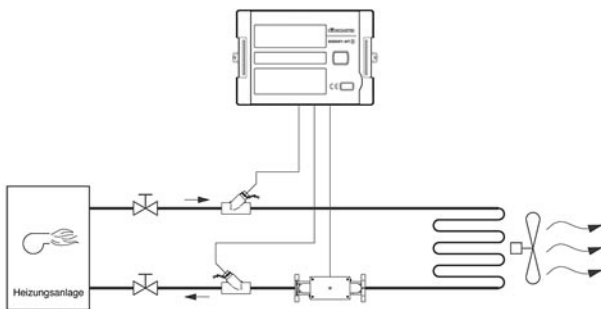
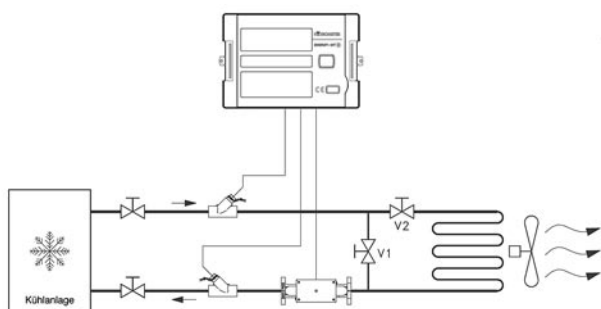




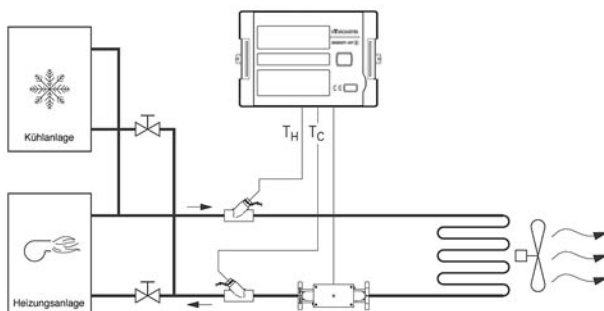
#### DISTRICT HEATING – BOILER APPLICATION – ENERGY HEATING



#### CHILLED WATER APPLICATION – ENERGY COOLING



#### COMBINED HEATING/COOLING APPLICATION – ENERGY SYSTEMS



#### APPLICATION

- Energy calculator for universal use in systems for heat and cooling measuring
- Highly accurate recording of all billing data in local and district heating systems
- Calculator meets the requirements concerning EN1434

#### FEATURES

- Lithium battery with lifetime typical 12 years (depending on selected functionality and the volume meter connected to the calculator means 10 ... 16 years)
- Can be used for heating, cooling or combined climatic
- Temperature range -10 °C / 190 °C
- Measuring accuracy meets the requirements of EN1434 class 2

#### SPECIAL FEATURES

- Power save mode
- NOWA test capability
- Remote reading over M-Bus, RS232, Radio or optical interface
- One optional module selectable out of module with two pulse output or module with two pulse input or module including two pulse input together with on pulse output
- Individual tariff functions
- History memory for 24 months
- Extensive diagnostic displays
- HYDRO-SET parameterization software on Windows basis guarantees optimum adaptation to the user's specific needs

#### GENERAL

- High accuracy thermal energy metering
- Clearly representation of actual consumed value
- Storage of volume and energy data
- Expandable functionality with add on modules plug and play

#### INTEGRATOR

The integrator contains all the necessary circuits for recording the flow rate and temperature and for calculating, logging and displaying the data. The integrator housing can be mounted directly on the volume measuring component or on the wall. At application with medium temperature above 90°C or at temperatures  $T_{\text{Wasser}} < T_{\text{Umgebung}}$  the calculator has to be removed from the volume meter. The calculator can be conveniently read from a single-line 7-digit display with units and symbols. A pushbutton provides user-friendly control of the various display loops. All failures and faults are recorded automatically and shown on the LC display. To protect the reading data, all the relevant data are saved in a non-volatile memory (EEPROM). This memory saves the measured values, device parameters and types of error at regular intervals.

