

TECHNICAL DATASHEET

Fresh produce robotic picking, built around the product.

FP5 combines a compact 6-axis robot, 3D machine vision, NVIDIA edge AI and adaptable Soft Touch gripping to automate delicate produce handling without forcing every product into the same tooling or recipe.

5 kg

ROBOT PAYLOAD

950 mm

ROBOT REACH

3000 mm/s

ROBOT SPEED - UP TO

360°

SAFETY SCANNER COVERAGE



High-throughput vision-guided picking

1 trained product model included in system price

BUILT FOR VARIABLE, DELICATE PRODUCT

Designed for fresh-produce environments where product geometry, orientation and surface condition vary from item to item. FP5 uses vision-guided recipes and configurable end-of-arm tooling rather than fixed mechanical presentation.

Tomatoes

Berries

Apples

Citrus

Peppers

Cucumbers

Mushrooms

Cheese

Pastries

Eggs*

Food-production construction

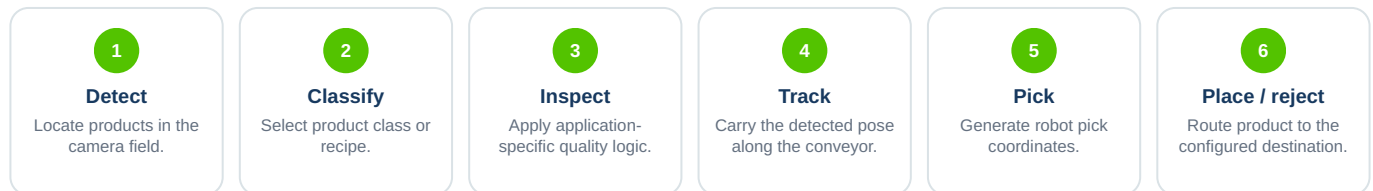
- ✓ 316 stainless-steel cabinet and structure
- ✓ Smooth, cleanable external surfaces
- ✓ Sealed industrial compute and control cabinet
- ✓ Application-specific food-contact fingers and pads available
- ✓ Target enclosure ingress protection: IP66*

***IP66 status:** currently awaiting compliance testing to gain IP certification. Final installed ingress protection is configuration-dependent and may be limited by the selected robot, camera, end-effector, connectors and peripherals. Angular gripper option is IP54; parallel gripper option is IP66.



See it. Understand it. Track it. Pick it.

The vision stack converts camera data into product position, orientation, class and quality decisions. Inference runs locally on the FP5 so the machine does not depend on a cloud connection for normal production.



NVIDIA Jetson Orin NX 16GB

Industrial edge compute provides local GPU acceleration for the FP5 vision pipeline.

157 TOPS

up to, sparse INT8 in
MAXN_SUPER

16 GB

LPDDR5 unified memory

1024

NVIDIA CUDA cores

32

Tensor Cores

NVIDIA public module specification. Available performance depends on software, power mode and the thermal design of the installed industrial computer.



NVIDIA TensorRT acceleration

Optimised GPU inference for low-latency, high-throughput production vision.

One trained model is included

Each FP5 system includes training and deployment of one agreed product model. Additional product types, grades, defect classes or customer-specific models are available on request.

VISION CAPABILITIES

- ✓ 3D / depth-enabled product localisation
- ✓ Product detection and classification
- ✓ Orientation and robot pose generation
- ✓ Configurable confidence thresholds
- ✓ Quality / defect inspection workflows where suitable training data is available
- ✓ Recipe-based selection of product model and handling parameters
- ✓ ONNX / TensorRT deployment workflow for efficient inference

CONVEYOR SYNCHRONISATION

Encoder-referenced tracking

Detected products can be referenced to conveyor movement so the system maintains a predicted product pose between the upstream camera zone and the robot pick zone.

Upstream detection

Encoder tracking

Predictive pick

Recipe control

Process strategy to suit the application

FP5 can be configured for controlled stop-and-pick or coordinated conveyor tracking, including high-throughput applications. Robot motion is capable of up to 3000 mm/s, subject to configured safety limits, product, path and application.

Final cycle time and achievable throughput are product- and application-dependent and are confirmed during trials/FAT.

Handling that adapts to the product, not the other way around.



SOFT TOUCH SENSING TECHNOLOGY

Soft Touch adds contact and force-feedback information to the gripper control loop, allowing FP5 recipes to approach, contact and secure delicate products with more control than position-only gripping.

