PRODUCT DESCRIPTION
RIPPrevent+ & Accessories

Short description of the system structure

This device is a compilation of components that are already being traded worldwide. Only the motherboard (passive) is an in-house development of SHG-Conveyor Control GmbH. We have listed all relevant components in the further course of this document.

Short description of the range of functions

The RIPPrevent+ system is an electrical measuring device with an evaluation unit behind it, for the detection of slot events on conveyor belt systems in mining and open-cast mining. It is also used to save energy and measure the weight of bulk materials. The application serves as an acute and preventive protective measure against expensive damage and to prevent the associated long-lasting downtime due to costly repair work.

Short description of how it works

By recording electrical parameters (volts, amps, frequency, temperature and humidity), the system can detect and classify malfunctions based on parameter sets and the use of AI-based pattern recognition. It uses a single-board computer and a sensitive measuring device. The data obtained in this way is prepared, processed and stored for data collection on a hard disk, in a database for more than 10 years. Via a user interface, the operator can view all data and be informed about possible malfunctions. The purpose of the product is to save costs and prevent serious damage to the conveyors described above.

Short description of hardware use

The RIPPrevent+ system consists of 4 main components:

- Motherboard (Bauelement passives)
- Single-board computer (active component)
- Universal measuring device / measuring device (active component)
- Display (active component)

The system was developed in Germany and is distributed in Germany. Individual components are purchased from third countries and manufactured in Germany by SHG-Conveyor Control GmbH, Am Teichhof 7, 37120 Bovenden, Germany.

All technical requirements of the countries in which the system is introduced are complied with. These include DIN EN, VDE, IEC, ISO, CE, IEEE, as3000 and many more. Basically, the system was developed and built on these components of the standardizations.

Short description of sales & costs

The RIPPrevent+ system, including accessories, is distributed worldwide based on a fee-based license model. The focus is on a low-cost purchase of the hardware, with subsequent license marketing, which allows the product to be planned and included in almost any conveyor system by means of a lifetime hardware warranty and a lifetime warranty for software updates.

It should also be noted that the product is often shipped free of charge (replacement delivery). In almost all cases, this is due to hardware replacement.

Template: **1002** – Version: **1.0**
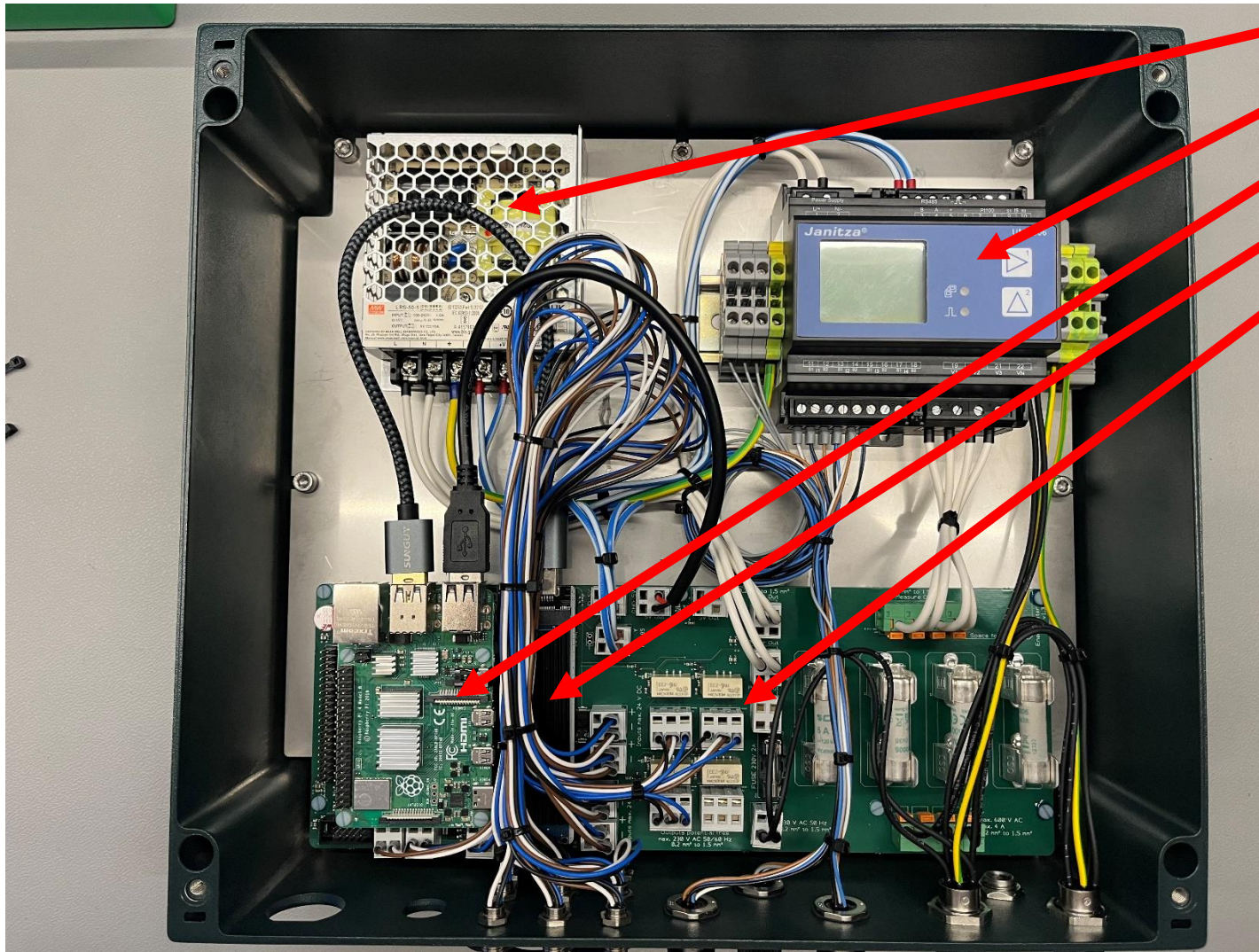
SHG CONVEYOR CONTROL GMBH

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Explanation Hardware

- Power supply 5V 10A
- Power Analyzer Janitza UMG806
- Raspberry Pi 4. & 5. Generation
- Hard Drive SSD WD
- Motherboard (passive)
- Front Panel: Display LCD 1024 x 600pxl
- Miscellaneous cables and structural components

Template: **1002** – Version: **1.0**

System

No.	Component	Manufacturer	Zolltarif / HS-Code	Country of origin	Data sheet available
1.	RIPPrevent+	SHG	84714100	DE	No

Component List (Main Components)

No.	Component	Manufacturer	Zolltarif / HS-Code	Country of origin	Data sheet available
1.	Power supply 5V 10A	Mean Well	85369095	CN	Yes
2.	Power Analyzer UMG806	Janitza	90308900	CN	Yes
3.	Raspberry Pi 4. & 5. Generation	Raspberry Pi Foundation	84714900	UK	Yes
4.	Hard Drive SSD Western Digital	Western Digital	85235110	TW	Yes
5.	Motherboard (passive)	Euro Circuits	85340090	OF	No
6.	Display 7" 1024*600 LCD	WaveShare	85285291	CN	Yes
7.	Cables & Wires	Lapp Cables	76141000	CA	No
8.	Case	Rolec	84879090	OF	Yes
Accessoires					
Z1.	Cables & Wires	Phoenix Contact	76141000	PL	No
Z2.	Cable current transformers	Janitza	85043129	NL	Yes
Z3.	Voltage converter 500V	Ritz	85043129	AT	Yes

Contact if you have any questions

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Germany

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EORI Number: DE714335371040625
Ust.-ID: DE359114202

R33100 RoHS   AS/NZS60950-1   GB4943.1   c **UL** us UL62368-1   EN623680-1   TP TC004   IEC62368-1   CB CE

ECO   Automate   Industrial   Security   Network   Telecom

■ Features

· Universal AC input / Full range
· Withstand 300VAC surge input for 5 second
· No load power consumption<0.2W
· Miniature size and 1U low profile
· High operating temperature up to 70℃
· Protections: Short circuit / Overload / Over voltage
· Cooling by free air convection
· Compliance to IEC/EN 60335-1(PD3) and
  IEC/EN61558-1, -2-16 for household appliances
· Operating altitude up to 5000 meters (Note.8)
· Withstand 5G vibration test
· High efficiency, long life and high reliability
· LED indicator for power on
· Over voltage category Ⅲ
· 100% full load burn-in test
· 3 years warranty

■ Applications

· Industrial automation machinery
· Industrial control system
· Mechanical and electrical equipment
· Electronic instruments, equipments or
  apparatus
· Household appliances

■ Description

LRS-50 series is a 50W single-output enclosed type power supply with 30mm of low profile design. Adopting the full range 85~264VAC input, the entire series provides an output voltage line of 3.3V, 5V, 12V, 15V, 24V, 36V and 48V.

