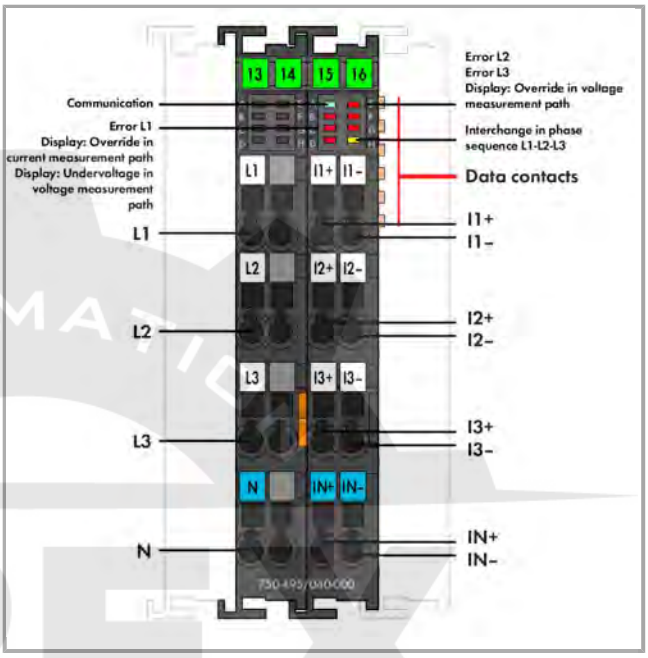
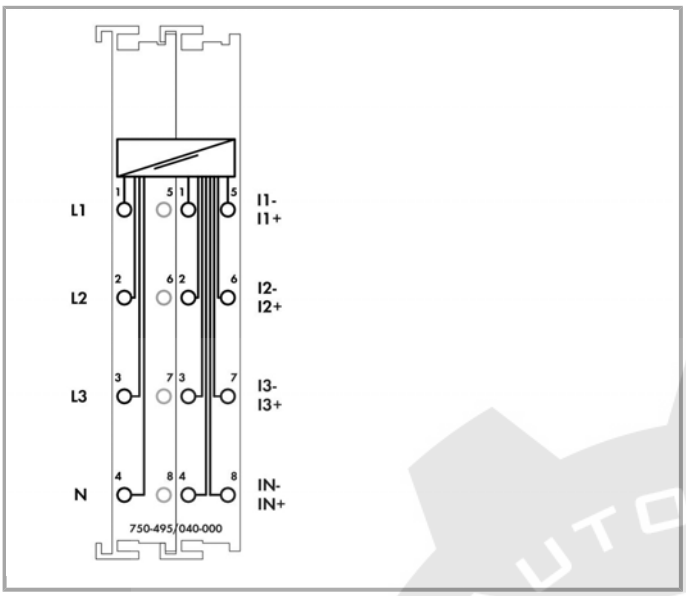
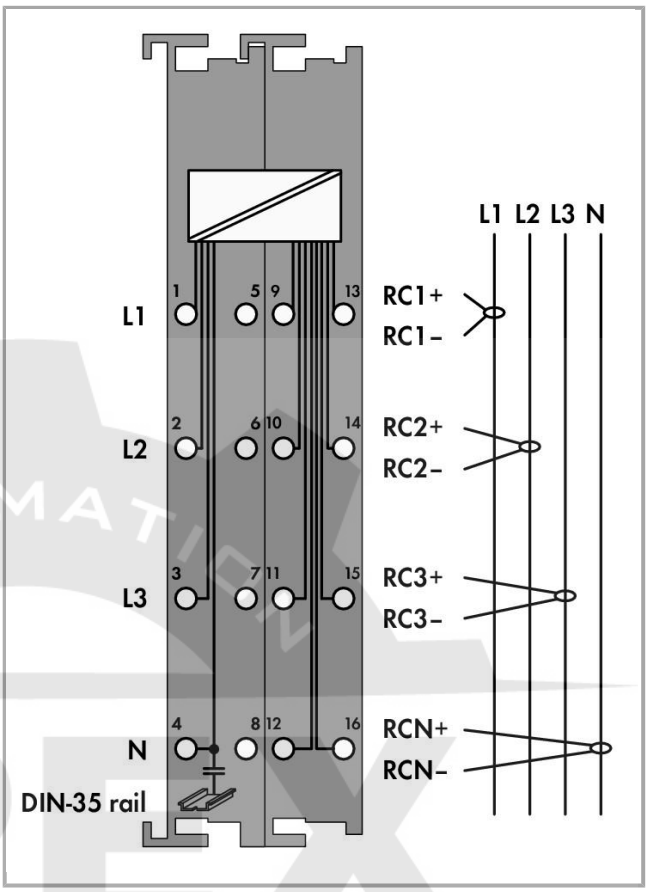
3-Phase Power Measurement; 690 VAC Rogowski coils; Extreme

