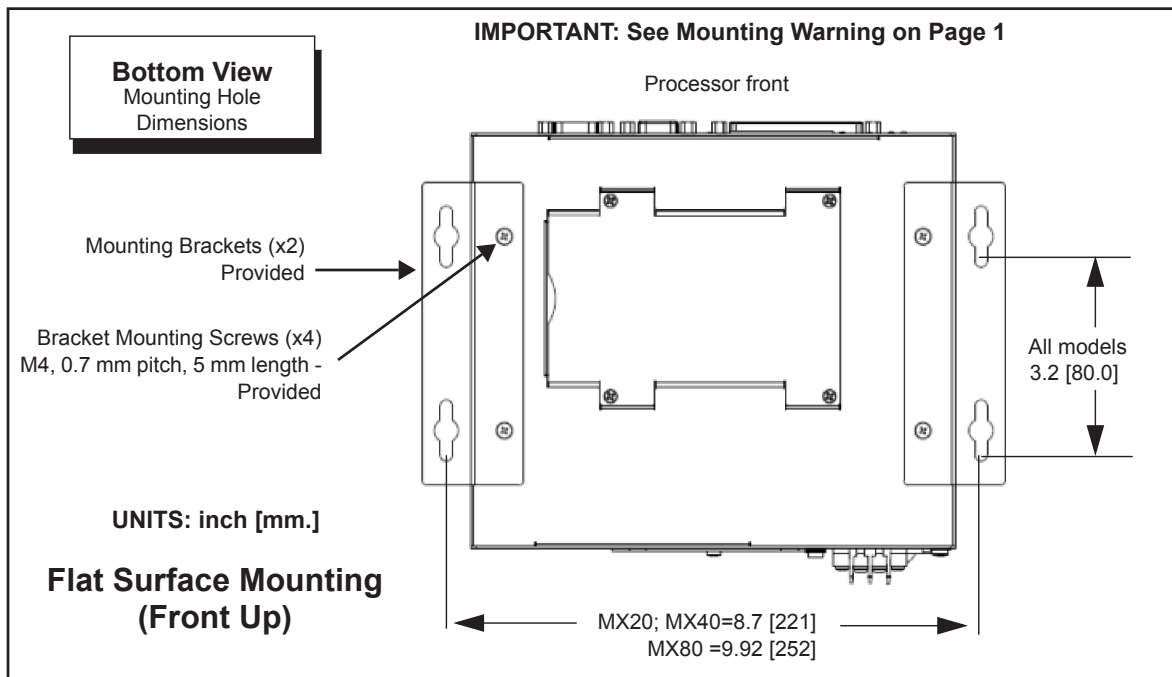4. Right click LAN1 or LAN 2 and select Properties.

5. In the list of items, select Internet Protocol Version 4 (TCP/IPv4), then click Properties.

6. Select Use the following IP address.
7. Enter the desired IP address.
8. Click OK to close all the open dialog windows.

Flat Surface Mounting

The M-Series Processor may be mounted on any stable surface using the provided case mounting brackets. (Use the appropriate bracket for the Processor model.) Allow at least 1.5 inches (38.1 mm) of clearance at the sides and top of the unit.

IMPORTANT: See Mounting Warning on Page 1

Processor front

Bottom View
Mounting Hole Dimensions

Mounting Brackets (x2) Provided

Bracket Mounting Screws (x4) M4, 0.7 mm pitch, 5 mm length - Provided

All models 3.2 [80.0]

UNITS: inch [mm.]

Flat Surface Mounting (Front Up)

MX20; MX40=8.7 [221]
MX80 =9.92 [252]

Mounting Bracket Installation

NOTE: If the Processor uses a Compact Flash card, mount with the Processor front facing upward so the CF card does not fall out due to vibration.

To mount the Processor using the mounting brackets:

1. Fasten the two mounting brackets to the bottom of the Processor using the bracket mounting screws.
2. Using the mounting brackets as a template, mark the surface mounting holes in the desired location. The surface must be sufficiently sturdy to hold the unit, stable, and free of vibration.
3. Drill four surface mounting holes in the mounting surface.
4. Insert four mounting screws in the mounting holes and tighten them until approximately 0.2 inches (5 mm) is left exposed. The mounting screws must be at least size #12 (min. 0.216 inches or 5.486 mm) and long enough to provide sufficient support.
5. Maneuver the Processor so mounting bracket slots align with the mounting screws.
6. Place the slots over the screws and slide the Processor down until the screws fit snugly into the mounting bracket slots.
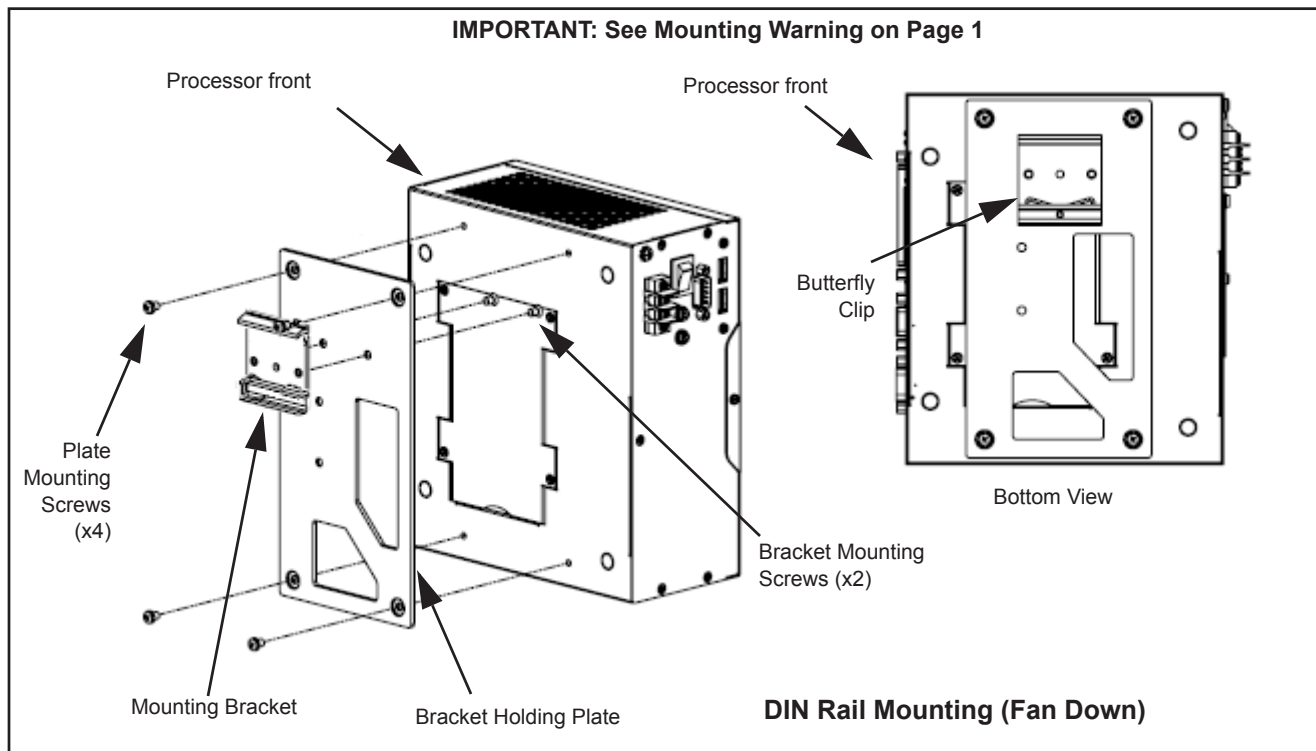
DIN Rail Mounting

The M-Series Processor may be bottom-mounted on a DIN rail using the optional DIN Rail Mount kit (MX20/MX40: Part # 606-0683; MX80: Part # 95A906038).
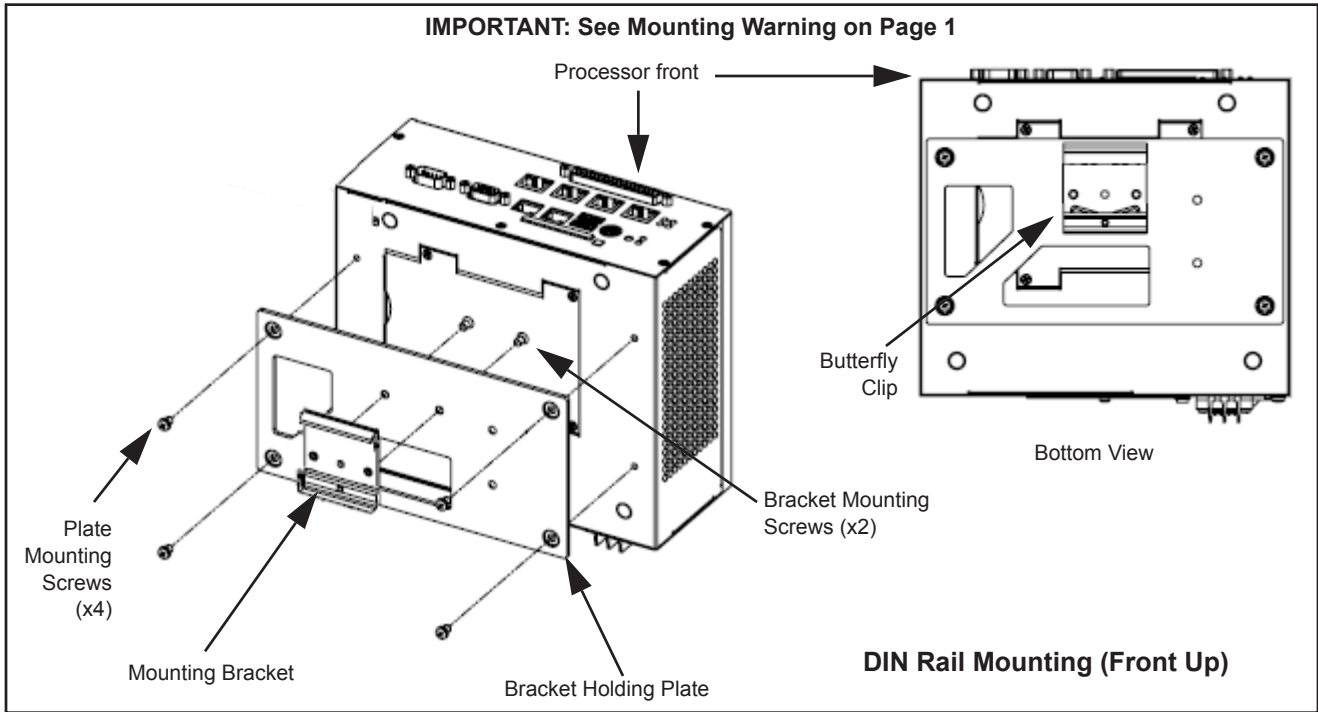
DIN Rail Mount Kit Installation

NOTE: If the Processor uses a Compact Flash card, horizontal mounting is recommended (the Processor front facing upward) so the card does not fall out due to vibration.

To mount the Processor using the DIN Rail Mount kit (see diagram):

1. To fasten the mounting bracket to the bracket holding plate, insert the bracket mounting screws from the reverse side of the bracket holding plate.
   Be sure to use the appropriate holes in the holding plate for the desired bracket orientation —horizontal or vertical. The part of the bracket that contains the butterfly clip should be on the bottom.
2. Fasten the bracket holding plate onto the bottom of the processor using the plate mounting screws.
3. Hook the bottom of the mounting bracket in the bottom flange of the DIN rail. The butterfly clips will offer some resistance.
4. While exerting slight upward force, clip the top of the mounting bracket over the top flange of the DIN rail.
5. Verify that the bracket is clipped securely to the rail.

IMPORTANT: See Mounting Warning on Page 1

Processor front

Processor front

Butterfly Clip

Bottom View

Plate Mounting Screws (x4)

Bracket Mounting Screws (x2)

Mounting Bracket

Bracket Holding Plate

DIN Rail Mounting (Fan Down)

IMPORTANT: See Mounting Warning on Page 1

Processor front

Butterfly Clip

Bottom View

Bracket Mounting Screws (x2)

Plate Mounting Screws (x4)

Mounting Bracket

Bracket Holding Plate

DIN Rail Mounting (Front Up)

⚠ **Warning**: To avoid electrical shock, disconnect all power to the power supply before working on it.

⚠ **Avertissement:** Pour éviter le choc électrique, débranchez toute la puissance à l'alimentation d'énergie avant de travailler à lui.

MX20 and MX40 Processor Power Supply Connection

The MX20 and MX40 power inputs use standard spade terminals to connect the power supply. The ground terminal on the power input must be connected to the power supply's grounded chassis/enclosure. This connection is needed to insure electromagnetic compliance and proper operation.

The MX20 and MX40 processors require approximately 10A @ 10VDC; 3.5A @ 24VDC; and 3A @ 30VDC. Datalogic recommends using a 24 VDC power supply capable of providing 3.5A current. The M-Series processor runs most efficiently at this voltage which is commonly used in many manufacturing environments.
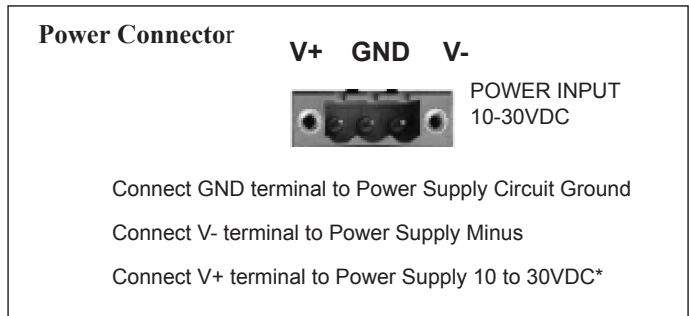
Power Connector   **1**   **3**   **2**

+ −

POWER INPUT
10-30 VDC
Max. 10A
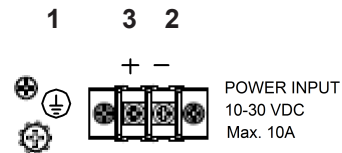
1   Connect Ground terminal to Power Supply Circuit Ground

2   Connect - terminal to Power Supply Minus

3   Connect + terminal to Power Supply 10 to 30VDC*

MX80 Processor Power Supply Connection

The MX80 power input uses a Datalogic-supplied connector. Wire the power supply cable to the connector, then plug it into the power connector on the rear of the processor. The ground terminal on the power input must be connected to the power supply's grounded chassis/enclosure. This connection is needed to insure electromagnetic compliance and proper operation.

The MX80 processor requires approximately 5A @ 24VDC. Datalogic recommends using a 24 VDC power supply capable of providing 5A current. This voltage is commonly used in many manufacturing environments.

Power Connector

V+   GND   V-

POWER INPUT
10-30VDC

Connect GND terminal to Power Supply Circuit Ground

Connect V- terminal to Power Supply Minus

Connect V+ terminal to Power Supply 10 to 30VDC*

MX20 and MX40 Front Panel Connections

This is the MX20 and MX40 Processor's front panel.

| Symbol	Function
A	Status Lights (see Page 10)
B	Reset Button (Resets the processor)
C	Keyboard and Mouse
D	USB Ports 2.0 (2)
E	LAN Ethernet Ports (2)
F	Compact Flash Socket (See Note below)
G	VGA Connector
H	Serial Port 1 - See "MX20 and MX40 Serial Cable" on page 11
I	M-Series Camera Connectors (CAM1-CAM4) MX20 has only 2 POE ports (CAM1-CAM2) Cable 606-0457-x
J	Digital I/O Connector - Cable 606-0675-xx with terminal block 661-0403 or terminal block 248-0110. Use cable 431-0952-xx without terminal block.
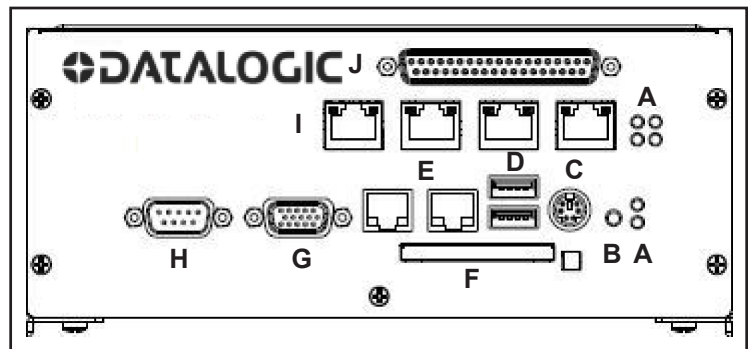
Note: If a Compact Flash card is present in the socket, it can be used for extended storage by the MX20 and MX40 processors. Do NOT insert or remove the card while the unit is powered on.

