INSPIRED BY INNOVATION

PRODUCT RANGE

Safety Monitors for Speed, Standstill, Direction of Rotation

Electronic Counters, Frequency Meters, Process Displays, Timers

Autonomous Motion Controller

Level Converters, Splitters and Switches, Signal Converters for Sensors and Encoders

motrona

safety - control - motion - interface

motrona – always in motion

In the field of machine building our own future-oriented development of hard- and software make us a competent partner for complex applications in industrial automation and drive technology. We are a manufacturer of a unique range of electronic measuring devices, signal converters as well as process- and motion controllers.
Our 35 years of market experience distinguishes us as reliable specialist providing professional support for your project development and problem solution.

Our state of the art production facilities have recently been expanded to accommodate growing demand which allows us to maintain a permanent stock of core products, ready for immediate delivery usually on the same working day the order is received.

Quite apart from a continually expanding product portfolio of safety devices, digital displays, controllers and signal converters, motrona offers a bespoke service of customer-specific solutions aided by a team well experienced in solution-finding. There is nothing our engineers relish more than a challenge!

We are internationally oriented and therefore represented worldwide. Our competent and long-term partners stand for maximum flexibility in consultation, problem solving and short product delivery.

This catalogue provides an overview of our product range. Further information, datasheets / operating instructions and software downloads can be found at **www.motrona.com**.

We are looking forward to hearing from you.

Your motrona-Team

Contents

STRENGTHENED BY
SAFETY

Safety Devices

The motrona range of SIL3 / PLe certified safety devices are intended to detect and monitor machine movements. The purpose is to protect the operator and machine by analyzing speed-, direction-, standstill and position and comparing with pre-selected limits.

For the requirements of increased security criteria according to DIN 61508 or EN ISO 13849 our SIL3 / PLe certified DS series offer maximum reliability and safety.

With an integrated analog output an additional signal is supplied that can be used as feedback for motion controllers.

All these devices and monitors are developed for an easy installation in control cabinets and by the flexible design they are suitable for retrofitting or inclusion in the existing design of an OEM equipment.
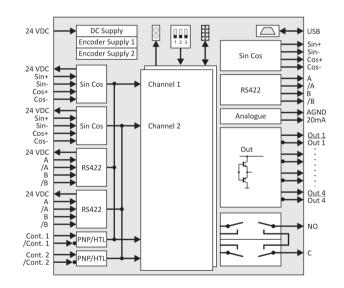
Safety Monitors

DS230 - DS246

SAFETY MOTION MONITOR

DS230: Multifunctional inputs, signal splitter function
DS236: Multifunctional inputs

The DS series is suitable for safety-related monitor tasks, e. g. overspeed, underspeed, standstill or rotative direction for complex machine applications.

- SIL3 and PLe certification
- Safety functions equivalent to EN 61800-5-2
- 2 encoder inputs with format SIN+, SIN-, COS+, COS- [1 Vss]
- 2 pulse inputs with format A, /A, B, /B [RS422]
- 2 pulse- or control inputs with format A, B, 90° [HTL / PNP] (for rotary encoder, proximity switches or commands)
- Input frequency up to 500 kHz
- Forced-guided redundant output relay (NO)
- 4 control outputs with push-pull characteristic, short-circuit-proof, [HTL], each inverse and redundant
- Safety related 14 bit analog output for 4 ... 20 mA (scalable)
- Power supply 18 ... 30 V
- Compact housing for 35 mm mounting top hat rail (according to EN 60715)
- Setup via USB port by operator software or plug-in display and programming unit BG230 (accessories)
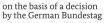
B x H x T = 50 x 100 x 165 mm

DS240: Input for certified SinCos encoders, signal splitter
DS246: Input for certified SinCos encoders

Performance as DS230 or DS236, but with different input configuration.

- 1 encoder input with format SIN+, SIN-, COS+, COS- [1 Vss]
- 2 control inputs [HTL / PNP]

Monitors for Speed, Direction of Rotation and Standstill

BG230

PLUG-IN DISPLAY AND PROGRAMMING UNIT (OPTIONAL)

B x H x T = 50 x 80 x 15 mm

For simple parameterization of motrona safety devices.

• Editing, saving and loading of parameters
• Individual scalable process or speed indicator as well as dual channel frequency indicator for visualization of the encoder frequency
• 1.54" OLED touchscreen with intuitive navigation
• Setup via USB port by operator software
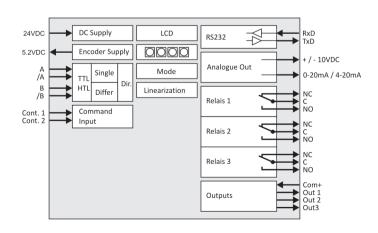

DZ260 - 269

SPEED MONITORS FOR INCREMENTAL ENCODERS AND SENSORS

B x H x T = 72 x 91 x 76 mm

DZ260: 3 output relays and 1 analog output
DZ261: 3 transistor outputs and 1 analog output
DZ266: 1 analog output
DZ267: 3 output relays
DZ269: 3 transistor outputs

Fast response speed monitoring device with a wide range of programmable monitoring functions, e. g. overspeed, underspeed (incl. start-up suppression), standstill or rotative direction.

• Pulse input with format A, B, 90° [HTL] or A, /A, B, /B [RS422], also possible for single channel
• Input frequency up to 1 MHz
• Power supply 17 ... 30 VDC
• Snap-on housing for top hat rail (according to EN 60715)
• LCD display, backlighted
• Setup via keys or via PC by serial RS232 interface

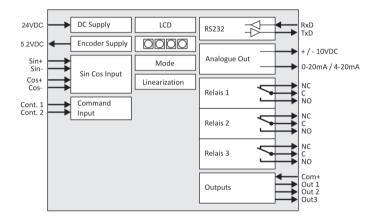# Monitors for Speed, Direction of Rotation and Standstill

DZ270 - 279

SPEED MONITORS FOR SINCOS-ENCODERS OR SENSORS

DZ270: 3 output relays and 1 analog output
DZ271: 3 transistor outputs and 1 analog output
DZ276: 1 analog output
DZ277: 3 output relays
DZ279: 3 transistor outputs

Fast response speed monitoring device with a wide range of programmable monitoring functions, e. g. overspeed, underspeed (incl. start-up suppression), standstill or rotative directionüberbrückung).

- Encoder input with format SIN+, SIN-, COS+, COS- [1 Vss]
- Input frequency up to 500 kHz
- Power supply 17 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- LCD display, backlighted
- Setup by keys or PC via serial RS232 interface

B x H x T = 72 x 91 x 76 mm

DZ210

DIRECTION AND STANDSTILL MONITOR

Fast, reliable standstill and speed monitor with variable settings, a high input frequency range and a very fast response time (< 1 ms at f > 1 kHz).