750-495/040-002







Item description

The 750-495 3-Phase Power Measurement Module measures electrical data in a three-phase supply network. The voltage is measured via network connection to L1, L2, L3 and N. The current of the three phases is fed to IL1, IL2, IL3 and IN (two clamping points each +,-) via current transformers or via Rogowski coils for the 750-495/000-002 Module. The module transmits metrics (e.g., reactive/apparent/effective power, energy consumption, power factor, phase angle, frequency, over-/undervoltage) directly into the process image, without requiring high computing power from the controller. Both comprehensive metrics and harmonic analysis up to the 41st harmonic permit extensive network analysis via the fieldbus. Metrics allow the operator to optimize the supply to a drive or machine, protecting the system from damage and failure. Insulation failures can be detected and prevented via current measurement performed in the neutral conductor. The 4-quadrant display indicates the type of load (inductive, capacitive) and whether it is an energy consumer or producer.

The device is ideal for operation in extreme environments:

- Extended temperature range

- Greater immunity to impulse voltages and electromagnetic interference

- Higher vibration and shock resistance

Data

Technical Data

Number of measurement inputs	7 (3 voltage measurement inputs, 4 differential current measurement inputs)

Type of signal	Power measurement
Signal form	any periodic signals (in consideration of the threshold frequencies)
Resolution [bit]	24 Bit
Bit width	2 x 128-bit data; 2 x 64-bit control/status
Input resistance voltage path (typ.)	1429 kΩ
Input resistance current path typ.	44 kΩ
Bezug für Messfehler	AC Strom/Spannung
Messfehler, Bezugstemperatur	25 °C
Messfehler, Abweichung max. vom Messbereichsendwert	0.5 %
Measuring current (max.)	Rogowski Coils RT500/RT2000
Measuring cycle time	Adjustable for arithmetic mean value, Min_Max_Values
Frequency range, power supply frequency	45 … 65 Hz
Frequency range, harmonics analysis	0 … 3300 Hz
Operating frequency	15.9 kHz
Rated voltage	V_{LN} = 400 VAC; V_{LL} = 690 VAC
Measured values	Line-to-line voltage, power output, energy, power factors, mains frequency, harmonic analysis (up to the 41st harmonic), THD
Messkomponenten	Evaluating
Measuring procedure	True RMS measurement
System supply voltage	DC 5 V; via data contacts
Current consumption, system supply (5 V)	100 mA
System and sensor supply voltage	)
Dielectric strength	AC 2,5 kV/DC 3,5 kV; gemäß EN 60870-2-1
Rated surge voltage	5.0 kV (EN 60870-2-1 / Class VW3); 6.0 kV (UL 508); 6.0 kV (EN 60664-1 / up to 4,000 m above sea level); 4.0 kV (EN 60664-1 / > 4,000 m up to 5,000 m above sea level)
Overvoltage category	Nominal voltage 400 V/690 V in a 3-phase system: III (EN 60664-1 / up to 4.000 m above sea level); II (EN 60664-1 / > 4,000 m up to 5.000 m above sea level)