In addition to the high efficiency up to 90%, the design of metallic mesh case enhances the heat dissipation of LRS-50 that the whole series operates from -30℃ through 70℃ under air convection without a fan. Delivering an extremely low no load power consumption (less than 0.2W), it allows the end system to easily meet the worldwide energy requirement. LRS-50 has the complete protection functions and 5G anti-vibration capability; it is complied with the international safety regulations such as TUV EN62368-1, EN60335-1, EN61558-1/-2-16, UL62368-1 and GB4943. LRS-50 series serves as a high price-to-performance power supply solution for various industrial applications.
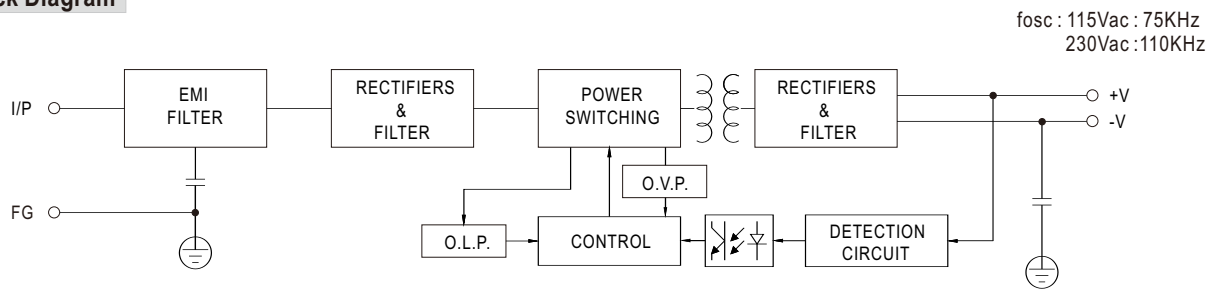
■ Model Encoding

LRS - 50 - 3.3

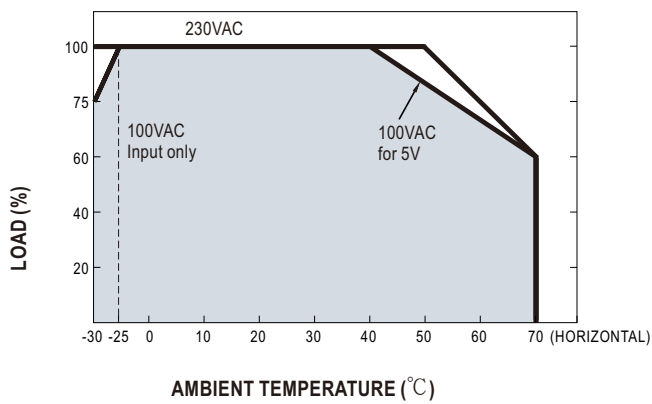Output voltage
Rated wattage
Series name

SPECIFICATION

MODEL		LRS-50-3.3	LRS-50-5	LRS-50-12	LRS-50-15	LRS-50-24	LRS-50-36	LRS-50-48
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	36V	48V
	RATED CURRENT	10A	10A	4.2A	3.4A	2.2A	1.45A	1.1A
	CURRENT RANGE	0 ~ 10A	0 ~ 10A	0 ~ 4.2A	0 ~ 3.4A	0 ~ 2.2A	0 ~ 1.45A	0 ~ 1.1A
	RATED POWER	33W	50W	50.4W	51W	52.8W	52.2W	52.8W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	120mVp-p	120mVp-p	150mVp-p	200mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE	2.97 ~ 3.6V	4.5 ~ 5.5V	10.2 ~ 13.8V	13.5 ~ 18V	21.6 ~ 28.8V	32.4 ~ 39.6V	43.2 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±3.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION Note.4	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION Note.5	±2.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	1000ms, 30ms/230VAC　　2000ms,30ms/115VAC at full load						
	HOLD UP TIME (Typ.)	30ms/230VAC　　12ms/115VAC at full load						
INPUT	VOLTAGE RANGE	85 ~ 264VAC　　120 ~ 373VDC						
	FREQUENCY RANGE	47 ~ 63Hz						
	EFFICIENCY (Typ.)	80%	83%	86%	88%	88%	89%	90%
	AC CURRENT (Typ.)	0.95A/115VAC　　0.56A/230VAC						
	INRUSH CURRENT (Typ.)	COLD START 45A/230VAC						
	LEAKAGE CURRENT	<0.75mA / 240VAC						
PROTECTION	OVER LOAD	110 ~ 150% rated output power						
		Protection type : Hiccup mode, recovers automatically after fault condition is removed						
	OVER VOLTAGE	3.8 ~ 4.45V	5.9~ 7.3V	13.8 ~ 16.2V	18.75 ~ 21.75V	28.8 ~ 33.6V	41.4 ~ 48.6V	55.2 ~ 64.8V
		Protection type : Shut down o/p voltage, re-power on to recover						
ENVIRONMENT	WORKING TEMP.	-30 ~ +70℃ (Refer to "Derating Curve")						
	WORKING HUMIDITY	20 ~ 90% RH non-condensing						
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH non-condensing						
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)						
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes						
	OVER VOLTAGE CATEGORY	III; Compliance to EN61558, EN50178, EN60664-1, EN62477-1; altitude up to 2000 meters						
SAFETY & EMC (Note 9)	SAFETY STANDARDS	UL62368-1, TUV EN62368-1, EN60335-1, EN61558-1/-2-16,CCC GB4943.1, BSMI CNS14336-1, EAC TP TC 004, AS/NZS 60950.1(by CB) approved						
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC　　I/P-FG:2KVAC　　O/P-FG:1.25KVAC						
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH						
	EMC EMISSION	Compliance to EN55032 (CISPR32) Class B, EN55014, EN61000-3-2,-3, GB/T 9254, BSMI CNS13438, EAC TP TC 020						
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN61000-6-2 (EN50082-2), heavy industry level, criteria A, EAC TP TC 020						
OTHERS	MTBF	645K hrs min.　　MIL-HDBK-217F (25℃)						
	DIMENSION	99*82*30mm (L*W*H)						
	PACKING	0.23Kg; 60pcs/14.8Kg/0.88CUFT						
NOTE		1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. Line regulation is measured from low line to high line at rated load. 5. Load regulation is measured from 0% to 100% rated load. 6. Length of set up time is measured at cold first start. Turning ON/OFF the power supply very quickly may lead to increase of the set up time. 7. 3.3V,5V when the load factor 0~50%, the switching power less is reduced by burst operation, which will cause ripple and ripple noise to go beyond the specifications. 8. The ambient temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m(6500ft). 9. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com)						

■ **Block Diagram**

fosc : 115Vac : 75KHz
230Vac :110KHz

■ **Derating Curve**

AMBIENT TEMPERATURE (°C)

■ **Static Characteristics**

INPUT VOLTAGE (VAC) 60Hz

■ Mechanical Specification

Case No.239A   Unit:mm

■ Installation Manual

Please refer to : http://www.meanwell.com/manual.html

Terminal Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4	DC OUTPUT -V
2	AC/N	5	DC OUTPUT +V
3	FG ⏚		

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Modular Power Analyser

UMG 806
and modules

Data sheet

Janitza®

DEVICE VIEWS

Front view

90 mm

90 mm

MODULES

Module 806-EC1:

- Ethernet
  communications
  module

- Analog
  input module

Module 806-ED1:

- Digital
  input module

TECHNICAL DATA DEVICE

General information	
Net weight	300 g (0.66 lb)
Device dimensions (approx.)	approx. 90 mm × 90 mm × 63.5 mm (3.54 in x 3.54 in x 2.5 in)
Horizontal pitch	5 HP
Battery	Typ Li-Mn CR2032, 3 V
Service life of the backlight	45000 h (50 % of the starting brightness)
Installation position	discretionary
Impact resistance	IK04 according to IEC 62262

Transport and storage	
The following information applies to devices which are transported or stored in the original packaging.	
Free fall (approx.)	1 m (39.37 in)
Temperature (approx.)	-30 °C .. +80 °C (-22 °F .. +176 °F)
Relative humidity	5 to 95 % at 25 °C (77 °F) without condensation

Ambient conditions during operation	
The device • must be used in a weather-protected, stationary application. • fulfills the operating conditions according to DIN IEC 60721-3-3. • possesses protection class II according to IEC 60536 (VDE 0106, Part 1), a ground wire connection is not required!	
Operating temperature range (approx.)	- 25 °C .. + 70 °C (-13 °F .. + 158 °F)
Relative humidity	5 to 95 % at 25 °C (77 °F) without condensation
Operating altitude	< 2500 m (1.55 mi above sea level)
Degree of pollution	2
Ventilation	forced ventilation is not required
Protection against ingress of solid foreign bodies and water	IP20 i.a.w. EN60529

Supply voltage	
Nominal range	AC/DC: 80 V - 270 V
Operating range	± 10 % of the nominal range
Power consumption	max.7 VA
Recommended overcurrent protection device for the line protection	5 A (char. B), IEC-/UL approval

Voltage measurement	
3-phase 4-conductor systems with nominal voltages up to	230 V_{LN} / 400 V_{LL} (+/-10) acc. IEC
3-phase 3-conductor systems, unearthed, with nominal voltages up to	400 V_{L-L} (+/-10 %) acc. IEC
Overvoltage category	300 V CAT III acc. IEC
Rated surge voltage	4 kV
Fuse for the voltage measurement	1 - 10 A tripping characteristic B (with IEC/UL approval)
Metering range L-N	0 .. 230 V_{rms} (max. overvoltage 277 V_{rms})
Metering range L-L	0 .. 400 Vrms (max. overvoltage 480 V_{rms})
Resolution	0.1 V
Crest factor	2 (based on the metering range 230 V L-N)
Impedance	≥1.7 MΩ/Phase
Power consumption	approx. 0.1 VA / phase
Sampling frequency	8 kHz / phase
Frequency of the basic oscillation - resolution	45 Hz .. 65 Hz 0.01 Hz
Harmonics	1 .. 31.

Current measurement (../1A) (../5A)	
Rated current	5 A
Channels	4
Metering range	0.005 .. 6 A_{rms}
Crest factor	2
Overload for 1 sec.	100 A (sinusoidal)
Resolution	1 mA
Overvoltage category	300V CAT II
Rated surge voltage	4 kV
Power consumption	approx. 0.2 VA
Sampling frequency	8 kHz
Harmonics	1 .. 31.