- ✓ Contact detection before full jaw closure
- ✓ Configurable grip window for each product recipe
- ✓ Incremental position adjustment to build grip gradually
- ✓ Automatic back-off if the configured force/contact threshold is exceeded
- ✓ Product-specific finger geometry and compliant contact surfaces

END-EFFECTOR OPTIONS

Specification	Soft Touch angular gripper	Parallel gripper option
Nominal adjustable range	1-145 mm angular gripping range	60 mm adjustable parallel travel
Ingress protection	IP54	IP66
Finger adaptation	Custom finger profiles, pad shapes and lengths available	Custom / extended fingers can increase the effective product size handled beyond the standard travel
Soft Touch sensing	Available / integrated with application-specific finger pads	Available with suitable custom finger design
Best suited to	Variable, rounded and irregular products requiring adaptable angular contact	Products that benefit from straight opposed contact and higher gripper ingress protection

Gentle contact

Recipes can use contact feedback to transition from fast approach to controlled gripping, reducing unnecessary compression.

Change the fingers

Finger geometry can be tailored around the shape, size, fragility and presentation of the customer's product.

Change the recipe

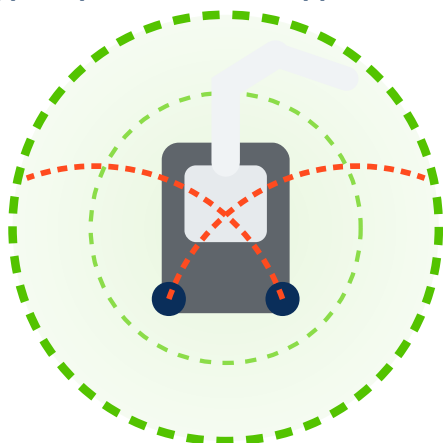
Gripper settings, contact thresholds and handling behaviour can be stored against product recipes from the HMI.

TYPICAL PRODUCT SUITABILITY

- ✓ Soft fruit and berries
- ✓ Peppers, citrus and apples
- ✓ Cheese and delicate prepared food
- ✓ Eggs and fragile items with validated tooling
- ✓ Tomatoes and vine produce
- ✓ Cucumbers and irregular vegetables
- ✓ Bakery / pastry products with suitable contact materials
- ✓ Customer products assessed through sample trials

360° monitored area safety around the robot.

Typical protective field: approx. 2-3 m*



Dual overlapping scanner fields provide 360° monitored coverage

Area entry = robot motion halted

When a person enters the configured protective field, robot motion is stopped and the production sequence is held.

Automatic process resume

When the monitored field is clear, FP5 can automatically resume the process once the configured safety restart conditions are satisfied. Restart behaviour is commissioned to the final risk assessment and site rules.

*2-3 m is a typical working protective distance discussed for FP5. Final field size is calculated and validated for the installed robot speed, stopping performance, layout and application.

SAFETY ARCHITECTURE

Dual safety scanners

Two overlapping laser-scanner fields are arranged to provide monitored coverage around the open robot work area.

Emergency stop

Operator emergency-stop controls are integrated into the FP5 HMI/control station and machine safety circuit.

Safe restart logic

Production restart and recovery logic is configured to the final safeguarding concept rather than relying on a generic timer.

HMI & RECIPES

Robot initialise / status	Cycle start / stop / pause
Product recipe selection	Vision model selection
Grip/contact thresholds	Conveyor parameters
Diagnostics and device status	Recovery / maintenance functions

DESIGN REFERENCES

Safety engineering and final validation are application-specific. FP5 system design is intended to be developed with reference to applicable machinery and robot safety standards including:

ISO 12100

ISO 10218

ISO 13849-1

PUWER

This datasheet is not a safety validation or declaration of conformity. Final safeguards, PLr, stopping distance, restart method and site integration are established during project risk assessment and commissioning.

A compact cell architecture with industrial interfaces.



Core mechanical platform

- ✓ 6-axis industrial robot - 5 kg payload, 950 mm reach
- ✓ 316 stainless-steel cabinet / structural enclosure
- ✓ Integrated external touchscreen HMI and operator controls
- ✓ Internal routing for end-of-arm tooling connections
- ✓ Industrial edge AI computer based on Jetson Orin NX 16GB
- ✓ Integrated safety-scanner and emergency-stop architecture
- ✓ Conveyor / product-flow interface configurable to the application
- ✓ Modular end-effector and custom finger options

CONTROL & DATA ARCHITECTURE



Industrial communications

Ethernet Modbus TCP RS485 Hardwired I/O

FP5 can exchange cycle status, recipe information, coordinates, ready/busy signals and production handshakes with customer controls. Exact interface scope is defined during project engineering.

