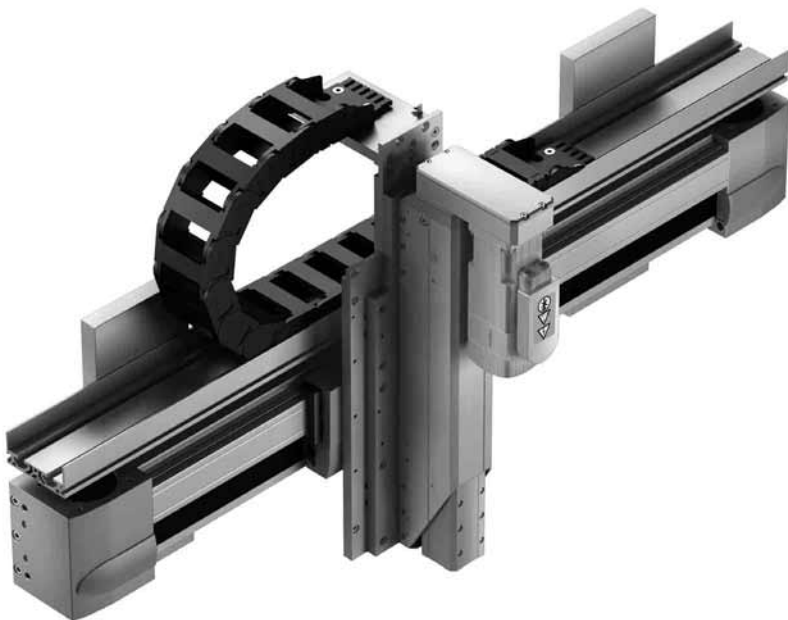




Linear gantries



Movements in 2D: a linear gantry consists of a gantry axis and a yoke drive.

- High mechanical rigidity and sturdy design
- Pneumatic and electrical components – freely combinable
- As electrical solution – variable positioning/any desired intermediate positions

Range of application:

- Ideal for long gantry strokes
- Often used for feeding applications
- Workpiece masses up to 5 kg (effective load up to 10 kg)
- Long gantry strokes up to 3 m and heavy loads up to 10 kg
- High requirements on system resistance to torsion

Example: construction materials industry

Handling, palletising and packing of ceramic tiles



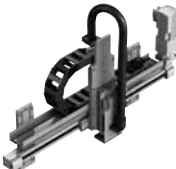



Requirements

- High dynamic response
- Gentle acceleration and braking
- Jerk-free movement
- Good positioning flexibility

Solution

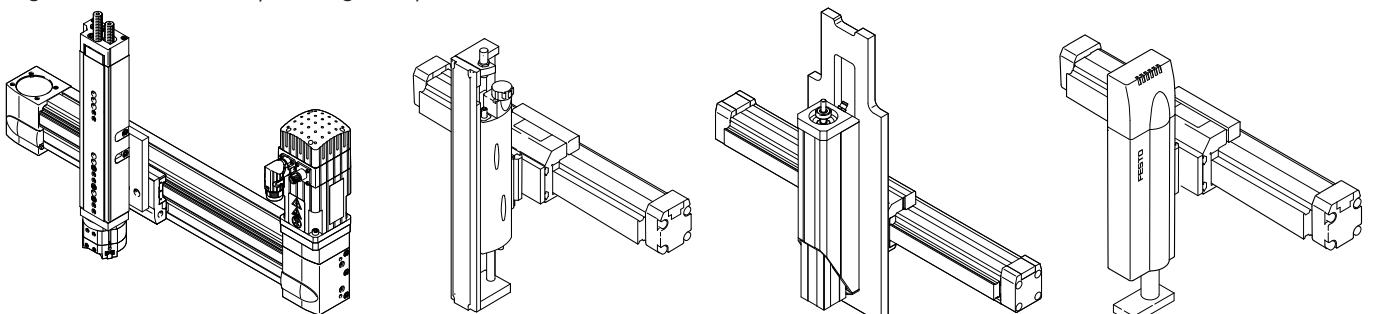
- Linear gantry with toothed belt axes and cantilever axis
- Complete solution, including vacuum gripper



