

# F4000 Advance Series

## Robot Accessories

### Mechanical Tip Alignment

The TA360U-KIT is a mechanical tip adjustment kit allowing the mounting hardware attached to the robot to be mechanically adjusted in the X Y & Z axis.

The TA360U-KIT allows the dispense tip to be quickly and easily adjusted by re-aligning it to a known location of the robot program.

Re-alignment can be carried out remotely to the program and adjustments can be easily made by users not trained in robot programming.



**Item Number**

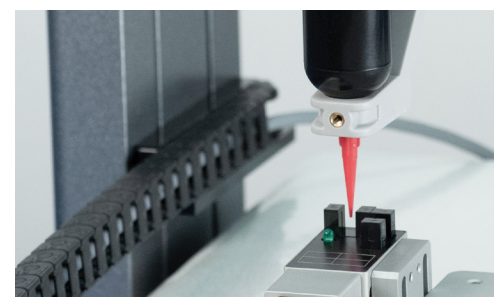
TA360U-KIT

### Automatic Tip Alignment

A series of tip alignment modules designed for precise dispensing applications that require frequent material or tip changes, which could alter the position of the dispensing needle.

With the tip alignment module installed, the user can simply run a function on the robot that will automatically offset the program based on the new dispense tip position. This ensures consistent dispense results and minimal production downtime.

This functionality can also be run through an external control making it simple for use in a production environment.



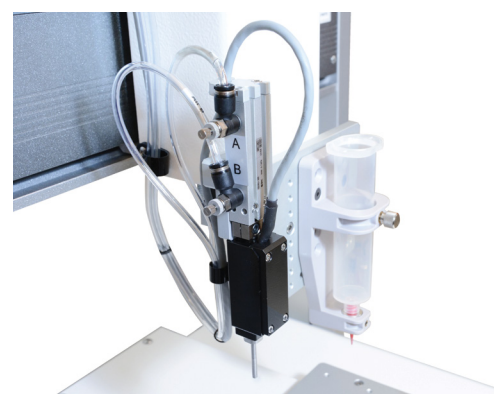
#### Models

Item Number	Description
F4000AKIT-TA3	Tip Alignment Module for F4000 ADVANCE 3-Axis Robots
F4000AKIT-TA4	Tip Alignment Module for F4000 ADVANCE 4-Axis Robots
TA9000N	Tip Alignment Module for F8000 & F9000 3-Axis Robots
TA4200N	Tip Alignment Module for F4200N.1 & F5200N.1 Robots

### Height Sensor

The height sensor automatically adjusts the dispense tip height in the event of any variation of the height of workpiece being dispensed upon. Setup and programming of the height sensor is carried out by following a user friendly step-by-step procedure pre-installed onto the robot software.

By comparing the actual workpiece height against the original stored datum value in the robot program, any deviation found in the workpiece height results in the Z-axis coordinate data being automatically offset accordingly. Multiple height checks can be made within one robot program in the event of multiple workpieces being processed or a single workpiece with differing heights.



**Item Number**

F4000AKIT-HDS

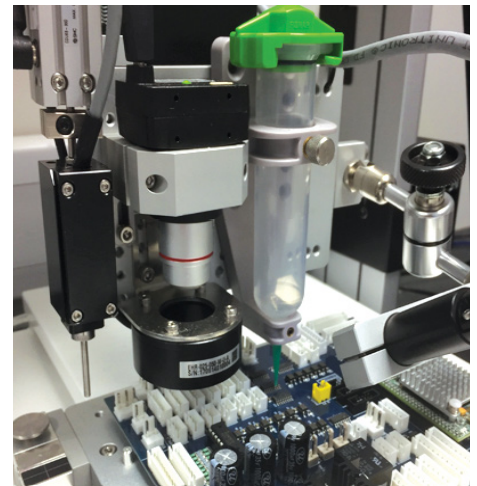
# CCD Camera Vision System

A powerful and intelligent CCD vision programming and auto adjustment system for creating both simple and complex dispense routines. This results in improved quality due to precise dispense positioning alongside improved production yield and reduced processing time and costs.