#### SUPPLY VOLTAGE

- Lithium battery 3.0 V DC (typ 12-year life)
- Lithium battery 3.6 V DC at volume meter e.g. SHARKY model 473
- Lithium battery 3.6 V DC at volume meter e.g. SHARKY model 087 (with 10-year life)
- Mains unit 230VAC and 24VAC (on request)

#### TEMPERATURE SENSORS

Pairs of Pt 100 or Pt 500 temperature sensors (e.g. Ø 5.2 mm or Ø 6 mm) with 2-wire leads are used.

#### INTERFACES

ENERGY-INT 6 is equipped as standard with a ZVEI optical interface with the M-Bus protocol as per EN 1434. This interface is used, for example, for communication with the HYDRO-SET parameterization software. The calculator features 2 slots for the modules. One slot for the function modules, and one for the communication modules.

The following communication modules are available as options:

- RS232 module
- M-Bus module to EN 1434
- RS 232 Modul

The RS232 communication module is a serial interface and permits data exchange with the calculator. For this purpose a special data cable is necessary.

The M-Bus module is a serial interface for communication with external devices (M-Bus Repeater) e.g. HYDRO-CENTER. A number of calculators can be connected to a control centre.

The Radio module is an interface for communicate unidirectional over radio predefined data records. The protocol is send every 8 ... 19 sec. For receiving there are different Hydrometer receiver available. The transmission protocol is editable by HYDRO-SET.

#### PULSE INPUT

Two pulse inputs are available. The pulse value and the unit is configurable for energy, water, gas or electrical meter by HYDRO-SET. The input frequency range is 0 – 8Hz with pulse-length  $\geq 10\text{ms}$ . Data are separate cumulated in different registers and are also stored on the two accounting day's.

The cable length to pulse input have to be less than 10m.

#### COMBINED PULSE INPUT / OUTPUT

Two pulse inputs combined with one pulse output are available on one module. The pulse inputs are configurable with value and the unit by HYDRO-SET. The input frequency range is 0 – 8Hz with pulse-length  $\geq 10\text{ms}$ . The pulse output is also programmable using the HYDRO-SET software. The "open collector" output is supplied with external power of 3-30VDC and has an output frequency of  $\leq 4\text{Hz}$ . The pulse width of the **not potential separated** pulses is 100-150ms.

#### PULSE OUTPUT

The calculator provides levels for two optional external pulse outputs, which can be freely programmed using the HYDRO-SET software. The outputs are "open collector" with external power supply of 3-30VDC and an output frequency of  $\leq 4\text{Hz}$ . The pulse width of the potential separated pulses is 100-150ms.

Possible pulse output values

- Energy (standard setting)
- Volume (standard setting)
- Tariff energy 1
- Tariff energy 2
- Tariff condition 1, limit switch
- Tariff condition 2, limit switch
- Energy error
- Volume error
- Volume with specific resolution (0,1l / 1,0l / 10l / 100l) at 3 digit after volume comma
- Energy with specific resolution (0,1 kWh) at 3 digit after volume comma
- Leakage detection (2 channel)

#### MODULE COMBINATIONS

The calculator has a group of extension modules for communication and another group of extension modules for additional functionality. These modules are available first selected within the calculator, or for retrofitting in the field. One single function module as well as one single communication module out of following modules is selectable.

