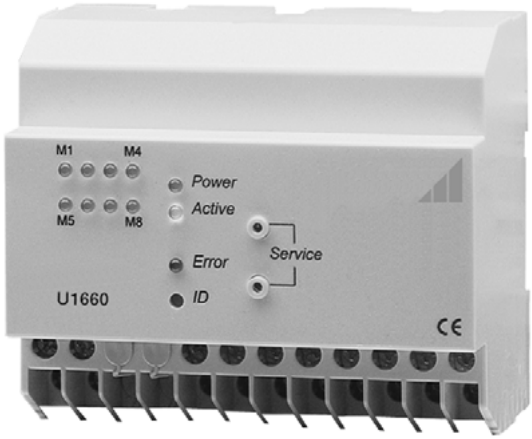
GOSSEN METRAWATT

U1660 LON-Add-On Component
Meter Reading Module

3-349-214-03
1/9.02

- 8 active S0 pulse inputs
- LED state display
- FTT-10A transceiver (78 kBit/s)
- Standard network variables
  for energy, instantaneous power and state
- LED status display



QUALITY MANAGEMENT SYSTEM

DQS certifizied per
DIN EN ISO 9001 Reg. No.1262

Applications

The LON add-on component is used for scanning measuring points within the energy control system in a decentralized fashion. The U1660 meter reading module processes data from up to 8 energy meters with pulse output (S0), or floating contact. The active inputs do not require any additional power supply which minimizes wiring expenses.

The add-on component expands the functions offered by the U1601 summator, the U1602 micro-summator and the U1603 mini-summator to include external inputs via the LON interface.

Function

U1660 is a meter reading module with eight active inputs. It determines energy and instantaneous power on the basis of SO pulses.

The valence of a pulse (delta) is calculated from the meter constant (nciPulseRate). The pulses are counted (nvoEnergyPower) and converted into energy (nvoEnergy). Instantaneous power (nvoPower) is calculated from the distance between two pulses. The network variables nvoEnergyPower, nvoEnergy and nvoPower are calculated and transmitted after each pulse. The meter readings (nvoEnergyPower, nvoEnergy) are lost upon auxiliary voltage failure.

In addition to energy and power measurement, the state of the binary inputs is transferred to the network (nvoInputState[8], nvoAllInState).

Display Elements

Power LED	On: Operating voltage on
Active LED	On: S0 inputs are supplied with voltage. If the adapter is in unconfigured or offline state, the LED is off and the SO inputs are not supplied with voltage.
Error LED	Signals the state of the LON node („Service LED“), is activated for 2 seconds upon receipt of a wink command. On: Module has no application Blinking: Module is not configured
M1 bis M8	On: Current flow via pulse contact of the meter

Controls

Service Sockets	Direct LON bus access for service applications
ID Key	Identifies the module in the network („Service Key")

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Inputs

8 ea. S0 pulse	per DIN 43864 The active inputs supply the power required for operation. The + terminals of the SO inputs S01+ ... S08+ are connected with each other.

LON Interface

Chip	3150 neuron chip
Protocol	LONTALK® Protocol
Technology	LONWORKS® FTT-10A (**F**ree **T**opology **T**ransceiver)
Transmission via	twisted pair (twisted 2-wire link)
Transmission Speed	78 kBit/s

LON Network Variables

Number	Name	SNVT	Range	Function
0	nviRequest	SNVT_obj_request		
1	nvoStatus	SNVT_obj_status		
2	nvoNodeType	SNVT_str_asc	20 characters	Device type (U1660)
3	nciDeviceLabel	SNVT_str_ascii	31 characters	Device ID
4 ... 11	nvoEnergy[8];	SNVT_elec_whr_f	0 ... 1E38 Wh	Meter reading in Wh (floating)
12 ... 19	nvoPower[8];	SNVT_power_f	0 ... 1E38 W	Instantaneous power in W (floating)
20 ... 27	nciPulseRate[8]	SNVT_count_f	0,01 ... 1E38 / kWh	Meter constant in 1 / kWh (floating)
28 ... 35	nvoEnergyPower	NonSNVT, 10 Byte, for U1601		Number of pulses (long), Pmom in W (floating), Reserve (uint)
36 ... 43	nvoInputState[8]	SNVT_switch		State of binary inputs
44	nvoAllInState	NonSNVT, 1 Byte, für U1601		State of binary inputs
Cut-off day function: Receipt of a time stamp acvtivates storage to memory of the current meter readings				
45	nviSetTime	SNVT_time_stamp		Input for time stamp
46	nvoTimeStamp	SNVT_time_stamp		Time stamp for meter readings
47... 54	nvoEnergyP[8]	SNVT_elec_whr_f	0... 1E38 Wh	Meter reading in Wh (floating)
Löschen der Zählerstände:				
55	nviEnergyClear	SNVT_lev_disc	0 (OFF)	Delete nvoEnergy and nvoEnergyPower

