MⅰᴄʀᴏHAWK® MV-20 / MV-30 / MV-40
Cᴏɴꜰɪɢᴜʀᴀᴛɪᴏɴ Gᴜɪᴅᴇ

Hardware Required

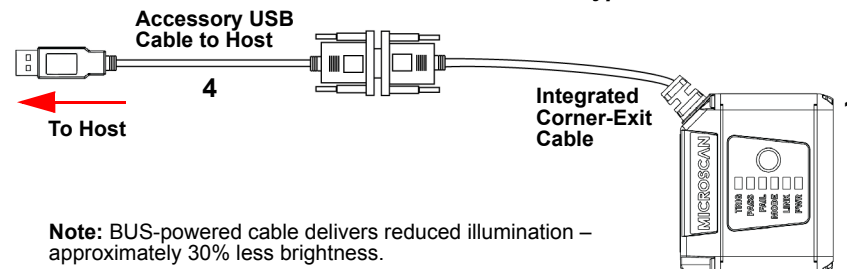| Item	Description	Part Number
1	MicroHAWK MV-20, MicroHAWK MV-30, or MicroHAWK MV-40	7ABX-YZZZ-LPPP
2	Cable, USB A to Micro B, 6 ft., MV-20	61-9000034-01
3	Cable, USB A to Micro B, 3 ft., MV-20	61-9000045-01
4	Cable, DB15 to BUS Power USB Type A, MV-30	61-9000043-01
5	Kit, Cable, DB15 to Ext. Power/RS-232 with Power Supply, MV-30 – includes 97-9000006-01 and 61-9000037-01	98-9000048-01
6	Power Supply, 5V – for use with cables 61-9000037-01 and 61-9000038-01	97-9000006-01
7	Cable, DB15 to Ext. Power/RS-232, MV-30	61-9000037-01
8	Kit, Cable, DB15 to Ext. Power/USB with Power Supply, MV-30 – includes 97-9000006-01 and 61-9000038-01	98-9000049-01
9	Cable, DB15 to Ext. Power/USB, MV-30	61-9000038-01
10	Kit, Cable, DB15 to Ext. Power/USB, I/O with Power Supply, MV-30 – includes 97-000011-02 and 61-9000039-01	98-9000050-01
11	Power Supply, 100-240VAC, +5VDC, 2-Pin U.S./Euro Plug	97-000011-02
12	Cable, DB15 to Ext. Power/USB, I/O, MV-30	61-9000039-01
13	Power Supply, 100-240VAC, +24VDC, TRK 3-Pin, U.S./Euro Plug	97-000012-02
14	IB-131 Interface Box	99-000018-01
15	Converter, IC-332, 24V/5V, Opto I/O – for use with IB-131	FIS-0001-0035G
16	Cable, Communication, DB25 Plug to DB9 Socket, 6 ft.	61-3000026-03
17	Photo Sensor, Visible, NPN, Light On, 5VDC	99-000019-01
18	Cable, DB15 to USB/RS-232, Triggered, MV-30	61-9000102-01
19	Power Supply, 100-240VAC, +24VDC, M12 12-Pin Socket	97-000012-01
20	QX-1 Interface Device	98-000103-02
21	Cordset, Common, M12 12-Pin Socket (Screw-On) to M12 12-Pin Plug	61-000162-02
22	Cordset, Host, Ethernet, M12 8-Pin Plug (Screw-On) to RJ45, 1 m.	61-000160-03
23	Photo Sensor, M12 4-Pin Plug, NPN, Dark Off, 2 m.	99-000020-01
24	Photo Sensor, M12 4-Pin Plug, NPN, Dark On, 2 m.	99-9000016-01
25	Cable, M12 12-Pin Socket to 9-Pin Socket and M12 Plug	61-9000054-01
26	Cable, M12 12-Pin Socket to USB Keyboard Wedge and M12 Plug	61-9000088-01

Configurations

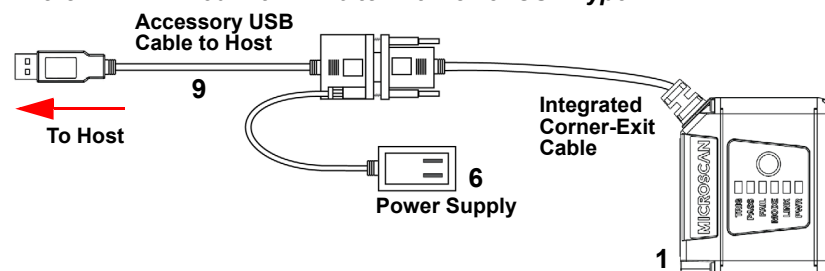### MicroHAWK MV-20 with Micro-USB Type B to USB Type A
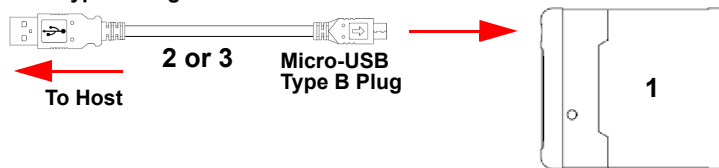
MicroHAWK MV-30 with DB15 to BUS Power USB Type A

Note: BUS-powered cable delivers reduced illumination – approximately 30% less brightness.
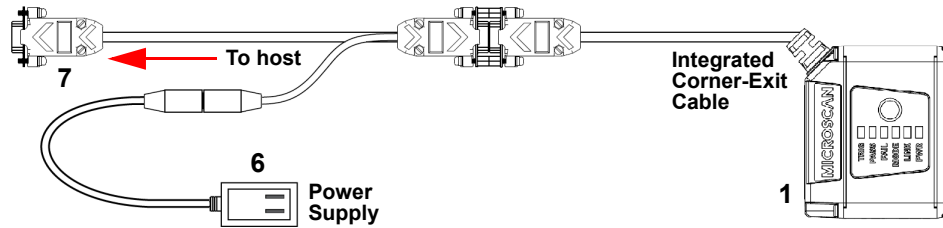
MicroHAWK MV-30 with DB15 to Ext. Power/USB Type A

Configurations (continued)

MicroHAWK MV-30 with DB15 to Ext. Power/RS-232
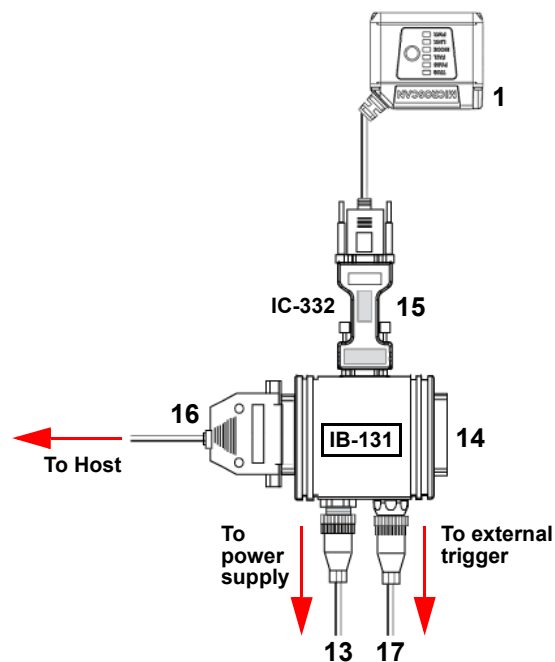
To host

