Baumer
Passion for Sensors

Counters, Process Displays, Timers, Tachometers

Product overview

Partnership.
Precision.
Pioneering.

Visibly better: Baumer sensors.

The Baumer Group is an international leading manufacturer and developer of sensors, encoders, measuring instruments and components for automated image-processing. Baumer combines innovative technology and customer-oriented service into intelligent solutions for factory and process automation and offers a uniquely wide range of related products and technologies. With around 2300 employees and 37 subsidiaries and in 19 countries, the family-owned company is always close to the customer. Industrial clients in many sectors gain vital advantages and measurable added value from the worldwide consistency of Baumer's high quality standards and its considerable innovative potential.

Our standards – your benefits.

- Passion coupled with expertise – both have made us a sensor pioneer and technology leader
- Our range of services is hard to beat – we have the right product, developed by our own team, for every task
- Inspired by innovation – Baumer takes on the challenge every day
- Reliability, precision and quality – we are powered by our customers' requirements
- Partnership from the very beginning – we develop the optimal solution in close cooperation with our customers
- Always one step ahead – thanks to our level of vertical production, our flexibility and adherence to delivery dates
- Worldwide presence – Baumer is always close across the globe

Baumer – setting standards with innovations.

The success story of the Baumer Group is characterized by innovations. By hardware and software engineers, designers or process engineers who work day in and day out to make our products and systems even better.

Our particular focus is on further miniaturization, enhanced precision as well as improved measuring speed and sensor robustness. That's what our products are characterized by - and something we are proud of.

The Baumer development teams are organized in an international network and are in close contact with well-known universities, recognized research institutes and highly specialized international engineering companies. As the technological leader, Baumer always endeavors to maintain its lead over the long term and protect its numerous innovations through patents.
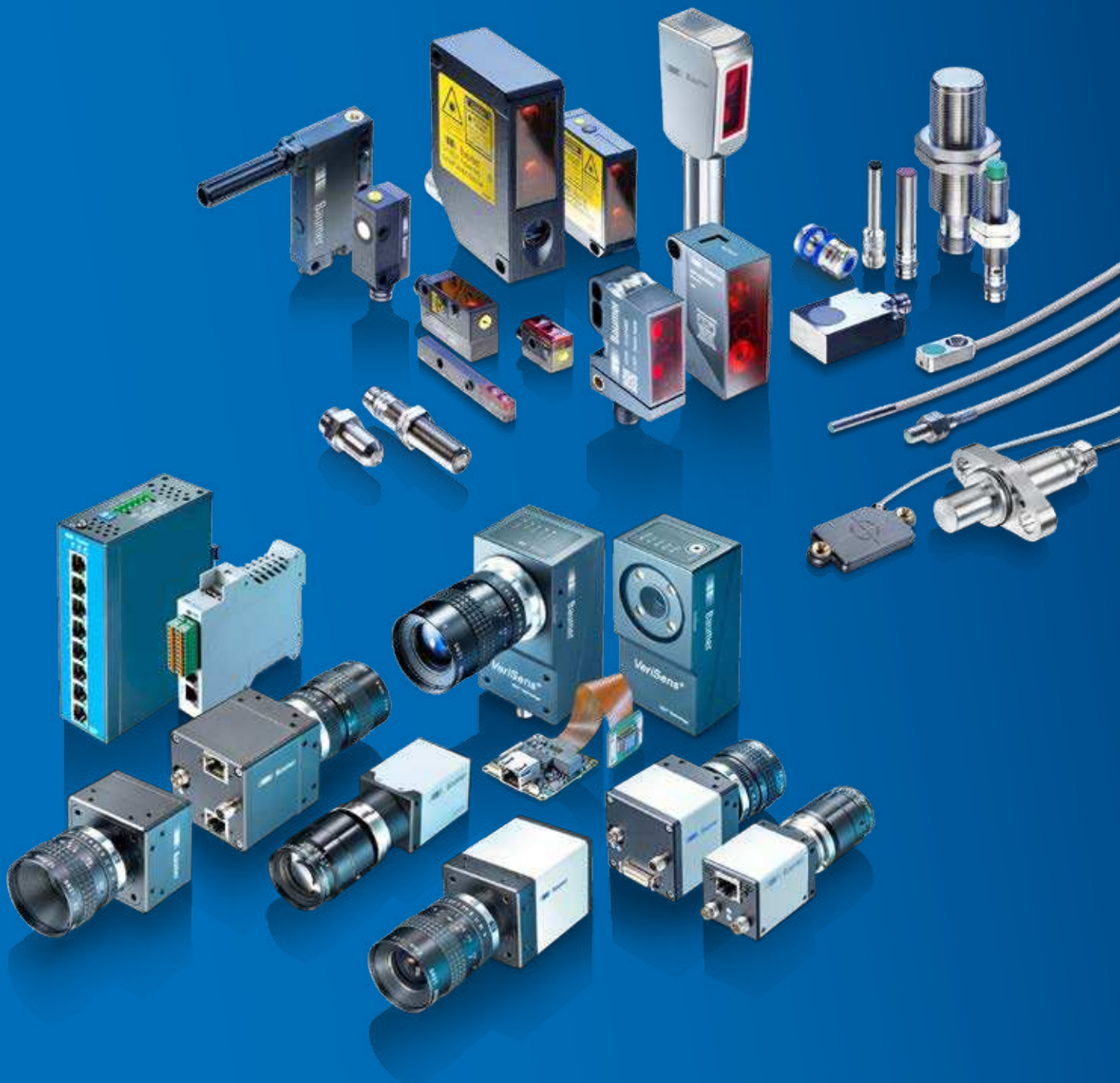
Comprehensive product range

- Absolute encoders
- Acceleration sensors
- Actuators and positioning drives
- Cable-pull encoders
- Capacitive proximity sensors
- Conductivity sensors
- Counters and process displays
- Digital cameras
- Encoder combinations
- Force and strain sensors

- Inclination sensors
- Inductive sensors
- Incremental encoders
- Level measurement
- Magnetic sensors
- Network Components
- OCR and code reader systems
- Optical inspection systems
- Photoelectric sensors
- Precision switches My-Com

- Pressure measurement
- Process analysis
- Speed switches
- Spindle positioning systems
- Tachogenerators and resolvers
- Temperature sensors
- Ultrasonic sensors
- Vision sensors

The Baumer portfolio of counters and displays: Mechanical, electromechanical, electronic.

Measuring quantity and length are ever-present cycles that repeat a thousand times at production and manufacturing facilities. The principal aid for quantity-relevant process control are counters and process displays.

Deployed together with a measuring wheel or encoder, these compact controllers are capable of processing and indicating distance and speed.

Depending on the product variant, their capabilities are further enhanced by more intelligent functionalities: Comparison of measured values, acquisition of difference, calculation of ratios, output of control variables and communication with higher-level controls via serial interface.

Production facilities are expected to meet the ever-growing requirements on efficiency and reliability. The Baumer counters and process displays provide decentralized automation solutions and hence contribute towards cost-efficient production processes.

Process-oriented technologies.

Reliable technologies master most versatile tasks in industrial production processes. From hand-held piece counters on to pulse and preset counters onward to calibrated meter counters – our customers can select among the broadest single-source portfolio available on the European market. Our process displays are designed to capture and display measured values in mechanical engineering and construction.

In interaction with digital or analog sensors, these instruments provide many options for evaluation and display of distance, speed, ratio and many more process parameters while taking over control functions in parallel.

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Applications

Winding and unwinding webs of textile, cables or ropes
Multifunctional counters deployed together with incremental encoders and measuring wheels acquire the length of a material and initiate the cutting operation as soon as the predefined target has been achieved.

Depending on the product variant, the counters acquire and monitor production parameters such as length with end and precontact for counting up to the preset target quantity of units and lots. Some counters provide additional functions to provide overall total and machine running time. Data transfer to higher-level control systems for further processing is by serial interface.

Mechanical length measurement
Robust and no need for power supply – these are the benefits of mechanical counters put in a nutshell. Carpet cutting facilities which are found at every do-it-yourself store are a good example. Mechanical totalizers and preset counters are used to acquire the length of material webs of carpet or wallpaper – most often together with a measuring wheel.

