Unipi Extension xS54

PRODUCT DESCRIPTION

Unipi Extension xS54 is an extension module communicating via the RS485 serial interface with Modbus RTU protocol. The module is a simple and inexpensive method of extending your project by additional inputs & outputs. The xS54 features a set of analog inputs combined with a set of digital and relay I/Os. This makes it ideal for more complex projects involving the measurement of analogue components.



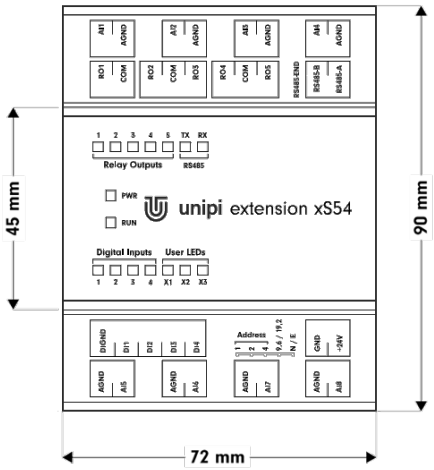


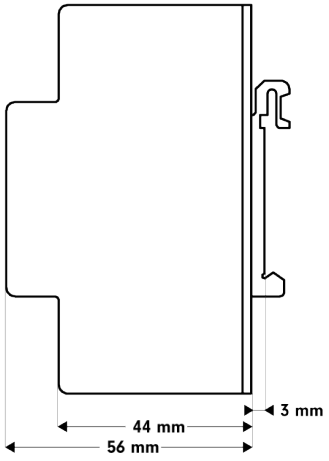
INPUTS & OUTPUTS

1 × RS485 (Modbus RTU)
4 × digital/counter input
5 × relay output
8 × universal analog input

OTHER FEATURES

- Special functions
  - Direct Switch – automatic response to input value change
  - MasterWatchdog – switches outputs to a safe mode if communication with the PLC is interrupted
  - Configurable user LEDs
- Durable aluminium chassis (IP20)
- Available in OEM variant





Unipi Extension xS54

Communication

Serial/bus channels	1 × RS485
Baudrates	2400 ... 115 200 baud
Pull-up/pull-down resistors	No
Terminating resistor	Builtin attachable, 120 Ω
Protocol	Modbus RTU
Galvanic isolation (pulse)	1.5 kVAC between RS-485 and all other circuits

Digital inputs

No. of inputs × groups	4 × 1
Input terminal	DI
Common ground	DIGND
Input type	SINK
Log. 0	< 3 V⎓
Log. 1	> 7 V⎓
Maximum voltage	35 V⎓
Input resistence for log. 1	6 200 Ω
Minimum pulse length	20 µs
0->1 / 1->0 delay	Typ. 20 µs / 60 µs
Maximum CNT counter input freq.	10 kHz
Functions of inputs	Counter (incl. memory), Direct Switch
LED indication	Yes
Galvanic isolation (pulse)	1.5 kVAC between DI and all other circuits

Relay outputs

No. of inputs × groups	1 × 1, 2 × 2
Output terminal	RO
Common terminal	COM
Output type	Electromechanic non-shielded relay
Contact type	Normally open (SPST-NO)
Used relay type	FTR-F3AA024E-HA
Maximum switching voltage	250 V∿ 30 V⎓
Maximum switching current	5 A
Maximum common terminal curr.	10 A
Short-term current overload	5 A
Mechanical lifespan	5 000 000
Electrical lifespan	Up to 100 000 (according to the connected load)
Operate/release time	10 ms
Switched load (IEC 60947-5-1)	AC-15, DC-13 Resistive
Load protection	External (RC, varistor, diode, thermistor)
Short circuit protection	No
Overvoltage protection	No
LED indication	Yes
Galvanic isolation (pulse)	2.5 kVAC between RO and RO 4 kVAC between RO and all other circuits

Analog inputs

No. of inputs × groups	8 × 1
Input terminals	AI
Common ground	AGND
Overvoltage protection	Integrated transil
Maximum voltage	15 V⎓
Maximum current	40 mA
Connection	SINK (measurement relative to the ground)
Galvanic isolation (pulse)	1.5 kVAC between AI and all other circuits

Caution:
Measurements outside the specified range may reduce the accuracy of the measurement and/or reduce the input impedance.

In case of strong interference to the cable (EN 6100-6-4), the measurement accuracy can be reduced to 1 % of the measured value. The use of additional EMC filters and shielded cabling is recommended (connect shield to the ground point of the device).