7

6 Power Supply

Integrated Corner-Exit Cable

1

MicroHAWK MV-30 with DB15 to Ext. Power/USB, I/O

To Trigger

12

Accessory USB Cable to Host

To Power Supply

Integrated Corner-Exit Cable

1
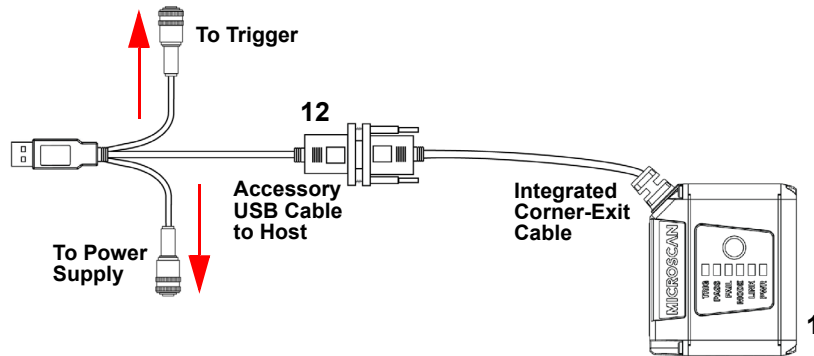
MicroHAWK MV-30 with DB15 to USB/RS-232, Triggered

To Trigger

Accessory USB Cable to Host

To Host (USB)

18

To Power Supply (11)

Integrated Corner-Exit Cable

To Host (RS-232)

1
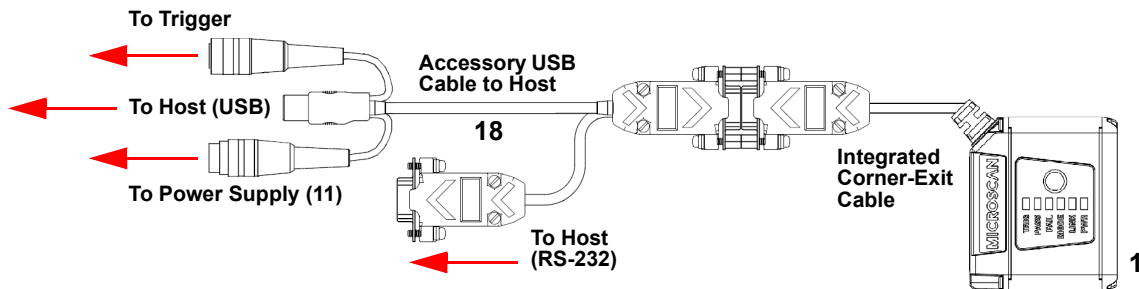
MicroHAWK MV-30 with IB-131 and IC-332

1

IC-332 **15**

16

IB-131 **14**

To Host

To power supply

To external trigger

13 17

Configurations (continued)

MicroHAWK MV-40 with QX-1 Interface Device

1

21 **22**

Common (12-Pin Plug to 12-Pin Socket)

To Host (Ethernet 8-Pin Plug to RJ45)

20 **1** **2** **QX-1**
3 **T**

To Power Supply **To Trigger**

19 **22 or 23**
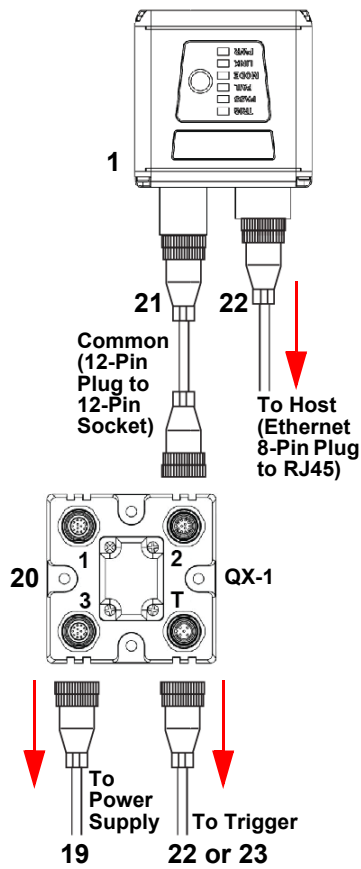
MicroHAWK MV-40 M12 12-Pin Socket to 9-Pin Socket and M12 Plug

To Power Supply (19) or: Flying Lead Cable (61-000167-02); QX-1; MS-Connect 210.

1

25

To Host (RS-232)

To Ethernet
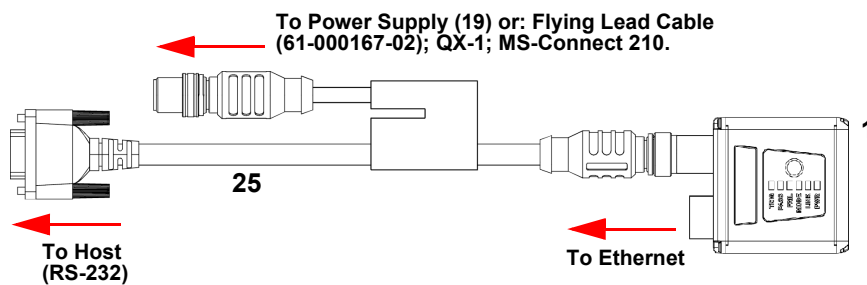
Electrical Specifications

MicroHAWK MV-20: 5VDC ± 5%, 350 mA at 5VDC (typ.)
MicroHAWK MV-30: 5VDC ± 5%, 600 mA at 5VDC (typ.)
MicroHAWK MV-40: 4.75 – 30VDC, 200 mV p-p max ripple, 150 mA at 24VDC (typ.)

Important: See the *MicroHAWK MV-20 / MV-30 / MV-40 Smart Camera Guide* for information about Omron Microscan's **Isolation Mounting Kit (P/N 98-9000064-01)** to eliminate ground loops or other external electrical noise through your MicroHAWK MV-30 or MV-40 camera.

MicroHAWK MV-20 Micro-USB Type B Socket
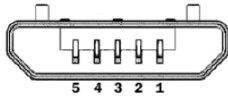
| Pin	Function
1	Vbus (5V)
2	D–
3	D+
4	N/C
5	Ground

MicroHAWK MV-40 M12 Connectors

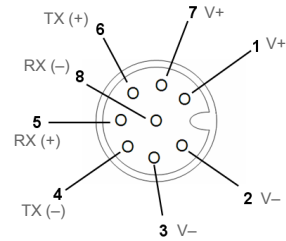*M12 12-Pin Plug*

MicroHAWK MV-30 High-Density 15-Pin Dsub USB/Serial Socket
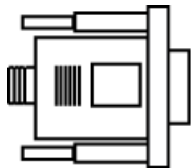
Note: An accessory cable is required between the MV-30's 15-pin corner-exit cable and the host's USB port.