#### **Function modules:**

- Pulse input module, 2 inputs
- Pulse output module, 2 outputs
- Combined pulse module 2 inputs, 1 output

#### **Communication modules:**

- M-Bus or
- RS 232 or
- Real Data Radio

#### ACCESSORIES / SOFTWARE

The HYDRO-SET parameterization software based on the M-Bus is a convenient tool for handling the calculator. It runs on Windows® 2000/XP and is used for

- Configuring the functionality of the calculator
- reading out different memories
- printing out calculator logs

Further information about the HYDRO-SET software is available for free downloading from our website at <http://www.hydrrometer.com/Systeme/Downloadcenter.html>

#### EVENT MEMORY

Events such as changes and faults are stored in a non-volatile memory with a capacity of up to 31 entries. The following events are recorded:

- Checksum error
- Temperature measurement error
- Start and end of test mode

#### MONTHLY MEMORY

ENERGY-INT 6 has a history memory of 24 months. The following values are stored in the EEPROM on the programmed date 1 ... 31 via (HYDRO-SET) of the actual month

<input type="checkbox"/> Date/ Time	<input type="checkbox"/> Volume
<input type="checkbox"/> Energy	<input type="checkbox"/> Error day counter
<input type="checkbox"/> Tariff energy 1	<input type="checkbox"/> Maximum monthly flow rate
<input type="checkbox"/> Tariff energy 2	<input type="checkbox"/> Maximum monthly power
<input type="checkbox"/> Tariff definition 1	<input type="checkbox"/> Date of maximum monthly flow rate
<input type="checkbox"/> Tariff definition 2	<input type="checkbox"/> Date of maximum monthly power
<input type="checkbox"/> Pulse input 1	<input type="checkbox"/> Pulse input 2
<input type="checkbox"/> Operation hours	

#### LOG MEMORY

The log memory is used to store consumption values. The storage frequency can be selected from various storage intervals (5, 6, 10, 12, 15, 20, 30, 60 minutes or the default setting of 24 hours, see Table 1). The data which are stored in Log Memory could be read out with HYDRO-SET and can be used for evaluations.

Extract of possible log memory settings			
Storage interval	Values	Number of data records	Recording period
5 minutes	Error status, overload time temperature, overload time flow rate,	440	36.6 hours
15 minutes	forward temperature, return temperature, date and time, energy,	440	110 hours
1 hour	tariff energy 1, tariff energy 2, tariff definition 1, tariff definition 2, volume, error day counter	440	18.3 days
24 hours		440	440 days

### ACCOUNTING DATE

The calculator includes two independent memories in which the accumulated energy at two programmable dates is stored.

- Last Accounting Date
- Last but one Accounting Date
- Values stored:
  - Energy
  - Volume
  - Tariff counter1
  - Tariff counter2
  - Pulse counter1
  - Pulse counter2
  - Date

### MAX. VALUES

The integrator creates max. values for power and flow rate based on consumption time, which are stored in the EE-PROM. The integration intervals are adjustable to 6, 15, 30 or 60 minutes and 24h. Default setting is 60 minutes.

### TARIFF FUNCTION

The integrator offers two optional tariff memories for monitoring plant load states for limit tariffs. Here it concerns threshold value tariffs. Extensive tariff conditions make it possible to adapt the calculator individually to the required customer-specific applications.

Both tariffs are separately configurable and independent from each other. Energy or time can be measured alternatively per tariff register dependent on the tariff mode adjusted in each case.

With the „time triggered tariff function“ (typ Z) the switch-on time and the switch-off time are adjustable independent from each other for each day of the week in steps of 15 minutes.

The following limit types are possible:

(This example applies to the display at 3 digit after volume comma)

Typ	Description	LIMIT	LIMIT resolution
ΔT	Temperature difference	1 ... 190 °C	1 °C
-ΔT	Negative temperature difference	1 ... 190 °C	1 °C
T <sub>R</sub>	Return temperature (low)	1 ... 190 °C	1 °C
T <sub>V</sub>	Forward temperature (high)	1 ... 190 °C	1 °C
P	Power	100 ... 255 kW	1 kW
Q	Flow	100 ... 25.500 l/h	100 l/h
FE	„theoretically Forward Energy“ with return temperature of 0°C		
Z	„Time triggered“ counting energy		
E	„external“ counting energy		

#### DISPLAY CONTROL

The readings are displayed on the calculator by a 7-digit LCD with units and symbols.

