iRVision

*integrated* Robot Vision
for the R-30iA Controller
iRVision
Every R-30iA Controller is “Vision Ready”
Integrated Vision Option for Robot Guidance

Advantages:
- Reduced Capital and Operating Costs + Reduced Complexity
  - Eliminates 3rd party PCs and expensive cabinets
  - Support from one supplier for both robot and ALL key vision components
  - Highly Reliable FANUC Hardware
  - Scalable Vision System Configurations
  - High Speed Vision Communication and Processing through robot backplane.
iRVision – “2D Single”

- Connect camera and cable to R-30iA controller and enable the iRVision single camera option.

Run-time images displayed on iPendant

Powerful 2D Geometric image processing

Easy setup using MS Internet Explorer – No Special Software!!!

Connect 2D camera cable directly to CPU
iRVision – “2D Multiple”

• Add the optional camera multiplexer for 2 to 4 cameras

Run-time images displayed on iPendant

Easy setup using MS Internet Explorer – No Special Software!!!

Up to (4) 2D Cameras with STANDARD iRVision

Optional Camera Multiplexer
iRVision – “3D Single”

- Add 3DL single-sensor system for applications requiring 3D vision
- Powerful geometric algorithm for 3D part location

Connect camera cable directly to CPU and Laser Sensor to optional Laser Safety Unit.
iRVision – “3D Multi-Sensor”

- 3D multi-sensor system for 2D and 3D processing

Optional Camera Multiplexer
Connect up to (32) 2D cameras with (0) 3DL or
Connect up to (24) 2D cameras with up to (4) 3DL sensors.
Note: Each 3DL camera takes (2) 2D locations.

Optional Enhanced Laser Safety Unit
Connect camera cables to multiplexer and Laser Sensors to enhanced Laser Safety Unit.

Ethernet
Features:
- Direct camera connection to main CPU
- Setup using IE browser (laptop or network PC)
- FANUC Geometric Pattern Matching (GPM) tool for Object Location
- 2D Single Vision Process
- 2D Grid and Simple 2-point Calibration
- Run mode data and images viewable iPendant or browser
  - No setup on iPendant
- Good for general vision guidance applications and Error Proofing.
• Features Continued
  – Image Playback, Automatic Exposure Control
  – Multiple Robot Support
  – Basic Sorting
  – Error Proofing Option
  – Dynamic Windows
  – Histogram Tool
New vision TP commands

1: !Vision command;
2: VISION RUN_FIND 'PART';
3: ;
4: !Vision command;
5: !Jump label if not successful;
6: VISION GET_OFFSET 'PART' VR[1] JMP LBL[99];
7: ;
8: !Vision command;
9: !Put vision offset into PR;
11: ;
12: !Move to part with offset;
13: J P[1] 100% FINE Offset,PR[1];
14: JMP LBL[100];
15: ;
16: LBL[99:no part];
17: !Part not found;
18: ;
19: LBL[100:End];

Move to points with Offset from Vision

Insert application code to handle “part not found”

(make sure robot is in the frame set on the calibration page)
Location

- Where is the part located?
  - X, Y and Roll – use 2DV
  - X, Y, Z, Y, P, R – consider 3DL

Attribute (“Error Proofing”)

- Is the part or a feature of an object present?

Gauging

- What is the measurement(s) of certain features on a part?

Inspection

- Are there any flaws or defects (pits, scratches…) to be found?
  - Size or Count?
Consider “Error Proofing” Applications

- R-30iA Vision offers a low cost, simple implementation
- Camera mounted in the tooling
- Visual check of features before pick
- Use even when location is NOT needed
- Adds quality control value to customer at low cost
- Unique Advantage with FANUC
  - Competition must add processing hardware

Good

Is tape in case correctly?

Bad

Are holes present?