GOSSEN METRAWATT

U1661 LON-Supplementary Component
Analog Input Module

3-349-196-01
2/6.15

- **6 analog inputs: 0 ... 20 mA, 4 ... 20 mA**
- **FTT-10A transceiver (78 kBit/s)**
- **Standard network variables for energy, instantaneous power and input signal**
- **Status display with LED**

The U1661 analog input module may only be used with the included FPL210 filter.

CE

Applications

The LON supplementary component is used for decentralized data logging from measuring points within the Energy Control System.
The U1661 six-channel analog input module accepts standard signals from 0 to 20 mA and 4 to 20 mA.
The supplementary component expands the functions of the U1601 summator, the U1602 micro-summator and the U1603 mini-summator with external inputs via the LON interface.

Function

The U1661 analog input module is a 6-channel measuring transducer with common ground.

It converts current or voltage into digital measured values. A mean value is generated based upon 10 measured values, from which instantaneous power and an energy delta are calculated as well. The meter reading is increased by an amount equal to the energy delta. Milliampere and voltage values, instantaneous power and the meter reading are read out after cycle time has elapsed. The device configuration (nci...) is saved to non-volatile memory, but meter readings are lost if auxiliary power fails.

U1661 LON-Supplementary Component Analog Input Module

Characteristic Values

Indicator Displays

LED Display

Power	On:	Operating voltage switched on
Active	Blinking.	Data communication active at the MUX bus
Error	On:	Module has no application
	Blinking:	Module is not configured

Controls

Service	Direct access to the LON bus
ID key	Service PIN for identifying the module in the LONWORKS® network

Inputs

6 analog inputs	0 ... 20 mA 4 ... 20 mA

Inputs AE 1 through AE 6 have a common ground.
Load is equal to 100 Ohm for milliampere inputs.

Cycle Time

Sampling the analog inputs	350 ms
Read out milliampere or volt value	3.5 s
Read out instantaneous power	3.5 s
Read out the meter reading	3.5 s

Measuring Accuracy 1.5% relative to upper range limit

LON Interface

Chip	Neuron 3150
Protocol	LONTALK®-Protocol
Technology	LONWORKS® FTT-10A (**F**ree **T**opology **T**ransceiver)
Transmission via	Twisted Pair
Transmission speed	78 kbps

LON Network Variables

Number	Name	SNVT	Range	Function
0	nviRequest	SNVT_obj_request		Object request
1	nvoStatus	SNVT_obj_status		Object status
2	nvoNodeType	SNVT_str_asc	20 characters	Device type (UCL210)
3	nciDeviceLabel	SNVT_str_ascii	31 characters	Device ID
4 ... 9	nvoEnergy[6]	SNVT_elec_whr_f	0 ... 1E38 Wh	Meter reading in Wh (float)
10 ... 15	nvoPower[6]	SNVT_power_f	0 ... 1E38 W	Instantaneous power in W (float)
16 ... 21	nciAnaFactor[6]	SNVT_count_f	–1E38 ... +1E38	Scaling factor (float)
22 ... 27	nciAnaOffset[6]	SNVT_count_f	–1E38 ... +1E38	Scaling offset (float)
28 ... 33	nciFactor[6]	SNVT_count_f	–1E38 ... +1E38	Time reference factor (float)
34 ... 39	nvoAmpmil[6]	SNVT_amp_mil	0.0 ... 25.0	Current input in mA: feature B1, B2
	nvoVoltl[6]	SNVT_Volt	0.0 ... 12.0	Voltage input in V: feature B3
40	nvoModulMonitor	NonSNVT, 10 Byte		Utilized I/O modules
41 ... 46	nvoEnergyPower[6]	NonSNVT, 10 Byte, for U1601		Meter reading in Wh (float) Instantaneous power in W (float) Status (uint)

Cutoff Date Function:
Current meter readings are saved to memory whenever a time stamp is received.