Current measurement (0 .. 40 mA, AC)	
Channel (I5)	1

Digital Output Energy pulse output	
Switching voltage	max. 35 V DC
Switching current	max. 10 mA_{eff} DC
Response time	Approx. 500 ms
Pulse width	80 ms ±20%
Pulse output (energy pulse)	max. 10 Hz

Temperature measurement	
Update time	1 s
Total burden (sensor + cable)	max. 0.35 kΩ
Suitable sensor types	PT 100

Line length (digital output; temp. measurement)	
Up to 30 m (32.81 yd.)	Unshielded
Greater than 30 m (32.81 yd.)	Shielded

RS485 interface x-wire connection	
Protocol	Modbus-RTU
Transmission rate	up to 115.2 kbps

Terminal connection capacity (supply voltage) Connectable conductors. Only one conductor can be connected per terminal.	
Single core, multi-core, fine-stranded	0.14 - 2.5 mm², AWG 26-14
Cable end sleeve (not insulated)	0.25 - 2.5 mm², AWG 23-14
Cable end sleeve (insulated)	0.25 - 1.5 mm², AWG 23-16
Tightening torque	0.5 - 0.6 Nm (4.4 - 5.3 lbf in)
Stripping length	7 mm (0.2756 in)

Terminal connection capacity (current measurement) Connectable conductors. Only one conductor can be connected per terminal.	
Single core, multi-core, fine-stranded	0.2 - 4 mm², AWG 24-12
Cable end sleeve (not insulated)	0.25- 2.5 mm², AWG 23-14
Cable end sleeve (insulated)	0.25 - 1.5 mm², AWG 23-16
Tightening torque	0.5 - 0.6 Nm (4.4 - 5.3 lbf in)
Stripping length	7 mm (0.2756 in)

Terminal connection capacity (voltage measurement) Connectable conductors. Only one conductor can be connected per terminal.	
Single core, multi-core, fine-stranded	0.2 - 4 mm², AWG 24-12
Cable end sleeve (insulated/not insulated)	0.25- 2.5 mm², AWG 23-14
Stripping length	7 mm (0.2756 in)

Terminal connection capacity (RS485, digital output, temp. measurement)	
Single core, multi-core, fine-stranded	0.2 - 4 mm², AWG 24-12
Cable end sleeve (not insulated)	0.25- 2.5 mm², AWG 23-14
Cable end sleeve (insulated)	0.25 - 1.5 mm², AWG 23-16
Tightening torque	0.5 - 0.6 Nm (4.4 - 5.3 lbf in)
Stripping length	7 mm (0.2756 in)

FUNCTION PERFORMANCE CHARACTERISTICS

Function	Sign	Accuracy class	Display range	Standard
Voltage	U	0.2	0-999.9 kV	IEC61557-12
Current	I	0.2	0-99.99 kA	IEC61557-12
Active power	P	0.5	0-9999 MW	IEC61557-12
Reactive power	Q	0.5	0-9999 Mvar	IEC61557-12
Apparent power	S	0.5	0-9999 MVA	IEC61557-12
Power factor	PF	0.5	0-1.000	IEC61557-12
Frequency	F	±0.01 Hz	45.00 Hz-65.00 Hz	IEC61557-12
Active energy	EP	0.5 s	0-99999999 MWh	IEC62053-22
Reactive energy	EQ	2	0-99999999 Mvarh	IEC62053-23
Total harmonic distortion of voltage	THDu	1 (50 Hz) 5 (60 Hz)	0-99.99 %	IEC61557-12
Total harmonic distortion of current	THDi		0-99.99%	IEC61557-12
Voltage harmonic ratio	THDu		0-99.99 %	IEC61557-12
Current harmonic ratio	THDi		0-99.99 %	IEC61557-12
Voltage unbalance	Uunb	0.5	--	IEC61557-12
Current unbalance	Iunb	0.5	--	IEC61557-12
Voltage sequence component	--	0.5	--	IEC61557-12
Phase position of voltage, current	--	±0.1°		IEC61557-12
Current sequence component	--	0.5	--	IEC61557-12
Extreme value	--	0.5	--	IEC61557-12
Demand	--	0.5	--	IEC61557-12
Temperature	T	±2 °C (35.6 °F)	--	--

Note:
The following applies to current transformers with an open
model or to Rogowski coils:
Current accuracy 0.5
Performance accuracy 1.0
Active energy class 2

TECHNICAL DATA MODULES

Module 806-EC1 Ethernet interface	
Connection	RJ45 (10M)
Frame format	IEE 802.3
MAC	IEEE certification
IP	Static set, DHCP
Protocol	Modbus/TCP, SNMP V2c
Isolation	1.5 kV AC

Module 806-EI1		
Analog input	Input number	4
	Input type	4 .. 240mA
	Accuracy	0.5 %
Relay output	Output number	2
	Contact rate	AC 250 V/5 A or DC 30 V/5 A
	Isolation	2.5 kV AC

Terminal connection capacity (inputs and outputs)	
Single core, multi-core, fine-stranded	0,2 - 1.5 mm^2 , AWG 28-16
Cable end sleeve (not insulated)	0,2 - 1.5 mm^2 , AWG 26-16
Cable end sleeve (insulated)	0,2 - 1,5 mm^2 , AWG 26-16
Tightening torque	0.2 - 0.25 Nm (1.77 - 2.21 lbf in)
Stripping length	7 mm (0.2756 in)

Module 806-ED1		
Digital input	Number	4
	Input type	Dry contact
	Scan time	30 ms
	Isolation	2 kV AC
	Min. pulse width	5 ms
	Max. pulse width	30 ms
	Max. value of calculation	99999999
Relay output	Number	2
	Contact rate	AC 250 V/5 A or DC 30 V/5 A
	Isolation	2.5 kV AC

Terminal connection capacity (inputs and outputs)	
Single core, multi-core, fine-stranded	0.2 .. 1,5 mm^2 , AWG 28-16
Cable end sleeve (not insulated)	0.2 .. 1,5 mm^2 , AWG 26-16
Cable end sleeve (insulated)	0.2 .. 1,5 mm^2 , AWG 26-16
Tightening torque	0.2 - 0,25 Nm (1.77 - 2.21lbf in)
Stripping length	7 mm (0.2756 in)

Janitza®

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Trade Compliance Information

1   Disclaimer

This statement is made to facilitate international trade of genuine Raspberry Pi products. It applies to the products listed in Table 1. The Product Information given in Table 1 ("Information") is correct to the best of our knowledge at the time of issue. Raspberry Pi Ltd ("Raspberry Pi") makes no representation or warranty as to the accuracy or reliability of the Information. Any use made of the Information provided, is without recourse to Raspberry Pi and at the user's risk. Raspberry Pi accepts no liability for any damages suffered by the user as a result of using or relying upon this Information. It is the responsibility of any person (including but not limited to entities) to ensure that the information they use for compliance purposes is correct and current at the time of use.

Following changes to License Exception ENC, (15 C.F.R § Part 740.17, Export Administration Regulations), parts listed as 5A992.c (b)(1) are to be self-classified without the need for CCATS or annual self-classification reporting.

Statements made according to the National Defence Authorisation Act (NDAA) reference the following list of prohibited entities:

- Huawei Technologies Company;
- ZTE Corporation;
- Hytera Communications Corporation;
- Hangzhou Hikvision Digital Technology Company;
- Dahua Technology Company;
- Any subsidiary of affiliate of the entities listed above; or
- Any entity that is known to be controlled by the government of the People's Republic of China.

2 Product Information

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Computers						
Raspberry Pi Model A	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Model B	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Model B+	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Model A+	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 2 Model B	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Zero	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 3 Model B	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Zero W	8471500000	5A992.c	Yes	Yes	Yes	Japan (JP)
Raspberry Pi Zero WH	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 3 Model B+	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 3 Model A+	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 4 Model B 1GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 4 Model B 2GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 4 Model B 4GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 4 Model B 8GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 4 Desktop Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 5 4GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 5 8GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Zero 2 W	8471500000	5A992.c	Yes	Yes	Yes	Japan (JP)
Raspberry Pi Zero 2 WH	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 UK	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 US	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 DE	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 FR	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 IT	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 ES	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 UK Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 US Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 DE Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 FR Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 IT Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 ES Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 EU Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 IN Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 400 AU Kit	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)

Micro Controller Boards

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Pico	8471500000	EAR99	Yes	Yes	Yes	Japan (JP)
Raspberry Pi Pico H	8471500000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Pico W	8471500000	5A992.c	Yes	Yes	Yes	Japan (JP)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Pico WH	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Compute Modules						
Raspberry Pi Compute Module	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 3	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 3+ 8GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 3+ 16GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 3+ 32GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4001008	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4001016	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4001032	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4002008	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4002016	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4002032	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Compute Module 4 CM4004008	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4004016	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4004032	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4008008	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4008016	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4008032	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4101008	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4101016	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4101032	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4102008	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4102016	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Module 4 CM4102032						
Raspberry Pi Compute Module 4 CM4104008	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4104016	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4104032	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4108008	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4108016	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 CM4108032	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 Lite CM4001000	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 Lite CM4002000	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 Lite CM4004000	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 Lite CM4008000	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 Lite CM4101000	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Compute Module 4 Lite CM4102000	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 Lite CM4104000	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 Lite CM4108000	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4S Lite	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4S 8GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4S 16GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4S 32GB	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 IO Board	8471500000	5A992.c	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Compute Module 4 Antenna Kit	8529100000	EAR99	No	No	Yes	China (CN)

Application Specific Integrated Circuits (ASIC)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
RP2040	8542310000	EAR99	Yes	Yes	Yes	Taiwan (TW)

Cameras

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Camera Module	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Camera Module 2	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Camera Module 2 NoIR	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi High Quality Camera	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Global Shutter Camera	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Global Shutter Camera Mono	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi High Quality Camera CS Mount	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi High Quality Camera M12 Mount	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Camera Module 3	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Camera Module 3 NoIR	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Camera Module 3 Wide	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Camera Module 3 Wide NoIR	8525890000	EAR99	Yes	Yes	Yes	Great Britain (GB)
16mm C-mount lens	9002110090	EAR99	No	No	Yes	China (CN)
6mm CS-mount lens	9002110090	EAR99	No	No	Yes	China (CN)

HATs

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Sense HAT	9031808000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi PoE HAT	8504403000	EAR99	No	No	Yes	China (CN)
Raspberry Pi PoE+ HAT	8504403000	EAR99	No	No	Yes	China (CN)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi TV HAT	8528711100	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Build HAT	8473302000	EAR99	Yes	Yes	Yes	Great Britain (GB)

Peripherals

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Touch Display	8524910000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Mouse	8471607000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub UK	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub US	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub DE	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub FR	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub IT	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub ES	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub PT	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub NO	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub SE	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Keyboard and Hub DK	8471606000	EAR99	No	No	Yes	China (CN)
Raspberry Pi Debug Probe	8471500000	EAR99	No	No	Yes	Great Britain (GB)