| Type | Important characteristics | Axis design | Effective load | Max. effective strokes | Components |
|---|---|---|--|---|---|
|  <ul style="list-style-type: none"> • Linear gantry as mono axis • Free movement of the Z-axis in the vertical plane (2D) | <ul style="list-style-type: none"> • High process reliability thanks to installation integration • Pneumatic and electric drives (with freely programmable positions) • Repetition-accurate, centralised direct axis connections • Mini slide on the Z-axis for maximum precision | Y: Gantry axes Z: Slide Cantilever axis | Mono: 0 to 6 kg | Y: Up to 5000 mm Z: Up to 300 mm | Y: DGC/EGC Z: DGSL EGSA |
|  <ul style="list-style-type: none"> • See above | <ul style="list-style-type: none"> • See above, points 1–3 • Pneumatic cantilever axis on the Z-axis with high repetition accuracy, high dynamic response and intermediate positions | Y: Gantry axes Z: Handling axis | Mono: 0 to 5 kg | Y: Up to 5000 mm Z: Up to 200 mm | Y: DGC/EGC Z: HMPL |
|  <ul style="list-style-type: none"> • See above | <ul style="list-style-type: none"> • See above, points 1–3 • Pneumatic handling axis on the Z-axis with high rigidity and intermediate positions | Y: Gantry axes Z: Handling axis | Mono: 0 to 10 kg* | Y: Up to 5000 mm Z: Up to 400 mm | Y: DGC/EGC Z: HMP |
|  <ul style="list-style-type: none"> • Linear gantry as mono or duo axis • Free movement of the Z-axis in the vertical plane (2D) | <ul style="list-style-type: none"> • See above, points 1–3 • Electric cantilever axis on the Z-axis for large strokes, high dynamic response and low moving dead weight | Y: Gantry axes Z: Cantilever axis | Mono: 0 to 15 kg Duo: 0 ... 25 kg | Y: Up to 5000 mm Z: Up to 900 mm | Y: DGC/EGC Z: DGEA |

Higher effective loads of up to 50 kg on request

* With the pneumatic drive DGC, can be used as duo axis



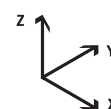
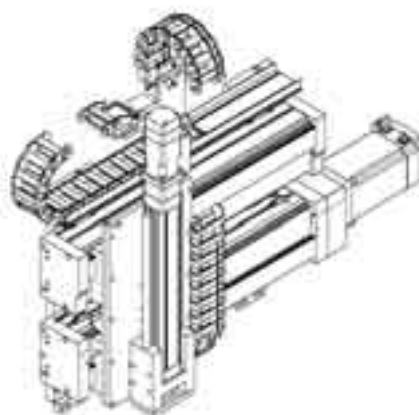
Standard linear gantry LP 50

Effective load up to 50 kg

Motor controller package on electric axes

Servo motor: EMMS-AS

Controller: CMMS/P-AS (CMMD)



Technical data

| | | Stroke/mm | Intermed. position | Repetition accuracy/mm | |
|--------|-----------------------|------------|--------------------|------------------------|----------------|
| Z-axis | ↕ | | End position | Intermediate position | |
| SP | EGC-185-BS-KF | 0 ... 1000 | Any | ± 0.02 | ± 0.02 |
| SP | DNCE-63 with FENG | 0 ... 200 | Any | ± 0.02 | ± 0.02 |
| Y-axis | ↔ | | | | |
| ZR | 2 x EGC-185-TB-KF *** | 0 ... 8500 | Any | ± 0.08 | ± 0.08 |
| SP | 2 x EGC-185-BS-KF *** | 0 ... 3000 | Any | ± 0.02 | ± 0.02 |
| P | DGC-63 + FA *** | 0 ... 5000 | 1* | ± 0.02 | ± 0.02/± 0.1 |
| PS | DGCI-63 + FA *** | 0 ... 2000 | 2/any** | Max. ± 0.4 | Max. ± 0.4/± 2 |

