

## V430 Autofocus Multicode Reader

### Autofocus to read codes at different distances.

- Simple programming with WebLink.
- Highly configurable.
- 0.3, 1.2, and 5 megapixel sensors available.
- Fixed Focus and Autofocus lens options.
- Alternate LED configurations available.
- Smallest in class.
- IP65 / IP67.
- Digital I/O, Ethernet TCP/IP, EtherNet/IP, and PROFINET.



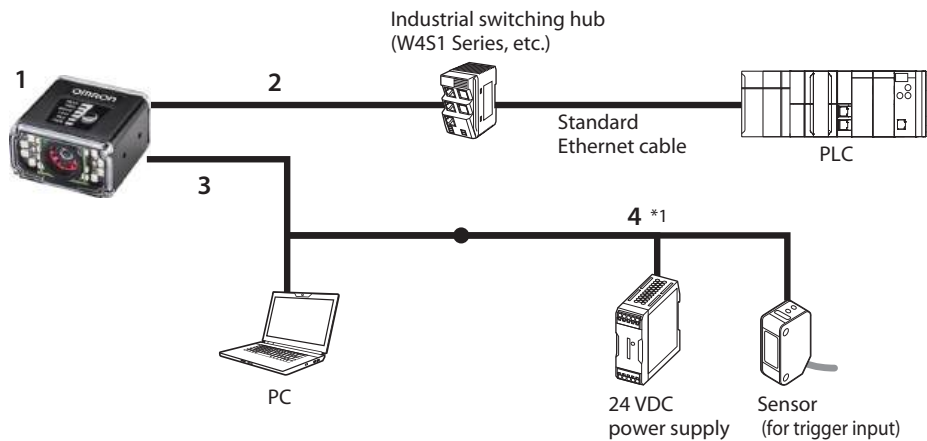
### V430-F 1.2 MP Monochrome Autofocus High Bright LED Cameras

| Appearance                                                                          | Part Number       | Description                                                        |
|-------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------|
|   | V430-F000W12M-HRX | V430,000W,1.2M, HIGH BRIGHT, RED, HIGH SPEED, X-MODE               |
|                                                                                     | V430-F000M12M-HRX | V430,000M,1.2M, HIGH BRIGHT, RED, HIGH SPEED, X-MODE               |
|                                                                                     | V430-F000N12M-HRX | V430,000N,1.2M, HIGH BRIGHT, RED, HIGH SPEED, X-MODE               |
|                                                                                     | V430-F000L12M-HRX | V430,000L,1.2M, HIGH BRIGHT, RED, HIGH SPEED, X-MODE               |
|  | V430-F000M12M-DRX | V430,000M,1.2M, HIGH BRIGHT DIFFUSED RING, RED, HIGH SPEED, X-MODE |
|                                                                                     | V430-F000N12M-DRX | V430,000N,1.2M, HIGH BRIGHT DIFFUSED RING, RED, HIGH SPEED, X-MODE |
|                                                                                     | V430-F000L12M-DRX | V430,000L,1.2M, HIGH BRIGHT DIFFUSED RING, RED, HIGH SPEED, X-MODE |

# System Configuration

## Ethernet Configuration 1

Input commands and output results via Ethernet.  
Triggers can be input using the I/O cable (Flying Leads Cable).

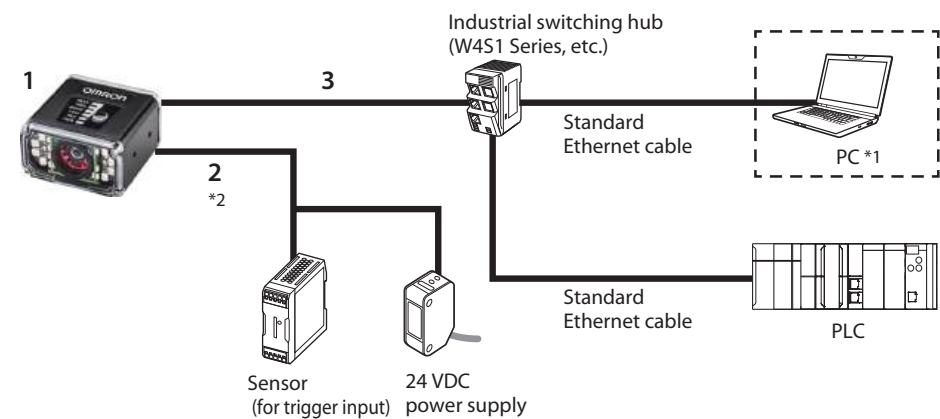


| Drawing Reference | Description                    | Part Number                                                                                         |
|-------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|
| 1                 | Autofocus Multicode Reader     | V430-F                                                                                              |
| 2                 | Ethernet Cable                 | V430-WE-1M/-3M/-5M<br>V430-WELU-3M<br>V430-WELD-3M                                                  |
| 3                 | M12 to Flying Leads Cable      | V430-WQK-3M                                                                                         |
| 4                 | I/O Cable (Flying Leads Cable) | V430-W8-3M/-5M<br>V430-W8F-3M/-5M<br>V430-W8LU-3M<br>V430-W8LUF-3M<br>V430-W8LD-3M<br>V430-W8LDF-3M |

\*1. The V430-WQ Cable (excluding V430-WQR and V430-WQK) can be used as an extension of the V430-W8 Cable.

## Ethernet Configuration 2

Input commands and output results via Ethernet.  
Triggers can be input using the I/O cable (Flying Leads Cable).



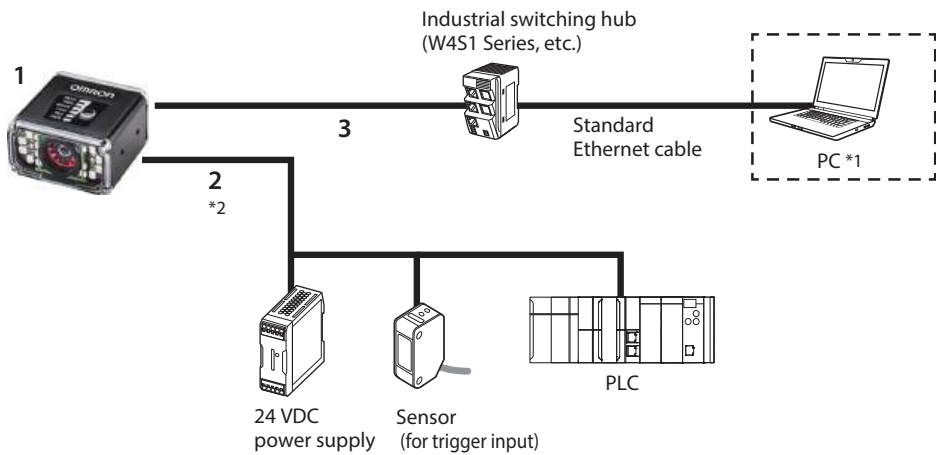
| Drawing Reference | Description                    | Part Number                                                                                         |
|-------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|
| 1                 | Autofocus Multicode Reader     | V430-F                                                                                              |
| 2                 | I/O Cable (Flying Leads Cable) | V430-W8-3M/-5M<br>V430-W8F-3M/-5M<br>V430-W8LU-3M<br>V430-W8LUF-3M<br>V430-W8LD-3M<br>V430-W8LDF-3M |
| 3                 | Ethernet Cable                 | V430-WE-1M/-3M/-5M<br>V430-WELU-3M<br>V430-WELD-3M                                                  |

\*1. Connect a PC during operation when you need to display information on the monitor.

\*2. The V430-WQ Cable (excluding V430-WQR and V430-WQK) can be used as an extension of the V430-W8 Cable.

I/O Interface

Input triggers and output judgment results via I/O.

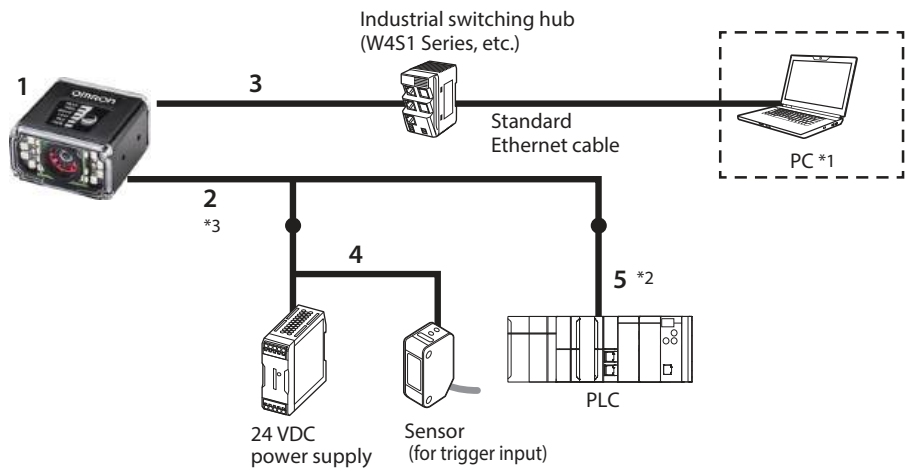


| Drawing Reference | Description                    | Part Number                                                                                         |
|-------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|
| 1                 | Autofocus Multicode Reader     | V430-F                                                                                              |
| 2                 | I/O Cable (Flying Leads Cable) | V430-W8-3M/-5M<br>V430-W8F-3M/-5M<br>V430-W8LU-3M<br>V430-W8LUF-3M<br>V430-W8LD-3M<br>V430-W8LDF-3M |
| 3                 | Ethernet Cable                 | V430-WE-1M/-3M/-5M<br>V430-WELU-3M<br>V430-WELD-3M                                                  |

\*1. Connect a PC during operation when you need to display information on the monitor.  
\*2. The V430-WQ Cable (excluding V430-WQR and V430-WQK) can be used as an extension of the V430-W8 Cable.

RS-232C Configuration 1

Input commands and output results via RS-232C.  
Triggers can be input using the V430-W8 Cable.

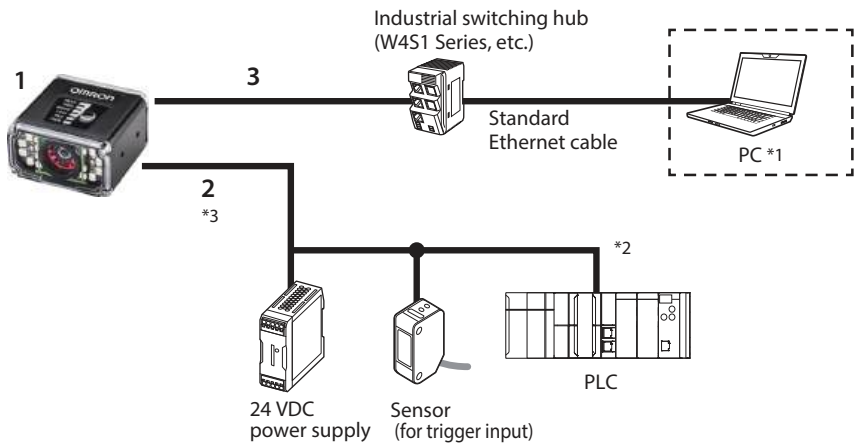


| Drawing Reference | Description                                              | Part Number                                                                                         |
|-------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1                 | Autofocus Multicode Reader                               | V430-F                                                                                              |
| 2                 | Camera to QX-1 Interconnect Cables with RS-232 Breakout  | V430-WQR-3M                                                                                         |
| 3                 | Ethernet Cable                                           | V430-WE-1M/-3M/-5M<br>V430-WELU-3M<br>V430-WELD-3M                                                  |
| 4                 | I/O Cable (Flying Leads Cable)                           | V430-W8-3M/-5M<br>V430-W8F-3M/-5M<br>V430-W8LU-3M<br>V430-W8LUF-3M<br>V430-W8LD-3M<br>V430-W8LDF-3M |
| 5                 | RS-232C Cable for connecting Omron's CS/CJ/NJ Controller | V430-WPLC-2M                                                                                        |

\*1. Connect a PC during operation when you need to display information on the monitor.  
\*2. The RS-232C cable is required to connect Omron's CS/CJ/NJ Controller. No additional RS-232C cable is required to connect Omron's NX Machine Automation Controller.  
\*3. The V430-WQ Cable can be used as an extension of the V430-W8 Cable.

RS-232C Configuration 2

Input commands and output results via RS-232C.  
Triggers can be input using the V430-W8 Cable.



| Drawing Reference | Description                    | Part Number                                                                                         |
|-------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|
| 1                 | Autofocus Multicode Reader     | V430-F                                                                                              |
| 2                 | I/O Cable (Flying Leads Cable) | V430-W8-3M/-5M<br>V430-W8F-3M/-5M<br>V430-W8LU-3M<br>V430-W8LUF-3M<br>V430-W8LD-3M<br>V430-W8LDF-3M |
| 3                 | Ethernet Cable                 | V430-WE-1M/-3M/-5M<br>V430-WELU-3M<br>V430-WELD-3M                                                  |

\*1. Connect a PC during operation when you need to display information on the monitor.  
\*2. Check the connector shape and signal lines (pin assignment) of the PLC before preparing the V430-W8 Cable.  
\*3. The V430-WQ Cable can be used as an extension of the V430-W8 Cable.

## Mounting Options

| Appearance                                                                                                                 | Description                                              | Part Number |
|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------|
|                                           | L Bracket Adjustable Angle Mounting Kit                  | V430-AM0    |
|                                           | 1/4-20 Camera Mounting Block Kit                         | V430-AM1    |
|  | 4" (102 mm) Ram Mount Stand                              | V430-AM2    |
|                                           | APG Pan and Tilt Camera Mount                            | V430-AM3    |
|                                          | Nylon Screw and Washer Electrical Isolation Mounting Kit | V430-AM4    |
|                                         | MS-4 / MINI to V/F4XX-F Adapter Plate                    | V430-AM5    |
|                                         | Smart Ring Light to V/F4XX-F Mounting Bracket            | V430-AM6    |
|                                         | QX / Vision HAWK to V/F4XX-F Adapter Plate               | V430-AM7    |

## Optics Options

| Appearance                                                                          | Description                         | Part Number |
|-------------------------------------------------------------------------------------|-------------------------------------|-------------|
|    | Front Window Installation Kit       | V430-AF10 * |
|    | Diffuser Installation Kit           | V430-AF11 * |
|    | Polarizer Installation Kit          | V430-AF12 * |
|    | Right Angle Mirror Installation Kit | V430-AF3    |
|    | YAG Filter Installation Kit         | V430-AF4    |
|   | ESD-Safe Window Installation Kit    | V430-AF5    |
|  | Red Filter Installation Kit         | V430-AF6    |
|  | Blue Filter Installation Kit        | V430-AF7    |

\* **Note:** V430-AF10, AF11, and AF12 are used for **MicroHAWK V/F4X0-FXXXXXXX-XXX** readers in this datasheet. The prior generation **MicroHAWK V430-FXXXXXXX** code reader uses part numbers V430-AF0, AF1, and AF2. Please select the correct accessory from the table based on your camera part number format.

| Accessory                     | Prior V430-FXXXXXXX Code Reader | New V/F4X0-FXXXXXXX-XXX Code Reader and Smart Camera |
|-------------------------------|---------------------------------|------------------------------------------------------|
| Front Window Installation Kit | V430-AF0                        | V430-AF10                                            |
| Diffuser Installation Kit     | V430-AF1                        | V430-AF11                                            |
| Polarizer Installation Kit    | V430-AF2                        | V430-AF12                                            |

## Additional Optics Options

| Options                                                                                                        | Appearance                                                                        | Description                              | Part Number      |
|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------|------------------|
| <b>V430-F Window Kits</b><br> |  | Ring Light Front Window Installation Kit | <b>V430-AF0R</b> |
|                                                                                                                |  | Ring Light Diffuser Installation Kit     | <b>V430-AF1R</b> |
|                                                                                                                |  | Ring Light Polarizer Installation Kit    | <b>V430-AF2R</b> |

## Lighting Options

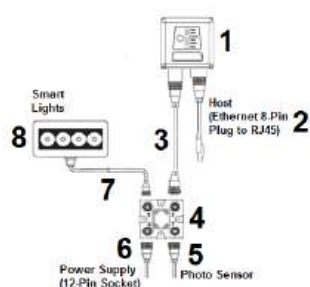
| Options                                                                                                                          | Appearance                                                                          | Description                                                                                                                  | Part Number       |
|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>V430-F Ring Light Kits</b><br>               |    | Red Ring Light Installation Kit                                                                                              | <b>V430-ALRR</b>  |
|                                                                                                                                  |                                                                                     | White Ring Light Installation Kit                                                                                            | <b>V430-ALWR</b>  |
|                                                                                                                                  |                                                                                     | Blue Ring Light Installation Kit                                                                                             | <b>V430-ALBR</b>  |
|                                                                                                                                  |                                                                                     | IR Ring Light Installation Kit                                                                                               | <b>V430-ALIR</b>  |
| <b>V430-F High Bright Ring Light Kits</b><br> |  | High Bright Red Ring Light Installation Kit<br>(3.3x brighter than standard Red Ring Light)                                  | <b>V430-ALRRH</b> |
|                                                                                                                                  |  | Ring Light Window with Heavy Diffuser Kit<br>(Creates very uniform lighting for DPM. Pair with V430-ALRRH for best results.) | <b>V430-AF1RH</b> |

## Additional Lighting Options

| Options                                                                                                             | Appearance                                                                          | Description                                                                                        | Part Number      |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------|
| <b>Standard Light Kits</b><br>   |  | Red Light Installation Kit                                                                         | <b>V430-ALR</b>  |
|                                                                                                                     |                                                                                     | White Light Installation Kit                                                                       | <b>V430-ALW</b>  |
|                                                                                                                     |                                                                                     | Blue Light Installation Kit                                                                        | <b>V430-ALB</b>  |
|                                                                                                                     |                                                                                     | IR Light Installation Kit                                                                          | <b>V430-ALI</b>  |
| <b>High Bright Light Kit</b><br> |  | High Bright RED Light Installation Kit<br>(1.8x brighter than standard Red Light Installation Kit) | <b>V430-ALRH</b> |



## Wiring Options



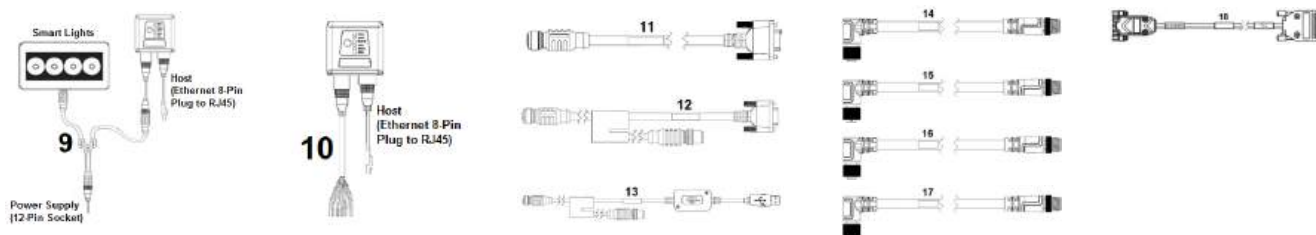
| Drawing Reference | Appearance | Description                                                                                                                      | Length / Spec                              | Part Number                                                                       |
|-------------------|------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------|
| 2                 |            | Ethernet Communication Cables – Straight Connectors<br>M12 Plug on Camera to RJ45 Connector                                      | 1 Meter                                    | <b>V430-WE-1M</b>                                                                 |
|                   |            |                                                                                                                                  | 3 Meters                                   | <b>V430-WE-3M</b>                                                                 |
|                   |            |                                                                                                                                  | 5 Meters                                   | <b>V430-WE-5M</b>                                                                 |
|                   |            | Ethernet Communication Cables – Right Angle M12 Connectors*<br>M12 Plug on Camera to RJ45 Connector                              | 3 Meters – Right Angle Up*                 | <b>V430-WELU-3M</b>                                                               |
|                   |            |                                                                                                                                  | 3 Meters – Right Angle Down*               | <b>V430-WELD-3M</b>                                                               |
| 3                 |            | Camera to QX-1 Interconnect Cables<br>M12 Socket to M12 Plug<br>QX-1 is used as breakout module for common IO signals and power. | 1 Meter                                    | <b>V430-WQ-1M</b>                                                                 |
|                   |            | M12 Socket to M12 Plug, with Power Filter                                                                                        | 300 mm                                     | <b>V430-WQF-1M</b>                                                                |
|                   |            | Camera to QX-1 Interconnect Cables<br>M12 Socket to M12 Plug<br>QX-1 is used as breakout module for common IO signals and power. | 3 Meters                                   | <b>V430-WQ-3M</b>                                                                 |
|                   |            |                                                                                                                                  | 5 Meters                                   | <b>V430-WQ-5M</b>                                                                 |
| 4                 |            | QX-1 Interconnect Module – Power, Trigger, Smart Light Control Breakout                                                          |                                            | <b>98-000103-02</b>                                                               |
| 5                 |            | QX-1 Photo Sensor, M12 4-Pin Plug, NPN                                                                                           | 2 Meters – Light ON/<br>Dark ON            | <b>99-9000016-01</b>                                                              |
|                   |            | QX-1 Field-Wireable M12 4-Pin Plug for Any Trigger Source or Photo Sensor                                                        | Screw Terminals                            | <b>98-9000239-01</b>                                                              |
| 6                 |            | Power Supply, 100-240VAC, +24VDC, M12 12-Pin Socket                                                                              | 1 Meter<br>US/Euro Plug                    | <b>97-000012-01</b>                                                               |
| 7                 |            | QX-1 M12 to Smart Light Power and Strobe Control Cables                                                                          | 3 Meters – Continuous Power                | <b>61-000204-01</b>                                                               |
|                   |            | M12 Plug on QX-1 to 5 Pin Socket on light                                                                                        | 3 Meters – Strobe Control                  | <b>61-000218-01</b>                                                               |
| 8                 |            | Omron Microscan Smart Light Series                                                                                               | Integrated Power and Strobe Control Module | <b>See Omron Microscan Smart Light Offering - Ring, DOAL, Large Area Lighting</b> |

\* Right angle cables.  
Right angle up

Right angle down



## Alternate Wiring Options



| Drawing Reference | Appearance | Description                                                         | Length / Spec               | Part Number   |
|-------------------|------------|---------------------------------------------------------------------|-----------------------------|---------------|
| 9                 |            | Y Cable, Camera/Power and Smart Light Power (Continuous On)         | 1 Meter                     | 61-9000135-01 |
|                   |            | Y Cable, Camera/Power and Smart Light Strobe Control                | 1 Meter                     | 61-9000137-01 |
| 10                |            | M12 to Flying Leads Cable, Straight Power, IO, RS-232, USB          | 3 Meters                    | V430-W8-3M    |
|                   |            | M12 to Flying Leads Cable, with Power Filter                        |                             | V430-W8F-3M   |
|                   |            | M12 to Flying Leads Cable, Straight Power, IO, RS-232, USB          | 5 Meters                    | V430-W8-5M    |
|                   |            | M12 to Flying Leads Cable, with Power Filter                        |                             | V430-W8F-5M   |
|                   |            | M12 to Flying Leads Cable, Straight Power, IO, RS-232, USB          | 10 Meters                   | V430-W8-10M   |
|                   |            | M12 to Flying Leads Cable Right Angle Power, IO, RS232, USB         | 3 Meters – Right Angle Up   | V430-W8LU-3M  |
|                   |            | M12 to Flying Leads Cable Right Angle, with Power Filter            |                             | V430-W8LUF-3M |
|                   |            | M12 to Flying Leads Cable Right Angle Power, IO, RS232, USB         | 3 Meters – Right Angle Down | V430-W8LD-3M  |
| 11                |            | M12 to RS-232 Breakout                                              | 1 Meter                     | V430-WR-1M    |
|                   |            |                                                                     | 3 Meters                    | V430-WR-3M    |
| 12                |            | Camera to QX-1 Interconnect Cables with RS-232 Breakout             | 2.7 Meters                  | V430-WQR-3M   |
| 13                |            | Camera to QX-1 Interconnect Cables with USB Keyboard Wedge Breakout | 2.7 Meters                  | V430-WQK-3M   |
| 14                |            | M12 12-Pin Plug to M12 12-Pin Socket, Right Angle                   | 3 Meters                    | 61-000148-03  |
| 15                |            | M12 12-Pin Plug to M12 12-Pin Socket, Right Angle, Alternate Key    | 3 Meters                    | 61-000148-04  |
| 16                |            | M12 12-Pin Plug to M12 12-Pin Socket, Right Angle                   | 1 Meter                     | 61-000162-03  |
| 17                |            | M12 12-Pin Plug to M12 12-Pin Socket, Right Angle, Alternate Key    | 1 Meter                     | 61-000162-04  |
| 18                |            | Cable, Adapter, Omron PLC                                           | 2 Meters                    | V430-WPLC-2M  |

## V430-F Part Number Structure

Use this legend when defining product part numbers. Please note that not all combinations of parameters are valid. For instance, color cameras are only available with white lighting, and 400 mm fixed focus is only available with UHD lenses. When ordering, use valid part numbers from the tables in the Ordering Information section only.