Audio Boards

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi Codec Zero	8543700600	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi DAC+	8543700600	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi DAC Pro	8543700600	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi DigiAMP+	8543700600	EAR99	Yes	Yes	Yes	Great Britain (GB)
Accessories						
Raspberry Pi 3 Case	4202125000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi A+ Case	4202125000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 4 Case	4202125000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Zero Case	4202125000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi 4 Case Fan	4202125000	EAR99	Yes	Yes	Yes	Great Britain (GB)
Raspberry Pi Micro USB Power Supply White UK	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi Micro USB Power Supply White AU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi Micro USB Power Supply White IN	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi Micro USB Power Supply White EU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi Micro USB Power Supply White US	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply White UK	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Raspberry Pi 15W USB-C Power Supply White AU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply White IN	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply White EU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply White US	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply Black UK	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply Black AU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply Black IN	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply Black EU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 15W USB-C Power Supply Black US	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C Power Supply White UK	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C Power Supply White AU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Power Supply White IN						
Raspberry Pi 27W USB-C Power Supply White EU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C Power Supply White US	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C Power Supply Black UK	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C Power Supply Black AU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C Power Supply Black IN	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C Power Supply Black EU	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi 27W USB-C Power Supply Black US	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Raspberry Pi Build HAT Power Supply	8504409090	EAR99	Yes	Yes	Yes	Cambodia (KH)
Cables						
Micro HDMI to HDMI Cable 1m Black	8544429090	EAR99	No	No	Yes	China (CN)
Micro HDMI to HDMI Cable 1m White	8544429090	EAR99	No	No	Yes	China (CN)
Micro HDMI Male to HDMI Female Cable 23cm White	8544429090	EAR99	No	No	Yes	China (CN)

Product Name	UK Tariff Code	U.S. Export Control Classification Number (ECCN)	NDAA 817 Compliant	NDAA 848 Compliant	NDAA 899 Compliant	Country of Origin
Micro HDMI to HDMI Cable 2m Black	8544429090	EAR99	No	No	Yes	China (CN)
Micro HDMI to HDMI Cable 2m White	8544429090	EAR99	No	No	Yes	China (CN)
Micro HDMI to HDMI Cable 5m Black	8544429090	EAR99	No	No	Yes	China (CN)
Micro HDMI to HDMI Cable 5m White	8544429090	EAR99	No	No	Yes	China (CN)
Micro HDMI to VGA Cable 1m Black	8544429090	EAR99	No	No	Yes	China (CN)
Mini HDMI Male to HDMI Female Cable 15cm White	8544429090	EAR99	No	No	Yes	China (CN)
Mini HDMI to HDMI Cable 1m White	8544429090	EAR99	No	No	Yes	China (CN)
HDMI Cable 1m Black	8544429090	EAR99	No	No	Yes	China (CN)
HDMI Cable 1m White	8544429090	EAR99	No	No	Yes	China (CN)
HDMI Cable 2m White	8544429090	EAR99	No	No	Yes	China (CN)
HDMI Cable 5m White	8544429090	EAR99	No	No	Yes	China (CN)
HDMI to VGA Cable 1m Black	8544429090	EAR99	No	No	Yes	China (CN)
Mini HDMI Male to HDMI Female Adapter	8544429090	EAR99	No	No	Yes	China (CN)

Table 1 - Product Information

Western Digital

WD Blue™ SN570 NVMe™ SSD

Stay in the moment and create beyond your expectations with the WD Blue™ SN570 NVMe™ SSD. This powerful internal drive delivers up to 5X the speed of our best SATA SSDs so you can let your imagination flow and worry less about PC lag or load times. Purpose-built for endurance, the WD Blue SN570 SSD delivers reliable data protection while keeping your storage health in check with the downloadable Western Digital® SSD Dashboard[3]. Whether you're working on your next passion project or crunching large amounts of data, take advantage of the high performance and capacities up to 2TB[2] in an affordable M.2 2280 form factor to do more, faster.

Product Highlights

- Keep your imagination flowing as you create faster while maintaining low power consumption. With read speeds up to 3500MB/s[1] (500GB – 2TB[2] models), your system can run up to 5X faster than our best SATA SSDs so you can stay in your creative moment.
- Remarkable reliability features to help protect your content so you can stress less about losing your brilliant work.
- Work with extra confidence and peace of mind as the downloadable Western Digital® SSD Dashboard[3] helps you monitor your drive's health, available space, temperature and more.
- Build your ideal creation engine. Upgrade your system or optimize your next custom build with the slim M.2 2280 form factor. All you need is a PCIe® Gen3 x4 NVMe™ slot[4].
- Save on space as you pack a lot of performance into your small-form factor PC with a single-sided M.2 2280 PCIe® Gen3 x4 NVMe™ SSD[4].
- As an industry-leading flash drive manufacturer and OEM drive manufacturer, Western Digital stands behind WD Blue™ SN570 NVMe™ SSD with a 5-year limited warranty[5].
- Acronis® True Image™ for Western Digital software backs up everything from operating systems and applications to settings and project files with support for PCs[6].

Spark Imagination

Inspire creativity with a one-month membership* to Adobe® Creative Cloud® offering access to some of the world's best creative apps and services such as Adobe Photoshop®, Illustrator®, Lightroom®, Premiere Pro® and InDesign®. For details go to: www.wd.com/adobe.

Tune Up Your Performance

Build your ideal creation engine. Upgrade your system or optimize your next custom build with the slim M.2 2280 form factor. All you need is an NVMe™ slot.

Stay in the Moment

Keep your imagination flowing as you create faster while maintaining low power consumption. With read speeds up to 3500MB/s[1] (500GB – 2TB[2] models), your system can run up to 5X faster than our best SATA SSDs so you can stay in your creative moment.

A Standard for Reliability

We value your content. That's why the WD Blue™ reliability features help protect your content so you can stress less about losing your brilliant work.

Get Extra Peace of Mind

Work with extra confidence and keep your projects on point as the downloadable Western Digital® SSD Dashboard[3] helps you monitor your drive's health, available space, temperature and more.

Save on Space

Pack a lot of performance into your small-form factor PC with a single-sided M.2 2280 PCIe® Gen3 x4 NVMe™ SSD[4].

Stay Organized

Back up your photos, videos, and other personal files with included Acronis® True Image™ for Western Digital® software[6].

WD Blue™ SN570 NVMe™ SSD

Specifications

	250GB[2]	500GB[2]
Interface M.2 2280[3]	PCIe® Gen3 8 Gb/s, up to 4 Lanes	PCIe Gen3 8 Gb/s, up to 4 Lanes
NAND Type	TLC	TLC

Performance[1]

	250GB	500GB
Sequential Read (MB/s) up to (Queues = 32, Threads = 1)	3,300	3,500
Sequential Write (MB/s) up to (Queues = 32, Threads = 1)	1,200	2,300
Random Read 4KB IOPS up to (Queues=32, Threads=16)	190K	360K
Random Write 4KB IOPS up to (Queues=32, Threads=16)	210K	390K
Endurance (TBW)[6]	150	300

Power

	250GB	500GB
Average Active Power[7]	90mW	90mW
Low Power (PS3)	30mW	30mW
Sleep (PS4) (low power)	5mW	5mW
Maximum Operating Power[8]	3.5W	4.0W

Reliability

	250GB	500GB
MTTF (hours)[9]	1.5M	1.5M

Environmental

	250GB	500GB
Operating Temperatures[10]	32°F to 158°F (0°C to 70°C)	32°F to 158°F (0°C to 70°C)
Non-operating Temperatures[11]	-40°F to 185°F (-40°C to 85°C)	-40°F to 185°F (-40°C to 85°C)
Operating Vibration	5.0 gRMS, 10–2000 Hz, 3 axes	5.0 gRMS, 10–2000 Hz, 3 axes
Non-Operating Vibration	4.9 gRMS, 7–800 Hz, 3 axes	4.9 gRMS, 7–800 Hz, 3 axes
Shock	1,500 G @ 0.5 msec half sine	1,500 G @ 0.5 msec half sine
Certifications	BSMI, CAN ICES-3(B)/NMB-3(B), CE, FCC, KCC, Morocco, RCM, TUV, UL, VCCI	BSMI, CAN ICES-3(B)/NMB-3(B), CE, FCC, KCC, Morocco, RCM, TUV, UL, VCCI
Limited Warranty[5]	5 years	5 years

Physical Dimensions

	250GB	500GB
Form Factor	M.2 2280	M.2 2280
Length	80 ± 0.15mm	80 ± 0.15mm
Width	22 ± 0.15mm	22 ± 0.15mm
Height	2.38mm	2.38mm
Weight	6.5g ± 1g	6.5g ± 1g

Ordering Information

	250GB	500GB
Model Number	WDS250G3B0C	WDS500G3B0C

Footnotes:
Specifications subject to change without notice.
[1] Test Conditions: Performance is based on the CrystalDiskMark™ 8.0.1 benchmark, 1000MB LBA range, on an Asus™ ROG Crosshair VIII Hero X570 desktop with AMD® Ryzen 9 3950X 16-Core, 32GB 3200MHz DDR4, Windows® 10 Pro 64-bit 20H1 using Microsoft® StorNVMe™ driver, secondary drive. 1 MB/s = 1 million bytes per second. IOPS = input/output operations per second. Based on internal testing; performance may vary depending upon host device, usage conditions, drive capacity, and other factors.
[2] 1GB = 1 billion bytes and 1TB = 1 trillion bytes. Actual user capacity may be less depending on operating environment.
[3] Available for download at www.westerndigital.com.
[4] Backwards compatible with PCIe Gen3 x1, PCIe Gen2 x4, PCIe Gen2 x2, and PCIe Gen2 x1.
[5] 5 years or Max Endurance (TBW) limit, whichever occurs first. See support.wdc.com/warranty for regional specific warranty details.
[6] Download and installation required. Includes 5-year license for your compatible drive. Redeem within 90-days of purchase. May not be combined with other offers. Limited time offer, see wd.com/backup for more details. Offer subject to change.
[7] TBW (terabytes written) values calculated using JEDEC client workload (JESD219) and vary by product capacity.
[8] Measured using MobileMark™ 2018 on Dell® Precision 7730 intel® Core™ i5–8300 CPU @ 2.30GHZ 8GB Windows 10 RS5 (1809) Bios 1.13.1.
[9] Measured during continuous sequential read or write activity and indicates the average over 1 second intervals.
[10] MTTF = Mean Time To Failure based on internal testing using Telcordia™ stress part testing (Telcordia SR-332, GB, 25°C). MTTF is based on a sample population and is estimated by statistical measurements and acceleration algorithms. MTTF does not predict an individual drive's reliability and does not constitute a warranty.
[11] Operational temperature is measured by thermal sensors in NAND package. The SSD box package is rated up to 60ºC.
[12] Non-operational storage temperature does not guarantee data retention.