Connection data

Connection technology: In-/Outputs	16 x CAGE CLAMP®
Connection type (1)	Inputs/Outputs
Solid conductor	0.25 … 2.5 mm² / 24 … 14 AWG
Fine-stranded conductor	0.25 … 2.5 mm² / 24 … 14 AWG
Strip length	8 … 9 mm / 0.31 … 0.35 inch

Geometrical Data

Width	24 mm / 0.945 inch
Height	67.8 mm / 2.669 inch
Height from upper-edge of DIN-35 rail	60.6 mm / 2.386 inch

Depth	100 mm / 3.937 inch

Mechanical data

Type of mounting	DIN-35 rail

Material Data

Housing material	Polycarbonate, polyamide 6.6
Fire load	0 MJ
Weight	90 g
Conformity marking	1

Environmental Requirements

Surrounding air (operating) temperature	-40 … 70 °C
Surrounding air (storage) temperature	-40 … 85 °C
Protection class	IP20
Degree of pollution (5)	2 (EN 60664-1)
Operating altitude	without temperature derating: 0 … 2000 m; with temperature derating: 2000 … 5000 m (0.5 K/100 m); max.: 5000 m
Mounting position	horizontal (standing/lying) or vertical
Relative air humidity (no condensation)	95 %
Relative humidity	Short-term condensation per Class 3K7/IEC EN 60721-3-3 and E DIN 40046-721-3 (except wind-driven precipitation, water and ice formation)
Vibration resistance	acc. to IEC 60068-2-6 (acceleration: 5g), EN 60870-2-2, IEC 60721-3-1, -3, EN 50155, EN 61373
Shock resistance	acc. to IEC 60068-2-27 (15g/11 ms/half-sine/1000 shocks; 25g/6 ms /1000 shocks), EN 50155, EN 61373
EMC immunity to interference	acc. to EN 61000-6-1, -2, EN 61131-2, marine applications, EN 50121-3-2, -4, -5, EN 60255-26, EN 60870-2-1, EN 61850-3, IEC 61000-6-5, IEEE 1613, VDEW: 1994
EMC emission of interference	acc. to EN 61000-6-3, -4, EN 61131-2, EN 60255-26, marine applications, EN 60870-2-1, EN 61850-3, EN 50121-3-2, EN 50121-4, -5
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible H_2S contaminant concentration at a relative humidity 75 %	10 ppm
Permissible SO_2 contaminant concentration at a relative humidity 75 %	25 ppm

Commercial data

Country of origin	DE
GTIN	4055143353564

Customs Tariff No.	85365080990

Approvals / Certificates

Ex-Approvals

Logo	Approval	Additional Approval Text	Certificate name
	ATEX TUEV Nord Cert GmbH	EN 60079-0	TUEV 17 ATEX 193969X
	ATEX TUEV Nord Cert GmbH	EN 60079-0	TUEV 17 ATEX 193969X
	IECEx TUEV Nord Cert GmbH	IEC 60079-0	IECEx TUN 16.0046X
	IECEx TUEV Nord Cert GmbH	IEC 60079-0	IECEx TUN 16.0046X

Country specific Approvals

Logo	Approval	Additional Approval Text	Certificate name
	KC National Radio Research Agency	Article 58-2, Clause 3	MSIP-REM-W43-AIM750
	KC National Radio Research Agency	Article 58-2, Clause 3	MSIP-REM-W43-AIM750

Ship Approvals

Logo	Approval	Additional Approval Text	Certificate name
	LR Lloyds Register	-	17/20073 LR
	PRS Polski Rejestr Statków	-	TE/2215/880590/18

