The brain behind picking

Take advantage of the scalable design of PickMaster™ 3.0. It is your fastest way to a successful packaging installation, no matter if your products come in at random, guided conveyors or placed on indexed carriers for highest precision. Or just use PickMaster™ as your standard tool for vision guidance of ABB robots.

Tightly integrated with the IRC5 robot control system, PickMaster™ is the best tool for guiding robots in the packaging process. It gives the IRB 340 a capacity of 150 picks per minute and more.

To pinpoint random objects, the PC-based software uses a high performance robust vision system. It identifies and transfers 360 degree random objects in 50 to 200 ms.

Powerful quality inspection tools let you categorize your products and make sure the defect ones are sorted out. Application projects are configured and calibrated with high precision using comprehensive graphical configurators.

PickMaster™ can control up to eight robots and eight cameras, working together in one application or in multiple independent processes. The work load can be distributed evenly between all robots and it is even possible for the fellow robots to take over the work of others which they may have missed. Software development kits enable powerful integration with external production systems and devices.

A complete line can be operated from a remote panel, PLC or PC, through field buses or any other communication link.
Technical data, PickMaster™ 3.0

PRODUCT CONTENT
PickMaster™ 3.0 Software package
PickMaster™ 3.0 Hardware
PickMaster™ 3.0 User’s Guide

SOFTWARE PACKAGE
PickMaster™ 3.0 includes
- PickMaster™ 3.0 Software
- Cognex Vision Software CVL 6.2
- Remote Integration Services
- Vision Analyzer
- PickMaster™ Software Development Kit (SDK)
- PickMaster™ User Hooks

HARDWARE
Analogue Systems:
- MVS-8504 (four cams)
- Camera breakout cable
- Trigger/Trig/Strobe I/O board: four pairs of secure opto-isolated trigger/strobe signal connections
- Digital Systems:
  - Vision PCI board Cognex MVS-8100D/1/2/3 (Alt. 1-3 camera boards)
  - Digital CMOS cameras (without lenses) and camera cables: standard resolution CDD-50 and high resolution CDD-200

OPTIONS
PickMaster™ license for ordered number of attached robots and cameras is obtained through licensing software included on the CD.
Basic options
- Basic License
- Extension License
- Additional Options
  - Lic. for one robot
  - Lic. for one camera
  - Inspection
  - Camera Distribution
  - Adaptive Task Completion
  - Analogue Multi Vision
  - Digital Single Vision
  - Standard/High-resolution camera
  - Digital Double Vision
  - Standard/High-resolution cameras
  - Digital Triple Vision
  - Standard/High-resolution cameras
  - Digital Repeater Kit
  - External Sensor (on request)
  - User’s Guide

REQUIRED EQUIPMENT
M2002 SA4Plus and M2004 IRC5 controller (all IRB types)
At least one 24 V Digital I/O board
- 0.6 Encoder Interface board for “Prepared for PickMaster”
- BaseWare 4.0.11/5.0.05 or later with option “Prepared for PickMaster”
- Additional equipment
  - PC: Recommended: Pentium III 1.5 GHz MMX, 512 MB memory with one free PCI slots/vision unit and one slot for RS4 fieldbus board.
  - Standard Ethernet board
  - PC Software: Windows XP Professional or Windows 2000 Professional
  - Communication: TCP/IP on Ethernet
  - Analogue vision: Camera type full frame shutter, progressive scan.
  - Camera cables according to Cognex specification for selected cameras.
  - Digital Vision: All cameras and cables included

SPECIFICATIONS
PickMaster™ is a scalable integration of high-speed picking operations, vision and conveyor tracking

Maximum configuration
- One PickMaster™/PC
- Eight robots/PickMaster™
- Two vision cards/PickMaster™
- Eight cameras/PickMaster™
- Eight work areas/robot

Vision
- Search tools PatMax™/Blob
- Inspection (multiple feature evaluations: size, shape, rel. positions, histogram, e.a.)
- External Model and Sensor SDK
- Linear and non-linear calibration with perspective compensation
- Camera acquisition time and transfer rates: typically 50-200 ms on a high performance PC. Complex models can affect performance.
- Up to eight simultaneous camera acquisitions

Conveyor Tracking
- Maximum conveyor speed together with IRB 340 is 1400 mm/s without camera. Recommended max speed with camera is 600 mm/s.
- Conveyor position measurement interfaces for encoders
- Required Encoder type: Two phase with 90 deg phase shift.
- Voltage 24 VDC, current 50-100 mA. Range of pulse ratio: 5000-10000 pulses per meter of conveyor motion

PERFORMANCE
- Repeatability: conveyor tracking with IRB 340
- Conveyor speed [mm/s] Repeatability [mm]
  - 150 1.0
  - 250-500 2.0
  - 500-800 5.0
  - 800-1400 15.0

- Vision accuracy
  - Repeatability for vision is about 1/40 pixel, 0.01 mm possible

Picking capacity* IRB 340
- Cycle [mm] Payload [kg] Capacity [picks per min]
  - 25/100/25 0.1 187
  - 25/305/25 0.1 150
  - 25/305/25 1.0 130
  - 100/700/100 0.1 100
  - 100/700/100 1.0 84

FEATURES
- Easy to Use graphical Line and project configurator
- GUI’s and Documentation in five languages
- Immediate task change-over and fully automatic one button production start
- Line PLC and custom operator’s panel connectivity through TCP/IP, field-buses, serial port or discrete I/O
- Remote operator’s panel connectivity (TCP/IP, field-buses, serial, I/O)
- Concurrent control of both SA4Plus and IRC5 robot controllers
- Status control of processes as well as individual robots
- Runtime Process tuning
- Advanced sorting and mixing capability
- Process load balancing of products between robots
- Progressive picking and case filling (ATC)
- Digital high resolution cameras
- High performance vision search and quality inspection
- Inspection of untaught features and defects
- Integration of custom vision algorithms and external sensors
- Integration and customization through User Hooks
- Camera distribution to multiple robots
- Sensor-less automatic camera
- Conveyor start/stop control

* Repeatability in each position at constant conveyor speed. The accuracy is dependent on the conveyor accuracy and a proper calibration.
* Capacity depends on many additional aspects besides PickMaster performance. Examples are grippers, product shape and surface, constant product flow, etc.
* Including picking up and placing time 0.035 s each.

Data and dimensions may be changed without notice.

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