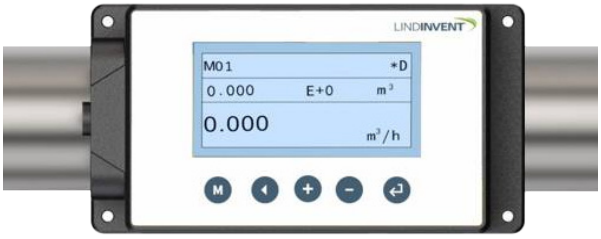
USEM - ULTRASONIC METER FOR HEATING AND COOLING

Version A01

INTRODUCTION

The USEM is an ultrasonic meter and temperature sensor designed for energy and flow measurement of heating/cooling in liquids. The measurement unit with a temperature sensor is attached to the supply line, and a second temperature sensor is placed on the return line.



USEM for Energy and Flow Measurement

APPLICATION AREA

The ultrasonic meter with temperature sensors communicates via Modbus. Connecting to Lindinvent's central unit enables energy and power distribution down to room level.

COMMUNICATION

Communication via Modbus RTU, see Communication Box below.

FEATURES

- Easy and quick installation of measurement units for flow and temperature without pipe intervention
- Non-contact flow measurement without pressure losses
- Installation can be done in existing systems without downtime, reducing time, material, and labor costs
- Compatible with various liquids and pipe materials
- 256*128 LCD screen
- USEM is configured for flow, power, and energy measurement

INSTALLATION

Both the flow and temperature measurement unit on the supply side and the return temperature sensor are quickly and securely mounted via mounting blocks (manually removable) that are included.

COMMUNICATION BOX

A communication box is ordered with USEM. The box contains a Modbus converter and a pre-mounted 24 VDC transformer. The box includes a connected network cable and a cable for 230 VAC plug connection. The box has a connection for the USEM40 or USEM65.

TECHNICAL SPECIFICATIONS

General

Material, Measuring Unit: Aluminum and industrial plastic
Circuit Board: FR4. Cables for connection included.
IP Class: IP65
Temperature Limits, Environment:
-10°C to +65°C; 35 to 85% RH (non-condensing)

Size

USEM40
Pipe Diameter: DN15-DN40
Dimensions of Measuring Unit (mm): 139x71x95
USEM65
Pipe Diameter: DN50-DN65
Dimensions of Measuring Unit (mm): 144x105x125

Energy and Flow Measurement

Pipe Material: Metal and plastic pipes (PVC, PP, or PVDF)
Liquids: Clean liquids without particles
Temperature Range: -10°C to +65°C
Minimum Flow Rate: 0.1 m/s
Flow Measurement Range: from 60 l/m (USEM/DN15) to 100 l/m (USEM65/DN65)
Minimum Pipe Inner Diameter: 12 mm
Measurement Accuracy: ±2% (±1% after calibration)
Temperature Sensors: Two PT1000 with cables

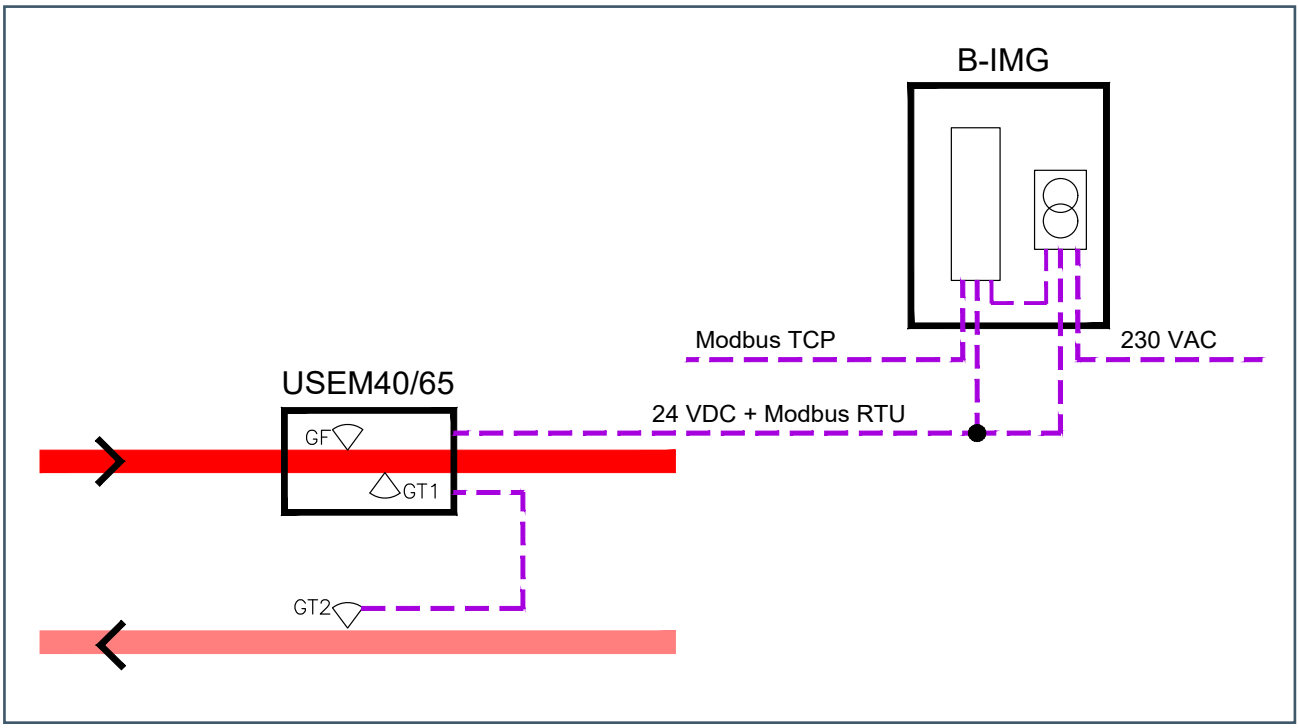
Communication

RS485 (Modbus RTU)

Electrical System

Power Supply: 24 VDC
Power: <3 W
CE Marking: Complies with EMC and Low Voltage Directive

EXAMPLE OPERATION CARD USEM



Equipment on Operation Card

USEM40/65	Energy and flow meter, ultrasonic flow meter
GF	Ultrasonic Flow Meter
GT1	Supply temperature sensor
GT2	Return temperature sensor
B-IMG	Communication box (Modbus converter + 24 VDC transformer)

SPECIFICATION FOR ORDERING

Model Size USEM: USEM40 (DN15-DN40) or USEM65 (DN50-DN65)
Communication Box: Specify if the communication box is included

SUPPLEMENTARY PRODUCT DOCUMENTATION

Documents available at www.lindinvent.com or upon request.

Document	Comment
Installation Instructions	Fastened to the pipe. Equipment and installation instructions are included with the product.
Commissioning Instructions	None.
Maintenance Instructions	Considered maintenance-free.
External Connection Diagram	Included with communication box B-IMG.
Environmental Product Declaration	For assessment at Byggvarubedömningen in Sweden.
AMA Text	None.