Mechanical totalizers are frequently found at distance measuring instruments or presses and punches.
Hand-held piece counters have been particularly popular for many decades – used by airlines and sports clubs, in forest management or for traffic surveys.
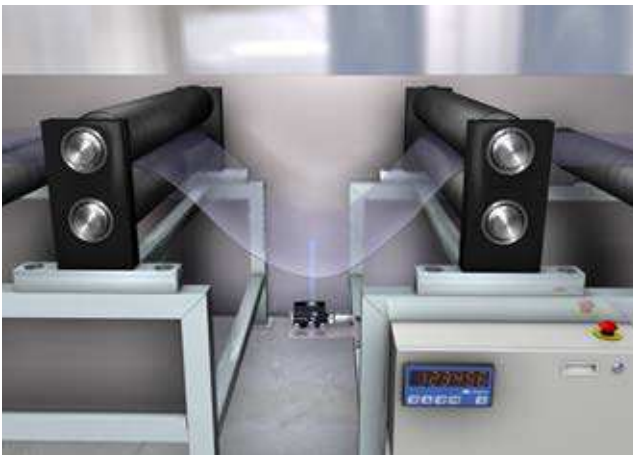
Analog control and monitoring of distance

The actual processing step requires some material webs (foil, textile) to be partly unrolled in order to prepare a smooth web infeed.

Some examples:
- Metal sheet alignment prior to punching
- Foils at printing machines
- Textile in drying systems

The material must come with slight sag as infeed buffer to ensure a smooth feeding process. A distance sensor is used to monitor the appropriate amount of sagging and to prevent any excess sag or strain.

Process display PCD41 is given the analog output signal and converts it into a digital measured value. Two configurable limits allow for sag monitoring within the allowed tolerance.

Two-speed ratio display

Electronic tachometers acquire several measured values all at once while in parallel controlling the related measuring operation according to their programmed parameters.

A good example is speed synchronization of conveyor belts. The belts' speed is acquired by encoders, the process display acts as a comparator and calculator while monitoring the defined limits at the same time.

With only one frequency input, tachometers allow for decentralized and precise indication of speed, clock cycles or rotational speed.

Every revolution counts.
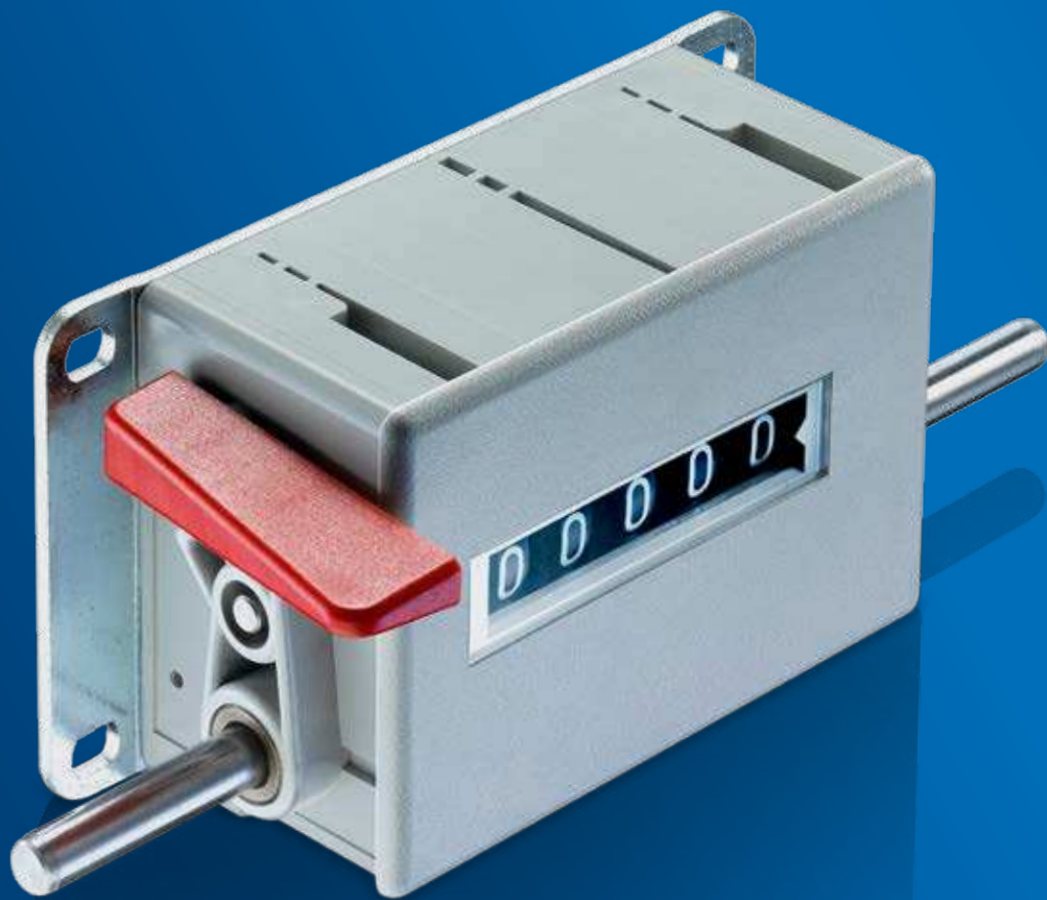
U 410 – Revolution counter

How many, how often, how long?

Totalizing is an ever-present cycle that repeats a thousand times at production and manufacturing facilities. Quantity, filling level, operation hours, length and position are process variables of vital significance. The principal aid for quantity-relevant process control is the totalizer. Deployed together with an encoder, it is even capable of supplying the length or position of an object.

Hence, totalizers are found at distance measuring instruments, pasting tables, presses and punches and where cables must be cut to length. Mechanical counters excel by on-spot measurements without needing power supply, while electronic counters with optional serial interface can communicate with master controls.

SSI position displays

NA214 position displays with SSI interface allow for immediate absolute encoder diagnostics. They are also the product to choose when it comes to absolute positioning by interaction with an absolute SSI encoder, for example adjusting machine stop positions or measuring travel distance.

Totalizers & position displays
Size 48 x 24 mm

Totalizers and incremental position displays.
Voltage supply by lithium battery.
- Pulse inputs NPN / PNP or 10...260 VAC/VDC
- Adding or subtracting
- 8-digit LCD display
- Length measurement with up/down counting

Features	■ Pulse counter adding or subtracting ■ 8-digit LCD display	■ Counting processes with direction signal (Up/Down) or differential counting ■ 8-digit LCD display	■ Slow counting processes with direction signal (Up/Down) ■ 8-digit LCD display	■ Position displays ■ Length measurement by incremental encoder A 90° B x1/x2 ■ 8-digit LCD display
Product family	ISI30	ISI31	ISI32	ISI33

Voltage supply	Lithium battery (approx. 8 years at 20 °C)	Lithium battery (approx. 8 years at 20 °C)	Lithium battery (approx. 8 years at 20 °C)	Lithium battery (approx. 8 years at 20 °C)
Display	LCD, 7-segment	LCD, 7-segment	LCD, 7-segment	LCD, 7-segment
Number of digits	8	8	8	8
Digit height	8 mm	8 mm	8 mm	8 mm
Control inputs	Pulses 10...260 VAC/VDC Floating contact NPN / PNP	Pulses 10...260 VAC/VDC Floating contact NPN / PNP	Pulses 10...260 VAC/VDC	NPN / PNP
Count mode	Adding or subtracting	Up/Down, differential counting	Up/Down	A 90° B
Count frequency	30 Hz, 7 kHz, 12 kHz	30 Hz, 7 kHz, 12 kHz	30 Hz	3 kHz, 6 kHz
Reset	Button and electric	Button and electric	Button and electric	Button and electric
Keylock	Electric	Electric	Electric	Electric
Programmable parameters	Count mode	Count mode	Count mode	Count mode
Dimensions	48 x 24 mm	48 x 24 mm	48 x 24 mm	48 x 24 mm
Protection (face)	IP 65	IP 65	IP 65	IP 65
Connection	Screw terminals	Screw terminals	Screw terminals	Screw terminals
Mounting	Clip frame or screw mount	Clip frame or screw mount	Clip frame or screw mount	Clip frame or screw mount
Options	Display backlighting 24 VDC, 50 mA	Display backlighting 24 VDC, 50 mA	Display backlighting 24 VDC, 50 mA	Display backlighting 24 VDC, 50 mA