MX20 and MX40 Rear Panel Connections

This is the MX20 and MX40 Processors' rear panel.

Symbol	Function
A	USB Port
B	Serial Port 2
C	Speaker and Microphone
D	Power Switch
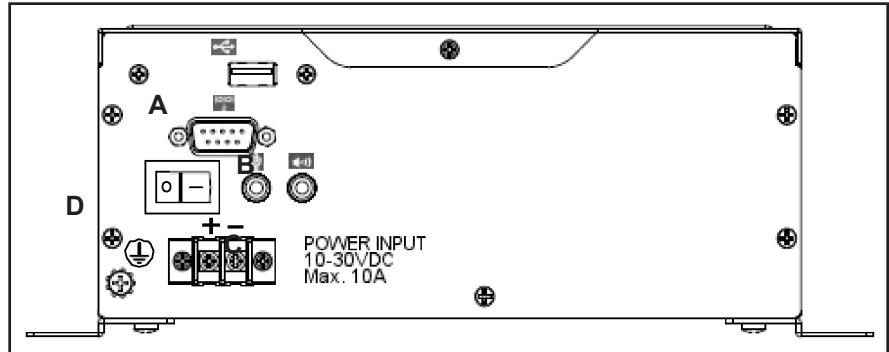
MX80 Front Panel Connections

These are the connections for the MX80 Processor's front panel.

Code	Function
A	Status Lights (see Page 11)
B	Power Button
C	Reset Button (Resets the processor)
D	Keyboard and Mouse
E	Gigabit Ethernet Ports (2)
F	DVI-I Video Connector (VGA Capable)
G	CFast Compact Flash Socket (See Note below)
H	USB 3.0 Ports (2)
I	USB 2.0 Ports (4)
J	M-Series Camera Connectors (CAM1 - CAM4) Cable 606-0457-x
K	Digital I/O Connector - Cable 606-0675-xx with terminal block 661-0403 or terminal block 248-0110. Use cable 431-0952-xx without terminal block.
L	Serial Port 1 (Com 5) See "MX80 Serial Cable" on page 12
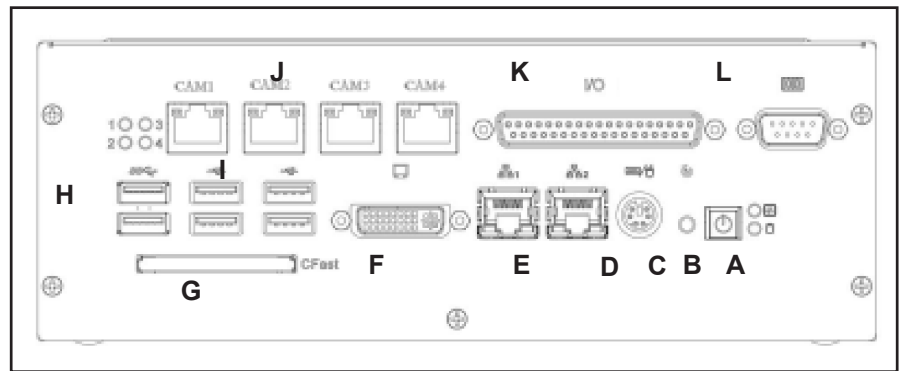
Note: If a Compact Flash card is present in the socket, it can be used for extended storage by the processor. Do NOT insert or remove the card while the unit is powered on.
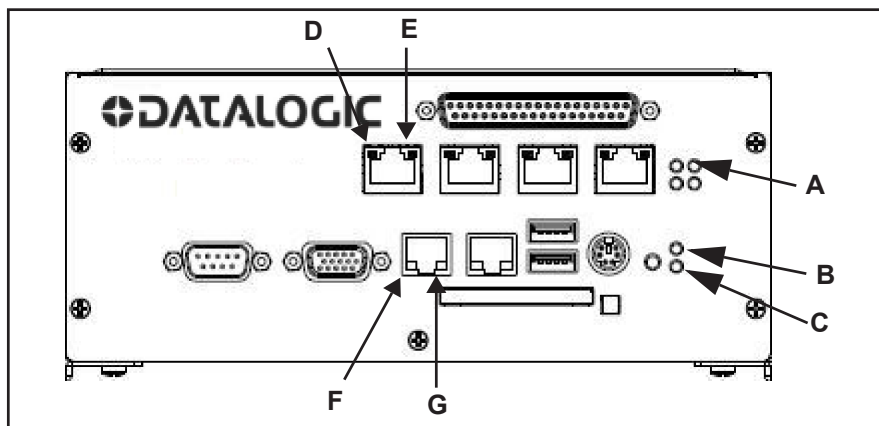
MX80 Rear Panel Connections
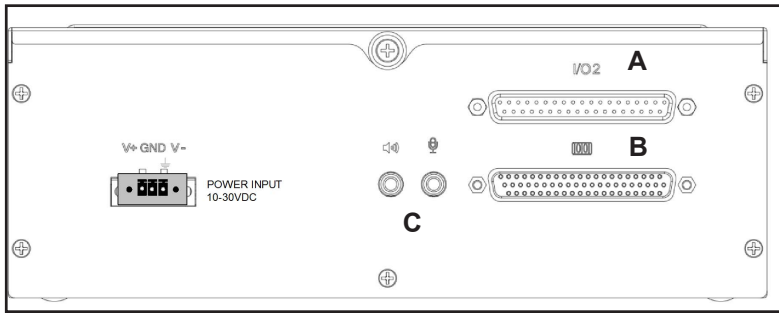
MX80 Processor's rear panel connections

Symbol	Function
A	Do Not Use. (For future expansion)
B	Serial Ports 2-4 (COM 2-4)
C	Speaker and Microphone

MX20 and MX40 Status Lights

These are the status lights on the front of the MX20 and MX40 Processors.

Symbol	Name	When lit indicates:
A	PoE: MX40 = 4 MX20 = 2	Power over Ethernet (PoE) is active (M1xx camera only)
B	Power	Power is On
C	HDD	Blinking: Solid-state hard drive is active
D	PoE Activity/Link: MX40 = 4; MX20 = 2	On: Link is established Blinking: Data is being transferred
E	PoE Speed: MX40 = 4; MX20 = 2	Off: 10 Mbps Green: 100 Mbps Orange: 1000 Mbps (Gigabit)
F	LAN 1 and 2 Speed	Off: 10 Mbps Green: 100 Mbps Orange: 1000 Mbps (Gigabit)
G	LAN 1 and 2 Activity/Link	On: Link is established Blinking: Data is being transferred

MX80 Status Lights

This illustration shows the status lights on the front of the MX80 Processor.
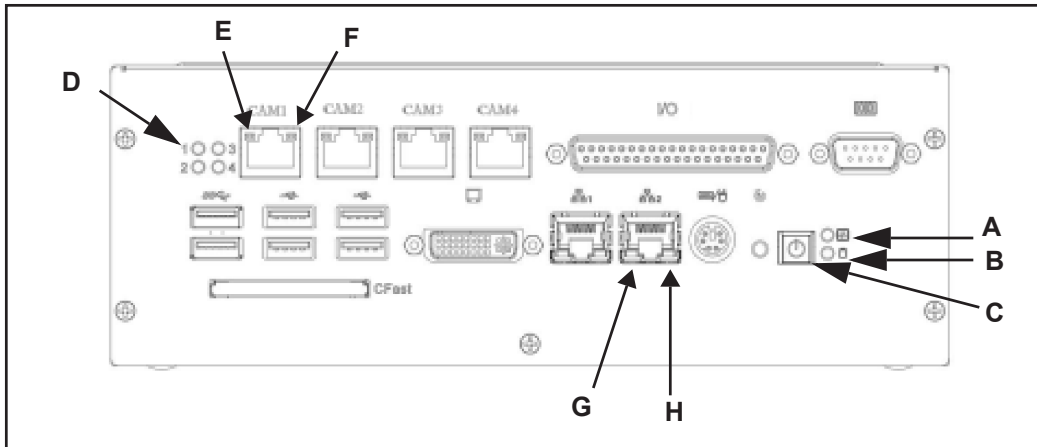
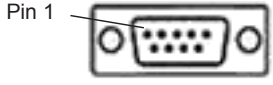| Symbol	Name	When lit indicates:
A	Diagnostic	Continuously: No physical storage connected Blinking: No memory installed
B	HDD	Blinking: Solid-state hard drive is active
C	Power	Power is On
D	PoE (4)	Power over Ethernet (PoE) is active (M1xx camera only)
E	PoE Activity/Link (4)	On: Link is established Blinking: Data is being transferred
F	PoE Speed (4)	Off: 10 Mbps Green: 100 Mbps Orange: 1000 Mbps (Gigabit)
G	LAN 1 and 2 Speed	Off: 10 Mbps Green: 100 Mbps Orange: 1000 Mbps (Gigabit)
H	LAN 1 and 2 Activity/Link	On: Link is established Blinking: Data is being transferred

M-Series Processor Serial Outputs

MX20 and MX40 Serial Cable

The MX20 and MX40 processors provide one serial port connection. The front panel connector (Serial Port 1-COM 1) uses a standard serial cable. CAM 1 controls this serial port.

Pin Number	Signal Name
1	Carrier Detect (CD)
2	Received Data (RxD)
3	Transmitted Data (TxD)
4	Data Terminal Ready (DTR)
5	Signal Ground (GND)
6	Data Set Ready (DSR)

| Pin Number	Signal Name
7	Request To Send (RTS)
8	Clear To Send (CTS)
9	Ring Indicator (RI)

Pin 1

9 Pin Male
(Pin Side)

MX80 Serial Cable

The MX80 processor provides four serial port connections. The connector on the front panel is Serial Port 1 (COM 5) which uses a standard serial cable. CAM 1 controls this serial port.

The rear panel connector has three serial port connections for Serial Ports 2, 3, and 4 (COM 2, 3, and 4 respectively). CAM 2 controls Serial Port 2, CAM 3 controls Serial Port 3, and CAM 4 controls Serial Port 4. Use the Datalogic provided cable which has a DB-62P connector on one end and four standard serial port connectors (DB9) on the other end (Part 95A906006). The connector wiring pin numbers on the DB9 connectors are the same as the MX20 and MX40.

M-Series Processor I/O Wiring

To connect Processor power and input/output signals, use cable 606-0675-xx (37 pin D-sub Male to Male) with terminal block 661-0403.
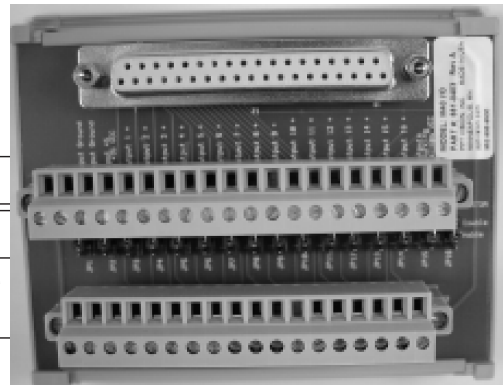
| Terminal Name	Signal	
Input Cmn (2)	Input Common	
Input 1 through Input 16	Input 1+ through Input 16+	See Input Voltage on Page 13
Output Ground (2)	Output Ground	
Output +5 to +35 VCC	Output Control Voltage	See Supply Voltage on Page 13
Output 1 through Output 16	Outputs 1 through 16 (sinking or sourcing selectable)	See "Pullup Jumpers to Enable Sourcing" on page 14
Outputs Sourcing Pullups VCC	Output Pullup - use if Output needs to be sourcing	+24 VDC (Jumpers JP1 through JP16 enable/disable connection)
JP1 through JP16	Pullup Enable/Disable	See "Pullup Jumpers to Enable Sourcing" on page 14

Input Characteristics

The diagrams and table below describe the input characteristics and how to wire a sensor to a general purpose or event input.


Note: All connections to inputs must be made using properly grounded shielded cable.
All inputs must be wired as either sinking or sourcing, they cannot be mixed. There is only one "Input Common" connection for all the inputs.

Input Resistance (nominal)	Input Voltage	Turn On Voltage	Turn Off Voltage	Isolated Voltage
1.2k @ 0.5 W	0-24 Vdc	>3 Vdc	< 0.8 Vdc	2500 Vrms

General Purpose Input Circuit (Sinking)
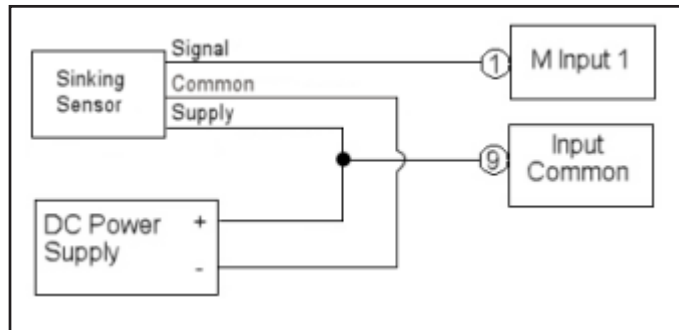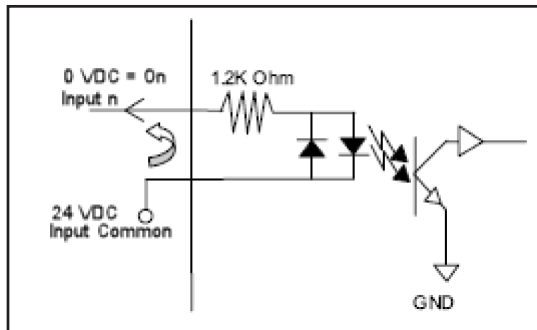
General Purpose Input Circuit (Sourcing)
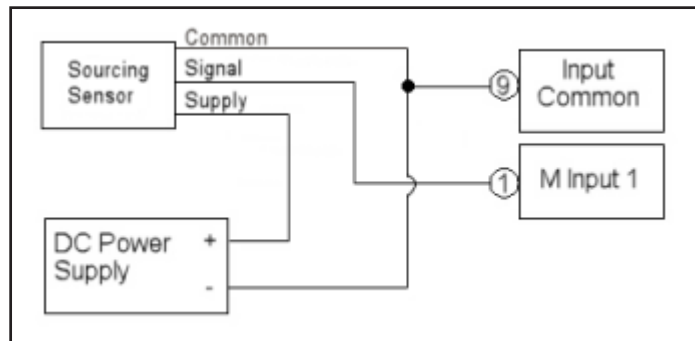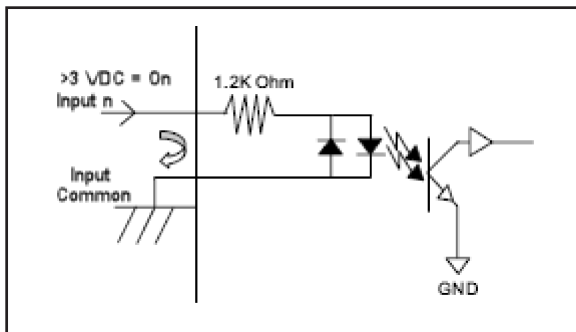
Output Characteristics

The M-Series Processors contain sixteen general-purpose output connections.

