

End-position controllers CPX-CMPX

FESTO



Overview

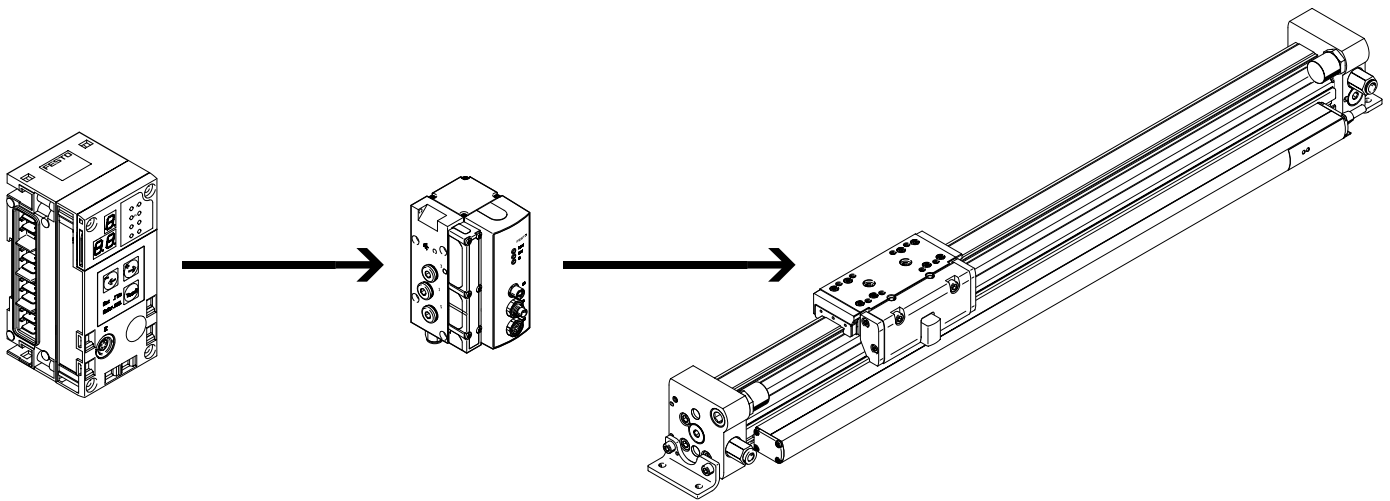
Servo-pneumatic drive technology

Positioning and Soft Stop applications as an integral component of the valve terminal CPX – the modular peripheral system for decentralised automation tasks.

The modular design means that valves, digital inputs and outputs, positioning modules and end-position controllers, as appropriate for the application, can be combined in almost any way on the CPX terminal.

Advantages:

- Pneumatics and electrics – control and positioning on one platform
- Innovative positioning technology – piston rod drives, rodless drives, rotary drives
- Actuation via fieldbus
- Remote maintenance, remote diagnostics, web server, SMS and e-mail alerts are all possible via TCP/IP
- Modules can be quickly exchanged and expanded without altering the wiring



Key features

Axis controller CPX-CMAX



Free choice:

Position and force control, directly actuated or selected from one of 128 configurable position sets.

If more is needed:

The configurable record sequencing function enables simple functional sequences to be realised with the axis controller CPX-CMAX.

Everything is recognisable:

the auto-identification function identifies each participant with its device data on the controller CPX-CMAX.

Also included:

Actuation of a brake or clamping unit via the proportional directional control valve VPWP is also part of the scope of performance of the controller CPX-CMAX.

Up to 8 modules (max. 8 axes) can be operated in parallel and independently of each other.

Commissioning via FCT (Festo configuration software) or via fieldbus:

no programming, only configuration.

Advantages:

- Greater flexibility
- OEM friendly – commissioning also via fieldbus
- Easy installation and fast commissioning
- Cost-effective
- You program the system in your PLC environment

End-position controllers CPX-CMPX

Datasheets → Internet: cpx-cmpx



Fast travel between the mechanical end stops of the cylinder, stopping gently and without impact in the end position.

Fast commissioning via control panel, fieldbus or handheld unit.

Improved control of standstills.

Actuation of a brake or clamping unit via the proportional directional control valve VPWP is an integral part of the controller CMPX.

Depending on the fieldbus chosen, up to 9 end-position controllers can be actuated on the CPX terminal.

