

# SHARKY SOLAR 775

COMPACT ENERGY METER | ULTRASONIC

**DIEHL**  
Metering



## APPLICATION

The ultrasonic compact energy meter SHARKY Solar 775 can be used for measuring the energy consumption in solar systems.

## FEATURES

- ▶ Energy meter for the specific media TYFOCOR LS
- ▶ Available in the sizes qp 0.6 up to 2.5 m<sup>3</sup>/h
- ▶ Extremely low power consumption --> longer battery lifetime
- ▶ Insensitive against dirt
- ▶ Versatile possibility of power supply
- ▶ Optional with integrated radio, Real Data or Open Metering Standard (868 or 434 MHz)
- ▶ Individual remote reading (AMR) with add on modules Plug & Play
- ▶ Extensive readable data memory
- ▶ 3 communication interfaces (e. g. M-Bus + M-Bus + Radio)
- ▶ Significantly improved radio performance

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## GENERAL

| SHARKY                             |   |
|------------------------------------|---|
| Application                        | Heating - cooling - heating/with cooling tariff   |
| Medium                             | TYFOCOR LS  |
| Approval                           | Without   |
| Accuracy                           | ±10 %   |
| Mounting position flow sensor      | Any position, calming sections not necessary  |
| Protection class flow sensor       | Heating: IP 54; cooling and heating/with cooling tariff: acc. IP 68                                     |
| Battery supply                     | 3.6 VDC A-cell up to 10,5 years lifetime (depending on configuration); 3.6 VDC D-cell 16 years lifetime |
| Mains supply                       | 24 VAC; 230 VAC   |
| Temperature sensor type            | Pt 100 or Pt 500 with 2-wire leads; Ø 5.2 / 6 mm or direct sensor                                       |
| Cable length of temperature sensor | Pt 100: 1.9 m; Pt 500: 1.9 / 2.9 / 4.9 / 9.9 m  |
| Volume measuring cycle             | With mains unit: 1/8 s; with A-cell battery: 1 s; with D-cell battery: 1 s                              |
| Test possibilities                 | Via display, optical test pulses, test output or via NOWA software                                      |
| Material of the flow sensor body   | Brass   |

## REACH

Information pursuant to Article 33 (1) of Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006:

This product series contains components with the following substances in a concentration of more than 0.1% weight by weight (w/w):

- Lead (CAS no.: 7439-92-1)

- Lead titanium zirconium oxide (CAS no.: 12626-81-2)

## CALCULATOR - BASIC FEATURES

| SHARKY                         |  |
|--------------------------------|--|
| Environmental class            | Class C  |
| Ambient class                  | Class E2 + M2  |
| Ambient temperature            | °C 5 ... 55  |
| Ambient storage temperature    | °C -25 ... +60 (>35 °C max. 4 weeks)   |
| Protection class               | IP 54  |
| Communication                  | 3 communication interfaces (e. g. M-Bus + M-Bus + integr. radio; 2 primary addresses, 1 secondary address)                   |
| Integrated Radio               | Optional   |
| Interfaces standard            | Optical ZVEI interface   |
| Interfaces optional            | 2 Slots for modules with M-Bus, L-Bus, RS232, RS485, pulse output, pulse input, combined pulse in-/output or analogue output |
| Temperature range              | °C 5 ... 130   |
| Extensive readable data memory | Periodical log <sup>1</sup> ; history log; event memory  |

<sup>1</sup> Programmable storage interval (daily, weekly, monthly, ...)

## CALCULATOR - INTEGRATED RADIO

| SHARKY                     |  |
|----------------------------|--|
| Frequency band             | 868 or 434 MHz   |
| Type of radio telegram     | Real Data or Open Metering Standard (OMS)  |
| Transmission data updating | Online - no time delay between value measurement and data transmission   |
| Data transmission          | Unidirectional   |
| Sending interval           | With A-cell: 180 s (11 years lifetime); with D-cell: 12 s (16 years lifetime); with mains unit: 12 s; depending on length of telegram (duty cycle) |

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## DISPLAY

| SHARKY             |  |
|--------------------|--|
| Display indication | LCD, 8-digit   |
| Units              | MWh - kWh - GJ - Gcal - MBtu                               |
| Total values       | 99,999,999 - 9,999,999.9 - 999,999.99 - 99,999.999         |
| Values displayed   | Energy - Power - Volume - Flow rate - Temperature and more |

