

Schwille - Elektronik Digital Panel Meter SPE 670 – 080 for Flow Turbines

Digital Panel Meter SPE 670 – 080

Meas. Type: Flow meter for flow turbines
Input: Square Pulse 5 - 24V
Coupling: DC / AC or Opto coupler
Dimension display: Ltr. (Standard)
Display/ Rate: 4 Digits / 1 Meas./s
Display Type: LED 12.5mm, red
Decimal Point: Programmable
Protection Index: IP50, DIN 40050
Operating Temp.: -10°C...+50°C
Control Outputs: 2 Relays N/O or N/C
Limit Values: Programmable
Relay Contact: 230V / 5A
Connector Type: Lift clamp
Front Panel: DIN 48 x 96
Mounting Depth: D = 115mm
Panel Cut-out: H x W = 44.5x90.5mm
Supply: 230V 50-60Hz 4.5VA
Meas. Ranges: Set by jumper
Front keys: Lockable by jumper
Sensor Supply: 24V / 30mA DC

Measuring Range

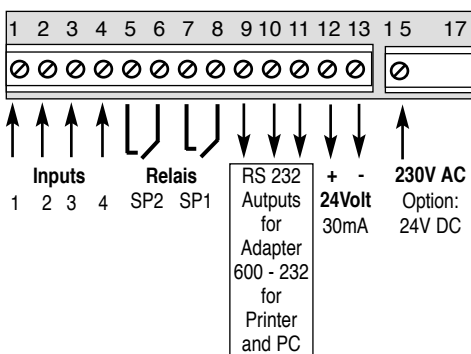
Flow (momentary flow and total quantity)
Accuracy: ± 1 Digit of measuring value

I 0000 – 9999 Ltr.

See Routine 24 for flow turbine signal settings.

Terminal Legend:

SPE 670 rare view



Input 1: In-HI for Opto Coupler / Isolator

Input 2: GND for Pulse 5–24V AC/DC coupling

Input 3: GND for Opto Coupler / Isolator

Input 4: In-HI for Pulse 5–24V AC/DC coupling

Relay SP1: Potential free switch

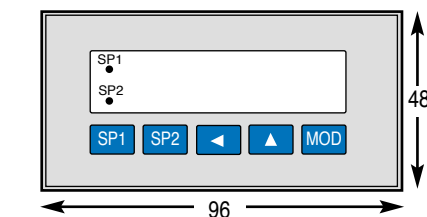
Relay SP2: Potential free switch

Opt.RS232: Galvanic separated RS232 output GND(11), RXD(10), TXD(9)

Output: 24V, 30mA galvanic separated voltage supply for external sensors

230V AC: AC Power input (15,17) or Optional 12V / 24V DC supply input

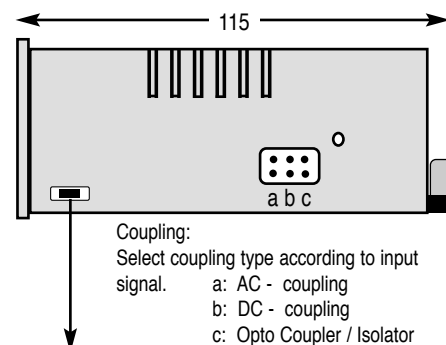
Operation Instruction:



- MOD** enter or leave programming mode
- ▲** increment selected digit
- ◀** select next digit / position
- SP1** display threshold value of SP1 relay
- SP2** display threshold value of SP2 relay
- SP1** ON : SP1 relay contact is closed
- SP2** ON : SP2 relay contact is closed

Reset to default device setting:

Turn off power. Push simultaneously the leftmost three keys. Hold and turn on power. Release keys after 3 seconds.



Coupling:
Select coupling type according to input signal.
a: AC - coupling
b: DC - coupling
c: Opto Coupler / Isolator

Key Lock:
The jumper is placed on the main board and is accessible from the side of the device housing.
By removing the jumper the keys are locked.

Error indications:

If the measuring signal exceeds or falls short of the allowed measuring range the LED display shows:

"oooo" = Measuring range exceeded

"uuuu" = Measuring range fallen short

Safety Precautions

Employing these instruments, regulations for working with high voltage equipment, as well as any Professional Trade Association regulation for working with electrical appliances and installations have to be observed.

Service

We are glad that you decided on an instrument from our product range. If there are what so ever any defects, please send the instrument (postage paid) to your distributor.