All system data can be read and written via the fieldbus, including, for example, the mid-positions.

Advantages:

- Greater flexibility
- OEM friendly – commissioning also via fieldbus
- Easy installation and fast commissioning
- Cost-effective
 - Up to 30% faster cycle rates
 - Significantly reduced system vibration
- Improved work ergonomics thanks to significantly reduced noise level
- The extended diagnostics help to reduce the service time of the machine

Proportional directional control valve VPWP

Datasheets → Internet: vpwp



The 5/3-way proportional directional control valve for applications with Soft Stop and pneumatic positioning.

Fully digitalised – with integrated pressure sensors, with new diagnostic functions.

In sizes 4, 6, 8 and 10.

Flow rates of 350, 700, 1400 and 2000 l/min.

With switching output for controlling a brake.

Colour-coded supply ports.

Pre-assembled cables guarantee error-free and fast connection to the controllers CPX-CMPX and CPX-CMAX.

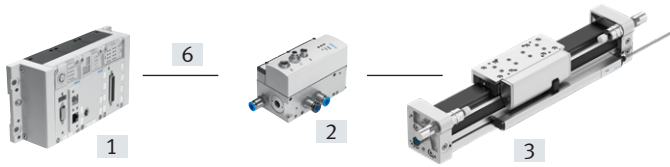
Advantages:

- Easy installation and fast commissioning
- Reduction of system downtimes thanks to the new diagnostic options
- With switching output for controlling a brake/clamping unit

Drive options

System with linear drive DDLI, DGCI

Datasheets → Internet: [ddli](#) or [dgc](#)



- [1] Controller module CPX-CMPX or CPX-CMAX
- [2] Proportional directional control valve VPWP
- [3] Linear drive DDLI, DGCI with displacement encoder
- [6] Connecting cable KVI-CP-3...

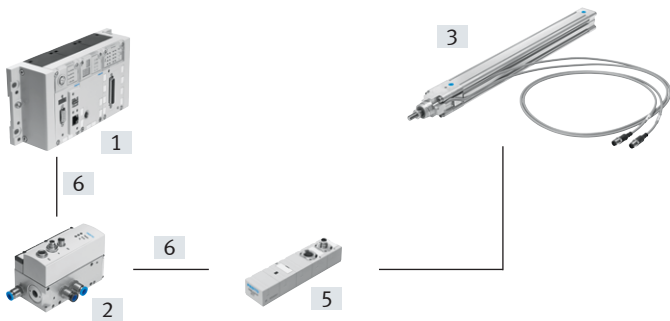
- Pneumatic rodless linear drive with displacement encoder, with or without recirculating ball bearing guide
- Displacement encoder with absolute and contactless measurement
- Diameter:
 - With DGCI: 18 ... 63 mm
 - With DDLI: 25 ... 63 mm
- Stroke: 100 ... 2000 mm in fixed lengths
- Application areas: Soft Stop and pneumatic positioning
- Loads from 1 ... 180 kg
- No sensor interface required

Advantages:

- Complete drive unit
- DDLI for easy connection to customer's guide system
- Excellent running characteristics
- For fast and accurate positioning up to ± 0.2 mm (only with axis controller CPX-CMAX)

System with standards-based cylinder DNCI, DDPG

Datasheets → Internet: [dn](#)



- [1] Controller module CPX-CMPX or CPX-CMAX
- [2] Proportional directional control valve VPWP
- [3] Standards-based cylinder DNCI, DDPG with displacement encoder
- [5] Sensor interface CASM-S-D3-R7
- [6] Connecting cable KVI-CP-3...

- Standards-based cylinder with integrated displacement encoder, conforms to DIN ISO 6432, VDMA 24 562, NF E 49 003.1 and Uni 10 290
- Displacement encoder with contactless and incremental measurement
- Diameter: 32 ... 100 mm
- Stroke: 100 ... 750 mm
- Application areas: Soft Stop and pneumatic positioning
- Loads from 3 ... 450 kg and the corresponding sensor interface CASM-S-D3-R7
- Pre-assembled cables guarantee error-free and fast electrical connection