#### LOOP STRUCTURE

The ENERGY-INT 6 display has six loops. Some display windows consist of two (to maximum seven) displays that are shown alternately at 4-second intervals.

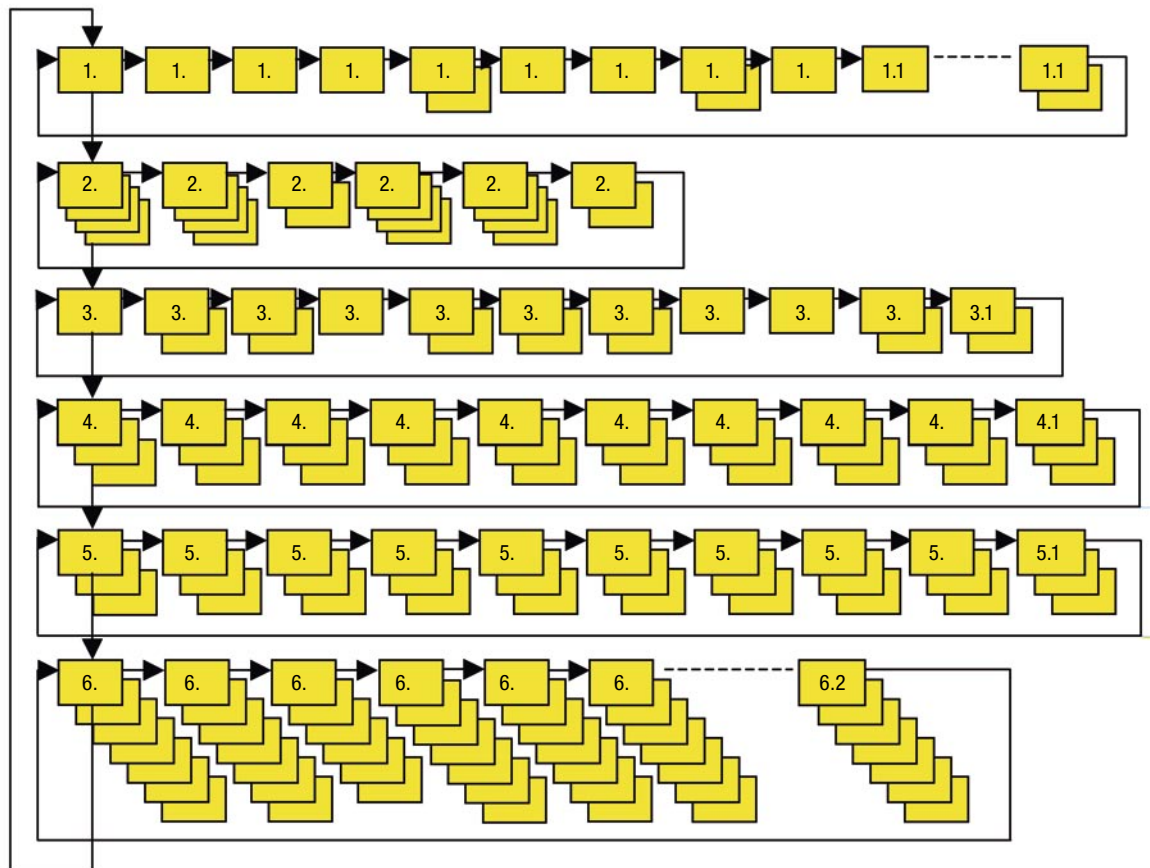
Some pictures in loops or a complete loop can be deactivated separately.

Note: For quick visual guidance, the loops in the display are numbered from 1 to 6.

The main loop with the current data, e.g. for energy, volume and flow rate, is programmed as default setting.

In the standard setting the loop no. 5 (tariff loop) is not activated.