Western Digital

WD Blue™ SN570 NVMe™ SSD

Specifications

	1TB[2]	2TB[2]
Interface M.2 2280[3]	PCIe Gen3 8 Gb/s, up to 4 Lanes	PCIe Gen3 8 Gb/s, up to 4 Lanes
NAND Type	TLC	TLC

Performance[1]

	1TB[2]	2TB[2]
Sequential Read (MB/s) up to (Queues=32, Threads=1)	3,500	3,500
Sequential Write (MB/s) up to (Queues=32, Threads=1)	3,000	3,500
Random Read 4KB IOPS up to (Queues=32, Threads=16)	460K	600K
Random Write 4KB IOPS up to (Queues=32, Threads=16)	450K	600K
Endurance (TBW)[6]	600	900

Power

	1TB[2]	2TB[2]
Average Active Power[7]	90mW	90mW
Low Power (PS3)	30mW	30mW
Sleep (PS4) (low power)	5mW	5mW
Maximum Operating Power[8]	4.5W	4.5W

Reliability

	1TB[2]	2TB[2]
MTTF (hours)[9]	1.5M	1.5M

Environmental

	1TB[2]	2TB[2]
Operating Temperatures[10]	32°F to 158°F (0°C to 70°C)	32°F to 158°F (0°C to 70°C)
Non-operating Temperatures[11]	-40°F to 185°F (-40°C to 85°C)	-40°F to 185°F (-40°C to 85°C)
Operating Vibration	5.0 gRMS, 10–2000 Hz, 3 axes	5.0 gRMS, 10–2000 Hz, 3 axes
Non-Operating Vibration	4.9 gRMS, 7–800 Hz, 3 axes	4.9 gRMS, 7–800 Hz, 3 axes
Shock	1,500 G @ 0.5 msec half sine	1,500 G @ 0.5 msec half sine
Certifications	BSMI, CAN ICES-3(B)/NMB-3(B), CE, FCC, KCC, Morocco, RCM, TUV, UL, VCCI	BSMI, CAN ICES-3(B)/NMB-3(B), CE, FCC, KCC, Morocco, RCM, TUV, UL, VCCI
Limited Warranty[5]	5 years	5 years

Physical Dimensions

	1TB[2]	2TB[2]
Form Factor	M.2 2280	M.2 2280
Length	80 ± 0.15mm	80 ± 0.15mm
Width	22 ± 0.15mm	22 ± 0.15mm
Height	2.38mm	2.38mm
Weight	6.5g ± 1g	6.5g ± 1g

Ordering Information

	1TB[2]	2TB[2]
Model Number	WDS100T3B0C	WDS200T3B0C

Footnotes:

Specifications subject to change without notice.

[1] Test Conditions: Performance is based on the CrystalDiskMark™ 8.0.1 benchmark, 1000MB LBA range, on an Asus™ ROG Crosshair VIII Hero X570 desktop with AMD® Ryzen 9 3950X 16-Core, 32GB 3200MHz DDR4, Windows® 10 Pro 64-bit 20H1 using Microsoft® StorNVMe™ driver, secondary drive. 1 MB/s = 1 million bytes per second. IOPS = input/output operations per second. Based on internal testing; performance may vary depending upon host device, usage conditions, drive capacity, and other factors.

[2] 1GB = 1 billion bytes and 1TB = 1 trillion bytes. Actual user capacity may be less depending on operating environment.

[3] Available for download at www.westerndigital.com.

[4] Backwards compatible with PCIe Gen3 x1, PCIe Gen2 x4, PCIe Gen2 x2, and PCIe Gen2 x1.

[5] 5 years or Max Endurance (TBW) limit, whichever occurs first. See support.wdc.com/warranty for regional specific warranty details.

[6] Download and installation required. Includes 5-year license for your compatible drive. Redeem within 90-days of purchase. May not be combined with other offers. Limited time offer, see wd.com/backup for more details. Offer subject to change.

[7] TBW (terabytes written) values calculated using JEDEC client workload (JESD219) and vary by product capacity.

[8] Measured using MobileMark™ 2018 on Dell® Precision 7730 intel® Core™ i5–8300 CPU @ 2.30GHZ 8GB Windows 10 RS5 (1809) Bios 1.13.1.

[9] Measured during continuous sequential read or write activity and indicates the average over 1 second intervals.

[10] MTTF = Mean Time To Failure based on internal testing using Telcordia™ stress part testing (Telcordia SR-332, GB, 25°C). MTTF is based on a sample population and is estimated by statistical measurements and acceleration algorithms. MTTF does not predict an individual drive's reliability and does not constitute a warranty.

[11] Operational temperature is measured by thermal sensors in NAND package. The SSD box package is rated up to 60ºC.

[12] Non-operational storage temperature does not guarantee data retention.

Western Digital.

7inch Capacitive Touch Screen LCD (C), 1024×600, HDMI, IPS, Low Power

SKU: 11199
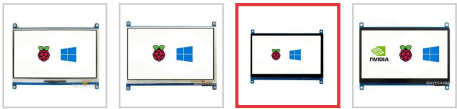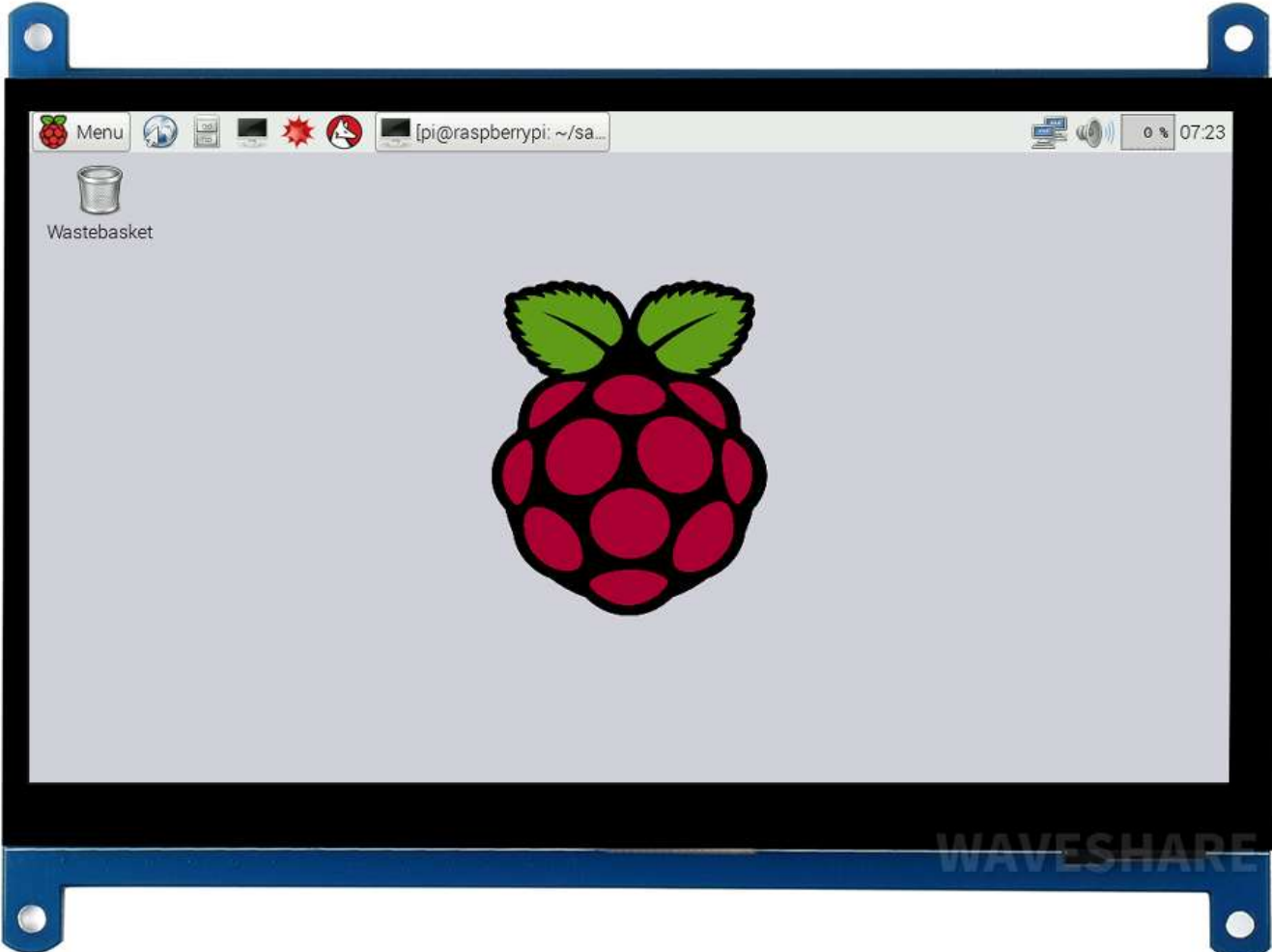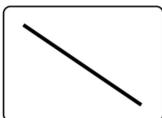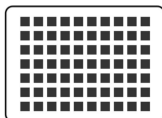**Part Number:** 7inch HDMI LCD (C)
Brand: Waveshare

$43.99

1
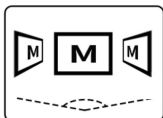
ADD TO CART
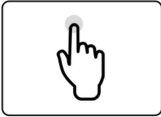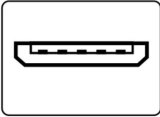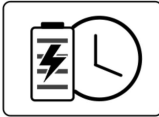
$42.99	10+
$42.49	50+
$42.29	100+