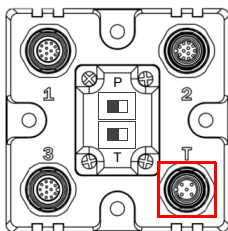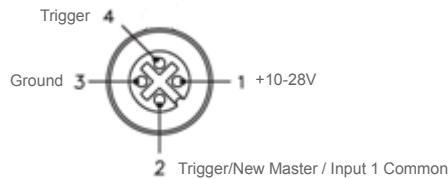| Pin	Function
1	+5VDC
2	TX232
3	RX232
4	GND
5	D+
6	N/C
7	Output 1+
8	Default+
9	Trigger+
10	D–
11	Output 3+
12	New Master+
13	N/C
14	Output 2+
15	Vbus
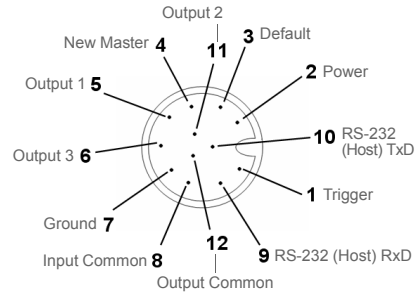
M12 8-Pin Socket (Ethernet)

QX-1 Interface Device – for use with the MicroHAWK MV-40 (Top View)

Connector T on the QX-1 Interface Device is the trigger connector.
Connectors 1, **2**, and **3** can be used to bus power and data as required by the application.
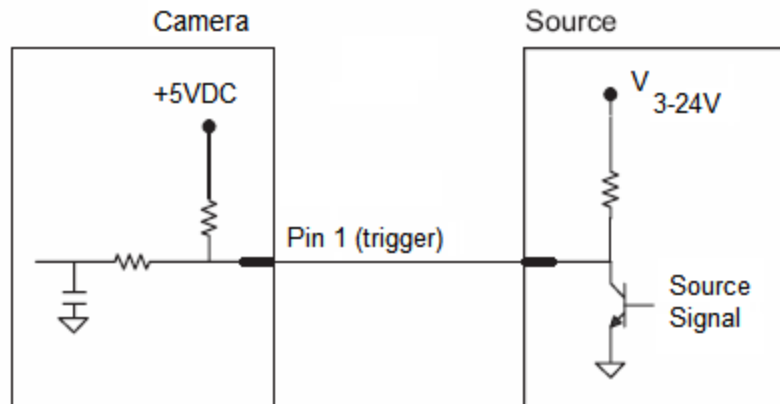

QX-1 Trigger Connector (T) 4-pin Socket

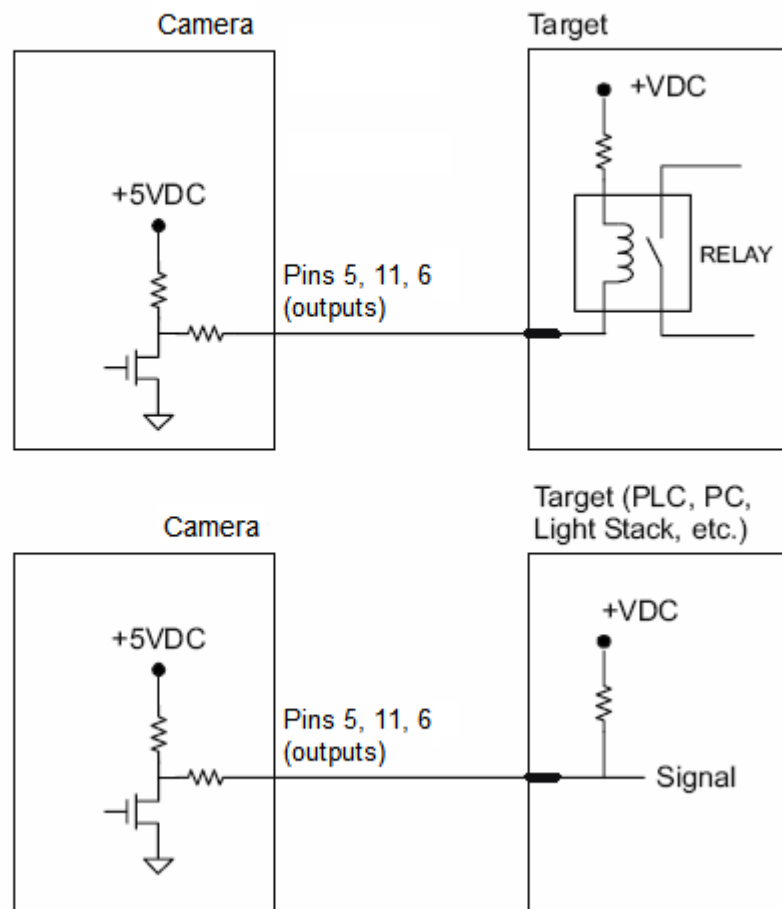### *MicroHAWK MV-30*

Direct Input / Output Diagrams (MV-30)

Trigger Input Example

Trigger, New Master Inputs: 3 to 24V rated, 1mA @ 5VDC
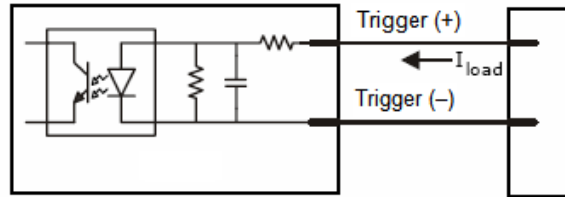

Output Examples

Outputs (1, 2, 3): 5V TTL compatible, can sink 10mA and source 2mA
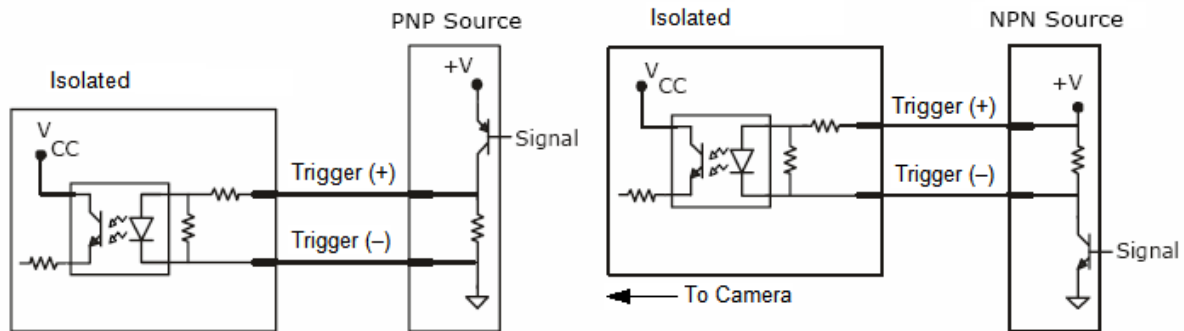
Optoisolator Trigger Inputs for IC-332 (MV-30)

Trigger input can be fully electrically isolated from an NPN or PNP signal source.

	Minimum	Maximum
$V_{IN-HIGH}/I_{IN-HIGH}$	4.5V/3.0mA	28V/15mA
V_{IN-LOW}/I_{IN-LOW}	0V/0mA	2.0V/1mA
Pulse Width$_{min}$	48 µs	

