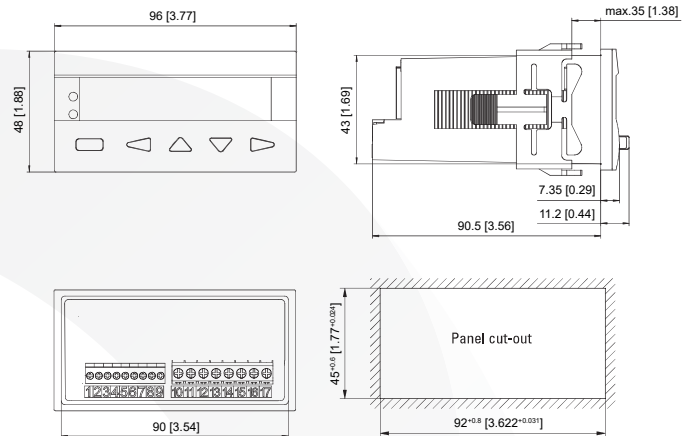# Model 898X

Electronic Programmable LCD Preset Counter and Rate Indicator

The 898X is a counter, tachometer, timer and position display in a single unit. It can be used as a preset counter, batch counter or totalizer depending on requirements, with automatic help text to take the user through programming. With its automatic help text, clearly and legibly displayed on 14 LED segments, the 898X preset counter takes the user effortlessly through the programming. The large user-friendly front keys can be operated even when wearing gloves. The 14mm high LED display ensures easy reading even from a long distance and in poor lighting conditions.

Available with RS485 interface and MODBUS and CR/LF protocol

Key Fetatures

- Counter, tachometer, timer and position display in one counter
- Can be used as a preset counter, batch counter or total counter
- 2 relays (change-over)
- Many different count models
- Scalable display
- Set value, step to tracking preset
- Multi-range power supply for AC
- Readable or configurable via RS232/485 interface via Modbus or CR/LF protocol
- Allows for direct connection of a large display or Printer

Benefits

- Automatic help text
- 14-segment LED for improved text representation
- Status display of the presets
- 3 defined parameters
- Tracking presets eliminate the need for re-programming the pre-signal
- 4-stage RESET modes
- 3-stage keypad locking
- Suitable for installation in mosaic systems

General Technical Data

Display	6-digit red 14 segment LED display, 14mm [0.55] high
Operating Temperature	-20ºC - +65ºC [-4ºF - +149ºF] (non-condensing)
Storage Temperature	-25ºC - +5ºC [-13ºF - +167ºF]
Relative humidity (at +40ºC [+104ºF])	RH 93% (non-condensing)
Altitude	up to 2000m [6562']

Electrical characteristics

Power Supply	AC 100-240 VAC, +10% max. 11 VA, 50/60 Hz
External Fuse Protection	230 VAC T0.1 A 10-30 VDC T 0.25 A
Data Retention	>10 years, EEPROM
Response time of the frequency meter	100 / 600 ms (details in instruction manual)
Input Modes	Count Direction (cnt.dir),
Pulse Counter:	Difference (up.dn)
	Addition A+B (up.up)
	Phase discriminator x1, x2, x4 (quad, quad x2, quad x4),
	Ratio (A/B),
	Ratio in % ((A-B)/Ax100%)
Frequency Meter:	A, A-B, A+B quad, A/B, (A-B)/A x 100%
Timer:	4 start modes: FrErun, Auto, InpA.InpB., InpB.InpB.
Sensor power supply	*AC supply:* 24V DC+ 15%, 80 mA
	DC Supply: max. 80 mA, external power supply is connected through
EMC	Emitted interference: EN55011 class B
	Immunity to interference: EN 61000-6-2
Device safety	Designed to EN 61010 part 1
	Protected class 3
	Application Area Pollution level 2

Mechanical Data

Protection	IP65 (from the front)
Weight	approx. 180g [6.35 oz]
Count inputs	A and B
Polarity of the inputs	programmable for all inputs in common, NPN/PNP
Input resistance	5kΩ
Count frequency	Pulse counters: max. 55kHz
	Tachometers: max. 65 kHz
	Can be damped to 30 Hz (mechanical contacts) (details in instruction manual)
Control/Reset input	MPI 1 and MPI 2, Lock, Gate, Reset
Min pulse duration of the inputs	10 ms/1ms
Switching levels with AC supply	*4-30 VDC* Low: 0 … 2 VDC
	High 3.5 … 30 VDC
Switching levels with DC supply	*1-30 VDC* Low: 0 … 2 VDC
	High: 3.5 … 30 VDC
Pulse shape	variable, Schmitt-Trigger characteristics

Outputs

Switching voltage	max. 250 VAC / 150 VDC
Switching current	max . 3 A AC / DC
	min. 30 mA DC
Switching capacity	max. 750 VA / 90 W
Output 1 + 2	
Mech. Service life (switching cycles)	2×10^7
No. of switching cycles at 3 A / 250 VAC	5×10^4
No. of switching cycles at 3 A / 30 VDC	5×10^4
Relay with changeover contact	
Reaction time of the outputs	13ms
(pulse / time)	(details in instruction manual)

Optional interface MODBUS and CR/LF

Count Frequency	max. 45 kHz 9 (details in instruction manual)
Interface	RS232, RS485
Baud Rate	9600
Device address	1-99, programmable

Functions / Count Modes

Pulse Counter
- Count with direction mode
- Difference mode
- Quadrature mode quad / quad2 / quad4
- Add, sub, automatic reset
- 2-input adding mode A+B
- Ratio measurement A/B
- Multi-range power supply for AC or DC
- Percentage difference measurement (A/B) / A x 100%
- Batch counting
- Totaliser (overall total)
- Multiplication and division factor (up to 99.9999)
- Set value
- Step or tracking preset

Frequency Meter (tachometer)
- A
- A - B
- A + B
- A / B
- (A – B) / A x 100% (percentage display)
- Quad (phase discriminator with recognition of direction)
- Averaging
- Start delay
- 2nd tacho input
- Gate input
- Multiplication and division factor (up to 99.9999)

Time and hours-run Meter (timer)
- FrErun (control via gate input)
- Auto (start via reset, stop at preset)
- InpB.InpB (start with the first edge at InpB (stop with second edge InpB.)
- InpA.InpB (start w/ InpA., stop w/ inpB.)
- Totaliser (overall total)
- Batch counting
- Set value
- Step or tracking preset

Part Numbers

8980-1:   Dual Preset, Dual Relay Counter, 10-30VDC
8981-1:   Dual Preset, Dual Relay Counter, 100-240VAC
8981-5:   Dual Preset, Dual Relay Counter, 100-240VAC, RS485