#### OVERVIEW OF LOOPS



#### INFORMATIVE DISPLAYS (STANDARD)

Loop	Sequence	Window 1		Window 2			Window 3			Window 4		
„1“ Main loop	1.1	accumulated Energy										
	1.2	Volume										
	1.3	Flow										
	1.4	Power										
	1.5	Forward temperature	Return temperature									
	1.6	Difference temperature										
	1.7	Operating hours										
	1.8 [OFF]	monthly peak power	Date									
	1.9	Error code										
	1.10	Display test										
	1.11 [OFF]	Tariff register 1										
	1.12 [OFF]	Tariff register 2										
	1.13 [OFF]	Pulse input 'In 1'	Pulse input counter 1									
	1.14 [OFF]	Pulse input 'In 2'	Pulse input counter 2									
	1.15	Leakage detection error	Leakage detection heating									
	1.16	Accounting date last time	Accounting date last time		Accounting value Energy last time			Accounting value Volume last time				
	1.17	Accounting date next to last time	Accounting date next to last time		Accounting value Energy next to last time			Accounting value Volume next to last time				
	1.18	Secondary address	Secondary M-Bus address									
	1.19	Actual maximal flow	Date actual maximal flow									
1.20		Window 1	Window 2	Window 3	Window 4	Window 5	Window 6	Window 7	Window 8	Window 9	Window 10	
		LOG	Date of last month	Energy	Tariff Energy1	Tariff Energy2	Volume	Max. flow	Max. Power	Impulse counter1	Impulse counter2	

Loop	Sequence	Window 1		Window 2		Window 3		Window 4	
„2“ Accounting date s-Schleife	2.1	Accounting date 1		Accounting date 1 energy		Accounting date 1 volume		,Accd 1'	
	2.2	Accounting date 1 previous year		Accounting date 1 previous year energy		Accounting date 1 previous year volume		,Accd 1'	
	2.3	Accounting date ,Accd 1'		Accounting date 1 in the future					
	2.4	Accounting date 2		Accounting date 2 Energie		Accounting date 2 volume		,Accd 2'	
	2.5	Accounting date 2 previous year		Accounting date 2 previous year energy		Accounting date 2 previous year volume		,Accd 2'	
	2.6	Accounting date ,Accd 2'		Accounting date 2 in the future					

Loop	Sequence	Window 1		Window 2			Window 3	
„3“ Info loop	3.1	Current date						
	3.2	,SEC_Adr'		Secondary address M-bus				
	3.3	,Pri_Adr'		Primary address M-Bus				
	3.4	, Pt 100 r' or , Pt 500 r' shows installation „forward or return“						
	3.5	monthly peak flow rate		Date max. flow rate				
	3.6	monthly peak power		Date max. power				
	3.7	Integration interval (maximum value)						
	3.8	Number of error day's						
	3.9	Pulse output ,Out1'		Pulse value and unit pulse output 1				
	3.10	Pulse output ,Out2'		Pulse value and unit pulse output 2				
	3.11	Pulse output ,Out3'		Pulse value interface pulse				
	3.12	Software version						