Compatible products

Carrier rail

	**Item no.: 210-112** Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slotted; according to EN 60715; "Hole width 25 mm	210-112
	**Item no.: 210-113** Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; unslotted; according to EN 60715	210-113
	**Item no.: 210-114** Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; unslotted; similar to EN 60715	210-114
	**Item no.: 210-115** Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slotted; according to EN 60715; "Hole width 18 mm	210-115
	**Item no.: 210-118** Steel carrier rail; 35 x 15 mm; 2.3 mm thick; 2 m long; unslotted; according to EN 60715	210-118
	**Item no.: 210-196** Aluminum carrier rail; 35 x 8.2 mm; 1.6 mm thick; 2 m long; unslotted; similar to EN 60715	210-196
	**Item no.: 210-197** Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; slotted; similar to EN 60715	210-197
	**Item no.: 210-198** Copper carrier rail; 35 x 15 mm; 2.3 mm thick; 2 m long; unslotted; according to EN 60715	210-198
	**Item no.: 210-504** Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slotted; galvanized; according to EN 60715	210-504
	**Item no.: 210-505** Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; unslotted; galvanized; according to EN 60715	210-505
	**Item no.: 210-506** Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; unslotted; galvanized; similar to EN 60715	210-506
	**Item no.: 210-508** Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; slotted; galvanized; similar to EN 60715	210-508

system box

	**Item no.: 850-804** IP65 enclosure; Stainless steel; WxHxD (400x123x200 mm); 4 x M20, 16 x M16, 28 x M12 cable grip	850-804
	**Item no.: 850-804/000-001** IP65 enclosure; Stainless steel; WxHxD (400x123x200 mm); 2 x M20, 13 x M16, 32 x M12 cable grip 7000-001	850-804
	**Item no.: 850-805** IP65 enclosure; Stainless steel; WxHxD (600x123x200 mm); 4 x M20, 19 x M16, 67 x M12 cable grip	850-805

	**Item no.: 850-814/002-000** IP65 enclosure; Sheet steel (RAL 7035); WxHxD (200x120x200 mm); without flange plate	850-814
	**Item no.: 850-815/002-000** IP65 enclosure; Sheet steel (RAL 7035); WxHxD (300x120x200 mm); without flange plate	850-815
	**Item no.: 850-816/002-000** IP65 enclosure; Sheet steel (RAL 7035); WxHxD (400x120x200 mm); without flange plate	850-816
	**Item no.: 850-817/002-000** IP65 enclosure; Sheet steel (RAL 7035); WxHxD (600x120x200 mm); without flange plate	850-817
	**Item no.: 850-825** IP65 enclosure; Aluminium (RAL 7032); WxHxD (160x100x160 mm); 9 x M12, 4 x M20	850-825
	**Item no.: 850-826** IP65 enclosure; Aluminium (RAL 7032); WxHxD (240x100x160 mm); 4 x M20, 4 x M16, 14 x M12 cable grip	850-826
	**Item no.: 850-826/002-000** IP65 enclosure; Aluminium (RAL 7035); WxHxD (240x100x160 mm); 4 x M20, 4 x M16, 14 x M12 cable grip	850-826
	**Item no.: 850-827** IP65 enclosure; Aluminium (RAL 7032); WxHxD (320x100x160 mm); 4 x M20, 8 x M16, 17 x M12 cable grip	850-827
	**Item no.: 850-827/002-000** IP65 enclosure; Aluminium (RAL 7035); WxHxD (320x100x160 mm); 4 x M20, 8 x M16, 17 x M12 cable grip	850-827
	**Item no.: 850-828** IP65 enclosure; Aluminium (RAL 7032); WxHxD (480x100x160 mm); 4 x M20, 10 x M16, 35 x M12 cable grip	850-828
	**Item no.: 850-828/002-000** IP65 enclosure; Aluminium (RAL 7035); WxHxD (480x100x160 mm); 4 x M20, 10 x M16, 35 x M12 cable grip	850-828
	**Item no.: 850-834** IP65 enclosure; Polyester (RAL 7032); WxHxD (164x100x164 mm); 9 x M12, 4 x M20	850-834
	**Item no.: 850-835** IP65 enclosure; Polyester (RAL 7032); WxHxD (244x100x164 mm); 4 x M20, 4 x M16, 14 x M12 cable grip	850-835
	**Item no.: 850-836** IP65 enclosure; Polyester (RAL 7032); WxHxD (324x100x164 mm); 4 x M20, 8 x M16, 17 x M12 cable grip	850-836

