ENS20 is a compact, in all usual functions and time ranges simply programmable digital timer/counter. By use of a tight-fitting keyboard the front of the equipment is protected against splash-water completely. Therefore ENS20 is suitable ideally for the employment at bakery machines, machine tools, manufacturing automats etc..



- *front protection IP65*
- *simple programming by integrated keyboard*
- *7 programmable time ranges 0.01s - 999h*
- *all usual functions programmable*
- *quartz-stabilized time base*
- *only 48x48mm front size*
- *1 equipment for all applications*
- *START/STOP (gate) and RESET inputs*

Timing begins either with the programmed time value (preselection) and ends at zero or it begins with zero and ends at the preselected value. Stop, resetting as well as adjusting new parameters during the timing operation are possible.

Keyboard function during timing/counting

The keyboard disabling (LOCK) is activated, if the keys "**<**" and "**R**" are pressed while connecting the supply voltage. By this the keyboard can be blocked against inadvertent adjusting in critical applications. Deactivating is effected by renewed actuation "**<**" and "**R**" while switching on the supply voltage.

Reset functions

R	Reset on zero or to the preselected value
▶	Announcement of the preselected value; timing continues in the background with all switching functions
◀ + ▶	Programming mode; depending on function attitudes only possible if no starting signal is acticvated
◀ + R	With power on activate the simultaneous pressing of these keys the LOCK function (keyboard disabling)

By operation of the backspace key "**R**" or the RESET-input (1-2) the ENS20 is set to the programmed preselected value in each operating condition. The RESET signal (1-2) and "**R**" - key have priority in relation to the START signal.

ENS20 can be used in numerous modes of operation as timer or as counter.

The different functions are now described in detail.

ENS20 as timer (2-0 to 2-6, see function 2)

Timing begins with turning on the starting signal (1-3) and can be interrupted by this input as desired. The START input 1-3 can be closed by a cable link. In this case timing begins directly with switching on the mains voltage. RESET and START input have an internal noise pulse suppression. They may be activated by contacts or electronic initiators.

ENS20 as counter (2-7, see function 2)

All functions 3 to 8 also apply to the counter mode. The clock input is provided at the terminals 3 (+12..24V) and 1 (0V). Counting is done by closing an external counting contact. Also 2- or 3-wire semiconductor outputs of initiators can be used. The falling edge is counted.

Programming

The programming mode is activated by simultaneously pressing of "**<**" and "**>**" keys. **Note:** The LOCK function must be deactivated. There are 8 functions (1..8), which are working on in sequence. The display flashes in the programming mode.

Programming

◀ + ▶	Programming mode; depending on attitude only possible if no start-signal is turned on, the display flashes, beginning with time preselection (function 1)
⇩	
◀ ▶	Attitude of the values, e.g. time preselection or time range
⇩	
R	" **R** " and afterwards " **>** " - key: Storing of the new value and next function
⇩	
R ▶	2x " **R** " one after the other: Leave the programming mode and back to the normal operation

Display	Function 1: Timer/counter preselection
last programmed value, e.g. **472**	Select the time/count-preselection with the keys "< " and " > ". Single and continuous pressure are possible. Storing and next function with "**R**" . The display shows "**r - >**": Next function with key "**>**", return to the operating mode with "**R**" - key.

Display	Function 2 Timing ranges
2 – 0	0.01 - 9.99s
2 – 1	0.1 - 99.9s
2 – 2	1 - 999s
2 – 3	0.1 - 99.9min
2 – 4	1 - 999min
2 – 5	0.1 - 99.9h
2 – 6	1 - 999h
2—7	**Counter mode**

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Programmable Digital Timer/Counter ENS20

The following function settings are valid depending on the value of the function 2 for **timer mode (2-0 to 2-6)** or **counter mode (2-7).**