Supply Voltage	+5 VDC (minimum) to +35 VDC (maximum)
Sink Current (maximum)	1 Amp per output
Source Current (maximum)	15 Milliamperes per output (see "Pullup Jumpers" below)

NOTES: An external power source is required to power an output load. The outputs are merely switches that are open or closed. All output connections must use properly grounded and shielded cable.
The Trigger Signal and Strobe Output for M-Series cameras are separate and not part of the M-Series Processor inputs and outputs. See "Camera Trigger, Power, and Strobe Wiring" on page 15 for details.
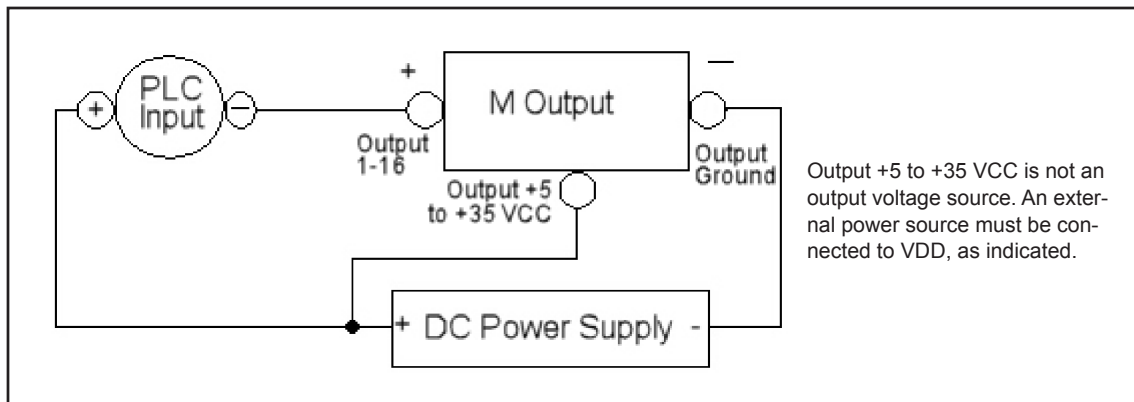

Pullup Jumpers to Enable Sourcing

Jumpers JP1 through JP16 enable and disable the connection between their respective Output and the "Outputs Sourcing Pullups VCC" signal on the terminal block. If a jumper is in the Enable position, the Sourcing VCC is connected to the Output and it provides a sourcing signal (it is normally low and goes high when On). If a jumper is in the Disable position, the Output provides a sinking signal (normally high and goes low when On). The Discrete Output tool in the vision program must be programmed to provide the desired output level. Refer to Discrete Output tool in the Impact Reference Guide (843-0093).

Note: With the sourcing pullup jumper enabled, the maximum current per output is 15 Milliamperes.
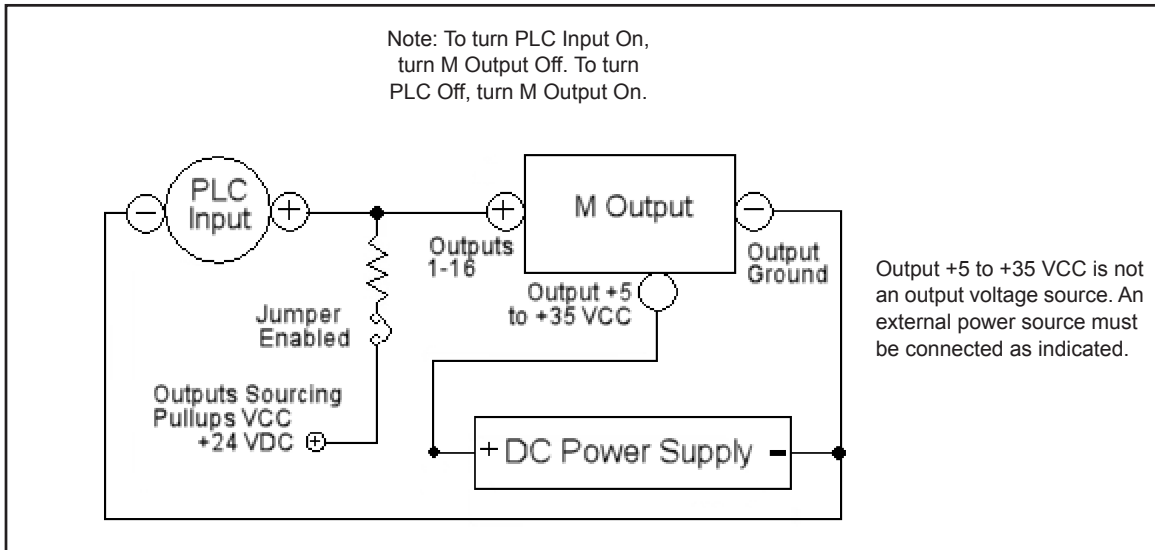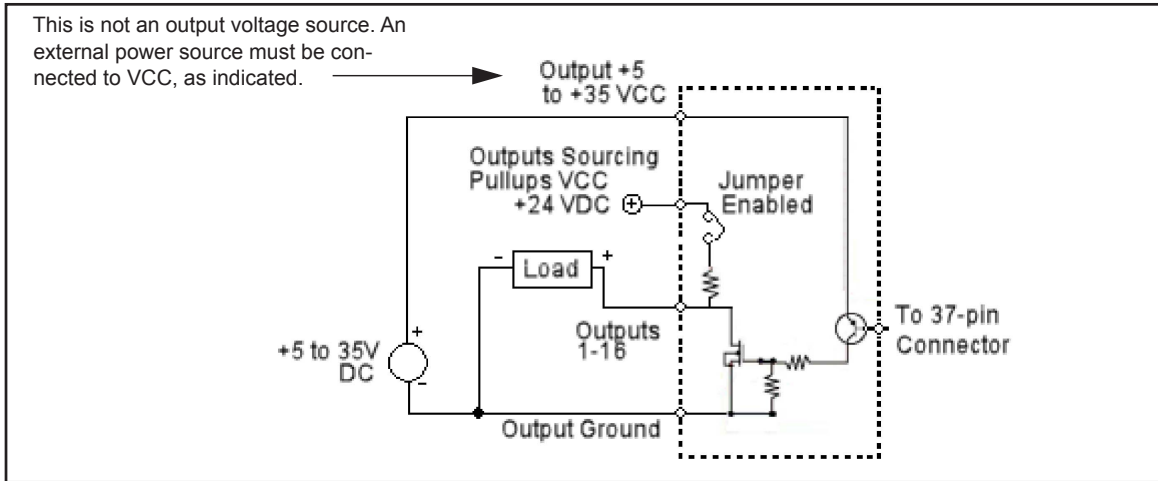
General Purpose Output Circuit (Sinking)
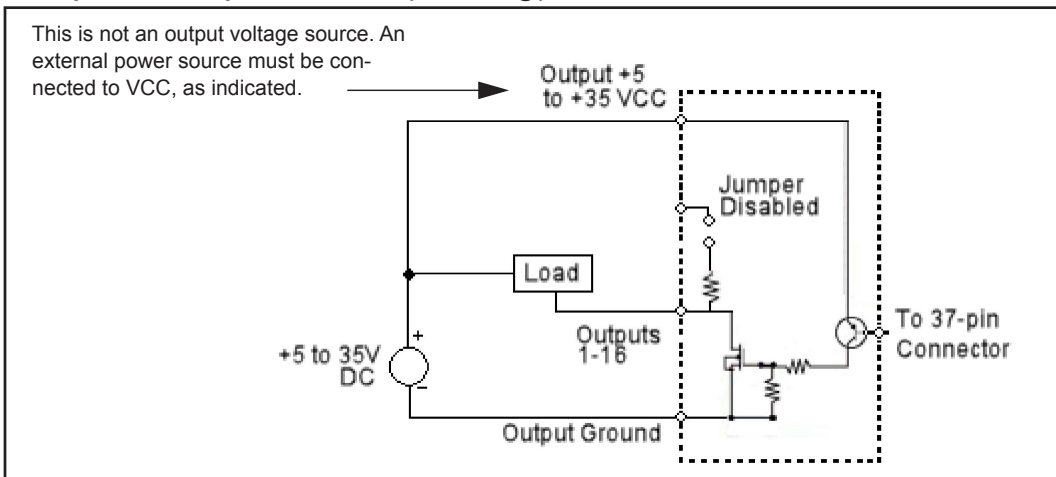
NOTES: To prevent output damage, all inductive loads must have noise suppressors connected directly across the load, as close to the load as possible.
The Output +5 to +35 VCC terminal is not an output voltage source. An external power source must be connected to it.

General Purpose Output Circuit (Sourcing)

This is not an output voltage source. An external power source must be connected to VCC, as indicated.

Output +5 to +35 VCC

Outputs Sourcing Pullups VCC +24 VDC ⊕

Jumper Enabled

− Load +

+5 to 35V DC +

−

Outputs 1-16

To 37-pin Connector

Output Ground

Note: To turn PLC Input On, turn M Output Off. To turn PLC Off, turn M Output On.

PLC Input − ⊕ +

Outputs 1-16

M Output

Output Ground

Jumper Enabled

Output +5 to +35 VCC

Output +5 to +35 VCC is not an output voltage source. An external power source must be connected as indicated.

Outputs Sourcing Pullups VCC +24 VDC ⊕
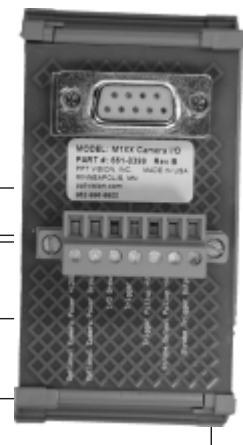
+ DC Power Supply −

Camera Trigger, Power, and Strobe Wiring

Datalogic M1xx Camera

To connect M1xx camera power, trigger signals, and strobe outputs, use cable 606-0674-xx (6 pin to DB9) with terminal block 661-0399.

| Terminal Name	Signal	Notes
Optional Camera Power +12VDC	DO NOT USE	(Power is supplied by POE)
Optional Camera Power Ground	DO NOT USE	
I/O Ground	I/O Ground	

Terminal Name	Signal	Notes

Trigger In**	Camera Trigger In	0 to +24 VDC recommended
		Maximum +30 VDC
		As sinking input
		   Off: 0 to +1.4 VDC
		   On: +2.2 to +24 VDC; 5 to 15 ma
		As sourcing input (see Trigger Pullup +VCC)
		   Off: +2.2 to +24 VDC; 5 to 15 ma
		   On: 0 to +1.4 VDC

Trigger Pullup +VCC**	Trigger In Pullup - use if Trigger In needs sourcing (see Note 1 below)	+24 VDC recommended Maximum +30 VDC (**Block contains 1.6k Ohm 1W resistor between Trigger In and Trigger Pullup +VCC)
Strobe Output Pullup +VCC*	Strobe Supply Voltage - use if Strobe Trigger Output needs sourcing (see Note 2 below)	Based on Strobe requirement (optional) Max: +30 VDC; 50 ma (*Block contains 1.6k Ohm 1W resistor between Strobe Trigger Output and Strobe Output Pullup +VCC)
Strobe Trigger Output*	Trigger Out to Strobe (see Note 3 below)	DO NOT APPLY ANY VOLTAGE DIRECTLY TO THIS OUTPUT. DO NOT WIRE OUTPUTS IN PARALLEL.

NOTE 1: If Camera Trigger In requires a sinking signal, set the Software Trigger Event to Rising Edge. If it requires a sourcing signal, set the Software Trigger Event to Falling Edge.
NOTE 2: If Strobe Trigger Output requires a sinking signal, set the Strobe Trigger Output to Falling Edge. If it requires a sourcing signal, set the Strobe Trigger Output to Rising Edge.
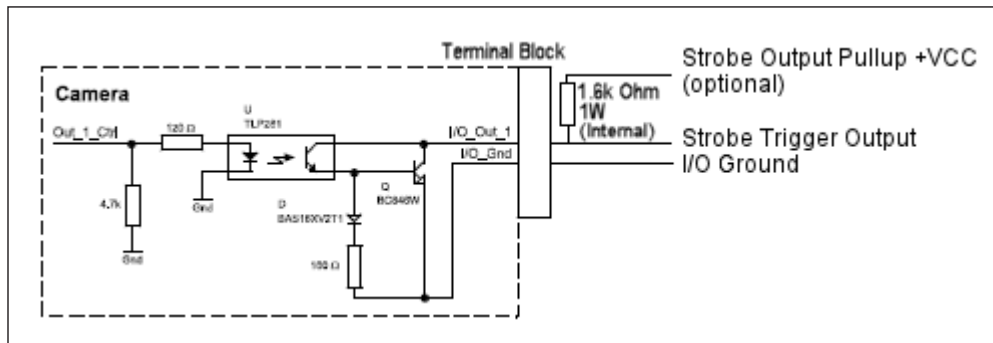**NOTE 3**: Disconnecting the camera will turn on some strobe lights.
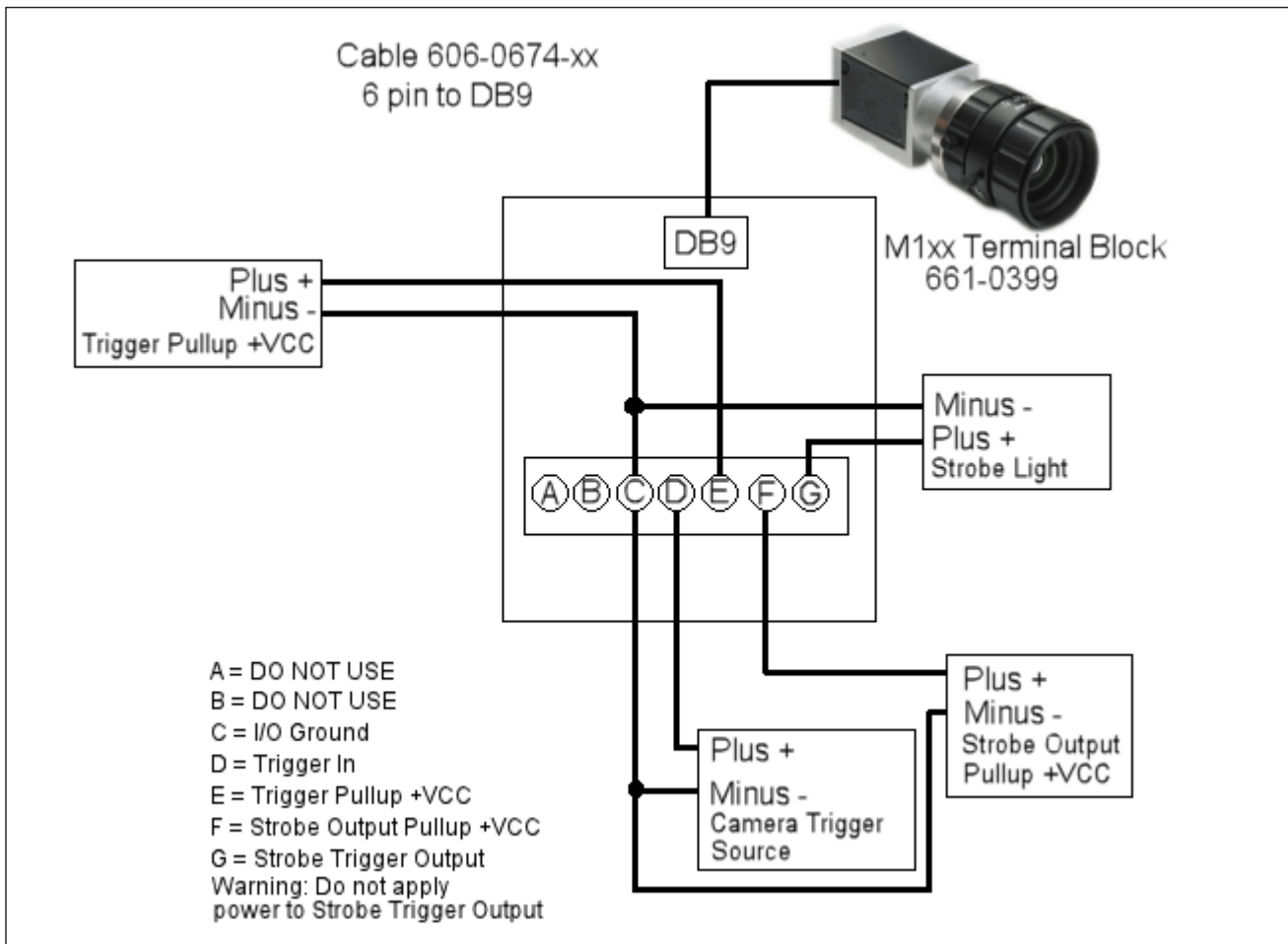
M1xx Trigger In Circuit
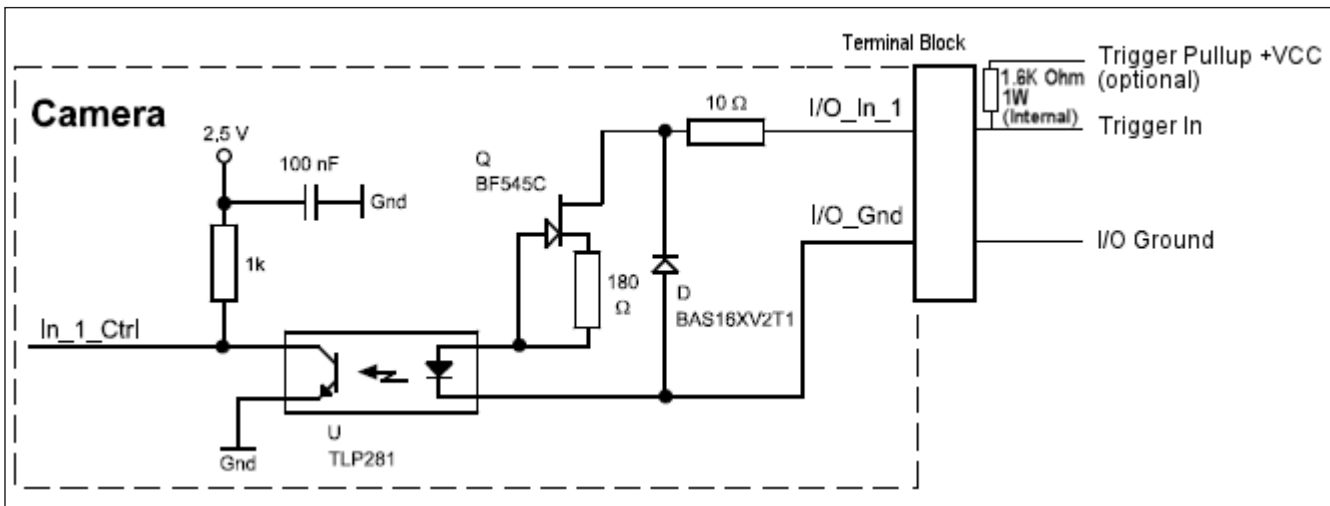
WARNING: Never wire M1xx Camera Strobe Outputs in parallel with M1xx, M2xx, or M3xx Camera Strobe Outputs. This will damage the cameras.
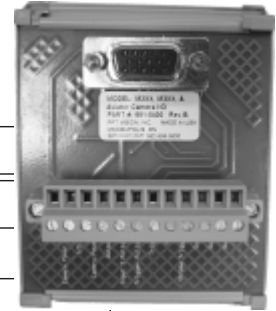
M1xx Strobe Trigger Output Circuit