Loop	Sequence	Window 1	Window 2	Window 3
„4“ Pulse input loop	4.1	Pulse input ‚In1‘	Pulse input counter 1	Pulse value 1
	4.2	Pulse input ‚In2‘	Pulse input counter 2	Pulse value 2
	4.3 [OFF]	Accounting date 1	Pulse input ‚In1‘	Acc.date 1 Pulse value 1
	4.4 [OFF]	Accounting date 1	Pulse input ‚In2‘	Acc.date 1 Pulse value 2
	4.5 [OFF]	Accounting date 1 previous year	Pulse input ‚In1‘	Acc.date 1 prev. year Pulse input counter 1
	4.6 [OFF]	Accounting date 1 previous year	Pulse input ‚In2‘	Acc.date 1 prev. year Pulse input counter 2
	4.7 [OFF]	Accounting date 2	Pulse input ‚In1‘	Acc.date 2 Pulse input counter 1
	4.8 [OFF]	Accounting date 2	Pulse input ‚In2‘	Acc.date 2 Pulse input counter 2
	4.9 [OFF]	Accounting date 2 previous year	Pulse input ‚In1‘	Acc.date 2 prev. year Pulse input counter 1
	4.10 [OFF]	Accounting date 2 previous year	Pulse input ‚In2‘	Acc.date 2 prev. year Pulse input counter 2
„5“ Tariff loop	5.1 [OFF]	Tariff energy 1	Tariff function 1 (e.g. ‚t 01‘)	Limit tariff 1
	5.2 [OFF]	Tariff energy 2	Tariff function 2 (e.g. ‚t 02‘)	Limit tariff 2
	5.3 [OFF]	Accounting date 1	Accounting date 1 tariff energy 1	‚Accd 1‘
	5.4 [OFF]	Accounting date 1	Accounting date 1 tariff energy 2	‚Accd 1‘
	5.5 [OFF]	Accounting date 1 previous year	Accounting date 1 prev. year tariff energy 1	‚Accd 1‘
	5.6 [OFF]	Accounting date 1 previous year	Accounting date 1 prev. year tariff energy 2	‚Accd 1‘
	5.7 [OFF]	Accounting date 2	Accounting date 2 tariff energy 1	‚Accd 2‘
	5.8 [OFF]	Accounting date 2	Accounting date 2 tariff energy 2	‚Accd 2‘
	5.9 [OFF]	Accounting date 2 previous year	Accounting date 2 prev. year tariff energy 1	‚Accd 2‘
	5.10 [OFF]	Accounting date 2 previous year	Accounting date 2 prev. year tariff energy 2	‚Accd 2‘

Loop	Sequence	Window 1	Window 2	Window 3 [OFF]	Window 4 [OFF]	Window 5	Window 6	Window 7
Monthly value loop	6.1	Last month	Energy	Tariff energy 1	Tariff energy 2	Volume	Max. flowrate	Max. Power
	6.2	Month -1	Energy	Tariff energy 1	Tariff energy 2	Volume	Max. flowrate	Max. Power
	6.3	Month -2	Energy	Tariff energy 1	Tariff energy 2	Volume	Max. flowrate	Max. Power
	...							
	6.24	Month -23	Energy	Tariff energy 1	Tariff energy 2	Volume	Max. flowrate	Max. Power

### SIMPLE OPERATION

A pushbutton mounted on the front of the calculator is used to switch to the various displays. The button can be pressed for a short or long time. A short press of the button (<3 seconds) switches to the next display within a loop and a long press (>3 seconds) switches to the next display loop. The “Energy” window (sequence 1.1) in the main loop is the basic display. The meter switches automatically to power save mode if the button is not pressed for approx. 4 minutes and returns to the basic display when the button is pressed again. The loop settings can be programmed to suit the customer’s individual requirements using the HYDRO-SET software.

#### TECHNICAL DATA

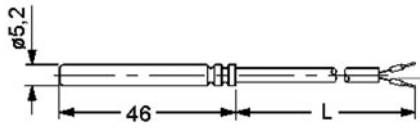
Calculator				
Basic features	Ambient class		EN 1434 class C / A	
	Protection class		IP 54 (Calculator)	
	Type		Integrator to EN 1434	
Display indication	Display		LCD, 7-stellig	
	Units		MWh - kWh - GJ - Gcal - Mbtu-gal	
	Total values		9 999 999 - 999 999.9 - 99 999.99 - 9 999.999	
	Values displayed		Power - energy - flow rate - temperature	
Temperature range	Ambient temperature	°C	0° to +55°C	
	Storage temperature		-25 °C to + 70 °C	
Input	Temperature sensors	Type	Pt 100 or Pt 500 with 2-wire leads < 10m	
	Sensor current		mA	
				Pt100 peak < 8; rms < 0.015 Pt500 peak < 2; rms < 0.012
	Measuring cycle	T	s	Mains unit supply: 2 s Temperatur Battery: 16 s
	Max. temperature difference	$\Delta\theta_{max}$	K	177
	Min. temperature difference	$\Delta\theta_{min}$	K	3
	Starting temperature difference	$\Delta\theta$	K	0.1
Absolute temperature measuring range	$\theta$	°C	-9.9 ... 189.9	
Supply voltage	Operating voltage	$U_N$	$V_{DC}$	3.0V / 3.6V (Lithium-battery)