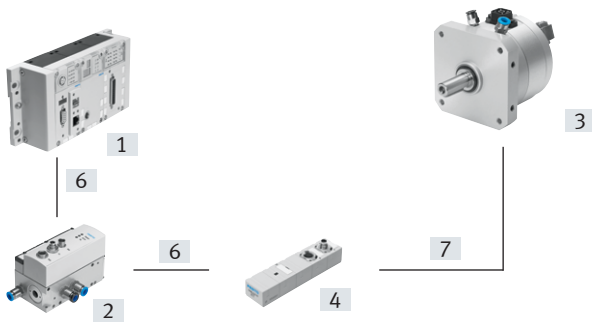
Advantages:

- Compact drive unit
- Can be used universally
- Also with guide unit
- For fast and accurate positioning up to ± 0.5 mm (only with axis controller CPX-CMAX)

Drive options

System with semi-rotary drive DSMI

Datasheets → Internet: dsmi



- [1] Controller module CPX-CMPX or CPX-CMAX
- [2] Proportional directional control valve VPWP
- [3] Semi-rotary drive DSMI with displacement encoder
- [4] Sensor interface CASM-S-D2-R3
- [6] Connecting cable KVI-CP-3-...
- [7] Connecting cable NEBC-P1W4-K-0.3-N-M12G5

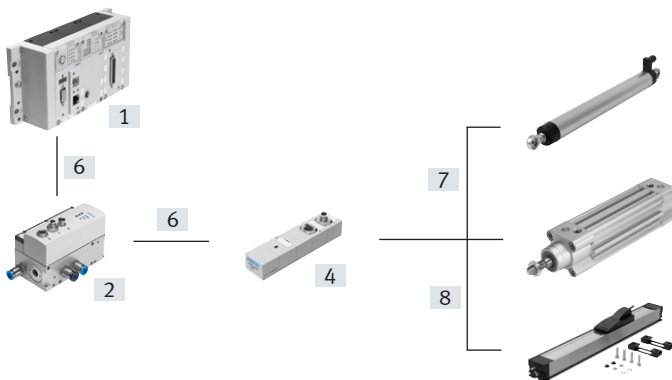
- Swivel drive DSMI with integrated displacement encoder
- Identical design to pneumatic semi-rotary drive DSM
- Absolute displacement encoder based on a potentiometer
- Swivel range from 0 ... 270°
- Size: 25, 40, 63
- Max. torque: 5 ... 40 Nm
- Application areas: Soft Stop and pneumatic positioning
- Mass moments of inertia of 15 ... 6000 kgcm² and the corresponding sensor interface CASM-S-D2-R3
- Pre-assembled cables guarantee error-free and fast connection to the proportional directional control valve VPWP

Advantages:

- Complete drive unit, compact, can be used immediately
- High angular acceleration
- With adjustable fixed stops
- For fast and accurate positioning down to ±0.2° (only with axis controller CPX-CMAX)

System with potentiometer

Datasheets → Internet: casm



- [1] Controller module CPX-CMPX or CPX-CMAX
- [2] Proportional directional control valve VPWP
- [4] Sensor interface CASM-S-D2-R3
- [6] Connecting cable KVI-CP-3-...
- [7] Connecting cable NEBC-P1W4-K-0.3-N-M12G5
- [8] Connecting cable NEBC-A1W3-K-0.4-N-M12G5

- Attachable potentiometers with absolute measurement, with high degree of protection
- With connecting rod or moment compensator
- Measuring range:
Connecting rod: 100 ... 750 mm
Moment compensator: 225 ... 2000 mm
- Pre-assembled cables guarantee error-free and fast connection to the sensor interface CASM
- Application areas: Soft Stop and pneumatic positioning with cylinder diameters of 25 ... 80 mm
- Loads from 1 ... 300 kg

Advantages:

- Easy installation and fast commissioning
- Cost-effective
- Can also be used in harsh operating conditions
- Variety of drives: CPX-CMPX and CPX-CMAX also support cylinders with external displacement encoder

