

TC.ACSUSense

Optional Sense Board

Key Values

Features

Compensation of the voltage drop across the connecting cables by correcting the RMS value of the output voltage.

Extension of the programmable output voltage by taking the transformer ratio into account.

Compensation of the voltage drop across an external transformer by correcting the RMS value of the output voltage.

Monitoring of the transformer ratio and the transformer output voltage.

Installed instead of the analog amplifier card at the same option slot.

Technical Data

X615 Sense Input

Transformer type	3 x 1 ph
(N1', N2', N3' connected or separate)	1 x 3 ph YNyn0
Nominal frequency	50 / 60 Hz
Max. voltage compensation	15 %
(transformer ratio 'n' not taken into account)	($U_{OutDevice} \times n \times 1.15$)

TC.ACSUSense 500V

Max. voltage	330 V _{RMS} / 500 V _p (L-N/L-PE)
	570 V _{RMS} / 860 V _p (L-L)

Isolation

Working voltage	L1,L2, L3 to PE	330 V _{RMS}
Test voltage	L1,L2, L3 to PE	2160 V _{DC} / 1 s

TC.ACSUSense 750V

Max. voltage	500 V _{RMS} / 750 V _p (L-N/L-PE)
	860 V _{RMS} / 1290 V _p (L-L)

Isolation

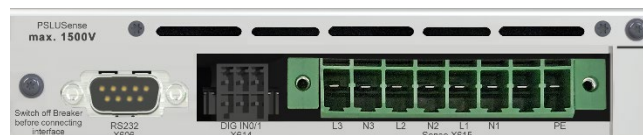
Working voltage	L1,L2, L3 to PE	500 V _{RMS}
Test voltage	L1,L2, L3 to PE	2160 V _{DC} / 1 s

TC.ACSUSense 1500V

Max. voltage	1000 V _{RMS} / 1500 V _p (L-N/L-PE)
	1000 V _{RMS} / 1500 V _p (L-L)

Isolation

Working voltage	L1,L2, L3 to PE	1000 V _{RMS}
Test voltage	L1,L2, L3 to PE	2160 V _{DC} / 1 s



Block diagram sense connection

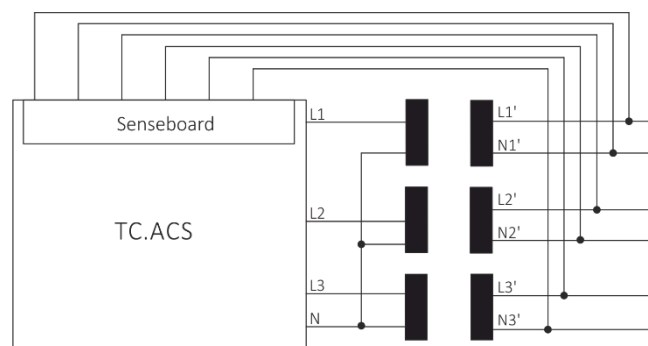


Figure 1 Sense measuring with TC.ACSUSense connected on the secondary side of a transformer

Ambient

Operating temperature	5...40 °C
Storage temperature	-18...70 °C
Relative air humidity (non-condensing)	0...95%
Installation altitude	0...2000 m above sea level ¹⁾
Vibration	IEC 60068-2-6 Test Fc

Connection

X615 Sense Plug

Plug type (included)	Phoenix PC4/8-ST-7.62
Cable housing (included)	Phoenix KGS-PC4/8-F

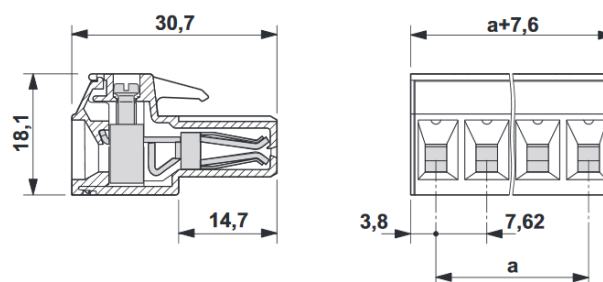


Figure 2 Dimension drawing TC.ACSUSense plug X615 (unit of measurement: mm)

Order Code

TC.ACSUSense 500V
TC.ACSUSense 750V
TC.ACSUSense 1500V
TC.ACSUSense 500V.RF (Retrofit)
TC.ACSUSense 750V.RF (Retrofit)
TC.ACSUSense 1500V.RF (Retrofit)