47	nviSettime	SNVT_time_stamp		Time stamp input
48	nvoTimeStamp	SNVT_time_stamp		Meter reading time stamp
49 ... 54	nvoEnergyP[6]	SNVT_elec_whr_f	0 ... 1E38 Wh	Meter reading in Wh (float)

Calibration:

55	nciGainCal	SNVT_count_f		Manufacturer calibration

Additional information:

- The error LED functions as a service LED.
- The ID key functions as a service key.
- The service jacks are connected to the LON bus.
- The active LED blinks to indicate that network variables are being updated.
- If a wink command is received, the error LED is illuminated for 2 seconds.
- For use with the U160x summator:
  The summator (as of version 2.42) takes the below described float arithmetic characteristic into consideration, and resets the meter readings whenever the energy delta exceeds 8E6. The U1661 summator triggers a reset to this end, which sets all meters to zero.
- For use without the U160x summator:
  Calculation of energy for network variables nvoEnergy and nvoEnergiePower is executed using float arithmetic with single precision. Float number resolution decreases as the value increases. The larger the value, the greater the error after adding the energy delta.

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

The analysis application must take this peculiarity into consideration and trigger resetting of the meter readings (nviEnergyClear).

Power Supply

Operating voltage	24 V DC
Operating current	100 mA

Electrical Safety

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

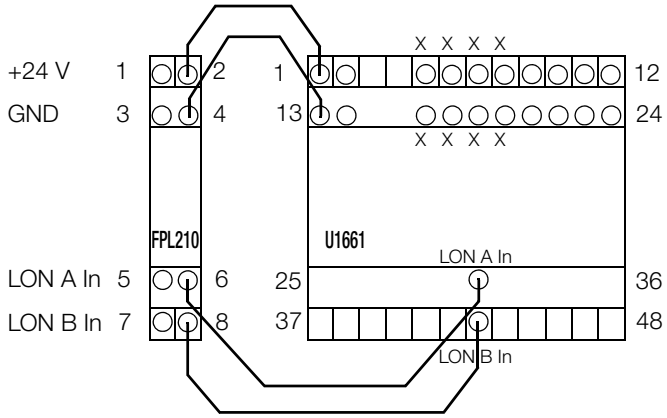
Electromagnetic Compatibility (EMC)

Interference emission	EN 50090-2-2: 1996
Interference immunity	EN 50090-2-2: 1996

Ambient Conditions

Operating temperatures	0 to +50 °C
Storage temperatures	-25 to +50 °C
Relative humidity	20% to 90%, no condensation allowed

Terminal Assignments



FPL210 Screw Terminals		
No.	**Designation**	**Function**
1	+24 V	In
2	+24 V	Out
3	GND	In
4	GND	Out
5	LON	A In
6	LON	A Out
7	LON	B In
8	LON	B Out

U1661 Screw Terminals		
No.	**Designation**	**Function**
1	+24 V	Uv (+)
2	+24 V	Uv (+)
5	X1	Analog input 1 +
6	X2	Analog input 3 +
7	X3	Analog input 5 +
8	X4	Ground
9 ... 12		Not used
13	GND	Uv (–)
14	GND	Uv (–)
17	X5	Analog input 2 +
18	X6	Analog input 4 +
19	X7	Analog input 6 +
20	X8	Ground
21 ... 24		Not used
31	LON	A In
43	LON	B In

Note:

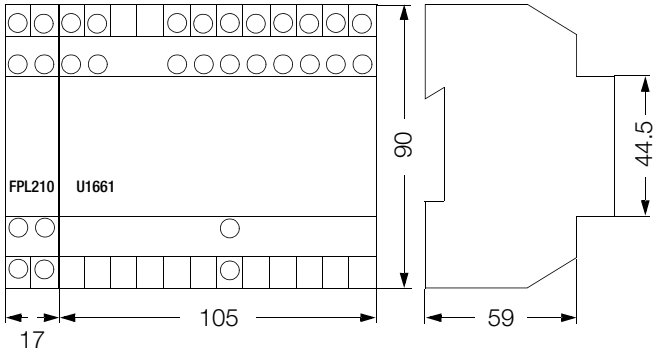
Terminals 1 and 2, as well as 13 and 14, are internally connected in the U1661.

U1661 LON-Supplementary Component
Analog Input Module

Mechanical Design

Housing	Plastic
Dimensions (H x W x D)	Module: 90 x 105 x 59 mm Filter: 90 x 17 x 59 mm
Mounting	Snap-mounting to top-hat rail per DIN EN 50022, 35 x 15 or 35 x 7.5 mm
Connection	Screw terminals

Dimensional Drawing



All dimensions in mm

Order Information

Description	Article Number / Feature
Analog input module with 6 analog inputs and FPL210 filter	**U1661**
0 ... 20 mA DC	B1
4 ... 20 mA DC	B2

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