current transformer

	**Item no.: 855-9100/2000-000** Rogowski coil; Primary rated current: 2000 A; Output signal: 40.2 mV; Cable length: 1.5 m	855-9100
	**Item no.: 855-9100/500-000** Rogowski coil; Primary rated current: 500 A; Output signal: 10.05 mV; Cable length: 1.5 m	855-9100

	**Item no.: 855-9150/2000-1251** Rogowski coil; Primary rated current 4000 A; Output signal 22.5 mV per kA; Cable length: 1.5 m; Accuracy class: 1; Feedthrough for measurement conductor 125 mm	855-9150
	**Item no.: 855-9150/2000-1751** Rogowski coil; Primary rated current 4000 A; Output signal 22.5 mV per kA; Cable length: 1.5 m; Accuracy class: 1; Feedthrough for measurement conductor 175 mm	855-9150
	**Item no.: 855-9150/2000-701** Rogowski coil; Primary rated current 4000 A; Output signal 22.5 mV per kA; Cable length: 1.5 m; Accuracy class: 1; Feedthrough for measurement conductor 70 mm	855-9150
	**Item no.: 855-9300/2000-000** Rogowski coil; Primary rated current: 2000 A; Output signal: 40.2 mV; Cable length: 3 m	855-9300
	**Item no.: 855-9300/500-000** Rogowski coil; Primary rated current: 500 A; Output signal: 10.05 mV; Cable length: 3 m	855-9300
	**Item no.: 855-9450/2000-1251** Rogowski coil; Primary rated current 4000 A; Output signal 22.5 mV per kA; Cable length 4.5 m; Accuracy class: 1; Feedthrough for measurement conductor 125 mm	855-9450
	**Item no.: 855-9450/2000-1751** Rogowski coil; Primary rated current 4000 A; Output signal 22.5 mV per kA; Cable length 4.5 m; Accuracy class: 1; Feedthrough for measurement conductor 175 mm	855-9450
	**Item no.: 855-9450/2000-701** Rogowski coil; Primary rated current 4000 A; Output signal 22.5 mV per kA; Cable length 4.5 m; Accuracy class: 1; Feedthrough for measurement conductor 70 mm	855-9450

General accessories

	**Item no.: 2007-8874** Compact terminal block; for current and voltage transformers	2007-8874
	**Item no.: 2007-8877** Compact terminal block; for current transformer circuit	2007-8877
	**Item no.: 855-8001** Power tap; with fuse; 2,5 mm² (12 AWG) - 6 mm² (10 AWG); Phase	855-8001
	**Item no.: 855-8002** Power tap; without fuse; 2,5 mm² (12 AWG) - 6 mm² (10 AWG); N-conductor	855-8002
	**Item no.: 855-8003** Power tap; with fuse; 10 mm² (8 AWG) - 16 mm² (6 AWG); Phase	855-8003
	**Item no.: 855-8004** Power tap; without fuse; 10 mm² (8 AWG) - 16 mm² (6 AWG); N-conductor	855-8004

Marking accessories

	**Item no.: 2009-145** Mini-WSB Inline; for Smart Printer; on reel; stretchable 5 - 5.2 mm; plain; snap-on type	2009-145
	**Item no.: 2009-145/000-002** Mini-WSB Inline; for Smart Printer; on reel; stretchable 5 - 5.2 mm; plain; snap-on type	2009-145