For technical information contact us via E Mail
Info@schwille.de

Technical changes reserved.
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Option: 12V / 24V DC Supply

In derivation of the standard model the device can be ordered for following auxiliary supply voltages: 12V DC or 24V DC (Conn. 15 "-", 17 "+"). For these models the 24V / 30mA sensor supply voltage is not available. Using this option measurements for up to 200V DC / AC can be performed only since the DC-DC converter isolates 500V. Special DC-DC Converters are available on request for higher measurements.

Option: RS232 with Real Time Clock

The RS232 module with Real Time Clock provides a printer output via the serial interface. Data, Time and Measuring values with dimension are available. The isolated RS232 interface is bi-directional and comes with a driver software. Models 670/... can be controlled external via this interface. (See description on back page)

CE-Guidelines

Meets the EMV Guideline (89/336/EWG) and the German EMV ruling by applying the Basic Standard EN 50080/ EN 50081. Meets the Low Voltage Guideline (73/23/EWG) by applying Product Standard EN 61010.

Guarantee Regulations:

Regulations by law apply for guarantee within 12 month. All equipment is factory tested and calibrated. Excluded from the guarantee are normal wear and tear, defects due to misuse, negligence, chemical exposure, mechanical stress as well as equipment, which has been modified, re-labeled or otherwise altered or if attempts to repair have been made. All guarantee claims are subject to our scrutiny and approval.

Programming:

The programmable Panel Meter 670-XXX with its integrated measuring routines can be controlled by a variety of parameters for the measuring cycle. New values can be entered as on a pocket calculator via keyboard, easy and comfortable.

This is how to select a measuring routine:



Push MOD to enter programming mode



Select routine number with increase key



Push MOD again to confirm selection

To change value on selected routine:



Enter desired value with increase key



Select next position with shift key,

decimal point of selected digit is blinking



Select value with increase key



Enter inserted value

The device now works again in the measuring mode.

Integrated Programming Routines

Routine 1: Memory initialization
Erasing memory content
Entering a preset value

With models SPE 670 – 080 / - 085 if power is turned off the memory location is erased which stores the last measured value. After power on the preset value is restored or will be overwritten by a new preset value. In this routine a preset value can be entered from which measurements continue. The setting in Routine 2 decides if new measuring values will be added to or subtracted from the preset value.

Setting: 0 = erase memory location
1 - 9999 = Preset value

Routine 2: Setting the count direction. Measuring values will be added to or subtracted from the preset value.

Setting: 0 = Add to preset value
1 = Subtract from preset value

Routine 5: Setting display options. With Parameter 1 the time of the SPE will be displayed in hours and minutes. (i.e. 12.35)

0 = display of measuring value
1 = display of SPE time

Routine 6: Setting the Decimal Point. Setting the position of the comma on the LED display

- 000 = No decimal point (default)
- 001 = 999.9
- 002 = 99.99
- 003 = 9.999

Routine 7: Setting the Switch Point SP 1 With this routine the desired threshold (display) value for SP 1 can be set.

Routine 8: Activating Switch Point SP 1 The switch point function can be turned on or off. 000 = Inactive, 001 = Active

Routine 9: Setting the Switch Point SP 2 With this routine the desired threshold (display) value for SP 2 can be set.

Routine 10: Activating Switch Point SP 2 The switch point function can be turned on or off. 000 = Inactive, 001 = Active

Routine 11: Switch Point Hysteresis SP 1

Routine 12: Switch Point Hysteresis SP 2

The hysteresis is set as an amount of digits (max. 1999). Default value 000

Routine 13: Test Function Relay SP 1

Routine 14: Test Function Relay SP 2

EIN is displayed if the relay is energized and if the relay is programmed as Closer (N/O). Otherwise AUS is displayed if programmed as Opener (N/C).

Routine 15: Setting of relay function SP 2

Routine 16: Setting of relay function SP 2

Each relay can operate as Closer (N/O) or Opener (N/C) when the Switch Point is reached. If the last digit is set to 1 = Opener (N/C) the current circuit is interrupted. If the last digit is set to 000 = Closer (N/O) the current circuit is closed. Default = 000.

Routine 17: ON- / OFF- delay of SP 1

Routine 18: ON- / OFF- delay of SP 2

When reaching the threshold value the relay function is time-delayed. The time-delay is proportional to the number of measuring cycles (max. 1999 cycles). Number of measuring cycles = Time-delay Default: 000

Routine 19: Viewing Maximum measuring value retention

Routine 20: Viewing Minimum measuring value retention
The maximum and minimum measuring values since the last reset are continuously recorded and stored. These values can be reset while the min. or max. value is displayed by pushing and holding keys [Δ] and key [<] simultaneously.