- Pulse input with format A, B, 90° [HTL] or A, /A, B, /B [RS422],
  also possible for single channel
- Input frequency up to 500 kHz
- 2 output relays with potential-free change-over contact (forward, reward and zero motion)
- Power supply 17 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- DIL switch for setup of input characteristic and definition of standstill

B x H x T = 22,5 x 102 x 102 mm

Monitor for Speed, Slip and Shaft Fracture

MS640

MOTION MONITOR FOR SECURE CONTROL
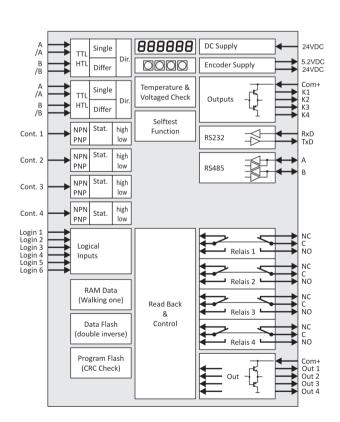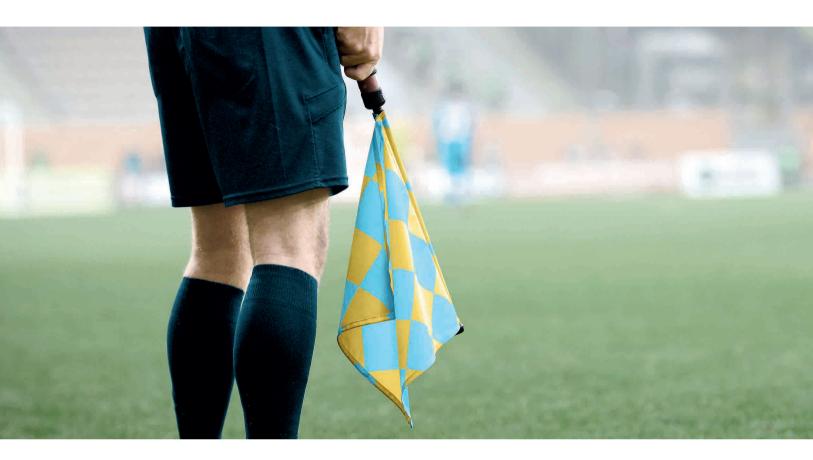

B x H x T = 110 x 48 x 140 mm

The MS640 motion monitor has been designed for monitoring and control of admissible and impermissible operating conditions on machinery systems. Additionally to its speed monitoring functions, the unit provides comparison between peripheral motion, motor motion and actual operator commands. The control functions include all actual values of two independent encoders (speeds, directions of rotation, standstill, positions and differential positions between both encoders).

- High level of external safety (Recognition of electrical or mechanical errors in the machinery / sensor systems / wirings etc.)
- High level of internal safety (detection of internal errors and failures of the device components)
- Pulse input with format A, B, 90° [HTL] or A, /A, B, /B [RS422]
- 4 control inputs for PNP / NPN / Namur signals [10 ... 30 VDC]
- 6 logical inputs for PNP signals [10 ... 30 VDC]
- 4 fast transistor outputs with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
- 4 forced-guided redundant output relays with potential free change-over contact
- Serial interface RS232 and RS485
- Power supply 24 VAC and 17 ... 40 VDC
- Compact norm panel housing
- 6 digits LED display with 15 mm height
- Display range -199999 ... 999999
- Setup by keys or PC via serial RS232 interface

COUNTED BY
CONTROL

Digital Indicators

Our display and evaluation systems ensure a precise monitoring of analog, pulse and absolute value information. The significant parameters for rotating and linear processes are precisely monitored, evaluated and displayed.

The electronic and pulse counters, process and position indicators distinguish themselves by offering a high dynamic range, short response times and an input frequency up to 1 MHz.

Our display devices are able to perform complex data manipulation such as summing, difference, filtering, linearization and totalization and comparison between input variables.

Additionally, the digital displays provide up to four preset values for relay and transistor outputs.

The set-up procedures are straightforward, using an intuitive menu system for entry and adjustment of parameters. Display devices equipped with a serial interface also allow operation and configuration using our OS user software.

Electronic Counters

ZX020 — SMALL-SIZED POSITION OR EVENT COUNTER

B x H x T = 48 x 24 x 59 mm

Multi-functional counter in a compact design. Including programmable pulse factor, power down memory, as well as numerous programmable operating modes, e. g. position counter, event counter or sum / differential counter.

- Pulse input with format A, B, 90° [HTL]
- Static input for Set / Reset [HTL]
- Input frequency up to 20 kHz
- Power supply 24 VDC
- Miniature norm panel housing
- 6 digits LED display with 8 mm height
- Display range -199999 ... 999999

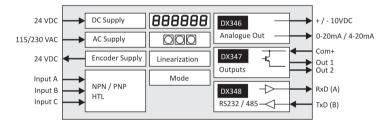## DX345 - 348 — COUNTER FOR INCREMENTAL-ENCODERS

B x H x T = 96 x 48 x 140 mm

DX345: Display unit without output
DX346: Scalable14 bit analog output ±10 V or 0/4 ... 20 mA
DX347: 2 preset values and transistor outputs
DX348: Serial RS232 / RS485 interface

Counter with edge evaluation (x1, x2, x4), programmable pulse scaling, power down memory and various programmable operating modes, e. g. position counter, event counter or sum / differential counter.

- Pulse input with format A, B, 90° [HTL], [TTL] as an option
- Static input for Set / Reset [HTL]
- Input frequency up to 100 kHz
- Power supply 115 / 230 VAC and 24 VDC
- Compact norm panel housing
- 6 digits LED display with 15 mm height
- Display range -199999 ... 999999

DX342 — COUNTER WITH RELAY OUTPUTS AND SERIAL INTERFACE
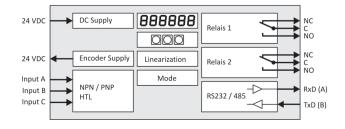
B x H x T = 96 x 48 x 140 mm

DX342: 2 relays instead of transistor outputs

Performance as DX345 - 348.

- Power supply 24 VDC only
- Serial RS232 / RS485 interface (switchable)

Series ZA - ZD - ZR

Variant 330 with 8 digit display
B x H x T = 96 x 48 x 140 mm

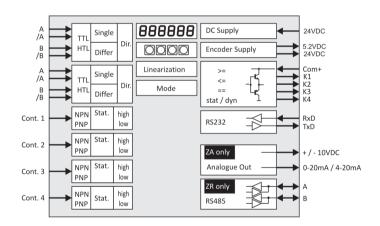Variant 340 with 6 digit display
B x H x T = 96 x 48 x 140 mm

Variant 644 with
4 thumbwheel switches / output relays
B x H x T = 96 x 96 x 140 mm

HIGH-PERFORMANCE COUNTER UNITS

Series ZA: Scalable 14 bit analog output ±10 V or 0/4 ... 20 mA
Series ZD: Performance as ZA, but without analog output
Series ZR: RS485 interface

Fast counter unit with a wide range of functions and operating modes (e. g. single counter, sum and differential counter, measurement of actual cutting lengths and more. Programmable linearization for each encoder channel. Different versions with relay outputs and thumbwheel switches are available.