## INTERFACES

| SHARKY                    |   |
|---------------------------|---|
| Optical                   | ZVEI interface, for communication and testing, M-Bus protocol   |
| M-Bus                     | Configurable telegram, according to EN13757-3, two wires with non polarity, auto baud detect (300 and 2400 baud), 2 M-Bus with 2 primary addresses  |
| L-Bus                     | Adapter for external radio module, configurable telegram, according to EN13757-3, data reading and parametrization are via two wires with polarity reversal protection  |
| RS232                     | Serial interface for communication with external devices, a special data cable is required, M-Bus protocol, 300 and 2400 baud   |
| RS485                     | Serial interface for communication with external devices, power supply with 12 V ± 5 V, M-Bus protocol, 2400 baud   |
| Pulse output              | Module with 2 Open Collector pulse outputs (potential-free), output 1: 4 Hz (pulse width 125 ms), pulse or static conditions (e.g. errors), output 2: 2000 Hz (pulse width ≥ 5 ms), ratio: pulse duration / pulse break ~ 1:1, configurable via IZAR@MOBILE 2 software. |
| Pulse input               | Module with 2 pulse inputs, max. 20 Hz, configurable via IZAR@MOBILE 2 software, data can be transferred remotely   |
| Combined pulse in-/output | Module with 2 pulse inputs and 1 pulse output, configurable via IZAR@MOBILE 2 software, needed for leak detection   |
| Analogue output           | Module for 4 ... 20 mA with 2 programmable passive outputs, programmable value in case of error   |

## TEMPERATURE INPUT

| SHARKY                               |                       |  |   |
|--------------------------------------|-----------------------|--|---|
| Sensor current                       | mA                    | Pt 100 peak < 8; rms < 0.015, Pt 500 peak < 2; rms < 0.012 |   |
| Measuring cycle                      | T                     | s  | With mains unit: 2 s; with A-cell battery: 16 s; with D-cell battery: 4 s |
| Starting temperature difference      | $\Delta\theta$        | K  | 0.125   |
| Min. temperature difference          | $\Delta\theta_{\min}$ | K  | 3   |
| Max. temperature difference          | $\Delta\theta_{\max}$ | K  | 127   |
| Absolute temperature measuring range | $\theta$              | °C   | 0 ... 130   |

## TECHNICAL DATA FLOW SENSOR

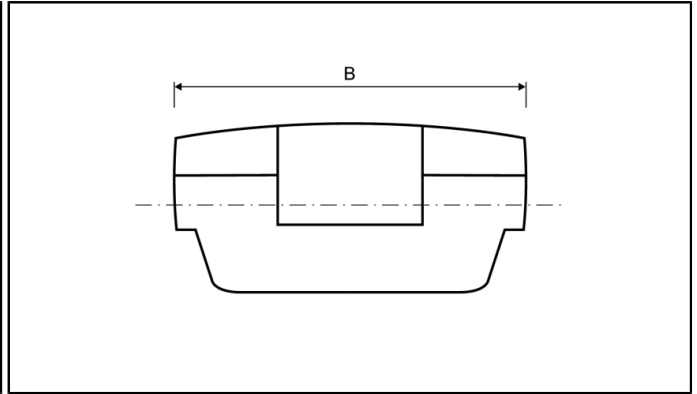
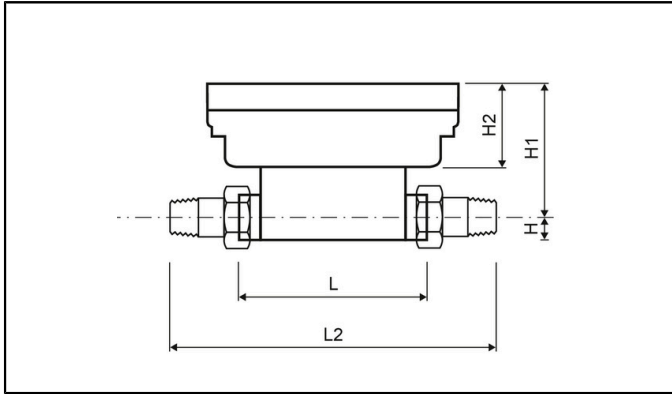
|                                    |            |                   |                 |                 |                 |                 |                 |                 |                 |                 |
|------------------------------------|------------|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Nominal flow rate                  | $q_p$      | m <sup>3</sup> /h | 0.6             | 0.6             | 0.6             | 1.5             | 1.5             | 1.5             | 2.5             | 2.5             |
| Nominal diameter                   | DN         | mm                | 15              | 20              | 20              | 15              | 20              | 20              | 20              | 20              |
| Overall length                     | L          | mm                | 110             | 130             | 190             | 110             | 130             | 190             | 130             | 190             |
| Starting flow rate                 |            | l/h               | 1               | 1               | 1               | 2.5             | 2.5             | 2.5             | 4               | 4               |
| Minimum flow rate                  | $q_i$      | l/h               | 6               | 6               | 6               | 6               | 6               | 6               | 10              | 10              |
| Maximum flow rate                  | $q_s$      | m <sup>3</sup> /h | 1.2             | 1.2             | 1.2             | 3               | 3               | 3               | 5               | 5               |
| Overload flow rate                 |            | m <sup>3</sup> /h | 2.5             | 2.5             | 2.5             | 4.6             | 4.6             | 4.6             | 6.7             | 6.7             |
| Operating pressure                 | PN         | bar               | 16 <sup>1</sup> | 16 <sup>1</sup> | 16 <sup>1</sup> | 16 <sup>1</sup> | 16 <sup>1</sup> | 16 <sup>1</sup> | 16 <sup>1</sup> | 16 <sup>1</sup> |
| Pressure loss at $q_p$             | $\Delta p$ | mbar              | 95              | 85              | 85              | 120             | 75              | 75              | 100             | 100             |
| Temp. range                        |            | °C                | 5 ... 130       | 5 ... 130       | 5 ... 130       | 5 ... 130       | 5 ... 130       | 5 ... 130       | 5 ... 130       | 5 ... 130       |
| Kvs value ( $\Delta p=Q^2/Kvs^2$ ) |            |                   | 2.06            | 2.06            | 2.06            | 5.48            | 5.48            | 5.48            | 7.91            | 7.91            |