Dispense programs are created quickly and easily in the Fisnar proprietary vision-controlled Fluid-In-Motion (FIM) software by using the displayed camera image to jog the robot to the exact required dispense location, and then selecting the operation wished to be carried out (dispense dot, line start etc).

Vision System software is supplied with an auto-part alignment function to guarantee fluid is being dispensed at the exact required location. This is achieved by the system capturing an image of two separate fiducial locations on the component and using pattern recognition software to compare the live image against a stored image. Any difference found in X or Y position results in the dispense coordinates being automatically adjusted to suit.

Dispense positional accuracy and repeatability is further optimised by the simple auto-calibration routine and part alignment function.



**Item Number**

F4000AKIT-VISION

## Features

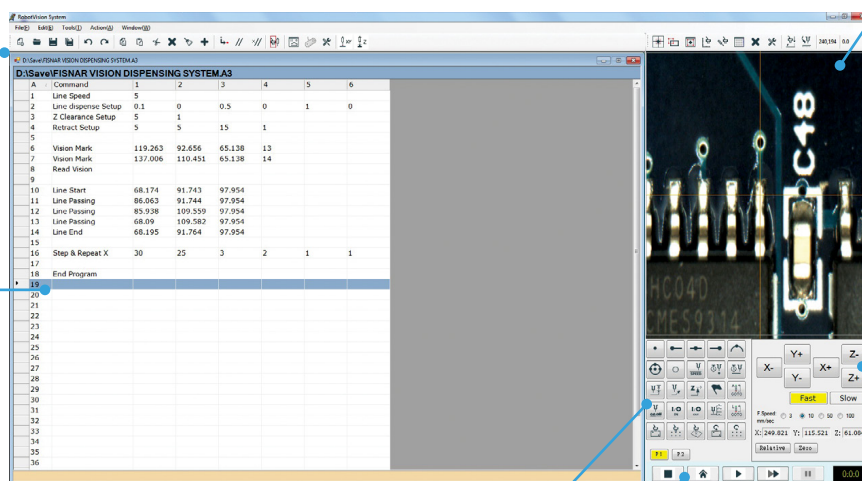
- Auto 3-axis tip calibration function
- Auxillary camera to monitor dispense process live
- High resolution CCD camera
- LED Light & Brightness Controller
- Simple & fast transfer of CAD data (.DXF/Gerber) into software
- Quick to set up and easy to program/operate using proprietary
- Industrial windows based PC system included
- Glue Check/Verification function\*

## Benefits

- Vision system can be easily installed at any time onto a F4000
- ADVANCE 3-axis robot using plug and play system design
- Peripheral hardware is mounted directly onto robot reducing space envelope taken up
- Images can be captured and stored for quality and process control purposes
- QR codes can be scanned by the camera, causing the relating program to be automatically selected

## Proprietary User Interface

For simple user setup, programming and operation.



**Tool Ribbon**  
Used for quickly accessing program setup and management functions.

**Programming Window**  
Gives full and simple view of complete dispense program. Values can be edited directly by clicking on the line.

**Camera Display**  
Real time view of camera viewing area. Cross hair designates dispense location to ensure precise positional control. Clicking on imaging area will jog robot to position clicked on.

**Robot Movement**  
Icons used to control robot movement and speed while also displaying absolute/relative dispense coordinates.

**Dispense Function**  
Graphical icons used for quick robot programming.

**Robot Actuation**  
Icons used to start, stop and view robot program.

\*Glue check function not suitable for all applications. To be certified by Fisnar application team.



## 1 F4000 ADVANCE Desktop Robot

Highly robust and durable based on their cast aluminium base and heavy duty extruded aluminium twin vertical side pillars supporting the horizontal X-axis. This rigid design concept allows for long term precision dispensing and dependable repeatability.