Display	Function 3: Timing functions
3– 0	**On-delay.** Timing begins with applying of the mains voltage and closing of the START-contact. After timing the contacts switch from 15-16 to 15-18 until the arrival of a resetting signal, at least however for 100ms.
3 – 1	**Impulse-limiting.** As On-delay, however the contacts are switched on with application of the mains voltage immediately (15-18) and back to 15-16 after timing.
3 – 2	**Flashing (T1=T2).** The ENS20 works after applying of the mains voltage and closing of the START contact as symmetrical cycling timer. The cycle starts with output off (relay switched off). On and off time are equal.
3 – 3	**Flashing (T2=100ms).** In this operating condition the output relay switches periodically for 100ms. The total cycle time is determined by the preselected current value.
3 – 4	**Signal off-delay.** The control is made by the START contact. The contacts switch on immediately and after opening the starting contact timing begins. After timing the contacts switch back to 15-16. A stop is not possible here.
3 – 5...	Free for customized special functions

Dispaly	Function 4: Counting direction
4 – 0	**upward.** Timing/counting begins with zero and ends with the preselected value. A RESET signal sets back to zero.
4 – 1	**downward.** Timing begins with the preselected value and ends with zero. A RESET signal sets back to the preselected value.

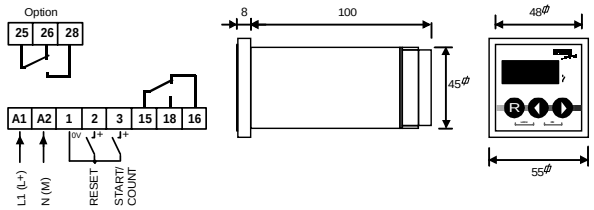
Display	Function 5: Power failure function
5 – 0	**Continuation.** Timing is continued after power failure with the value reached last.
5 – 1	**Restart.** Timing begins after power failure with zero or with the preselected value (RESET after power failure).

Display	Function 6: Enable/disable programming
6 – 0	**Programming enabled during timing.** Programming during timing (i.e. the START signal is turned on) is enabled. Timing is stopped and continued after the recent time preselection with the new values.
6 – 1	**Programming disabled during timing.** The programming mode by "**<**" and "**>**" - keys is not possible during timing (i.e. the START signal is turned on). Programming only, if the START input is turned off.

Display	Function 7: Aux. contact, only version 52311x
7 – 0	**Auxiliary contact is immediate contact.** Timer mode: The 2nd contact switches with applying the START signal . Counter mode: The 2nd contact switches on with the first counting pulse.
7 – 1	**Auxiliary contact is progammable pre-contact** The display shows next **"Pxx ".** xx is the timer/counter value of the 2nd contact. Set the value with **<, >** e.g.**"P52".** Through this the 2nd contact switches on 52 clocks before reaching the timer/counter preselection (1st contact). With the value **"P00 "** the 2nd contact switches at the same time as the 1st contact with reaching the preselection value.

Display	Function 8: Input frequency
8 – 0	**Input frequency** at start/count **50Hz.**
8 – 1	**Input frequency** at start/count **500Hz.**

Specifications	
Operating voltage	DC24V, AC230V/AC115V, 50-60Hz
Voltage tolerance	90..110% of U_N
Power consumption	< 2VA
LED-display	3 digits, 7mm red, time up indication
Protection	IP65 front
Internal data storage time	10 years
Contacts	1 change-over contact, optional 2nd contact
Contact rating	jAC 250V, 8A; DC 24V, 3A
Contact life	mechanically 2x10^7 operations
	electrical 10^5 operations
Inputs 2, 3	DC10..30V or external contact
Time base	quartz-stabilized, time tolerance: < 0,1%
Min.power-off time	function 5-1:100ms, function 5-0: 200ms
Input frequency / counter	50/500Hz programmable
Trigger	closing of the contact / falling edge
Time ranges	7 between 0.01s and 999h
Temperature range	0^0 - + 50^0C
Dielectric strength	4kV DIN VDE 0110-1:1997-04
Weight	approx. 200g



External dimensions 55mm with front frame

Order-No	Type
523100	ENS20 AC230V, 1 contact
523101	ENS20 AC115V, 1 contact
523102	ENS20 ADC24V, 1 contact
523110	ENS20 AC230V, 2 contacts
523111	ENS20 AC115V, 2 contacts
523112	ENS20 ADC24V, 2 contacts
523010	Plug-on front frame 55x55mm (option)

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