In-Sight Communication Examples Using a Mitsubishi Q Series PLC

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Overview

This document describes the sample applications installed with In-Sight Explorer to show methods of using a Mitsubishi Q Series PLC to control and get results from an In-Sight vision system. In these examples, the user will use the contacts in the PLC program to control the In-Sight vision system.

Minimum Software Requirements

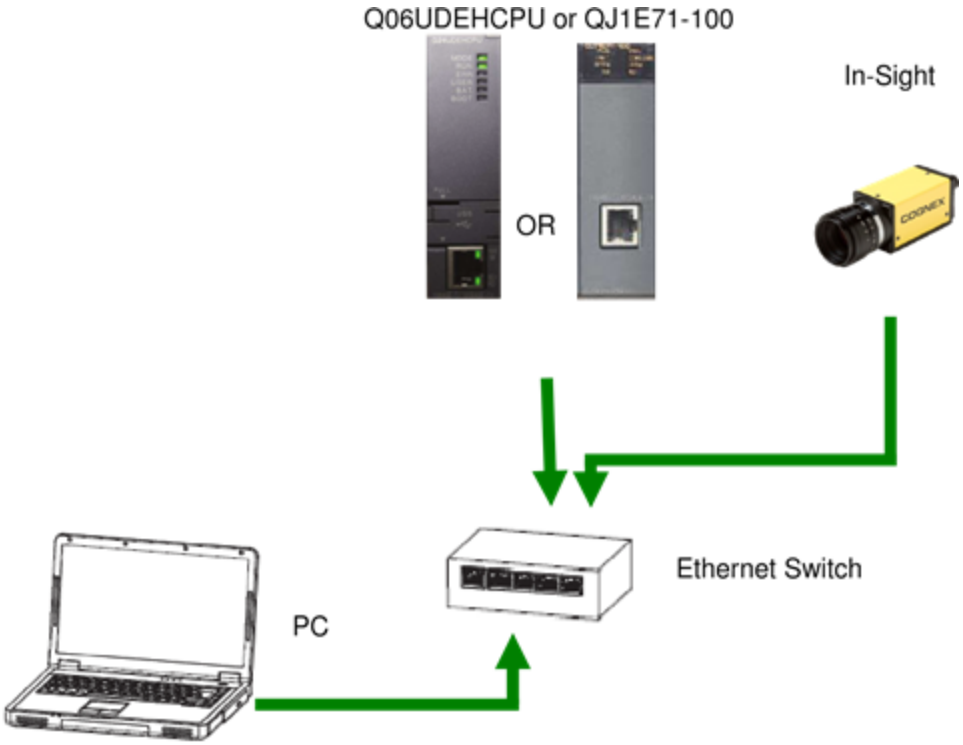
The table below lists the minimum software versions for Cognex and Mitsubishi software:

	Software	Examples	Version
Cognex	In-Sight Explorer	All	4.3
Mitsubishi	GX Developer	Ladder Logic	8.78G
	GX Works 2	Function Blocks	1.09K

System Setup

For these examples, the In-Sight vision system, PLC, and PC are connected to an Ethernet switch:

Mitsubishi Ethernet Connection



The following settings are used in the examples:

In-Sight:

- IP Address: `192.168.0.1`
- Subnet Mask: `255.255.255.0`
- Telnet Port: `23` (default)

Q-Series PLC:

- IP Address: `192.168.0.2`
- Subnet Mask: `255.255.255.0`

The PLC files have the IP address in the project. Loading the project file will update the IP address for the PLC. If necessary, change the IP Address and telnet port of the vision sys-

tem through the Sensor > Network Settings or the System > Add Sensor/Device to Network menus.

Vision System Setup

In these examples, the user will use the contacts in the PLC program to control In-Sight to acquire an image, perform an inspection and send the results to the PLC. The PDF files located in the following directory can be used as samples for inspections:

Windows 7/Vista/Server 2008/R2:

```
C:\Users\Public\Documents\Cognex\In-Sight\In-Sight Sample Pro-
jects 5.6.1\Mitsubishi Communications\Part Images
```

Windows XP/Server 2003:

```
C:\Documents and Settings\All Users\Documents\Cognex\In-
Sight\In-Sight Sample Projects 5.6.1\Mitsubishi Com-
munications\Part Images
```

The following PDF files should be printed out and used with the In-Sight vision system:

PDF File	Example In-Sight JOB
xy and inspect.pdf	xy-en.job, inspect-en.job
IDCode.pdf	IDCode-en.job

Example Setup

This document provides an example of a lens, working distance and field of view to use with these printed PDF files. The field of view does not need to be exact because the PatMax tools and ReadID tools will tolerate changes in scale of the part.