M1xx Terminal Connections

A = DO NOT USE
B = DO NOT USE
C = I/O Ground
D = Trigger In
E = Trigger Pullup +VCC
F = Strobe Output Pullup +VCC
G = Strobe Trigger Output
Warning: Do not apply
  power to Strobe Trigger Output

Datalogic M2xx and M3xx Camera

To connect M2xx and M3xx camera power, trigger signals, and strobe outputs, use cable 606-0673-xx (12-pin to HD-15) with terminal block 661-0400.

| Terminal	Signal Name	Notes
Camera Power Ground	Camera Ground	
I/O Ground	I/O Ground	
Camera Power +VDC	Camera Power	+12 to +24 VDC recommended @ 500 mA Max Maximum: +30 VDC
Output +VCC	Power for Strobe Trigger Out	+3.3 to +24 VDC; 50 mA Max Maximum: +30 VDC
Input 2 Pullup +VCC	DO NOT USE	Not Currently Supported
Trigger Pullup +VCC	Trigger In Pullup - use if Trigger In needs sourcing input	Recommended: +24 VDC

Trigger In	Camera Trigger In (see Note 1 below)	0 to +24 VDC recommended
		Maximum +30 VDC
		As sinking input
		   Off: 0 to +1.4 VDC
		   On: +2.2 to +24 VDC; 5 to 15 ma
		As sourcing input (see Trigger Pullup +VCC)
		   Off: +2.2 to +24 VDC; 5 to 15 ma
		   On: 0 to +1.4 VDC

Input 2	DO NOT USE	Not Currently Supported
Strobe Trigger Out	Trigger Out to Strobe (see Note 2 below)	DO NOT APPLY GROUND DIRECTLY TO THIS OUTPUT.
Output 2	DO NOT USE	Not Currently Supported
Output 3	DO NOT USE	Not Currently Supported
Output 4	DO NOT USE	Not Currently Supported

NOTE 1: If Camera Trigger In requires a sinking signal, set the Software Trigger Event to Rising Edge. If it requires a sourcing signal, set the Software Trigger Event to Falling Edge.
NOTE 2: If Strobe Trigger Output requires a sinking signal, set the Strobe Trigger Output to Falling Edge. If it requires a sourcing signal, set the Strobe Trigger Output to Rising Edge.
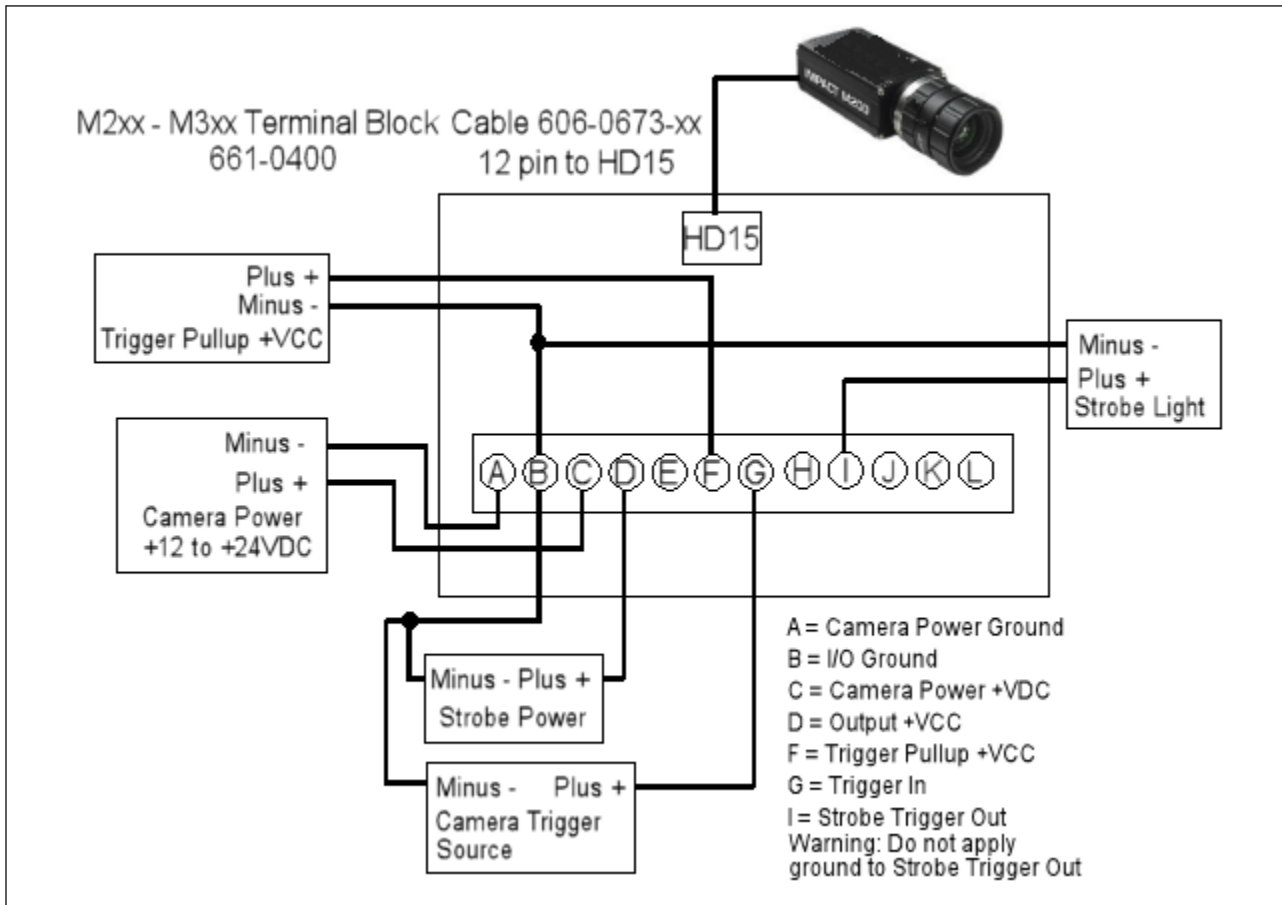
M2xx and M3xx Trigger In Circuit
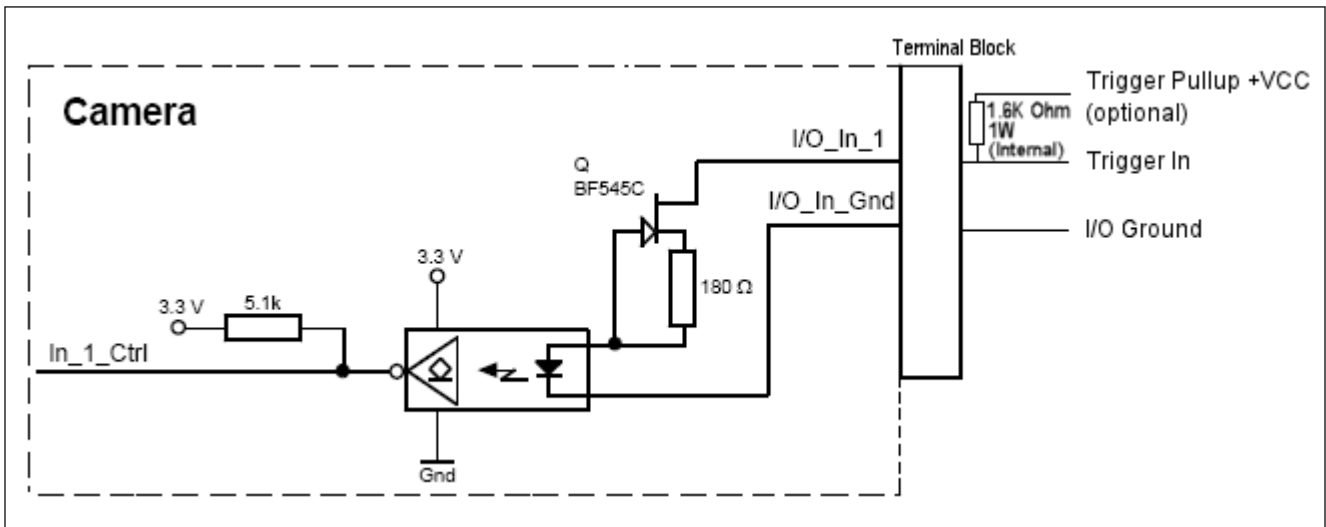
M2xx and M3xx Strobe Trigger Out Circuit
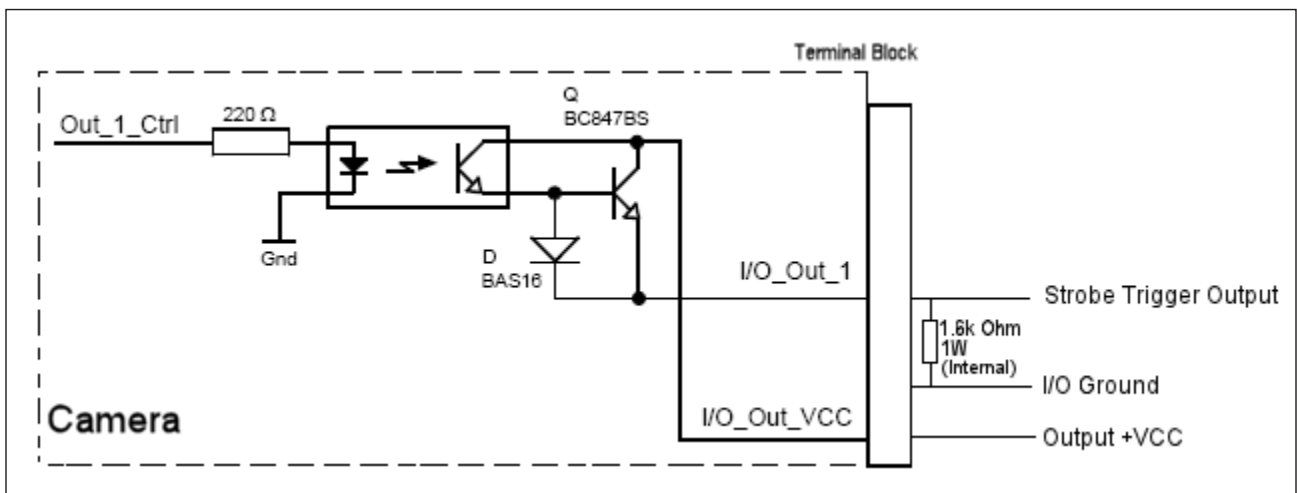
M2xx and M3xx Terminal Connections

Datalogic M565/M570 Camera

To connect the M565/M570, use terminal block 661-0401 with cable 606-0673-xx (12-pin to HD-15 camera I/O) and cable 606-0674-xx (6 pin to DB9 camera power). For details about programming the Line Trigger, refer to the Impact Reference Guide (843-0093).

NOTE: Do NOT use the M2xx/M3xx terminal block (661-0400) or M1xx block (661-0399) to connect this camera. They will NOT provide the correct signal levels.

| Terminal	Signal Name	Notes
Camera Power Ground	Camera Ground	See Note 1 Below
I/O Ground	I/O Ground	See Note 1 Below
Camera Power +12VDC	Camera Power	+12 VDC (+-10%) @ 700 mA Max
Input 1 -	No Connection	DO NOT USE

Terminal	Signal Name	Notes

Input 1 +	Frame Start Trigger	As sinking input
		    Off 0 to +0.8 VDC
		    On: +2.0 to +5 VDC
		As sourcing input (see Input 1 Pullup)
		    Off: +2.0 to +5 VDC
		    On 0 to +0.8 VDC
		Maximum: +5 VDC

Input 2 -	No Connection	DO NOT USE

Input 2 +	Single Line Trigger
	OR
	Phase A Line Trigger
	(Quadrature Encoder)
		As sinking input
		    Off 0 to +0.8 VDC
		    On: +2.0 to +5 VDC
		As sourcing input (see Input 2 Pullup)
		    Off: +2.0 to +5 VDC
		    On 0 to +0.8 VDC
		Maximum: +5 VDC

Input 3 -	No Connection	DO NOT USE

Input 3 +	Phase B Line Trigger
	(Quadrature Encoder)
		As sinking input
		    Off 0 to +0.8 VDC
		    On: +2.0 to +5 VDC
		As sourcing input (see Input 3 Pullup)
		    Off: +2.0 to +5 VDC
		    On 0 to +0.8 VDC
		Maximum: +5 VDC

Output 1 -	Not Currently Supported	DO NOT USE
Output 1 +	Not Currently Supported	DO NOT USE
Output 2 -	Not Currently Supported	DO NOT USE
Output 2 +	Not Currently Supported	DO NOT USE
Input 1 Pullup +5VDC	Frame Start Trigger Pullup - use if Input 1 needs sourcing input	Maximum: +5 VDC
Input 2 Pullup +5VDC	Line Trigger Pullup - use if Input 2 needs sourcing input	Maximum: +5 VDC
Input 3 Pullup +5VDC	Line Trigger Pullup - use if Input 3 needs sourcing input	Maximum: +5 VDC