1) Above 1000 m, slight temperature derating possible

TC.ACS.DIG8IOST

Optional Digital I/O Interface

Key Values

Features

Interface for TC.ACS with galvanically isolated programmable digital I/O's
Status and error LEDs for easy status analysis
8 digital inputs and 8 digital outputs for logic control and operating state indication
4 potential free relay contacts SPDT
For installation in the second option slot of the TC.ACS device

Technical Data

X645 Supply

External Supply	
Input voltage	20.4 ... 28.8 V _{DC}
Protection	limited inrush current
Isolation	supply to PE 250 V _{DC}

Auxiliary Supply

Output voltage	23.2 ... 24.8 V _{DC}
Max. output power	6 W
Protection	short circuit, overload
Isolation	supply to PE 250 V _{DC}

X640 Relay Contacts (Outputs)

Max. switching voltage	250 V _{RMS}
Max. switching current	NO: 10 A _{RMS} NC: 3 A _{RMS}
Min. switching capacity (reference value)	100 mA, 5 V _{DC}
Max. switching power (resistive load)	150W, 1250 VA

Isolation

Channels	channel to channel	100 V _{RMS}
Supply	contact to ext./aux supply	300 V _{RMS}
Contacts	contact to PE	300 V _{RMS}

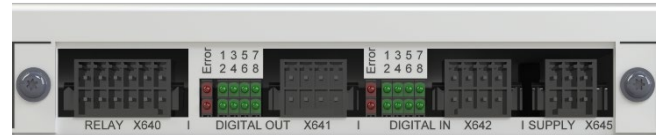
Standards

The relay contacts are able to switch mains voltage. Due to air- and creepage distances, a mixed operation of AC mains voltage and 24 V_{DC} is not allowed. X641 Digital Outputs

Degree of pollution	2
Area of application	industrial

X641 Digital Outputs

Max. current output (1 Ch.)	0.7 A
Max. peak current (1 Ch)	1.4 A
Max. peak current (all Ch)	5.6 A
Protection	short circuit, overload, current limit, overvoltage protection when switching inductive loads
Isolation output to PE	250 V _{DC}



X642 Digital Inputs

Max. voltage	30.0 V _{DC}
Min. voltage high-signal	15.0 V _{DC}
Min. current high-signal	2 mA
Max. voltage low-signal	5.0 V _{DC}
Isolation input to PE	250 V _{DC}

Ambient

Operating temperature	5...40 °C
Storage temperature	-18...70 °C
Relative air humidity (non-condensing)	0...95%
Installation altitude	0...2000 m above sea level ¹⁾
Vibration	IEC 60068-2-6 Test Fc

Connection

X640 Relay Contacts (Outputs)

Plug type (included)	WAGO 713-1106/037-000 (6 x 2-pin PCB connector)
Position pin 1	top left

X641/X642 Digital Inputs/Outputs

Plug type (included)	WAGO 713-1104/037-000 (4 x 2-pin PCB connector)
Position pin 1	top left

X645 Digital Inputs/Outputs

Plug type (included)	WAGO 713-1103/037-000 (3 x 2-pin PCB connector)
Position pin 1	top left

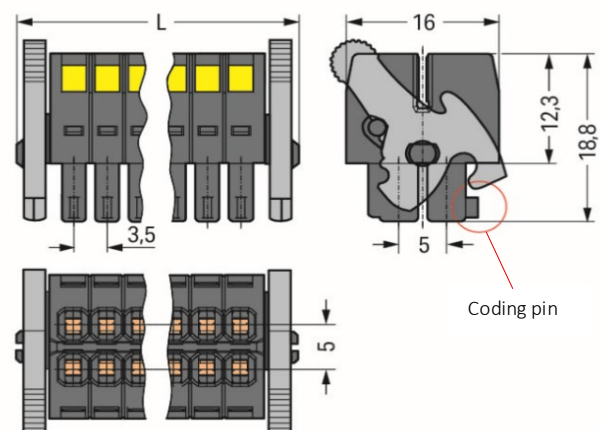


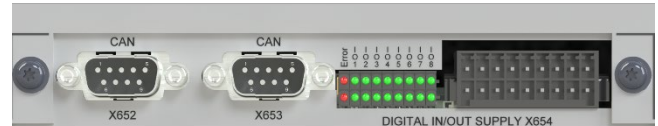
Figure 3 Dimension drawing TC.ACS.DIG8IOST plugs
(unit of measurement: mm)