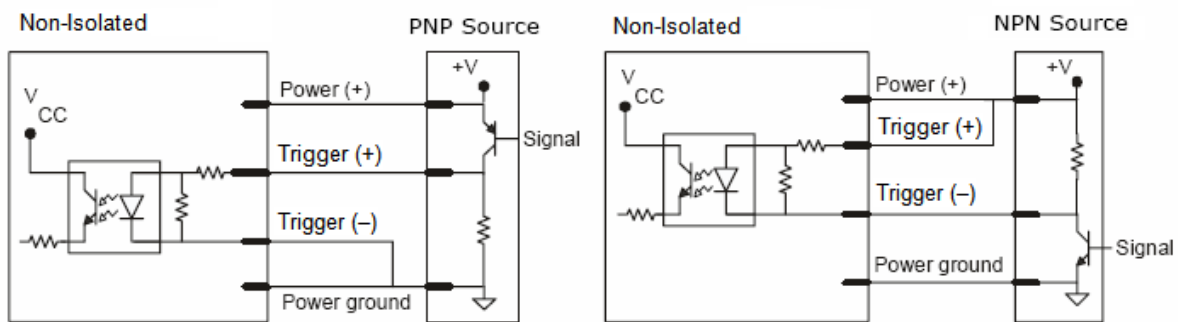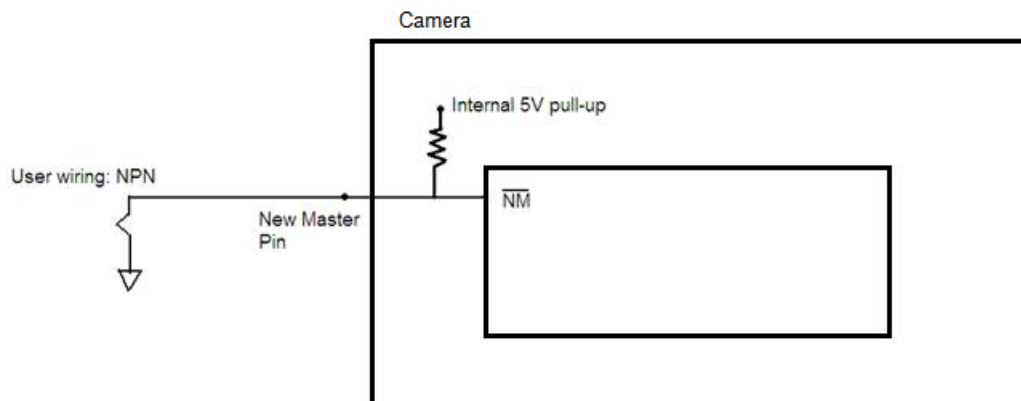## Input Examples

Fully Optoisolated

Not Optoisolated

New Master Pin (MV-30)

MicroHAWK MV-40
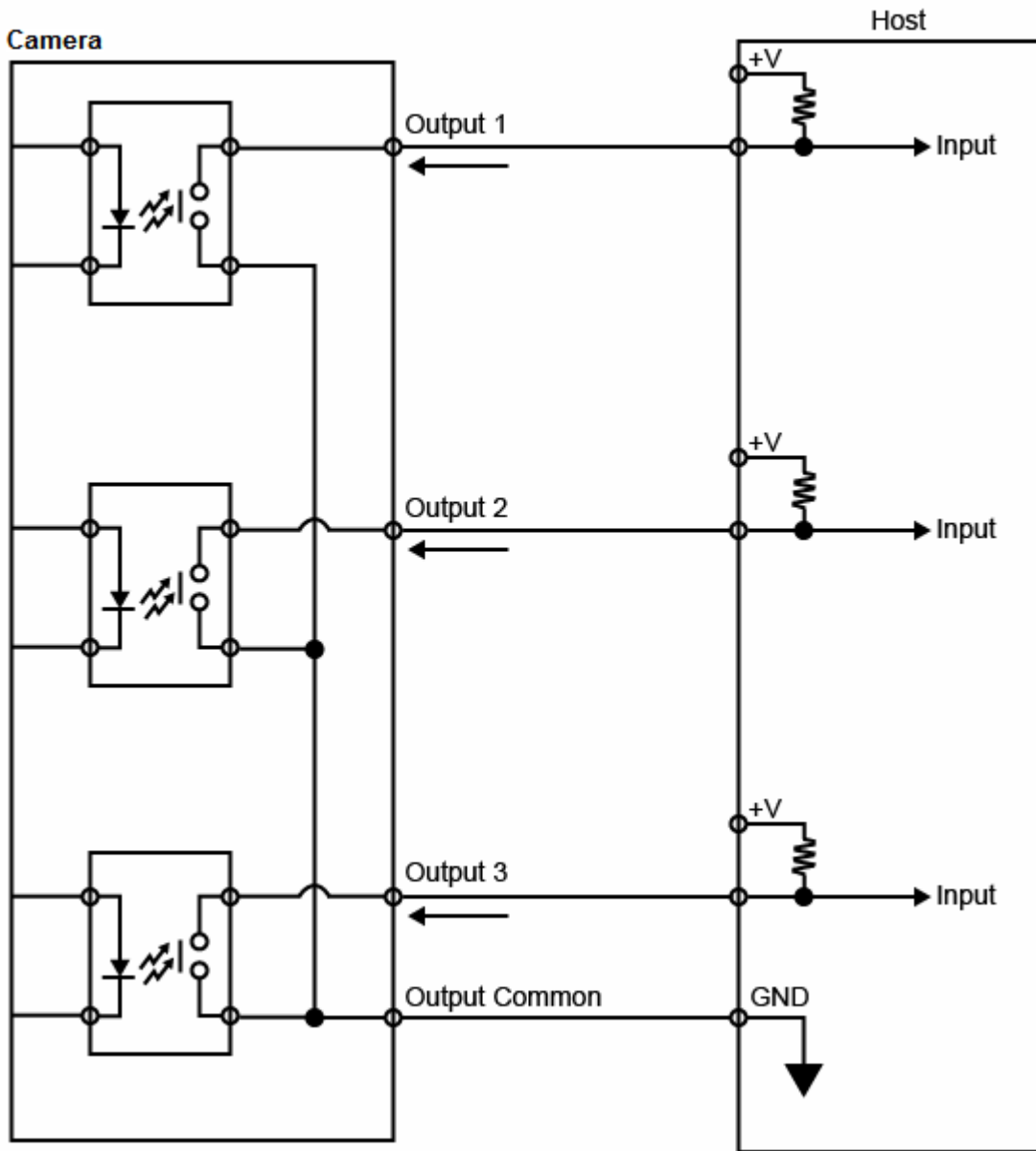
Optoisolated Outputs (MV-40)