NOTE 1: To help prevent ground loops and possible false triggering, we recommend connecting I/O Ground to Camera Power Ground.
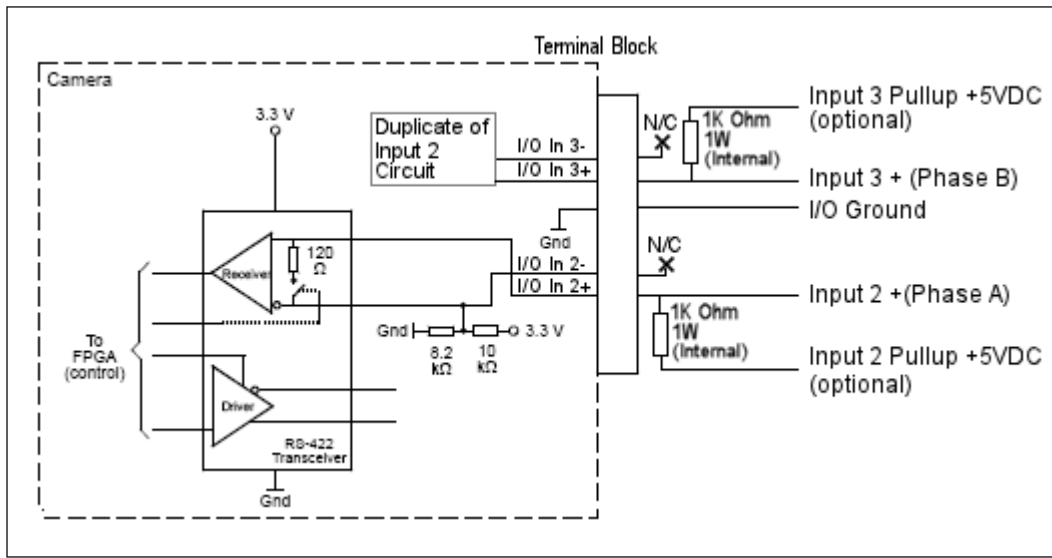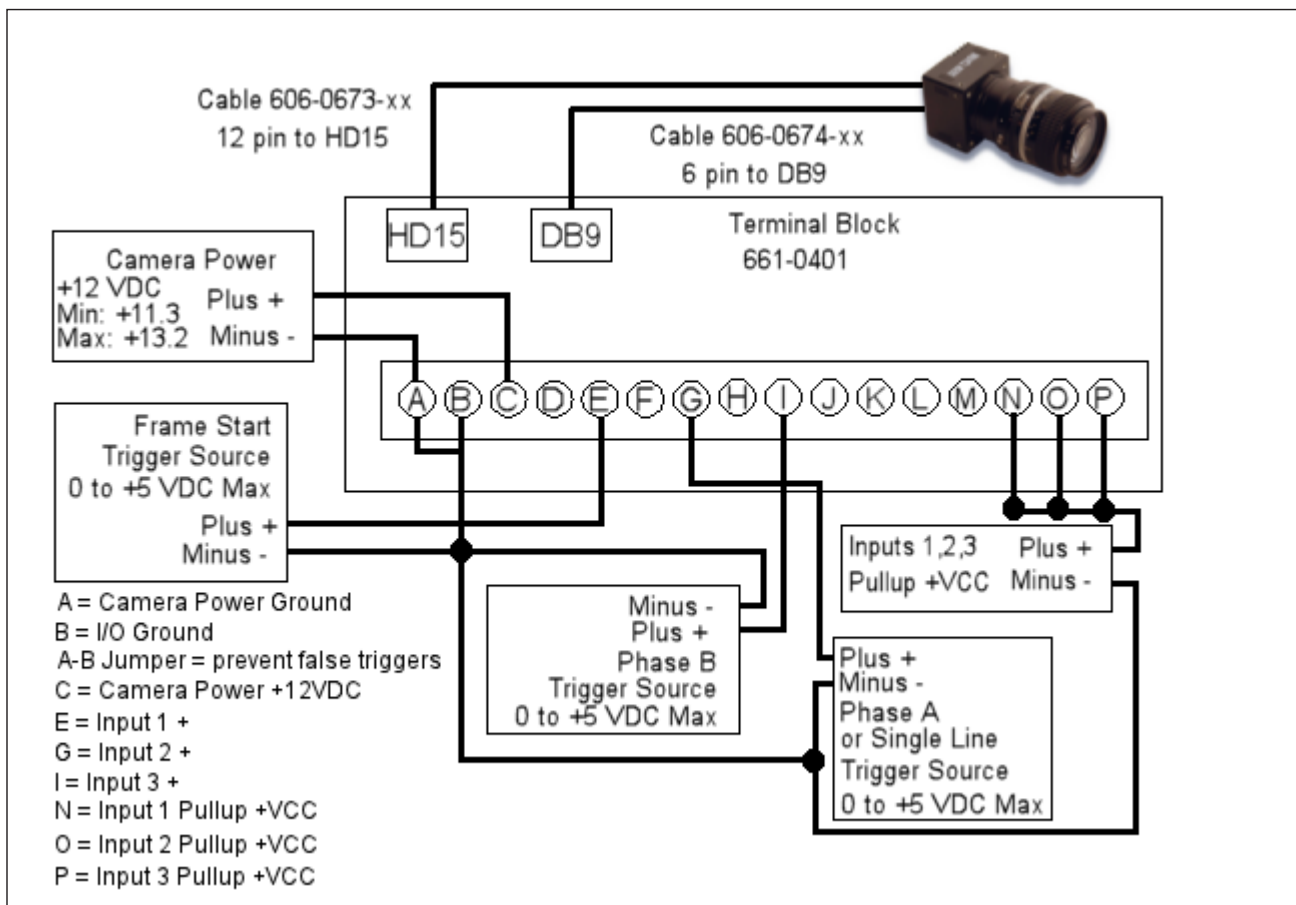
M565/M570 Frame Trigger Circuit
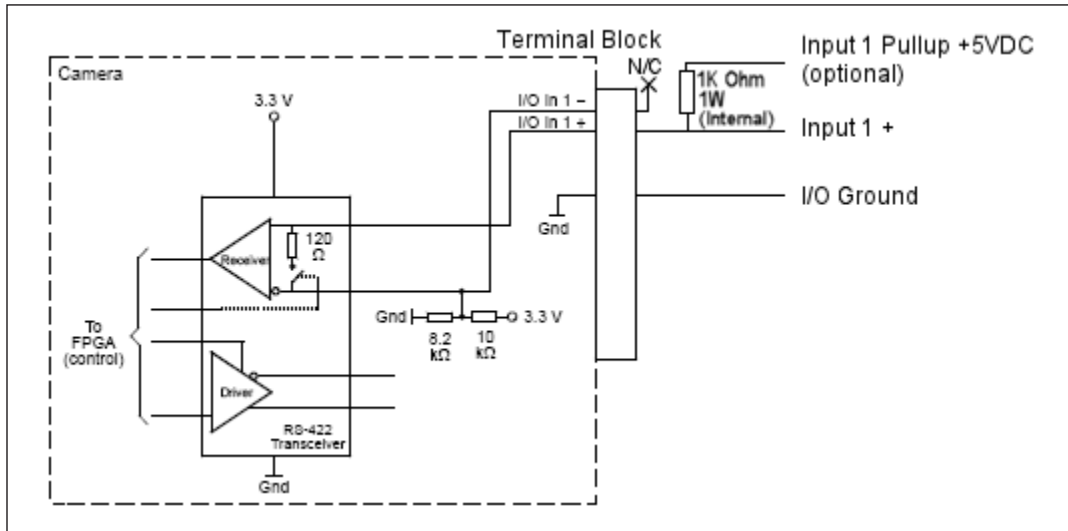
M565/M570 Single Line Trigger Circuit
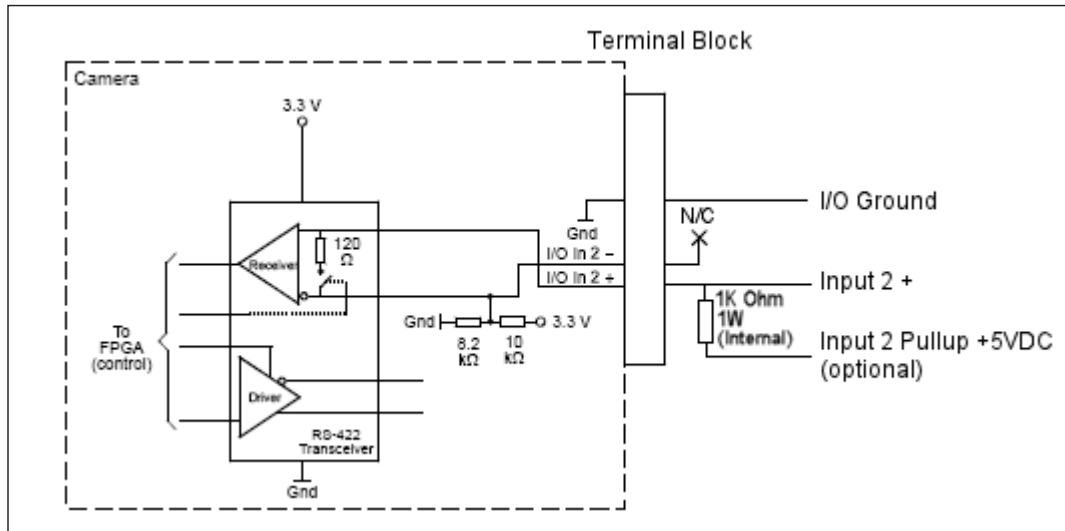
M565/M570 Quadrature Encoder Line Trigger Circuit

## M565/M570 Trigger Terminal Connections

A = Camera Power Ground
B = I/O Ground
A-B Jumper = prevent false triggers
C = Camera Power +12VDC
E = Input 1 +
G = Input 2 +
I = Input 3 +
N = Input 1 Pullup +VCC
O = Input 2 Pullup +VCC
P = Input 3 Pullup +VCC

Using Unisolated Terminal Blocks

IMPORTANT: This section describes how to connect M-Series cameras and I/O using the <u>unisolated</u>, <u>discrete style</u> of terminal block. To use the newer, integrated style of terminal block, see "M-Series Processor I/O Wiring" on page 1-12 and "Camera Trigger, Power, and Strobe Wiring" on page 1-15.
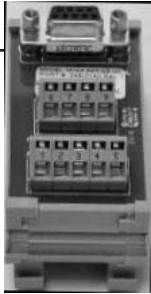
WARNING: Never wire M1xx Camera Strobe Outputs in parallel with M1xx, M2xx, or M3xx Camera Strobe Outputs. This will damage the cameras.

M1xx Camera Connection (Unisolated Terminal Blocks)

Camera power, trigger signals, and strobe triggers can be connected to the camera using one of two methods: a terminal block and cable or an unterminated cable only. To use a terminal block (248-0140) you must also use the optional Hirose 6-pin to DB9 camera cable (606-0674-xx).

To connect the camera using an unterminated cable, use the optional Hirose 6-pin to unterminated cable (part number 606-0672-xx).
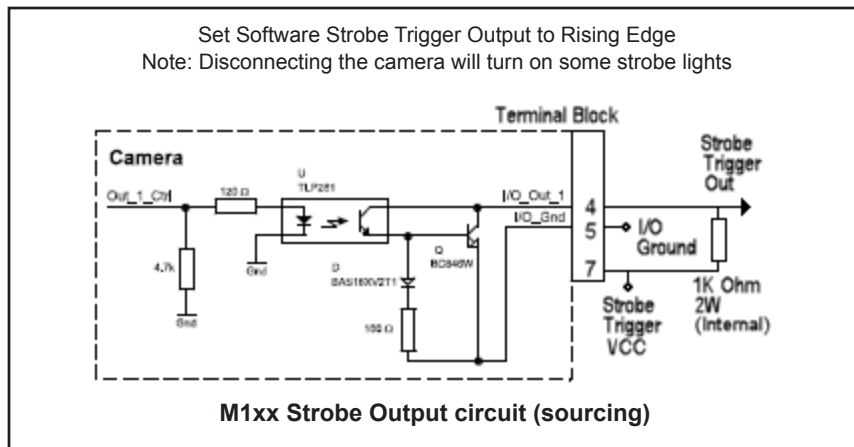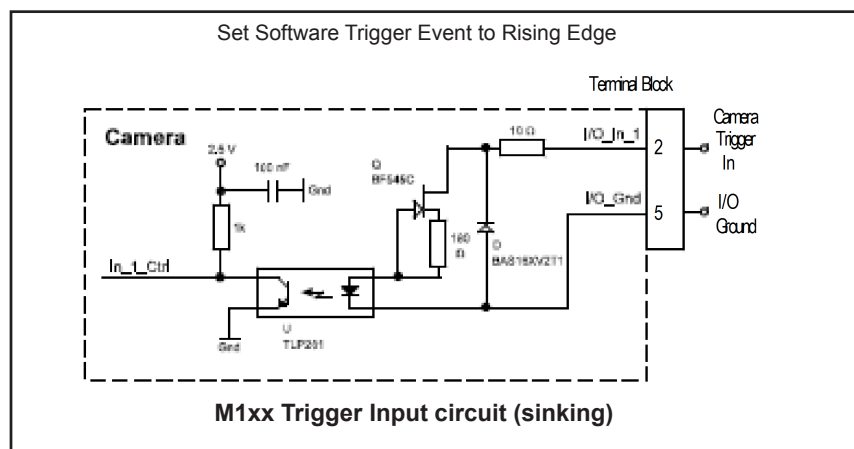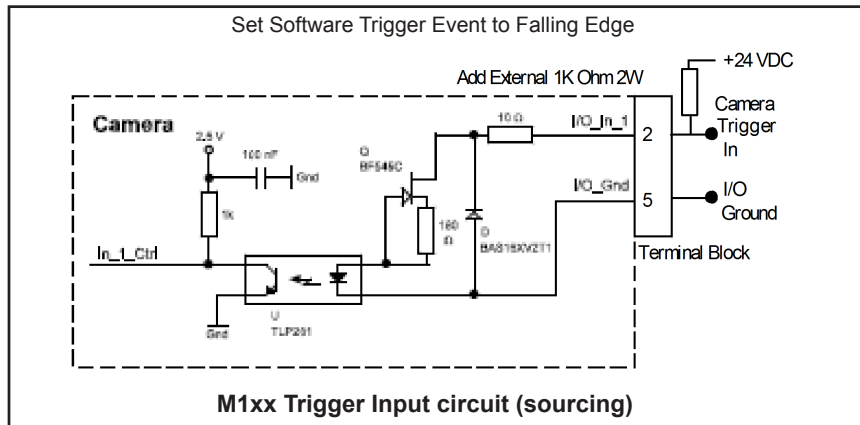
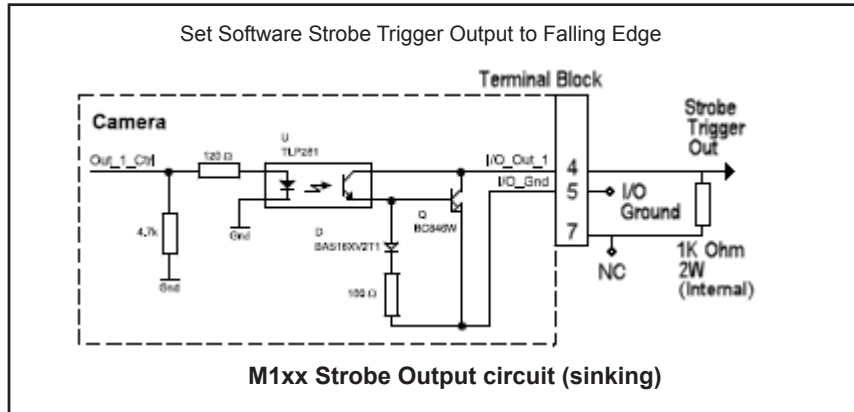| Terminal	Color	Signal Name	Notes
1	Blue	DO NOT USE	Do NOT apply power to this terminal. Power is supplied by Power over Ethernet (PoE)
2	Orange	Camera Trigger In	0 to +24 VDC recommended Off: 0 to +1.4 VDC On: +2.2 to +24 VDC; 5 to 15 ma Maximum +30 VDC
3	Green	No Connection	
4*	Wht/ Grn	Strobe Trigger Out	DO NOT APPLY ANY VOLTAGE DIRECTLY TO THIS OUTPUT. DO NOT WIRE OUTPUTS IN PARALLEL.
5	Wht/ Org	I/O Ground	
6	Wht/ Blu	DO NOT USE	Not required. Ground is supplied by Power Over Ethernet (PoE)
7*	None	Strobe VCC	Based on Strobe requirement Max: +30 VDC; 50 ma (*Block contains 1k Ohm 2W resistor between terminals 4 and 7)

NOTE: The M1xx camera's Strobe Trigger Out is normally closed (it opens to trigger the strobe). Do not wire multiple cameras' strobe outputs in parallel to trigger a single strobe.

To connect the power cable to the camera, align the cable connector with the connector on the rear of the camera, push gently until the cable connector seats securely, then tighten the connector collar. To disconnect it, loosen the collar completely, then grasp the connector and gently pull.