Order Code

TC.ACS.DIG8IOST
TC.ACS.DIG8IOST.RF (Retrofit)

TC.ACS.CANmp

Optional CAN Communication Interface



Key Values

Features

CAN interface according to ISO 11898-1 (CAN 2.0B, layers 1 and 2)
User-configurable CAN protocol via ACSControl, template dbc-file available
Up to 20 transmit and 20 receive signals (16-bit) at 1 kHz
Cyclic or synchronized messaging with prioritization options
8 digital inputs and 8 digital outputs (X654) for logic control and operating state indication, fully configurable via ACSControl
For installation in the second option slot of the TC.ACS device

Technical Data

X652/X653 CAN Interface

Interface CAN 2.0B according to ISO 11898-1

Socket type	D-Sub 9 pin male
CAN-Term (included)	D-Sub 9 pin female / 120 Ω
Isolation to PE	250 V _{DC}

X654 Digital Inputs/Outputs, External Supply

External Supply

Input voltage	20.4 ... 28.8 V _{DC}
Input current	depends on number of outputs used and output current
Protection	limited inrush current
Isolation	supply to PE
	250 V _{DC}

Digital Inputs

Max. voltage	30.0 V _{DC}
Min. voltage high-signal	15.0 V _{DC}
Min. current high-signal	2 mA
Max. voltage low-signal	5.0 V _{DC}
Isolation input to PE	250 V _{DC}

Digital Outputs

Max. current output (1 Ch.)	0.7 A
Max. peak current (1 Ch)	1.4 A
Max. peak current (all Ch)	5.6 A
Protection	short circuit, overload, current limit, overvoltage protection when switching inductive loads
Isolation input to PE	250 V _{DC}

Ambient

Operating temperature	5...40 °C
Storage temperature	-18...70 °C
Relative air humidity (non-condensing)	0...95%
Installation altitude	0...2000 m above sea level ¹⁾
Vibration	IEC 60068-2-6
	Test Fc

Connection

X654 Digital Inputs/Outputs, External Supply

Plug type (included)	WAGO 713-1109/037-000 (9 x 2-pin PCB connector)
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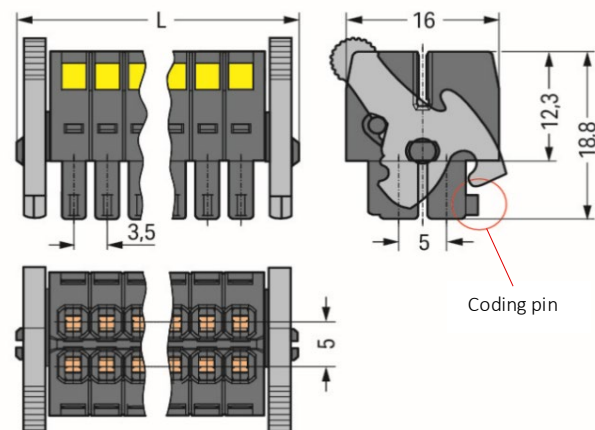


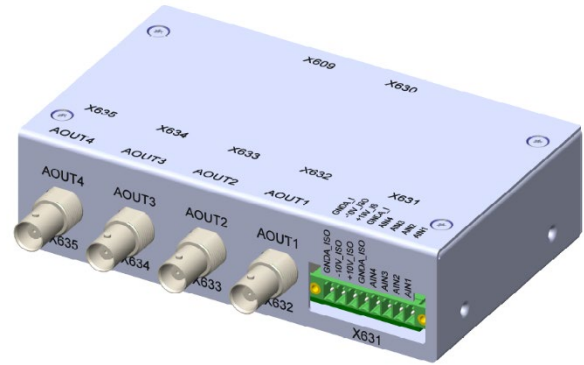
Figure 4 Dimension drawing TC.ACS.CANmp X654 plug
(unit of measurement: mm)

Order Code

TC.ACS.CANmp
TC.ACS.CANmp.RF

TC.ACS X609 Adapter

Optional Connection Box to Interface X609



Key Values

Features

- Easy access to X609 interface on TC.ACS
- Convenient BNC connectors for 4 analog outputs
- Multi-pin connector for 4 analog inputs
- Mirrored X609 interface for direct passthrough
- Can be mounted on a top-hat rail or with mounting brackets

Technical Data

Analog Output 1...4 (X632...X635)

Plug type	BNC connectors (female)
Isolation to PE	250 V _{RMS}
For more information, refer to the data sheet in the section "Analog port 12-pin flush-type (X609)" of the TC.ACS device, intended for connecting the adapter.	