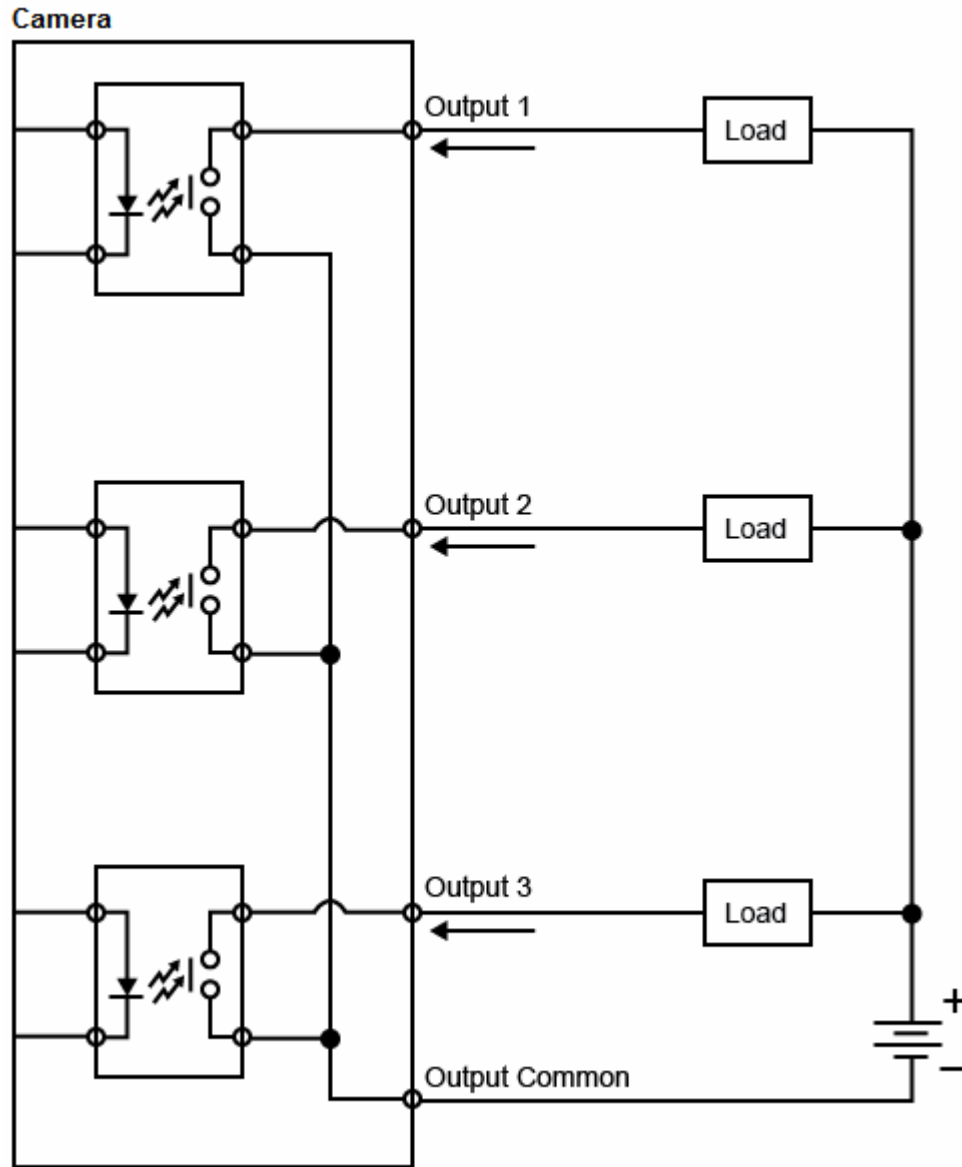The camra has optoisolated outputs that can transfer signals from the camera to peripherals. Outputs can be configured as either NPN or PNP, but NPN and PNP cannot be mixed in a system, because the output common is shared by all outputs.

NPN Output for Host Input (MV-40)

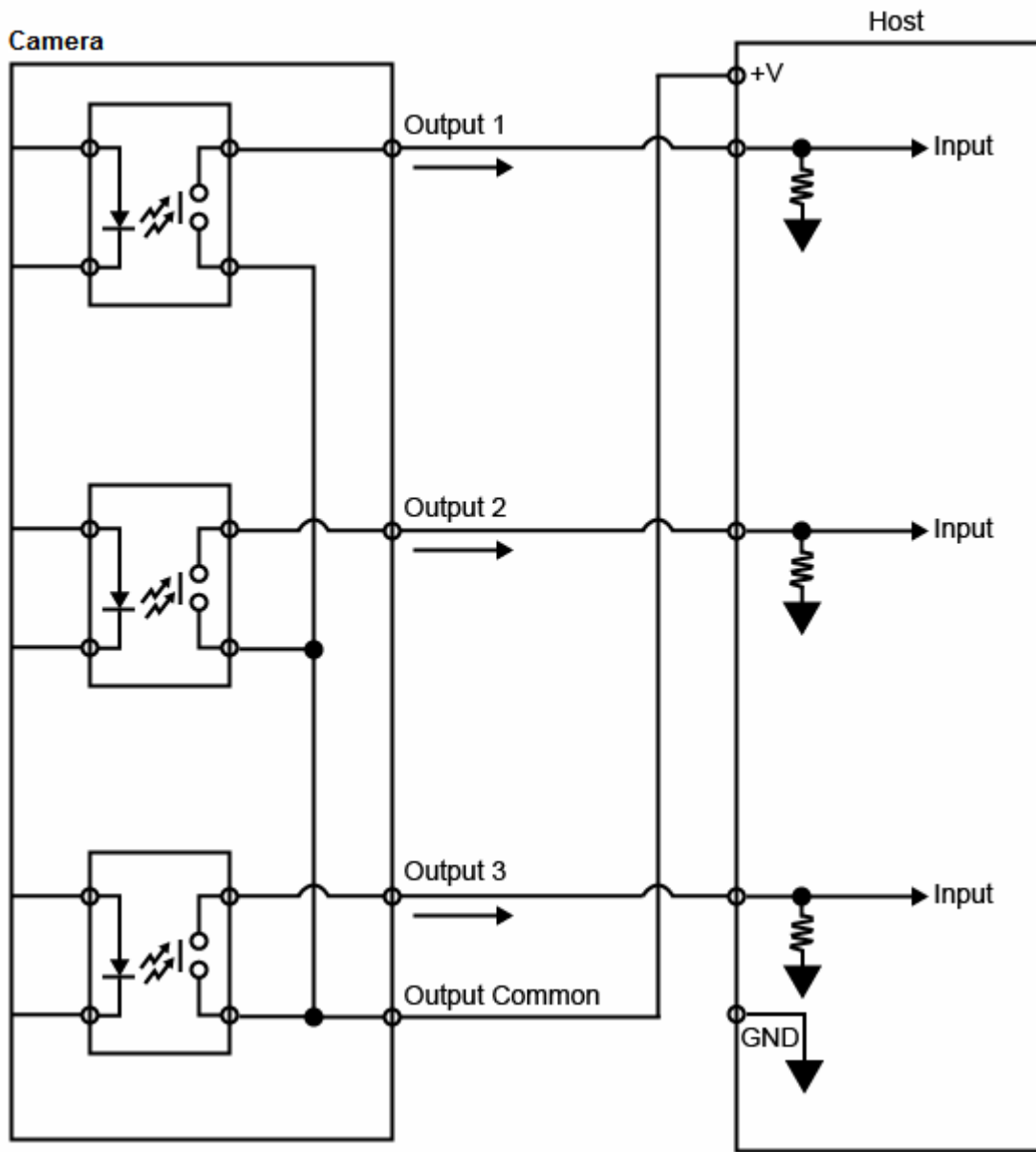**NPN Output for External Load (MV-40)**
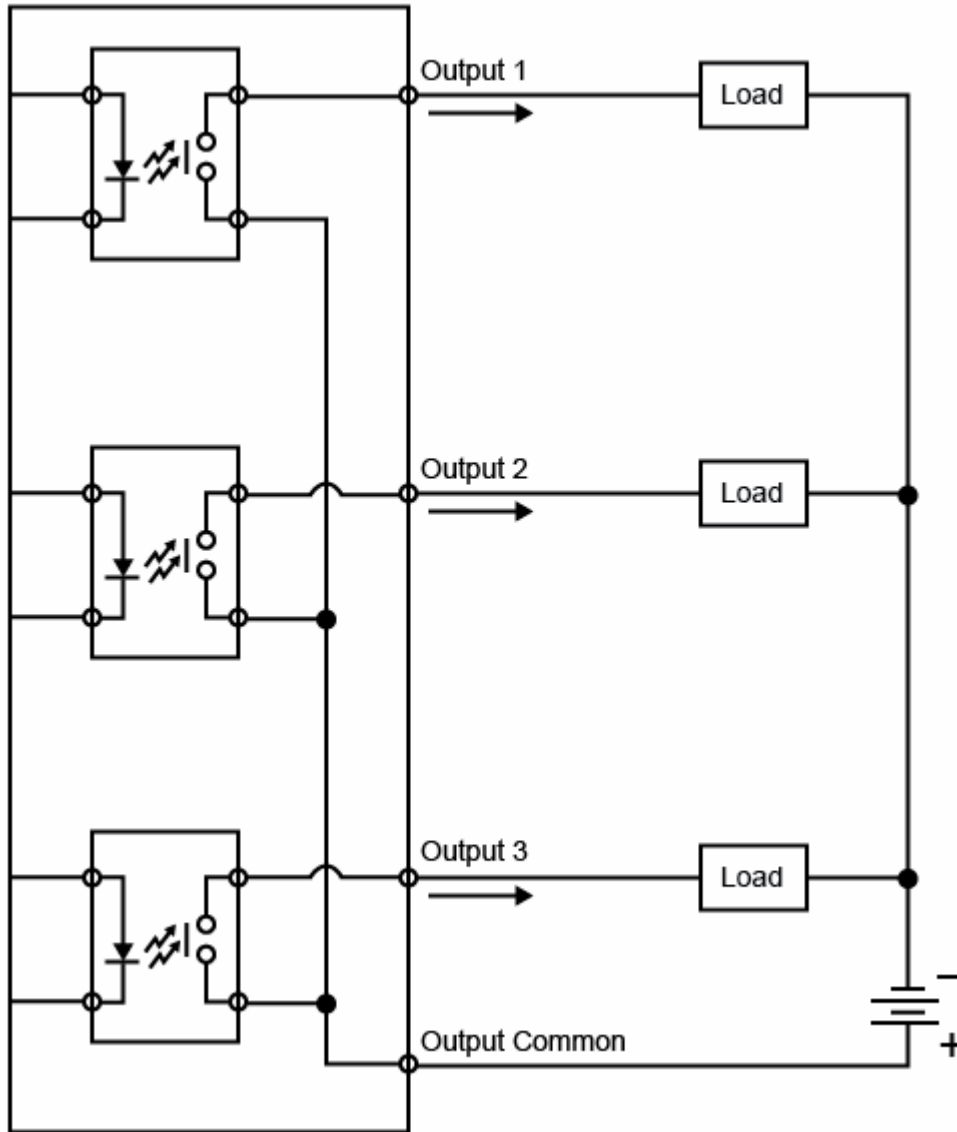
PNP Output for Host Input (MV-40)