Totalizers and incremental position displays.
Absolute position displays SSI.
- Pulse inputs NPN / PNP
- Adding or subtracting
- 6-digit LED display, 8-digit LCD display
- Length measurement with up/down counting

Features	■ Totalizers
	■ Differential counting
	■ Position displays
	■ 6-digit LED display,
	  7.6 mm
		■ Position displays
		■ Programmable
		■ Pulse evaluation
		■ 6-digit LED display,
		  14 mm
			■ SSI-Position displays
			■ Programmable
			■ 8-digit LCD display,
			  10 mm

Product family	N 208	N 214	NA214
Voltage supply	12...24 VDC	24/48 VAC ±10 % 115/230 VAC ±10 % 24 VDC ±10 %	85...265 VAC (50/60 Hz) 24 VDC ±10 %
Display	LED, 7-segment	LED, 7-segment	LCD-TFT, 2-lines alphanumeric
Number of digits	6	6	8
Digit height	7.6 mm	14 mm	10 mm (position value) 5 mm (menu guided)
Control inputs	NPN / PNP	NPN / PNP	NPN / PNP
Count mode	Adding or subtracting Differential counting A-B Total (parallel) A+B Up/Down, A 90° B phase evaluation	Adding or subtracting Differential counting A-B Total (parallel) A+B Up/Down, A 90° B phase evaluation	SSI format 1...31 bits
Count frequency	3 Hz, 25 Hz, 10 kHz	3 Hz, 25 Hz, 10 kHz	3 Hz, 25 Hz, 10 kHz
Reset	Button and electric	Button and electric	Button and electric
Keylock	Electric	Electric	Electric
Programmable parameters	Decimal point, set value Scaling factor, count mode Count frequency	Decimal point, set value Scaling factor, count mode Count frequency	Decimal point, set value Scaling factor, count mode Count frequency
Dimensions	53.2 x 28.2 mm 60 x 37.5 mm 50 x 25 mm	96 x 48 mm	96 x 48 mm
Protection (face)	IP 41	IP 65	IP 65
Connection	Screw terminals	Screw terminals	Screw terminals
Mounting	Spring clips Screw mount Socket box	Clip frame for built-in housing	Clip frame for built-in housing
Interface	–	RS232, RS422, RS485	RS485
Options	–	–	Relay and analog outputs

Totalizers mechanical
Stroke counters

Three designs, optional with
5-, 6- or 7-digit display.
- Adding
- Manual reset
- Surface mount with mounting plate

Features	■ Stroke counter ■ Adding ■ 5-digit		■ Stroke counter ■ Adding ■ 5- or 6-digit		■ Stroke counter ■ Adding ■ 5- or 7-digit	
Product family	H 126	H 127	H 300	H 310	H 400	H 410

Display	White numbers on black		White numbers on black		White numbers on black	
Number of digits	5		6	5	7	5
Measuring range	99999		999999	99999	9999999	99999
Digit height	4.5 mm		4.5 mm		7 mm	
Count mode	1 stroke = 1 count		1 stroke = 1 count		1 stroke = 1 count	
Stroke	>38° to <60°		>38° to <60°		>38° to <60°	
Stroke frequency	≤500 strokes/min		≤500 strokes/min		≤500 strokes/min	
Reset	Knurled knob		Detachable key	Reset lever	Detachable key	Reset lever
Drive shaft	Right or left		Both sides		Both sides	
Shaft diameter	4 mm		4 mm		7 mm	
Lever diameter	3.5 mm		5 mm		6 mm	
Dimensions	48 x 24 x 48 mm		69 x 48 x 28 mm		106 x 64 x 45 mm	
Mounting	Base plate, 4 mounting holes	Base plate, 2 mounting slots	Base plate, 6 mounting slots		Base plate, 4 mounting slots	

Two designs, optional with
5-, 6- or 7-digit display.
- Adding
- Manual reset
- Surface mount with mounting plate
- Matching measuring wheels as an accessory

Features	■ Meter counter ■ Adding ■ 5- or 6-digit		■ Meter counter, PTB ■ Adding ■ 5-digit	■ Meter counter ■ Adding ■ 5- or 7-digit		■ Meter counter, PTB ■ Adding ■ 5-digit
Product family	M 300	M 310	M 310.A	M 400	M 410	M 410.A

Display	White numbers on black Decimal digits in red		White numbers on black Decimal digits in red	White numbers on black Decimal digits in red		White numbers on black Decimal digit with graduation
Number of digits	6	5	5	7	5	5
Measuring range	99999.9 m	9999.9 m	999.99 m/cm	999999.9 m	9999.9 m	9999.99 m/cm
Digit height	4.5 mm		4.5 mm	7 mm		7 mm
Count mode	5 revolutions = 10 counts		5 revolutions = 100 counts	1 revolution = 10 counts 2 revolutions = 10 counts 5 revolutions = 10 counts		2 revolutions = 10 counts
Measuring speed	<100 m/min (with measuring wheel)		<100 m/min (with measuring wheel)	<100 m/min (with measuring wheel)		<200 m/min (with measuring wheel)
Reset	Detachable key	Reset lever	Reset lever	Detachable key	Reset lever	Reset lever
Drive shaft	Both sides		Both sides	Both sides		Both sides
Shaft diameter	4 mm		4 mm	7 mm		7 mm
Dimensions	69 x 48 x 28 mm		69 x 48 x 28 mm	106 x 64 x 45 mm		106 x 64 x 45 mm
Mounting	Base plate, 6 mounting slots	Base plate, 2 mounting slots	Base plate, 6 mounting slots	Base plate, 4 mounting slots		Base plate, 4 mounting slots
Options	–		–	M 411: Drive shaft from below		–

Totalizers mechanical
Revolution counters

Three designs, optional with
5-, 6- or 7-digit display.
- Surface mount with mounting plate
- Adding
- Manual reset

Features	■ Revolution counter ■ Adding ■ 5-digit		■ Revolution counter ■ Adding ■ 5- or 6-digit		■ Revolution counter ■ Adding ■ 5- or 7-digit		■ Revolution counter ■ Adding ■ Drive shaft at bottom ■ 5- or 7-digit	
Product family	U 126	U 127	U 300	U 310	U 400	U 410	U 401	U 411

Display	White numbers on black		White numbers on black		White numbers on black		White numbers on black	
Number of digits	5		6	5	7	5	7	5
Measuring range	99999		999999	99999	9999999	99999	9999999	99999
Digit height	4.5 mm		4.5 mm		7 mm		7 mm	
Count mode	1 revolution = 1 count		1 revolution = 1 count		1 revolution = 1 count		1 revolution = 1 count	
Operating speed	≤2000 rpm		≤3000 rpm		≤1000 rpm	≤3000 rpm	≤1000 rpm	
Reset	Knurled knob		Detachable key	Reset lever	Detachable key	Reset lever	Detachable key	Reset lever
Drive shaft	Single-sided		Both sides		Both sides		Drive shaft centered below	
Shaft diameter	4 mm		4 mm		7 mm		7 mm	
Dimensions	48 x 24 x 48 mm		69 x 48 x 28 mm		106 x 64 x 45 mm		106 x 64 x 45 mm	
Mounting	Base plate, 4 mounting holes	Base plate, 2 mounting slots	Base plate, 6 mounting slots		Base plate, 4 mounting slots		Base plate, 4 mounting slots	

With retaining ring.
For wall or table mount.
- Metal or plastic housing
- Adding
- Manual reset

Mechanical, hand-held piece counters for mobile and stationary applications ease counting persons, parts, events and a lot more.