Additional Information:

- nvoAllInState supplies the state of all 8 S0 inputs. This has no effect on the energy and power measuring functions. Each input is equivalent to one bit:

S0 Input	8	7	6	5	4	3	2	1
Bit	8	7	6	5	4	3	2	1

  Example: nvoAllInState = 3
  means: input 1 and input 2 are ON (current flow), all other inputs are OFF.
- Owing to the operating system of the neuron chip, the power values of small pulse distances are subject to heavy scattering.
- Use of U1660 without summator:
  The energy of the network variable nvoEnergy is calculated by means of float arithmetics with simple accuracy.
  The resolution of the float numbers decreases with increasing value.
  The greater the value, the greater the error resulting from the addition of an energy delta. The evaluating application must take this feature into account and ensure that the meter readings are deleted (nviEnergyClear).
  Alternatively, the network variable nvoEnergyPower (number of pulses) can be used. It is not an SNVT.

Example:

Value	Resolution
1	0,00000012
8	0,00000095
128	0,000015
2.048	0,00024
32.768	0,0039
524.288	0,063
8.388.608	1,00

- Use of U1660 with the U1601, U1602 or U1603 summators:
  The float arithmetic problems do not arise here because the number of pulses is transmitted as integer number (nvoEnergyPower).

Power Supply

Operating Voltage	24 V DC
Closed-Circuit Current	85 mA
Operating Current (at 100% load)	290 mA

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Electrical Safety

Type	EN 60950
Protection	Housing IP 20 per DIN VDE 0470 part 1 / EN 60529

Electromagnetic Compatibility EMC

Interference Emission	EN 50090-2-2: 1996
Interference Immunity	EN 50090-2-2: 1996

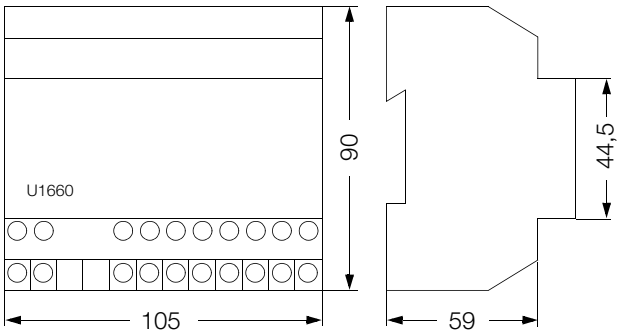
Ambient Conditions

Operating Temperatures	0 °C ... +50 °C
Storage Temperatures	–25 °C ... +50 °C
Relative Humidity	20% ... 90%, no condensation allowed

Mechanical Design

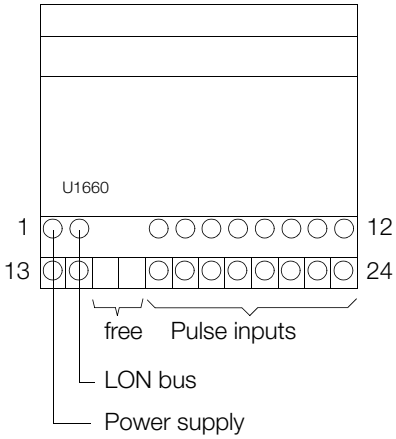
Mounting	DIN EN 50022 system rail
Dimensions (H x W x D)	90 x 105 x 59 mm
Terminals	20 ea. single pole screw terminal

Dimensional Drawing



All dimensions in mm

Terminal Assignments



Screw Terminals U1660		
No.	**Designation**	**Assignments**
1	+24 V	Operating voltage +
2	LON A	LON bus
		free
		free
5	S0 1+	Meter 1 pulse contact +
6	S0 2+	Meter 2 pulse contact +
7	S0 3+	Meter 3 pulse contact +
8	S0 4+	Meter 4 pulse contact +
9	S0 5+	Meter 5 pulse contact +
10	S0 6+	Meter 6 pulse contact +
11	S0 7+	Meter 7 pulse contact +
12	S0 8+	Meter 8 pulse contact +
13	GND	Operating voltage –
14	LON B	LON bus
		free
		free
17	S0 1-	Meter 1 pulse contact +
18	S0 2-	Meter 2 pulse contact +
19	S0 3-	Meter 3 pulse contact +
20	S0 4-	Meter 4 pulse contact +
21	S0 5-	Meter 5 pulse contact +
22	S0 6-	Meter 6 pulse contact +
23	S0 7-	Meter 7 pulse contact +
24	S0 8-	Meter 8 pulse contact +

The + terminals of pulse inputs S0 1+ ... S0 8+ are connected with each other.

Order Information

Description	Article number
Meter reading module 8 inputs (S0)	U1660

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Meter Reading Module

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