Data Sheet

OM 653UQC

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UNIVERSAL COUNTER

- 6-digit programmable projection
- Counter/Frequency/Clock/Timer
- 0,1 Hz...50 kHz; UP/DW counter, IRC
- Digital filters, Tare, Linearization, Sum
- Size of DIN 96 x 48 mm
- Power supply 10...30 V AC/DC; 80...250 V AC/DC
- Option
  Comparators • Data output • Analog output • Three-color display - 20 mm

OM 653UQC

Type OM 653UQC is an inexpensive universal 6-digit panel counter/frequency meter/timer/clock designed for maximum efficiency and user comfort.

The instrument is based on a single-chip microcontroller, which secures good accuracy, stability and easy operation of the instrument.

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OPERATION

The instrument is set and controlled by five buttons situated on the front panel. All programmable settings of the instrument may be performed in three adjusting modes:

LIGHT MENU is protected by optional number code and contains solely items necessary for instrument setting.

PROFI MENU is protected by optional number code and contains complete instrument setting.

USER MENU may contain arbitrary items from the programming menu (LIGHT/PROFI), which determine the right (see, change). Access w/o password.

Standard equipment is the OM Link interface, which together with operation program enables modification and filing of all instrument settings as well as performing firmware updates (with OML cable). The program is also designed for visualization and filing of measured values from more instruments.

All settings are stored in the EEPROM memory (settings hold even after the instrument is switched off).

OPTION

COMPARATORS are assigned to monitor two limit values with relay output. The limits have adjustable hysteresis within the full range of the display as well as selectable delay of the switch-on in the range of 0...99,9 s. Reaching the preset limits is signalled by LED and simultaneously by the switch-on of the relevant relay.

DATA OUTPUTS are for their rate and accuracy suitable for transmission of the measured data for further projection or directly into the control systems. We offer an isolated RS232 and RS485 with the ASCII/PROFIBUS protocols.

ANALOG OUTPUTS will find their place in applications where further evaluating or processing of measured data is required in external devices. We offer universal analog output with the option of selection of the type of output - voltage/current. The value of analog output corresponds with the displayed data. Its type and range are selectable in menu.

TIME BACKUP is suitable where time needs to be measured even in case of supply voltage outage (upon power supply outage the instrument does not display).

STANDARD FUNCTIONS

PROGRAMMABLE PROJECTION
Selection: measuring mode
Setting: Measuring mode counter/frequency/timer/clock with adjustable calibration coefficient, time base and projection
Measuring modes: counter/frequency meter/UP-DW counter/frequency/counter for IRC
Measur. channels: A and B, two independent functions (number/frequency) can be evaluated from one measuring input)
Projection: -99999...999999 with stabile or floating DT in format 10/24/60

EXCITATION
Range: 5/12/17/24 VDC/100 mA, for feeding sensors and transmitters

FUNCTIONS
Linearization: non-linear signals can be linearized by the means of a linearization table (up to 25 points)
Tare: designed to reset display upon non-zero input signal
Preset: initial nonzero value that is always read after resetting the device
Current value: one-off setting of the initial value
Summation: registration of figures upon shift operation
Time backup: time is running even when the power supply is turned off (the display is off)

DIGITAL FILTERS
Exponential average: from 2...100 measurements
1/Fr.: filter to convert frequency to time
Rounding: setting the projection step for display
Input filter: passes the input signal up to 5...1 000 Hz

EXTERNAL CONTROL
Hold: display/instrument blocking
Lock: control keys blocking
Resetting: counter resetting
Start/Stop: timer/clock control

TECHNICAL DATA

INPUT

Number of inputs		1	
UQC	Input	optional in configuration menu on contact, TTL, NPN/PNP 0...30/300 V, comparation levels are adjustable in the menu or automatic	
	Input frequency	0,1 Hz...50 kHz (Mode SINGLE) 0,1 Hz...20 kHz (Mode UP/DW) 0,1 Hz...20 kHz (Mode UP-DW) 0,1 Hz...20 kHz (Mode QUADR. - frequency) 0,1 Hz...10 kHz (Mode QUADR. - counter) (for duty cycle 50 %)	
	Measuring mode	SINGLE	counter/frequency
		QUADR	counter/frequency for IRC sensors
		UP/DW	UP/DW counter/frequency - measures on inputs A, B (direction) and can display numbers/frequency
		UP - DW	UP - DW counter/frequency - measures on inputs A (UP), B (DW) and can display numbers/frequency
		TIME	Timer
		RTC	Clock
	Time base	0,5/1/5/10 s	
	Calibration constant	0,00001...999999	
	Preset	0...999999	
	Input filter	0/5/40/100/1000 Hz	
	Functions	Preset Summation One time setting of the initial value Time backup (Timer/clock)	
External input		1 input, on contact The following functions can be assigned:	
		OFF	input off
		LOCK.K	control keys blocking
		HOLD	display stop
		TARE	tare activation
		CLEAR	display reset
		CLR.ST.	counter/timer reset and preset
		SUM.	sum showing
		CL.SUM.	sum reset
		COUNT.	switching counter/frequency display