• 2 scalable inputs with format A, /A, B, /B [HTL / TTL / RS422, single channel, dual channel, symmetric or asymmetric]
• 4 control inputs for PNP / NPN / Namur signals [10 ... 30 VDC]
• Input frequency up to 1 MHz
• 4 fast transistor outputs with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
• 4 programmable preset values
• Power supply 24 VAC and 17 ... 40 VDC
• Compact norm panel housing
• LED display either 6 digits with 15 mm or 8 digits with 10 mm height
• Display range -199999 ... 999999 (6 digits) or -19999999 ... 99999999 (8 digits)
• Serial RS232 interface

Frequency Meters, Tachometers and Timers

DX020

SMALL-SIZED TACHOMETER FOR DIVERSE MEASUREMENT TASKS

B x H x T = 48 x 24 x 59 mm

Programmable indicator for reliable measurement of RPM, speed and frequency.

- Single channel pulse input [HTL]
- Input frequency up to 20 kHz
- Programmable input filter for mechanical input contacts
- Power supply 24 VDC
- Miniature norm panel housing
- 6 digits LED display with 8 mm height
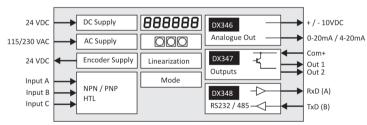- Display range -199999 ... 999999

DX345 - 348

FREQUENCY METER, TACHOMETER AND TIMER

B x H x T = 96 x 48 x 140 mm

DX345: Display unit without outputs
DX346: Scalable 14 bit analog output ±10 V or 0/4 ... 20 mA
DX347: 2 preset values and transistor outputs
DX348: Serial RS232 / RS485 interface (switchable)

Versatile indicator unit with programmable modes for different measurement applications, e. g. as frequency or speed meter, speed difference indicator, baking times indicator, timer or pulse counter. Universal input for encoders, sensors, proximity switches, light barriers and many more.

- Pulse inputs with format A, B, 90° [HTL], [TTL] as an option
- Static input for Set / Reset [HTL]
- Input frequency up to 25 kHz (in tachometer mode)
- Power supply 115 / 230 VAC and 24 VDC
- Compact norm panel housing
- 6 digits LED display with 15 mm height
- Display range 0 ... 999999 (for operation modes above)

DX342

FREQUENCY METER WITH RELAY OUTPUTS AND SERIAL INTERFACE

B x H x T = 96 x 48 x 140 mm

DX342: 2 relay instead of transistor outputs

Performance as DX345 - 348.

- Power supply 24 VDC only
- Serial RS232 / RS485 interface (switchable)

Frequency Meters, Tachometers and Timers

Series SA - SD - SR

Variant 330 with 8 digit display

B x H x T = 96 x 48 x 140 mm

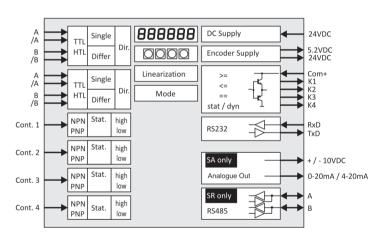Variant 340 with 6 digit display

B x H x T = 96 x 48 x 140 mm

Variant 644 with
4 thumbwheel switches / output relays

B x H x T = 96 x 96 x 140 mm

HIGH-PERFORMANCE DISPLAY UNITS

Series SA: Scalable 14 bit analog output ±10 V or 0/4 ... 20 mA

Series SD: Performance as SA, but without analog output

Series SR: RS485 interface

Universal display unit with a large selection of functions and operating modes, e. g. as tachometer, speed and timer. Indicates measurement results, times, sums, differences and speed ratios. Programmable linearization for each encoder channel. Different versions with relay outputs or thumbwheel switches are available.

- 2 scalable inputs with format A, /A, B, /B [HTL / TTL / RS422, single channel, dual channel, symmetric or asymmetric]
- 4 control inputs for PNP / NPN / Namur signals [10 ... 30 VDC]
- Input frequency up to 1 MHz
- 4 fast transistor outputs with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
- 4 programmable preset values
- Power supply 24 VAC and 17 ... 40 VDC
- Compact norm panel housing
- LED display either 6 digits with 15 mm or 8 digits with 10 mm height
- Display range -199999 ... 999999 (6 digits) or -19999999 ... 99999999 (8 digits)
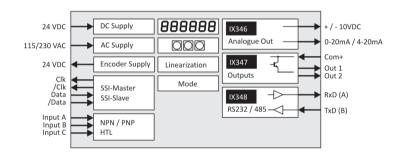- Serial RS232 interface

SSI Indicators

POSITION INDICATORS WITH SINGLE SSI ENCODER INPUT

IX345: SSI indicator without outputs
I**X346:** Scalable 14 bit analog output ±10 V or 0/4 ... 20 mA
IX347: 2 preset values and transistor outputs
IX348: Serial RS232 / RS485 interface

SSI indicator unit for evaluation of single- or multi-turn absolute encoders. Suitable for all SSI formats and codes up to 25 bits. Free scalability and zero definition. Programmable bit blanking, linearization, concentricity function and many other functions. Operation in master or slave mode.

- SSI input with format DATA+, DATA-, CLOCK+, CLOCK
- SSI frequency range 100 Hz ... 1 MHz
- 3 control inputs for PNP / NPN Signals [10 ... 30 VDC]
- Power supply 115 / 230 VAC and 24 VDC
- Compact norm panel housing
- 6 digits LED display with 15 mm height
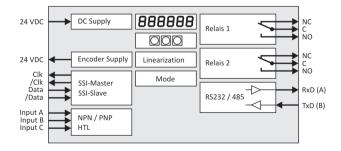- Display range -199999 ... 999999

B x H x T = 96 x 48 x 140 mm

IX342

POSITION INDICATOR WITH RELAY OUTPUTS AND SERIAL INTERFACE

IX342: 2 relays instead of transistor outputs

Performance as IX345 - 348.

- Power supply 24 VDC only
- Serial RS232 / RS485 interface (switchable)

B x H x T = 96 x 48 x 140 mm

Series IA - ID - IR

POSITION INDICATORS WITH DUAL SSI ENCODER INPUT

Variant 330 with 8 digit display
B x H x T = 96 x 48 x 140 mm

Variant 340 with 6 digit display
B x H x T = 96 x 48 x 140 mm

Variant 644 with
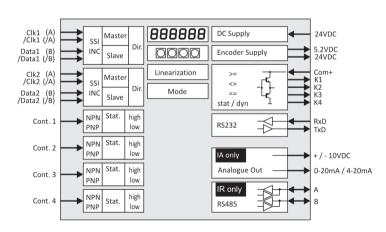4 thumbwheel switches / relays
B x H x T = 96 x 96 x 140 mm

Series IA: Scalable 14 bit analog output ±10 V or 0/4 ... 20 mA
Series ID: Performance as IA, but without analog output
Series IR: RS485 interface

The indicators of ID and IA series have been designed to close a gap with multiple indicating and counting applications, which cannot be accomplished by the standard SSI indicators or incremental counters available on the market. Many applications require to evaluate the signals of two SSI measuring systems, and to compare the results with respect to the sum or the difference. In certain applications it is necessary to compare position signals from an SSI encoder with other information coming from an incremental encoder.