### V430-F[XXX][Y][ZZZ]-[L][C][P]

| Key | Classification      | Code | Meaning                                                 |
|-----|---------------------|------|---------------------------------------------------------|
| XXX | Focus Distance (mm) | 000  | Autofocus – Variable Distance                           |
|     |                     | 050  | Fixed Focus at 50 mm                                    |
|     |                     | 064  | Fixed Focus at 64 mm                                    |
|     |                     | 081  | Fixed Focus at 81 mm                                    |
|     |                     | 102  | Fixed Focus at 102 mm                                   |
|     |                     | 133  | Fixed Focus at 133 mm                                   |
|     |                     | 190  | Fixed Focus at 190 mm                                   |
|     |                     | 300  | Fixed Focus at 300 mm                                   |
|     |                     | 400  | Fixed Focus at 400 mm                                   |
| Y   | Lens                | W    | Wide Field of View – 5.2 mm Focal Length Lens           |
|     |                     | M    | Medium Field of View – 7.7 mm Focal Length Lens         |
|     |                     | N    | Narrow Field of View – 16 mm Focal Length Lens          |
|     |                     | L    | Narrow 16 mm Lens – Autofocus to 1160 mm                |
| ZZZ | Sensor              | 03M  | 752 x 480 (0.3 MP) Pixel, Mono Sensor, Global Shutter   |
|     |                     | 12M  | 1280 x 960 (1.2 MP) Pixel, Mono Sensor, Global Shutter  |
|     |                     | 50C  | 2592 x 1944 (5 MP) Pixel, Color Sensor, Rolling Shutter |
| L   | Light Type          | N    | None (Engine Lighting Only)                             |
|     |                     | S    | Standard Outer Light                                    |
|     |                     | H    | High Bright Outer Light                                 |
|     |                     | R    | Ring Light                                              |
|     |                     | D    | High Bright Diffused Red Ring Light                     |
| C   | Light Color         | N    | None (Engine Lighting Only)                             |
|     |                     | R    | Red                                                     |
|     |                     | W    | White                                                   |
| P   | Software License    | P    | High Speed, Plus Mode                                   |
|     |                     | X    | High Speed, X-Mode                                      |

#### Example Part Numbers:

- V430-F081W03M-NNP: Fixed Focus at 81 mm, Wide Lens, 0.3 MP Monochrome Sensor, No Outer Light, High Speed, Plus Mode
- V430-F000N12M-RRX: Autofocus, Narrow Lens, 1.2 MP Mono, Ring Light, Red, High Speed, X-Mode
- V430-F000W50C-SWP: Autofocus, Wide Lens, 5 MP Color, Standard Light, White, High Speed, Plus Mode

## V430-F Valid Product Matrix

| Model  | Category   | Focus Type           | Sensor   | Lens    | Focus Distance (mm)                              | Light      | License |
|--------|------------|----------------------|----------|---------|--------------------------------------------------|------------|---------|
| V430-F | Monochrome | Fixed Focus          | 03M, 12M | W, M    | 50, 64, 81, 102, 133, 190, 300                   | NN, SR, SW | P, X    |
|        |            |                      | 12M      | N       | 400                                              | NN, SR, SW | P, X    |
|        |            | Autofocus            | 03M      | W, M    | 50 <-> 300 Autofocus                             | NN, SR, SW | P, X    |
|        |            |                      | 12M      | W, M, N | 50 <-> 300 (W, M)<br>40 <-> 150 (N)<br>Autofocus | NN, SR, SW | P, X    |
|        | Color      | Fixed Focus          | 50C      | W, M    | 50, 64, 81, 102, 133, 190, 300                   | NN, SR, SW | P, X    |
|        |            | Autofocus            | 50C      | W, M    | 50 <-> 300 Autofocus                             | NN, SR, SW | P, X    |
|        | Specialty  | Ring Light Autofocus | 12M      | M, N    | 50 <-> 300 (M)<br>40 <-> 150 (N)<br>Autofocus    | RR, RW     | X       |
|        |            | Long Range Autofocus | 12M      | L       | 75 <-> 1160 Autofocus                            | NN, SR, SW | P, X    |

## V430-F Ordering Information

### Categories:

1. Fixed Focus Camera
  - a.) V430-F Monochrome Fixed Focus Camera
  - b.) V430-F Color Fixed Focus Camera
  - c.) V430-F 1.2 MP Monochrome Fixed Focus Camera with Narrow Lens
2. Autofocus Camera
  - a.) V430-F 0.3 MP Monochrome Autofocus Camera (50 - 300 mm)
  - b.) V430-F 1.2 MP Monochrome Autofocus Camera (50 - 300 mm for Wide and Medium Lens, 40 - 150 mm for Narrow Lens)
  - c.) V430-F Color Autofocus Camera (50 - 300 mm)
  - d.) V430-F 1.2 MP Monochrome Autofocus Camera with Ring Light (50 – 300 mm for Medium Lens, 40 - 150 mm for Narrow Lens)
  - e.) V430-F 1.2 MP Monochrome Long Range Autofocus Camera (75 - 1160 mm)
3. Autofocus Cameras with High Bright LEDs

### 1a) V430-F Monochrome Fixed Focus Camera: Valid Combinations

V430-F[XXX][Y][ZZZ]-[L][C][P]

| Key | Classification      | Code | Meaning                                                |
|-----|---------------------|------|--------------------------------------------------------|
| XXX | Focus Distance (mm) | 050  | Fixed Focus at 50 mm                                   |
|     |                     | 064  | Fixed Focus at 64 mm                                   |
|     |                     | 081  | Fixed Focus at 81 mm                                   |
|     |                     | 102  | Fixed Focus at 102 mm                                  |
|     |                     | 133  | Fixed Focus at 133 mm                                  |
|     |                     | 190  | Fixed Focus at 190 mm                                  |
|     |                     | 300  | Fixed Focus at 300 mm                                  |
| Y   | Lens                | W    | Wide Field of View - 5.2 mm Focal Length Lens          |
|     |                     | M    | Medium Field of View – 7.7 mm Focal Length Lens        |
| ZZZ | Sensor              | 03M  | 752 x 480 (0.3 MP) Pixel, Mono Sensor, Global Shutter  |
|     |                     | 12M  | 1280 x 960 (1.2 MP) Pixel, Mono Sensor, Global Shutter |
| L   | Light Type          | N    | No Outer Light                                         |
|     |                     | S    | Standard Outer Light                                   |
| C   | Light Color         | N    | No Outer Light                                         |
|     |                     | R    | Red                                                    |
|     |                     | W    | White                                                  |
| P   | Software License    | P    | High Speed, Plus Mode                                  |
|     |                     | X    | High Speed, X-Mode                                     |

### 1b) V430-F 5.0 MP Color Fixed Focus Camera: Valid Combinations

**Note:** 5 MP Color cameras are available with No Outer Light or White Light options only.

V430-F[XXX][Y]50C-[L][C][P]

| Key | Classification      | Code | Meaning                                         |
|-----|---------------------|------|-------------------------------------------------|
| XXX | Focus Distance (mm) | 050  | Fixed Focus at 50 mm                            |
|     |                     | 064  | Fixed Focus at 64 mm                            |
|     |                     | 081  | Fixed Focus at 81 mm                            |
|     |                     | 102  | Fixed Focus at 102 mm                           |
|     |                     | 133  | Fixed Focus at 133 mm                           |
|     |                     | 190  | Fixed Focus at 190 mm                           |
|     |                     | 300  | Fixed Focus at 300 mm                           |
| Y   | Lens                | W    | Wide Field of View - 5.2 mm Focal Length Lens   |
|     |                     | M    | Medium Field of View – 7.7 mm Focal Length Lens |
| L   | Light Type          | N    | No Outer Light                                  |
|     |                     | S    | Standard Outer Light                            |
| C   | Light Color         | N    | No Outer Light                                  |
|     |                     | W    | White                                           |
| P   | Software License    | P    | High Speed, Plus Mode                           |
|     |                     | X    | High Speed, X-Mode                              |

**1c) V430-F 1.2 MP Monochrome Fixed Focus Camera with Narrow Lens: Valid Combinations**

**Note:** Fixed Focus Narrow lens option available for 1.2 MP Mono camera only.

**V430-F[XXX]N12M-[L][C][P]**

| Key | Classification      | Code | Meaning               |
|-----|---------------------|------|-----------------------|
| XXX | Focus Distance (mm) | 400  | Fixed Focus at 400 mm |
| L   | Light Type          | N    | No Outer Light        |
|     |                     | S    | Standard Outer Light  |
| C   | Light Color         | N    | No Outer Light        |
|     |                     | R    | Red                   |
|     |                     | W    | White                 |
| P   | Software License    | P    | High Speed, Plus Mode |
|     |                     | X    | High Speed, X-Mode    |

**2a) V430-F 0.3 MP Monochrome Autofocus Camera (50 - 300 mm): Valid Combinations**

**V430-F000[Y]03M-[L][C][P]**

| Key | Classification   | Code | Meaning                                         |
|-----|------------------|------|-------------------------------------------------|
| Y   | Lens             | W    | Wide Field of View - 5.2 mm Focal Length Lens   |
|     |                  | M    | Medium Field of View – 7.7 mm Focal Length Lens |
| L   | Light Type       | N    | No Outer Light                                  |
|     |                  | S    | Standard Outer Light                            |
| C   | Light Color      | N    | No Outer Light                                  |
|     |                  | R    | Red                                             |
|     |                  | W    | White                                           |
| P   | Software License | P    | High Speed, Plus Mode                           |
|     |                  | X    | High Speed, X-Mode                              |

**2b) V430-F 1.2 MP Monochrome Autofocus Camera (50 - 300 mm for Wide and Medium, 40 – 150 mm for Narrow): Valid Combinations**

**V430-F000[Y]12M-[L][C][P]**

| Key | Classification   | Code | Meaning                                         |
|-----|------------------|------|-------------------------------------------------|
| Y   | Lens             | W    | Wide Field of View - 5.2 mm Focal Length Lens   |
|     |                  | M    | Medium Field of View – 7.7 mm Focal Length Lens |
|     |                  | N    | Narrow Field of View – 16 mm Focal Length Lens  |
| L   | Light Type       | N    | No Outer Light                                  |
|     |                  | S    | Standard Outer Light                            |
| C   | Light Color      | N    | No Outer Light                                  |
|     |                  | R    | Red                                             |
|     |                  | W    | White                                           |
| P   | Software License | P    | High Speed, Plus Mode                           |
|     |                  | X    | High Speed, X-Mode                              |

**2c) V430-F 5.0 MP Color Autofocus Camera (50 - 300 mm): Valid Combinations**

**Note:** Narrow Autofocus lens option not available for color camera.

**V430-F000[Y]50C-[L][C][P]**

| Key | Classification   | Code | Meaning                                         |
|-----|------------------|------|-------------------------------------------------|
| Y   | Lens             | W    | Wide Field of View - 5.2 mm Focal Length Lens   |
|     |                  | M    | Medium Field of View – 7.7 mm Focal Length Lens |
| L   | Light Type       | N    | No Outer Light                                  |
|     |                  | S    | Standard Outer Light                            |
| C   | Light Color      | N    | No Outer Light                                  |
|     |                  | W    | White                                           |
| P   | Software License | P    | High Speed, Plus Mode                           |
|     |                  | X    | High Speed, X-Mode                              |

## 2d) V430-F 1.2 MP Monochrome Autofocus Camera with Ring Light (50 - 300 mm for Medium, 40 – 150 mm for Narrow): Valid Combinations

**Note:** Ring Light version is available for Autofocus, Medium, and Narrow lens, 1.2 MP Monochrome camera only.

### V430-F000[Y]12M-R[C]X

| Key | Classification | Code | Meaning                                         |
|-----|----------------|------|-------------------------------------------------|
| Y   | Lens           | M    | Medium Field of View – 7.7 mm Focal Length Lens |
|     |                | N    | Narrow Field of View – 16 mm Focal Length Lens  |
| C   | Light Color    | R    | Red                                             |
|     |                | W    | White                                           |

## 2e) V430-F 1.2 MP Monochrome Long Range Autofocus Camera (75 - 1160 mm): Valid Combinations

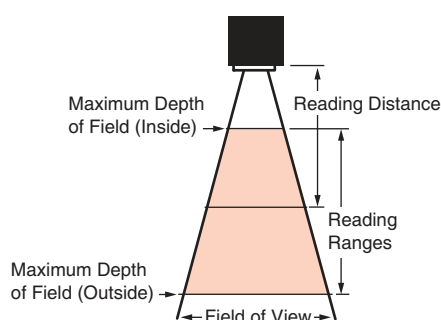
**Note:** Autofocus Long Range lens option available for 1.2 MP Monochrome camera only.

### V430-F000L12M-[L][C][P]

| Key | Classification   | Code | Meaning               |
|-----|------------------|------|-----------------------|
| L   | Light Type       | N    | No Outer Light        |
|     |                  | S    | Standard Outer Light  |
| C   | Light Color      | N    | No Outer Light        |
|     |                  | R    | Red                   |
|     |                  | W    | White                 |
| P   | Software License | P    | High Speed, Plus Mode |
|     |                  | X    | High Speed, X-Mode    |

## Field of View Charts

Specifications are subject to change.



### Fixed Focus Field of View (mm) - Wide Lens

|               | 0.3 MP |        | 1.2 MP |        | 5 MP  |        |
|---------------|--------|--------|--------|--------|-------|--------|
| Distance (mm) | Width  | Height | Width  | Height | Width | Height |
| 50            | 49     | 32     | 53     | 39     | 50    | 38     |
| 64            | 62     | 39     | 66     | 49     | 63    | 47     |
| 81            | 76     | 49     | 81     | 61     | 78    | 58     |
| 102           | 95     | 60     | 101    | 75     | 96    | 72     |
| 133           | 121    | 78     | 129    | 97     | 124   | 92     |
| 190           | 171    | 109    | 182    | 136    | 174   | 130    |
| 300           | 266    | 170    | 283    | 213    | 271   | 202    |

### Fixed Focus Field of View (mm) - Medium Lens

|               | 0.3 MP |        | 1.2 MP |        | 5 MP  |        |
|---------------|--------|--------|--------|--------|-------|--------|
| Distance (mm) | Width  | Height | Width  | Height | Width | Height |
| 50            | 34     | 22     | 36     | 27     | 35    | 26     |
| 64            | 43     | 27     | 45     | 34     | 43    | 32     |
| 81            | 53     | 34     | 56     | 42     | 54    | 40     |
| 102           | 66     | 42     | 70     | 52     | 67    | 50     |
| 133           | 84     | 54     | 90     | 67     | 86    | 64     |
| 190           | 119    | 76     | 126    | 95     | 121   | 90     |
| 300           | 185    | 118    | 196    | 147    | 188   | 140    |

### Fixed Focus Field of View (mm) - Narrow Lens

|               | 1.2 MP |        |
|---------------|--------|--------|
| Distance (mm) | Width  | Height |
| 400           | 118    | 88     |

## V430-F

### Autofocus Field of View (mm) - Wide Lens

| Distance (mm) | 0.3 MP |        | 1.2 MP |        | 5 MP  |        |
|---------------|--------|--------|--------|--------|-------|--------|
|               | Width  | Height | Width  | Height | Width | Height |
| 50            | 51     | 33     | 55     | 41     | 52    | 39     |
| 100           | 97     | 62     | 103    | 77     | 98    | 73     |
| 150           | 142    | 90     | 151    | 113    | 144   | 107    |
| 200           | 187    | 119    | 199    | 149    | 190   | 142    |
| 250           | 232    | 148    | 247    | 185    | 236   | 176    |
| 300           | 277    | 177    | 295    | 221    | 282   | 210    |

### Autofocus Field of View (mm) - Medium Lens

| Distance (mm) | 0.3 MP |        | 1.2 MP |        | 5 MP  |        |
|---------------|--------|--------|--------|--------|-------|--------|
|               | Width  | Height | Width  | Height | Width | Height |
| 50            | 33     | 21     | 36     | 27     | 34    | 25     |
| 100           | 63     | 40     | 67     | 50     | 64    | 48     |
| 150           | 92     | 59     | 98     | 73     | 94    | 70     |
| 200           | 121    | 77     | 129    | 97     | 123   | 92     |
| 250           | 151    | 96     | 160    | 120    | 153   | 114    |
| 300           | 180    | 115    | 191    | 144    | 183   | 136    |

### Autofocus Field of View (mm) - Narrow Lens

| Distance (mm) | 1.2 MP |        |
|---------------|--------|--------|
|               | Width  | Height |
| 50            | 16     | 12     |
| 100           | 31     | 23     |
| 150           | 45     | 34     |

### Long Range Autofocus Field of View (mm)

| Distance (mm) | 1.2 MP |        |
|---------------|--------|--------|
|               | Width  | Height |
| 75            | 24     | 18     |
| 100           | 31     | 23     |
| 200           | 60     | 45     |
| 300           | 89     | 67     |
| 400           | 118    | 88     |
| 500           | 147    | 110    |
| 600           | 176    | 132    |
| 700           | 204    | 153    |
| 800           | 233    | 175    |
| 900           | 262    | 197    |
| 1000          | 291    | 218    |
| 1200          | 349    | 262    |
| 1300          | 378    | 283    |
| 1400          | 407    | 305    |
| 1500          | 436    | 327    |



## Readability Tables

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The readability tables on the following pages are designed to help users choose the best read-distance, sensor, and lens combination to read their particular code size and code type successfully.

The readability tables show the calculated PPE (pixels per element) for a range of typical code sizes at all the MicroHAWK Fixed Focus distances with the Wide, Medium, Narrow, and Long Range lens as well as with the 0.3MP, 1.2MP, and 5MP sensors.

PPE is defined as the following for 1D and 2D codes:

- PPE for 1D codes is the number of pixels across the thinnest bar in the barcode.
- PPE for 2D codes is the number of pixels across a single code cell.

The tables show a color code for readability based on Direct Part Marks (DPM) where red means not likely to read, and green means that it should read. The tables also show a range of colors between red and green, while showing the zone where read rates may be acceptable for high-contrast, well-printed labels and can be considered. See the 1D and 2D Code Readability Guidelines below for Minimum and Preferred PPE for both DPM marks and high-contrast labels.



### 1D Code Readability Guidelines

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#### High-Contrast Labels

- 1.5 pixels per thin bar is suggested minimum;
- 2 pixels or more per thin bar is preferred.

#### Direct Part Marks

- 2 pixels per thin bar is suggested minimum;
- 2.5 pixels or more per thin bar is preferred.

### 2D Code Readability Guidelines

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#### High-Contrast Labels

- 2.5 – 2.75 pixels per 2D cell is suggested minimum;
- 3.5 – 5 pixels per 2D cell is preferred.

#### Direct Part Marks

- 3.25 pixels per 2D Cell is suggested minimum;
- 4 – 6 pixels per 2D Cell is preferred.

## Readability Table – 0.3 Megapixel

 = Maximum Readability  
 = Minimum Readability

| 0.3 Megapixel – Pixels Per Element / Readability Chart |                                         |      |      |      |      |      |     |     |             |                                         |      |      |      |      |      |     |     |
|--------------------------------------------------------|-----------------------------------------|------|------|------|------|------|-----|-----|-------------|-----------------------------------------|------|------|------|------|------|-----|-----|
| Minimum Element Size                                   | Readability of 1D Code at Distance (mm) |      |      |      |      |      |     |     | Lens        | Readability of 2D Code at Distance (mm) |      |      |      |      |      |     |     |
|                                                        | 50                                      | 64   | 81   | 102  | 133  | 190  | 300 | 400 |             | 50                                      | 64   | 81   | 102  | 133  | 190  | 300 | 400 |
| 2 mil                                                  | 0.7                                     | 0.6  | 0.5  | 0.4  | 0.3  | 0.2  | 0.1 | 0.1 | Wide Lens   | 0.7                                     | 0.6  | 0.5  | 0.4  | 0.3  | 0.2  | 0.1 | 0.1 |
| 2.5 mil                                                | 0.9                                     | 0.7  | 0.6  | 0.5  | 0.4  | 0.3  | 0.2 | 0.1 |             | 0.9                                     | 0.7  | 0.6  | 0.5  | 0.4  | 0.3  | 0.2 | 0.1 |
| 3.3 mil                                                | 1.2                                     | 1.0  | 0.8  | 0.6  | 0.5  | 0.4  | 0.2 | 0.2 |             | 1.2                                     | 1.0  | 0.8  | 0.6  | 0.5  | 0.4  | 0.2 | 0.2 |
| 5 mil                                                  | 1.9                                     | 1.5  | 1.2  | 1.0  | 0.8  | 0.5  | 0.3 | 0.3 |             | 1.9                                     | 1.5  | 1.2  | 1.0  | 0.8  | 0.5  | 0.3 | 0.3 |
| 7.5 mil                                                | 2.8                                     | 2.2  | 1.8  | 1.5  | 1.1  | 0.8  | 0.5 | 0.4 |             | 2.8                                     | 2.2  | 1.8  | 1.5  | 1.1  | 0.8  | 0.5 | 0.4 |
| 10 mil                                                 | 3.7                                     | 3.0  | 2.4  | 1.9  | 1.5  | 1.1  | 0.7 | 0.5 |             | 3.7                                     | 3.0  | 2.4  | 1.9  | 1.5  | 1.1  | 0.7 | 0.5 |
| 15 mil                                                 | 5.6                                     | 4.5  | 3.6  | 2.9  | 2.3  | 1.6  | 1.0 | 0.8 |             | 5.6                                     | 4.5  | 3.6  | 2.9  | 2.3  | 1.6  | 1.0 | 0.8 |
| 20 mil                                                 | 7.4                                     | 6.0  | 4.8  | 3.9  | 3.0  | 2.1  | 1.4 | 1.0 |             | 7.4                                     | 6.0  | 4.8  | 3.9  | 3.0  | 2.1  | 1.4 | 1.0 |
| 30 mil                                                 | 11.1                                    | 8.9  | 7.2  | 5.8  | 4.5  | 3.2  | 2.1 | 1.6 |             | 11.1                                    | 8.9  | 7.2  | 5.8  | 4.5  | 3.2  | 2.1 | 1.6 |
| 40 mil                                                 | 14.9                                    | 11.9 | 9.6  | 7.8  | 6.0  | 4.3  | 2.8 | 2.1 |             | 14.9                                    | 11.9 | 9.6  | 7.8  | 6.0  | 4.3  | 2.8 | 2.1 |
| 2 mil                                                  | 1.2                                     | 1.0  | 0.8  | 0.6  | 0.5  | 0.3  | 0.2 | 0.2 | Medium Lens | 1.2                                     | 1.0  | 0.8  | 0.6  | 0.5  | 0.3  | 0.2 | 0.2 |
| 2.5 mil                                                | 1.5                                     | 1.2  | 1.0  | 0.8  | 0.6  | 0.4  | 0.3 | 0.2 |             | 1.5                                     | 1.2  | 1.0  | 0.8  | 0.6  | 0.4  | 0.3 | 0.2 |
| 3.3 mil                                                | 2.0                                     | 1.6  | 1.3  | 1.0  | 0.8  | 0.6  | 0.4 | 0.3 |             | 2.0                                     | 1.6  | 1.3  | 1.0  | 0.8  | 0.6  | 0.4 | 0.3 |
| 5 mil                                                  | 3.0                                     | 2.4  | 1.9  | 1.6  | 1.2  | 0.9  | 0.6 | 0.4 |             | 3.0                                     | 2.4  | 1.9  | 1.6  | 1.2  | 0.9  | 0.6 | 0.4 |
| 7.5 mil                                                | 4.5                                     | 3.6  | 2.9  | 2.3  | 1.8  | 1.3  | 0.8 | 0.6 |             | 4.5                                     | 3.6  | 2.9  | 2.3  | 1.8  | 1.3  | 0.8 | 0.6 |
| 10 mil                                                 | 5.9                                     | 4.8  | 3.8  | 3.1  | 2.4  | 1.7  | 1.1 | 0.8 |             | 5.9                                     | 4.8  | 3.8  | 3.1  | 2.4  | 1.7  | 1.1 | 0.8 |
| 15 mil                                                 | 8.9                                     | 7.2  | 5.8  | 4.7  | 3.6  | 2.6  | 1.7 | 1.2 |             | 8.9                                     | 7.2  | 5.8  | 4.7  | 3.6  | 2.6  | 1.7 | 1.2 |
| 20 mil                                                 | 11.9                                    | 9.5  | 7.7  | 6.2  | 4.8  | 3.4  | 2.2 | 1.7 |             | 11.9                                    | 9.5  | 7.7  | 6.2  | 4.8  | 3.4  | 2.2 | 1.7 |
| 30 mil                                                 | 17.8                                    | 14.3 | 11.5 | 9.3  | 7.3  | 5.2  | 3.3 | 2.5 |             | 17.8                                    | 14.3 | 11.5 | 9.3  | 7.3  | 5.2  | 3.3 | 2.5 |
| 40 mil                                                 | 23.8                                    | 19.1 | 15.4 | 12.4 | 9.7  | 6.9  | 4.4 | 3.3 |             | 23.8                                    | 19.1 | 15.4 | 12.4 | 9.7  | 6.9  | 4.4 | 3.3 |
| 2 mil                                                  | 2.5                                     | 2.0  | 1.6  | 1.3  | 1.0  | 0.7  | 0.5 | 0.3 | Narrow Lens | 2.5                                     | 2.0  | 1.6  | 1.3  | 1.0  | 0.7  | 0.5 | 0.3 |
| 2.5 mil                                                | 3.1                                     | 2.5  | 2.0  | 1.6  | 1.3  | 0.9  | 0.6 | 0.4 |             | 3.1                                     | 2.5  | 2.0  | 1.6  | 1.3  | 0.9  | 0.6 | 0.4 |
| 3.3 mil                                                | 4.1                                     | 3.3  | 2.6  | 2.1  | 1.7  | 1.2  | 0.8 | 0.6 |             | 4.1                                     | 3.3  | 2.6  | 2.1  | 1.7  | 1.2  | 0.8 | 0.6 |
| 5 mil                                                  | 6.2                                     | 4.9  | 4.0  | 3.2  | 2.5  | 1.8  | 1.1 | 0.9 |             | 6.2                                     | 4.9  | 4.0  | 3.2  | 2.5  | 1.8  | 1.1 | 0.9 |
| 7.5 mil                                                | 9.2                                     | 7.4  | 6.0  | 4.8  | 3.8  | 2.7  | 1.7 | 1.3 |             | 9.2                                     | 7.4  | 6.0  | 4.8  | 3.8  | 2.7  | 1.7 | 1.3 |
| 10 mil                                                 | 12.3                                    | 9.9  | 8.0  | 6.4  | 5.0  | 3.6  | 2.3 | 1.7 |             | 12.3                                    | 9.9  | 8.0  | 6.4  | 5.0  | 3.6  | 2.3 | 1.7 |
| 15 mil                                                 | 18.5                                    | 14.8 | 12.0 | 9.7  | 7.5  | 5.4  | 3.4 | 2.6 |             | 18.5                                    | 14.8 | 12.0 | 9.7  | 7.5  | 5.4  | 3.4 | 2.6 |
| 20 mil                                                 | 24.7                                    | 19.8 | 16.0 | 12.9 | 10.0 | 7.1  | 4.6 | 3.5 |             | 24.7                                    | 19.8 | 16.0 | 12.9 | 10.0 | 7.1  | 4.6 | 3.5 |
| 30 mil                                                 | 37.0                                    | 29.7 | 24.0 | 19.3 | 15.1 | 10.7 | 6.9 | 5.2 |             | 37.0                                    | 29.7 | 24.0 | 19.3 | 15.1 | 10.7 | 6.9 | 5.2 |
| 40 mil                                                 | 49.3                                    | 39.6 | 31.9 | 25.8 | 20.1 | 14.3 | 9.2 | 6.9 |             | 49.3                                    | 39.6 | 31.9 | 25.8 | 20.1 | 14.3 | 9.2 | 6.9 |

