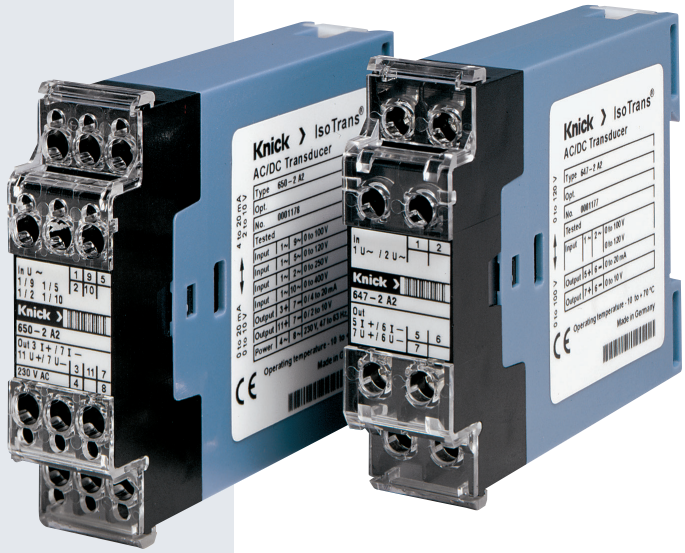
IsoTrans 600

For isolation and conversion of sinusoidal alternating currents and voltages into standard signals.



The Task
For monitoring mains supplies, control of electric motors etc., alternating currents up to 10 A and voltages up to 800 V are converted to 0(4) … 20 mA or 0 … 10 V standard signals.

The Problem
is the provision of several AC/DC transmitters for different ranges. Furthermore, the maintenance staff and the system need to be protected against high potentials.

The Solution
comes in the form of the switchable, signal-powered IsoTrans 600 AC/DC transmitters.
Only the transmitters with 4 … 20 mA output require 230 V AC power supply.

The calibrated range selection for all standard alternating voltages and the 22.5 mm slim modular housing allow for universal use.

The Advantages
The accuracy class is 0.5 – no need to re-adjust the switchable ranges.

The IsoTrans 600 provides protective separation up to 600 V AC/DC according to EN 61010-1.

This allows for use in 3-phase networks without the need for further measures to ensure protective separation.

Except for the 4 … 20 mA output, the IsoTrans 600 is supplied directly from the measurement signal. There are no costs for a power supply and wiring.

Optimized circuit design makes the power consumption and the resulting self-heating very low. This protects against unnecessary temperature-related component aging and thus increases reliability.

The Technology
The measured values are converted into rms values through averaging, in the case of sinusoidal input signals with calibration. Short rise times, very low residual ripple and excellent overload behavior guarantee maximum transmission quality.

The Facts

– **Calibrated range selection**
Simple inventory management due to universal application possibilities, no need for complicated readjustment

– **No power supply required for models with 0 ... 20 mA and 0 ... 10 V output**
Minimal wiring effort and no mains influences

– **Protective separation according to EN 61140**
Protection of the maintenance staff and subsequent devices against excessively high voltages

– **22.5-mm modular housing**
Low space requirement due to compact design

– **High long-term stability and accuracy**
Reliable operation without recalibration

– **Very low power consumption**
allows for minimum ratings of the upstream current and voltage transformer

– **Very low self-heating**
No temperature-related component aging, high MTBF

– **Maximum reliability**
No repair or failure costs

– **High reliability**

– **5-year warranty**

Warranty
5 years!

Warranty
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender).

IsoTrans 600

Product Line

IsoTrans 600 with current input	Input	Output	Order No.
IsoTrans 611/-1	0 ... 1 A	0 ... 20 mA	**611-1 A2**
IsoTrans 621-1 (with power supply)	0 ... 1 A	4 ... 20 mA	**621-1 A2**
IsoTrans 631/-1	0 ... 1 A	0 ... 10 V	**631-1 A2**
IsoTrans 615/-1	0 ... 5 A	0 ... 20 mA	**615-1 A2**
IsoTrans 625-1 (with power supply)	0 ... 5 A	4 ... 20 mA	**625-1 A2**
IsoTrans 635/-1	0 ... 5 A	0 ... 10 V	**635-1 A2**

IsoTrans 600 with voltage input			Order No.
IsoTrans 647/-2	0 ... 100 / 120 V switchable	0 ... 20 mA / 0 ... 10 V, terminal selectable	**647-2 A2**
IsoTrans 648/-2	0 ... 250 / 400 V switchable	0 ... 20 mA / 0 ... 10 V, terminal selectable	**648-2 A2**
IsoTrans 650-2 (with power supply)	0 ... 100 / 120 / 250 / 400 V, terminal selectable	0 ... 20 mA / 4 ... 20 mA / 0 ... 10 V, switchable / terminal selectable	**650-2 A2**