Analog Input Configuration

Voltage 0-10 V

Measuring range	0.1–10 V
Accuracy	±0.2 % (of range)
Input resistance	12 kΩ ±20 %
Resolution	24 bits
Conversion time	200 ms

Voltage 0-2 V

Measuring range	0.1–2 V
Accuracy	±1 % (of range)
Input resistance	1 MΩ ±50 %
Resolution	24 bits
Conversion time	200 ms

Current 4-20 mA

Measuring range	1–20 mA
Accuracy	±0.2 % (of range)
Input resistance	100 Ω ±1 %
Resolution	24 bits
Conversion time	200 ms

Resistance 2 kΩ

Measuring range	75–2000 Ω
Connection	Two-wire
Measuring current	< 0.3 mA (average)
Resolution	24 bits
Accuracy	±0.3 % (of range) / 0.5 Ω
Conversion time	200 ms
Compatible sensors	Pt100/Pt1000 (tol. ±0.75 °C), Ni100/Ni1000/2k reostat, etc ...

Please note:
The compensation of the lead resistance and the conversion to temperature according to the selected sensor is up to the user application.

Resistance 20 kΩ

Measuring range	1–20 kΩ
Connection	Two-wire
Measuring current	< 0.03 mA (average)
Resolution	24 bits
Accuracy	±1 % (of value) / 10 Ω
Conversion time	200 ms
Compatible sensors	Reostat

Installation and operating conditions

Operating conditions	Temperature 0 ... +55 °C, relative humidity 10 ... 95 %, without aggressive substances, condensing vapour and fog
Storing conditions	Temperature -25 ... +70 °C, relative humidity 10 ... 95 %, without aggressive substances, condensing vapour and fog
Altitude	up to 2000 m
EMC immunity zone	B (IEC 61000-6-2 compliant)
Protection class	I (SELV power circuit)
Overvoltage category	II
Pollution degree	2
Ingress Protection (IEC 529)	IP 20
Operation position	Any
Installation	On 35mm DIN rail (EN 60715, 35mm) into distribution box (holder included)
Connection	Pluggable terminal blocks
Wire gauge	Max. 2.5 mm²

Power supply

Rated voltage - SELV	24 V⎓ (±5%)
Power consumption	Typ. 3 W Max. 12 W
Reverse polarity protection	Yes

Dimensions and weight

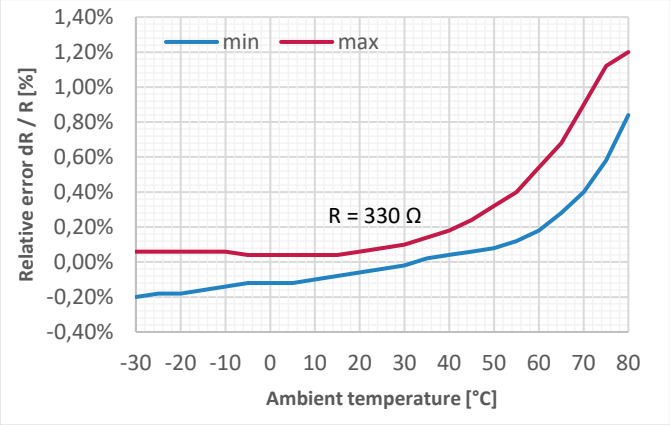
Dimensions	72 × 90 × 56 mm
Weight	320 g

Temperature dependence of resistance measurement

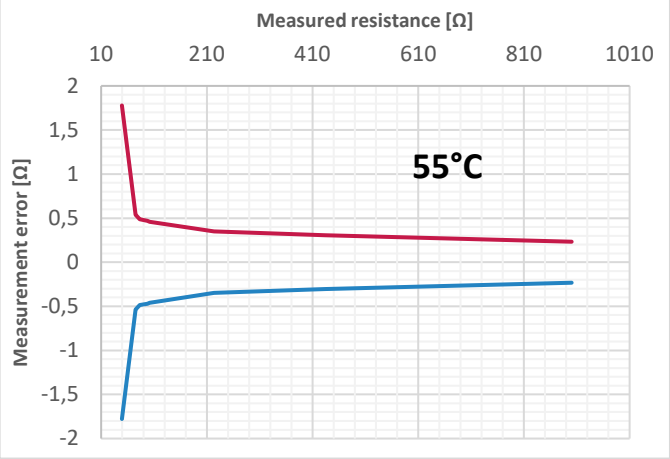
When measuring resistance, it is necessary to include the temperature-dependent measurement error of the device, especially at the lower limit of the measuring range.

The graph represents the dependence of the measured value error range compared to the measured value at 20 °C for a set of 16 channels with 3 sigma coverage (99.7 % in-band measurement), various production batches.

- Measurement mode: 2 kΩ
- Measured resistance: 330 Ω



Measurement tolerance for unit temperature 55 °C and 2 kΩ mode:



Directive compliance

LVD:	**2014/35/EU**
EMC:	**2014/30/EU**
RoHS:	**2015/863/EU**
WEEE:	**2012/19/EU**