## Readability Table – 1.2 Megapixel

| 1.2 Megapixel – Pixels Per Element / Readability Chart |                                         |      |      |      |      |      |      |      |             |                                         |      |      |      |      |      |      |      |
|--------------------------------------------------------|-----------------------------------------|------|------|------|------|------|------|------|-------------|-----------------------------------------|------|------|------|------|------|------|------|
| Minimum Element Size                                   | Readability of 1D Code at Distance (mm) |      |      |      |      |      |      |      | Lens        | Readability of 2D Code at Distance (mm) |      |      |      |      |      |      |      |
|                                                        | 50                                      | 64   | 81   | 102  | 133  | 190  | 300  | 400  |             | 50                                      | 64   | 81   | 102  | 133  | 190  | 300  | 400  |
| 2 mil                                                  | 1.2                                     | 1.0  | 0.8  | 0.6  | 0.5  | 0.4  | 0.2  | 0.2  | Wide Lens   | 1.2                                     | 1.0  | 0.8  | 0.6  | 0.5  | 0.4  | 0.2  | 0.2  |
| 2.5 mil                                                | 1.5                                     | 1.2  | 1.0  | 0.8  | 0.6  | 0.4  | 0.3  | 0.2  |             | 1.5                                     | 1.2  | 1.0  | 0.8  | 0.6  | 0.4  | 0.3  | 0.2  |
| 3.3 mil                                                | 2.0                                     | 1.6  | 1.3  | 1.1  | 0.8  | 0.6  | 0.4  | 0.3  |             | 2.0                                     | 1.6  | 1.3  | 1.1  | 0.8  | 0.6  | 0.4  | 0.3  |
| 5 mil                                                  | 3.1                                     | 2.5  | 2.0  | 1.6  | 1.3  | 0.9  | 0.6  | 0.4  |             | 3.1                                     | 2.5  | 2.0  | 1.6  | 1.3  | 0.9  | 0.6  | 0.4  |
| 7.5 mil                                                | 4.6                                     | 3.7  | 3.0  | 2.4  | 1.9  | 1.3  | 0.9  | 0.6  |             | 4.6                                     | 3.7  | 3.0  | 2.4  | 1.9  | 1.3  | 0.9  | 0.6  |
| 10 mil                                                 | 6.2                                     | 5.0  | 4.0  | 3.2  | 2.5  | 1.8  | 1.1  | 0.9  |             | 6.2                                     | 5.0  | 4.0  | 3.2  | 2.5  | 1.8  | 1.1  | 0.9  |
| 15 mil                                                 | 9.3                                     | 7.4  | 6.0  | 4.8  | 3.8  | 2.7  | 1.7  | 1.3  |             | 9.3                                     | 7.4  | 6.0  | 4.8  | 3.8  | 2.7  | 1.7  | 1.3  |
| 20 mil                                                 | 12.4                                    | 9.9  | 8.0  | 6.5  | 5.0  | 3.6  | 2.3  | 1.7  |             | 12.4                                    | 9.9  | 8.0  | 6.5  | 5.0  | 3.6  | 2.3  | 1.7  |
| 30 mil                                                 | 18.5                                    | 14.9 | 12.0 | 9.7  | 7.5  | 5.4  | 3.4  | 2.6  |             | 18.5                                    | 14.9 | 12.0 | 9.7  | 7.5  | 5.4  | 3.4  | 2.6  |
| 40 mil                                                 | 24.7                                    | 19.8 | 16.0 | 12.9 | 10.1 | 7.2  | 4.6  | 3.5  |             | 24.7                                    | 19.8 | 16.0 | 12.9 | 10.1 | 7.2  | 4.6  | 3.5  |
| 2 mil                                                  | 1.8                                     | 1.4  | 1.2  | 0.9  | 0.7  | 0.5  | 0.3  | 0.2  | Medium Lens | 1.8                                     | 1.4  | 1.2  | 0.9  | 0.7  | 0.5  | 0.3  | 0.2  |
| 2.5 mil                                                | 2.2                                     | 1.8  | 1.4  | 1.2  | 0.9  | 0.6  | 0.4  | 0.3  |             | 2.2                                     | 1.8  | 1.4  | 1.2  | 0.9  | 0.6  | 0.4  | 0.3  |
| 3.3 mil                                                | 2.9                                     | 2.4  | 1.9  | 1.5  | 1.2  | 0.9  | 0.5  | 0.4  |             | 2.9                                     | 2.4  | 1.9  | 1.5  | 1.2  | 0.9  | 0.5  | 0.4  |
| 5 mil                                                  | 4.5                                     | 3.6  | 2.9  | 2.3  | 1.8  | 1.3  | 0.8  | 0.6  |             | 4.5                                     | 3.6  | 2.9  | 2.3  | 1.8  | 1.3  | 0.8  | 0.6  |
| 7.5 mil                                                | 6.7                                     | 5.4  | 4.3  | 3.5  | 2.7  | 1.9  | 1.2  | 0.9  |             | 6.7                                     | 5.4  | 4.3  | 3.5  | 2.7  | 1.9  | 1.2  | 0.9  |
| 10 mil                                                 | 8.9                                     | 7.2  | 5.8  | 4.7  | 3.6  | 2.6  | 1.7  | 1.2  |             | 8.9                                     | 7.2  | 5.8  | 4.7  | 3.6  | 2.6  | 1.7  | 1.2  |
| 15 mil                                                 | 13.4                                    | 10.7 | 8.7  | 7.0  | 5.4  | 3.9  | 2.5  | 1.9  |             | 13.4                                    | 10.7 | 8.7  | 7.0  | 5.4  | 3.9  | 2.5  | 1.9  |
| 20 mil                                                 | 17.8                                    | 14.3 | 11.5 | 9.3  | 7.3  | 5.2  | 3.3  | 2.5  |             | 17.8                                    | 14.3 | 11.5 | 9.3  | 7.3  | 5.2  | 3.3  | 2.5  |
| 30 mil                                                 | 26.7                                    | 21.5 | 17.3 | 14.0 | 10.9 | 7.7  | 5.0  | 3.7  |             | 26.7                                    | 21.5 | 17.3 | 14.0 | 10.9 | 7.7  | 5.0  | 3.7  |
| 40 mil                                                 | 35.6                                    | 28.6 | 23.1 | 18.6 | 14.5 | 10.3 | 6.6  | 5.0  |             | 35.6                                    | 28.6 | 23.1 | 18.6 | 14.5 | 10.3 | 6.6  | 5.0  |
| 2 mil                                                  | 3.9                                     | 3.2  | 2.6  | 2.1  | 1.6  | 1.1  | 0.7  | 0.6  | Narrow Lens | 3.9                                     | 3.2  | 2.6  | 2.1  | 1.6  | 1.1  | 0.7  | 0.6  |
| 2.5 mil                                                | 4.9                                     | 4.0  | 3.2  | 2.6  | 2.0  | 1.4  | 0.9  | 0.7  |             | 4.9                                     | 4.0  | 3.2  | 2.6  | 2.0  | 1.4  | 0.9  | 0.7  |
| 3.3 mil                                                | 6.5                                     | 5.2  | 4.2  | 3.4  | 2.7  | 1.9  | 1.2  | 0.9  |             | 6.5                                     | 5.2  | 4.2  | 3.4  | 2.7  | 1.9  | 1.2  | 0.9  |
| 5 mil                                                  | 9.9                                     | 7.9  | 6.4  | 5.2  | 4.0  | 2.9  | 1.8  | 1.4  |             | 9.9                                     | 7.9  | 6.4  | 5.2  | 4.0  | 2.9  | 1.8  | 1.4  |
| 7.5 mil                                                | 14.8                                    | 11.9 | 9.6  | 7.7  | 6.0  | 4.3  | 2.7  | 2.1  |             | 14.8                                    | 11.9 | 9.6  | 7.7  | 6.0  | 4.3  | 2.7  | 2.1  |
| 10 mil                                                 | 19.7                                    | 15.8 | 12.8 | 10.3 | 8.0  | 5.7  | 3.7  | 2.8  |             | 19.7                                    | 15.8 | 12.8 | 10.3 | 8.0  | 5.7  | 3.7  | 2.8  |
| 15 mil                                                 | 29.6                                    | 23.8 | 19.2 | 15.5 | 12.0 | 8.6  | 5.5  | 4.1  |             | 29.6                                    | 23.8 | 19.2 | 15.5 | 12.0 | 8.6  | 5.5  | 4.1  |
| 20 mil                                                 | 39.5                                    | 31.7 | 25.6 | 20.6 | 16.1 | 11.4 | 7.3  | 5.5  |             | 39.5                                    | 31.7 | 25.6 | 20.6 | 16.1 | 11.4 | 7.3  | 5.5  |
| 30 mil                                                 | 59.2                                    | 47.5 | 38.3 | 30.9 | 24.1 | 17.1 | 11.0 | 8.3  |             | 59.2                                    | 47.5 | 38.3 | 30.9 | 24.1 | 17.1 | 11.0 | 8.3  |
| 40 mil                                                 | 78.9                                    | 63.3 | 51.1 | 41.3 | 32.1 | 22.8 | 14.6 | 11.1 |             | 78.9                                    | 63.3 | 51.1 | 41.3 | 32.1 | 22.8 | 14.6 | 11.1 |

## Readability Table – 5 Megapixel

| 5 Megapixel – Pixels Per Element / Readability Chart |                                         |      |      |      |      |      |      |      |             |                                         |      |      |      |      |      |      |      |
|------------------------------------------------------|-----------------------------------------|------|------|------|------|------|------|------|-------------|-----------------------------------------|------|------|------|------|------|------|------|
| Minimum Element Size                                 | Readability of 1D Code at Distance (mm) |      |      |      |      |      |      |      | Lens        | Readability of 2D Code at Distance (mm) |      |      |      |      |      |      |      |
|                                                      | 50                                      | 64   | 81   | 102  | 133  | 190  | 300  | 400  |             | 50                                      | 64   | 81   | 102  | 133  | 190  | 300  | 400  |
| 2 mil                                                | 1.7                                     | 1.4  | 1.1  | 0.9  | 0.7  | 0.5  | 0.3  | 0.2  | Wide Lens   | 1.7                                     | 1.4  | 1.1  | 0.9  | 0.7  | 0.5  | 0.3  | 0.2  |
| 2.5 mil                                              | 2.2                                     | 1.7  | 1.4  | 1.1  | 0.9  | 0.6  | 0.4  | 0.3  |             | 2.2                                     | 1.7  | 1.4  | 1.1  | 0.9  | 0.6  | 0.4  | 0.3  |
| 3.3 mil                                              | 2.8                                     | 2.3  | 1.8  | 1.5  | 1.2  | 0.8  | 0.5  | 0.4  |             | 2.8                                     | 2.3  | 1.8  | 1.5  | 1.2  | 0.8  | 0.5  | 0.4  |
| 5 mil                                                | 4.3                                     | 3.5  | 2.8  | 2.3  | 1.8  | 1.2  | 0.8  | 0.6  |             | 4.3                                     | 3.5  | 2.8  | 2.3  | 1.8  | 1.2  | 0.8  | 0.6  |
| 7.5 mil                                              | 6.5                                     | 5.2  | 4.2  | 3.4  | 2.6  | 1.9  | 1.2  | 0.9  |             | 6.5                                     | 5.2  | 4.2  | 3.4  | 2.6  | 1.9  | 1.2  | 0.9  |
| 10 mil                                               | 8.6                                     | 6.9  | 5.6  | 4.5  | 3.5  | 2.5  | 1.6  | 1.2  |             | 8.6                                     | 6.9  | 5.6  | 4.5  | 3.5  | 2.5  | 1.6  | 1.2  |
| 15 mil                                               | 12.9                                    | 10.4 | 8.4  | 6.8  | 5.3  | 3.7  | 2.4  | 1.8  |             | 12.9                                    | 10.4 | 8.4  | 6.8  | 5.3  | 3.7  | 2.4  | 1.8  |
| 20 mil                                               | 17.3                                    | 13.9 | 11.2 | 9.0  | 7.0  | 5.0  | 3.2  | 2.4  |             | 17.3                                    | 13.9 | 11.2 | 9.0  | 7.0  | 5.0  | 3.2  | 2.4  |
| 30 mil                                               | 25.9                                    | 20.8 | 16.8 | 13.5 | 10.5 | 7.5  | 4.8  | 3.6  |             | 25.9                                    | 20.8 | 16.8 | 13.5 | 10.5 | 7.5  | 4.8  | 3.6  |
| 40 mil                                               | 34.5                                    | 27.7 | 22.4 | 18.1 | 14.1 | 10.0 | 6.4  | 4.8  |             | 34.5                                    | 27.7 | 22.4 | 18.1 | 14.1 | 10.0 | 6.4  | 4.8  |
| 2 mil                                                | 2.5                                     | 2.0  | 1.6  | 1.3  | 1.0  | 0.7  | 0.5  | 0.3  | Medium Lens | 2.5                                     | 2.0  | 1.6  | 1.3  | 1.0  | 0.7  | 0.5  | 0.3  |
| 2.5 mil                                              | 3.1                                     | 2.5  | 2.0  | 1.6  | 1.3  | 0.9  | 0.6  | 0.4  |             | 3.1                                     | 2.5  | 2.0  | 1.6  | 1.3  | 0.9  | 0.6  | 0.4  |
| 3.3 mil                                              | 4.1                                     | 3.3  | 2.7  | 2.1  | 1.7  | 1.2  | 0.8  | 0.6  |             | 4.1                                     | 3.3  | 2.7  | 2.1  | 1.7  | 1.2  | 0.8  | 0.6  |
| 5 mil                                                | 6.2                                     | 5.0  | 4.0  | 3.3  | 2.5  | 1.8  | 1.2  | 0.9  |             | 6.2                                     | 5.0  | 4.0  | 3.3  | 2.5  | 1.8  | 1.2  | 0.9  |
| 7.5 mil                                              | 9.3                                     | 7.5  | 6.0  | 4.9  | 3.8  | 2.7  | 1.7  | 1.3  |             | 9.3                                     | 7.5  | 6.0  | 4.9  | 3.8  | 2.7  | 1.7  | 1.3  |
| 10 mil                                               | 12.5                                    | 10.0 | 8.1  | 6.5  | 5.1  | 3.6  | 2.3  | 1.7  |             | 12.5                                    | 10.0 | 8.1  | 6.5  | 5.1  | 3.6  | 2.3  | 1.7  |
| 15 mil                                               | 18.7                                    | 15.0 | 12.1 | 9.8  | 7.6  | 5.4  | 3.5  | 2.6  |             | 18.7                                    | 15.0 | 12.1 | 9.8  | 7.6  | 5.4  | 3.5  | 2.6  |
| 20 mil                                               | 24.9                                    | 20.0 | 16.1 | 13.0 | 10.1 | 7.2  | 4.6  | 3.5  |             | 24.9                                    | 20.0 | 16.1 | 13.0 | 10.1 | 7.2  | 4.6  | 3.5  |
| 30 mil                                               | 37.4                                    | 30.0 | 24.2 | 19.5 | 15.2 | 10.8 | 6.9  | 5.2  |             | 37.4                                    | 30.0 | 24.2 | 19.5 | 15.2 | 10.8 | 6.9  | 5.2  |
| 40 mil                                               | 49.8                                    | 40.0 | 32.3 | 26.0 | 20.3 | 14.4 | 9.2  | 7.0  |             | 49.8                                    | 40.0 | 32.3 | 26.0 | 20.3 | 14.4 | 9.2  | 7.0  |
| 2 mil                                                | 5.5                                     | 4.4  | 3.6  | 2.9  | 2.2  | 1.6  | 1.0  | 0.8  | Narrow Lens | 5.5                                     | 4.4  | 3.6  | 2.9  | 2.2  | 1.6  | 1.0  | 0.8  |
| 2.5 mil                                              | 6.9                                     | 5.5  | 4.5  | 3.6  | 2.8  | 2.0  | 1.3  | 1.0  |             | 6.9                                     | 5.5  | 4.5  | 3.6  | 2.8  | 2.0  | 1.3  | 1.0  |
| 3.3 mil                                              | 9.1                                     | 7.3  | 5.9  | 4.8  | 3.7  | 2.6  | 1.7  | 1.3  |             | 9.1                                     | 7.3  | 5.9  | 4.8  | 3.7  | 2.6  | 1.7  | 1.3  |
| 5 mil                                                | 13.8                                    | 11.1 | 8.9  | 7.2  | 5.6  | 4.0  | 2.6  | 1.9  |             | 13.8                                    | 11.1 | 8.9  | 7.2  | 5.6  | 4.0  | 2.6  | 1.9  |
| 7.5 mil                                              | 20.7                                    | 16.6 | 13.4 | 10.8 | 8.4  | 6.0  | 3.8  | 2.9  |             | 20.7                                    | 16.6 | 13.4 | 10.8 | 8.4  | 6.0  | 3.8  | 2.9  |
| 10 mil                                               | 27.6                                    | 22.1 | 17.8 | 14.4 | 11.2 | 8.0  | 5.1  | 3.9  |             | 27.6                                    | 22.1 | 17.8 | 14.4 | 11.2 | 8.0  | 5.1  | 3.9  |
| 15 mil                                               | 41.3                                    | 33.2 | 26.8 | 21.6 | 16.8 | 12.0 | 7.7  | 5.8  |             | 41.3                                    | 33.2 | 26.8 | 21.6 | 16.8 | 12.0 | 7.7  | 5.8  |
| 20 mil                                               | 55.1                                    | 44.2 | 35.7 | 28.8 | 22.4 | 15.9 | 10.2 | 7.7  |             | 55.1                                    | 44.2 | 35.7 | 28.8 | 22.4 | 15.9 | 10.2 | 7.7  |
| 30 mil                                               | 82.7                                    | 66.4 | 53.5 | 43.2 | 33.7 | 23.9 | 15.3 | 11.6 |             | 82.7                                    | 66.4 | 53.5 | 43.2 | 33.7 | 23.9 | 15.3 | 11.6 |
| 40 mil                                               | 110.2                                   | 88.5 | 71.4 | 57.6 | 44.9 | 31.9 | 20.5 | 15.4 |             | 110.2                                   | 88.5 | 71.4 | 57.6 | 44.9 | 31.9 | 20.5 | 15.4 |

## Readability Table – Long Range

Long Range readability is shown out to 1,500 even though Autofocus is only specified out to 1,160. At the longest focus distance, the lens has a very deep depth of field. Large codes can actually be read beyond 2,000 mm.

| Long Range 1.2 MP - Pixels Per Element/Readability Chart |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |
|----------------------------------------------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Readability of 1D Code at Distance (mm)                  |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |
| Min Element Size                                         | 100   | 200   | 300   | 400   | 500  | 600  | 700  | 800  | 900  | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 |
| 2 mil                                                    | 2.10  | 1.09  | 0.73  | 0.55  | 0.44 | 0.37 | 0.32 | 0.28 | 0.25 | 0.22 | 0.20 | 0.19 | 0.17 | 0.16 | 0.15 |
| 2.5 mil                                                  | 2.63  | 1.36  | 0.92  | 0.69  | 0.55 | 0.46 | 0.40 | 0.35 | 0.31 | 0.28 | 0.25 | 0.23 | 0.22 | 0.20 | 0.19 |
| 3.3 mil                                                  | 3.47  | 1.79  | 1.21  | 0.91  | 0.73 | 0.61 | 0.52 | 0.46 | 0.41 | 0.37 | 0.34 | 0.31 | 0.28 | 0.26 | 0.25 |
| 5 mil                                                    | 5.25  | 2.72  | 1.83  | 1.38  | 1.11 | 0.93 | 0.80 | 0.70 | 0.62 | 0.56 | 0.51 | 0.47 | 0.43 | 0.40 | 0.37 |
| 7.5 mil                                                  | 7.88  | 4.07  | 2.75  | 2.07  | 1.66 | 1.39 | 1.19 | 1.04 | 0.93 | 0.84 | 0.76 | 0.70 | 0.65 | 0.60 | 0.56 |
| 10 mil                                                   | 10.51 | 5.43  | 3.66  | 2.76  | 2.22 | 1.85 | 1.59 | 1.39 | 1.24 | 1.12 | 1.02 | 0.93 | 0.86 | 0.80 | 0.75 |
| 15 mil                                                   | 15.76 | 8.15  | 5.49  | 4.14  | 3.33 | 2.78 | 2.39 | 2.09 | 1.86 | 1.67 | 1.52 | 1.40 | 1.29 | 1.20 | 1.12 |
| 20 mil                                                   | 21.02 | 10.86 | 7.32  | 5.53  | 4.44 | 3.70 | 3.18 | 2.79 | 2.48 | 2.23 | 2.03 | 1.86 | 1.72 | 1.60 | 1.49 |
| 30 mil                                                   | 31.52 | 16.30 | 10.99 | 8.29  | 6.65 | 5.56 | 4.77 | 4.18 | 3.72 | 3.35 | 3.05 | 2.79 | 2.58 | 2.40 | 2.24 |
| 40 mil                                                   | 42.03 | 21.73 | 14.65 | 11.05 | 8.87 | 7.41 | 6.36 | 5.57 | 4.96 | 4.47 | 4.06 | 3.73 | 3.44 | 3.20 | 2.98 |

| Readability of 2D Code at Distance (mm) |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |
|-----------------------------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Min Element Size                        | 100   | 200   | 300   | 400   | 500  | 600  | 700  | 800  | 900  | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 |
| 2 mil                                   | 2.10  | 1.09  | 0.73  | 0.55  | 0.44 | 0.37 | 0.32 | 0.28 | 0.25 | 0.22 | 0.20 | 0.19 | 0.17 | 0.16 | 0.15 |
| 2.5 mil                                 | 2.63  | 1.36  | 0.92  | 0.69  | 0.55 | 0.46 | 0.40 | 0.35 | 0.31 | 0.28 | 0.25 | 0.23 | 0.22 | 0.20 | 0.19 |
| 3.3 mil                                 | 3.47  | 1.79  | 1.21  | 0.91  | 0.73 | 0.61 | 0.52 | 0.46 | 0.41 | 0.37 | 0.34 | 0.31 | 0.28 | 0.26 | 0.25 |
| 5 mil                                   | 5.25  | 2.72  | 1.83  | 1.38  | 1.11 | 0.93 | 0.80 | 0.70 | 0.62 | 0.56 | 0.51 | 0.47 | 0.43 | 0.40 | 0.37 |
| 7.5 mil                                 | 7.88  | 4.07  | 2.75  | 2.07  | 1.66 | 1.39 | 1.19 | 1.04 | 0.93 | 0.84 | 0.76 | 0.70 | 0.65 | 0.60 | 0.56 |
| 10 mil                                  | 10.51 | 5.43  | 3.66  | 2.76  | 2.22 | 1.85 | 1.59 | 1.39 | 1.24 | 1.12 | 1.02 | 0.93 | 0.86 | 0.80 | 0.75 |
| 15 mil                                  | 15.76 | 8.15  | 5.49  | 4.14  | 3.33 | 2.78 | 2.39 | 2.09 | 1.86 | 1.67 | 1.52 | 1.40 | 1.29 | 1.20 | 1.12 |
| 20 mil                                  | 21.02 | 10.86 | 7.32  | 5.53  | 4.44 | 3.70 | 3.18 | 2.79 | 2.48 | 2.23 | 2.03 | 1.86 | 1.72 | 1.60 | 1.49 |
| 30 mil                                  | 31.52 | 16.30 | 10.99 | 8.29  | 6.65 | 5.56 | 4.77 | 4.18 | 3.72 | 3.35 | 3.05 | 2.79 | 2.58 | 2.40 | 2.24 |
| 40 mil                                  | 42.03 | 21.73 | 14.65 | 11.05 | 8.87 | 7.41 | 6.36 | 5.57 | 4.96 | 4.47 | 4.06 | 3.73 | 3.44 | 3.20 | 2.98 |