Analog Input 1...4 (X631)

Plug type	PCB connector 8-pin
Signal filter	low-pass, $f_c = 107$ kHz
Isolation to PE	250 V _{RMS}
For more information, refer to the data sheet in the section "Analog port 12-pin flush-type (X609)" of the TC.ACS device, intended for connecting the adapter.	

Dimensions

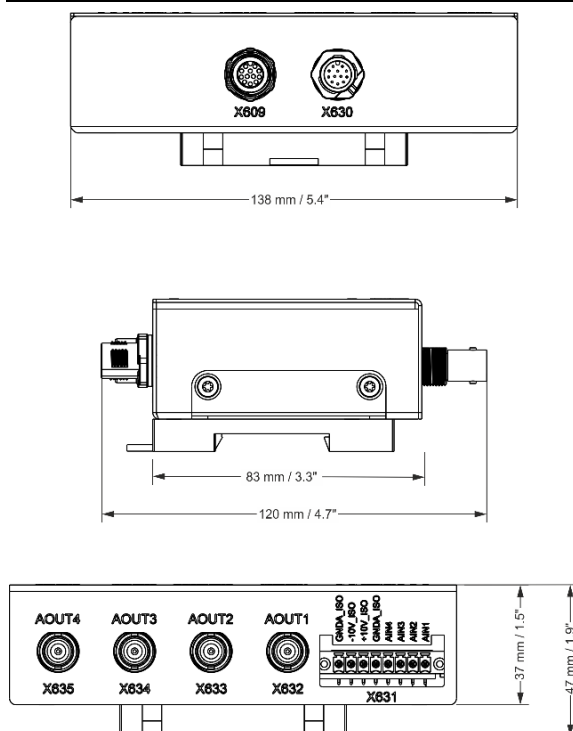


Figure 5 Dimensions of TC.ACS.X609 Adapter

Ambient

Operating temperature	5...40 °C
Storage temperature	-18...70 °C
Relative air humidity (non-condensing)	0...95%
Installation altitude	0...2000 m above sea level ¹⁾
Vibration	IEC 60068-2-6 Test Fc

Standards

Approval CE

EMC Directive 2014/30/EU	
EMC immunity (industrial)	EN 61000-6-2:2005
EMC emission (industrial)	EN 61000-6-4:2007 + A1:2011
RoHS Directive 2011/65/EU	EN IEC 63000:2018

Approval UKCA

Electromagnetic Compatibility Regulations 2016	
EMC immunity (industrial)	BS EN 61000-6-2:2005
EMC emission (industrial)	BS EN 61000-6-4:2007 + A1:2011
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	
	BS EN IEC 63000:2018

Connection

X631 Analog inputs plug

Plug type (included)	Phoenix FK-MCP 1,5/ 8-ST-3,81-LR
Position pin 1	left

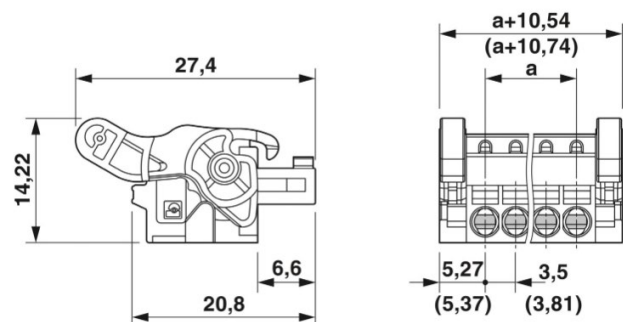


Figure 6 Dimension drawing TC.ACS X609 Adapter X631 plug
(unit of measurement: mm)

Order Code

TC.ACS X609 Adapter

TC.ACS.RS485 Repeater

Communication interface

Key Values

Features

Repeater for RS485 bus lengths exceeding 20 m
Can be mounted on a top-hat rail or with mounting brackets

Technical Data

X1 External Supply

Input voltage	20.4 ... 28.8 V _{DC}
Max. input current	200mA
Isolation	supply to PE 250 V _{DC}

JU2/JU3 Shield Connection

Jumper (included) TE Connectivity 827914-1
If it is not possible to connect the cable shield to earth at the RS485 output, jumpers can be used to connect the shield. Connecting the cable shield to earth at the RS485 output is always the better option.