Drive options

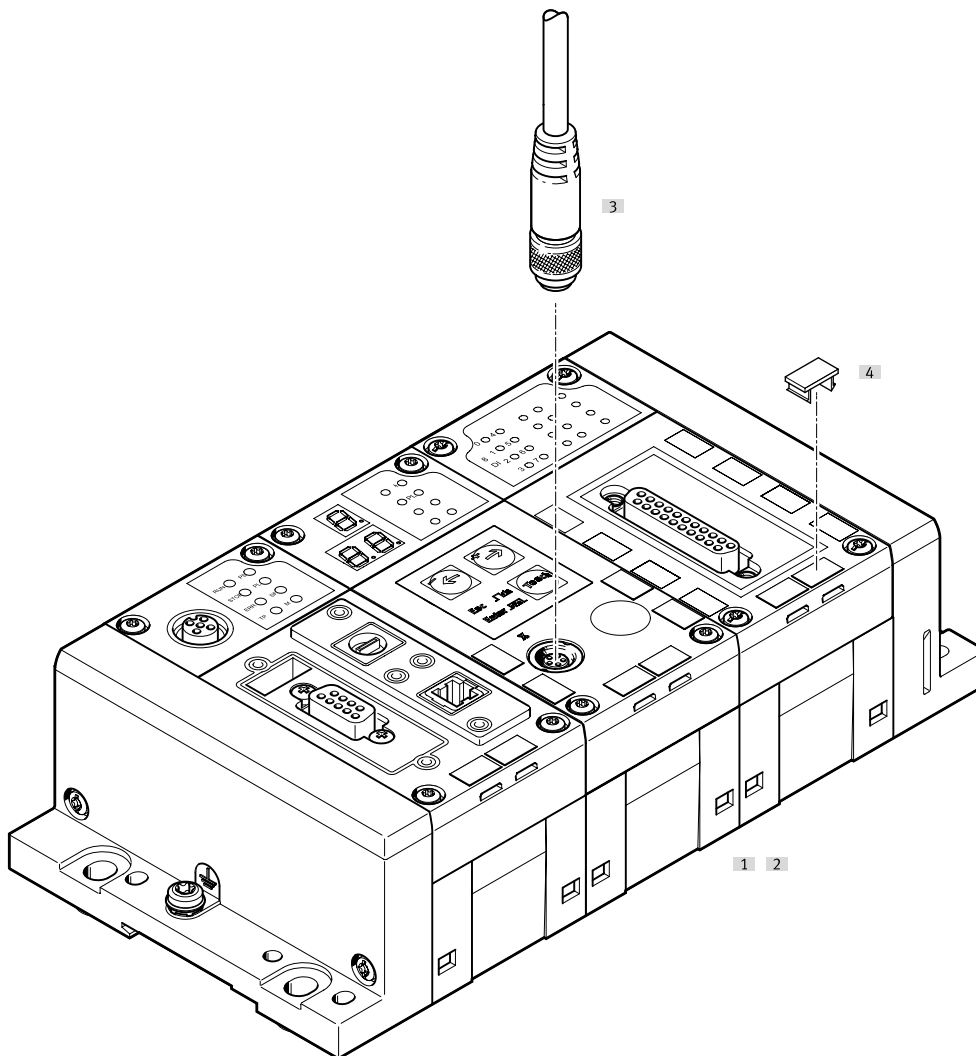
| System components for Soft Stop systems with end-position controller CPX-CMPX | | | | | | | |
|---|---|--------------|--------------------------|-------------------|----------------------|---------|-----------------|
| [3] | | Linear drive | Standards-based cylinder | Semi-rotary drive | Displacement encoder | | → Page/Internet |
| | | DDLI/DGCI | DNCI/DDPC | DSMI | MLO-LWG/-TLF | MME-MTS | |
| [1] | End-position controller CPX-CMPX | ■ | ■ | ■ | ■ | ■ | 8 |
| [2] | Proportional directional control valve VPWP | ■ | ■ | ■ | ■ | ■ | vpwp |
| [4] | Sensor interface CASM-S-D2-R3 | – | – | ■ | ■ | – | casm |
| [5] | Sensor interface CASM-S-D3-R7 | – | ■ | – | – | – | casm |
| [6] | Connecting cable KVI-CP-3-... | ■ | ■ | ■ | ■ | ■ | 10 |
| [7] | Connecting cable NEBC-P1W4-... | – | – | ■ | ■ / – | – | nebc |
| [8] | Connecting cable NEBC-A1W3-... | – | – | – | – / ■ | – | nebc |
| – | Connecting cable NEBP-M16W6-... | – | – | – | – | ■ | vpwp |