Features	■ Piece counter with lever ■ Adding ■ 4-digit	■ Hand-held piece counter with retaining ring ■ Adding ■ Metal or plastic housing ■ 4-digit		■ Hand-held piece counter, table mount ■ Adding ■ Metal or plastic housing ■ 4-digit		■ Hand-held piece counter, wall mount ■ Adding ■ Metal or plastic housing ■ 4-digit	
Product family	T 127	T 120	T 130	T 123	T 134	T 124	T 134

Display	White numbers on black	White numbers on black		White numbers on black		White numbers on black	
Number of digits	4	4		4		4	
Measuring range	9999	9999		9999		9999	
Digit height	4.5 mm	4.5 mm		4.5 mm		4.5 mm	
Count mode	1 press = 1 count	1 press = 1 count		1 press = 1 count		1 press = 1 count	
Stroke	>38° to <60°	–		–		–	
Reset	Knurled knob	Knurled knob		Knurled knob		Knurled knob	
Push button	On one side	Top		Top		Top	
Shaft diameter	4 mm	–		–		–	
Dimensions	40 x 29 x 27.5 mm	ø53 mm		ø53 mm		ø53 mm	
Mounting	Base plate, 2 mounting slots	–		Base / mounting plate with 3 holes		Base / mounting plate with 3 holes	
Housing	Surface mount	With retaining ring		For table mount		For wall mount	
Housing colour	Grey	Silver	Yellow, red or grey	Silver	Yellow, red or grey	Silver	Yellow, red or grey
Housing material	Plastic	Metal	Plastic	Metal	Plastic	Metal	Plastic
Options	–	Available with customer logo imprint		Available with customer logo imprint		Available with customer logo imprint	

Totalizers electromechanical
Pulse counters

Pulse counters for AC/DC voltage pulses.
- Adding
- 4- to 8-digit display
- With or without reset button or detachable key
- Built-in housing

Features	Pulse counter, adding, With/without manual by reset button, 4- or 6-digit	Pulse counter, adding, With/without manual by reset button, 6- or 8-digit	Pulse counter, adding, With/without manual by reset button, 5- or 7-digit	Pulse counter, adding, With/without manual by reset button or detachable key, 6- or 8-digit
Product family	F 102, F 112, F 122	F 304, F 314, F 324, F 364	F 503, F 513, F 523	F 504, F 514, F 518, F 524
Voltage supply	24/110 VAC ±10 % 230 VAC +6/-10 % 24 VDC ±10 %	24/110 VAC ±10 % 230 VAC +6/-10 % 24 VDC ±10 %	24/110 VAC ±10 % 230 VAC +6/-10 % 12/24 VDC ±10 %	24/110 VAC ±10 % 230 VAC +6/-10 % 24 VDC ±10 %
Measuring range	9999 or 999999	999999 or 99999999	99999 or 9999999	999999 or 99999999
Number of digits	4 - with reset button 6 - w/o reset button	6 - with reset button 8 - w/o reset button	5 - with reset button 7 - w/o reset button	6 - with reset button 8 - w/o reset button
Digit height	4 mm	4.5 mm	4 mm	4.5 mm
Reset	Manual by reset button	Manual by reset button	Manual by reset button	Manual by reset button or detachable key
Count mode	1 pulse = 1 count	1 pulse = 1 count	1 pulse = 1 count	1 pulse = 1 count
Count frequency	6 pulses (230 VAC) 10 pulses (24 VAC) 20 pulses (24 VDC)	10 pulses (24/230 VAC) 20 pulses (24 VDC)	5 pulses (VAC) 10 pulses (VDC)	10 pulses (VAC) 20 pulses (VDC)
Dimensions	F 102 - 32 x 21.5 x 59 mm F 112 - 39 x 37 x 59 mm F 122 - 37 x 25 x 59 mm	F 304 - 50 x 25 x 85.5 mm F 314 - 60 x 50 x 61 mm F 324 - 53.2 x 28.2 x 61 mm F 364 - 66.5 x 37 x 75 mm	F 503 - 36 x 22 x 45 mm F 513 - 45.7 x 45.7 x 43 mm F 523 - 42 x 28 x 43 mm	F 504 - 50 x 25 x 85.5 mm F 514 - 60 x 37.5 x 61.3 mm F 518 - 66.5 x 37 x 61.3 mm F 524 - 53.2 x 28.2 x 61.3 mm
Protection	IP 41	IP 41	IP 41	IP 41
Connection	Soldering pins	Soldering pins	Stranded wires	Soldering pins
Mounting	F 102 - Screw mount F 112 - Front panel F 122 - Spring clips	F 304 - Socket box F 314 - Screw mount F 324 - Spring clips F 364 - Screw mount	F 503 - Screw mount F 513 - Front panel F 523 - Spring clips	F 504 - Socket box F 514 - Screw mount F 518 - Screw mount F 524 - Spring clips
Options	–	–	–	Front panel with flexible transparent cover or lockable plexiglass lid

Piece counting is a cycle repeating a thousand times at production and manufacturing facilities. The principal aid for quantity-relevant process control is the totalizer.

Switching operations with pinpoint accuracy.

NE212 – Electronic preset counter

Universal deployment.

Cutting and packaging operations as well as positioning require the position, length, quantity and processing time of an object to be acquired, calculated and displayed. But a preset counter can do a lot more: Comparing parameters, determining difference, outputting control variables and communicating with master controls via serial interface. Preset counters can relieve the burden on a higher-level control system. Self-sufficient and compact, they also allow for cost-efficient solutions in basic control applications.

Easy and quick preset entry

Where production parameters require frequent realignment, maybe several times a day, a numeric keypad is recommended.
A single touch on a key will both start and end the new preset operation. Preset entry is in the same way as at a pocket calculator.

Preset counters electronic
Size 48 x 48 mm

Main counter with 1 or 2 presets.
Batch counter, totalizer and time-controlled functions.
- Programmable parameters
- 5-, 6- or 8-digit LCD or LED display
- Soft-touch membrane keypad
- Optional: Interface RS485
- Optional: Analog output for display value (NE214)

Features	■ Preset counter with 1 or 2 presets ■ Pulses 12-260 VAC/VDC ■ Programmable parameters	■ Preset counter with 1 or 2 presets ■ Batch counter with/ without preset ■ Totalizer (parallel)	■ Preset counter with 1 preset ■ Time function ■ Programmable	■ Preset counter with 2 presets ■ Totalizer, hour and batch counter ■ Programmable
Product family	NE131	NE134	NE210	NE216
Voltage supply	10...30 VAC (50/60 Hz) 85...265 VAC (50/60 Hz) 10...30 VDC	24/48 VAC ±10 % (50/60 Hz) 85...265 VAC (50/60 Hz) 12...30 VDC	24/48 VAC ±10 % (50/60 Hz) 85...265 VAC (50/60 Hz) 24 VDC ±10 %	24/48 VAC ±10 % (50/60 Hz) 85...265 VAC (50/60 Hz) 12...30 VDC
Display	LCD, 7-segment, 2-line, backlit	LCD, 7-segment, 2-line, backlit	LED, 7-segment	LED, 7-segment
Number of digits	6	6 8 - totalizer/2 steps	5	5 8 - totalizer/2 steps
Digit height	7 mm (position value) 4 mm (preset)	7 mm (position value) 4 mm (preset)	7.6 mm	7.6 mm
Scaling factor	0.0001...9999.99	0.0001...9999.99	0.001...99.999	0.0001...9999.99
Control inputs	Voltage pulses 12...260 VAC/VDC	NPN / PNP	NPN / PNP	NPN / PNP
Count mode	Adding or subtracting	Adding or subtracting Differential counting A-B Total (parallel) A+B Up/Down, A 90° B x1/x2/x4	Adding or subtracting Differential counting A-B Total (parallel) A+B Up/Down, A 90° B x1/x2/x4	Adding or subtracting Differential counting A-B Total (parallel) A+B Up/Down, A 90° B x1/x2/x4
Count frequency	25 Hz (AC) 1 kHz (DC)	Main counter: max. 10 kHz Batch counter: max. 20 Hz	15 Hz, 10 kHz (adjustable)	3 Hz, 25 Hz, 10 kHz programmable
Reset	Button, electric or automatic	Button, electric or automatic	Button, electric or automatic	Button, electric or automatic
Outputs	Floating relay, change-over contact	Optocoupler Floating relay	NPN/PNP Floating relay	NPN/PNP Floating relay
Programmable parameters	Measuring units, Sensor logic, decimal point, Scaling factor, count mode	Measuring units, Sensor logic, decimal point, Scaling factor, count mode	Measuring units, Sensor logic, decimal point, Scaling factor, count mode, Time function	Operating modes, Sensor logic, scaling factor, Count mode, control inputs
Dimensions	48 x 48 x 100 mm	48 x 48 x 100 mm	48 x 48 x 100 mm	48 x 48 x 100 mm
Connection	Screw terminal connector	Screw terminal connector	Screw terminal connector	Screw terminal connector
Mounting	Clip frame for built-in housing	Clip frame for built-in housing	Clip frame for built-in housing	Clip frame for built-in housing
Interface	–	RS485	RS485	RS485
Options	Programmable as a time and hour counter	Adaptor plate for screw or clip mount	Time relay with delayed pick up and drop out	Programmable as a time and hour counter