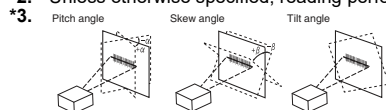
# V430-F

## Ratings and Specifications

| V430-F                               |                                  | V430-F□□□□03M-□□□                                                                                                                                                       | V430-F□□□□12M-□□□                                                       | V430-F□□□□50C-□□□      |
|--------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------|
| Symbolologies *1                     | 1D Symbolologies                 | Code 39, Code 128, BC412, Interleaved 2 of 5, UPC/EAN, Codabar, Code 93, Pharmacode, PLANET, Postnet, Japanese Post, Australian Post, Royal Mail, Intelligent Mail, KIX |                                                                         |                        |
|                                      | 2D Symbolologies                 | Data Matrix (ECC 0-200), QR Code, Micro QR Code, Aztec Code, DotCode                                                                                                    |                                                                         |                        |
|                                      | Stacked Symbolologies            | PDF417, MicroPDF417, GS1 Databar (Composite and Stacked)                                                                                                                |                                                                         |                        |
| Reading Performance *2               | Number of Reading Digits         | No Upper Limit (depending on bar width and reading distance)                                                                                                            |                                                                         |                        |
|                                      | Aiming Light                     | Two Blue LEDs                                                                                                                                                           |                                                                         |                        |
|                                      | Illumination                     | Inner LEDs: Four White and Four Red (Wavelength: 625 nm)                                                                                                                |                                                                         |                        |
|                                      |                                  | Outer LEDs:<br>8 Red or White                                                                                                                                           | Outer LEDs:<br>8 Red or White; 24 Red or White for<br>V430-F□□□□12M-R□□ | Outer LEDs:<br>8 White |
|                                      | Reading Distance / Field of View | Refer to <i>Field of View Charts</i> for details.                                                                                                                       |                                                                         |                        |
|                                      | Pitch Angle (α) *3               | ±30°                                                                                                                                                                    |                                                                         |                        |
|                                      | Skew Angle (β) *3                | ±30°                                                                                                                                                                    |                                                                         |                        |
|                                      | Tilt Angle (γ) *3                | ±180°                                                                                                                                                                   |                                                                         |                        |
| Image Capture                        | Focus                            | Liquid Lens Autofocus or Fixed Focus (Wide = 5.2 mm, Medium = 7.7 mm, Narrow = 16 mm, L = 16 mm)                                                                        |                                                                         |                        |
|                                      | Resolution                       | 752 (H) x 480 (V)                                                                                                                                                       | 1280 (H) x 960 (V)                                                      | 2592 (H) x 1944 (V)    |
|                                      | Color / Monochrome               | Monochrome CMOS                                                                                                                                                         | Monochrome CMOS                                                         | Color CMOS             |
|                                      | Shutter                          | Global Shutter                                                                                                                                                          | Global Shutter                                                          | Rolling Shutter        |
|                                      | Frames per Second                | 60 fps                                                                                                                                                                  | 42 fps                                                                  | 5 fps                  |
|                                      | Exposure                         | 50 to 100,000 μs                                                                                                                                                        |                                                                         |                        |
| Image Logging                        |                                  | FTP                                                                                                                                                                     |                                                                         |                        |
| Trigger                              |                                  | External Trigger (Edge or Level), Communication Trigger (Ethernet, RS-232C)                                                                                             |                                                                         |                        |
| I/O Specifications                   | Input Signals                    | 3 Signals: Bi-Directional, Optoisolated, 4.5-28 V rated (10 mA @ 28 VDC)                                                                                                |                                                                         |                        |
|                                      | Output Signals                   | 3 Signals: Bi-Directional, Optoisolated, 1-28V rated (Current limited by user, < 100 mA at 24VDC)                                                                       |                                                                         |                        |
| Communication                        | Connectivity                     | RS-232C, Ethernet TCP/IP, EtherNet/IP, PROFINET                                                                                                                         |                                                                         |                        |
|                                      | Ethernet Specifications          | 100BASE-TX / 10BASE-T                                                                                                                                                   |                                                                         |                        |
| Indicator LEDs                       |                                  | PASS (Green), TRIG (Amber), MODE (Amber), LINK (Amber), FAIL (Red), PWR (Green)                                                                                         |                                                                         |                        |
| Power Supply Voltage                 |                                  | DC24V (Voltage Range: DC5~30V for Standard Light Model, DC10~30V for Ring Light Model) *5                                                                               |                                                                         |                        |
| Current Consumption                  |                                  | 0.18 A at 24 VDC (max.)                                                                                                                                                 |                                                                         |                        |
| Environmental Immunity *4            | Operating Temperature            | 0° to 45° C                                                                                                                                                             |                                                                         |                        |
|                                      | Ambient Atmosphere               | No Corrosive Gases                                                                                                                                                      |                                                                         |                        |
|                                      | Storage Temperature              | -40° to 75° C                                                                                                                                                           |                                                                         |                        |
|                                      | Humidity (Operating and Storage) | 5% to 95% (Non-Condensing)                                                                                                                                              |                                                                         |                        |
|                                      | Destructive Vibration Resistance | Sine Vibration: 10 Hz to 55 Hz, 0.35 mm displacement, 20 cycles/axis. Random Vibration: 20 Hz to 2000 Hz, 0.02G <sup>2</sup> /Hz for 30 minutes                         |                                                                         |                        |
|                                      | Shock Resistance                 | 50G, 11mS                                                                                                                                                               |                                                                         |                        |
|                                      | Degree of Protection             | IP65 and IP67 per IEC 60529                                                                                                                                             |                                                                         |                        |
| Weight                               | Main Body Only                   | Approx. 68 g                                                                                                                                                            |                                                                         |                        |
|                                      | Packaging Weight                 | Approx. 174 g (including packing)                                                                                                                                       |                                                                         |                        |
| Dimensions                           | Main Body Dimensions             | 44.5 (W) × 44.5 (D) × 25.4 (H) mm                                                                                                                                       |                                                                         |                        |
|                                      | Packaging Dimensions             | 170 (W) × 117 (D) × 86 (H) mm                                                                                                                                           |                                                                         |                        |
| Accessories                          |                                  | ReadMeFirst, CE Compliance Sheet                                                                                                                                        |                                                                         |                        |
| LED Safety Standard                  |                                  | IEC 62471-1: 2006 Risk-Exempt Group                                                                                                                                     |                                                                         |                        |
| EMC Standards - ITE (CODE READER)    |                                  | FCC 47 CFR PART 15 Subpart B, ICES-003, EN 55024, EN 55032, EN 55035, KN32, KN35, CNS13438                                                                              |                                                                         |                        |
| Safety Standards - ITE (CODE READER) |                                  | UL 62368-1, UL 60950-1, IEC 62471-1, CAN/CSA C22.2, IS 13252                                                                                                            |                                                                         |                        |
| Regulatory Marks - ITE (CODE READER) |                                  | FCC, UL, cUL (Canada), CE (EU), BIS (India), BSMI (Taiwan), KC (S. Korea), RCM (Australia/NZ)                                                                           |                                                                         |                        |
| Materials                            | Case                             | Aluminum                                                                                                                                                                |                                                                         |                        |
|                                      | Reading Window                   | Acrylic                                                                                                                                                                 |                                                                         |                        |
| Software                             |                                  | WebLink                                                                                                                                                                 |                                                                         |                        |

\*1. These symbolologies are supported based on Omron's read capability validation standard. Omron recommends that validation be performed for each application.

\*2. Unless otherwise specified, reading performance is defined with center of field of view, angle R=∞.



\*4. In an electrically noisy environment, use only the V430-F in combination with a noise filter cable (V430-W□F-□M) to ensure proper operation.

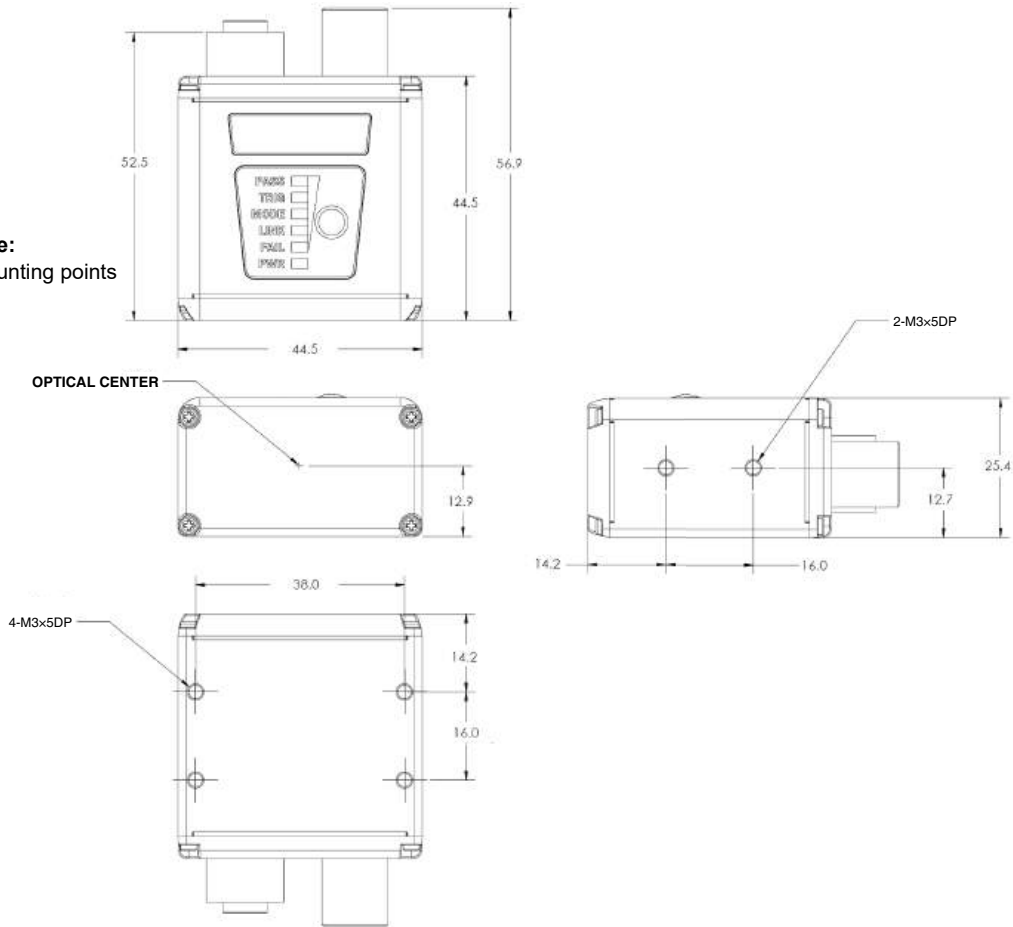
\*5. UL certification rating is DC24V. Maximum ripple is 200 mV p-p.

Product Dimensions

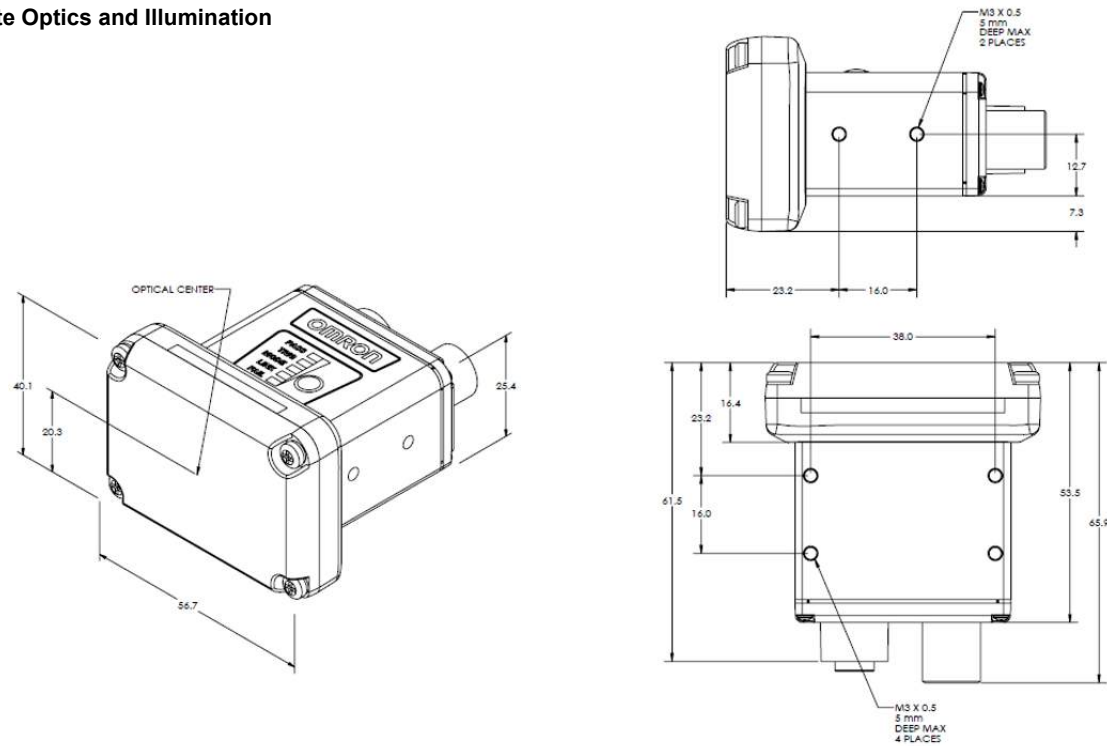
V430-F



Recommended torque:  
0.5 - 1.0NM for M3 mounting points

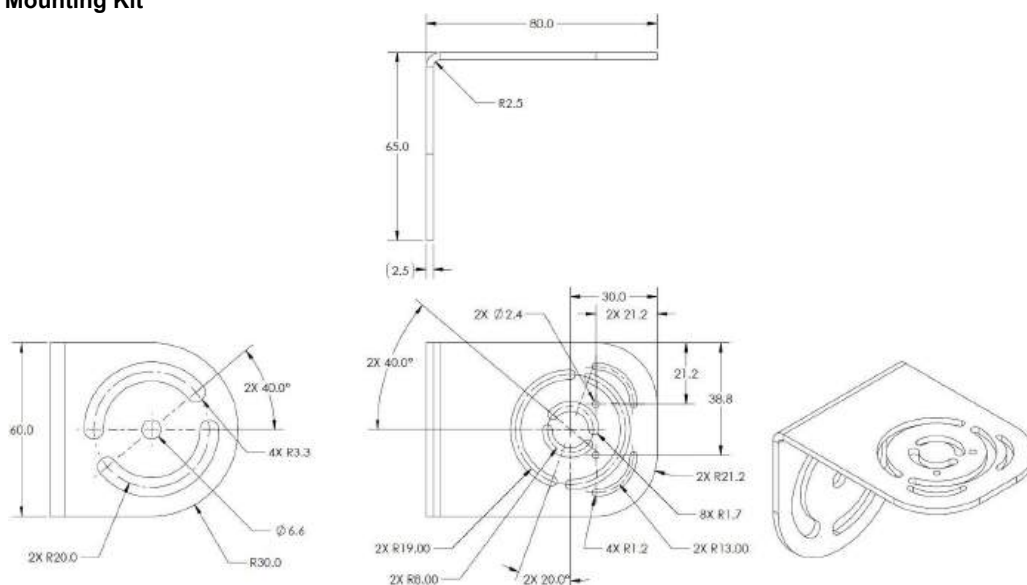


V430-F with Alternate Optics and Illumination



## Mounting Information

## L Bracket Adjustable Angle Mounting Kit V430-AM0



- L Bracket, SUS304 (1)
- M3 X 6mm SS Phillips screws (2)
- M2 X 6mm SS Phillips screws (2)
- Flat Washer, SS, size M3 (2)
- Flat Washer, SS, size M2 (2)

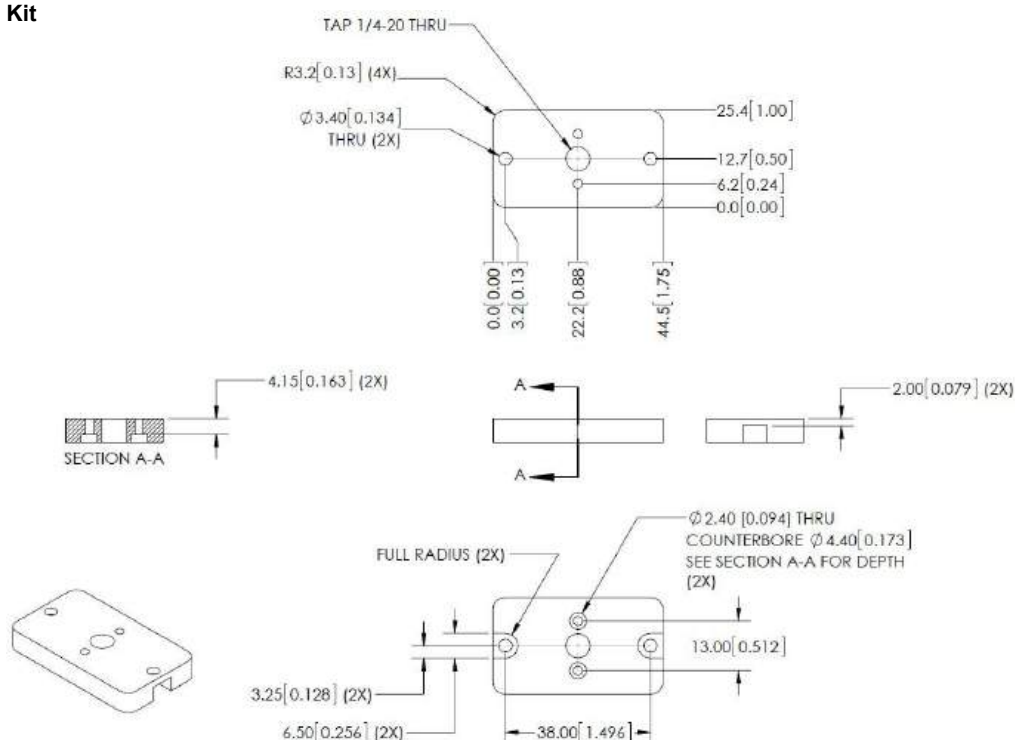
- Phillips torque driver

**Installation Notes:** For V430 cameras, the M2 screws and washers are not necessary to use. Use only the M3-sized hardware. The V430 product can be mounted in two different orientations using this L bracket by mounting to the bottom or the side of the camera.





### 1/4-20 Camera Mounting Block Kit V430-AM1



#### Kit Contents:

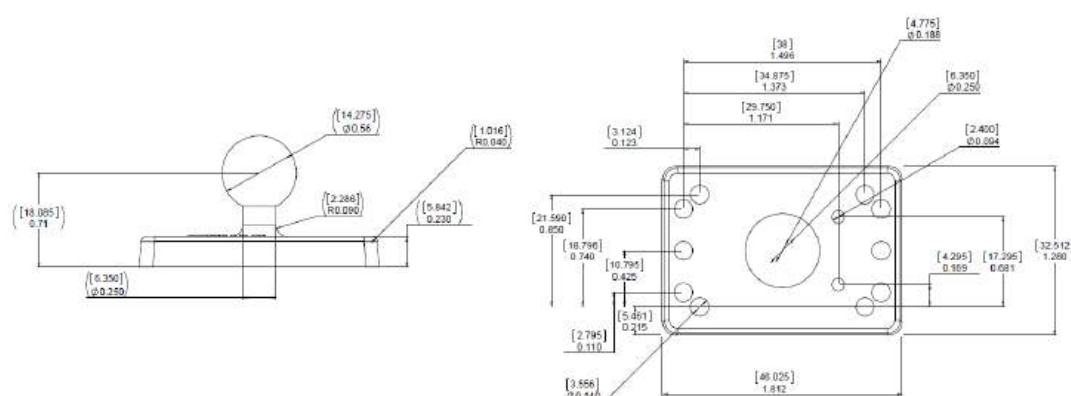
- Mounting Block, Aluminum alloy (1)
- M3 X 6mm SS Socket screws (2)
- M2 X 8mm SS Socket screws (2)

#### Recommended Tools and Hardware (not included):

- Torque wrench

**Installation Notes:** For V430 cameras, the M2 screws are not necessary to use. Use only the M3-sized hardware.

### 4" (102 mm) Ram Mount Stand V430-AM2



#### Kit Contents:

- Diamond Ball Base (1)
- Double Socket Arm (1)
- Base Plate (1)
- M2 X 10mm SS Phillips screws (2)
- M3 X 10mm SS Phillips screws (4)
- M4 X 10mm SS Phillips screws (2)
- Split Washer, SS, size #3 (2)
- Split Washer, SS, size M3 (4)
- Split Washer, SS, size M4 (2)

#### Recommended Tools and Hardware (not included):

- Phillips torque driver

**Note:** Dimensions for the diamond ball base and the double socket arm can be found at the manufacturer's website at:

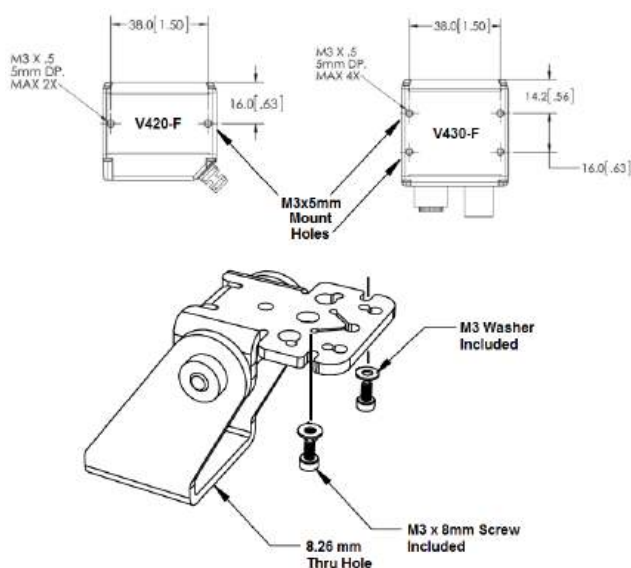
Diamond ball base: <https://www.rammount.com/part/RAM-A-238U>

Double socket arm: <https://www.rammount.com/part/RAM-A-201U-B>

**Installation Notes:** For V430 cameras, the M2 and M4 screws and #3 and M4 washers are not necessary to use. Use only the M3-sized hardware. The V430 product can be mounted in two different orientations using this mounting system by mounting the base plate to the bottom or the side of the camera.