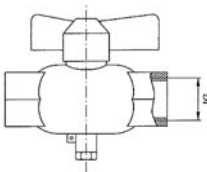
#### MODULES

Group	Designation	Article number
Communication	M-Bus-Module	542 000 01
	RS-232-Module	542 000 07
	Radio-Module	542 000 17
	RS-232-Module incl. data cables	542 000 30
Function	Module for volume and energy pulse outputs (selectable out of 2 outputs)	542 000 02
	Module for 2 pulse inputs	542 000 03
	Module for 2 pulse inputs + 1 pulse output	542 000 26
Supply voltage	Mains unit 230 V AC	542 000 04
	Mains unit 240 V AC	542 000 05
	Battery 3,0V (12 years)	542 000 06
	Battery 3,6V (16 years, incl. Regulator)	542 000 16

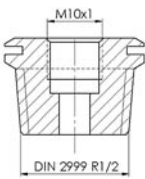
#### ACCESSORIES / TEMPERATURE SENSORS

Designation	Type	Diameter	Length	Cable length	Illustration	Article number
Temperature sensor pair for pockets or direct mounting	Pt500	Ø 5,2 mm	46 mm	2 m		818 770
				3 m		818 771
				5 m		818 772
				10 m		818 773
Temperature sensor pair for pockets or direct mounting	Pt100	Ø 5,2 mm	46 mm	2 m		818 774

#### ADAPTERS FOR TEMPERATURE SENSORS

Designation	Quantity	Internal thread	Illustration	Article number
Ball valve	1	G 1/2"		087 HY0 04
Ball valve	1	G 3/4"		087 HY0 05
Ball valve	1	G 1"		087 HY0 06

#### ADAPTER FOR MOUNTING TEMPERATURE SENSORS

Coupling thread	Sensor thread	Illustration	Article number
R 1/2"	M10 x 1		087 HY0 03

# HYDROMETER

## ENERGY CALCULATOR

### ENERGY-INT 6

#### METER CONFIGURATION FOR CALCULATOR ENERGY-INT 6

APPLICATION	
energy calculator for heating	
energy calculator for cooling	
energy calculator for combined heating / cooling	

NOMINAL FLOW (BR 087)	
qp 10 / DN 40	
qp 15 / DN 50	
qp 25 / DN 65	
qp 40 / DN 85	

NOMINAL FLOW	PULSE VALUE (LITRE/PULSE)								
qp 0.6 / DN 20	1								
qp 1.5 / DN 20	1		10						
qp 2.5 / DN 20	1		10						
qp 3.5 / DN 32	1		10						
qp 6 / DN 32	1	2.5	10						
qp 10 / DN 40			10						
qp 15 / DN 50				25	100				1000
qp 25 / DN 65	1		10		100				
qp 36 / DN 50	1								
qp 40 / DN 80					100				
qp 60 / DN 100					100	250			
qp 100 / DN 80					100				
qp 150 / DN 150									1000
qp 180 / DN 100		2.5							
qp 250 / DN 125									1000
qp 360 / DN 150			10						
qp 400 / DN 250						100			
qp 600 / DN 200							250		1000

INSTALLATION	
forward (supply)	
return (standard)	

VERIFICATION	
without type approval mark	
with approval mark	
with approval mark and german verification	
with approval mark and declaration of conformity	

POWER SUPPLY	
battery 3.0VDC (C-Cell)	
battery 3.6VDC (D-Cell)	
power supply 230VAC (on request)	
power supply 240VAC (on request)	