• 2 control inputs with format DATA+, DATA-, CLOCK+, CLOCK- [SSI, absolute] or A, /A, B, /B [RS422, incremental]
• 4 control inputs for PNP / NPN / Namur signals [10 ... 30 VDC]
• Input frequency up to 1 MHz
• 4 fast transistor outputs, with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
• 4 programmable preset values
• Power supply 24 VAC and 17 ... 40 VDC
• Compact norm panel housing
• LED display, optionally 6 digits with 15 mm or 8 digits with 10 mm height
• Display range -199999 ... 999999 (6 digits) or -19999999 ... 99999999 (8 digits)
• Serial RS232 interface

Process Indicators with Analog Input

AX020 — SMALL-SIZED PROCESS INDICATOR WITH ANALOG INPUT

B x H x T = 48 x 24 x 59 mm

Small-sized process indicator for analog norm signals.

- Scalable 14 bit analog input für 0 ... 10 V or 0/4 ... 20 mA
- Power supply 24 VDC
- Miniature norm panal housing
- 5 digits LED display with 8 mm height
- Display range -19999 ... 99999

AX320 - 323 — PROCESS INDICATORS FOR ANALOG SIGNALS

B x H x T = 96 x 48 x 102 mm

AX320: Norm signals, power supply 17 ... 30 VDC
AX321: DMS sensoren, power supply 17 ... 30 VDC
AX322: Norm signals, power supply 90 ... 240 VAC
AX323: DMS sensoren, power supply 90 ... 240 VAC

Programmable 16 bit analog process indicator for voltage or current operation. Extensive functions are available, e. g. tare function or programmable linearization.

- Scalable analog input für 0 ... 10 V or 0/4 ... 20 mA or DMS
- 2 preset values with relay outputs
- Compact norm panel housing
- 6 digits LED display with 14 mm height
- Display range -199999 ... 999999

AX345 - 348 — PROCESS INDICATORS WITH DUAL ANALOG INPUT

B x H x T = 96 x 48 x 140 mm

AX345: Display unit without outputs
AX346: Scalable 14 bit analog output ±10 V or 0/4 ... 20 mA
AX347: 2 preset values and transistor outputs
AX348: Serial RS232 / RS485 interface

Process indicator with two 14 bit analog inputs and extensive programmable functions like tare function, programmable linearization and many more. Suitable for visualization of measurement values, sums, differences and ratio.

- 2 separate scalable analog inputs, each 0 ... 10 V or 0/4 ... 20 mA
- Power supply 115 / 230 VAC and 24 VDC
- Compact norm panel housing
- 6 digits LED display with 15 mm height
- Display range -99999 ... 999999

AX342 — PROCESS INDICATOR WITH RELAY OUTPUTS AND SERIAL INTERFACE

B x H x T = 96 x 48 x 140 mm

AX342: 2 relay instead of transistor outputs

Performance as AX345 - 348.

- Power supply 24 VDC only
- Serial RS232 / RS485 interface (switchable)

Displays for CAN-Bus and PROFIBUS

PB340 - CA340

PROFIBUS AND CANBUS INDICATOR UNITS

PB340: PROFIBUS indicator
CA340: CAN-Bus indicator for PDO or SDO objects

Peripheral indicator for fieldbus process values.

- Power supply 10 ... 30 VDC
- Compact norm panel housing
- 6 digits LED display with 15 mm height
- Display range -199999 ... 999999
- DIL-switch for setup of the transmission parameters

B x H x T = 98 x 48 x 120 mm

PB306 - CA306

SIMPLE PRESET UNIT FOR PROFIBUS AND CAN-BUS

PB306: PROFIBUS preset switch
CA306: CAN-Bus preset switch

Simple devices with BCD thumbwheel switches for remote adjustment of individual parameters via the fieldbus interface. By pressing the ENTER button on the front, the adjusted value is transmitted to the desired target unit.

- Power supply 10 ... 30 VDC
- Compact norm panel housing
- Preset range: 6 digits or 5 digits with sign
- DIL-switch for setup of the transmission parameters

B x H x T = 98 x 48 x 120 mm

PB541 - CA541
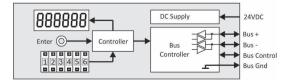
COMBINDE INDICATOR AND PRESET UNITS

PB541: PROFIBUS combination
CA541: CAN-Bus combination

Combination of both upper versions. The function, operation and technical specifications correspond with the individual components, but both devices are built-in a single bigger housing (24 mm higher).

B x H x T = 98 x 72 x 120 mm

MOVED BY
PRECISION

Control

Our Motion Controllers are implemented in numerous applications in the field of modern drive technology.

The firmware library includes optimized routines for applications such as drive synchronization, index or intermitted printing, label-printing, rotary cutters, flying shears and eccentric scissors.

As other motrona products, the set-up procedures are simple and intuitive. The highly integrated Motion Controllers feature by a very high cut-off frequency up to 2 MHz, a very flexible bus architecture as well as a variable input configuration of encoders and sensors.

A unique feature of the MC800 drive controller is the integrated tandem drive controller which enables achieving the acceleration requirement of a slave axis by distributing the power on two independent drives.

Synchronizers

BY340 / BY641

B x H x T = 96 x 48 x 140 mm

Variant 641 with thumbwheel switches
B x H x T = 96 x 96 x 140 mm
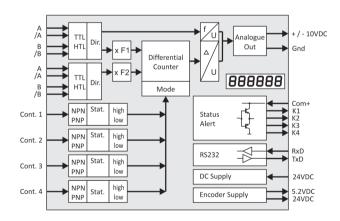
HIGH-PERFORMANCE SYNCHRONIZERS FOR ONE SLAVE AXIS

BY340: Speed ratio adjustable by keypad
BY641: Speed ration adjustable by thumbwheel switch on front and 4 relay outputs with potential free change-over contacts

These single-axis controllers with excellent control characteristics are suitable for use in smaller systems with tight cost specifications. Applications are variable speed drives with an analog set point input.

Essential features of the wide function range are an absolute angle and position synchronization as well as a speed synchronization with adjustable ratios and phase angles. The trim and index functions allow the adjustment of the relative position between the axes.