<sup>1</sup> Also available in PN 25 bar

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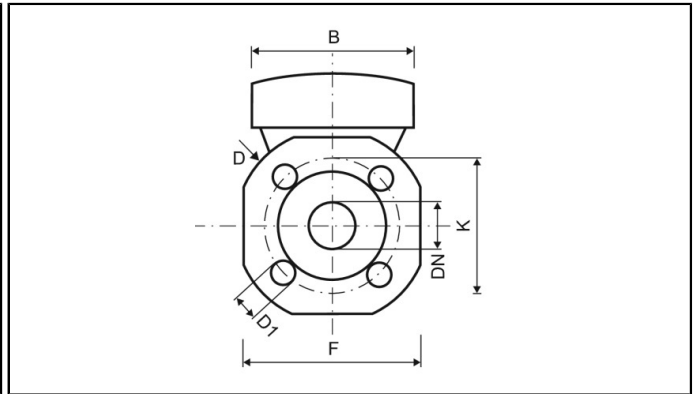
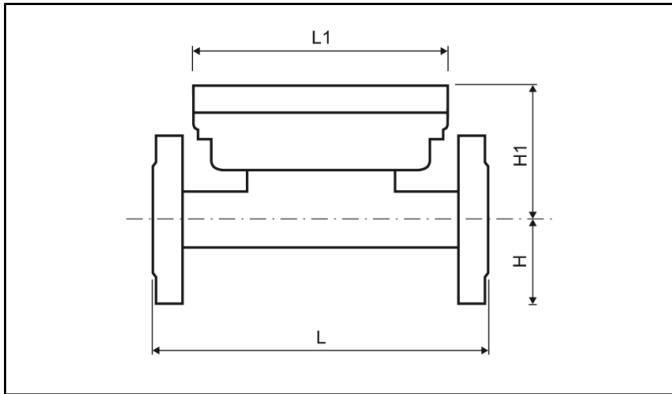
## DIMENSIONS THREAD VERSION