Type codes and peripherals overview

Type codes

| | | | |
|----------|---|-----|---------------|
| 001 | Series | 003 | Axes |
| CPX-CMPX | End-position controller for electrical terminal | 1 | One |
| 002 | Function module | 004 | Control panel |
| C | Controller | H1 | Integrated |

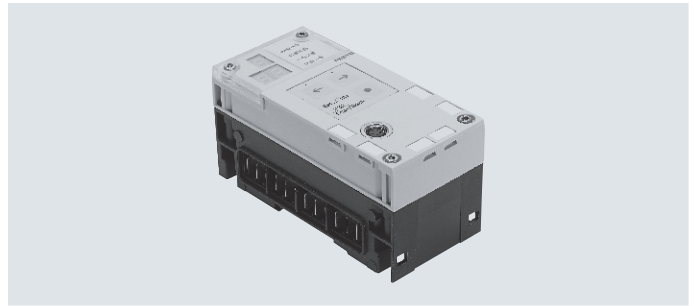
Peripherals overview



| Accessories | | | |
|-------------|----------------------------------|--|-----------------|
| Type | | Brief description | → Page/Internet |
| [1] | End-position controller CPX-CMPX | Integrated into the CPX terminal. Screws for mounting on the polymer interlinking block are included in the scope of delivery | 8 |
| [3] | Connecting cable KVI-CP-3 | For connecting end position controller CPX-CMPX and proportional directional control valve VPWP | 10 |
| [4] | Inscription label IBS | For labelling the modules | 10 |
| [2] | Interlinking block CPX-GE | Connects the individual modules. Two versions are available: Polymer or metal interlinking block. | 11 |
| - | Screws CPX-M-M3 | For mounting on the metal interlinking block | 10 |

Datasheet

The end-position controller CPX-CMPX is intended exclusively for use in valve terminals CPX.



General technical data

Operating voltage

| | | |
|--|--------|-----------|
| Operating voltage range | [V DC] | 18 ... 30 |
| Nominal operating voltage | [V DC] | 24 |
| Current consumption at nominal operating voltage | [mA] | 80 |

Load voltage

| | | |
|--------------------------|--------|-----------|
| Load voltage range | [V DC] | 20 ... 30 |
| Nominal load voltage | [V DC] | 24 |
| Permissible load current | [A] | 2.5 |

| | | | |
|------------------------------------|---------|-------------------|-----------------------------|
| Number of axes per module | | 1 | |
| Length of connecting cable to axis | [m] | ≤ 30 | |
| Max. number of modules | | 9 | |
| Display | | 7-segment display | |
| Control elements | | 3 buttons | |
| Assigned addresses | Outputs | [Bit] | 6x8 |
| | Inputs | [Bit] | 6x8 |
| Diagnostics | | | Module-orientated |
| | | | Via local 7-segment display |
| Status indicator | | | Module status |
| | | | Power load |

Control interface

| | | |
|-----------------------|--|-----------------------------|
| Data | | CAN bus with Festo protocol |
| | | Digital |
| Electrical connection | | 5-pin |
| | | M9 |
| | | Socket |

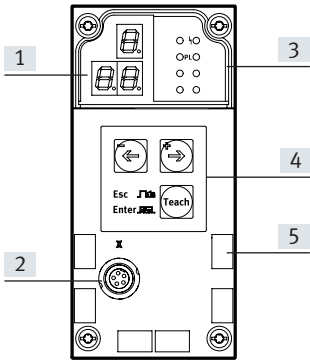
| | | | |
|------------------------|--------|----------------|-----|
| Materials: Housing | | Reinforced PA | |
| LABS (PWIS) conformity | | VDMA24364-B2-L | |
| Product weight | [g] | 140 | |
| Dimensions | Length | [mm] | 107 |
| | Width | [mm] | 50 |
| | Height | [mm] | 55 |

Datasheet

Operating and environmental conditions

| | | |
|-----------------------------------|------|--------------------------|
| Ambient temperature | [°C] | -5 ... +50 |
| Relative humidity | [%] | 5 ... 95, non-condensing |
| Degree of protection to IEC 60529 | | IP65 |

Connection and display components



- [1] 3-digit display
- [2] Control interface
- [3] Status LEDs
- [4] Operating buttons
- [5] Inscription labels

Pin allocation – Control interface

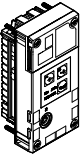
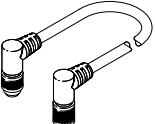
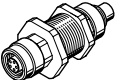