NOTE: To reduce stress on the cable and connectors, loop the cable and fasten it to the camera's mounting block. Do not crimp or tie the cable tightly with wire ties as this may damage it internally. The cable is not intended for continuous flexing or movement. The cable's maximum bend radius is fifteen times the cable diameter.

M1xx Circuit Diagrams (Unisolated Terminal Blocks)

Set Software Trigger Event to Falling Edge

M1xx Trigger Input circuit (sourcing)

Set Software Trigger Event to Rising Edge

M1xx Trigger Input circuit (sinking)

Set Software Strobe Trigger Output to Rising Edge
Note: Disconnecting the camera will turn on some strobe lights

M1xx Strobe Output circuit (sourcing)

Set Software Strobe Trigger Output to Falling Edge

M1xx Strobe Output circuit (sinking)

WARNING: Never wire M1xx Camera Strobe Outputs in parallel with M1xx, M2xx, or M3xx Camera Strobe Outputs. This will damage the cameras.

M1xx Terminal Connections (Unisolated Terminal Blocks)

Cable 606-0674-xx
6 pin to DB9

M1xx Terminal Block
248-0140

DB9

Plus +
Minus -
Camera Trigger Source

Warning: Do not apply power to terminal 4.

Plus +
Minus -
Strobe Light

Minus -   Plus +
Strobe Power 30 VDC Max

M1xx Terminal Block Connections

M1xx Unterminated Cable Connections (Unisolated Terminal Blocks)
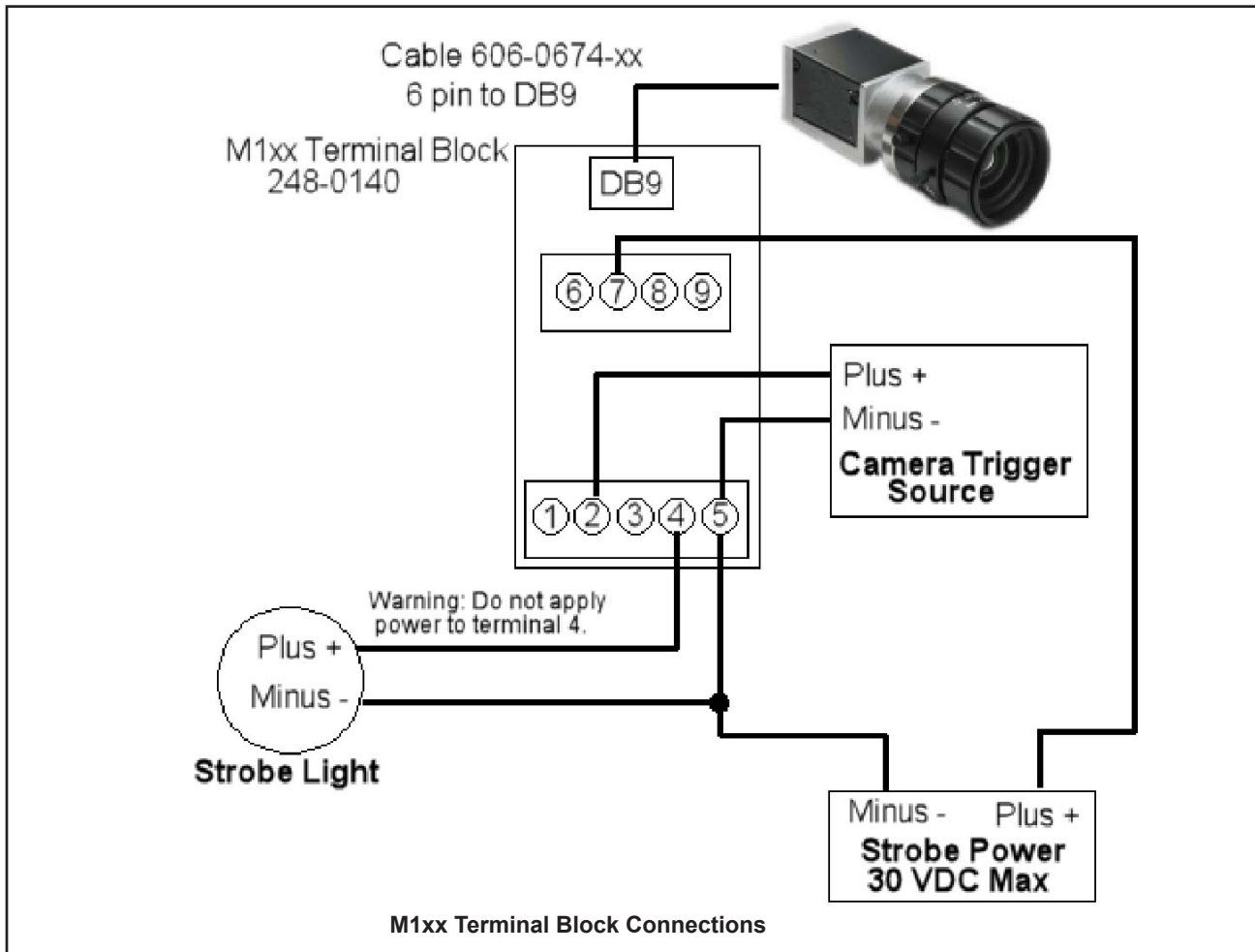
M1xx Unterminated Cable Connections
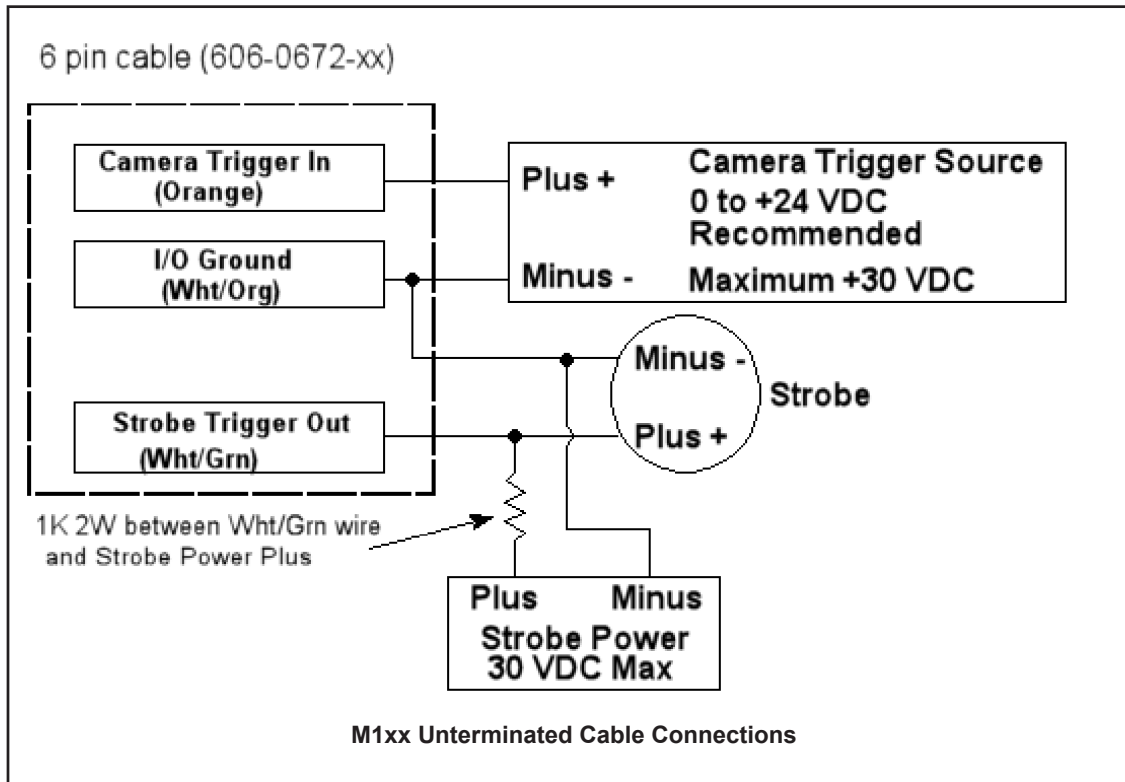
M2xx and M3xx Camera Connection (Unisolated Terminal Blocks)

Camera power, trigger signal, and strobe trigger can be connected to the camera using one of two methods: a terminal block and cable or an unterminated cable only. To use a terminal block (248-0141), you must also use the optional Hirose 12-pin to HD-15 camera cable (606-0673-xx).

To connect the camera using an unterminated cable, use the optional Hirose 12-pin to unterminated cable (part number 606-0671-xx).
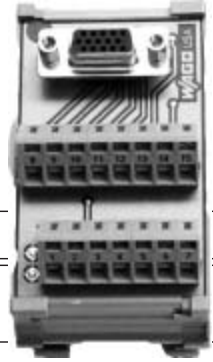
Terminal	Color	Signal Name	Notes
1 2	Wht/Blu Wht/Org	Camera Power Ground Camera Power Ground	See Note 1 below
3	Wht/Brn	Camera Trigger In	0 to +24 VDC recommended Off: 0 to + 1.4 VDC On: +2.2 to + 24 VDC; 5 to 15 mA Maximum: +30 VDC
4	Brn/Wht	DO NOT USE	
5	Wht/Grn	Camera Trigger Ground	
6*	Wht/Gry	Strobe Trigger Out	
7	Gry/Wht	DO NOT USE	
8 9	Blu/Wht Org/Wht	Camera Power VCC Camera Power VCC	+12 to +24 VDC recommended @ 500 mA Max Maximum: +30 VDC See Note 1 below
10	Grn/Wht	Strobe VCC	Based on strobe requirement Maximum: +30 VDC; 100 ma
11	Red/Blu	DO NOT USE	
12	Blu/Red	DO NOT USE	
13	None	Strobe Output Ground	Block contains 270 Ohm 2W resistor between terminals 6 and 13

NOTE 1: Pins 1 and 2 are tied together inside of the camera. Pins 8 and 9 are tied together inside of the camera. To avoid a voltage drop when there are long wires between your power supply and the camera, we recommend that you provide camera power VCC through separate wires between your power supply and pins 8 and 9 on the camera. We also recommend that you provide camera power ground through separate wires between your power supply and pins 1 and 2 on the camera.

To connect the power cable to the camera, align the cable connector with the connector on the rear of the camera, push gently until the cable connector seats securely, then tighten the connector collar. To disconnect it, loosen the collar completely, then grasp the connector and gently pull.

NOTE: To reduce stress on the cable and connectors, loop the cable and fasten it to the camera's mounting block. Do not crimp or tie the cable tightly with wire ties as this may damage it internally. The cable is not intended for continuous flexing or movement. The cable's maximum bend radius is fifteen times the cable diameter.

M2xx and M3xx Circuit Diagrams (Unisolated Terminal Blocks)

M2xx and M3xx Cameras Trigger Input circuit (sourcing)

M2xx and M3xx Cameras Trigger Input circuit (sinking)

M2xx and M3xx Cameras Strobe Output circuit (sourcing)