# V430-F

## APG Pan and Tilt Camera Mount V430-AM3



### Kit Contents:

- APG Mount, Stainless steel (1)
- Flat Washers, SS, size M3 (2)
- Flat Washers, SS, oversized (2)
- M2 X 8mm SS Socket screws (2)
- M3 X 8mm SS Socket screws (2)

### Recommended Tools and Hardware (not included):

- Torque wrench

**Note:** Dimensions for the base and arm can be found on the manufacturer's website at: [apgvision.com](http://apgvision.com). For V430 cameras, the M2 screws and oversized washers are not necessary to use. Use only the M3-sized hardware.

## Nylon Screw and Washer Electrical Isolation Kit V430-AM4



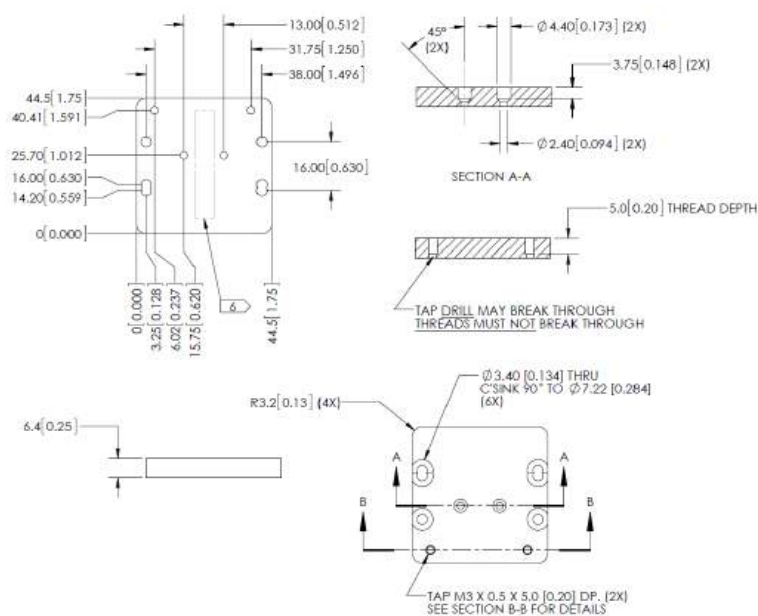
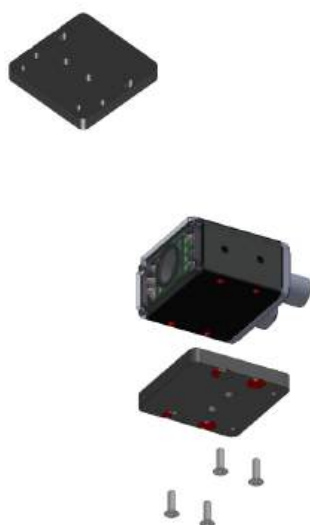
### Kit Contents:

- M3 X 16mm Phillips nylon screw (4)
- Nylon Washer, size M3, 1.6mm thick
- Nylon Washer, size M3, 3.6mm thick

### Recommended Tools and Hardware (not included):

- Torque wrench

### MS-4 / MINI to V/F4XX-F Adapter Plate V430-AM5



#### Kit Contents:

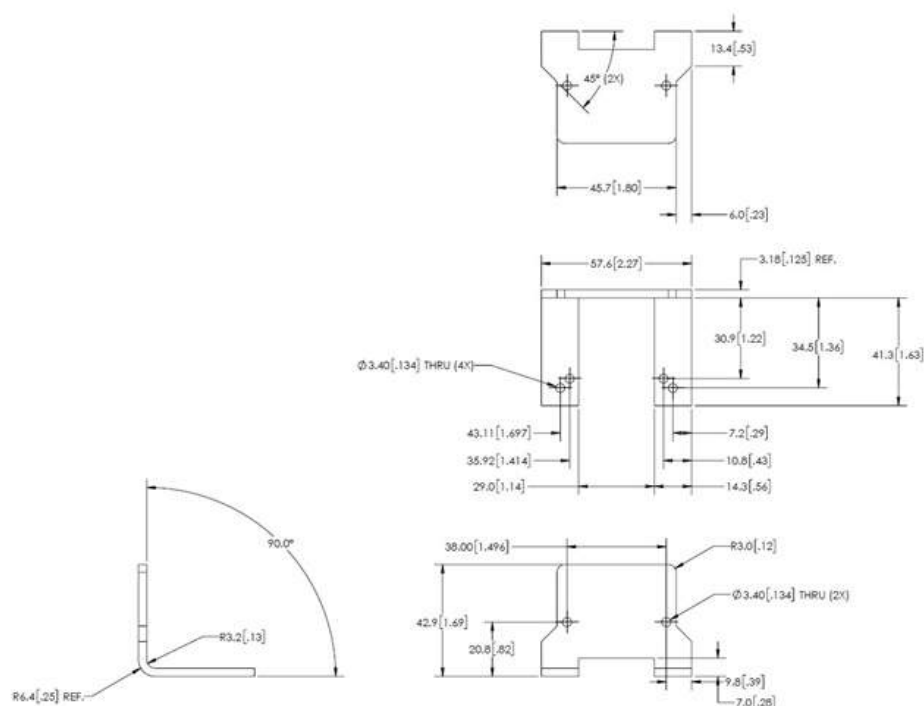
- Adapter Plate , Aluminum alloy (1)
- M3 X 10mm SS Socket screws (4)
- M2 X 6mm SS Phillips screws (2)

#### Recommended Tools and Hardware (not included):

- Torque wrench

**Installation Notes:** For V430 cameras, the M2 screws are not necessary to use. Use only the M3-sized hardware.

### Smart Ring Light to V/F4XX-F Mounting Bracket V430-AM6



## V430-F

### Kit Contents:

- Mounting Bracket, Aluminum alloy (1)
- M3 X 6mm Phillips screws (2) [mounts the ring light to camera]

### Recommended Tools and Hardware (not included):

- Phillips torque driver
- M3 X L screws [mount camera to bracket; where L = mounting surface thickness + 6]

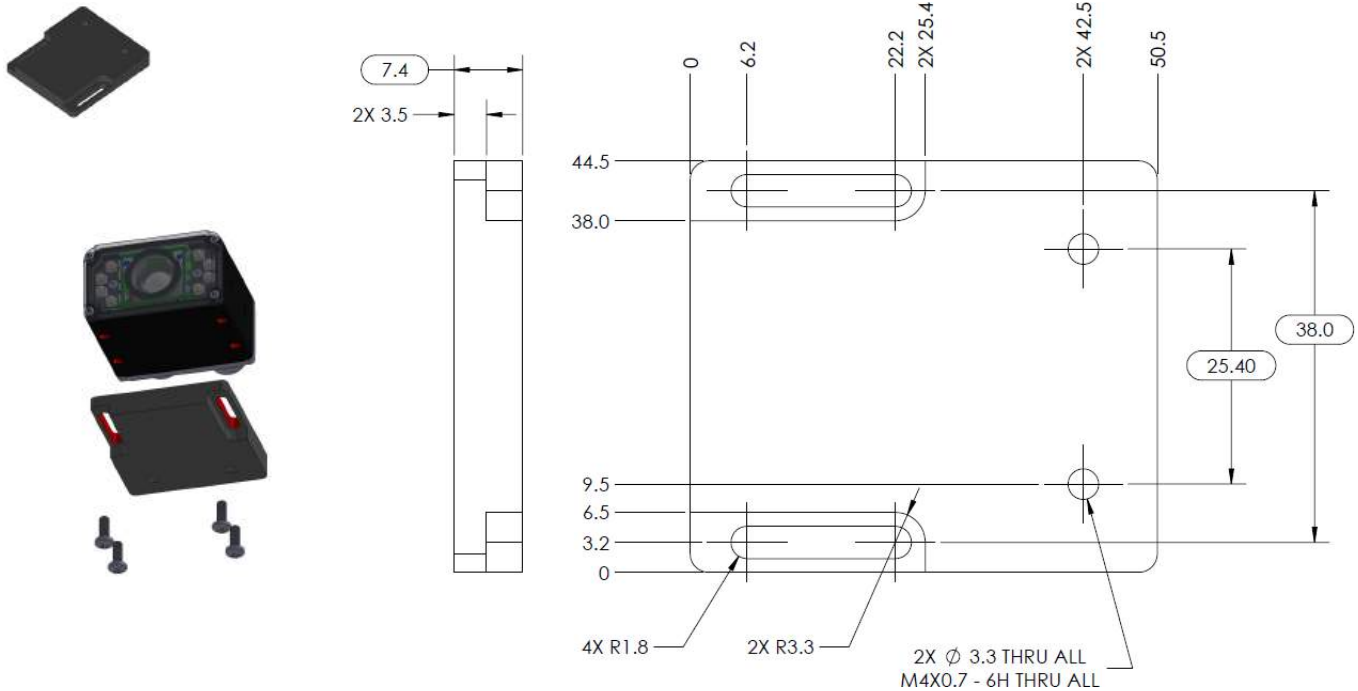
**Installation Note:** The Smart Ring Light Mounting Bracket can be used with the R-60 and R-70 series Smart Ring Lights. The R-60 series Ring Light will utilize the inner holes of the pronged half of the bracket, and the R-70 series will utilize the outer holes. The R-100 series Ring Lights are not compatible with this bracket.



Bracket Assembly with 60 Series Smart Ring light

Bracket Assembly with 70 Series Smart Ring light

### QX / Vision HAWK to V/F4XX-F Adapter Plate V430-AM7



### Kit Contents:

- Adapter Plate, Nylon (1)
- M3 X 8mm SS Phillips screws (2)
- M3 X 8mm Nylon Phillips screws (2)
- M4 X 10mm SS Phillips screws (2)
- M4 X 16mm Nylon Phillips screws (2)
- Nylon Washer, size: M4, 1.5mm thickness (4)
- Nylon Washer, size: M4, 3.2mm thickness (4)

### Recommended Tools and Hardware (not included):

- Phillips torque driver

**Installation Notes:** For V430 cameras, the M4 screws and washers are not necessary to use. Use only the M3-sized hardware.

## Optics Information

**General notes:** See optics and lighting accessory guide for detailed installation instructions.

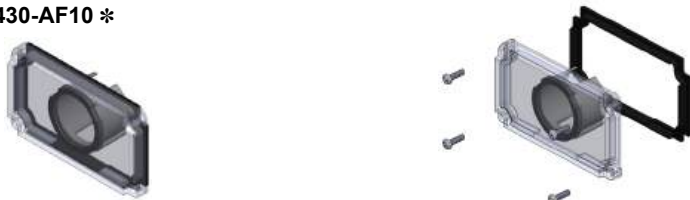
**Optics maintenance:**

Wipe optics options with a lens cleaning cloth or an airbrush. A cloth dampened with water can be used to remove more stubborn contaminants. ESD Safe Window - Wiping the ESD window with a lens cleaning cloth has been shown to not impact the surface resistance when wiped up to 500 times (1 wipe = 1 back and forth wipe across the window).

Never use paint thinners or other organic solvents to clean the surfaces of the products.

**Front Window Installation Kit**

**V430-AF10 \***



**Purpose:** Replaces the standard front window of V430 camera models in case of damage.

**Kit Contents:**

- Window (1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

**Recommended Tools (not included):**

- Phillips torque driver

**Installation Note:** Apply a torque of 1.0 in./lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

**Diffuser Installation Kit**

**V430-AF11 \***



**Purpose:** To create contrast between specular and non-specular surfaces. Diffusion can be useful when imaging textured codes on mirror like surfaces or reflective DPM marks on textured surfaces.

**Kit Contents:**

- Diffuser Window (1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

**Recommended Tools (not included):**

- Phillips torque driver

**Installation Note:** Apply a torque of 1.0 in./lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

**Polarizer Installation Kit**

**V430-AF12 \***



**Purpose:** To reduce glare when imaging specular surfaces. Cross Polarization can be useful when imaging codes on glossy surfaces or DPM marks on polished metal substrates.

**Kit Contents:**

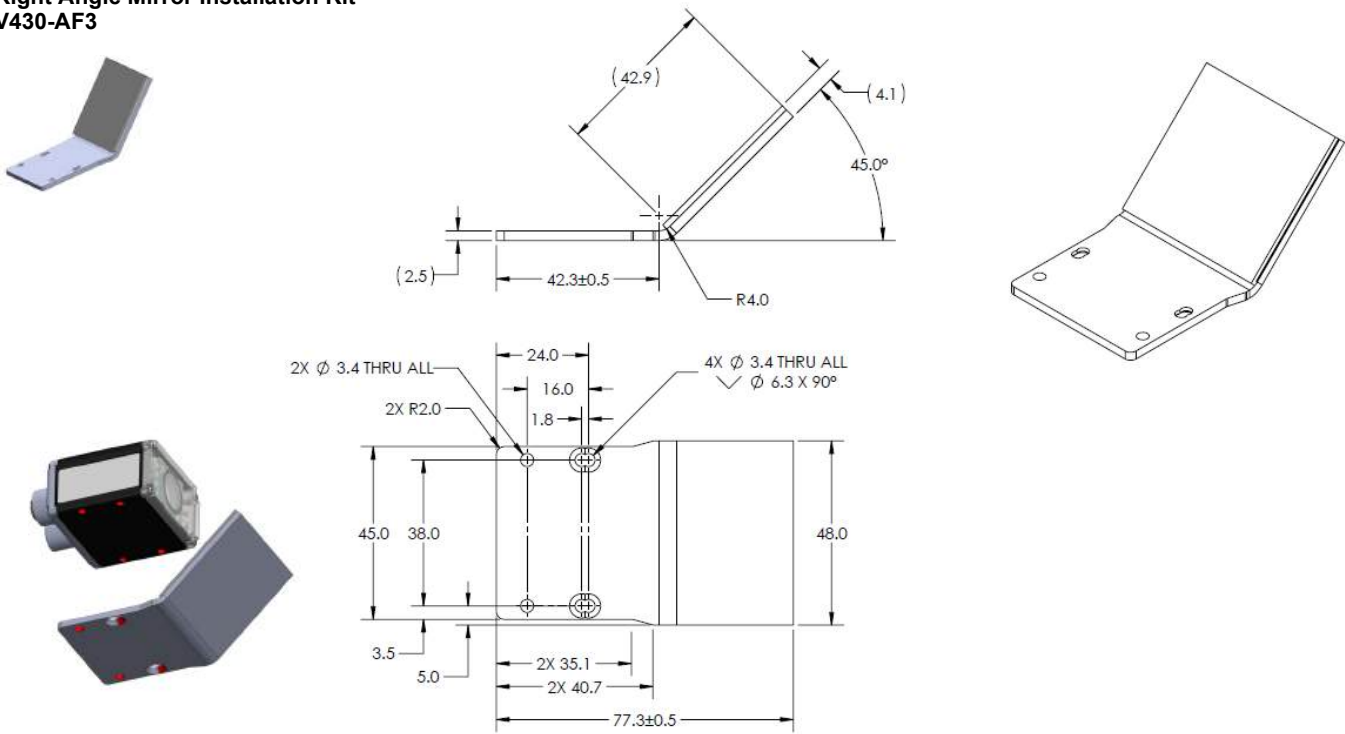
- Polarizer Window (1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

**Recommended Tools (not included):**

- Phillips torque driver

**Installation Note:** Apply a torque of 1.0 in./lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

Right Angle Mirror Installation Kit  
V430-AF3



**Purpose:** Redirects the imaging path of the camera by 90 degrees.

**Kit Contents:**

- Right angle mirror bracket, Aluminum {bracket} and glass [mirror] (1)

**Recommended Tools and Fasteners (not included):**

- M3 X L screws (2) [where L = mounting surface thickness + 2.5]
- M3 x 6 Flat head screws (2)
- Phillips torque driver

**Installation Note:** Apply a torque of 4.4 - 8.8 in. lbs. (0.5 - 1.0 NM) to the screws during installation.

YAG Laser Filter Window  
V430-AF4



**Window Material**  
Polymer

**Laser Type**  
Argon  
Broadband  
KTP  
Nd:YAG

**Protection**  
OD 6+ @ 200-532 nm  
OD 4+ @ 850-879 nm  
OD 5+ @ 900-1070 nm

**Purpose:** The V430-AF4 YAG Laser Filter is used to block a range of wavelengths from a variety of laser types from being seen by the MicroHAWK camera that will either disrupt the cameras view of the object, or damage the MicroHAWK sensor.

The table shows the laser types that are handled by the V430-AF4 Filter window, as well as the level of protection they provide at the various wavelengths.

**Note:** Optical Density (OD) is a measure of the attenuation of energy passing through a filter. The higher the OD value, the higher the attenuation and the greater the protection level.

OD 4 blocks 99.99% of the laser energy.

OD 5 blocks 99.999% of the laser energy (YAG).

OD 6 blocks 99.9999% of the laser energy (Argon, KTP)

**Kit Contents:**

- YAG filter (1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

**Recommended Tools and Fasteners (not included):**

- Phillips torque driver

**Installation Note:** Apply a torque of 1.0 in/lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

**ESD-Safe Window  
V430-AF5**

**Purpose:** An ESD event occurs when an electrostatic charge rapidly transfers between two objects. This transfer is usually caused when two objects with a notable potential difference in electrical charge contact each other. However, ESD events can also happen when two objects close to one another create a highly charged electrostatic field.

ESD safety precautions are extremely important in the electronics and semiconductor industries where sensitive components can be damaged even by a discharge of a mere 20 volts. Less sensitive components may still be susceptible, and cumulative discharges can create long-term problems affecting the functionality and performance of electronic components.

The MicroHAWK V430-AF5 ESD-Safe window is designed with an ESD coating on the exterior surface to prevent static discharge between the reader or smart camera when the camera is deployed close to the component surface. The antistatic coating offers a resistivity of  $\leq 1.0 \times 10^9 \Omega/\text{sq}$  to prevent these electrostatic discharges.

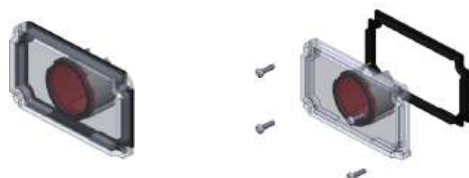
**Kit Contents:**

- ESD Safe Window (1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

**Recommended Tools and Fasteners (not included):**

- Phillips torque driver

**Installation Note:** Apply a torque of 1.0 in/lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

**Red Filter and Blue Filter Installation Kits****Red Filter Installation Kit  
V430-AF6****Blue Filter Installation Kit  
V430-AF7**

**Purpose:** The Red Filter (V430-AF6), and Blue Filter (V430-AF7) are used to turn MicroHAWKs equipped with white lights into units that emit red or blue light. The filters limit passage of wavelengths -- other than red when using the red filter, or other than blue when using the blue filter -- to the sensor and reduce the response of an opposing color.

**Kit Contents:**

- Filter Window (1) [red or blue]
- Window Gasket (1)
- 0-80 Phillips head screws (4)

**Recommended Tools (not included):**

- Phillips torque driver

**Installation Note:** Apply a torque of 1.0 in/lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.



## Ring Light Front Installation Kit V430-AF0R



**Purpose:** To replace the front window should it become scratched or damaged. For use on units equipped with the ring light only.

### Kit Contents:

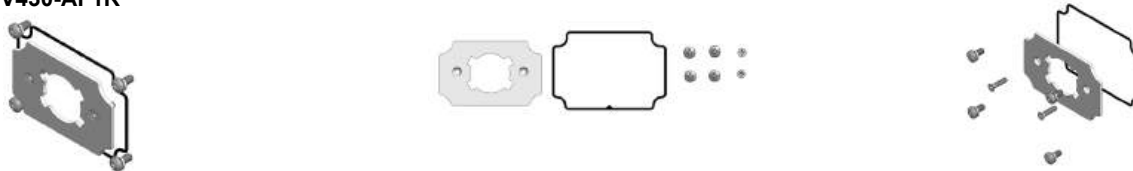
- Ring Light Window (1)
- Window gasket (1)
- #4-40 Phillips head screws with split lock washer (4)

### Recommended Tools:

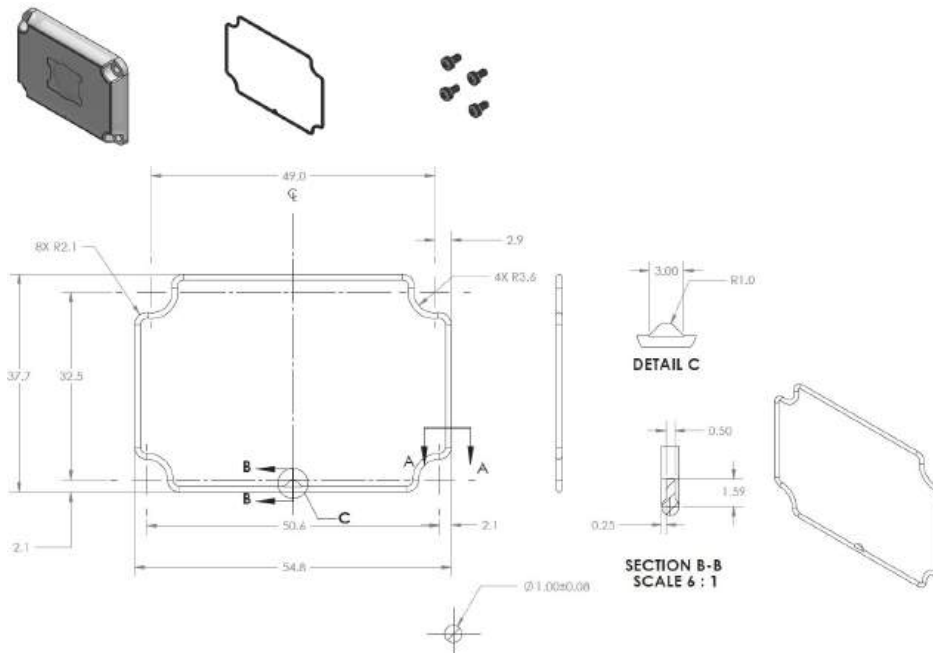
- Phillips torque driver

**Installation Notes:** Apply a torque of 2.9 in. lbs. (0.33 Nm max) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

## Ring Light Diffuser Installation Kit V430-AF1R



## Kit – Ring Light Window with Heavy Diffuser V430-AF1RH



**Purpose:** To create contrast between specular and non-specular surfaces. Diffusion can be useful when imaging textured codes on mirror like surfaces or reflective DPM marks on textured surfaces. For use on units equipped with the ring light only.

### Kit Contents:

- Ring Light Diffuser (1)
- Window gasket (1)
- #4-40 Phillips head screws with split lock washer (4)
- #2-56 Phillips head screws (2)

### Recommended Tools:

- Phillips torque driver

**Installation Notes:** Apply a torque of 2.9 in. lbs. (0.33 Nm max) to the #4-40 screws during installation to maintain gasket function and reduce risk of damaging the window. Apply a torque of 1.9 in. lbs. (0.21 Nm max) to the #2-56 screws during installation to reduce risk of damaging the diffuser.



### Ring Light Polarizer Installation Kit V430-AF2R



**Purpose:** To reduce glare when imaging specular surfaces. Cross Polarization can be useful when imaging codes on glossy surfaces or DPM marks on polished metal substrates. For use on units equipped with the ring light only.

#### Kit Contents:

- Ring Light Window with Polarizer (1)
- Window gasket (1)
- #4-40 Phillips head screws with split lock washer (4)
- #2-56 Phillips head screws (2)

#### Recommended Tools:

- Phillips torque driver

**Installation Notes:** Apply a torque of 2.9 in. lbs. (0.33 Nm max) to the #4-40 screws during installation to maintain gasket function and reduce risk of damaging the window. Apply a torque of 1.9 in. lbs. (0.21 Nm max) to the #2-56 screws during installation.

# V430-F

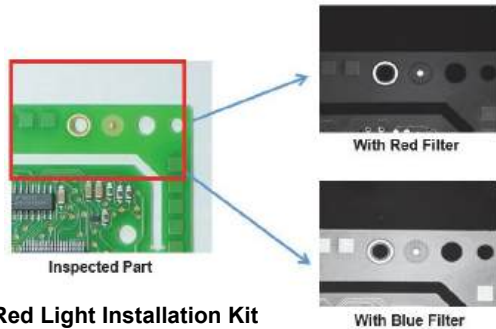
## Lighting Information

**General Notes:** See optics and lighting accessory guide for detailed installation instructions.

### Red, White, Blue, and IR Light Installation Kits

**Purpose:** MicroHAWK light color changes can be accomplished using the F430-F Red, Blue, White, or IR LED kits. Red or blue LED kits replace or change the color of the outer LED boards. Using a specific color can enhance the response of that color or reduce the response of an opposing color. White LED kits replace or provide full spectrum illumination for applications using a chromatic sensor inspecting colors. IR LED kits replace or create contrast on features that have a single hue or to enhance the response of black features and reduce the response of colors.