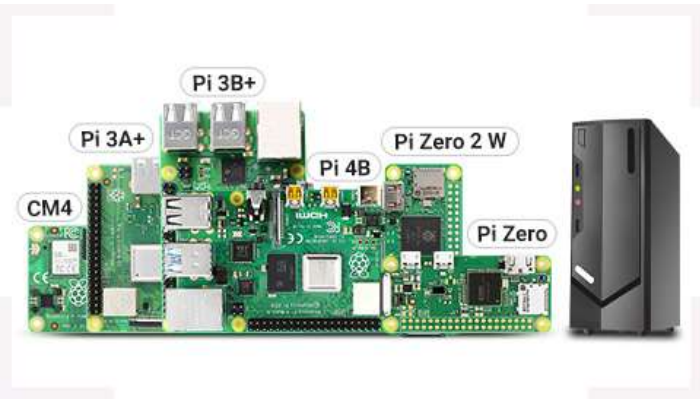**Related Products:**

Contact

DESCRIPTION	PACKAGE CONTENT

7inch Capacitive Touch Screen LCD (C), 1024×600, HDMI, IPS, Low Power Consumption

7" HDMI Touch Display

Size

Resolution

Display Interf…

Display Panel

Viewing Angle

IPS

Contact

7"	1024×600	HDMI	IPS	170°

Touch Type	Touch Points	Touch Port	Consumption	Certification
Capacitive	5-Points	USB	Low Power	CE

Device & System Support

Raspberry Pi

Supports Raspberry Pi OS, 5-point touch, driver free

Supports Ubuntu / Kali / WIN10 IoT, single point touch, driver free

Supports Retropie, driver free

Supports all versions of Raspberry Pi

PC

Supports Windows 11 / 10 / 8.1 / 8 / 7, 5-point touch, driver free

Connection Examples

Contact

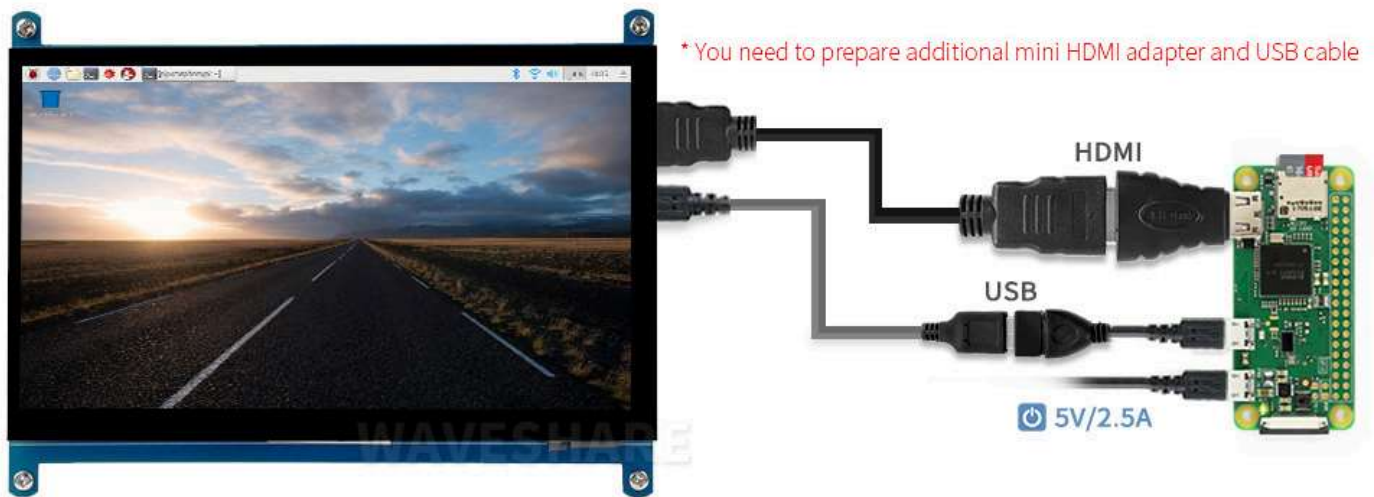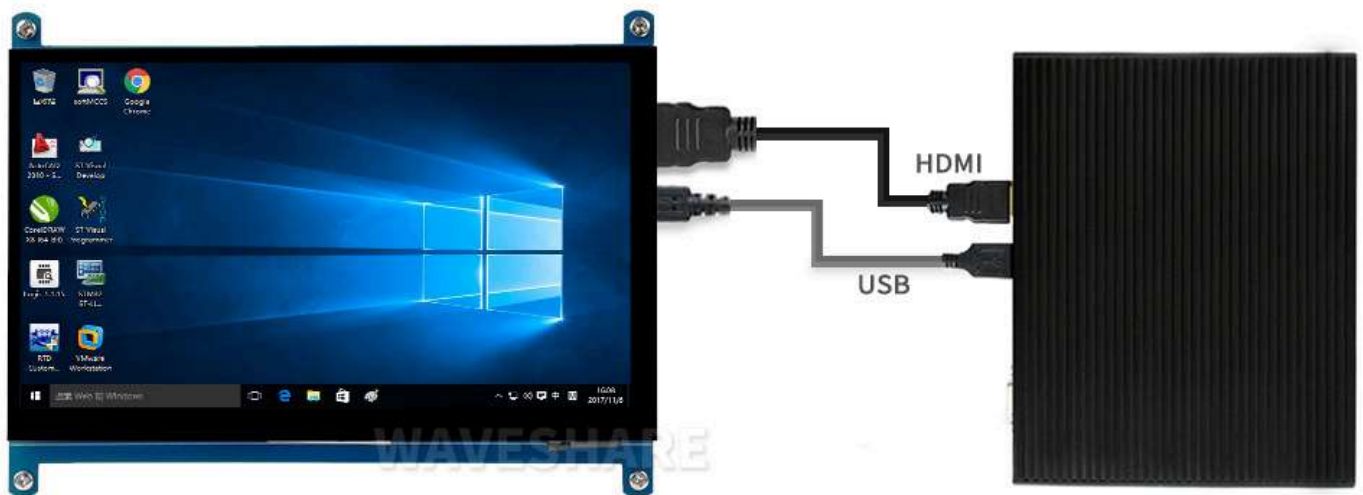# Working With Raspberry Pi 4

Working With Raspberry Pi 3B+

Working With Raspberry Pi Zero W

Contact

Working With Mini PC

Display

IPS Panel
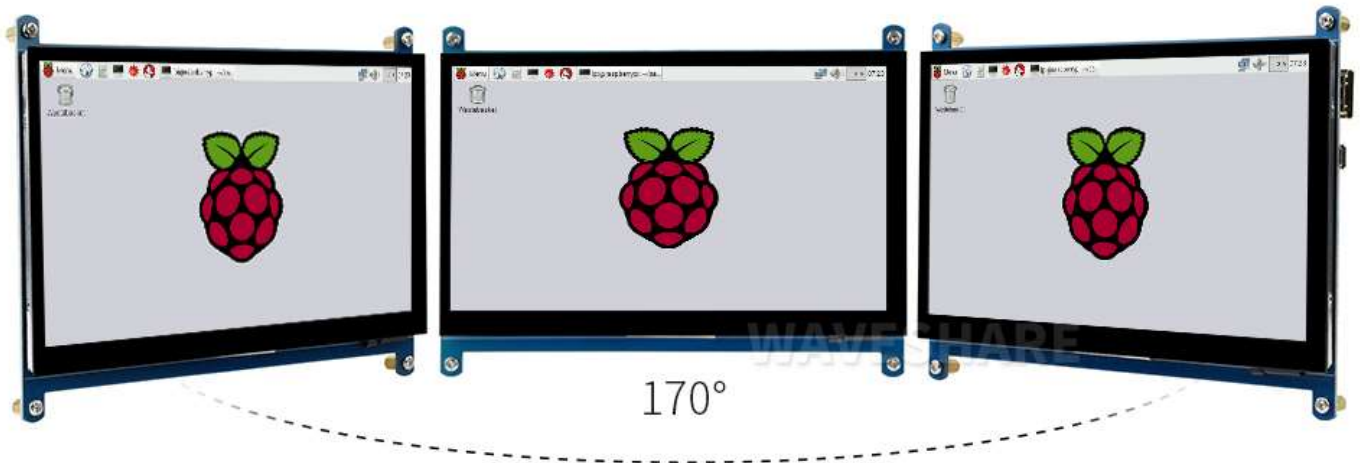
Contact

Touch Control

1) up to 5-points touch, depending on the operating system.

