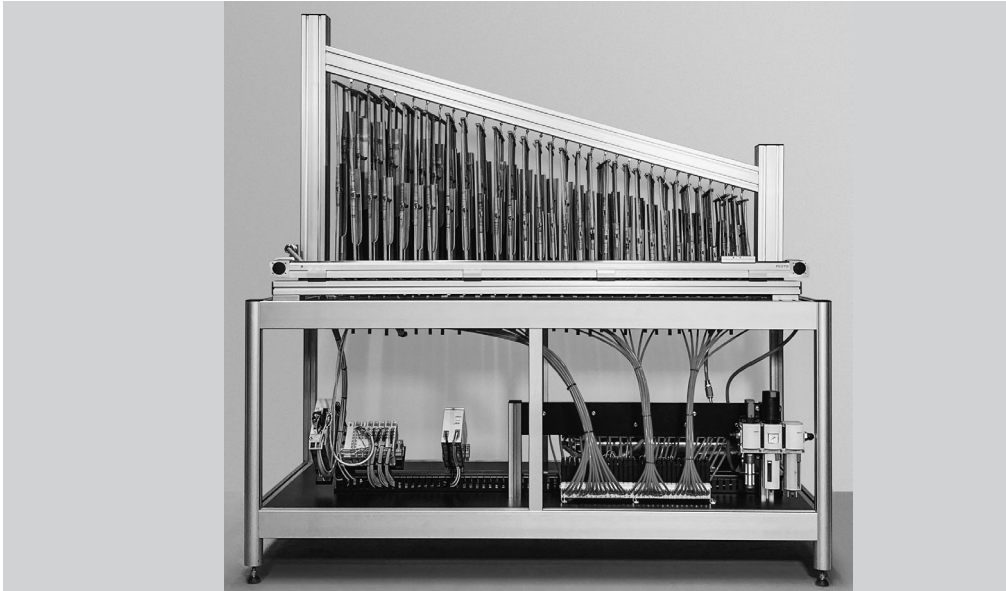


Fast and precise movement creates melodies in Angklung

FESTO

**Dynamic Display
D-TA2001**



Angklung is an Indonesian musical instrument consisting of two to four bamboo tubes suspended in a bamboo frame, bound with rattan cords. The tubes are carefully whittled and cut by a master craftsman to produce certain notes when the bamboo frame is shaken or tapped. Each Angklung produces a single note or chord, so several players must collaborate in order to play melodies. Traditional Angklungs use the pentatonic scale. The Angklung is closely related to traditional customs, arts and cultural identity in Indonesia, played during ceremonies such as rice planting, harvest and circumcision. The special black bamboo for the Angklung is harvested during the two weeks a year when the cicadas sing, and is cut at least three segments above the ground, to ensure the root continues to propagate. Angklung education is transmitted orally from generation to generation, and increasingly in educational institutions. Because of the collaborative nature of Angklung music, playing promotes cooperation and mutual respect among the players, along with discipline, responsibility, concentration, development of imagination and memory, as well as artistic and musical feelings.



The fluidic muscle, DMSP, is a tensile actuator which mimics the natural movement of a muscle. It consists of contractible tubing and appropriate connectors. The contractible tubing is made up of a rubber sheath with a non-crimped fabric made of aramid fibres on the inside. The sheath hermetically seals the operating medium, while the fibres provide reinforcement and power transmission. When internal pressure is applied, the tubular sheath extends in circumferential direction. DMSP connected to Angklung handle to shake the Angklung.

Fast switching valve MHE facilitate short cycle times. Extremely precise switching makes it possible to control the timing of process sequences accurately. High output and very good machine utilisation are also guaranteed. Solenoid valve MHE creates a high frequency pressure output to drive the DMSP.

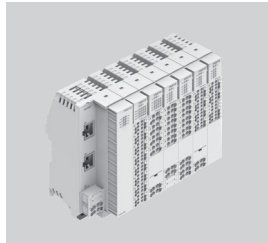
Technical information about the Festo products used in this display can be obtained from the information counter at our exhibition stand or from our information service in Esslingen.
Tel: +49 711 347-0 or www.festo.com

Festo SE & Co. KG

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The Automation system CPX-E



- Standardised CODESYS programming interface
- Reduced development effort thanks to integrated data management and modularity
- Extended software functions for seamless integration and simplified control of electric drives

Fast switching solenoid valve MHE



- Very high cycle rates
- Extremely short cycle times
- Maximum repetition accuracy
- Vacuum-compatible thanks to directly actuated poppet valve (time-restricted)
- Direct activation via standard PLC possible
- Direct mounting in the application with degree of protection IP65

Fluidic Muscle DMSP



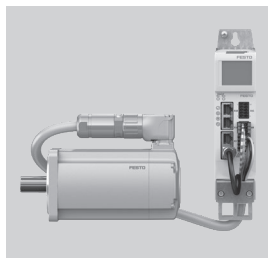
- Frequency up to 150 Hz
- Amplitude/frequency can be adjusted independently of each other
- Stroke proportionally can be adjusted depending on the operating pressure
- Free of maintenance
- Insensitive to dirt
- Frictionless movement

Toothed belt axes with recirculating ball bearing EGC-TB-KF



- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s²
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mountings

Servo motor EMMT-AS with Servo motor controller CMMT-AS



- Universal servo drive for synchronous servo motors.
- Interfaces: EtherCAT – PROFINET RT/IRT – EtherNet/IP.
- Simple connection technology (OCP: one cable plug) – hybrid cable: motor and connecting cable for supply and encoder rolled into one.
- Connector plug rotatable
- Dynamic, brushless, permanently excited synchronous servo motors.
- Extremely low cogging torque – supports high synchronisation even at low rotational speeds.