Routine 21: Rounding the last digit

The last digit can be rounded to 0, 2 or 5.

Setting: 000 = last digit will be set to 0
001 = last digit will be displayed (default)
002 = 2 / 4 / 6 / 8
003 = 0 / 5 / 0

Routine 22: Setting the number of measurements to generate an average value The average measuring value will be displayed.

Setting: 000 = no average value generation (default).
002 – 1999 number of measuring cycles used to generate an average value

Routine 23: Setting the Measuring Function

Setting: 000 = momentary flow
001 = total flow quantity.

Routine 24: Setting the Pulse Count of the flow turbine

The amount of pulses in Ltr. / Minute is entered here.

Setting: 1 ... 9999 Pulse / Ltr.
Default is 100 Pulses / Ltr.

Remark: Revolution / second multiplied by Pulse / revolution should be less than 32000

Routine 25: Activation und Time setting for RS232

Interface and for the Analog Measurement output

Setting: 000 = Analog output DAC active (default)
cycle time in Seconds
001 = RS232 output active
cycle time in Seconds
002 = Analog output DAC active (default)
cycle time in Minutes
003 = RS232 output active
cycle time in Minutes

Routine 26: Measuring value division by 10

Setting: 000 = no division (default)
001 = measuring value divided by 10

Routine 27: Setting the Baud Rate of the RS232 interface

Setting: 0 = 150, 1 = 300, 2 = 600,
3 = 1200, 4 = 2400
5 = 4800 Baud

Data format: 4800 Bd, no Parity, 1 Stop bit and 8 Data bits

Setting the Real Time Clock (RTC)

Routine 28: Minutes

This value sets the actual time in minutes
Setting range: 0 – 59 minutes

Routine 29: Hours

This value sets the actual time in hours
Setting range: 0 – 23 hours

Routine 30: Day of date

This value sets the actual day of the date
Setting range: 1 – 31

Routine 31: Day of week

This value sets the actual day of the week
Setting: 0 = Sunday, 1 = Monday, 2 = Tuesday,
3 = Wednesday, 4 = Thursday, 5 = Friday,
6 = Saturday

Routine 32: Month of date

This value sets the actual month of the date

Setting range: 1 – 12
1 = January, 2 = February ... 12 = December

Routine 33: Year of date

This value is least significant part of the year number of the actual year of date. The most significant part is set to 20.

Setting range: 0 – 99
0 = 2000,
99 = 2099

Routine 34: Setting the Transmission cycle for serial interface

Date and time are added to the measuring value at the time interval of the programmed transmission cycle and transmitted via the serial interface. The time distance of transmissions is entered in minutes Note that transmission must be activated first either through Routine 25 or through Jumper 4 (see description further down).

Setting range: 0 – 255

0 = Timer Stop (no transmission)
1 = transmission occurs every minute
2 = every 2 minutes
255 = every 255 minutes (4h 15min)

Dimensioning measurements

The dimension of a physical unit consists mainly of two parts, the size and the type of the unit.

Dimensions are not displayed on the SPE 670 series but appear on the printout. The dimension size and type can be entered in ASCII-code as a decimal value. For the extended type-set code page 437 (IBM) applies.

Routine 35: Size of dimension

Sets the size of the physical unit for the displayed measuring value: m = Milli, μ = Micro, p = Pico ...
° = Grad. Examples: ° = 248, μ = 230, m = 109,
n = 110, p = 112, k = 107, M = 77, G = 71.

Routine 36: Type of dimension

Sets the type of the physical unit for the displayed measuring value: V = Volt, A = Ampere ... C = Celsius
Examples: A = 65, C = 67, V = 86, Ω = 234 (Ohm).

Routine 37: Customizing signs for measurements

Covering a wider variety of naming measuring values a third sign can be entered. Through this feature names like "Bar" are possible. In this example enter B = 66 in Routine 35, a = 65 in Routine 36 and r = 114 in Routine 37. For character translation see ASCII-code table or IBM code page 437.

Jumper 4 Single or event triggering

If Jumper 4 is set measuring values are transmitted at programmed time intervals via the serial interface, even if the interface is deactivated through Routine 25. The transmission cycle is set through Routine 34 respectively can be stopped. Jumper 4 is accessible on the main board left hand side of the display unit. (seen from the front view)