A typical example of how to use different color filters or LEDs with monochrome cameras is shown below. The emitted color is matched with the color of the part that needs to be emphasized or de-emphasized, which creates sufficient contrast for the part to be inspected or for the symbol to be decoded. In the example below, the red filter makes the reddish copper look bright, while the green circuit board looks dark. The blue filter produces the opposite effect.



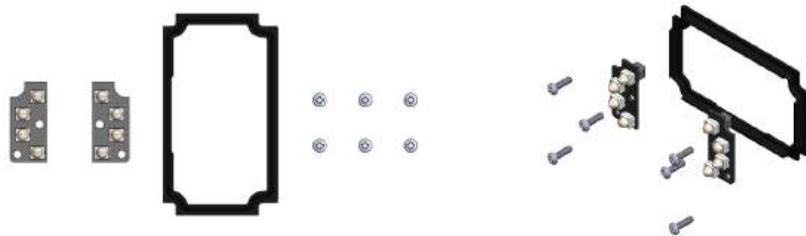
#### Red Light Installation Kit V430-ALR

#### White Light Installation Kit V430-ALW

#### Blue Light Installation Kit V430-ALB

#### IR Light Installation Kit V430-ALI

#### High Bright Red Light Installation Kit V430-ALRH



#### Kit Contents:

- LED Boards Kit (1) [Red, Blue, White or IR]
- Window gasket (1)
- 0-80 Phillips head screws (6)

#### Recommended Tools:

- Phillips torque driver
- Fine tip tweezers

**Installation Notes:** Apply a torque of [1.0 in. lbs. (0.11 Nm max.)] screws during installation to maintain gasket function and reduce risk of damaging the product.

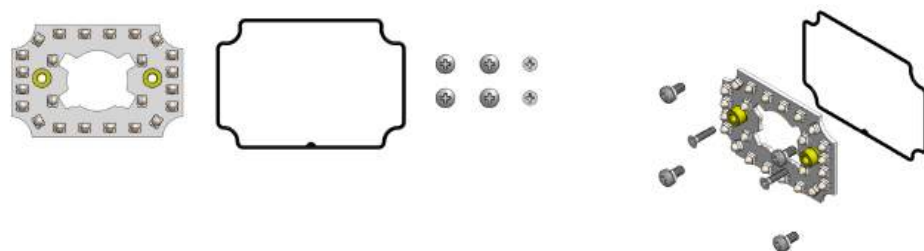
#### Red Ring Light Installation Kit V430-ALRR

#### White Ring Light Installation Kit V430-ALWR

#### Blue Ring Light Installation Kit V430-ALBR

#### IR Ring Light Installation Kit V430-ALIR

#### High Bright Red Ring Light Installation Kit V430-ALRRH



#### Kit Contents:

- LED Boards Kit (1) [Red, Blue, White or IR]
- Window gasket (1)
- #4-40 Phillips head screws with split lock washer (4)
- #2-56 Phillips head screws (2)

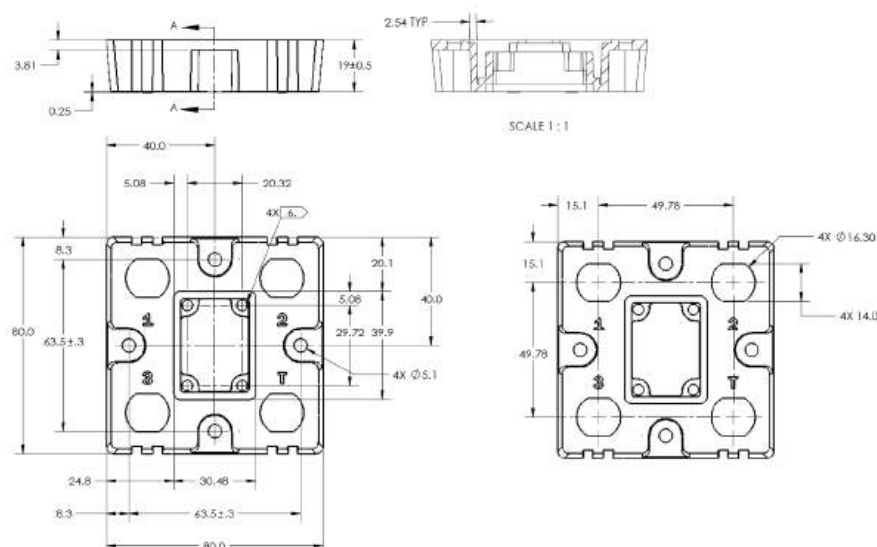
#### Recommended Tools:

- Phillips torque driver
- Fine tip tweezers

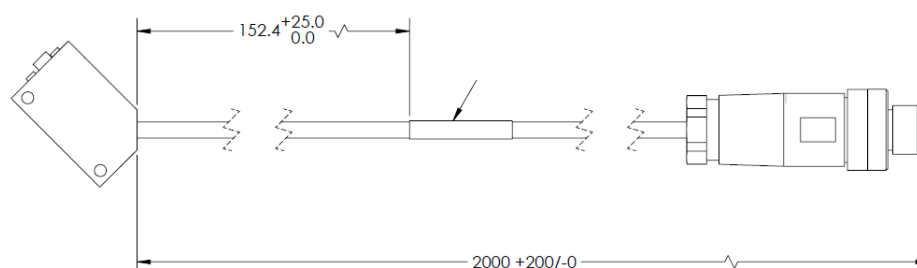
**Installation Notes:** Apply a torque of 2.9 in. lbs. (0.33 Nm max) to the #4-40 screws during installation to maintain gasket function and reduce risk of damaging the window. Apply a torque of 1.9 in. lbs. (0.21 Nm max) to the #2-56 screws during installation to reduce risk of damaging the diffuser. For use on units equipped with the ring light only.

## Wiring Options

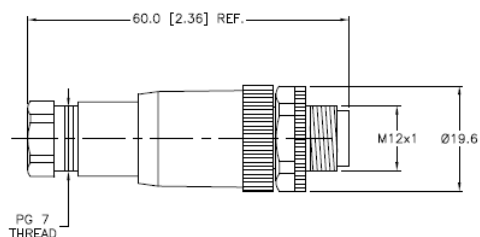
### QX-1 Interconnect Module – Power, Trigger, Smart Light Control Breakout 98-000103-02



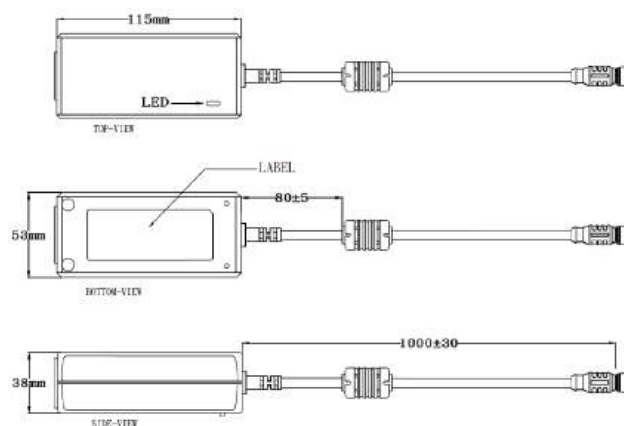
### QX-1 Photo Sensor, M12 4-Pin Plug, NPN – 2 Meters – Light ON / Dark ON 99-9000016-01



### QX-1 Field-Wireable M12 4-Pin Plug for Any Trigger Source or Photo Sensor – Screw Terminals 98-9000239-01



### Power Supply, 100-240VAC, +24VDC, M12 12-Pin Socket – 1 Meter – U.S. / Euro Plug 97-000012-01

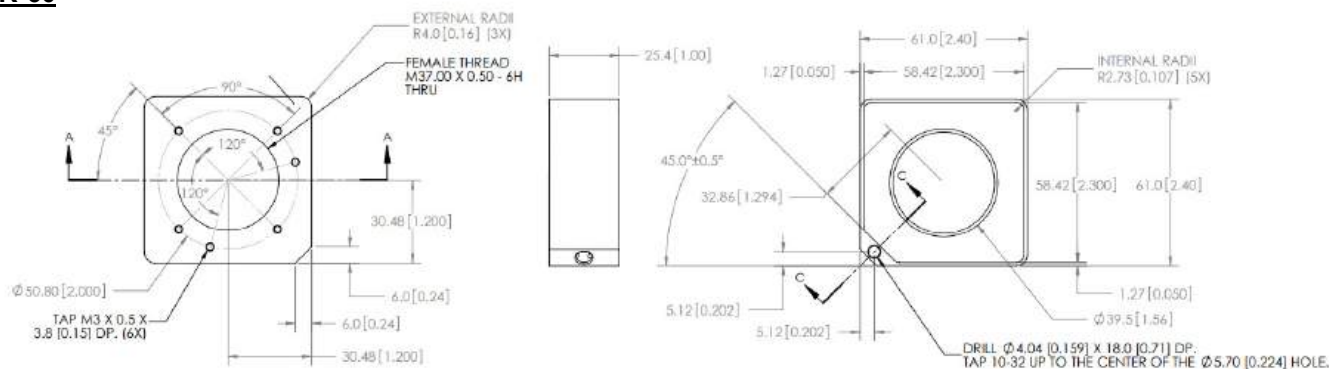


## Omron Microscan Smart Light Series – Integrated Power and Strobe Control Module

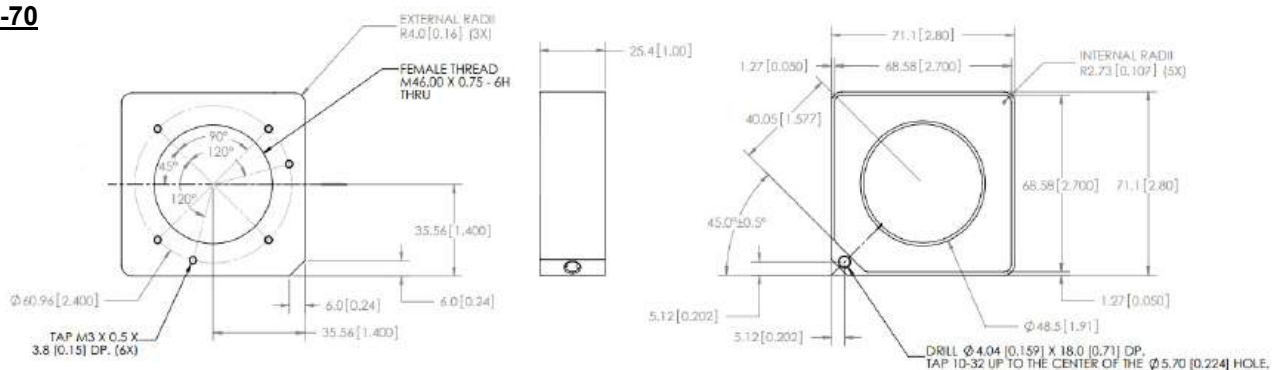
See Omron Microscan Smart Light Offering – Ring, DOAL, Large Area Lighting



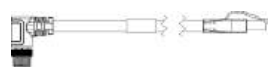
### R-60



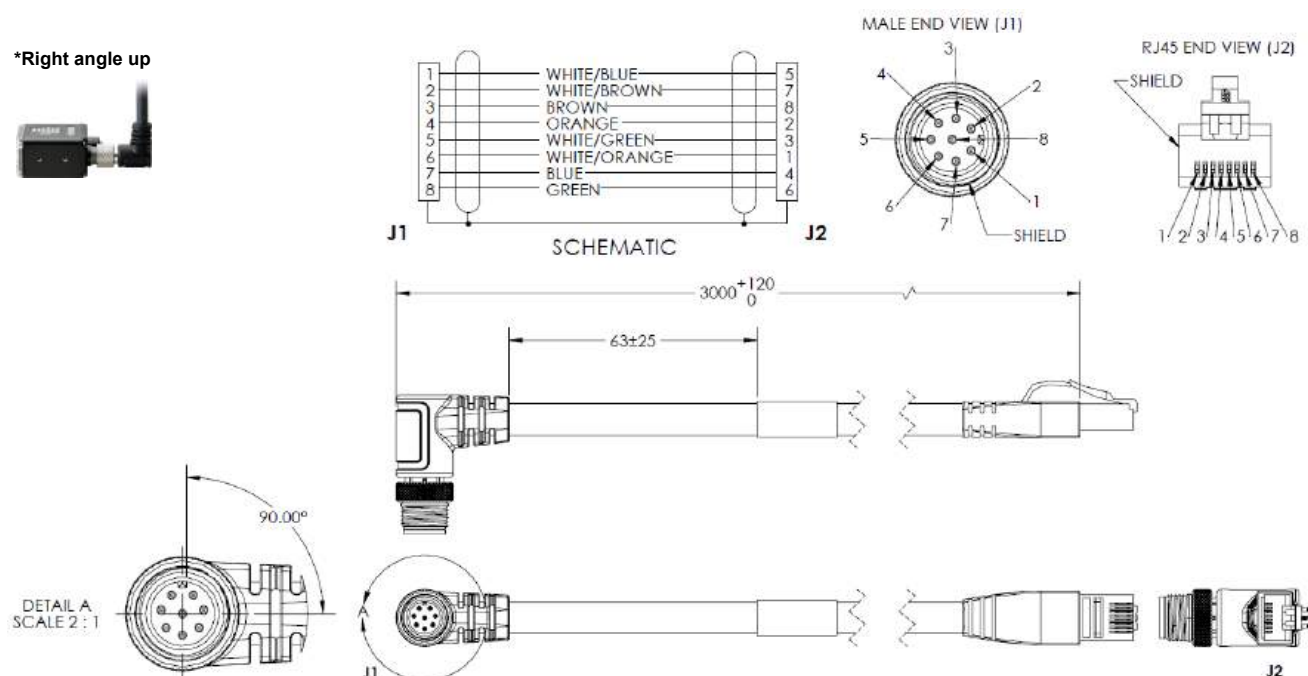
### R-70



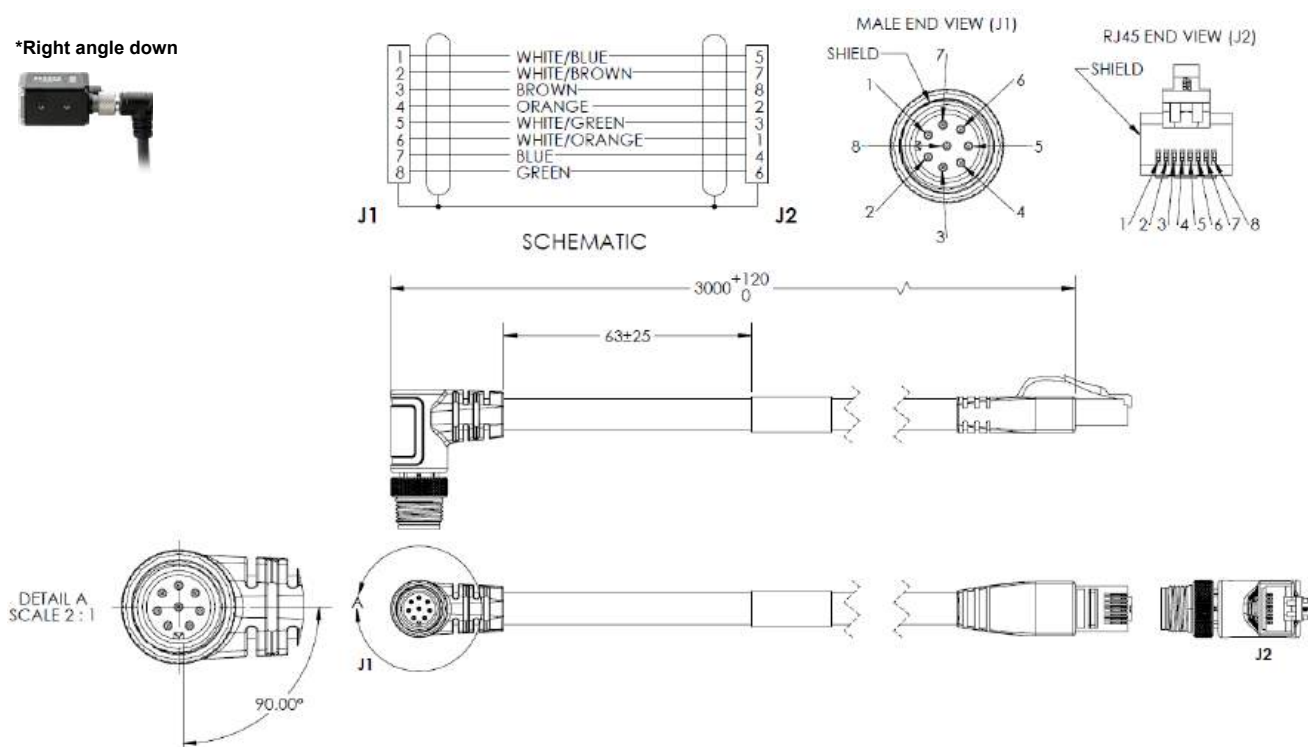
**Ethernet Communication Cables – Right Angle M12 Connectors – 3 Meters**  
**M12 Plug on Camera to RJ45 Connector**  
**V430-WELU-3M (Right Angle Up)\***  
**V430-WELD-3M (Right Angle Down)\***



**\*Right angle up**



**\*Right angle down**



# V430-F

Camera to QX-1 Interconnect Cables – 1 Meter, 3 Meters, or 5 Meters

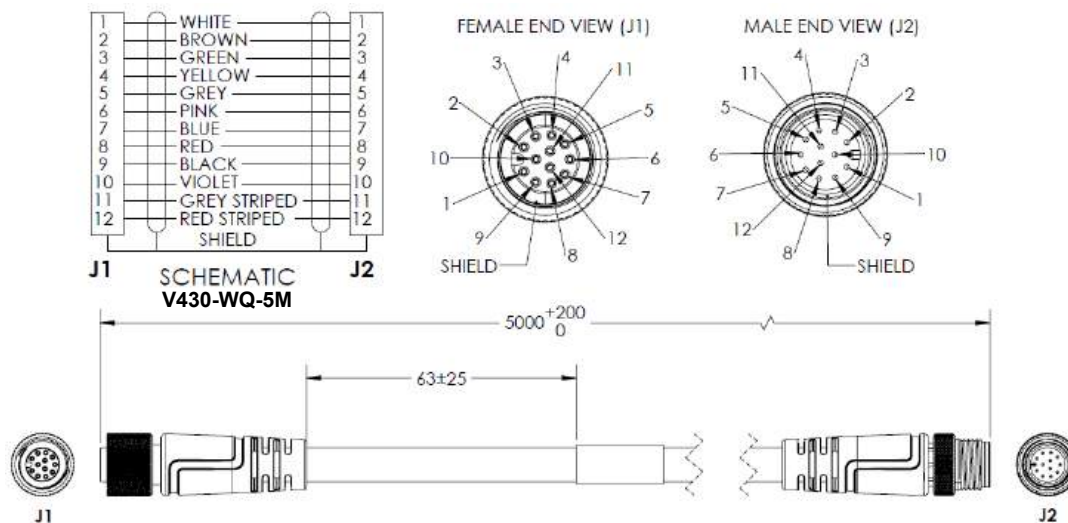
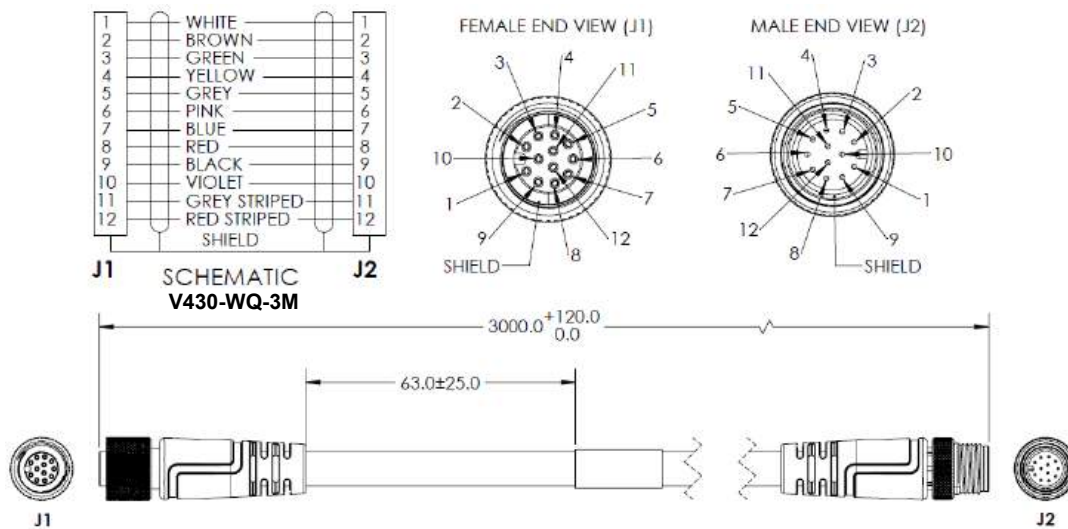
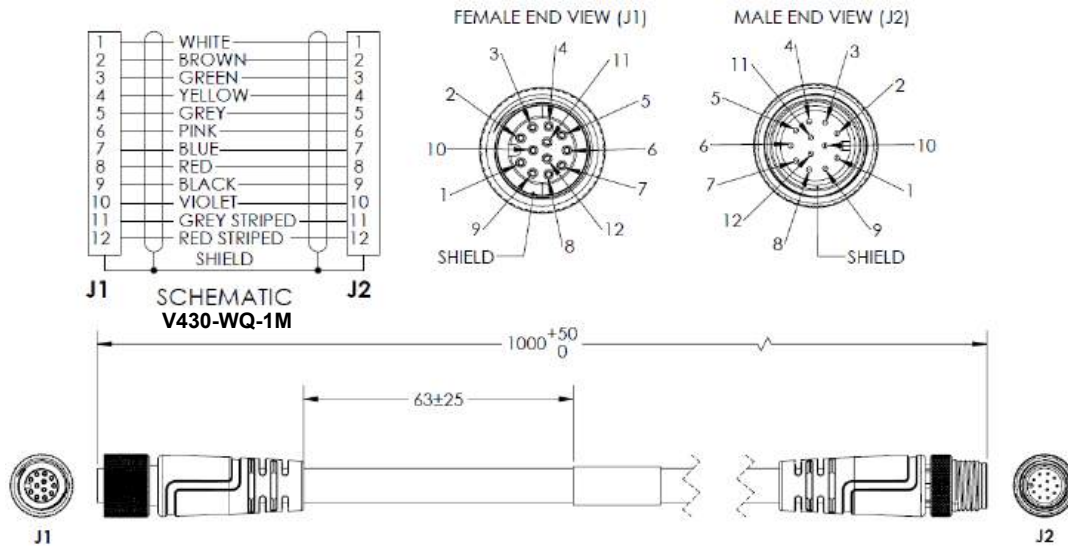
M12 Socket to M12 Plug

QX-1 is used as breakout module for common IO signals and power.