- 2 pulse inputs with format A, B, 90° [HTL] or A, /A, B, /B [RS422]
- 4 control inputs for PNP / NPN / Namur signals [10 ... 30 VDC]
- Input frequency up to 300 kHz
- 4 fast transistor outputs, with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
- Scalable 14 bit analog output for ±10 V or 0/4 ... 20 mA
- Loop time approx. 250 µs
- Power supply 24 VAC and 17 ... 40 VDC
- Compact norm panel housing
- Top hat rail mounting by using SM300 support brackets (option)
- Setup via keys or via PC by serial RS232 interface
- PROFIBUS connection via motrona gateway PB251

PS340 / PS641

STAND-ALONE SINGLE AXIS CONTROLLER
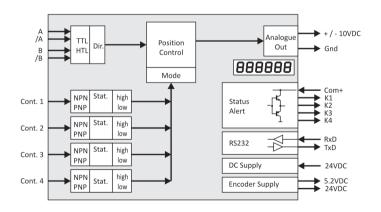

B x H x T = 96 x 48 x 140 mm

PS340: Incremental position adjustable by keypad
PS641: Incremental position adjustable by thumbwheel switch on front and
4 relay outputs with potential free change-over contacts

The position controller of the series PS340 and PS641 are stand-alone solutions for smaller machines and offer an excellent price-performance ratio. A very short position loop time and intelligent calculation algorithms ensure the best precision for uniaxial applications with electric or hydraulic 4-Q drives, equipped with a ± 10 V set point input.

An extremely smooth motion with minimum stress for all mechanical parts due to the self-optimized polynomial motion profile and different operation modes, e. g. absolute and relative (incremental) positions or loop mode are further features of these devices.

Variant 641 with thumbwheel switches
B x H x T = 96 x 96 x 140 mm

- 2 pulse inputs with format A, B, 90° [HTL] or A, /A, B, /B [RS422]
- 4 control inputs for PNP / NPN / Namur signal [10 ... 30 VDC]
- Input frequency up to 300 kHz
- 4 fast transistor outputs, with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
- Scalable 14 bit analog output for ±10 V or 0/4 ... 20 mA
- Loop time approx. 250 µs
- Power supply 24 VAC and 17 ... 40 VDC
- Compact norm panel housing
- Top hat rail mounting by using SM300 support brackets (option)
- Setup via keys or via PC by serial RS232 interface
- PROFIBUS connection via motrona gateway PB251

Controller for Flying Shears

HIGH-PERFORMANCE CONTROLLER FOR FLYING SAWS AND SHEARS

B x H x T = 96 x 48 x 140 mm

FS340: Cutting length adjustable by keypad

FS641: Cutting length adjustable by thumbwheel switch on front and 4 relay outputs with potential free change-over contacts

These units were specifically matched to the requirements of flying saws and shears and provide maximum cutting performance and precision combined with high protection for the mechanical parts. A short position control cycle and intelligent calculation algorithms ensure maximum precision.

These controllers are used to cut endless material, which cannot be stopped during the cutting operation.

Variant 641 with thumbwheel switches
B x H x T = 96 x 96 x 140 mm

- 2 pulse inputs with format A, B, 90° [HTL] or A, /A, B, /B [RS422]
- 4 control inputs for PNP / NPN / Namur signal [10 ... 30 VDC]
- Input frequency up to 300 kHz
- 4 fast transistor outputs, with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
- Scalable 14 bit analog output for ±10 V or 0/4 ... 20 mA
- Loop time approx. 250 µs
- Power supply 24 VAC and 17 ... 40 VDC
- Compact norm panel housing
- Top hat rail mounting by using SM300 support brackets (option)
- Setup via keys or via PC by serial RS232 interface
- PROFIBUS connection via motrona gateway PB251

Controller for Rotary Cutters and Printing Rolls

CT340 / CT641

B x H x T = 96 x 48 x 140 mm

Variant 641 with thumbwheel switches
B x H x T = 96 x 96 x 140 mm

CONTROLLER FOR ROTARY CUTTERS AND PRINTING ROLLS

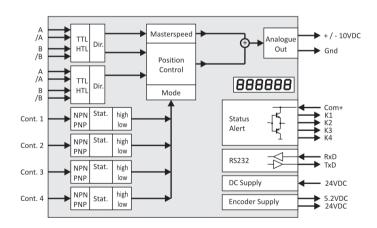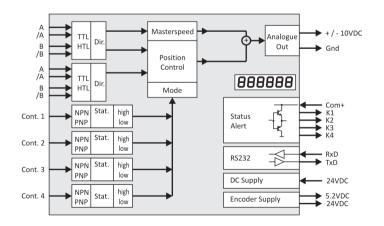**CT340:** Cutting length adjustable by keypad
CT641: Cutting length adjustable by thumbwheel switch on front and 4 relay outputs with potential free change-over contacts

The precision controller series CT340 and CT641 are suitable for application such as rotation cutters and rotating printing, stamping or sealing rollers. These units are used to cut or attend endless materials, which cannot be stopped during the operation processes.

The short control response ensures a high dynamic performance and precise cutting even during speed changes. A high protection for the mechanical parts, as well as a short position loop time and intelligent calculation algorithms are further advantages of the CT series.

- 2 pulse inputs with format A, B, 90° [HTL] or A, /A, B, /B [RS422]
- 4 control inputs for PNP / NPN / Namur signal [10 ... 30 VDC]
- Input frequency up to 300 kHz
- 4 fast transistor outputs, with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
- Scalable 14 bit analog output for ±10 V or 0/4 ... 20 mA
- Loop time approx. 250 µs
- Power supply 24 VAC and 17 ... 40 VDC
- Compact norm panel housing
- Top hat rail mounting by using SM300 support brackets (option)
- Setup via keys or via PC by serial RS232 interface
- PROFIBUS connection via motrona gateway PB251

Universal Motion Controllers

MC700

B x H x T = 144 x 144 x 69 mm

UNIVERSAL MOTION CONTROLLER UP TO 4 AXES

MC700 is a universal and proven 1 to 4 axes motion controller, which can be cascaded for additional axes. The actual function of this controller-hardware is assigned by loading a specific firmware. Corresponding application firmware is available on our product CD respectively on the motrona homepage for download. Mathematically optimized motion profiles and extremely short position control cycles guarantee highest accuracy and maximum speed.

In addition to the standard application as a multi-axis synchronizer, this controller is suitable especially for control tasks of motion profiles with flying material processing and for numerous movements of printing machines, packaging machines and winding equipment.

- 4 pulse inputs with format A, /A, B, /B [RS422]
- 4 scalable 12 bit analog inputs for ±10 V or 0/4 ... 20 mA
- 8 control inputs for PNP signals [10 ... 30 VDC]
- 4 scalable 12 bit analog outputs for ±10 V or 0/4 ... 20 mA
- Short loop time (depending on application)
- Power supply 18 ... 35 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- Setup via windows operator software (free of charge)
- OnBoard interfaces: RS232 and CANopen

MC800   **MOTION CONTROLLER WITH INTEGRATED TANDEM DRIVE CONTROLLER**

B x H x T = 50 x 160 x 160 mm

The MC800 hardware is a universal motion controller, which serves for sophisticated control tasks in today's machine engineering and drive technology. This motion controller can cover a wide application range due to the function features and settings of the equipped control firmware.