* More than 1 on request

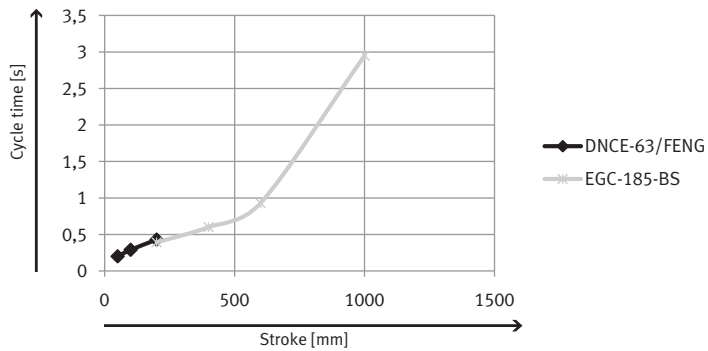
** 2 with SPC11/CMPX, any with SPC200/CMAX

*** Max. Z-stroke 1000 mm

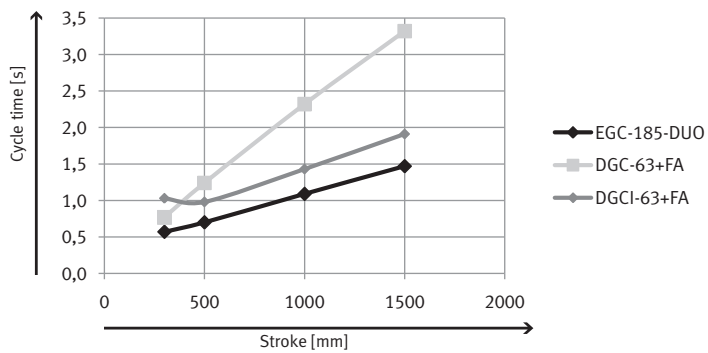
Grey shading: drive components in the illustration

Reference for cycle times

Z-axis



Y-axis



Note

Selection matrix

Types of handling units

→ Pages 6 to 9

Handling components

→ Page 95

Gripping/rotating

Adaptation options

→ Page 71

Control cabinets

→ Page 92

Frames

→ Page 78

CAD drawings/

CAD hotline

2D and 3D drawings

→

Tel. +49 (0)711 347-4667

Individual project engineering and cycle time calculation

→

Tel. +49 (0)711 347-4381

Fax enquiry


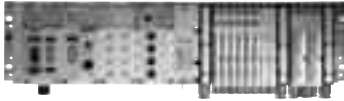
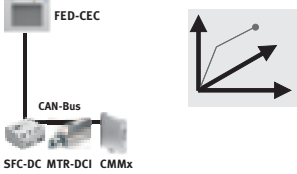
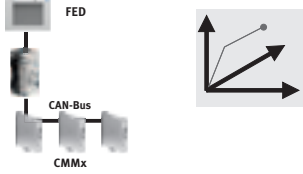
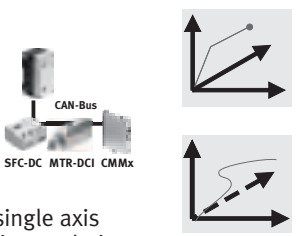
Form

→ Page 101

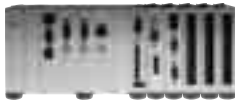
Note

An operating pressure of 6 bar is assumed for all the pneumatic drives shown here.