	Item no.: 2009-145/000-005 Mini-WSB Inline; for Smart Printer; on reel; stretchable 5 - 5.2 mm; plain; snap-on type	2009-145
	Item no.: 2009-145/000-006 Mini-WSB Inline; for Smart Printer; on reel; stretchable 5 - 5.2 mm; plain; snap-on type	2009-145
	Item no.: 2009-145/000-007 Mini-WSB Inline; for Smart Printer; on reel; stretchable 5 - 5.2 mm; plain; snap-on type	2009-145
	Item no.: 2009-145/000-012 Mini-WSB Inline; for Smart Printer; on reel; stretchable 5 - 5.2 mm; plain; snap-on type	2009-145
	Item no.: 2009-145/000-023 Mini-WSB Inline; for smartPRINTER; on reel; stretchable 5 - 5.2 mm; plain; snap-on type	2009-145
	Item no.: 2009-145/000-024 Mini-WSB Inline; for Smart Printer; on reel; stretchable 5 - 5.2 mm; plain; snap-on type	2009-145
	Item no.: 248-501 Miniature WSB Quick marking system; plain; Marker width 5 mm; 10 strips with 10 markers per card	248-501
	Item no.: 248-501/000-002 Mini-WSB marking card; as card; not stretchable; plain; snap-on type	248-501
	Item no.: 248-501/000-005 Mini-WSB marking card; as card; not stretchable; plain; snap-on type	248-501
	Item no.: 248-501/000-006 Mini-WSB marking card; as card; not stretchable; plain; snap-on type	248-501
	Item no.: 248-501/000-007 Mini-WSB marking card; as card; not stretchable; plain; snap-on type	248-501
	Item no.: 248-501/000-012 Mini-WSB marking card; as card; not stretchable; plain; snap-on type	248-501
	Item no.: 248-501/000-017 Mini-WSB marking card; as card; not stretchable; plain; snap-on type	248-501
	Item no.: 248-501/000-023 Mini-WSB marking card; as card; not stretchable; plain; snap-on type	248-501
	Item no.: 248-501/000-024 Mini-WSB marking card; as card; not stretchable; plain; snap-on type	248-501

	**Item no.: 750-103** Group marker carrier	750-103
	**Item no.: 750-107** Group marker carrier	750-107
shield connection		
	**Item no.: 790-108** Shield clamping saddle; 11 mm wide; diameter of compatible conductor	790-108
	**Item no.: 790-116** Shield clamping saddle; 19 mm wide; diameter of compatible conductor; 7 … 16 mm	790-116
	**Item no.: 790-124** Shield clamping saddle; 27 mm wide; diameter of compatible conductor; 6 … 24 mm	790-124
	**Item no.: 790-140** Shield clamping saddle; diameter of compatible conductor	790-140
	**Item no.: 790-208** Shield clamping saddle; 12.4 mm wide; 3 … 8 mm	790-208
	**Item no.: 790-216** Shield clamping saddle; 21.8 mm wide; 6 … 16 mm	790-216
	**Item no.: 790-220** Shield clamping saddle; 30 mm wide; 6 … 20 mm	790-220

Downloads

Documentation

Manual

3-Phase Power Measurement Module /XTR 690 V	V 1.1.0	pdf 5.4 MB	Download

Bid Text

750-495/040-002		doc 36.9 kB	Download

Additional Information

Disposal; Electrical and electronic equipment, Packaging	V 1.0.0	pdf 265.8 kB	Download

System Description

System Manual /XTR Basic conditions and recommendations for higher operational safety	V 1.2.0	pdf 2.9 MB	Download
750 XTR Series I/O-System – General Product Information		pdf 1.1 MB	Download

Overview on WAGO-I/O-SYSTEM 750 approvals	pdf 780.2 kB	Download

CAD/CAE - Smart Data

CAD data

3D Download 750-495/040-002	URL	Download

Product family

750 XTR Series – I/O System

I/O-System 750 XTR: Dort automatisieren, wo jedes andere System an seine Grenzen stößt – und das zuverlässig und wirtschaftlich! XTR – dieses Kürzel im Systemnamen steht für extremen Schutz vor klimatischen Einflüssen, Schwingungen, Erschütterungen und Überspannungen.

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Subject to changes.