Power supply

621-1, 625-1, 650-2: 230 V AC; other: none, supply from input signal

Options	Order No.
IsoTrans 635-1 and IsoTrans 650-2 for input frequency 16 2/3 Hz (635-1: response time 1 s, load ≥7.5 kohms)	**469**

Selection Aid

		Output		
		0 ... 20 mA	4 ... 20 mA	0 ... 10 V
Input	0 ... 1 A AC	611-1 A2	621-1 A2*)	631-1 A2
	0 ... 5 A AC	615-1 A2	625-1 A2*)	635-1 A2
	0 ... 100 V AC	647-2 A2 650-2 A2*)	650-2 A2*)	647-2 A2 650-2 A2*)
	0 ... 120 V AC	647-2 A2 650-2 A2*)	650-2 A2*)	647-2 A2 650-2 A2*)
	0 ... 250 V AC	648-2 A2 650-2 A2*)	650-2 A2*)	648-2 A2 650-2 A2*)
	0 ... 400 V AC	648-2 A2 650-2 A2*)	650-2 A2*)	648-2 A2 650-2 A2*)

*) With power supply

Specifications

Input data	**IsoTrans 600 with current input**		**IsoTrans 600 with voltage input**		
	6x1	6x5	647	648	650
Input[1)]	0 … 20 mA 0 ... 1 A 48 ... 63 Hz	0 … 10 V 0 ... 5 A 48 ... 63 Hz	0 … 100 / 120 V switchable, measurements from 10 % FS 48 … 63 Hz	0 … 250 / 400 V switchable, measurements from 10 % FS 48 … 63 Hz	0 … 100 / 120 / 250 / 400 V terminal selectable 48 … 63 Hz
Overload capacity	Continuous: 2 times I_{nom} 1 s: 50 times I_{nom}		Continuous: 1.5 times V_{nom} 1 s: 4 times V_{nom}		
Input power at nominal current	Approx. 1 VA		Max. 0.4 VA		

Output data	**IsoTrans 600 with current input**			**IsoTrans 600 with voltage input**		
	61x	62x	63x	647	648	650
Output	0 … 20 mA	4 … 20 mA	0 … 10 V	0 … 20 mA / 0 … 10 V terminal selectable		0(4) … 20 mA / 0(2) … 10 V switch/terminal selectable
Load	≤ 750 ohms		≥ 2 kohms	With output current: ≤ 600 ohms With output voltage: ≥ 1 kohm		
Response time (T_{90}) Load 0 ohm Load 750 ohms	 Approx. 0.1 s Approx. 0.2 s		< 0.2 s	Approx. 0.25 s		

Transmission behavior	
Transmission error	Class 0.5 (EN 60688)

Power supply	
Power supply (only models with 4 … 20 mA output)	230 V AC –15 % +10 %, 47 … 63 Hz, approx. 1 VA (IsoTrans 650 approx. 1.5 VA)

Isolation		
Galvanic isolation	With power supply: Without power supply:	3-port isolation between input, output and power supply Isolation between input and output
Test voltage	With current input: With voltage input:	6 kV AC for models with power supply: 6 kV AC (input against output / power supply), 4 kV AC (output against power supply) 4 kV AC
Protection against electric shock	Protective separation according to EN 61140 by reinforced insulation according to EN 61010-1. Working voltages at overvoltage category II and pollution degree 2: up to 400 V AC/DC across output and power supply. up to 600 V AC/DC across input and output and, if applicable, power supply (current isolators up to category III, degree 2). For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.	

IsoTrans 600

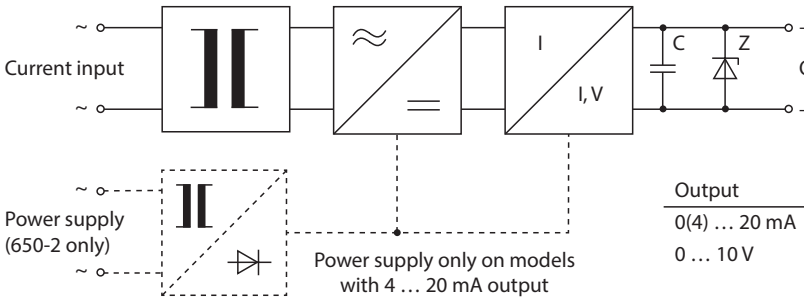
Specifications (continued)