Overview of Festo control products

| |  FED-CEC Integrated controller FED-CEC |  CPX terminal CoDeSys controller CPX-CEC-C1 Motion controller CPX-CEC-M1 | |
|--|--|---|---|
| |  Single axis (point-to-point asynchronous) |  C1: single axis M1: interpolation |  C1: single axis M1: interpolation |
| Maximum number of possible axes | Recommended: 8 axes Note: one axis is treated as a CANopen node. 128 nodes are possible (as defined by CANopen specifications). | Recommended: 8 axes Note: one axis is treated as a CANopen node. 128 nodes are possible (as defined by CANopen specifications). | Recommended: 8 axes Note: one axis is treated as a CANopen node. 128 nodes are possible (as defined by CANopen specifications). |
| Motion | <ul style="list-style-type: none"> • Point-to-point asynchronous • Every axis moves with its own pre-defined parameter • The axes do not reach their end positions at the same time and the path is not defined | | <ul style="list-style-type: none"> • 2.5D interpolation • PLC Open |
| Special features | Integrated controller in a display screen | Function integration on the CPX valve platform | |
| | | | <ul style="list-style-type: none"> • CNC editor • DXF import • Cam disk editor |
| Application examples | <ul style="list-style-type: none"> • Handling systems • Pick & place, palletising | | Path control, bonding, cutting, handling, flying saw, cam disk |
| Programming environment | CoDeSys | CoDeSys | CoDeSys + Softmotion |

Modular control



| Modular control | | CMXR robotic controller | |
|---|---|--|--|
| Modular controller CECX-C1 | Motion controller CECX-M1 | CMXR-C1 (Basic) | CMXR-C2 (Advanced) |
| <p>Single axis (point-to-point asynchronous)</p> | <p>Interpolation (2.5D)</p> | <p>Robotics (3D)</p> | <p>Robotics (3D)</p> |
| <p>Recommended: 8 axes Note: one axis is treated as a CANopen node. 128 nodes are possible (as defined by CANopen specifications).</p> | | <p>Max. 6 interpolated axes, of which max. 3 basic axes and 1 orientation axis and max. 3 dependent auxiliary axes that are interpolated together with the kinematics system.</p> | |
| | | | <p>Additional single axes (not interpolated together with others) can be controlled via the integrated CoDeSys PLC. Recommended: 16 axes.</p> |
| | | <p>3D contour interpolation with an orientation axis for kinematics systems with up to 4 degrees of freedom. E.g. 3D gantry with an axis of rotation on the front end.</p> | |
| | <ul style="list-style-type: none"> • 2.5D interpolation • PLC Open | | <p>CoDeSys control: point-to-point asynchronous</p> |
| <ul style="list-style-type: none"> • Powerful PLC • Encoder interface • Interrupt function • Fast clock pulse inputs • Profibus master • Two Canbus masters • RS 232/ RS 485-A/422-A | | <ul style="list-style-type: none"> • Economical design and configuration with the Festo Configuration Tool (FCT) • Simple programming of motions with Festo Teach Language (FTL), no specialist expertise required • Optional teach pendant with 2-channel permission button • Reduced speed in manual override mode • Automatic repositioning when continuing interrupted motions • Simple teaching of positions • Definition of tools, allowing easy use of multiple grippers • Real orientation axes on the front end • Integrated kinematics models e.g. for Cartesian systems, tripod, H- and T-gantries | |
| | <ul style="list-style-type: none"> • CNC editor • DXF import • Cam disk editor | | <ul style="list-style-type: none"> • Increased flexibility with the integrated CoDeSys PLC, e.g. for the integration of vision systems • Tracking function for applications involving selecting items from a conveyor belt • Speed-independent path switching points with time compensation, e.g. for bonding applications • Complete automation of a cell is possible |
| <ul style="list-style-type: none"> • Handling systems • Pick & place, palletising | <p>Path control, bonding, cutting, handling, flying saw, cam disk</p> | <p>Handling, palletising, bonding, metered dispensing, painting, cutting</p> | <p>Tracking applications such as processing of moving parts on a conveyor belt or synchronised kinematics movement with up to 6D</p> |
| CoDeSys | CoDeSys + Softmotion | Festo Teach Language (FTL) | FTL + CoDeSys |