PNP Output for External Load (MV-40)

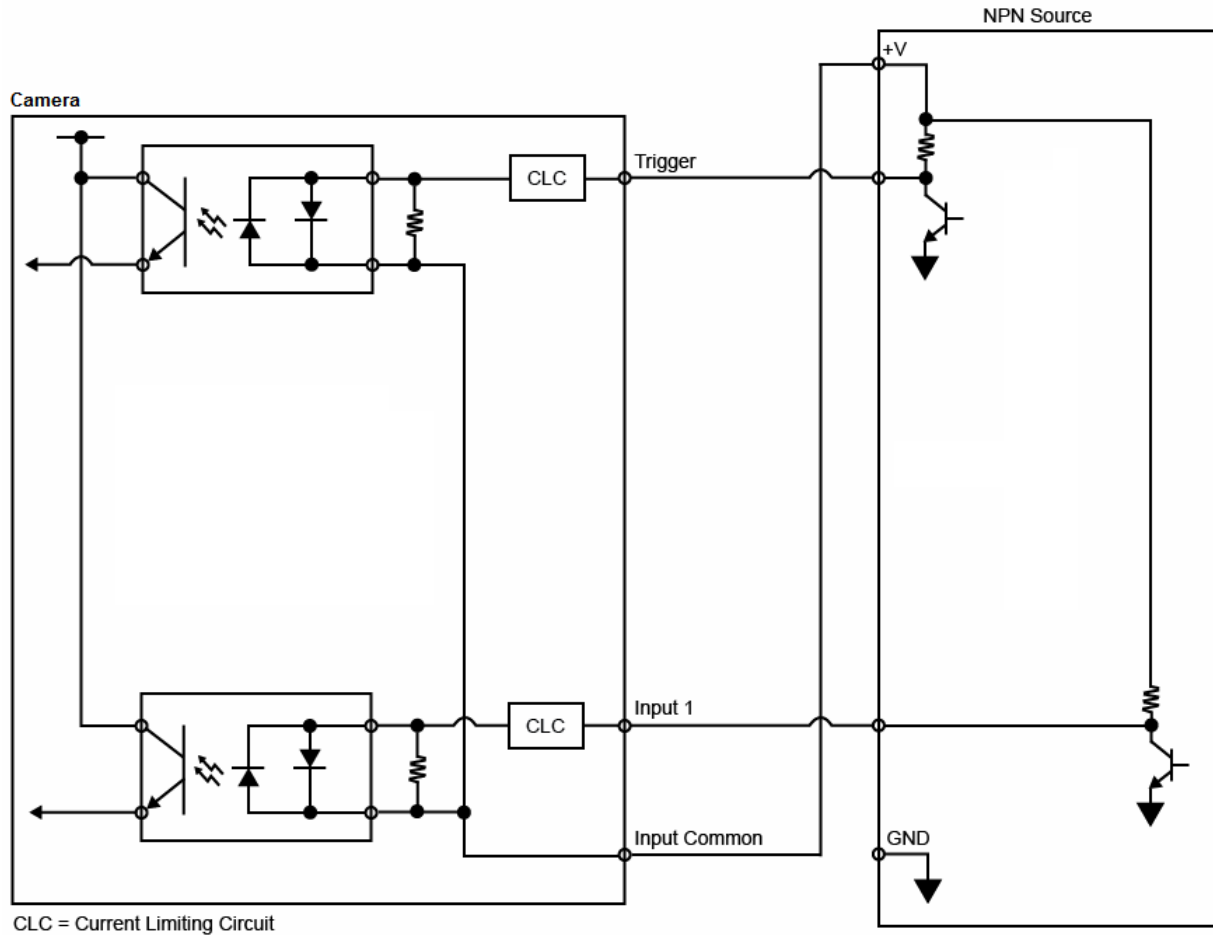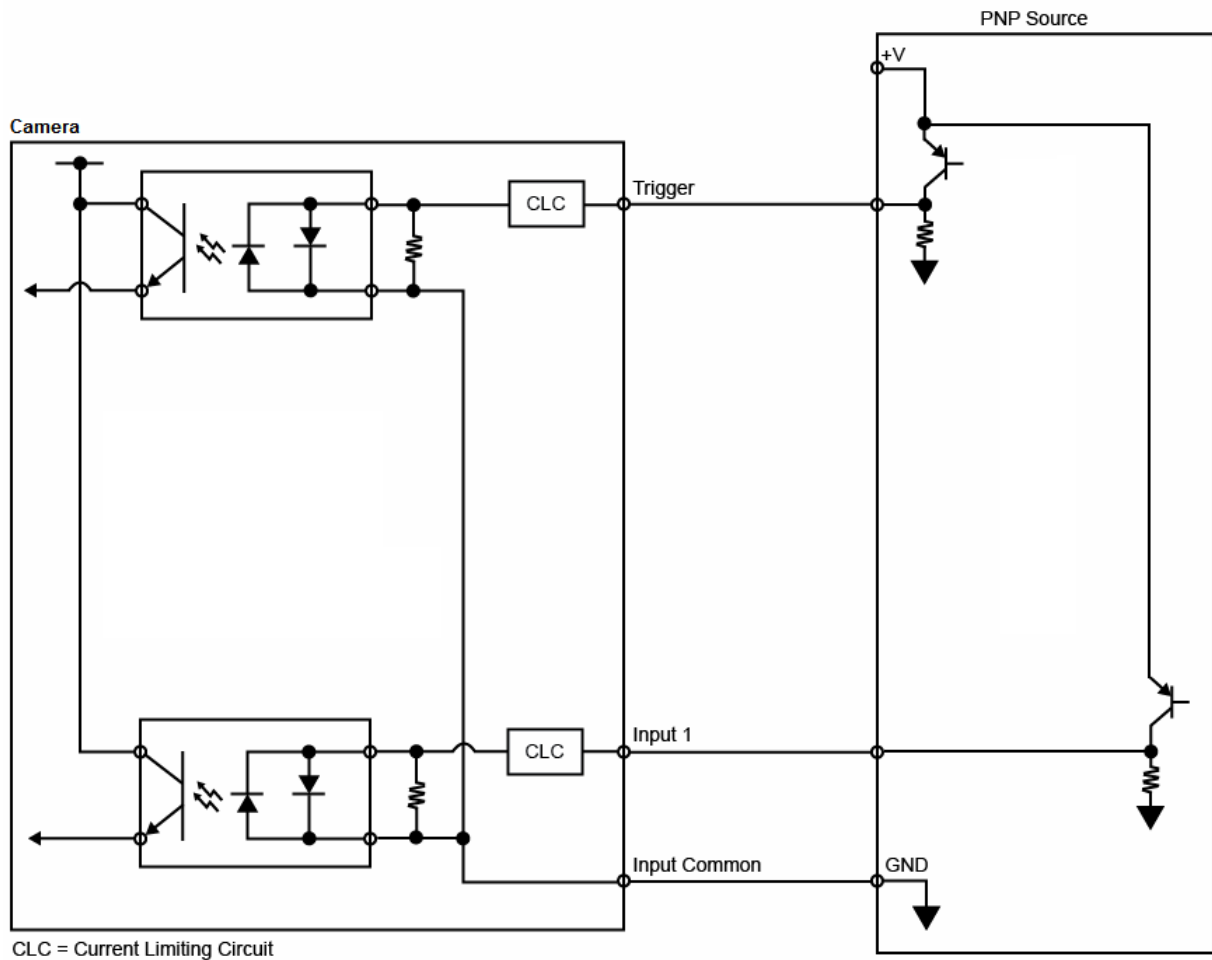## Optoisolated Inputs (MV-40)