Contact

Demystifying Design Details
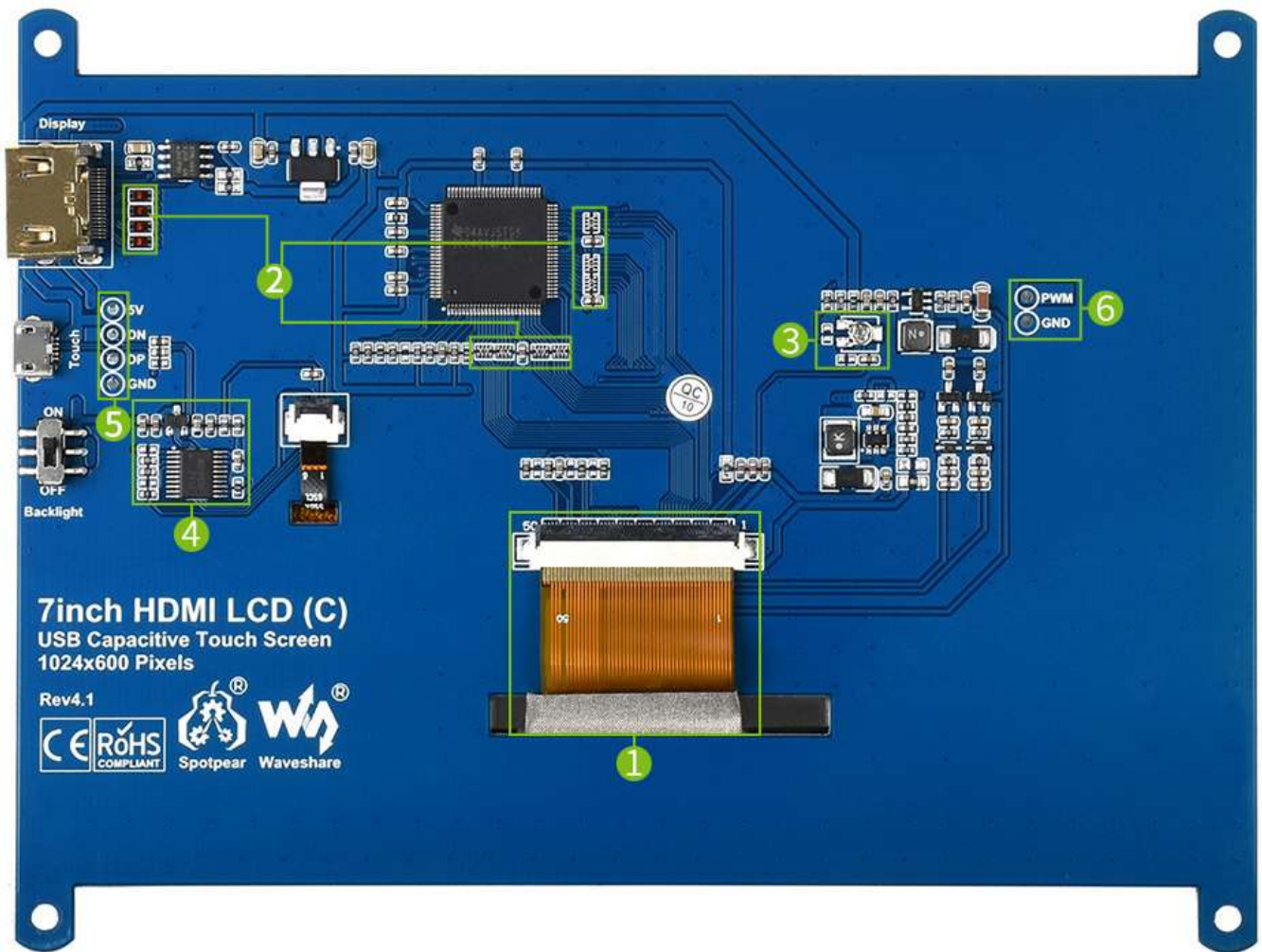
1. LCD FFC cable anti-interference design, more stable for industrial application
2. EMI and ESD protection, in compliance with CE certification
3. VCOM voltage adjustment for optimizing display effect
4. USB protocol translator, converting the touch signal into standard multi-points touch protocol to achieve smooth multi-points touch control
5. USB and power input solder pads, breakout USB interface, easy for connecting external power supply
6. Backlight adjustment solder pads for PWM signal input, so as to control the backlight brightness, increasing the lifetime of the display

Appearance And Dimensions

Contact
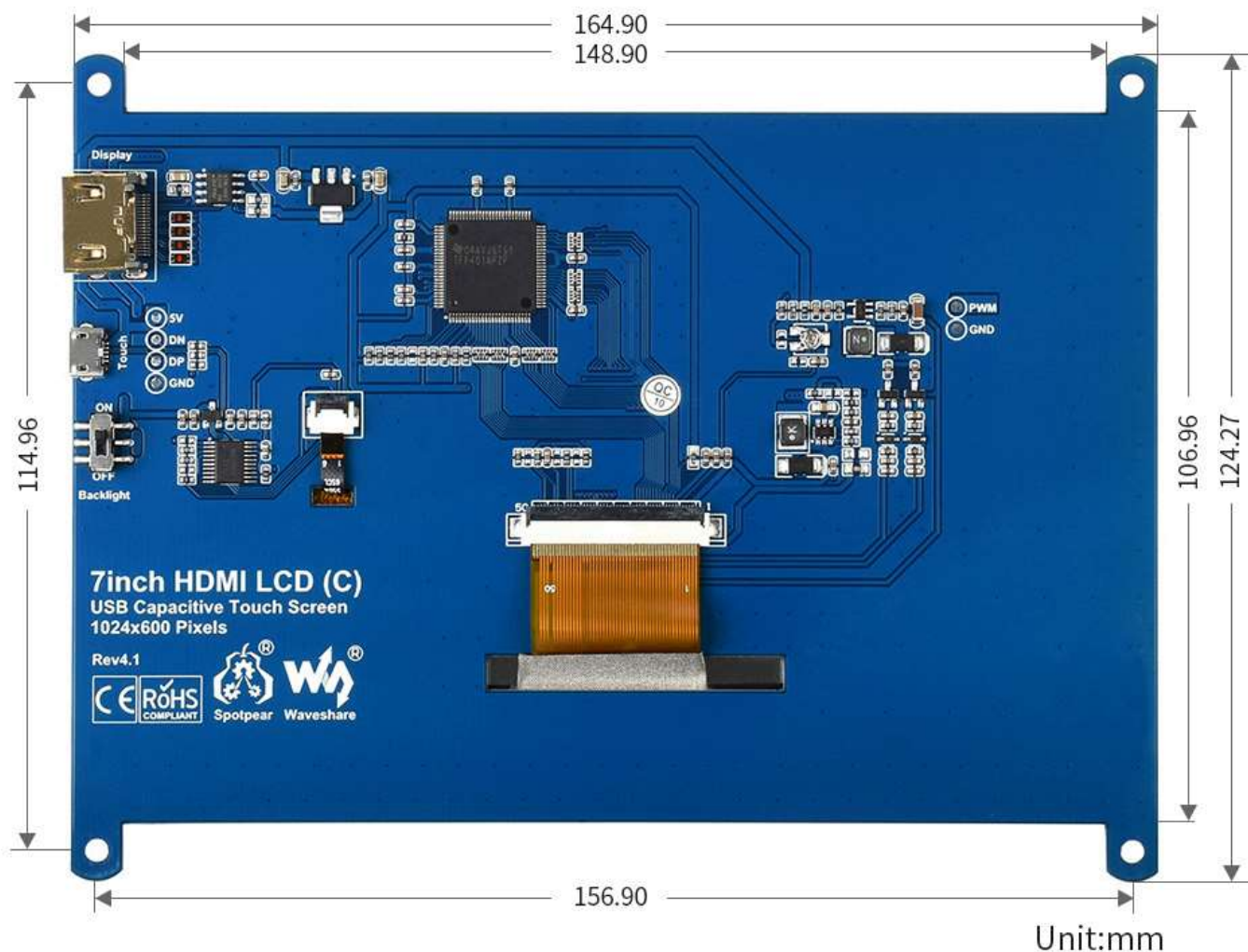
Resources & Services

WAVESHARE ORIGINAL ✓

PROFESSIONAL TECH SUPPORT

RICH RESOURCES MANUAL & DEMO

Wiki: www.waveshare.com/wiki/7inch_HDMI_LCD_(C)

Product Certification

HDMI Certified

Contact

The Adopted Trademarks HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc. in the United States and other countries.

We are official authorized HDMI Adopter

CE Certified

* This display is in compliance with CE standard.