WARNING: Never wire M1xx Camera Strobe Outputs in parallel with M1xx, M2xx, or M3xx Camera Strobe Outputs. This will damage the cameras.
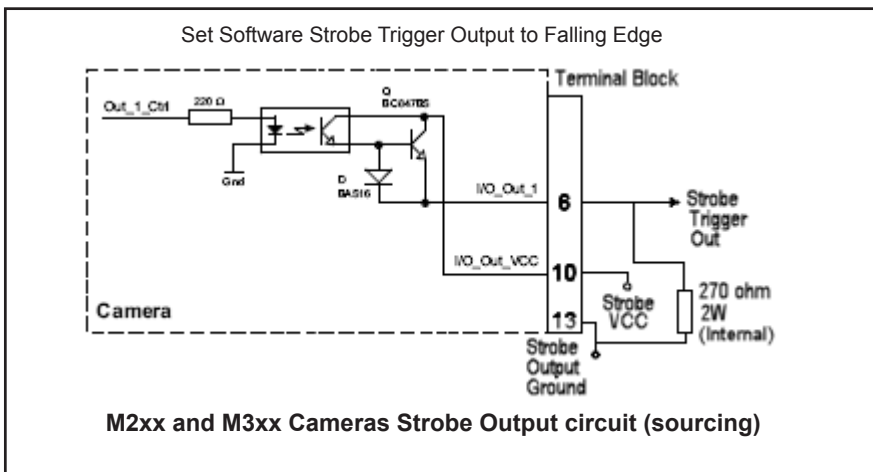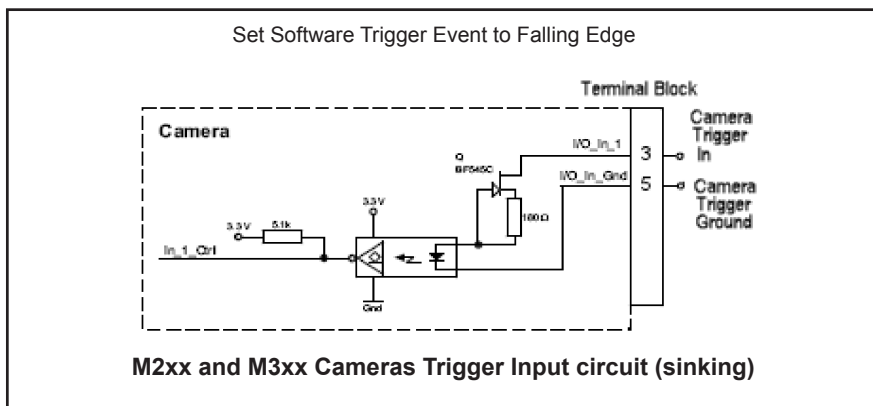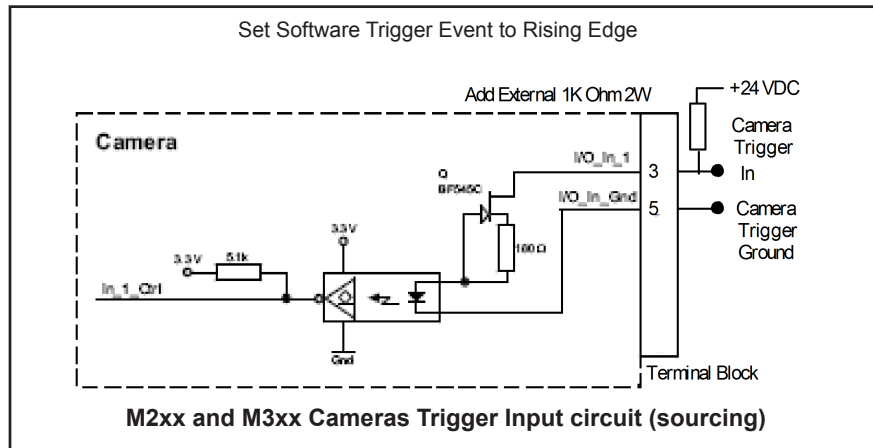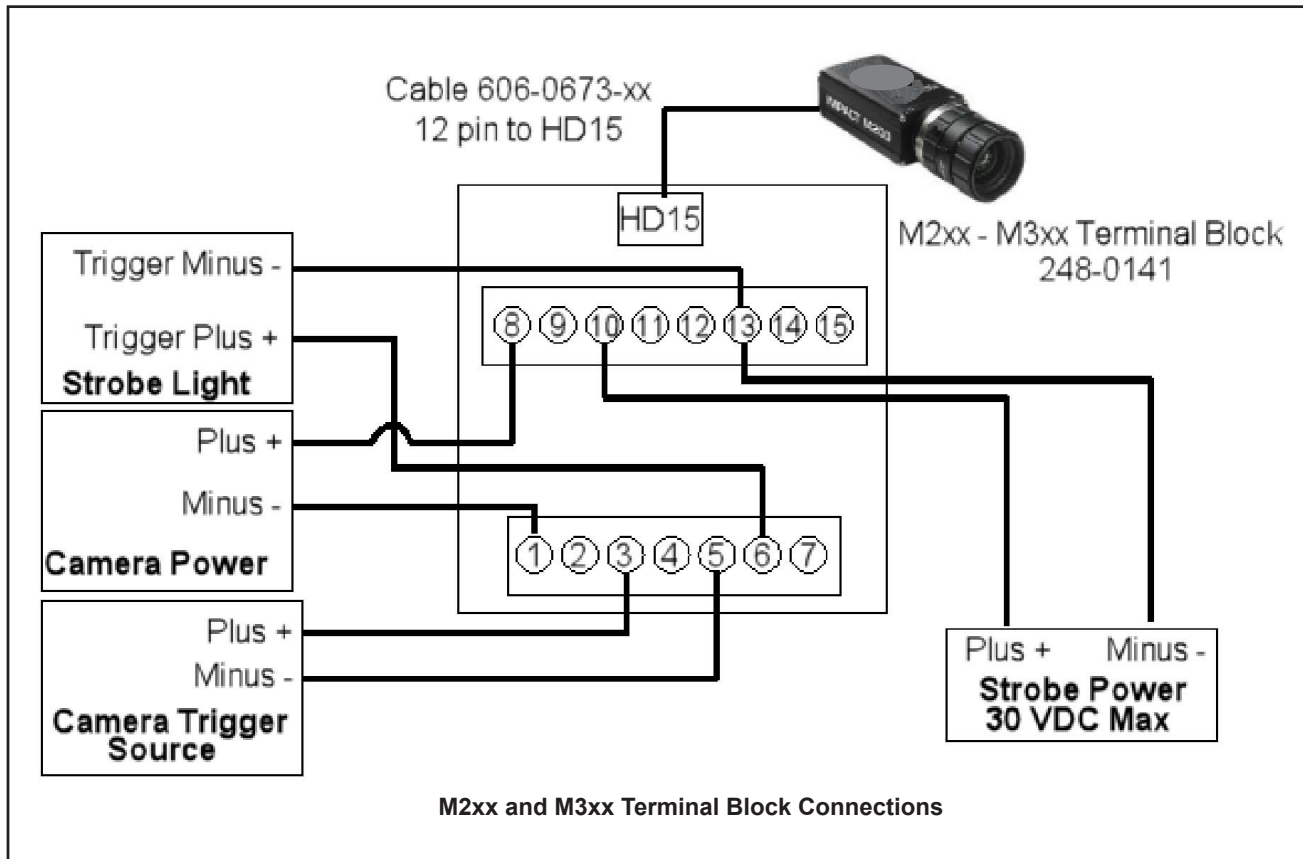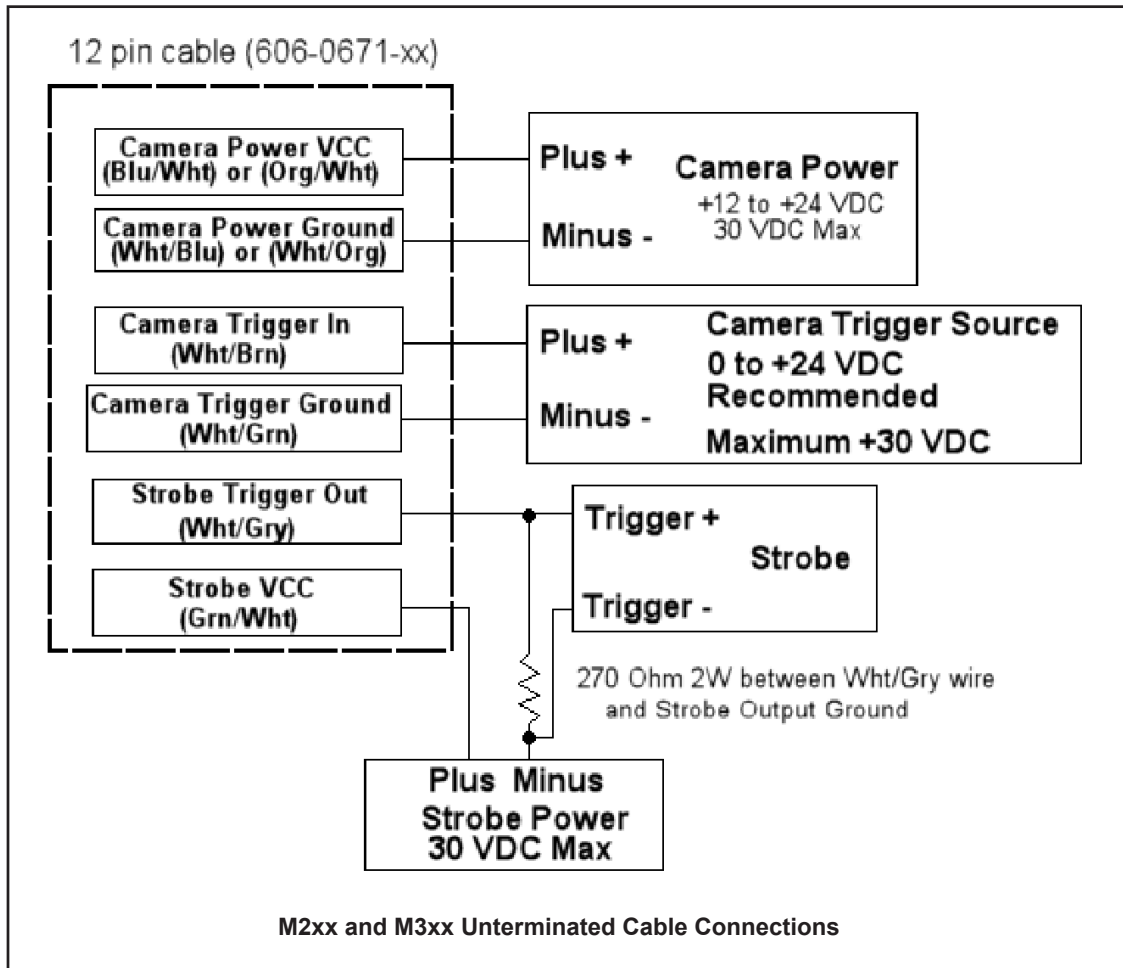
M2xx and M3xx Terminal Connections (Unisolated Terminal Blocks)

M2xx and M3xx Terminal Block Connections

M2xx and M3xx Unterminated Cable Connections (Unisolated Terminal Blocks)

M2xx and M3xx Unterminated Cable Connections

M565/M570 Camera Connection (Unisolated Terminal Blocks)

This camera uses three cables, one for Ethernet, one for power, and one for trigger signals.

Power

To connect power, use the optional Hirose 6-pin unterminated cable (part number 606-0672-xx) without a terminal block. Table 1 shows the power connections.

Trigger

To connect trigger signals, use a terminal block with a cable or an unterminated cable. Use a terminal block (248-0136) with the optional Hirose 12-pin to HD-15 camera cable (606-0673-xx). Without a terminal block, use the optional Hirose 12-pin to unterminated cable (part number 606-0671-xx). Table 2 shows the trigger connections.

NOTE: Do NOT use the M2xx/M3xx terminal block (248-0141) to connect this camera. It will NOT provide the correct signal levels.

Power Cable Connections

Cable Pin	Color	Signal Name	Notes
1	Blue	Camera Power VCC	+12 VDC (+-10%) @ 700 mA Max
2	Orange	Camera Power VCC	See Note below
3	Green	Not Connected	
4	Wht/Grn	Not Connected	
5	Wht/Org	Camera Power Ground	See Note 1 below
6	Wht/Blu	Camera Power Ground	

NOTE 1: Pins 1 and 2 are tied together inside of the camera. Pins 5 and 6 are tied together inside of the camera. To avoid a voltage drop when you use long wires between the power supply and the camera, we recommend providing camera power VCC through separate wires between the power supply and camera pins 1 and 2. We also recommend providing camera power ground through separate wires between the power supply and pins 5and 6 on the camera.
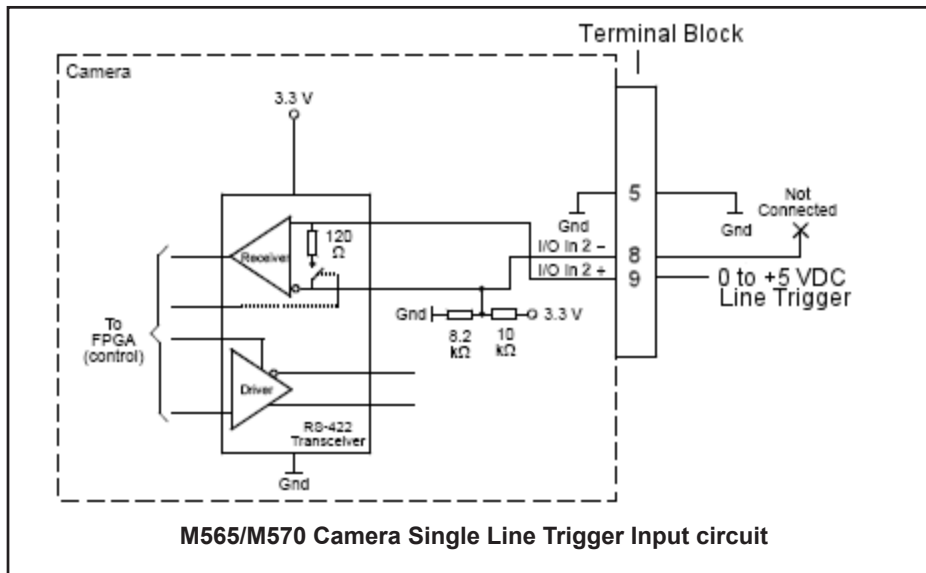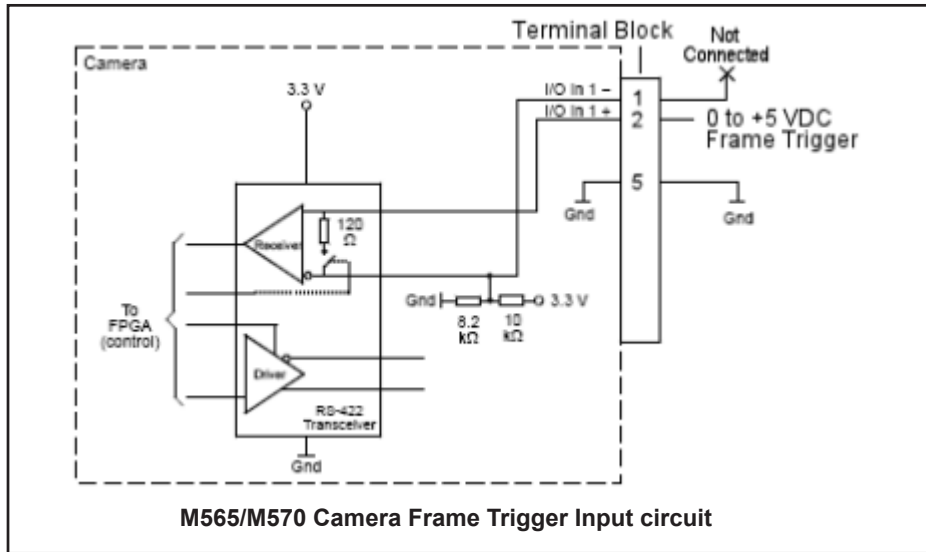

Trigger Cable Connections

Terminal	Color	Signal Name	Notes
1	Wht/Blu	Input 1 Ground	No Connection
2	Wht/Org	Input 1 Plus	Frame Start Trigger Off: 0 to + 0.8 VDC On: +2.0 to +5 VDC Maximum: +5 VDC
3	Wht/Brn	Input 3 Ground	No Connection
4	Brn/Wht	Input 3 Plus	Phase B Line Trigger (Quadrature Encoder) Off: 0 to + 0.8 VDC On: +2.0 to +5 VDC Maximum: +5 VDC
5	Wht/Grn	Camera Trigger Ground	See Note 2 below
6	Wht/Gry	DO NOT USE	
7	Gry/Wht	DO NOT USE	
8	Blu/Wht	Input 2 Ground	No Connection

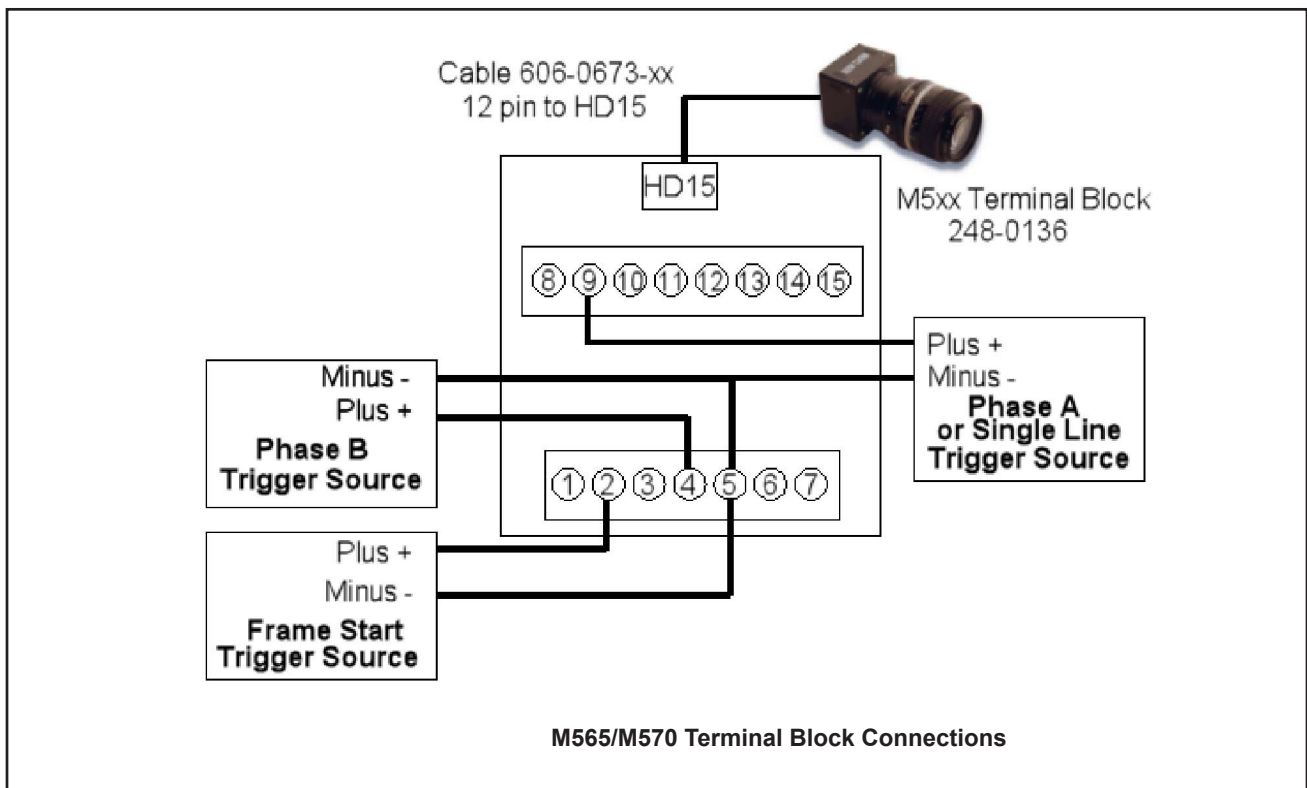| Terminal	Color	Signal Name	Notes
9	Org/Wht	Input 2 Plus	Single Line Trigger **OR** Phase A Line Trigger (Quadrature Encoder) Off: 0 to + 0.8 VDC On: +2.0 to +5 VDC Maximum: +5 VDC
10	Grn/Wht	Not Connected	
11	Red/Blu	DO NOT USE	
12	Blu/Red	DO NOT USE	

NOTE 2: To help prevent ground loops and possible false triggering, we recommend connecting pin 5 on the Trigger Input (Camera Trigger Ground) to the ground on the Camera Power supply cable (pins 5 and/or 6).