All discrete inputs are optoisolated. Inputs can be configured as either NPN or PNP, but NPN and PNP cannot be mixed in a system, because the input common is shared by all inputs.
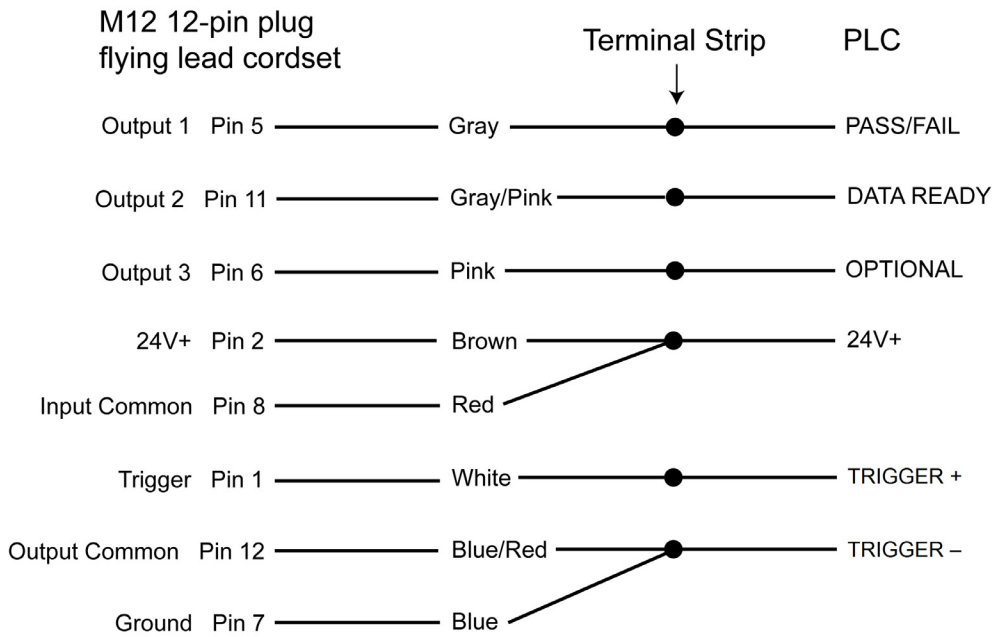
NPN (MV-40)

PNP (MV-40)

Input/Output Wiring (MV-40)

Ground and Shield Considerations

Proper grounding is necessary for operator safety, noise reduction, and the protection of equipment from voltage transients. Buildings, including any steelwork, all circuits, and all junction boxes must be grounded directly to an earth ground in compliance with local and national electrical codes.
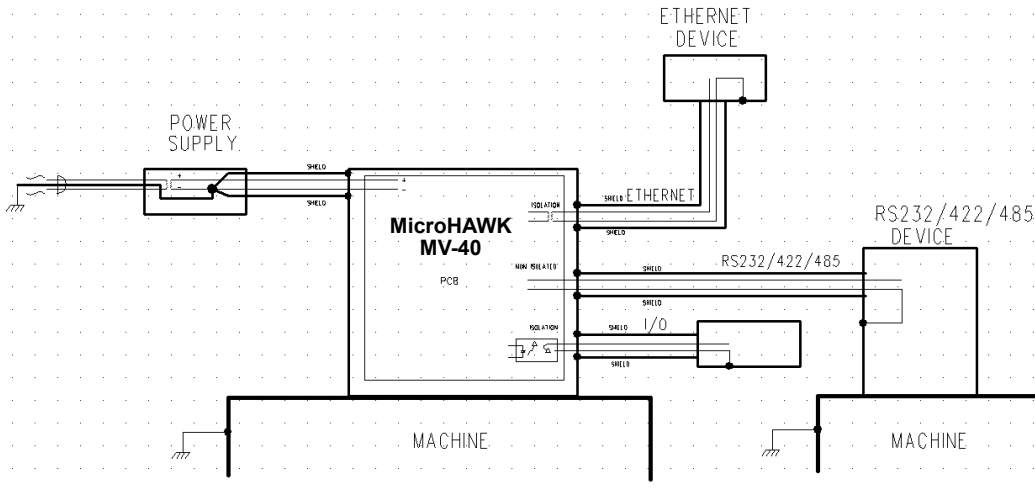
An earth ground is provided through the cable shields and chassis of the camera.

Ground Loops

Ground loops (signal degradation due to different ground potentials in communicating devices) can be eliminated or minimized by ensuring that both the host, imager, and their power supplies are connected to a common earth ground.