Cutting, positioning and packaging operations require the position, length, quantity and processing time of an object to be acquired, calculated and displayed. But a preset counter can do a lot more: Comparing parameters, determining difference, outputting control variables and communicating with higher-level controls via serial interface.

Features	■ Preset counter with 2 presets ■ Totalizer/batch counter ■ 10 figure keypad with 5 function keys	■ Preset counter with 2 presets ■ Totalizer, hour and batch counter	■ Preset counter with 2 presets and PTB approval 1.3 / 93.15 ■ Measurement in mm and cm	■ Preset counter with 2 presets ■ Totalizer and hour counter ■ DIN rail housing
Product family	NE212	NE214	NE215	NE230
Voltage supply	24/48 VAC ±10 % 85...265 VAC 24 VDC ±10 %	24/48 VAC ±10 % 115/230 VAC ±10 % 24 VDC ±10 %	115/230 VAC ±10 % 24 VDC ±10 %	14...28 VAC 85...265 VAC 10...30 VDC
Display	LED, 7-segment	LED, 7-segment	LED, 7-segment	LED, 7-segment
Number of digits	6 - totalizer-/main-/batch counter 8 - totalizer	6	6 - preset counter 8 - totalizer	6
Digit height	7.6 mm	14 mm	7.6 mm	7.6 mm
Scaling factor	0.0001...9999.99	0.0001...9999.99	0.0001...9999.99	0.0001...9999.99
Control inputs	NPN / PNP	NPN / PNP	NPN / PNP	NPN / PNP
Count mode	Adding or subtracting Differential counting A-B Total (parallel) A+B Up/Down, A 90° B x1/x2/x4	Adding or subtracting Differential counting A-B Total (parallel) A+B Up/Down, A 90° B x1/x2/x4	A 90° B	Adding or subtracting Differential counting A-B Total (parallel) A+B Up/Down, A 90° B x1/x2/x4
Count frequency	3 Hz, 25 Hz, 10 kHz programmable	3 Hz, 25 Hz, 10 kHz programmable	10 kHz	3 Hz, 25 Hz, 10 kHz programmable
Reset	Button, electric or automatic	Button, electric or automatic	Button, electric or automatic	Button, electric or automatic
Outputs	NPN/PNP transistor switch Relay change-over contact	Optocoupler Relay change-over contact	Relay change-over contact	Relay (normally open or closed, programmable)
Programmable parameters	Operating modes, Sensor logic, control inputs, Scaling factor, count mode	Operating modes, Sensor logic, control inputs, Scaling factor, count mode	Print output Sensor logic Scaling factor	Print output Sensor logic Scaling factor
Dimensions	72 x 72 x 108 mm	96 x 48 x 124 mm	72 x 72 x 105 mm	70 x 89 x 58 mm
Connection	Screw terminal connector	Screw terminal connector	Screw terminal connector	Screw terminal connector Connector D-SUB, 9-pin
Mounting	Clip frame for built-in housing	Clip frame for built-in housing	Clip frame for built-in housing	DIN rail housing for control cabinet installation
Interface	RS232, RS422, RS485	RS232, RS422, RS485	RS232 oder RS422/RS485	RS232, RS422, RS485
Options	With printer interface (NE213)	Analog output 0(2)...10 V, 0(4)...20 mA	–	–

Preset counters mechanical
Meter counters

Mechanical meter counters with 1 or 2 presets.
Adding or subtracting.
- 4- or 5-digit display
- Manual reset
- Robust top mount
- End contact with switching capacity 100 VA / 30 W

Features	▪ Small meter counter with 1 preset ▪ Subtracting ▪ Reset button ▪ 4-digit	▪ Large meter counter with 1 preset ▪ Subtracting ▪ With/without precontact ▪ Reset lever ▪ 5-digit	▪ Large meter counter with 2 presets ▪ Adding ▪ Reset lever ▪ 5-digit	▪ Large meter counter with 1 or 2 presets ▪ PTB approval ▪ Adding ▪ Reset lever ▪ 5-digit	
Product family	ME102	ME230	ME280	ME280 - PTB	ME282 - PTB
Display	White numbers on black Decimal digits in red	White numbers on black Decimal digits in red	White numbers on black Decimal digits in red	White numbers on black Decimal digits in red	White numbers on black Decimal digit with graduation
Number of digits	4	5	5	5	
Digit height	5.5 mm	7 mm	7 mm	7 mm	
Count mode	Subtracting in a direction to be indicated, adding in reverse direction	Adding in a direction to be indicated, subtracting in reverse direction	Adding in a direction to be indicated, subtracting in reverse direction	Adding in a direction to be indicated, subtracting in reverse direction	
Measuring speed	5 revs. = 1-count ≤2000 m/min 5 revs. = 10-counts ≤200.0 m/min	2 revs. = 1-count ≤2500 m/min 2 revs. = 10-counts ≤250.0 m/min	2 revs. = 1-count ≤3000 m/min 2 revs. = 10-counts ≤300.0 m/min	2 revs. = 100-counts ≤25.00 m/min	2 revs. = 10-counts = <250.0 m/min
Measuring range, max.	9999 m	99999 m	99999 m	99.99 m	9999.95 m
Drive shaft	Both sides, ø4 mm	Both sides, ø7 mm	Both sides, ø7 mm	Both sides, ø7 mm	
Measuring accuracy	1 m, 1 dm, 1 cm	1 m, 1 dm	1 m, 1 dm	1 cm	1 dm
Reset	Manual by reset button	Manual by reset lever	Manual by reset lever	Manual by reset lever	
Preset	1	1	2	1	2
Trigger	Momentary contact at 0000 Permanent contact at 9999	Permanent contact at 00000 Permanent contact at 99999 with precontact	Permanent contact at 00000 Permanent contact at 99999	Permanent contact at 00000 Permanent contact at 99999	
Output contact	Change-over contact	Change-over contact	Change-over contact	Change-over contact	
Switching capacity	100 VA / 30 W	100 VA / 30 W	100 VA / 30 W	100 VA / 30 W	
Dimensions	60 x 62 x 68.5 mm	126 x 88 x 78 mm	120 x 105 x 95 mm	120 x 105 x 95 mm	
Connection	Cable, 0.3 m, 3 pin	Terminal connector	Terminal connector	Terminal connector	
Mounting	Base plate with M4 mounting holes	Base plate, 4 mounting holes	Base plate, 4 mounting holes	Base plate, 4 mounting holes	
Options	With permanent precontact	With permanent precontact as permanent contact	–	–	

Mechanical revolution counters with 1 or 2 presets.
Adding or subtracting.
- 4- or 5-digit display
- Manual reset
- Robust top mount
- End contact with switching capacity 100 VA / 30 W

Features	■ Small revolution counter with 1 preset ■ Subtracting ■ Reset button ■ 4-digit	■ Large revolution counter with 1 preset ■ Subtracting ■ With/without precontact ■ Reset lever ■ 5-digit	■ Large revolution counter with 2 presets ■ Adding ■ Reset lever ■ 5-digit
Product family	UE102	UE230	UE280