Conveyor integration

FP5 can be supplied around a dedicated conveyor or integrated with customer product flow. Encoder feedback, VFD control, start/stop handshakes and upstream/downstream permissives can be incorporated as required.

Technical specification summary

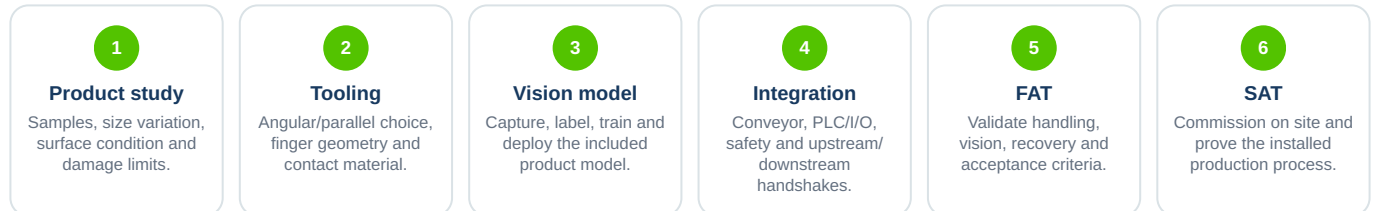
Core system		Vision & AI	
System	FP5 fresh-produce robotic picking cell	Vision	Integrated 3D / depth-enabled AI vision; camera selected to application
Robot type	6-axis industrial robot	Compute	NVIDIA Jetson Orin NX 16GB
Payload	5 kg	AI performance	Up to 157 TOPS (module MAXN_SUPER public specification)
Reach / speed	950 mm up to 3000 mm/s	GPU	1024 CUDA cores; 32 Tensor Cores
Construction	316 stainless-steel cabinet / structure	Memory	16GB LPDDR5
System target IP	IP66* - compliance testing pending	Acceleration	NVIDIA TensorRT
HMI	Integrated touchscreen operator interface with recipes and diagnostics	Included model	1 trained product model included in system price
Conveyor	Integrated or customer conveyor; encoder support available	Additional models	Available on request
Gripping		Safety & integration	
Angular option	1-145 mm adjustable range	Area monitoring	360° monitored coverage using dual overlapping safety laser scanners
Angular IP	IP54	Protective field	Typically approx. 2-3 m; final distance established by risk assessment
Parallel option	60 mm adjustable range	Field breach	Robot motion halted and sequence held
Parallel IP	IP66	Clear field	Configurable automatic process resume when safe restart conditions are satisfied
Custom fingers	Available for product geometry, contact area and increased effective size	Interfaces	Ethernet, Modbus TCP, RS485 and hardwired I/O as required
Soft Touch	Contact / force sensing available with suitable finger configuration	Safety design	Application-specific design and validation with reference to applicable machinery / robot standards

Configuration note: FP5 is an engineered platform rather than a fixed catalogue machine. Product range, camera, end-effector, conveyor interface, safety-field geometry, customer controls and acceptance criteria are confirmed during project engineering.

FOOD SAFETY - All exposed product-zone components and lubricants / greases are specified for food-safe use. Gripper surfaces intended to contact product use food-contact-safe materials.

Configure, validate and deploy around the real product.

The FP5 platform is adapted during project engineering so the robot, vision model, gripper, conveyor and safety concept are matched to the customer's product and production environment.



APPLICATION-SPECIFIC CONFIGURATION

- ✓ Product size and variation envelope
- ✓ Camera type, mounting and field of view
- ✓ Product destinations and reject logic
- ✓ Customer PLC and machine handshakes
- ✓ Recipe structure and operator controls
- ✓ Gripper style and finger geometry
- ✓ Vision model, classes and training dataset
- ✓ Conveyor width, speed and tracking strategy
- ✓ Safety field, layout and restart behaviour
- ✓ FAT / SAT acceptance criteria

IMPORTANT ENGINEERING NOTES

Ingress protection: IP66 is the target FP5 system/enclosure rating and is currently awaiting compliance testing to gain IP certification. The final installed rating is affected by the robot, gripper, camera, connectors and accessories. The angular gripper is IP54; the parallel gripper option is IP66.

Safety: protective-field dimensions and restart logic are configured and validated for the installed application, stopping performance and site risk assessment. The 2-3 m distance shown in this datasheet is a typical design range, not a fixed universal distance.

Performance: cycle time, throughput, pick success and inspection performance depend on product presentation, conveyor behaviour, model training data, tooling and agreed acceptance criteria.