PROJECTION

Display: -99999...999999, single color 7-segment LED;
-999...9999, 3-color 7-segment LED
Digit height: 14 or 20 mm
Display color: red or green (height 14 mm)
red/green/orange (height 20 mm)
Decimal point: adjustable - in menu
Brightness: adjustable - in menu

INSTRUMENT ACCURACY

TC: 50 ppm/°C
Accuracy: ±0,01% of range + 1 digit (frequency)
±0,02% of value ±2ms (timer)
±0,02% of value ±130ms (RTC)
Overload capacity: 2x; 10x (t < 30 ms) - not for 300 V
Watch-dog: reset after 500 ms
Digital filters: exponential average, rounding, input filter, 1/Fr.
Functions: data backup, Time backup, Preset, Sum, Tare
OM Link: company communication interface for operation, setting and update of instruments
Calibration: at 25°C and 40 % r.h.

COMPARATOR

Type: digital, menu adjustable, contact switch-on < 50 ms
Hysteresis mode: switching limit, hysteresis band (Lim and ±1/2 Hys.) and time (±99,9 s) determining the switching delay
Mode C-Puls (L1) - automatic counter resetting at the set value
Mode Once (L1) - switching limit, which will switch off only after the counter has been reset
Mode On Run (L2) - output is active when the timer is running
Output: 1...2x Form A relays (250 VAC/30 VDC, 3 A);
1...2x open collector (30 VDC/100 mA)

DATA OUTPUTS

Protocol: ASCII, PROFIBUS DP
Data format: 8 bit + no parity + 1 stop bit (ASCII)
Rate: 300...230 400 Baud
9 600 Baud...12 Mbaud (PROFIBUS)
RS 232: isolated
RS 485: isolated, addressing (max. 31 instruments)

ANALOG OUTPUTS

Type: isolated, programmable with a 16 bit D/A converter, type and range of output is optional in the menu
Non-linearity: 0,1% of range
TC: 15 ppm/°C
Rate: response to change of value < 1 ms
Ranges: 0...2/5/10 V, ±10 V, 0...5 mA, 0/4...20 mA
(comp. < 600 Ω/12 V)

EXCITATION

Adjustable: 5/12/17/24 VDC/max. 2,5 W, isolated

POWER SUPPLY

Range: 10...30 V AC/DC, ±10 %, PF≥ 0,4, I_{STP}< 40 A/1 ms, isolated
80...250 V AC/DC, ±10 %, PF≥ 0,4, I_{STP}< 40 A/1 ms, isolated
Consumption: < 6,9 W/7,3 VA
Power supply is protected by a fuse inside the instrument.

MECHANIC PROPERTIES

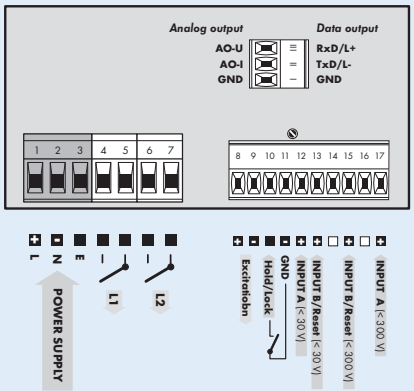
Material: Noryl GFN2 SE1, incombustible UL 94 V-I
Dimensions: 96 x 48 x 120 mm (w x h x d)
Panel cutout: 90,5 x 45 mm (w x h)

OPERATING CONDITIONS

Connection: connector terminal blocks, section < 1,5/2,5 mm²
Stabilization period: within 5 minutes after switch-on
Working temperature: -20°...60°C
Storage temperature: -20°...85°C
Protection: IP64 (front panel only)
El. safety: EN 61010-1, A2
Dielectric strength: 4 kVAC per 1 min test between supply and input
4 kVAC per 1 min test between supply and data/analog output
4 kVAC per 1 min test between input and relay output
2,5 kVAC per 1 min test between input and data/analog output
Insulation resistance: for pollution degree II, measuring cat. III
power supply > 670 V (PI), 300 V (DI)
input, output, PN > 300 V (PI), 150 V (DI)
EMC: EN 61326-1

PI - Primary insulation, DI - Double insulation

CONNECTION



ORDER CODE

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Power supply	10...30 V AC/AC	**0**						
	80...250 V AC/DC	**1**						
Comparators	**no**		**0**					
	1x relay (Form A)		**1**					
	2x relay (Form A)		**2**					
	1x open collector		**3**					
	2x open collector		**4**					
Output	**none**			**0**				
	Analog output			**2**				
	RS 232			**3**				
	RS 485			**4**				
	PROFIBUS			**6**				
Excitation	**yes**				**1**			
Time backup	**no**					**0**		
Only for Measuring mode „Timer/clock"	yes					**1**		
Display color	**red (14 mm)**						**1**	
	green (14 mm)						**2**	
	red/green (20 mm)						**3**	
Specification	**customized version, do not fill in**							**00**

Basic configuration of the instrument is indicated in bold.