## 2 PC

Industrial specification PC installed with Windows 7 and supplied installed with Fluid-In-Motion (FIM) software ready to use. Unit mounted directly onto robot to reduce overall space envelope. TFT LCD monitor, keyboard & mouse included.

## 3 CCD Camera

For high resolution color and greyscale image capturing.

## 4 LED Ring Light & Controller

For optimising image contrast and definition. Adjustable light brightness controller is mounted directly onto the robot to reduce the overall space envelope.

## 5 Tip Calibration Module

Works by the camera capturing an image of the purged fluid and uses pattern recognition to compare it against a pre-defined datum image. Any difference found between the center positions result in the X and Y coordinate values being automatically adjusted and dispense program re-aligning to suit. The Z-axis is automatically calibrated by the dispense tip contacting a touch pad.

## 6 Aux Camera

Displays a live image on the TFT LCD monitor allowing the user to clearly monitor the fluid being dispensed onto the component part while a dispense cycle is taking place.

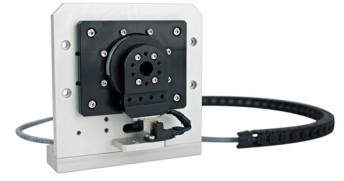
## Auxiliary Rotation Axis

The Auxiliary rotation module allows an additional axis to be quickly and easily mounted onto a F4000 ADVANCE 3-Axis robot. The device can be mounted in two different ways:

**Horizontal Mounting:** When 4-Axis (R) rotation is required, but is not possible due to the size or weight of the dispense equipment that is normally attached to the robot Z-Axis that would typically rotate on a conventional 4-Axis robot. This configuration set-up results in the workpiece rotating instead, achieving the same end dispense result. Horizontal mounting also allows the CCD vision system to be used in application processes requiring 4-axis motion.

**Vertical Mounting:** In applications that require dispensing onto multiple planes on a single workpiece.

Dispensing onto cylindrical components can be made easy with the device mounted in either a horizontal or vertical position depending on the specific application process.



Item Number

F4000AKIT-AUX

## I/O Expansion Module

The I/O Expansion module increases the number of inputs and outputs while simplifying connection of external devices (e.g. sensors) to the robot.

The I/O expansion module increases the number of robot inputs to 16 channels and outputs to 20 channels. Two different models (NPN or PNP) are available depending on the I/O signal type of the external devices. The use of this device also prevents any damage caused to the PCB's inside the robot due to incorrect wiring or failure of the external device.



Item Number

Description

F4000AKIT-IONPN

I/O Expansion Module - NPN Signal

F4000AKIT-IOPNP

I/O Expansion Module - PNP Signal

## Remote Operation Box

The remote operation box allows users to operate the robot from a safe distance or in instances when the robot is housed within a safety enclosure.

A version is also available with a safety relay (Category 3, PL d) incorporated directly inside allowing a light curtain or safety switch to be easily connected to the control box. This eliminates the need for additional cost for an unnecessary electrical control panel to be fitted.



Item Number

Description

F4000AKIT-EXTBOX

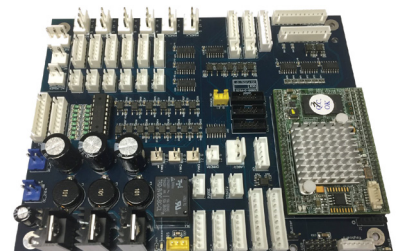
Remote Operation Box

F4000AKIT-EXTBOX-SR

Remote Operation Box with Safety Relay

## N.1 Robot Upgrade Kit

The upgrade kit can be installed onto a Fisnar F4300N.1, F4400N.1 or F4500N.1 robot, making it compatible with the following robot accessory kits: CCD Camera Vision System, Automatic Tip alignment, Height Sensor, I/O Expansion Module, Remote Operation Box.



Item Number

Description

F4000AKIT-N.1ADV-3

Upgrade Kit for F4300N.1

F4000AKIT-N.1ADV-4

Upgrade Kit for F4400N.1

F4000AKIT-N.1ADV-5

Upgrade Kit for F4500N.1