X2 RS485 Input

Plug type RJ45 8-pin
Do not connect the cable shield to earth at the RS485 input.

X3 RS485 Output

Plug type RJ45 8-pin
Connect the cable shield to earth at the RS485 output. Jumpers JU2 and JU3 must be disconnected.

Dimensions

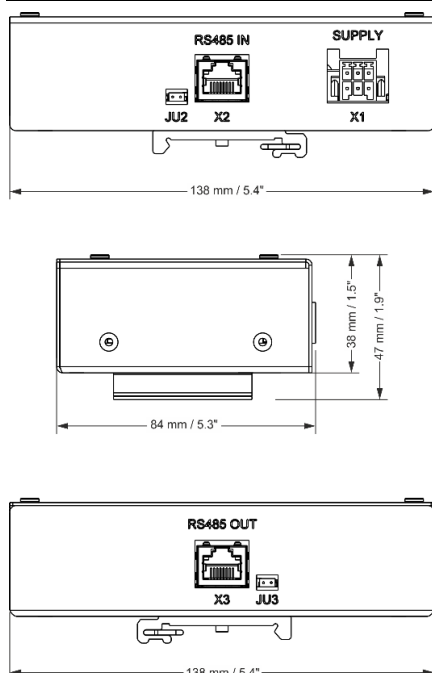
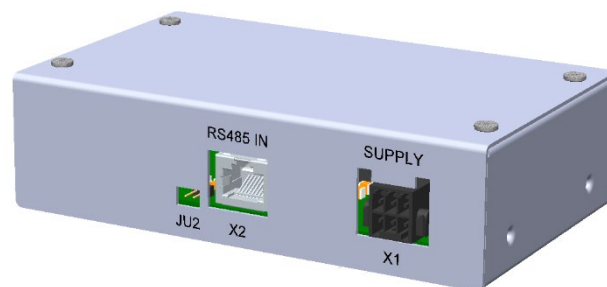


Figure 7 Dimensions of TC.ACS.RS485 Repeater



Ambient

Operating temperature	5...40 °C
Storage temperature	-18...70 °C
Relative air humidity (non-condensing)	0...95%
Installation altitude	0...2000 m above sea level ¹⁾
Vibration	IEC 60068-2-6 Test Fc

Standards

Approval CE

EMC Directive 2014/30/EU	
EMC immunity (industrial)	EN 61000-6-2:2005
EMC emission (industrial)	EN 61000-6-4:2007 + A1:2011
RoHS Directive 2011/65/EU	EN IEC 63000:2018

Approval UKCA

Electromagnetic Compatibility Regulations 2016	
EMC immunity (industrial)	BS EN 61000-6-2:2005
EMC emission (industrial)	BS EN 61000-6-4:2007 + A1:2011
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	
	BS EN IEC 63000:2018

Connection

X1 External Supply

Plug type (included)	WAGO 713-1103/037-000 (3 x 2-pin PCB connector)
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Position pin 1 top left

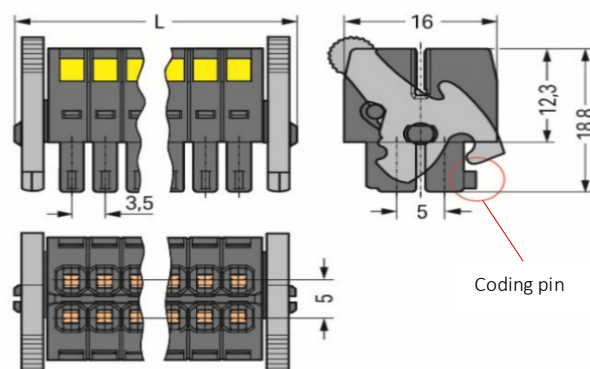


Figure 8 Dimension drawing TC.ACS.RS485 Repeater X1 plug
(unit of measurement: mm)

Order Code

TC.ACS.RS485Repeater

This product is developed, produced and tested according to ISO 9001 by REGATRON.

For detailed technical information, contact your local sales partner or REGATRON.

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All product specifications and information contained herein are subject to change without notice.

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Class: Project specific use only