| Nominal flow rate             | $q_p$ | $m^3/h$ | 0.6               | 0.6             | 0.6             | 1.5               | 1.5             | 1.5             | 2.5             | 2.5             |
|-------------------------------|-------|---------|-------------------|-----------------|-----------------|-------------------|-----------------|-----------------|-----------------|-----------------|
| Nominal diameter              | DN    | mm      | 15                | 20              | 20              | 15                | 20              | 20              | 20              | 20              |
| Overall length                | L     | mm      | 110               | 130             | 190             | 110               | 130             | 190             | 130             | 190             |
| Overall length with coupling  | L2    | mm      | 190               | 230             | 290             | 190               | 230             | 290             | 230             | 290             |
| Length of calculator          | L1    | mm      | 150               | 150             | 150             | 150               | 150             | 150             | 150             | 150             |
| Height                        | H     | mm      | 14.5              | 18              | 18              | 14.5              | 18              | 18              | 18              | 18              |
| Height                        | H1    | mm      | 82                | 84              | 84              | 82                | 84              | 84              | 84              | 84              |
| Height of calculator          | H2    | mm      | 54                | 54              | 54              | 54                | 54              | 54              | 54              | 54              |
| Width of calculator           | B     | mm      | 100               | 100             | 100             | 100               | 100             | 100             | 100             | 100             |
| Connection thread on meter    |       | Inch    | G $\frac{3}{4}$ B | G1B             | G1B             | G $\frac{3}{4}$ B | G1B             | G1B             | G1B             | G1B             |
| Connection thread of coupling |       | Inch    | R $\frac{1}{2}$   | R $\frac{3}{4}$ | R $\frac{3}{4}$ | R $\frac{1}{2}$   | R $\frac{3}{4}$ | R $\frac{3}{4}$ | R $\frac{3}{4}$ | R $\frac{3}{4}$ |
| Weight <sup>1</sup>           |       | kg      | 0.76              | 0.85            | 0.96            | 0.76              | 0.85            | 0.96            | 0.85            | 0.96            |

<sup>1</sup> Meter with A-cell, without modules, 1.4 m cable length, 1.9 m cable length of temperature sensor  $\varnothing$  5.2 mm

## DIMENSIONS FLANGE VERSION



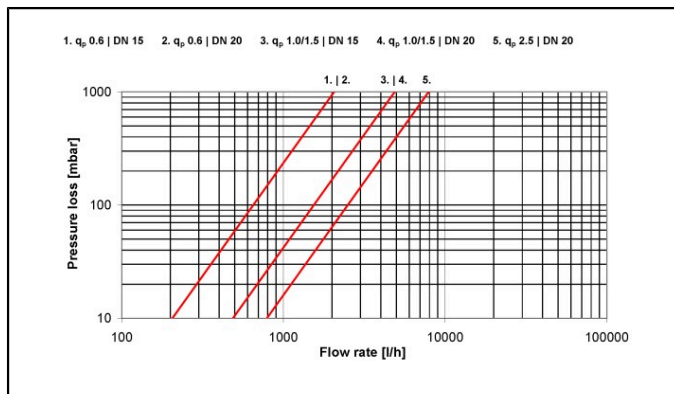
| Nominal flow rate     | $q_p$ | $m^3/h$ | 0.6 | 0.6 | 0.6  | 1.5 | 1.5 | 1.5  | 2.5 | 2.5  |
|-----------------------|-------|---------|-----|-----|------|-----|-----|------|-----|------|
| Nominal diameter      | DN    | mm      | 15  | 20  | 20   | 15  | 20  | 20   | 20  | 20   |
| Overall length        | L     | mm      | 110 | 130 | 190  | 110 | 130 | 190  | 130 | 190  |
| Length of calculator  | L1    | mm      | -   | -   | 150  | -   | -   | 150  | -   | 150  |
| Height                | H     | mm      | -   | -   | 47.5 | -   | -   | 47.5 | -   | 47.5 |
| Height                | H1    | mm      | -   | -   | 84   | -   | -   | 84   | -   | 84   |
| Height of calculator  | H2    | mm      | -   | -   | 54   | -   | -   | 54   | -   | 54   |
| Width of calculator   | B     | mm      | -   | -   | 100  | -   | -   | 100  | -   | 100  |
| Flange dimension      | F     | mm      | -   | -   | 95   | -   | -   | 95   | -   | 95   |
| Flange diameter       | D     | mm      | -   | -   | 105  | -   | -   | 105  | -   | 105  |
| Hole circle diameter  | K     | mm      | -   | -   | 75   | -   | -   | 75   | -   | 75   |
| Screw hole diameter   | D1    | mm      | -   | -   | 14   | -   | -   | 14   | -   | 14   |
| Number of screw holes |       | pcs     | -   | -   | 4    | -   | -   | 4    | -   | 4    |
| Weight <sup>1</sup>   |       | kg      | -   | -   | 2.75 | -   | -   | 2.75 | -   | 2.75 |

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<sup>1</sup> Meter with A-cell, without modules, 1.4 m cable length, 1.9 m cable length of temperature sensor Ø 5.2 mm

## PRESSURE LOSS GRAPH



Pressure loss graph