Typical control applications are e. g. drive synchronization of a master and slave axis, index and print mark evaluation, rotating cross cutters, flying and eccentric shears, label printing machines and many more.
The unique feature of the MC800 is the integrated tandem drive controller. This enables to reach the acceleration requirements of heavy loads by splitting the necessary power to two independent drives.

Further features are the flexible and combinable input configuration for different types of encoders, measuring systems and sensors, the high frequency range up to 2 MHz and the adaptive interface architecture.

Due to an extremely short position loop time of 250 µs, a self-optimizing polynomial motion profile, an excellent accuracy - even at high line speeds, the MC800 ensures a very smooth motion with maximum protection of the mechanical parts.

- 2 pulse inputs with format A, /A, B, /B, Z, /Z [HTL, RS422] with an input frequency up to 2 MHz
- 2 control inputs with format SIN+, SIN-, COS+, COS- [1 Vss] with an input frequency up to 400 kHz
- 2 SSI inputs with format DATA+, DATA-, CLOCK+, CLOCK- up to 25 Bit, with SSI switching frequency of 100 Hz ... 1 MHz
- 2 scalable 14 bit analog inputs for ±10 V or 0/4 ... 20 mA
- 4 control inputs for PNP / NPN signals [10 ... 30 VDC]
- 4 fast interrupt inputs for PNP / NPN signals [10 ... 30 VDC]
- 1 pulse output with format A, /A, B, /B, Z, /Z [RS422]
- 4 control outputs with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
- 2 scalable 14 bit analog outputs for ±10 V or 0/4 ... 20 mA
- Loop time approx. 250 µs
- Power supply 18 ... 35 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- OnBoard interfaces: Ethernet / IP, RS232 / RS485, USB 2.0, CANopen, Modbus RTU
- Optional Ethernet interfaces: EtherCAT, Ethernet / IP, Modbus TCP, Powerlink, PROFINET, SERCOS III
- Optional Fieldbus interfaces (slave): CC-Link, DeviceNet, PROFIBUS
- Operates with all 4-Q-drive systems, equipped with a standardized drive communication bus (e. g. SERCOS-II). Alternatively ±10 V setpoint can be used
- The controllers can be setup by an external operator terminal as well as HMI's via standardized factory communication bus e. g. PROFINET
- Setup via windows operator software (free of charge)

SAFETY

CONTROL

MOTION

INTERFACE

Standard firmware and available applications for MC700

BY701   **FIRMWARE FOR SYNCHRONIZATION OF DRIVES**

With the use of BY701 firmware, the MC700 controller provides excellent solutions with all kinds of multi-axes synchronizing applications. Numerous possibilities for control of relative phase, position, index and print mark evaluation are available.

FS701   **FIRMWARE FOR FLYING SAWS, SHEARS, PUNCHERS, ETC.**

With the use of FS701 firmware, the MC700 controller provides excellent solutions with all kinds of flying cut-to-length systems as well as with applications like labeling, printing punching, sealing, etc.

CT703   **FIRMWARE FOR ROTATING CROSS CUTTERS**

Rotary cutters and other rotary applications require high dynamics, precise cuts and short position control cycles. These requirements will be complied by using the CT703 firmware and the MC700 motion controller.
Typical applications are intermittent or rotary operations like cutting, perforating, printing, sealing, adhesion, applying, labeling and many more.

CT701   **FIRMWARE FOR ECCENTRIC MATERIAL PROCESSING**

The Firmware CT701, in combination with the controller MC700 offers a maximum processing performance with guillotines or eccentric shears in cut-to-length-lines.

TB701   **FIRMWARE FOR TUBULAR BAG PACKING MACHINE**

Due to highly dynamic motion profiles, the combination of firmware TB701 and MC700 controller works very precisely and is optimized for tubular bag packaging machines (e. g. "pillow packaging").

Standard firmware and available applications for MC800

BY801   **FIRMWARE FOR SYNCHRONIZATION OF DRIVES**

With the use of BY701 firmware, the MC700 controller provides excellent solutions with all kinds of multi-axes synchronizing applications. Numerous possibilities for control of relative phase, position, index and print mark evaluation are available.

Compared to the BY701 firmware, a significantly higher dynamic is achieved by using the combination BY801 firmware with MC800. In addition, processing to various sensor systems and fieldbus architectures is possible.

FS801   **FIRMWARE FOR FLYING SAWS, SHEARS, PUNCHERS, ETC.**

By using this application firmware, the MC800 controller is equipped for motion control tasks with typical "on-the-fly-processing" machines (e. g. sawing, cutting, punching, drilling, etc.).

Compared to the FS701 firmware, a significantly higher dynamic is achieved by using the combination FS801 firmware with MC800. In addition, processing to various sensor systems and fieldbus architectures is possible.

CT801   **FIRMWARE FOR ROTATING CROSS CUTTERS**

Rotary cutters and other rotary applications require high dynamic, precise cuts and short position loop time. These requirements will be complied by using the CT801 firmware and the MC800 motion controller.

Typical applications are intermittent or rotary operations like cutting, perforating, printing, sealing, adhesion, labeling and many more.

Compared to the CT703 firmware, a significantly higher dynamics is achieved by using the combination CT801 firmware with MC800 hardware. In addition, an adaptation to a variety of sensor systems and fieldbus architectures is possible.

Special highlight of this firmware is the integrated tandem drive controller which enables achieving the acceleration requirement of a slave axis by distributing the power on two independent drives.

Signal Converters

Our signal converters are characterized by a fast conversion time, a wide bandwidth and maximum flexibility classed among the World's Best in industrial automation.

For requirements demanding safe processing and reliable transmission of encoder and sensor signals our frequency dividers, frequency multipliers, pulse dividers and level converters have no peers.

Converters from motrona convince by easy handling and simple set-up of parameters whereby scaling is performed by DIL switches or TEACH buttons.

Programmable linearization, digital filters or window functions are further features of our complex modules.
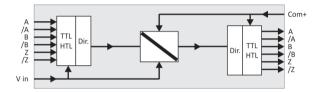
Level Converter and LWL Modules

PU210

B x H x T = 22,5 x 102 x 102 mm

UNIVERSAL LEVEL CONVERTER AND DIRECTION DECODER

This converter allows the conversion of incremental signals into pulse signals with a static direction output and vice versa, as well as a potential separation of input and output. An external supplied DC voltage determines the level of the output signals.