M565/M570 Circuit Diagrams (Unisolated Terminal Blocks)

M565/M570 Camera Frame Trigger Input circuit

M565/M570 Camera Single Line Trigger Input circuit

M565/M570 Camera Quadrature Encoder Line Trigger Input circuit
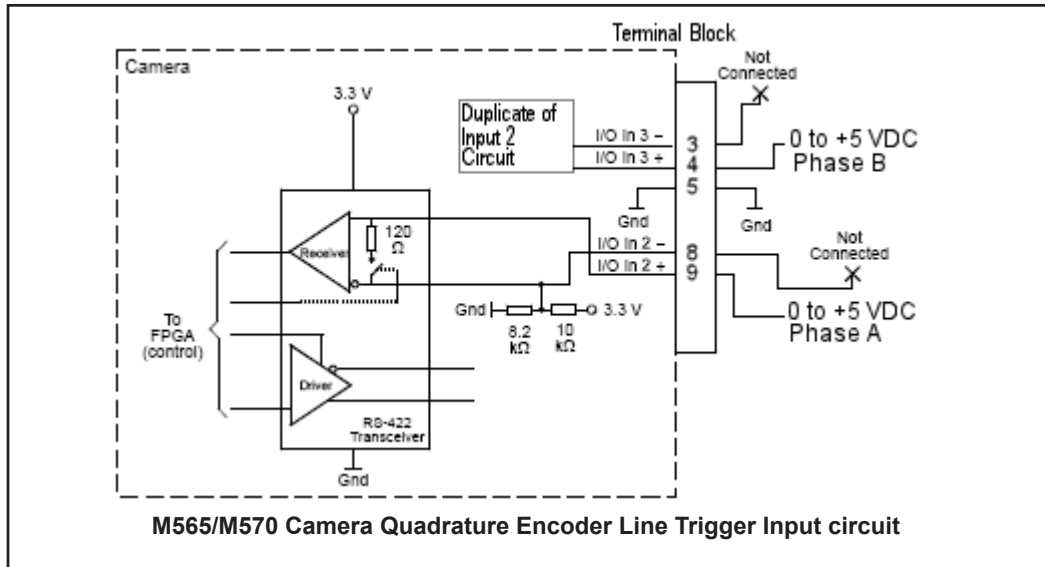
M565/M570 Terminal Connections (Unisolated Terminal Blocks)

M565/M570 Terminal Block Connections

M565/M570 Unterminated Cable Connections (Unisolated Terminal Blocks)

6 pin cable (606-0672-xx)

| Camera Power VCC Blue and/or Orange | Plus + | Camera Power |
| Camera Power Ground Wht/Blu and/or Wht/Org | Minus - | +12 VDC Min: +11.3 Max: +13.2 |

12 pin cable (606-0671-xx)

Camera Trigger In Org/Wht	Plus +	Single Line Trigger OR Phase A Line Trigger
Camera Trigger Ground Wht/Grn	Minus -	0 to +5 VDC Max
	Minus -	Phase B Line Trigger 0 to +5 VDC Max
Phase B Line Trigger Brn/Wht	Plus +	

M565/M570 Unterminated Cable Connections
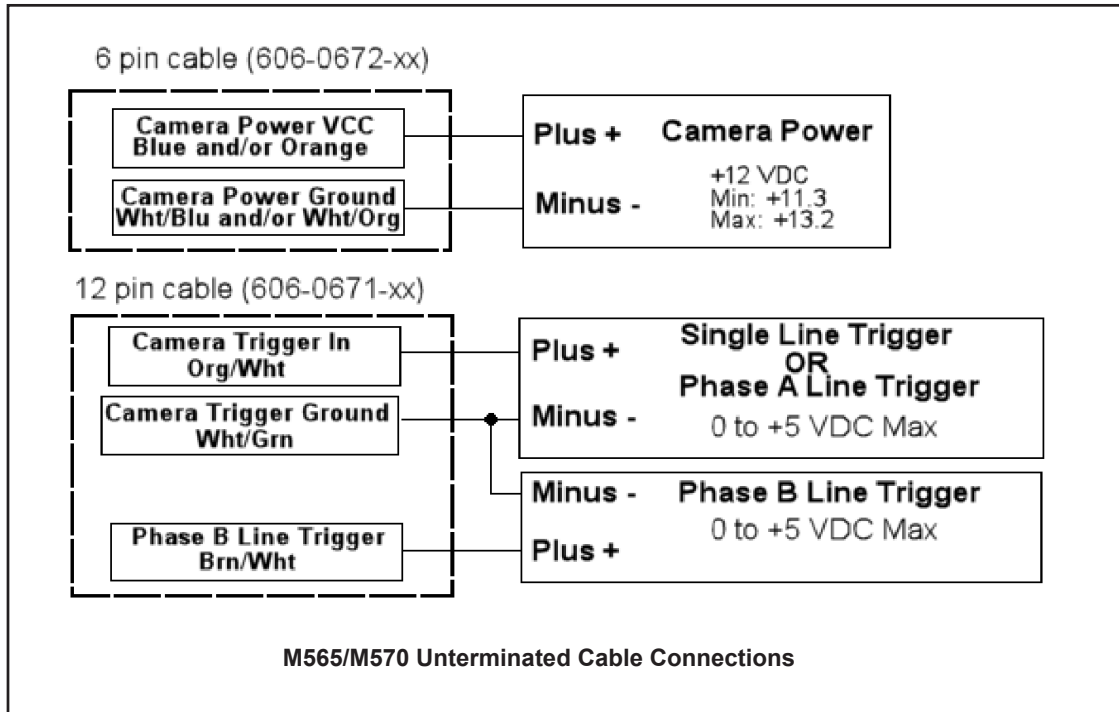
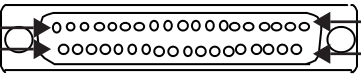# Processor Input/Output (Unisolated Terminal Blocks)

Two options for connecting to the Unisolated M-Series Processor I/O terminal block are listed in the table below. The cable wire color codes are listed in the following table.

The last two digits of the part number indicate the cable length in meters.

Connector Type	Part Number
Terminal Block - 37 pin D-sub to Screw Terminal	248-0110
I/O Cable - 37 pin D-sub Male to Male Cable (for use with above terminal block)	606-0675-xx
I/O Cable - 37 pin D-sub Male to Unterminated Cable (remove one end)	606-0675-xx

| Connector or terminal number	Color Code	Signal Name
1 2	Black Brown	Input 1 and Event 1 + Input 3 +
3 4	Red Orange	Input 5 + Input 7 +
5 6	Yellow Green	Input 9 + Input 11 +
7 8	Blue Purple	Input 13 + Input 15 +
9 10	Gray White	Input Common Output GND
11 12	Pink Light Green	Output 1 + Output 3 +
13 14	Black/White Brown/White	Output 5 + Output 7 +
15 16	Red/White Orange/White	Output 9+ Output 11 +
17 18	Green/White Blue/White	Output 13 + Output 15 +
19	Purple/White	Output VDD +5 to 35 VDC external supply. *Not an output voltage
20 21	Red/Black Orange/Black	Input 2 and Event 2 + Input 4 +
22 23	Yellow/Black Green/Black	Input 6 + Input 8 +
24 25	Gray/Black Pink/Black	Input 10 + Input 12 +
26 27	Pink/Red Pink/Blue	Input 14 + Input 16 +
28 29	Pink/Green Light Blue	Output GND Output GND
30 31	Light Blue/Black Light Blue/Red	Output 2 + Output 4 +
32 33	Light Blue/Blue Light Blue/Green	Output 6 + Output 8 +
34 35	Gray/Red Gray/Green	Output 10 + Output 12 +
36 37	Purple/Black Blue/Black	Output 14 + Output 16 +

Pin 1　　　Pin 19
Pin 20　　　Pin 37

J1 (37 Pin "D" Sub Male)
AMP Part 747916-4
Part 244-0287
(Solder Side)

Hood Assembly with Screws
LEOCO Part DCHD-37MON4
Part 248-0089

Processor Unisolated I/O Terminal Block

This diagram illustrates the 37 pin D-sub to Screw Terminal block (Part number 248-0110). This terminal block can be mounted on a DIN rail, then connected to the unit using a 37-pin cable (Part number 606-0675-xx). You can then wire from the terminal block to the controlled devices.
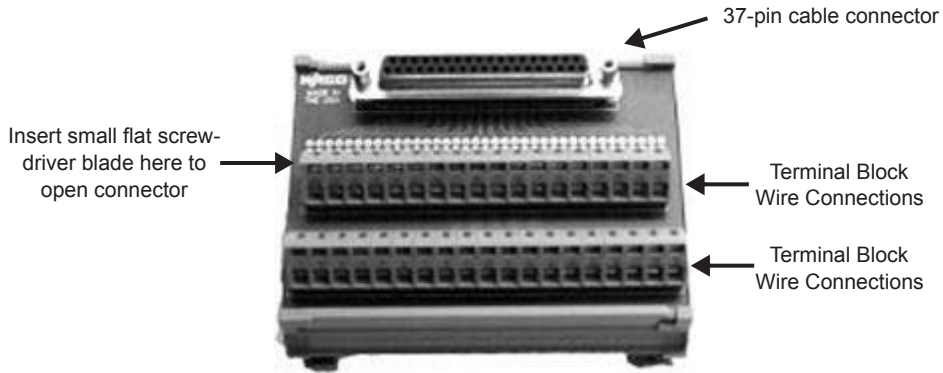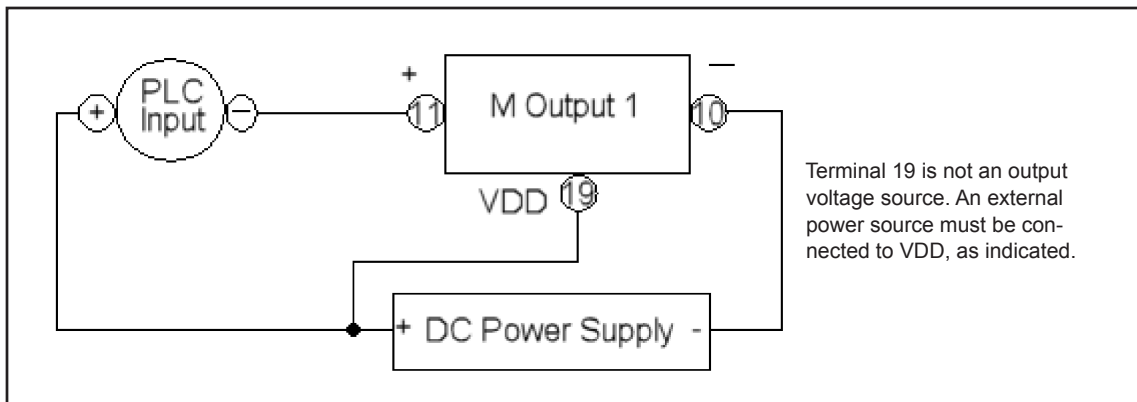

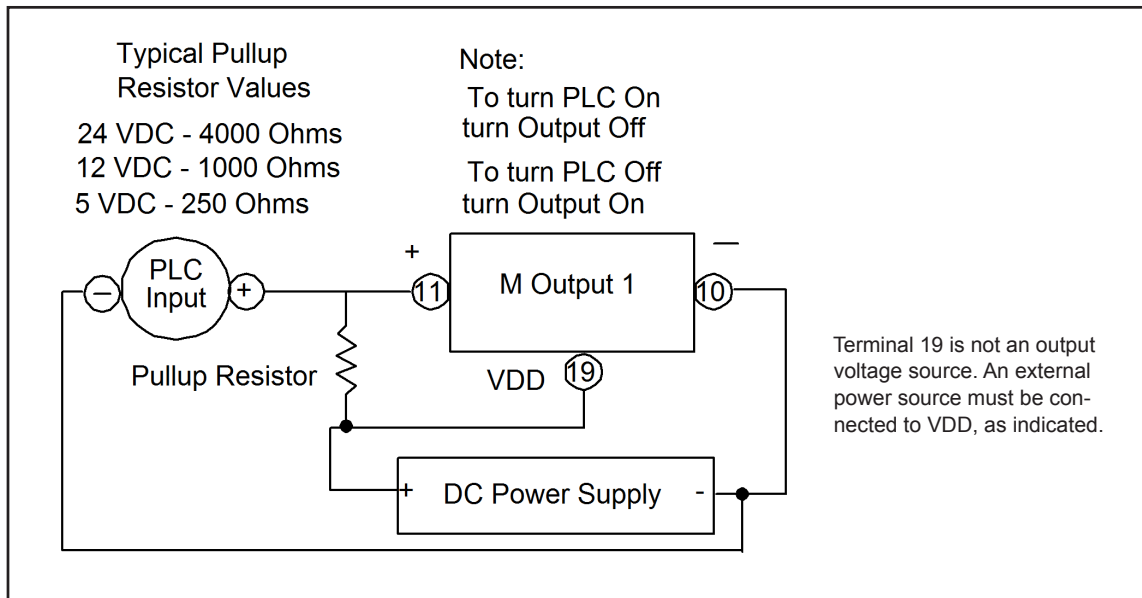# General Purpose Unisolated I/O Output Circuit (Sinking)
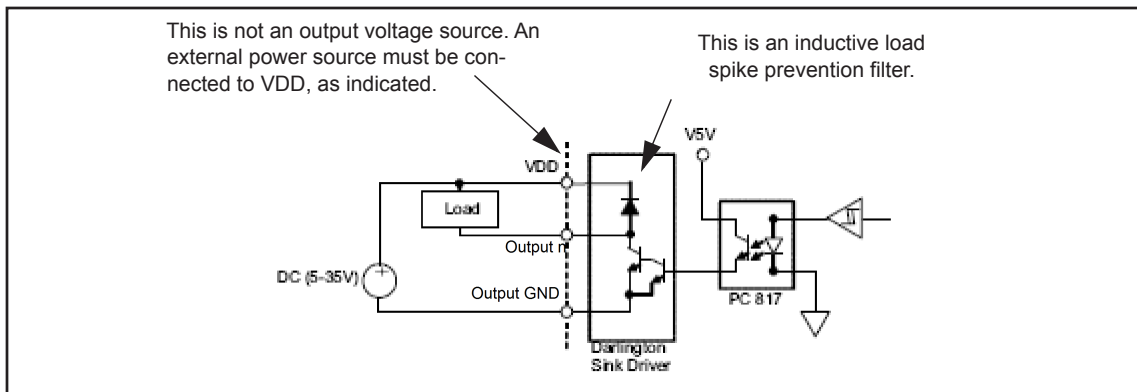
NOTES: To prevent output damage, all inductive loads must have noise suppressors connected directly across the load, as close to the load as possible.

Terminal 19 is not an output voltage source. An external power source must be connected to VDD.

General Purpose Unisolated I/O Output Circuit (Sourcing)

Typical Pullup
Resistor Values

24 VDC - 4000 Ohms
12 VDC - 1000 Ohms
5 VDC - 250 Ohms

Note:
 To turn PLC On
turn Output Off

 To turn PLC Off
turn Output On

PLC Input

+ 11   M Output 1   10   —

Pullup Resistor

VDD 19

Terminal 19 is not an output voltage source. An external power source must be connected to VDD, as indicated.

+ DC Power Supply -

Unisolated Input I/O Circuit

The M-Series Processors contain sixteen general-purpose input connections.

Two inputs serve as both event and polled inputs (Inputs 1 and 2). The remaining inputs are polled. The event inputs are interrupt-driven which means that a change of state on the input will immediately cause an action and any inspection task that uses that input will run. Polled input means that the input's status is checked based on conditions defined in the inspection task.

Interrupt-driven inputs are edge-triggered and the duration of the input pulse must be longer than the debounce time. The active trigger edge (rising, falling, or both), input pulse duration, and debounce, are all configured in the Vision Program Manager Settings tab.

This table describes the input characteristics.

Input Resistance (nominal)	Input Voltage	Turn On Voltage	Turn Off Voltage	Isolated Voltage
1.2k @ 0.5 W	0-24 Vdc	>3 Vdc	< 0.8 Vdc	2500 Vrms

This table lists the connector/terminal numbers for the input signals.

Connector and terminal number	Signal Name
1	Input1 and Event 1 +
2	Input 3 +
3	Input 5 +
4	Input 7 +
5	Input 9 +
6	Input 11 +
7	Input 13 +
8	Input 15 +
9	Input Common

Connector and terminal number	Signal Name
20	Input 2 and Event 2 +
21	Input 4 +
22	Input 6 +
23	Input 8 +
24	Input 10 +
25	Input 12 +
26	Input 14 +
27	Input 16 +

Input Wiring

The diagrams below show two ways to wire a sensor to a general purpose or event input.

Note: All connections to inputs must be made using properly grounded shielded cable.
All inputs must be wired as either sinking or sourcing, they cannot be mixed. There is only one "Input Common" connection for all the inputs.

General Purpose Input Circuit (Sinking)

General Purpose Input Circuit (Sourcing)