Display	White numbers on black	White numbers on black	White numbers on black
Number of digits	4	5	5
Digit height	5.5 mm	7 mm	7 mm
Count mode	Subtracting in a direction to be indicated, adding in reverse direction	Adding in a direction to be indicated, subtracting in reverse direction	Adding in a direction to be indicated, subtracting in reverse direction
Measuring speed	≤10000 rpm	≤5000 rpm	≤6000 rpm
Measuring range max.	9999 revs.	99999 revs.	99999 revs.
Drive shaft	Both sides, ø4 mm	Both sides, ø7 mm	Both sides, ø7 mm
Measuring accuracy	1 rev. = 1-digit	1 rev. = 1-digit	1 rev. = 1-digit
Reset	Manual by reset button	Manual by reset lever	Manual by reset lever
Preset	1 preset	1 preset	2 presets
Trigger	Momentary contact at 0000 Permanent contact at 9999	Permanent contact at 00000 Permanent contact at 99999	Permanent contact at 00000 Permanent contact at 99999
Output contact	Change-over contact	Change-over contact	Change-over contact
Switching capacity	100 VA / 30 W	100 VA / 30 W	100 VA / 30 W
Dimensions	60 x 62 x 68.5 mm	126 x 88 x 78 mm	120 x 105 x 95 mm
Connection	Cable, 0.3 m, 3 pin	Terminal connector	Terminal connector
Mounting	Base plate with M4 mounting holes	Base plate, 4 mounting holes	Base plate, 4 mounting holes
Options	With permanent precontact	–	–

Preset counters electromechanical
Pulse counters

Electromechanical pulse counters with 1 preset.
Adding or subtracting.
- 5- or 6-digit display
- Manual and electric reset
- Built-in housing
- End contact with switching capacity 100 VA / 30 W

Features	■ Pulse counter with 1 preset ■ Adding ■ Reset button ■ 5-digit display	■ Pulse counter with 1 preset ■ Subtracting ■ Reset button ■ 5-digit display	■ Pulse counter with 1 preset ■ Subtracting ■ Manual and electric reset ■ 5-digit display	■ Pulse counter with 1 preset ■ Adding ■ Reset button ■ 6-digit display
Product family	FE304, FE314, FE324	FS304, FS314, FS324	FS309, FS319, FS329	FE504, FE514, FE524
Voltage supply	24/110 VAC ±10 % (50/60 Hz) 230 VAC +6/-10 % (50/60 Hz) 24 VDC ±10 %	24/110 VAC ±10 % (50/60 Hz) 230 VAC +6/-10 % (50/60 Hz) 24 VDC ±10 %	24/110 VAC ±10 % (50/60 Hz) 230 VAC +6/-10 % (50/60 Hz) 24 VDC ±10 %	24/110 VAC ±10 % (50/60 Hz) 230 VAC +6/-10 % (50/60 Hz) 24 VDC ±10 %
Display	White numbers on black	White numbers on black	White numbers on black	White numbers on black
Number of digits	5	5	5	6
Digit height	4.5 mm	4.5 mm	4.5 mm	4.5 mm
Count mode	1 pulse = 1 count	1 pulse = 1 count	1 pulse = 1 count	1 pulse = 1 count
Count frequency	10 pulses (AC) 20 pulses (DC)	10 pulses (AC) 20 pulses (DC)	10 pulses (AC) 20 pulses (DC)	10 pulses (AC) 20 pulses (DC)
Measuring range	99999	99999	99999	999999
Reset	Manual by reset button	Manual by reset button	Manual by reset button and electric	Manual by reset button
Outputs	Change-over contact by micro-switch, one-pole	Change-over contact by micro-switch, one-pole	Change-over contact by micro-switch, one-pole	Change-over contact by micro-switch, one-pole
Switching capacity	100 VA / 30 W	100 VA / 30 W	100 VA / 30 W	100 VA / 30 W
Dimensions	FE304 - 50 x 50 x 85.9 mm FE314 - 60 x 75 x 61 mm FE324 - 53.2 x 53.2 x 61 mm	FS304 - 50 x 50 x 85.9 mm FS314 - 60 x 75 x 61 mm FS324 - 53.2 x 53.2 x 61 mm	FS309 - 50 x 50 x 85.9 mm FS319 - 60 x 75 x 61 mm FS329 - 53.2 x 53.2 x 61 mm	FE504 - 50 x 50 x 85.9 mm FE514 - 60 x 75 x 61 mm FE524 - 53.2 x 53.2 x 61 mm
Connection	Soldering pins	Soldering pins	Soldering pins	Soldering pins
Mounting	FE304 - Socket box FE314 - Screw mount FE324 - Spring clips	FS304 - Socket box FS314 - Screw mount FS324 - Spring clips	FS309 - Socket box FS319 - Screw mount FS329 - Spring clips	FE504 - Socket box FE514 - Screw mount FE524 - Spring clips
Options	Front panel with flexible transparent cover or lockable plexiglass lid	Front panel with flexible transparent cover or lockable plexiglass lid	With permanent precontact as permanent contact	Front panel with flexible transparent cover or lockable plexiglass lid

Large electromechanical pulse counter with 1 preset.
Subtracting.
- 5-digit display
- Manual and electric reset
- Built-in housing 144 x 72 mm
- End contact with switching capacity 100 VA / 30 W

Features	■ Pulse counter with 1 preset ■ Subtracting ■ Manual and electric reset ■ 5-digit display	
Product family	FS218	FS219
Voltage supply	24/110 VAC ±10 % (50/60 Hz) 230 VAC +6/-10 % (50/60 Hz) 24 VDC ±10 %	
Display	White numbers on black	
Number of digits	5	
Digit height	8 mm	
Count mode	1 pulse = 1 count	
Count frequency	10 pulses (AC) 20 pulses (DC)	
Measuring range	99999	
Reset	Manual by reset button	Manual by reset button and electric
Outputs	Change-over contact by micro-switch, one-pole	
Switching capacity	100 VA / 30 W	
Dimensions	144 x 72 x 129 mm	
Connection	Terminal connector, 10-pin	
Mounting	Front panel with 4 screws	
Options	Front plate with flexible transparent cover	

Reliably keeping the pace.

TA202 – Electronic tachometer

Tachometer & process displays

Analog and digital.

At present-day production facilities, significant variables as speed and clock rate must be monitored and displayed. Electronic tachometers and process displays evaluate the analog and digital measured values and, depending on the configuration, will calculate and provide the required information in the display. The measuring principle combining period duration and gate measurement ensures precise results. Pulse evaluation can be configured at will to have the result displayed in the desired measuring unit.

Typical fields of application:
- Speed monitoring and display
- Display of throughput
- Display of clock rate
- Monitoring slippage and torsion
- Monitoring stretching/compression
- Fill level acquisition, distance measurement

Process monitoring

By acquiring two frequencies in parallel, TA202 provides the speed ratio and is also capable of monitoring functions.
Optional digital and analog outputs are available for further enhanced process control.