- 1 pulse input with format A, B, Z [HTL] or A, /A, B, /B, Z, /Z [RS422]
- Input frequency up to 500 kHz
- 1 pulse output with format A, /A, B, /B, Z, /Z [RS422, HTL]
- Power supply 5 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)

SERIES LW

B x H x T = 19 x 92,3 x 110,4 mm

INNOVATIVE OPTICAL FIBER MODULES

LW213 / LW214: Send- / receive module for RS422 / HTL signals (up to 3000 m)
LW215 / LW216: Send- / receive module for RS422 / HTL signals (up to 2000 m)
LW217 / LW218: Send- / receive module for SSI absolut encoder (up to 2000 m)

The fiber optic modules can transmit encoder signals reliably over long distances. The transmission via fiber optic cable is resistant to extremely strong electromagnetic fields and interferences. Pre-configured optical fibers are available.

Depending on the version the following signal formats are available:
- 4 independent input channels with format A, B, C, D [HTL] or
  A, /A, B, /B, C, /C, D, /D [RS422], also possible for single channel
- 4 output channels with format A, B, C, D [HTL] or
  A, /A, B, /B, C, /C, D, /D [RS422]
- 1 SSI input / output channel [RS422] with format DATA+, DATA-, CLOCK+, CLOCK-
- 1 Error input (LW217) or 1 open-drain-output in SSI version (LW218)
- Power supply 10 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)

Signal Splitters

SV210 / SV211 — SINCOS ENCODER DISTRIBUTOR

SV210: 2 SinCos outputs and 2 RS422 / TTL / HTL outputs
SV211: 4 SinCos outputs

The signal distributors SV210 and SV211 distribute sinusoidal signals from SinCos encoders error-free to several devices.

• 1 encoder input with format SIN+, SIN-, COS+, COS-, REF+, REF- [1 Vss]
• Maximum sinus input frequency 500 kHz with max. 200 ns conversion time
• 4 / 2 signal outputs with format SIN+, SIN-, COS+, COS-, REF+, REF- [1 Vss]
• 2 pulse outputs with format A, /A, B, /B, Z, /Z [RS422, TTL, HTL] (for SV210)
• Power supply 17 ... 30 VDC
• Snap-on housing for top hat rail (according to EN 60715)

B x H x T = 22,5 x 102 x 102 mm

GV210 — LEVEL CONVERTER, SIGNAL SPLITTER, DUAL CROSS SWITCHER

Universal encoder interface for level conversion, distribution and electronic switching of incremental encoder signals.

• 2 pulse inputs with format A, B, Z [HTL] or A, /A, B, /B, Z, /Z [RS422]
• Input frequency up to 250 kHz for asymmetrical and up to 1 MHz for symmetric signals
• 2 control inputs for HTL / PNP signals [10 ... 30 VDC]
• 2 output channels with format A, B, Z [HTL] or A, /A, B, /B, Z, /Z [RS422], each output adjustable separately
• Power supply 12 ... 30 VDC
• Snap-on housing for top hat rail (according to EN 60715)

B x H x T = 22,5 x 102 x 102 mm

GV460 - GV470 - GV480 — SIGNAL SPLITTERS WITH 4 OR 8 OUTPUTS

GV460: 8 outputs, extended temperature range -20°C ... +60°C
GV470: 8 outputs, industrial temperature range 0°C … +50° C
GV480: 8 outputs, extended temperature range -20°C ... +60°C
and full electrical isolation of all channels and power supply
GV461, GV471, GV481: Performance as above, but with 4 outputs each

Very compact and extremely versatile distributor for incremental encoder signals and measurement systems. Available with 4 or 8 outputs. The outputs can be cascaded to n x 4 resp. n x 8 outputs (without loss of a regular encoder output).

• 2 pulse inputs with format A, B, Z [HTL] or A, /A, B, /B, Z, /Z [RS422]
• Select input for PNP signals [10 ... 30 VDC]
• Input frequency up to 200 kHz for HTL or 500 kHz for RS422 / TTL
• 4 or 8 push-pull outputs, formats corresponds to the input signals, but with individual assignment for each output
• Power supply 10 ... 30 VDC
• Snap-on housing for top hat rail (according to EN 60715)
• LEDs for indication of the input pulses

B x H x T = 72 x 144 x 61 mm

Signal Converter

FU252

SIGNAL CONVERTER FREQUENCY - ANALOG / SERIAL

Converts a single frequency, as well as a sum, difference, product or ratio of two frequencies into an analog and a serial format. Unsteady input frequencies can be smoothed by activating a selectable average filter.

- Pulse inputs with format A, B, 2 x 90° [HTL] or A, /A, B, /B [TTL / RS422]
- Input frequency up to 1 MHz [RS422] or 200 kHz [HTL]
- Scalable 14 bit analog output for ±10 V or 0/4 ... 20 mA
- Output polarity ± follows rotation direction (phasing A / B)
- Power supply 18 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- Serial RS232 / RS485 interface

B x H x T = 40 x 80 x 90 mm

ZU252

SIGNAL CONVERTER AND INCREMENTAL COUNTER - ANALOG / SERIAL

Suitable to convert counting process of an incremental counter to an analog output and also converts sum A + B and difference A - B.

- Pulse inputs with format A, B, 2 x 90° [HTL] or A, /A, B, /B [RS422]
- Input frequency up to 1 MHz [RS422] or 200 kHz [HTL]
- Scalable 14 bit analog output for ±10 V or 0/4 ... 20 mA
- Output polarity ± follows rotation direction (phasing A / B)
- Power supply 18 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- Serial RS232 / RS485 interface

B x H x T = 40 x 80 x 90 mm

IV251

SIGNAL CONVERTER SSI - ANALOG / SERIAL

Suitable for sensors and absolute encoders with SSI interface 6 ... 25 bit, binary or Gray code. Selectable SSI master or slave mode and programmable concentricity functions, bit blanking and many more.

- SSI input with format DATA+, DATA-, CLOCK+, CLOCK- up to 25 bit
- Clock frequency 100 Hz ... 1 MHz
- Scalable 14 bit analog output for ±10 V or 0/4 ... 20 mA
- Output polarity ± follows rotation direction
- Power supply 18 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- Setup via teach function and operator software
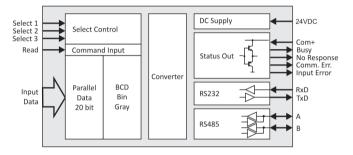- Serial RS232 / RS485 interface

B x H x T = 40 x 80 x 90 mm

PR210

SIGNAL CONVERTER PARALLEL - SERIAL

Converts parallel BCD, binary or Gray code data into serial RS232 / RS485 formats. The converter also has 3 selection inputs for serial transmission up to 8 different target units.

• 20 bit parallel input with format BCD, binary or Gray-Code
• Input frequency: fast encoder 5 kHz, auto-transmit / data logging 0.5 kHz
• 4 status outputs, with push-pull characteristic, short-circuit-proof [5 ... 30 VDC]
• Power supply 10 ... 30 VDC
• Snap-on housing for top hat rail (according to EN 60715)
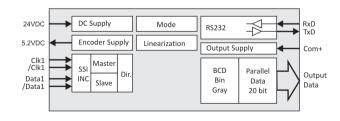• Serial RS232 / RS485 interface

B x H x T = 22,5 x 102 x 102 mm

IP251

SIGNAL CONVERTER SSI / RS232 - PARALLEL

Suitable for conversion of SSI data or serial RS232 data into a parallel data format (BCD, binary or Gray). Programmable concentricity functions, bit rate, bit blanking and other useful additional functions. Master or slave operation possible.