Standards and approvals	
Surge withstand	5 kV 1.2/50 µs according to IEC 255-4
EMC	89/336/EEC, EN 61326
Further data	
Ambient temperature	Operation: -10 … +70 °C Transport and storage: -30 … +80 °C
Design	Modular housing A7, 22.5 mm wide, screw terminals See dimension drawings for further measurements
Ingress protection	Housing: IP 40, terminals: IP 20
Mounting	Snap-on mounting for 35 mm mounting rail according to EN 50022 or screw fastener M4 See dimension drawing for conductor cross-section
Weight	6xx-1: approx. 350 g 6xx-2: approx. 250 g

[1] other input values up to 10 A or 800 V in the frequency range of 16 … 63 Hz upon request

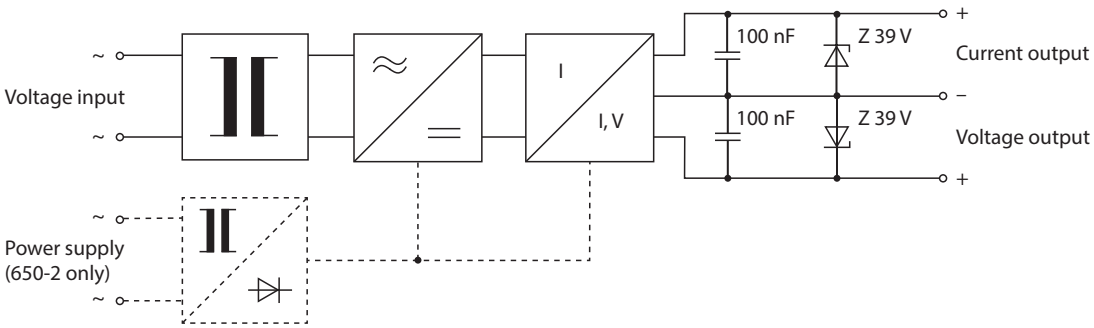
Block Diagrams

AC/DC Transmitter with Current Input



Output	C	Z
0(4) … 20 mA	0.47 µF	18 V
0 … 10 V	15 µF	14 V

AC/DC Transmitter with Voltage Input



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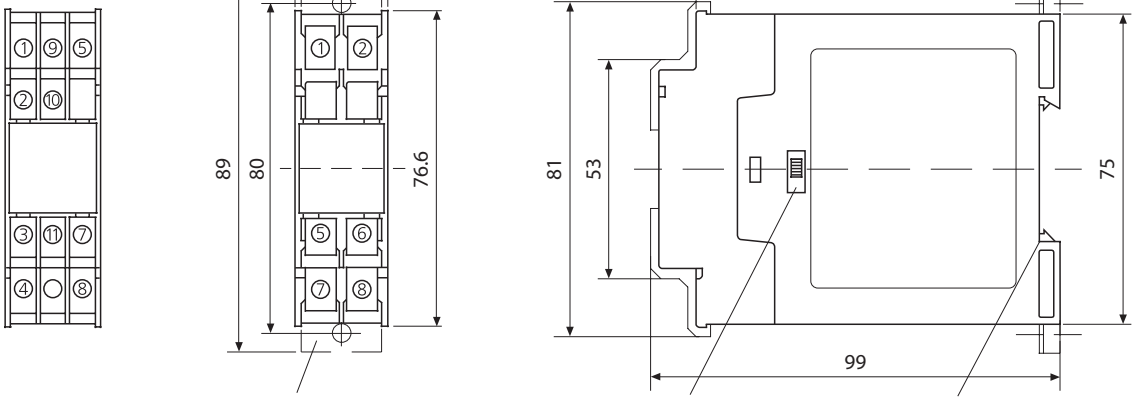
Dimension Drawings and Terminal Assignments



Screw mounting
with extendable lugs

Range selector, don't switch
during operation!

Snap-on mounting onto 35-mm
EN 50022 mounting rail

All dimensions in mm

AC/DC transmitter
with current input 6-1**

1 Input ~
2 Input ~

5 Output +
6 Output –

7 Power supply ~
8 Power supply ~

(only for models 621 and 625,
nothing connected otherwise)

AC/DC transmitter with voltage input
647-2 and 648-2

1 Input ~
2 Input ~

5 Output + 20 mA
6 Output –
7 Output + 10 V

AC/DC transmitter
with voltage input 650-2

1 Input 0
9 Input 100 V ~
5 Input 120 V ~
2 Input 250 V ~
10 Input 400 V ~

7 Output –
11 Output + 20 mA
3 Output + 10 V

4 Power supply ~
8 Power supply ~

Mounting screws M 2,5 x 8 with
self-raising locking plates,
max. conductor cross-section
2 x 2.5 mm² solid or
2 x 1.5 mm² stranded with ferrule