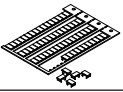

| | Pin | Signal | Designation |
|--|---------|-----------|---------------------------|
| | 1 | +24 V | Nominal operating voltage |
| | 2 | +24 V | Load voltage |
| | 3 | 0 V | Ground |
| | 4 | CAN_H | CAN High |
| | 5 | CAN_L | CAN low |
| | Housing | Shielding | Cable shield |

Permitted bus nodes/CEC

| Bus node/CEC | Protocol | Max. no. of CMPX modules |
|--------------|-------------------------|----------------------------|
| CPX-CEC... | – | 9 |
| CPX-FB11 | DeviceNet ¹⁾ | 9 |
| CPX-FB13 | PROFIBUS ²⁾ | 9 |
| CPX-FB14 | CANopen | 5 |
| CPX-FB23-24 | CC-LINK [®] | 5 (as function module F23) |
| | | 9 (as function module F24) |
| CPX-FB36 | EtherNet/IP | 9 |
| CPX-FB37 | EtherCAT [®] | 9 |
| CPX-FB39 | Sercos III | 9 |
| CPX-FB40 | POWERLINK | 9 |
| CPX-FB43 | PROFINET RT, M12 | 9 |
| CPX-M-FB44 | PROFINET RT, RJ45 | 9 |
| CPX-M-FB45 | PROFINET RT, SCRJ | 9 |

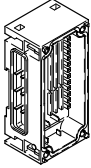

1) As of revision 20 (R20)
 2) As of revision 23 (R23)

Accessories

| Ordering data | | Brief description | Part no. | Type |
|--|---|-------------------|-------------------------|-----------------------------|
| End-position controller | | | | |
|  | Order code in the CPX configurator: T20 | | 548931 | CPX-CMPX-C-1-H1 |
| Connecting cables | | | | |
|  | Connecting cable with angled plug and angled socket | 0.25 m | 540327 | KVI-CP-3-WS-WD-0.25 |
| | | 0.5 m | 540328 | KVI-CP-3-WS-WD-0.5 |
| | | 2 m | 540329 | KVI-CP-3-WS-WD-2 |
| | | 5 m | 540330 | KVI-CP-3-WS-WD-5 |
| | | 8 m | 540331 | KVI-CP-3-WS-WD-8 |
| | Connecting cable with straight plug and straight socket | 2 m | 540332 | KVI-CP-3-GS-GD-2 |
| 5 m | | 540333 | KVI-CP-3-GS-GD-5 | |
| 8 m | | 540334 | KVI-CP-3-GS-GD-8 | |
|  | Connecting component for cabinet through feed | | 543252 | KVI-CP-3-SSD |
| Screws | | | | |
|  | For mounting on the metal interlinking block | | 550219 | CPX-M-M3X22-4X |
| Inscription labels | | | | |
|  | Inscription labels 6x10, in frames | 64 pieces | 18576 | IBS-6X10 |
| User documentation | | | | |
|  | Manual – End-position controller CPX-CMPX ¹⁾ | German | 555479 | P.BE-CPX-CMPX-SYS-DE |
| | | English | 555480 | P.BE-CPX-CMPX-SYS-EN |
| | | Spanish | 555481 | P.BE-CPX-CMPX-SYS-ES |
| | | French | 555482 | P.BE-CPX-CMPX-SYS-FR |
| | | Italian | 555483 | P.BE-CPX-CMPX-SYS-IT |

1) User documentation in paper form is not included in the scope of delivery

Accessories

| Ordering data | | Brief description | Part no. | Type |
|---|---|-------------------|---------------|-----------------------------|
| Polymer interlinking block as extension block | | | | |
|  | Without power supply | – | 195742 | CPX-GE-EV |
| | With additional supply for outputs | M18 – 4-pin | 195744 | CPX-GE-EV-Z |
| | | 7/8" – 5-pin | 541248 | CPX-GE-EV-Z-7/8-5POL |
| | | 7/8" – 4-pin | 541250 | CPX-GE-EV-Z-7/8-4POL |
| | With additional supply for valves | M18 – 4-pin | 533577 | CPX-GE-EV-V |
| Tie rods | | | | |
|  | For expansion using an interlinking block | Single | 525418 | CPX-ZA-1-E |