Tachometer electronic
For digital and analog measured values

Rotation speed and velocity display.
Signal inputs for NPN / PNP.
- One or two frequency inputs
- 5- or 6-digit LCD or LED display
- Adjustable limits
- Interface RS485

Features	■ Small tachometer and frequency display ■ Display unit 1/s ■ 5-digit LCD display	■ Tachometers for rotation speed and velocity display ■ Programmable ■ 6-digit LED display, 14 mm	■ Tachometer with 2 limits ■ Programmable ■ 6-digit LCD display	■ Tachometer as speed ratio display ■ 6-digit LED display, 14 mm
Product family	ISI36	TA200	TA134	TA201
Voltage supply	Lithium battery	24/48 VAC ±10 % (50/60 Hz) 115/230 VAC ±10 % (50/60 Hz) 24 VDC ±10 %	24/48 VAC ±10 % (50/60 Hz) 85...265 VAC (50/60 Hz) 12...30 VDC	24/48 VAC ±10 % (50/60 Hz) 115/230 VAC ±10 % (50/60 Hz) 24 VDC ±10 %
Display	LCD, 7-segment, backlit	LED, 7-segment	LCD, 7-segment, 2-line, backlit	LED, 7-segment
Number of digits	5	6	6, programmable	6
Digit height	8 mm	14 mm	7 mm	14 mm
Scaling factor	−	0.0001...9999.99	0.0001...9999.99	0.0001...9999.99
Control inputs	NPN / PNP	NPN / PNP Comparator	NPN / PNP Comparator	NPN / PNP Comparator
Measuring principle	Gate time measurement 1 s	Period duration measurement	Period duration measurement	Period duration measurement
Count frequency	30 Hz, 7 kHz, 12 kHz	25 Hz, 40 kHz	25 Hz, 40 kHz programmable	F1: 10 kHz / F2: 25 Hz, 40 kHz programmable
Calculating functions	−	−	1/s, 1/min, 1/h programmable	Differential F1-F2 Ratio F1:F2 Stretch/shrinking (F2-F1):F1 Flow Pulse rate measurement
Outputs	−	−	Relay, optocoupler	Relay, optocoupler
Programmable parameters	−	Measuring units, Sensor logic, scaling factor, Pulse frequency	Measuring units, Sensor logic, scaling factor, Count frequency	Assignment F1, F2 or F3 Calculating functions Count frequency
Dimensions	48 x 24 x 48 mm	96 x 48 x 124 mm	48 x 48 x 100 mm	96 x 48 x 124 mm
Connection	Screw terminals 5 mm pattern	Screw terminal connector	Screw terminal connector	Screw terminal connector
Mounting	Clip frame or screw mount	Clip frame for built-in housing	Clip frame for built-in housing	Clip frame for built-in housing
Interface	−	−	RS485	−

Two-frequency ratio display.
Process display for analog sensors.
- 6-digit LED display
- Soft-touch membrane keypad
- Adjustable limits
- Interface RS232, RS422 or RS485
- Analog output 0(2)...10 V, 0(4)...20 mA

Features	■ Tachometer as speed ratio display ■ Two limits ■ 6-digit LED display, 14 mm	■ Process display with analog measured value input ■ Two limits with relay ■ Programmable ■ 6-digit LED display, 14 mm
Product family	TA202	PCD41
Voltage supply	24/48 VAC ±10 % (50/60 Hz) 115/230 VAC ±10 % (50/60 Hz) 24 VDC ±10 %	24/48 VAC ±10 % (50/60 Hz) 115/230 VAC ±10 % (50/60 Hz) 24 VDC ±10 %
Display	LED, 7-segment	LED, 7-segment
Number of digits	6	6
Digit height	14 mm	14 mm
Scaling factor	0.0001...9999.99	–
Control inputs	NPN / PNP Comparator	Analog 0(2)...10 V, 0(4)...20 mA
Measuring principle	Period duration measurement	Analog input , Resolution 12 bit
Count frequency	F1: 10 kHz / F2: 25 Hz, 40 kHz programmable	–
Calculating functions	Differential F1-F2 Ratio F1:F2 Stretch/shrinking (F2-F1):F1 Flow Pulse rate measurement	–
Outputs	Floating relay (change-over contact) Optocoupler Analog output 0(2)...10 V, 0(4)...20 mA Resolution 12 bit	Relay (normally open or closed) programmable
Programmable parameters	Assignment F1, F2 or F3 Calculation functions 2 limits, analog output Slave point	Analog input, limits Control inputs, calculating functions, offset (maximum and minimum analog limit)
Dimensions	96 x 48 x 124 mm	96 x 48 x 124 mm
Connection	Screw terminal connector	Screw terminal connector
Mounting	Clip frame for built-in housing	Clip frame for built-in housing
Interface	RS232, RS422, RS485	RS232, RS422, RS485

Time is money.

BE134 – Electronic hour meter

Electronic and electromechanical.

Time and hour meters acquire operating hours of machines, facilities and instruments. Product variants with preset option and control output as well as RS interface master time-controlled processes.

Time and hour counters acquire operating hours and determine maintenance intervals, but also provide throughput and machine operating hours.

Special characteristics

Electronic counters operate with quartz precision and are independent of the prevailing grid frequency. Product variants with configurable measuring ranges offer even more versatility in the application.

Trigger NPN / PNP and 10...260 VAC/VDC.
Measuring range programmable.
- With and without preset
- LCD or LED display
- Programmable time slots
- Interface RS485

Features	Time/hour meter with count input for NPN-, PNP logic Count input 10...260 VAC/VDC 7-digit / 8-digit LCD display		Time/hour meter with 1 or 2 presets Count input 12...260 VAC/VDC 6-digit LCD display	Time/hour meter with 2 presets NPN-/PNP input 6-digit / 8-digit LCD display	Preset counter with 1 or 2 presets Programmable 5-digit LED display Programmable as a time counter	
Product family	ISI34	ISI35	NE131	BE134	NE210	NE216
Voltage supply	Lithium battery		10...30 VAC (50/60 Hz) 85...265 VAC (50/60 Hz) 10...30 VDC	24/48 VAC ±10 % (50/60 Hz) 85...265 VAC (50/60 Hz) 12...30 VDC	24/48 VAC ±10 % (50/60 Hz) 85...265 VAC (50/60 Hz) 24 VDC ±10 %| 12...30 VDC	
Display	LCD, 7-segment, backlit		LCD, 7-segment, 2-line, backlit	LCD, 7-segment, 2-line, backlit	LED, 7-segment	
Number of digits	7	8	6 8 - totalizer/2 steps	6 8 - totalizer/2 steps	5	
Digit height	8 mm		7 mm (position value) 4 mm (preset)	7 mm (position value) 4 mm (preset)	7.6 mm	
Measuring range	9999 h 59 min 99999.99 h	9999 h 59 min 59 s 9999999.9 h	999.99 s / 999.59.9 min 9999.59 min / 9999.59 h 999999 h	9999.99 s / 999.59.9 min 9999.59 min / 9999.59 h	999 s 99/100 s 99 min 59 s 9/10 s 999 min 59 s / 999 h 59 min	
Control inputs	NPN / PNP Pulses 10...260 VAC/VDC		Voltage pulses 12...260 VAC/VDC	NPN / PNP	NPN / PNP	
Count mode	Adding		Adding or subtracting	Adding or subtracting	Adding or subtracting	
Preset	–		1 or 2	2	1	2
Reset	Button or electric		Button, electric or automatic	Button, electric or automatic	Button, electric or automatic	
Outputs	–		Floating relay (change-over contact)	Optocoupler Relay (normally open or closed)	Optocoupler Relay (normally open/ closed)	NPN, PNP, Relay (change-over contact)
Programmable parameters	Time slot		Sensor logic, decimal point, Scaling factor, count mode, Time slot	Measuring units, Sensor logic, decimal point, Scaling factor, count mode, Time slot	Operating modes, Sensor logic, scaling factor, Control inputs, count mode, Time slot	
Dimensions	48 x 24 x 48 mm		48 x 48 x 100 mm	48 x 48 x 100 mm	48 x 48 x 108 mm	
Connection	Screw terminals		Screw terminal connector	Screw terminal connector	Screw terminal connector	
Mounting	Clip frame or screw mount		Clip frame for built-in housing	Clip frame for built-in housing	Clip frame for built-in housing	
Interface	–		–	RS485	–	RS485
Options	Keylock		–	–	–	

Trigger 18 to 400 VAC.
DIN housing 48 x 48 mm.
- 7-digit
- Measuring range 99 999.99 h or 999 999.9 h

Cure time
Maintenance cycles
Cooling time
Machine operating time
Mixing time
Set-up times
Throughput

Features	■ Hour meter ■ DIN housing 48 x 48 mm ■ VAC trigger ■ 7-digit	■ Hour meter ■ DIN housing 48 x 48 mm ■ VDC trigger ■ 7-digit
Product family	B 148	B 160
Voltage supply	18...26 VAC / 50 Hz 36...48 VAC / 50 Hz 110...120 VAC / 50 Hz 220...240 VAC / 50 Hz 350...400 VAC / 50 Hz 24...30 VAC / 60 Hz 110...127 VAC / 60 Hz 220...240 VAC / 60 Hz	10...80 VDC
Display	White numbers on black Decimal digits in yellow Red running indicator	White numbers on black Decimal digits in red
Number of digits	7	7
Digit height	4 mm	4 mm
Measuring range	99 999.99 h	999 999.9 h
Control inputs	VAC	VDC
Count mode	Adding	Adding
Running accuracy	Mains synchronization	<1 s / 24 h, stepping motor
Reset	Without	Without
Dimensions	48 x 48 x 43 mm	48 x 48 x 38 mm
Connection	Screw terminals Flat connector outlet	Screw terminals
Mounting	Clip frame for built-in housing Rear screw mount Snap-on base for DIN rail EN 50022	Clip frame for built-in housing DIN rail housing EN 50022

Optimal.
Flexible.
Dependable.