V430-WQ-1M

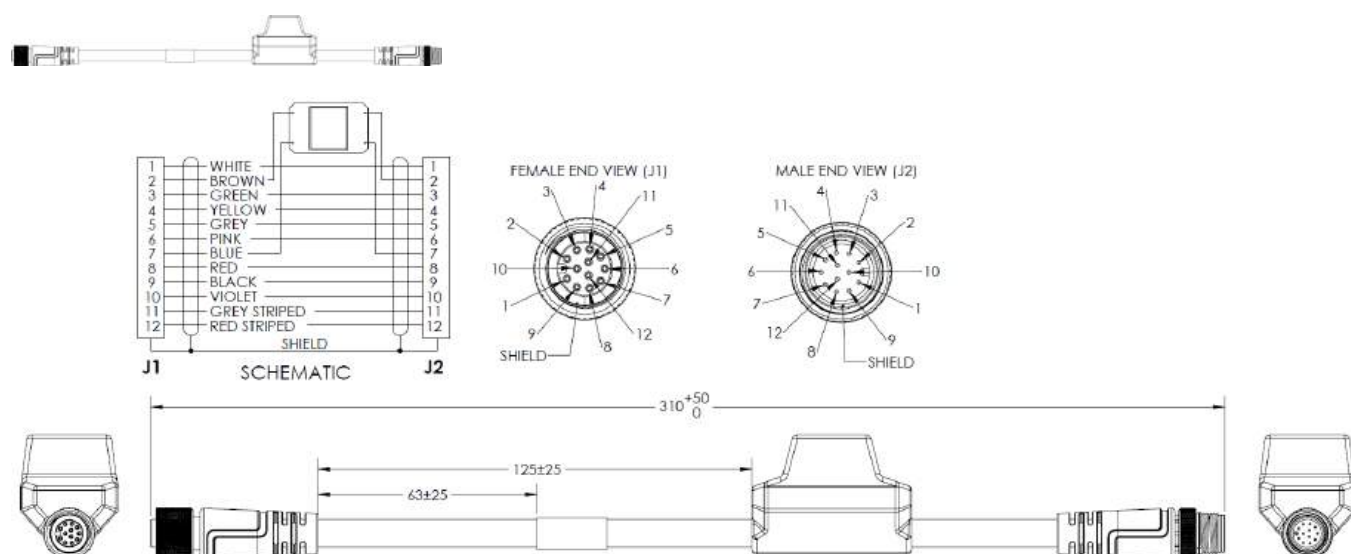
V430-WQ-3M

V430-WQ-5M

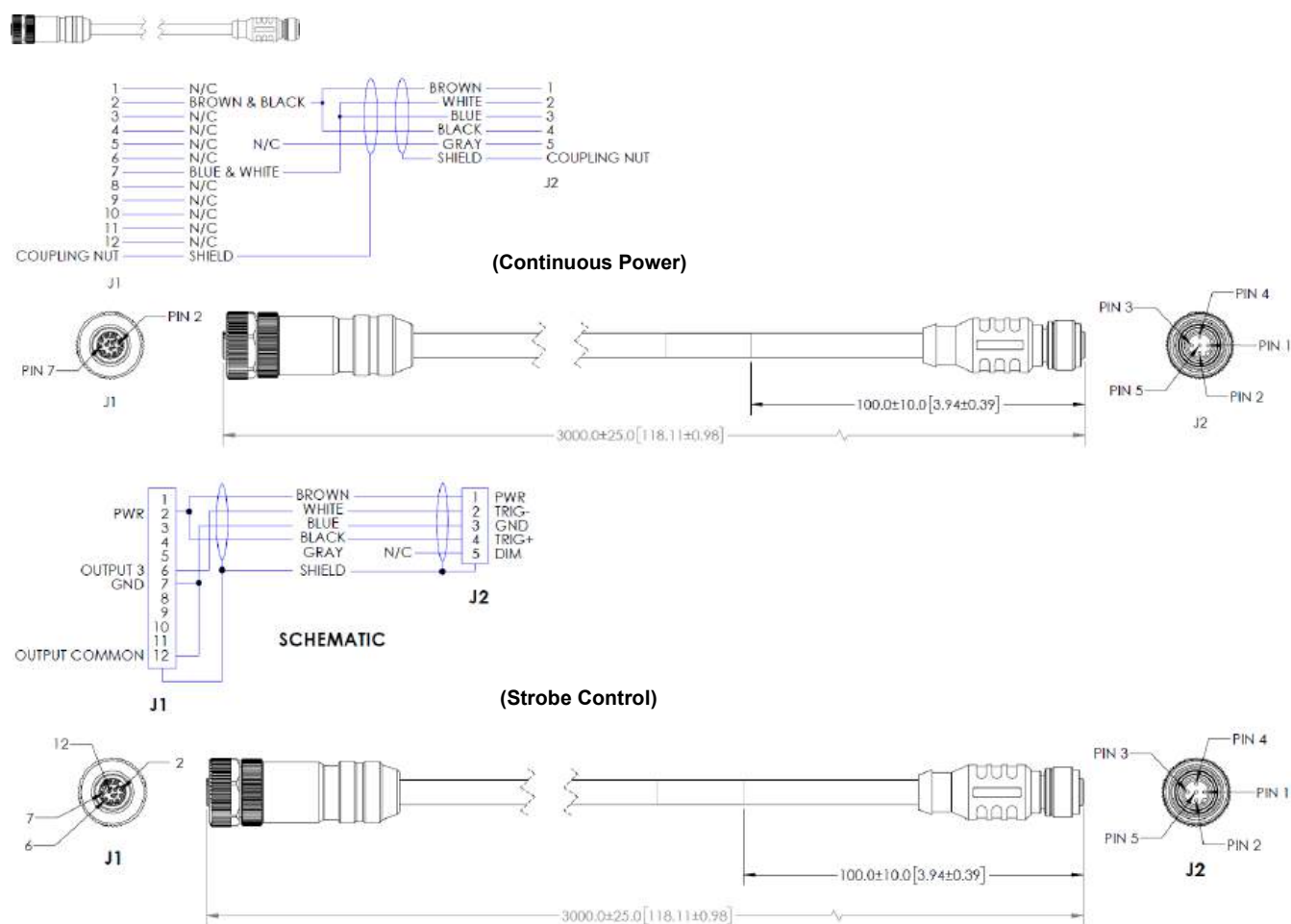




# M12 Socket to M12 Plug, with Power Filter – 300 mm V430-WQF-1M

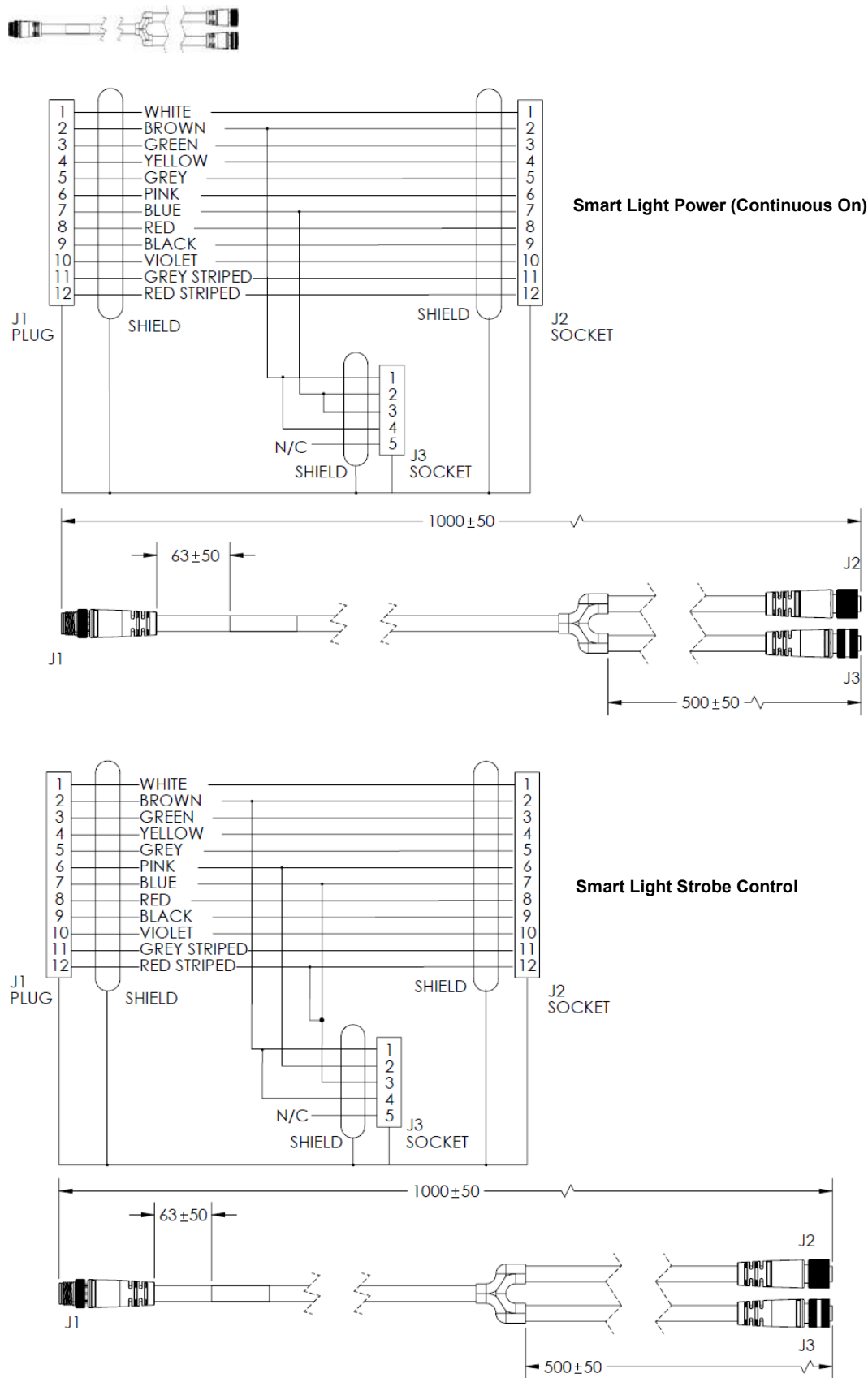


# QX-1 M12 to Smart Light Power and Strobe Control Cables – 3 Meters M12 Plug on QX-1 to 5 Pin Socket on Light 61-000204-01 (Continuous Power) 61-000218-01 (Strobe Control)



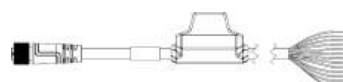
Y Cable, Camera/Power and Smart Light Power (Continuous On) – 1 Meter  
61-9000135-01

Y Cable, Camera/Power and Smart Light Strobe Control – 1 Meter  
61-9000137-01

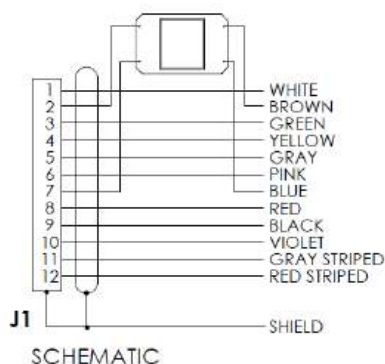




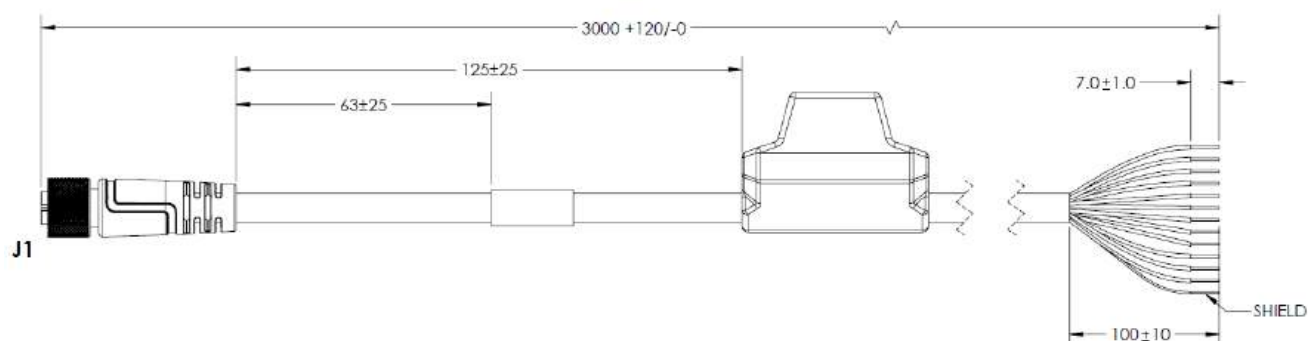
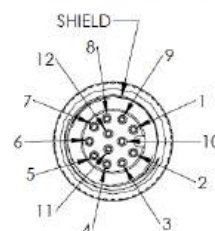
M12 to Flying Leads Cable, with Power Filter – 3 Meters or 5 Meters  
V430-W8F-3M  
V430-W8F-5M



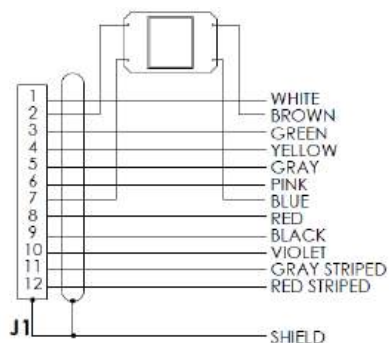
V430-W8F-3M



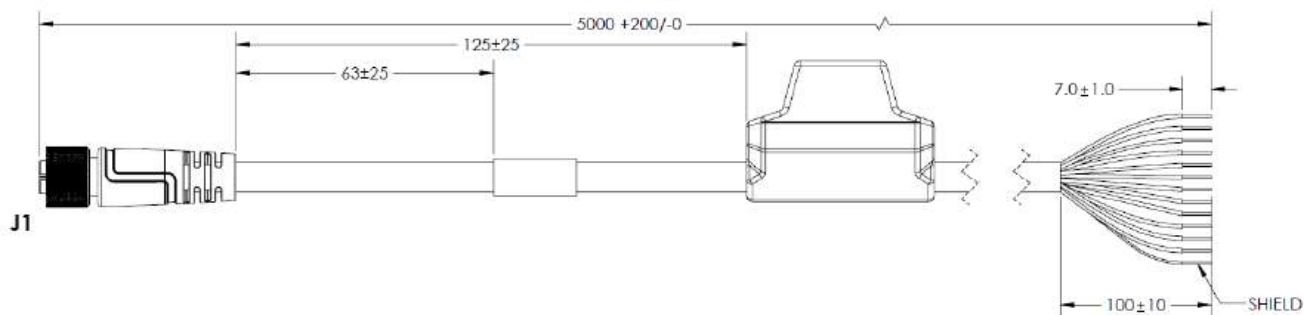
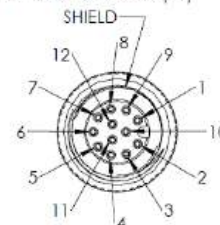
FEMALE END VIEW (J1)



V430-W8F-5M



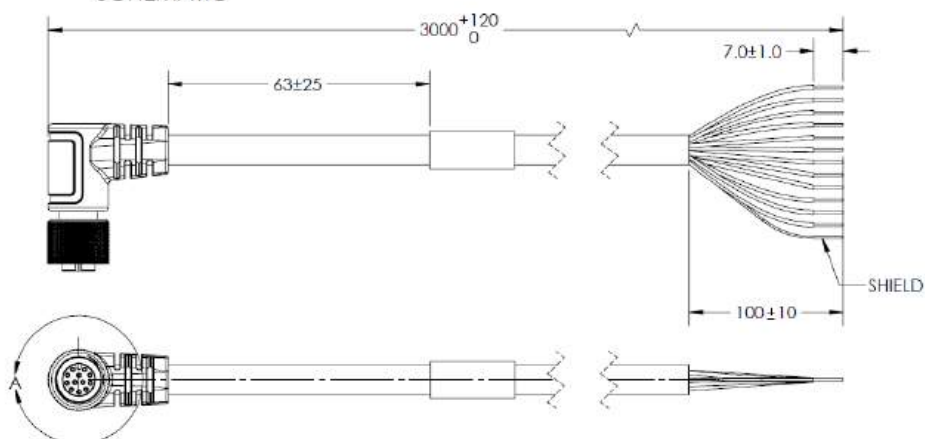
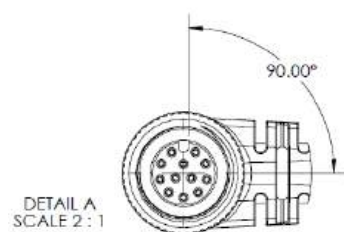
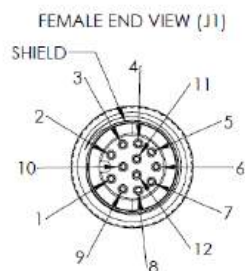
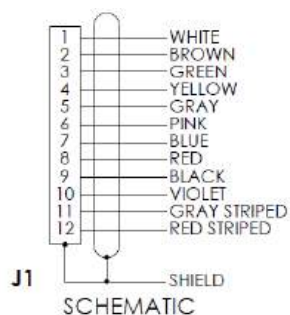
FEMALE END VIEW (J1)



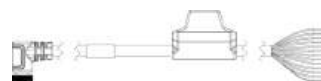
## M12 to Flying Leads Cable Right Angle Up Power, IO, RS232, USB – 3 Meters V430-W8LU-3M



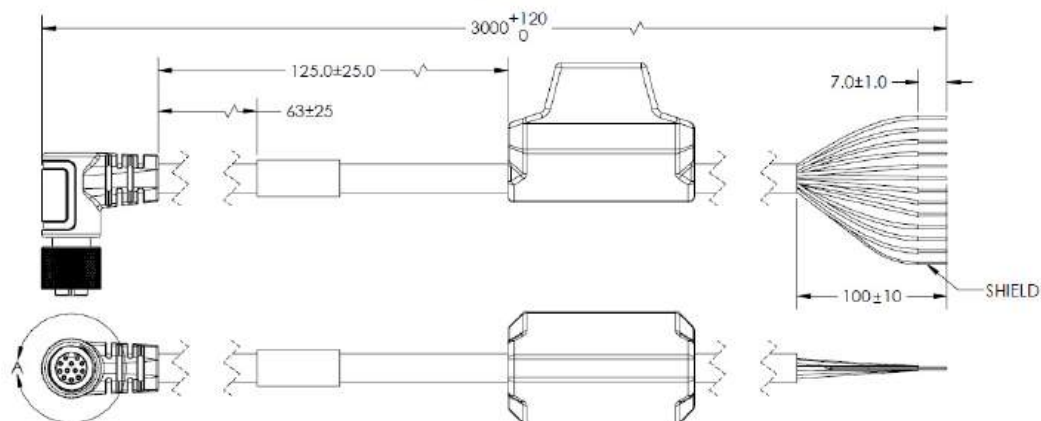
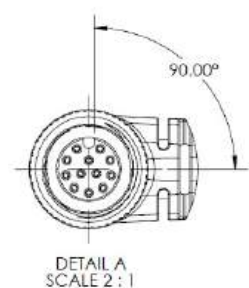
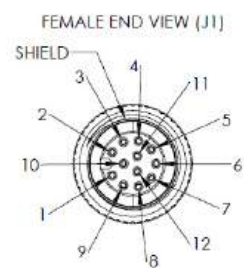
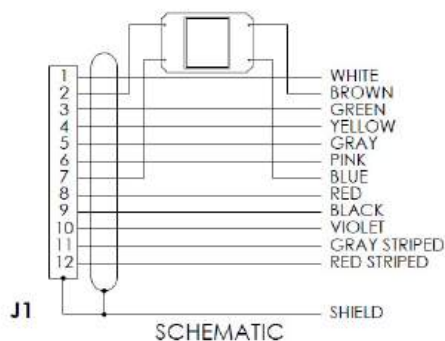
\*Right angle up



## M12 to Flying Leads Cable Right Angle Up, with Power Filter – 3 Meters V430-W8LUF-3M



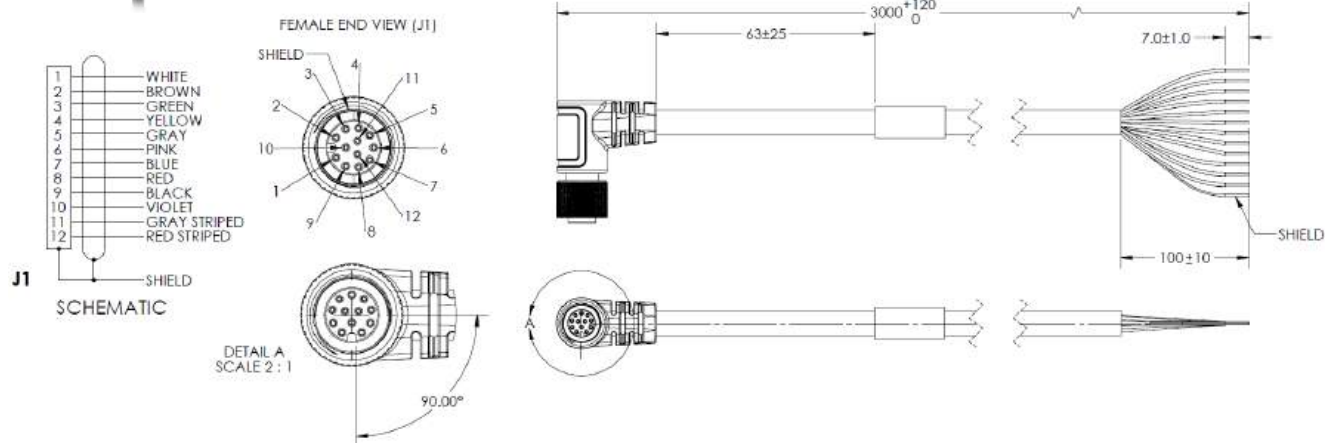
\*Right angle up



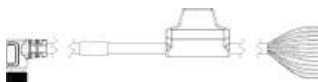
### M12 to Flying Leads Cable Right Angle Down Power, IO, RS232, USB – 3 Meters V430-W8LD-3M