The user can also retrain the PatMax models in the files xy-en.job, inspect-en.job and retrain the ReadID tool in IDCode-en.job to work with a different field of view. The jobs must be resaved to the In-Sight vision system to work properly with the GOT sample program.

- **Vision System**: In-Sight Micro 1400
- **Lens**: 8 mm c-mount lens with a 5 mm spacer
- **Working Distance**: 280 mm (11 inches)
- **Field of View**: 170 mm (approximately 6 ¾ inches)

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Cognex In-Sight Files

Three In-Sight job files (`xy-en.job`, `inspect-en.job` and `IDCode-en.job`) are located in the following directory:

Windows 7/Vista/Server 2008/R2:

```
C:\Users\Public\Documents\Cognex\In-Sight\In-Sight Sample Pro-
jects 5.6.1\Mitsubishi Communications\Control Examples\In-Sight
Job Files
```

Windows XP/Server 2003:

```
C:\Documents and Settings\All Users\Documents\Cognex\In-
Sight\In-Sight Sample Projects 5.6.1\Mitsubishi Com-
munications\Control Examples\In-Sight Job Files
```

These files are used in the PLC control examples and are described in the following table:

In-Sight JOB FIle	Examples	Purpose
`xy-en.job`	All	Returns X, Y, Angle
`inspect-en.job`	All	Returns Pass/Fail
`IDCode-en.job`	All	Returns QR Decode String

Mitsubishi Files

This section describes the files to use for a specific model of PLC.

Which PLC files to use depends on the model of PLC that you are using and the method: Ladder Logic or Function Block. The Q Series PLC programs reside in the following directory:

Windows 7/Vista/Server 2008/R2:

```
C:\Users\Public\Documents\Cognex\In-Sight\In-Sight Sample Pro-
jects 5.6.1\Mitsubishi Communications\Control Examples
```

Windows XP/Server 2003:

```
C:\Documents and Settings\All Users\Documents\Cognex\In-
Sight\In-Sight Sample Projects 5.6.1\Mitsubishi Com-
munications\Control Examples
```

Descriptions of the Q Series PLC Programs:

Filename	Example	CPU	Subdirectory
In-Sight_E71_Q06UDHCPU_EN	Ladder Logic	QJ7171-100	Ladder Logic
In-Sight_QnUDE_Q06UDEHCPU_EN	Ladder Logic	Q06UDEHCPU	
In-Sight_FB_E71_EN	Function Blocks	QJ7171-100	Function Block\Cognex_In-Sight
In-Sight_FB_QnUDEH_EN	Function Blocks	Q06UDEHCPU	

Loading In-Sight Files

Save all three In-Sight job files (`xy-en.job`, `inspect-en.job` and `IDCode-en.job`) to the In-Sight vision system. The GOT main screen will load the correct In-Sight job directly from the In-Sight vision system.

Loading Q-Series PLC Files

- For Ladder Logic examples, launch **GX Developer**.
- For Function Block examples, launch **GX Works2**.

Load the appropriate file for the CPU on your PLC.

Ladder Logic:

Windows 7/Vista/Server 2008/R2:

```
C:\Users\Public\Documents\Cognex\In-Sight\In-Sight Sample Pro-
jects 5.6.1\Mitsubishi Communications\Control Examples\Ladder
Logic
```

Windows XP/Server 2003:

```
C:\Documents and Settings\All Users\Documents\Cognex\In-
Sight\In-Sight Sample Projects 5.6.1\Mitsubishi Com-
munications\Control Examples\Ladder Logic
```

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Function Blocks:

Windows 7/Vista/Server 2008/R2:

```
C:\Users\Public\Documents\Cognex\In-Sight\In-Sight Sample Pro-
jects 5.6.1\Mitsubishi Communications\Control Examples\Function
Block\Cognex_In-Sight
```

Windows XP/Server 2003:

```
C:\Documents and Settings\All Users\Documents\Cognex\In-
Sight\In-Sight Sample Projects 5.6.1\Mitsubishi Com-
munications\Control Examples\Function Block\Cognex_In-Sight
```

Running the Example Files

1. Put the In-Sight sensor Online.
2. Reset the PLC.
3. Put the PLC into Run mode.

You can now control the In-Sight vision system by controlling the contacts in the PLC program.