INTERFACE MODULES - SLOT 1	
without module (standard)	
M-Bus module	
RS-232 module	
Real Data radio module	
Pulse input module (2 inputs)	

INTERFACE MODULES - SLOT 2	
without module (standard)	
Pulse output module (2 outputs)	
Pulse input module (2 inputs)	
combined module (2 inputs / 1 output)	

**standard setting for pulse input modules: 100l/pulse**  
**standard setting for pulse output module: energy and volume**  
**Pulse value is last digit at display**

Please complete this request and return it to HYDROMETER by Fax, Email or Mail

HYDROMETER GmbH · P.O.Box 1462 · 91505 Ansbach / Germany • Delivery address: Industriestraße 13 · 91522 Ansbach/Germany  
 www.hydrometer.de • Phone: +49 (0) 9 81 / 18 06 -0 • Fax: +49 (0) 9 81 / 18 06 -605 and -615

**REQUEST 1/2**

# HYDROMETER

## ENERGY CALCULATOR

### ENERGY-INT 6

ENERGY UNIT	
kWh (without digit after comma) only for 0.6 - 6 m <sup>3</sup> /h	
MWh (1 digit after comma)	
MWh (2 digits after comma)	
MWh (3 digits after comma) only for 0.6 - 6 m <sup>3</sup> /h	
GJ (1 digit after comma)	
GJ (2 digits after comma)	
GJ (3 digits after comma) only for 0.6 - 6 m <sup>3</sup> /h	
Gcal (1 digit after comma)	
Gcal (2 digits after comma)	
Gcal (3 digits after comma) only for 0.6 - 6 m <sup>3</sup> /h	
MBtu (1 digit after comma)	
MBtu (2 digits after comma)	
MBtu (3 digits after comma) only for 0.6 - 6 m <sup>3</sup> /h	

TEMPERATURE SENSORS DIAMETER	
5.2 mm (standard)	
6.0 mm	

TEMPERATURE SENSORS (PAIR, STANDARD WITH EN-APPROVAL)	
without sensor	
Pt 100 / 2 m cable (standard)	
Pt 500 / 2 m cable	
Pt 500 / 3 m cable	
Pt 500 / 5 m cable	
Pt 500 / 10 m cable	

POCKET (PAIR) FOR 5.2 mm TEMPERATURE SENSORS (STANDARD)	
brass-pockets 34 mm	
brass-pockets 50 mm	
brass-pockets 70 mm	
brass-pockets 85 mm	
brass-pockets 120 mm	

POCKET (PAIR) FOR 6 mm TEMPERATURE SENSORS	
brass-pockets 40 mm	
brass-pockets 85 mm	
brass-pockets 120 mm	
stainless steel-pockets 85 mm	
stainless steel-pockets 120 mm	
stainless steel-pockets 155 mm	
stainless steel-pockets 210 mm	

ACCESSORIES	
without	
ball value DN 15 - 1/2" for direct sensor (1 piece)	
ball value DN 20 - 3/4" for direct sensor (1 piece)	
ball value DN 25 - 1" for direct sensor (1 piece)	
adapter for direct sensor (1 piece)	
srewing set R 1/2" x G 3/4 B	
srewing set R 3/4" x G 1 B	
srewing set R 1" x G 5/4 B	
srewing set R 1 1/2 x G 2 B	

### INFORMATIONS FOR YOUR REQUEST

First name / Last Name
Street / Number
ZIP / City
Country
Phone (important for callback)
Fax
E-Mail adress

Quantity (pieces)
Contact person HYDROMETER
Country approval
Miscellaneous

Please complete this request and return it to HYDROMETER by Fax, Email or Mail

HYDROMETER GmbH · P.O.Box 1462 · 91505 Ansbach / Germany • Delivery address: Industriestraße 13 · 91522 Ansbach/Germany  
www.hydrometer.de • Phone: +49 (0) 9 81 / 18 06 -0 • Fax: +49 (0) 9 81 / 18 06 -605 and -615

REQUEST 2/2