• SI input with format DATA+, DATA-, CLOCK+, CLOCK- up to 25 Bit
• Clock frequency up to 1 MHz
• Control input (hold) for PNP signals [10 ... 30 VDC]
• 25 bit parallel output with push-pull characteristic with format BCD, binary or Gray-Code
• Power supply 18 ... 30 VDC
• Snap-on housing for top hat rail (according to EN 60715)
• Serial RS232 input

B x H x T = 40 x 80 x 90 mm
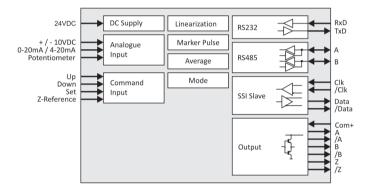
SAFETY

CONTROL

MOTION

INTERFACE

Signal Converter and Interpolators

UZ210

SIGNAL CONVERTER ANALOG - DIGITAL / SERIAL / SSI

The UZ210 unit converts analog signals into a frequency or a position as incremental signal or absolute SSI value. Essential features are a variety of functions, a free programmable U / f characteristic, ability to generate repeating frequency processes, motor potentiometer function, programmable zero pulse and more.

- Scalable 14 bit analog input for ±10 V or 0/4 ... 20 mA
- 4 control inputs for PNP signals [10 ... 30 VDC]
- Pulse output with format A, B, 90° [HTL] or A, /A, B, /B, Z, /Z [RS422]
- SSI output with format DATA+, DATA-, CLOCK+, CLOCK- up to 25 bit
- Power supply 12 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)

B x H x T = 22,5 x 102 x 102 mm

SI251

INTERPOLATOR SINCOS - INCREMENTAL

Suitable for converting sinusoidal encoder signals into incremental output pulses. Further features e. g. adjustable multiplier, interpolation factor, divider and glitch filter are available.

- Encoder input with format SIN+, SIN-, COS+, COS-, REF+, REF- [1 Vss]
- Control input „Error Release" for PNP signals [10 ... 30 VDC]
- Input frequency up to 400 kHz
- Pulse output with format A, /A, B, /B, Z, /Z [RS422]
- Pulse output with format A, B, 90° [HTL]
- Output frequency up to 100 kHz [HTL], up to 4 MHz [RS422]
- Control output „Error" with push-pull characteristic, short-circuit-proof, [5 ... 30 VDC]
- Power supply 18 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)

B x H x T = 40 x 80 x 90 mm

Frequency Dividers, Frequency Multipliers

IT251
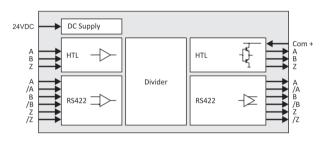
PROGRAMMABLE FREQUENCY DIVIDER

Dual channel frequency divider, programmable for error-free division of sensor signals in the format A, B, 90° with ratios from 1: 1 up to 1: 4096. A programmable direction format and a separate adjustable marker pulse divider are also included.

- Pulse input with format A, /A, B, /B, Z, /Z [RS422]
- Pulse input with format A, B, Z [HTL]
- Input frequency up to 300 kHz
- Pulse output with format A, /A, B, /B, Z, /Z [RS422]
- Pulse output with format A, B, 90° [HTL]
- Power supply 18 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- Setup by DIL-switches

B x H x T = 40 x 80 x 90 mm

FM260

PULSE AND FREQUENCY MULTIPLIER

Multiplies incoming signals from incremental encoders and measuring systems with a proportional and a reciprocal factor (each adjustable from 0.0001 ... 9.9999). Accurate pulse multiplication taking into account the direction of rotation, therefore no cumulative pulse errors can occur. Further features are available, e. g. programmable marker pulse distance.

- Pulse input with format A, B, 90° [HTL] or A, /A, B, /B, Z, /Z [RS422]
- 4 control inputs for PNP signals [10 ... 30 VDC]
- Pulse output with format A, /A, B, /B, Z, /Z and push-pull characteristic, [5 ... 30 VDC]
- Input and output frequency up to 1 MHz
- Power supply 11 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)
- LCD display, backlighted
- Setup via keys, RS232 or USB-Port

B x H x T = 72 x 91 x 76 mm

Accessories

BT348

MINI OPERATOR TERMINAL

Simple operating unit for entering and readout individual parameters via serial interface. Suitable as a remote display for all motrona devices with serial interface.

- Power supply 16 ... 35 VDC
- Compact norm panel housing
- 6 digits LED display with 15 mm digit height

B x H x T = 96 x 48 x 140 mm

PB251

PROFIBUS GATEWAY

Universal gateway for connecting motrona devices to a PROFIBUS (DP-V1). Allows easily the PROFIBUS connection of all motrona counters, indicators, converters and motion controllers that are equipped with a serial interface (DRIVECOM protocol).

- Power supply 10 ... 30 VDC
- Snap-on housing for top hat rail (according to EN 60715)

B x H x T = 40 x 80 x 90 mm

SM300 - SM600 - TG300

SUPPORT BRACKETS AND TABLE HOUSING

SM300: Suitable for display units with front dimension 96 x 48 mm
SM600: Suitable for display units with front dimension 96 x 96 mm

SM300 and SM600 are practical support brackets with snap mechanism for fast and easy installation of panel housings onto a 35 mm DIN rail (EN 60715).

TG300: Suitable for display units with front dimension 96 x 48 mm

Desktop housing e. g. for use in laboratories or workshops.

TG300

NT215

UNIVERSAL 24 VDC / 15 W POWER PACK (LAMBDA)

Affortable compact power supply unit for all motrona devices with 24 VDC input.

- Universal input 85 ... 264 VAC [50 ... 60 Hz] or 90 ... 375 VDC
- Output 24 VDC (±1 %), 630 mA, 15 W

B x H x T = 22,8 x 75 x 96,7 mm

USBAA - USBAMiniB

USB 2.0 CABLES FOR MOTRONA DEVICES

USB cable for the connection of PC with operator surface to motrona devices.

- **USBAA** wire with USB connector male type A to type A
- **USBAB** wire with USB connector male type A to type B
- **USBAMiniB** wire with USB connector male type A to type Mini B
- Length approx. 1,8 m

CK232

PC USB / RS232 CONNECTION SET

This connection set includes an USB to RS232 adapter and a serial RS232 cable for connection between the adapter and motrona device. The kit is compatible with all current windows versions and supplied with a driver CD.

- Cable with 9-pin male and female SUB-D connector
- Length 3 m

SAFETY

CONTROL

MOTION

INTERFACE