Measuring wheel – MR261 and MR592

Accessories for counters.

Several front and adaptor panels with flexible or lockable transparent cover provide optimum protection against dirt, dust or water in any installation environment.

Measuring wheels

When selecting a measuring wheel, the kind of material to be measured must be considered prior to deciding on the wheel's profile or cover lining. Measuring wheels with 20 cm, 30.48 cm (1 foot) or 50 cm circumference are available with different surface profiles and linings.

Accessories
Small measuring wheels

20 cm circumference.
- For 4...10 mm shaft diameter
- Different surface profiles
- Aluminium or plastic wheel

Features	■ Small measuring wheel with 20 cm circumference ■ Surface: Aluminium knurled	■ Small measuring wheel with 20 cm circumference ■ Surface: Hytrel TPE-E smooth	■ Small measuring wheel with 20 cm circumference ■ Surface: Nitrile NBR knubbed rubber	■ Small measuring wheel with 20 cm circumference ■ Surface: Hytrel TPE-E knurled
Product family	MR211	MR241	MR261	MR291

Circumference	20 cm	20 cm	20 cm	20 cm
Outer diameter	63.33 mm ±0.1 mm	63.33 mm ±0.1 mm	63.33 mm ±0.1 mm	63.33 mm ±0.1 mm
Mounting bore	ø4 mm, ø7 mm	ø4 mm, ø5 mm, ø6 mm, ø7 mm, ø10 mm	ø4 mm, ø5 mm, ø6 mm, ø7 mm, ø10 mm	ø4 mm, ø5 mm, ø6 mm, ø7 mm, ø10 mm
Surface profile	Knurled	Smooth	Knubbed rubber	Knurled
Surface material	Aluminium	Hytrel TPE-E	Nitrile NBR	Hytrel TPE-E
Wheel material	Aluminium	Plastic	Aluminium	Plastic
Surface hardness, approx.	–	90° Shore A	55° ±5° Shore A	90° Shore A
Operating temperature	−30...+180 °C	−10...+70 °C	−10...+50 °C	−10...+70 °C
Fastening torque/pin	1.5 Nm	1.5 Nm	1.5 Nm	1.5 Nm
Suitable material	Cardboard, wood, (textile)	Plastic, painted material, Paper, cardboard, wood, Metal, textile	Textile	Plastic, painted material, Paper, cardboard, wood, Metal, textile

50 cm or 1 foot circumference.
- For 6...12 mm shaft diameter
- Different surface profiles
- Aluminium or plastic wheel

■ Large measuring wheel with 50 cm circumference ■ Surface: Aluminium knurled	■ Large measuring wheel with 50 cm circumference ■ Surface: Hytrel TPE-E smooth or knurled	■ Large measuring wheel with 50 cm circumference ■ Surface: Vulkollan PUR smooth	■ Large measuring wheel with 50 cm circumference ■ Surface: Nitrile NBR knubbed rubber	■ Measuring wheel 30.48 cm (1 foot) circumference ■ Surface: Vulkollan PUR smooth
MR512	MR542 | MR592	MR552	MR562	MR752
50 cm	50 cm	50 cm	50 cm	30,48 cm
159.15 mm ±0.2 mm	159.15 mm ±0.2 mm	159.15 mm ±0.2 mm	159.15 mm ±0.2 mm	97.02 ±0.06 mm
ø7 mm, ø10 mm	ø6 mm, ø7 mm, ø10 mm, ø12 mm	ø7 mm, ø10 mm	ø7 mm, ø10 mm	ø4 mm, ø7 mm, ø9.52 mm, ø10 mm
Knurled	Smooth | Knurled	Smooth	Knubbed rubber	Smooth
Aluminium	Hytrel TPE-E	Vulkollan PUR	Nitrile NBR	Vulkollan PUR
Aluminium	Plastic	Aluminium	Aluminium	Aluminium
–	90° Shore A	94° Shore A	55° ±5° Shore A	92° Shore A
−30...+180 °C	−10...+70 °C	−30...+80 °C	−10...+50 °C	−30...+80 °C
3 Nm	3 Nm	3 Nm	3 Nm	1.5 Nm
Cardboard, wood, (textile)	Plastic, painted material, Paper, cardboard, wood, Metal, textile	Plastic, painted material, Paper, cardboard, wood, Metal, wire	Textile	Plastic, painted material, Paper, cardboard, wood, Metal, wire

Measuring wheels

Measuring wheels can be attached to both an encoder and electronic or mechanical counter or process display. Different designs, surface linings and profiles ensure ever-precise measured results on most varied materials.

Accessories
Mounting accessories

Front frame, adaptor and front plates.
- Screw or clip mount
- Front plates with transparent cover
- Front plates and front frames with and without plexiglass lid

Features	■ Adaptor plates ■ For electronic counters in DIN housing	■ Front panel with flexible, transparent cover	■ Frame with transparent lid with knob or cylinder lock	■ Frame and transparent lid with knob lock
Product family	Z 118.033, Z 118.034, Z 118.035	Z 100.01A, Z 100.02A Z 100.03A, Z 100.04A	Z 102.01A, Z 102.02A	Z 102.050
Dimensions	Front 60 x 75 mm Front 53.2 x 53.2 mm Front 60 x 75 mm	50 x 25 mm, 50 x 50 mm 50 x 75 mm, 114 x 61 mm	64.5 x 79.5 mm	64.5 x 79.5 mm
Mounting	Screw mount Clip mount	Screw mount	Screw mount	Screw mount
Cutout dimensions	50.5 x 50.5 mm	–	55 x 55 mm	50.5 x 50.5 mm
Suitable for matching counters	BE134, NE131, NE134, NE210, NE216, TA134	F 304, F 504, FE304, FE504, FS304, FS218, FS219	FE304, FE504, FS304, FS309	

Features	■ Front frame with cylinder lock provided on transparent cover	■ Front frame with different cutouts ■ 50 x 25 mm	■ Front frame with different cutouts ■ 50 x 50 mm	■ Front frame with different cutouts ■ 50 x 75 mm, 100 x 50 mm
Product family	Z 105.02A	Z 107.01A	Z 107.02A	Z 107.03A, Z 107.04A
Dimensions	64.5 x 55 mm	60 x 50 cm	60 x 75 mm	100 x 60 mm, 110 x 75 mm
Mounting	Screw mount	Screw mount	Screw mount	Screw mount
Cutout dimensions		55 x 30 mm	55 x 55 mm	55 x 80 mm, 105 x 55 mm
Suitable for matching counters	F 304, F 504, N 208	F 304, F 504, N 208	FE304, FE504, FS304, FS309	Combination of several electromechanical counters

Worldwide presence.

Africa
Algeria
Cameroon
Côte d'Ivoire
Egypt
Morocco
Reunion
South Africa

America
Brazil
Canada
Colombia
Mexico
United States
Venezuela

Asia
Bahrain
China
India
Indonesia
Israel
Japan
Kuwait
Malaysia
Oman
Philippines
Qatar
Saudi Arabia
Singapore
South Korea
Taiwan
Thailand
UAE

Europe
Austria
Belgium
Bulgaria
Croatia
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Italy
Malta
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