Expected Power and Ground Connections for Proper Operation
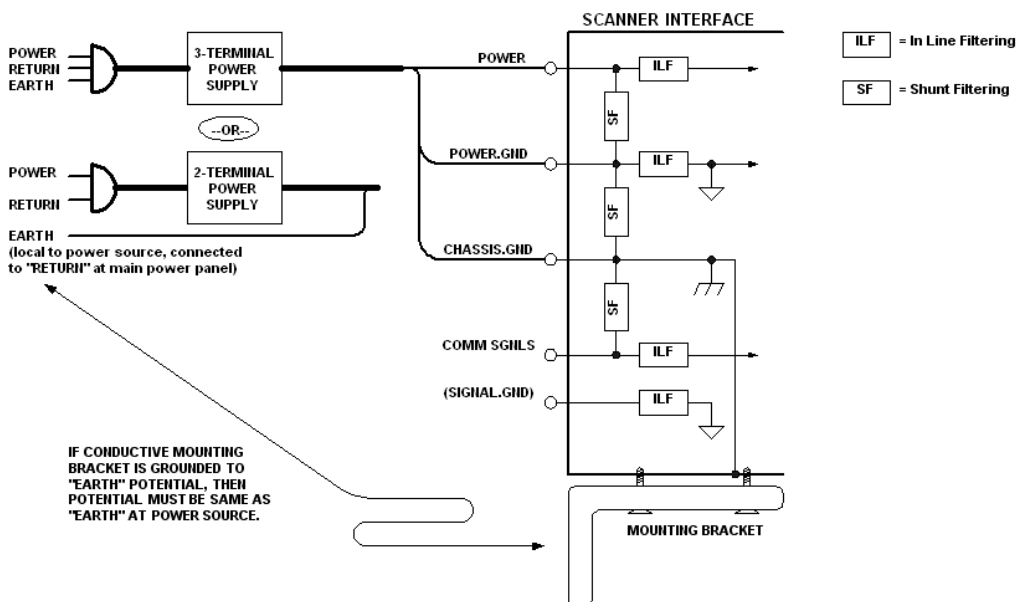
Grounding Notes

• Ensure that mounting bracket "Earth" is at the same potential as power source "Earth".

• Supply "Return" and "Earth" ground must be stable, low-impedance reference points.

• "2-Terminal Power Supply" must still provide an "Earth" connection to the imager.

• "Signal Ground" can be used for communications and/or discrete signal ground reference. It must **not** be used as Power Ground or Earth Ground.

MicroHAWK MV Accessories

MicroHAWK MV-30 Connectivity Kits	
98-9000048-01	Kit, Cable, DB15 to Ext. Power/RS-232 with Power Supply, MV-30 – includes 97-9000006-01 and 61-9000037-01
98-9000049-01	Kit, Cable, DB15 to Ext. Power/USB with Power Supply, MV-30 – includes 97-9000006-01 and 61-9000038-01
98-9000050-01	Kit, Cable, DB15 to Ext. Power/USB, I/O with Power Supply, MV-30 – includes 97-000011-02 and 61-9000039-01 Recommended items (not included with kit): • 99-000019-01, Visible, NPN, Light On, 5VDC • 61-000151-01, Flying Lead Cable
MicroHAWK Power Supplies	
97-9000006-01	Power Supply, 5V – for use with cables 61-9000037-01 and 61-9000038-01
97-000011-02	Power Supply, 100-240VAC, +5VDC, 2-Pin U.S./Euro Plug
97-000012-01	Power Supply, 100-240VAC, +24VDC, TRK 3-Pin, U.S./Euro Plug
MicroHAWK Cables	
61-9000034-01	Cable, USB A to Micro B, 6 ft., MV-20
61-9000045-01	Cable, USB A to Micro B, 3 ft., MV-20
61-9000037-01	Cable, DB15 to Ext. Power/RS-232, MV-30
61-9000038-01	Cable, DB15 to Ext. Power/USB, MV-30
61-9000039-01	Cable, DB15 to Ext. Power/USB, I/O, MV-30
61-9000043-01	Cable, DB15 to BUS Power USB, MV-30
61-9000102-01	Cable, DB15 to USB/RS-232 Triggered, MV-30
61-9000054-01	Cable, M12 12-Pin Socket to 9-Pin Socket and M12 Plug
61-9000088-01	Cable, M12 12-Pin Socket to USB Keyboard Wedge and M12 Plug
MicroHAWK Mounting Accessories	
98-9000034-01	Kit, Adapter, MS-4 to MV-20
98-9000041-01	Kit, L-Bracket, MicroHAWK
98-9000047-01	Kit, 1/4-20 Camera Mount, MicroHAWK
98-9000052-01	Kit, Mounting Stand, Ram, MS-3, MS-4, MINI, MicroHAWK, 4"
98-9000053-01	Kit, Mounting Stand, Ram, MS-3, MS-4, MINI, MicroHAWK, 3"
98-9000054-01	Kit, Mounting, APG, MS-4, MINI, MicroHAWK
98-9000059-01	Kit, Adapter Plate, MS-4, MINI to MicroHAWK
Other Accessories	
98-9000043-01	Kit, Diffuser, MicroHAWK MV-30/MV-40
98-9000129-01	Kit, Polarizer, MicroHAWK MV-30/MV-40
98-9000045-01	Kit, Red LED, MicroHAWK MV-30/MV-40
98-9000046-01	Kit, White LED, MicroHAWK MV-30/MV-40
98-9000051-01	Kit, Window, MicroHAWK MV-30/MV-40
98-9000057-01	Kit, Right-Angle Mirror, MicroHAWK MV-20
98-9000058-01	Kit, Right-Angle Mirror, MicroHAWK MV-30/MV-40
98-9000064-01	Kit, Isolation Mounting, M3, MicroHAWK MV-30/MV-40

MicroHAWK MV Part Number Structure

MicroHAWK MV part numbers follow the format **7ABX-YZZZ-LPPP**.

7 = MicroHAWK.

Example Part Number: 7412-2000-2104

Description: MicroHAWK MV-40, IP65 Case, 24V, Ethernet, Machine Vision, SXGA, 1.2 Megapixel, Mono, High Density, Autofocus, White Outer LEDs, AutoVISION + Verification + Visionscape.

(A) Model
1: Engine, No Case, USB
2: MV-20, IP40 Case, USB
3: MV-30, IP54 Case, 5V, USB
4: MV-40, IP65/67 Case, 24V, Ethernet

(B) Application Type
1: Machine Vision

(X) Sensor
1: WVGA, 0.3 Megapixel, Mono
2: SXGA, 1.2 Megapixel, Mono
3: QSXGA, 5 Megapixel, Color

WVGA	752 x 480, 0.3 MP, Mono	Global Shutter	Standard: 10 FPS / High: 52 FPS
SXGA	1280 x 960, 1.2 MP, Mono	Global Shutter	Standard: 10 FPS / High: 40 FPS
QSXGA	2592 x 1944, 5 MP, Color	Rolling Shutter	5 FPS

(Y) Optics
0: Custom
1: Standard-Density
2: High-Density
3: Ultra-High-Density
4: Long-Range (Autofocus Long Range available for SXGA sensor only.)
5: Ultra-High-Density with Polarizer

(ZZZ) Focus Distance
000: Autofocus
050: 50 mm = 1.96 in.
064: 64 mm = 2.51 in. – UHD FF
081: 81 mm = 3.18 in.
102: 102 mm = 4.02 in.
133: 133 mm = 5.23 in.
190: 190 mm = 7.48 in.
300: 300 mm = 11.81 in.
400: 400 mm = 15.75 in. – UHD FF

(L) Outer LED Color
0: N/A (Engine and ID-20)
1: Red (Not available with QSXGA sensor.)
2: White
3: Blue
4: IR

(PPP) Software License Bundles
100: AutoVISION Sensor
101: AutoVISION
102: AutoVISION + Visionscape
103: AutoVISION + Verification
104: AutoVISION + Verification + Visionscape

Notes:
- **(A) Model:** The MicroHAWK Engine is available for OEM-certified partners only.
- **(L) Outer LED Color:** Outer LEDs provide extra illumination. Base-level LED illumination included with all cameras.
- **Field Upgrades:** Not available for optics or illumination due to factory settings for optical alignment, LED balancing, and sealing for IP enclosure rating. However, the camera's software is field-upgradeable via licenses.

OMRON

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