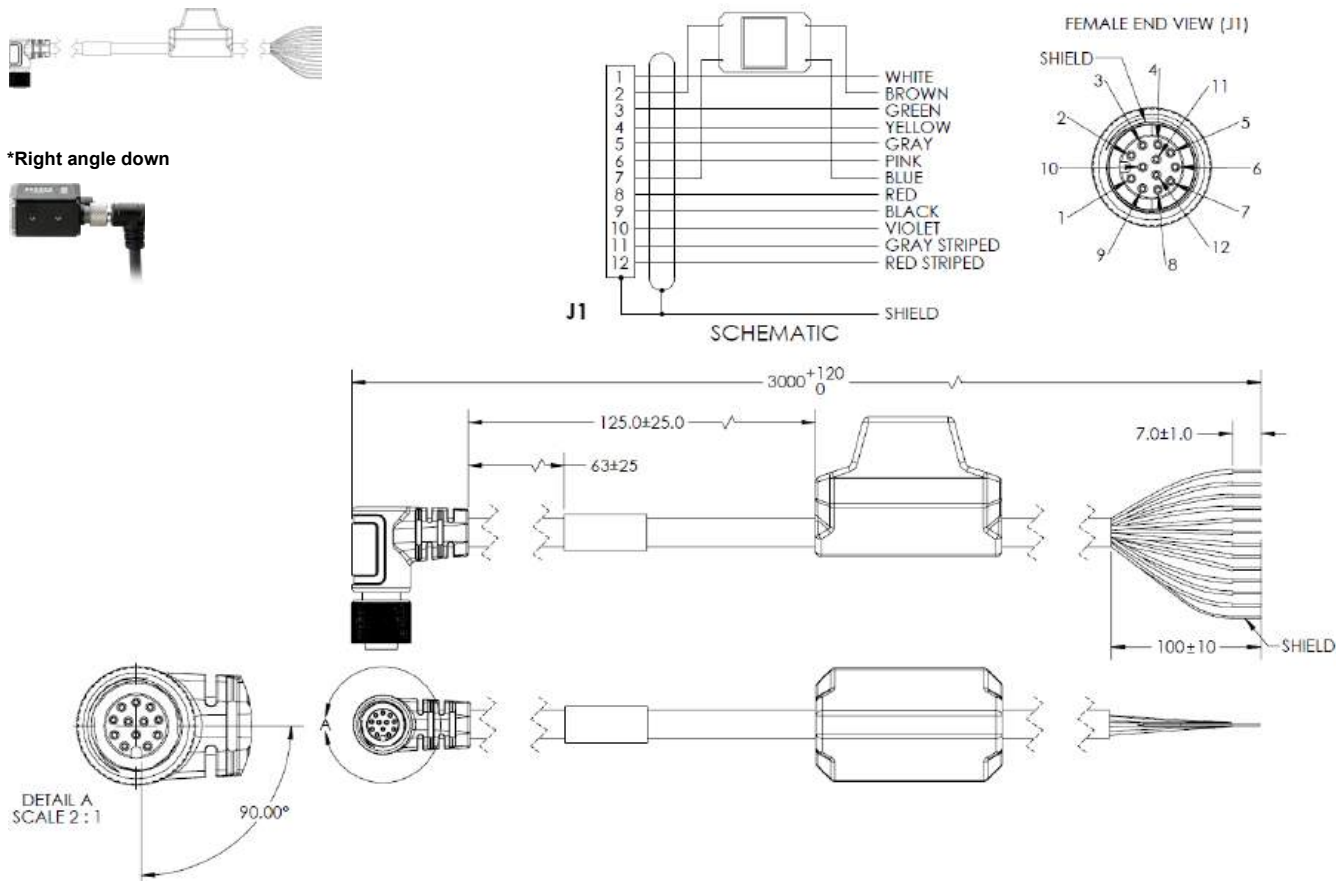
\*Right angle down



### M12 to Flying Leads Cable Right Angle Down, with Power Filter – 3 Meters V430-W8LDF-3M

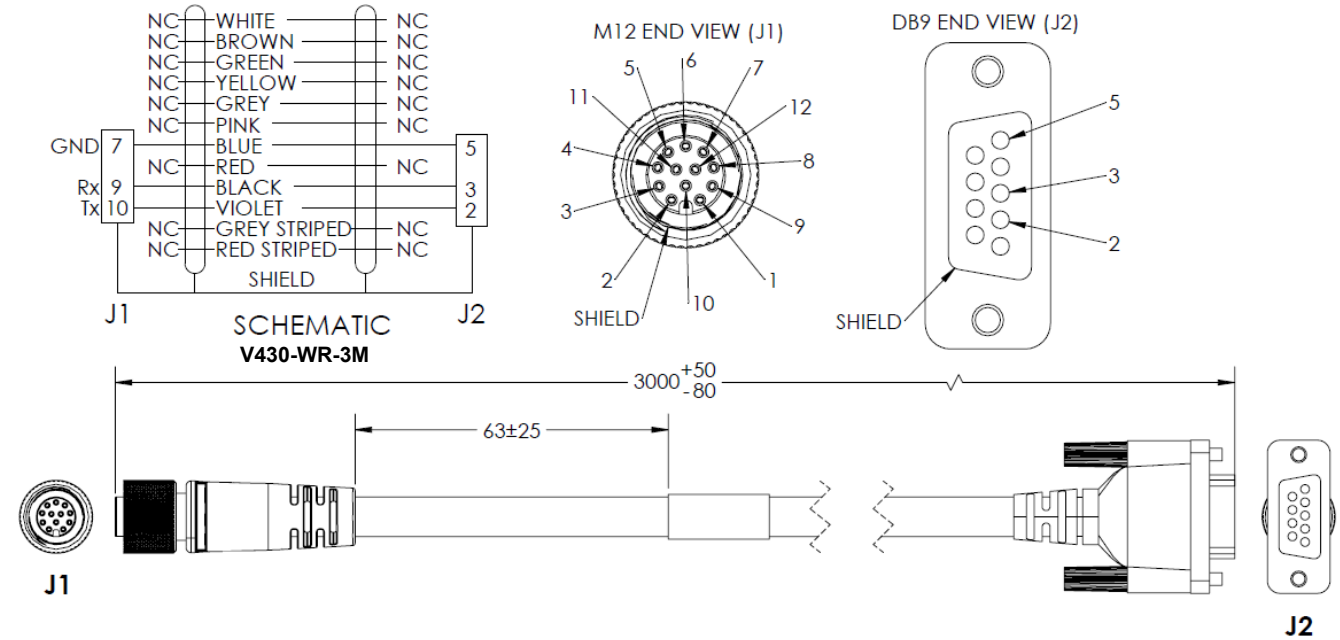
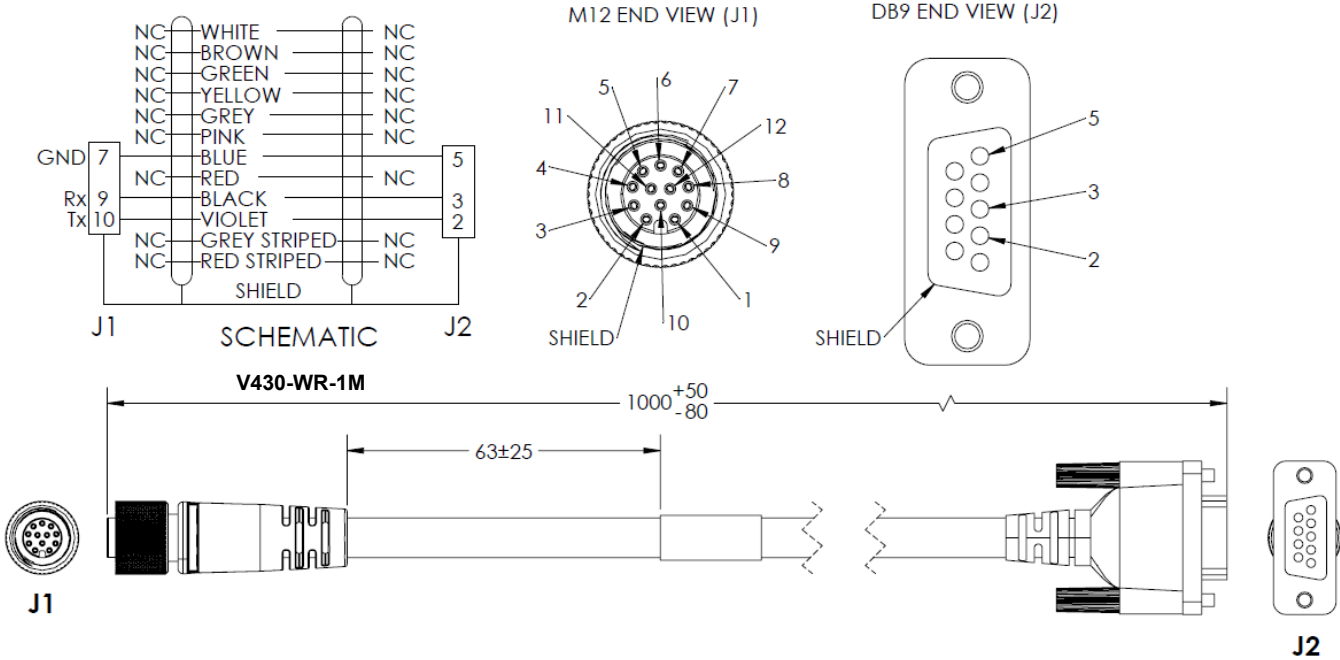


\*Right angle down

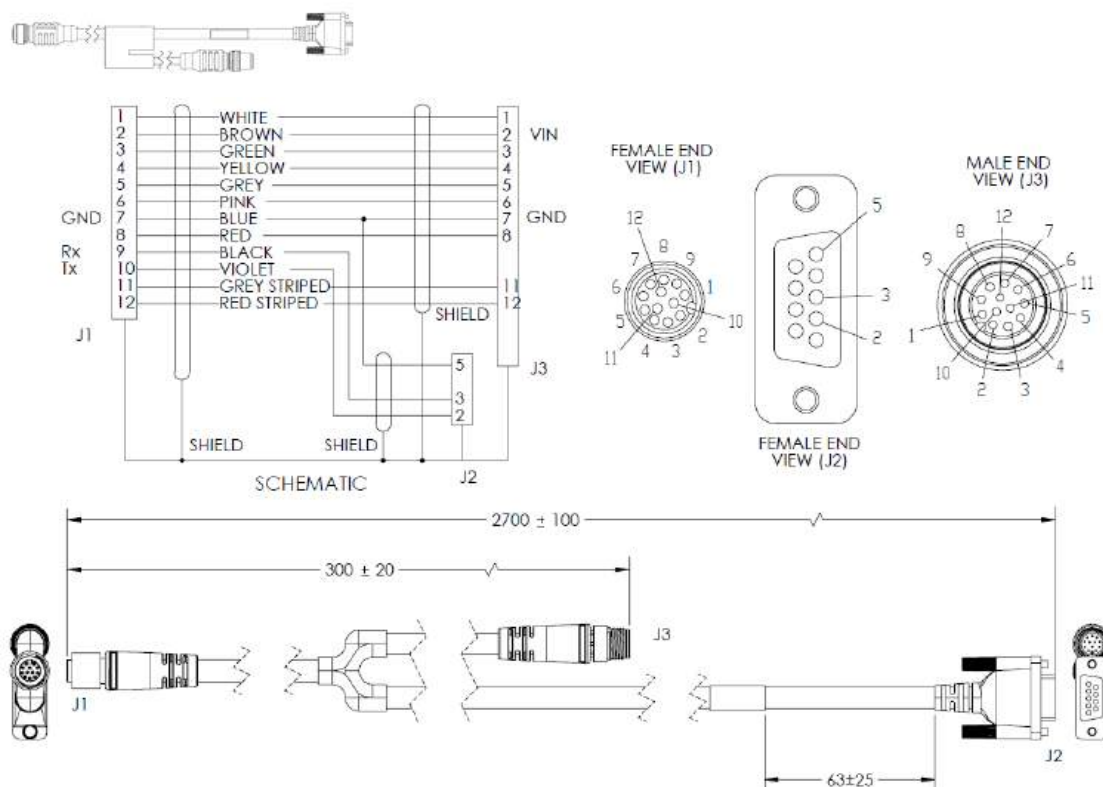


V430-F

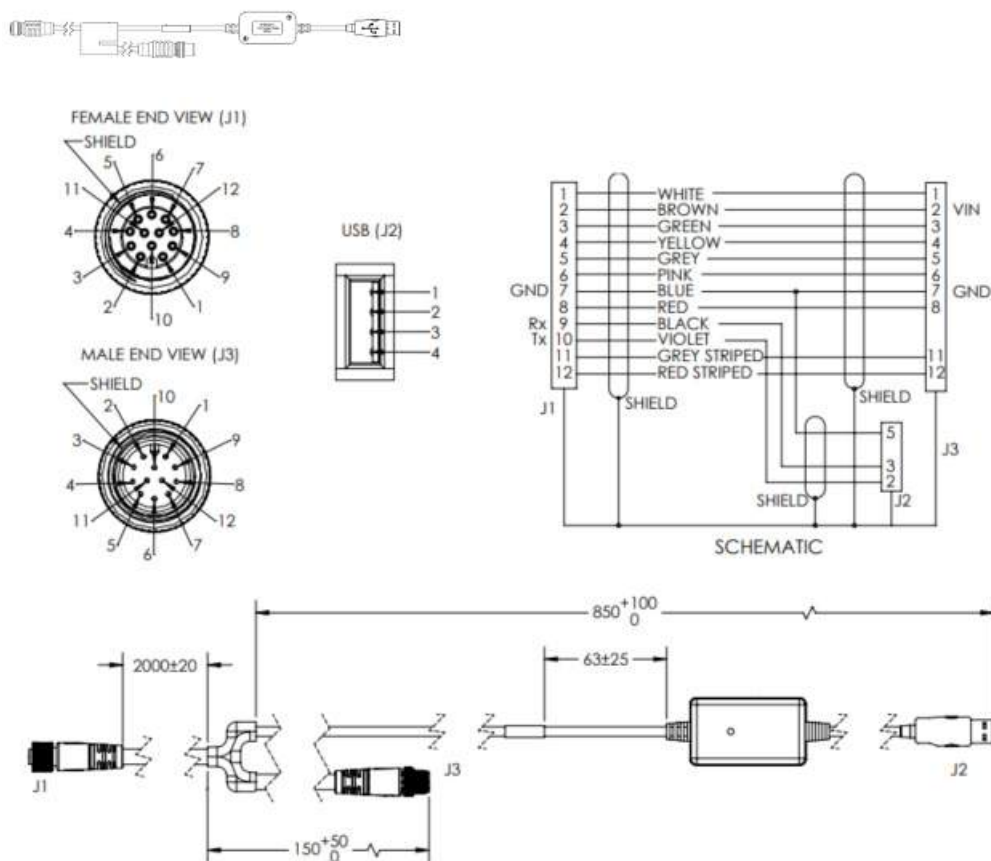
M12 to RS-232 Breakout – 1 Meter or 3 Meters  
V430-WR-1M  
V430-WR-3M



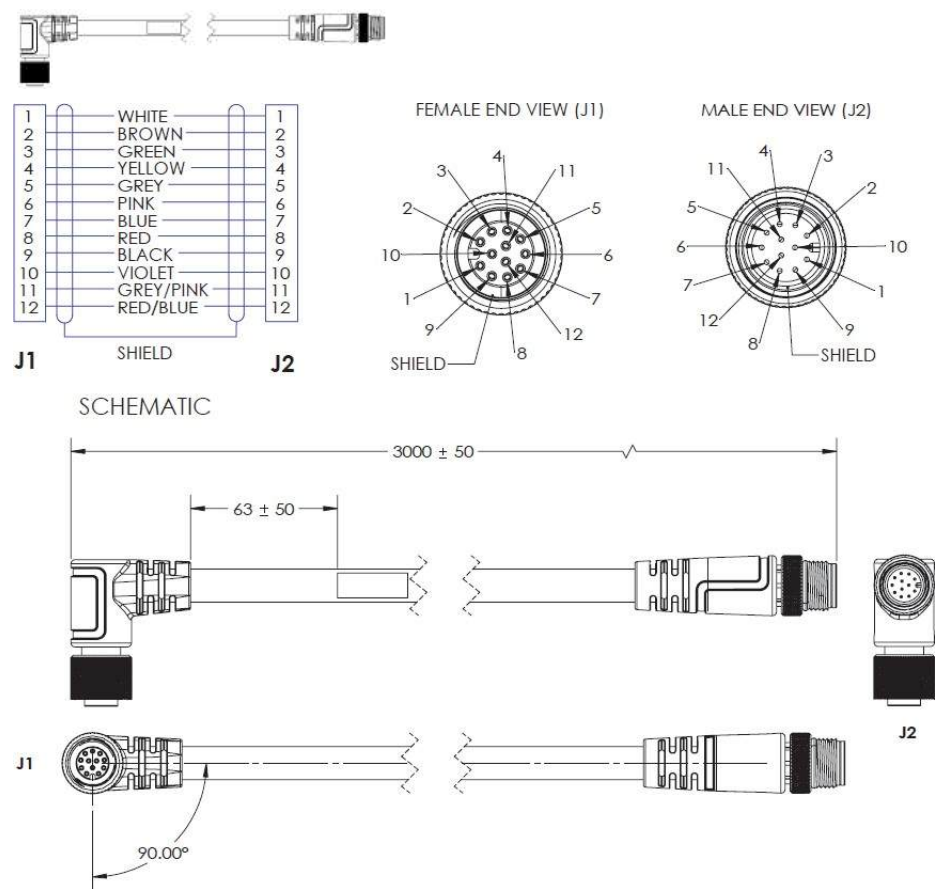
### Camera to QX-1 Interconnect Cables with RS-232 Breakout – 2.7 Meters V430-WQR-3M



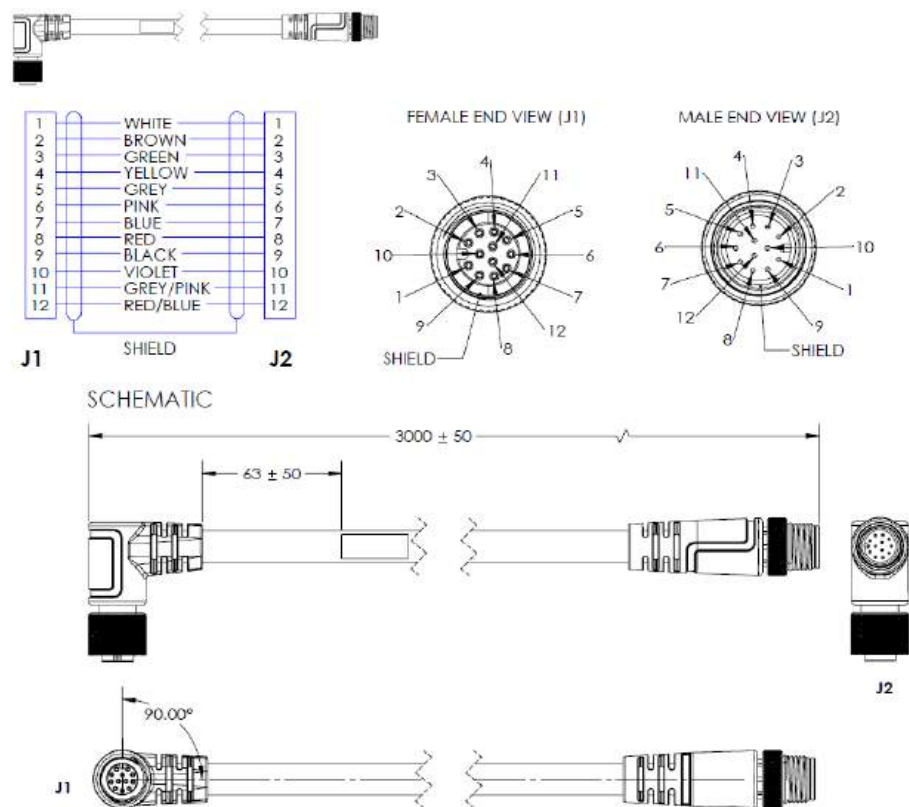
### Camera to QX-1 Interconnect Cables with USB Keyboard Wedge Breakout – 2.7 Meters V430-WQK-3M



M12 12-Pin Plug to M12 12-Pin Socket, Right Angle, 3 Meters  
61-000148-03

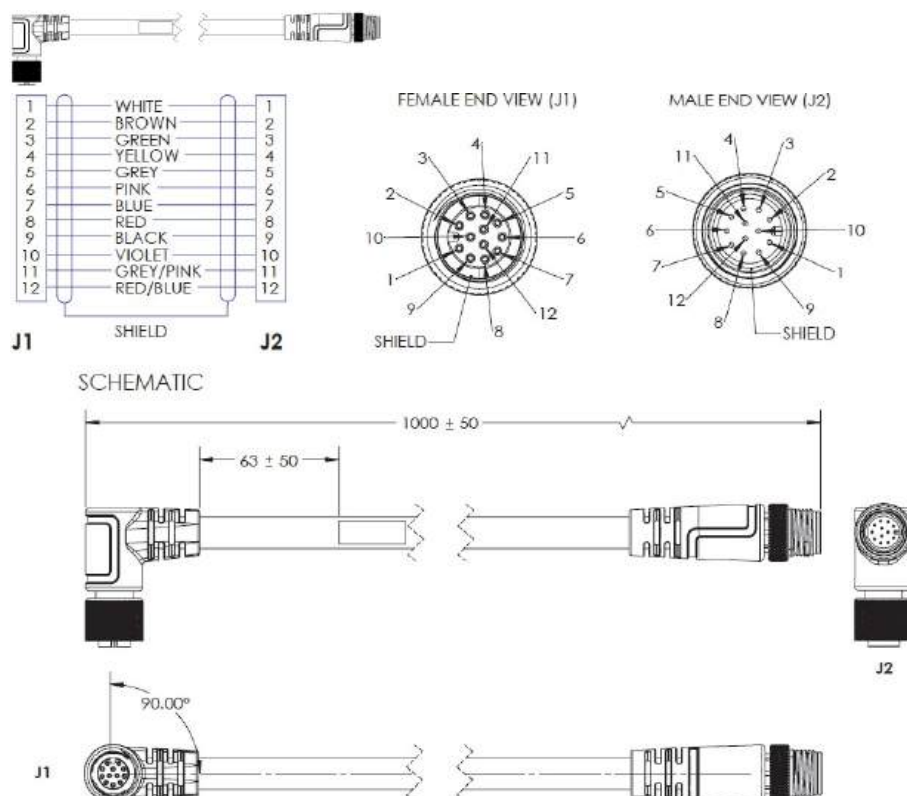


M12 12-Pin Plug to M12 12-Pin Socket, Right Angle, Alternate Key, 3 Meters  
61-000148-04

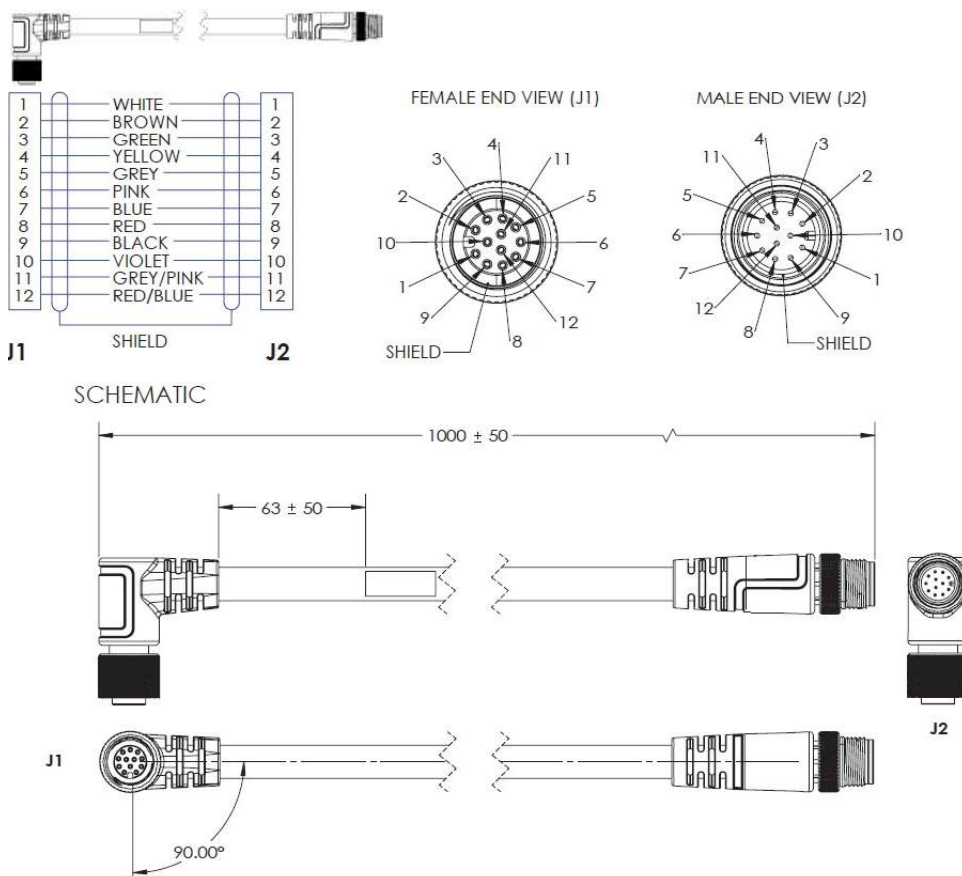




**M12 12-Pin Plug to M12 12-Pin Socket, Right Angle, Alternate Key, 1 Meter**  
**61-000162-04**

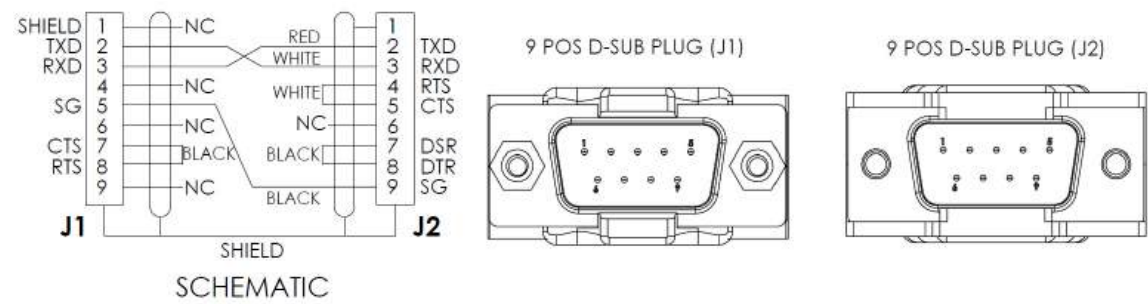
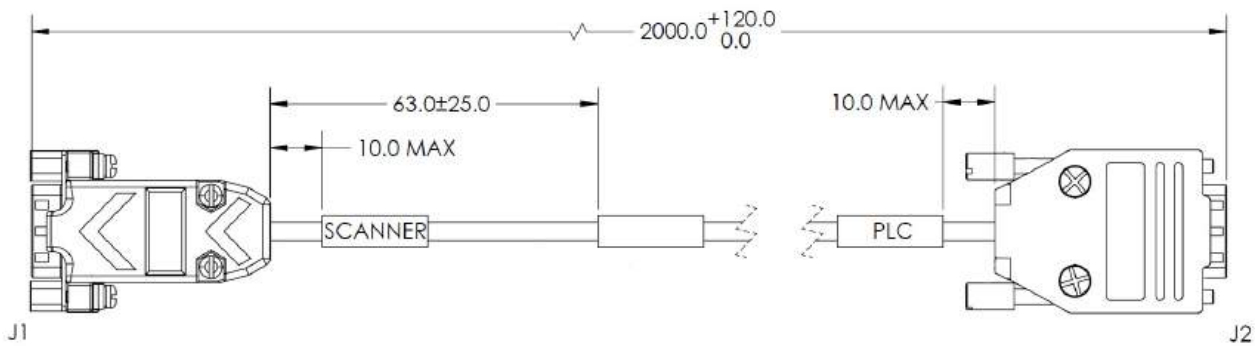


**M12 12-Pin Plug to M12 12-Pin Socket, Right Angle, 1 Meter**  
**61-000162-03**



V430-F

Cable, Adapter, Omron PLC – 2 Meters  
V430-WPLC-2M





Related Manuals

| Man. No.             | Model                          | Manual                                                  |
|----------------------|--------------------------------|---------------------------------------------------------|
| Z432 (84-9000400-02) | V320-F, V330-F, V420-F, V430-F | MicroHAWK V320-F / V330-F / V420-F / V430-F User Manual |

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