Contact

Support Touch Screen Customization

Support The Following Ways To Customize The Touch Screen Display In Bulk Order

Over A Decade

Waveshare Grows With Display

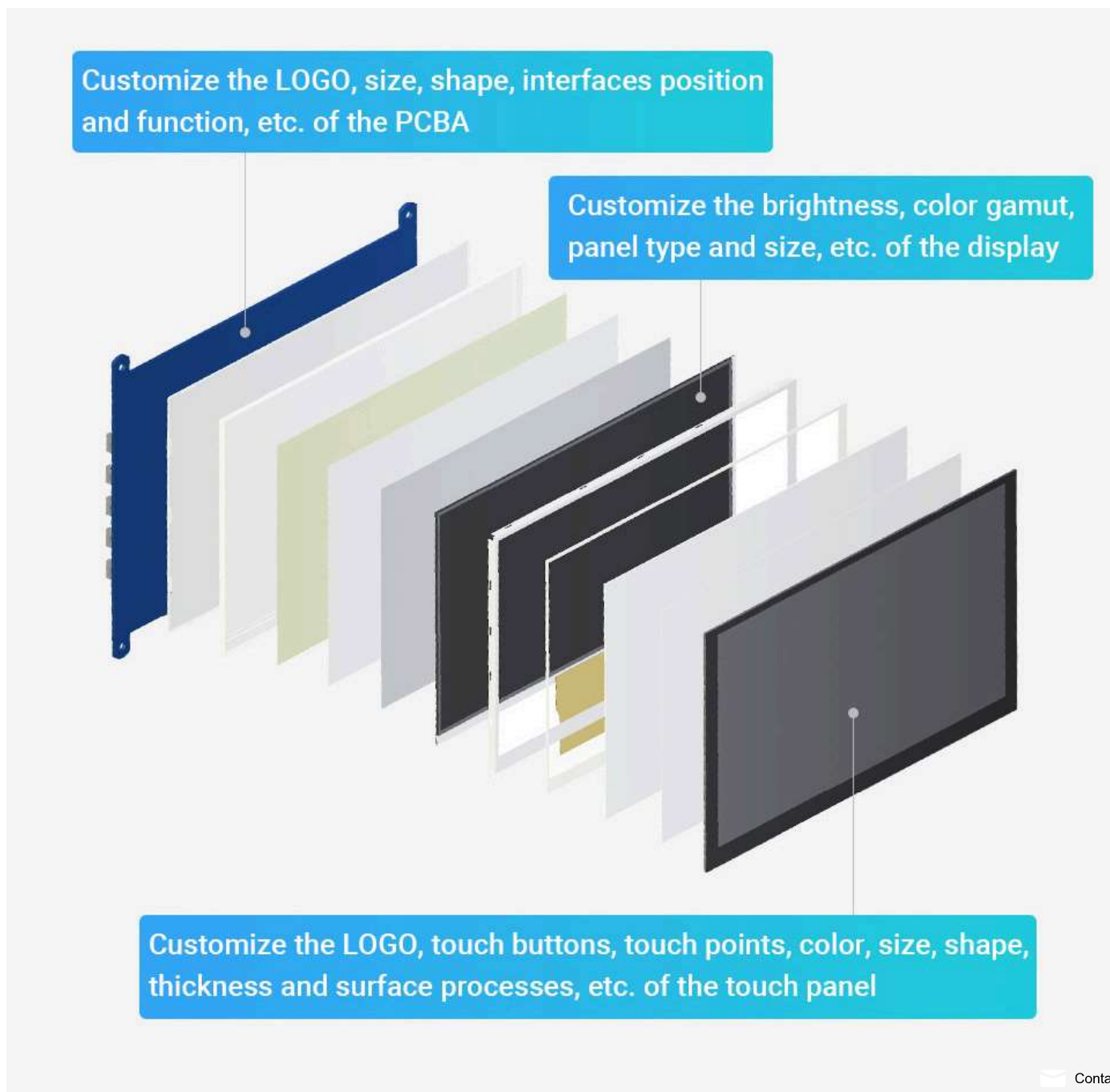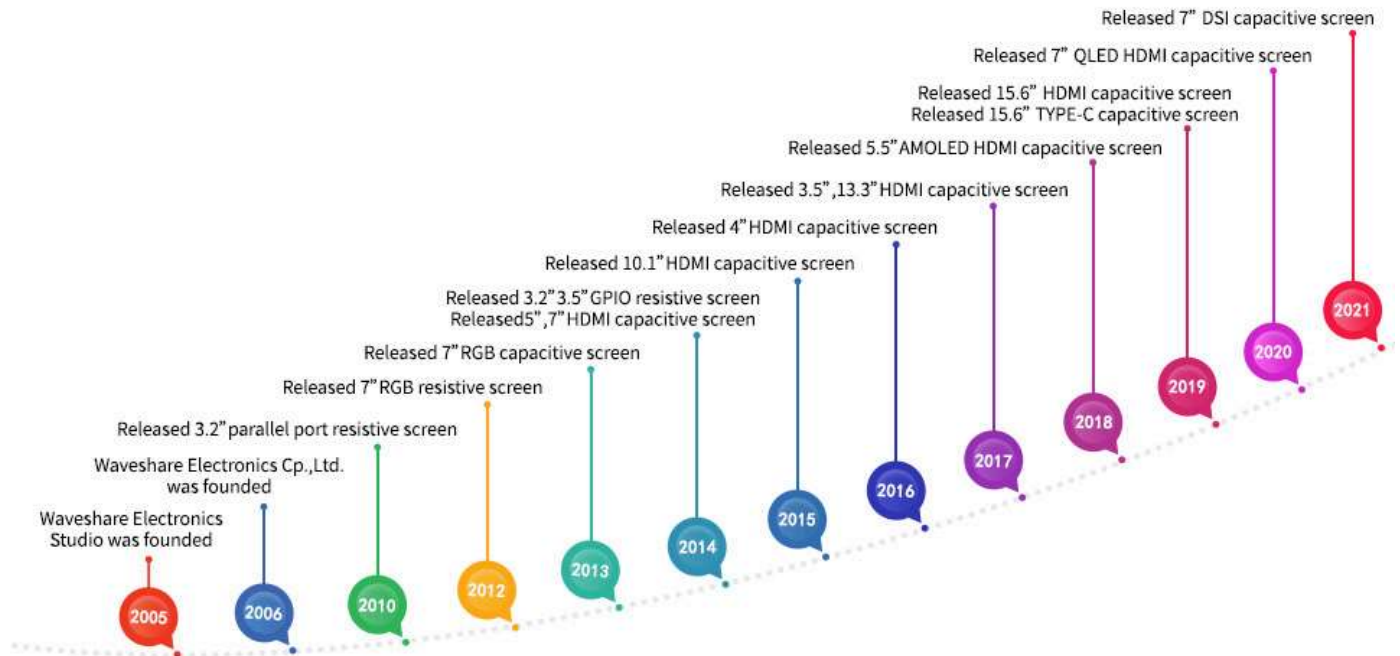

* Waveshare has been focusing on display design for over 10 years.

Selection Guide

PARTNUMBER	DISPLAY				TOUCH				AUDIO		DEVICE SUPPORT		
	RESOLU-TION	DISPLAY PORT	DISPLAY PANEL	VIEW ANGLE	TOUCH TYPE	TOUCH PORT	TOUGHENED GLASS PANEL	OPTICAL BONDING	SPE-AKER	SIGNAL OUTPUT	PI	JETSON NANO	PC
SPI DISPLAYS													
PROS: low price.													
CONS: low refresh rate & resolution, supports Raspberry Pi only, requires Raspberry Pi 40PIN GPIO (the SPI bus), poor compatibility with Raspberry Pi system.													
3.2inch RPi LCD (B)	320×240	SPI	TFT	–	Resistive	SPI	×	×	×	×	√	×	×
3.5inch RPi LCD (B)	480×320	SPI	IPS	160°	Resistive	SPI	×	×	×	×	√	×	×
3.5inch RPi LCD (C)	480×320	High-Speed SPI	TFT	–	Resistive	SPI	×	×	×	×	√	×	×
4inch RPi LCD (C)	480×320	High-Speed SPI	TFT	–	Resistive	SPI	×	×	×	×	√	×	×
DPI DISPLAYS													
PROS: low price, high refresh rate, multiple resolution support, better compatibility with Raspberry Pi system.													
CONS: supports Raspberry Pi only, requires Raspberry Pi 40PIN GPIO.													
2.8inch DPI LCD	480×640	DPI	IPS	160°	Capacitive	I2C	√	√	×	×	√	×	×
3.5inch DPI LCD	640×480	DPI	IPS	170°	Capacitive	I2C	√	×	×	×	√	×	×
4inch DPI LCD (B)	480×800	DPI	IPS	170°	Capacitive	I2C	√	×	√	√	√	×	×
4inch DPI LCD (C)	720×720	DPI	IPS	170°	Capacitive	I2C	√	×	×	×	√	×	×
5inch DPI LCD	800×480	DPI	IPS	160°	×	×	×	×	×	×	√	×	×
7inch DPI LCD	1024×600	DPI	IPS	170°	×	×	×	×	×	×	√	×	×
DSI DISPLAYS													
PROS: moderate price, high refresh rate, leaves the Raspberry Pi 40PIN GPIO free, better compatibility with Raspberry Pi system.													
CONS: supports Raspberry Pi only.													
2.8inch DSI LCD	480×640	DSI	IPS	160°	Capacitive	I2C	√	√	×	×	√	×	: Contact
3.4inch DSI LCD (C)	800×800	DSI	IPS	170°	Capacitive	I2C	√	√	×	×	√	×	×

PARTNUMBER	DISPLAY				TOUCH				AUDIO		DEVICE SUPPORT		
	RESOLU-TION	DISPLAY PORT	DISPLAY PANEL	VIEW ANGLE	TOUCH TYPE	TOUCH PORT	TOUGHENED GLASS PANEL	OPTICAL BONDING	SPE-AKER	SIGNAL OUTPUT	PI	JETSON NANO	PC
4inch DSI LCD	480×800	DSI	IPS	170°	Capacitive	I2C	√	√	×	×	√	×	×
4inch DSI LCD (C)	720×720	DSI	IPS	170°	Capacitive	I2C	√	√	×	×	√	×	×
4.3inch DSI LCD	800×480	DSI	IPS	160°	Capacitive	I2C	√	×	×	×	√	×	×
4.3inch DSI LCD (with case)	800×480	DSI	IPS	160°	Capacitive	I2C	√	×	×	×	√	×	×
4.3inch DSI QLED	800×480	DSI	IPS(QLED)	160°	Capacitive	I2C	√	×	×	×	√	×	×
5inch DSI LCD	800×480	DSI	TFT	-	Capacitive	I2C	√	×	×	×	√	×	×
5inch DSI LCD (B)	800×480	DSI	IPS	160°	Capacitive	I2C	√	×	×	×	√	×	×
7inch DSI LCD	800×480	DSI	TFT	-	Capacitive	I2C	√	×	×	×	√	×	×
7inch DSI LCD (with case A)	800×480	DSI	TFT	-	Capacitive	I2C	√	×	×	×	√	×	×
7inch DSI LCD (with cam)	800×480	DSI	TFT	-	Capacitive	I2C	√	×	×	×	√	×	×
7inch DSI LCD (with cam and case)	800×480	DSI	TFT	-	Capacitive	I2C	√	×	×	×	√	×	×
7inch DSI LCD (B)	800×480	DSI	IPS	170°	Capacitive	I2C	√	×	×	×	√	×	×
7inch DSI LCD (B) (with case A)	800×480	DSI	IPS	170°	Capacitive	I2C	√	×	×	×	√	×	×
7inch DSI LCD (C)	1024×600	DSI	IPS	170°	Capacitive	I2C	√	×	×	×	√	×	×
7inch DSI LCD (C) (with case A)	1024×600	DSI	IPS	170°	Capacitive	I2C	√	×	×	×	√	×	×
7.9inch DSI LCD	400×1280	DSI	IPS	170°	Capacitive	I2C	√	×	×	×	√	×	×
8inch DSI LCD	800×480	DSI	TFT	-	Capacitive	I2C	√	×	×	×	√	×	×
8inch DSI LCD (with cam)	800×480	DSI	TFT	-	Capacitive	I2C	√	×	×	×	√	×	×
8inch DSI LCD (C)	1280×800	DSI	IPS	178°	Capacitive	I2C	√	√	×	×	√	×	×
10.1inch DSI LCD (C)	1280×800	DSI	IPS	178°	Capacitive	I2C	√	√	×	×	√	×	×
11.9inch DSI LCD	320×1480	DSI	IPS	170°	Capacitive	I2C	√	×	×	×	√	×	×

HDMI / TYPE-C DISPLAYS

PROS: high refresh rate, multiple resolution support, multiple devices support, leaves the Raspberry Pi 40PIN GPIO free, better compatibility with Raspberry Pi system.

CONS: somewhat costly.

PARTNUMBER	RESOLUTION	DISPLAY PORT	DISPLAY PANEL	VIEW ANGLE	TOUCH TYPE	TOUCH PORT	TOUGHENED GLASS PANEL	OPTICAL BONDING	SPEAKER	SIGNAL OUTPUT	PI	JETSON NANO	PC
2.8inch HDMI LCD (H)	480×640	HDMI	IPS	160°	Capacitive	USB-C / I2C	√	√	×	×	√	√	√
3.2inch HDMI LCD (H)	480×800	HDMI	IPS	160°	×	×	×	×	×	×	√	√	Display ONLY
3.5inch HDMI LCD	480×320	HDMI	IPS	160°	Resistive	SPI	×	×	×	√	√	×	Display ONLY
3.5inch 480x800 LCD	480×800	HDMI	IPS	170°	Capacitive	USB-C	×	×	×	×	√	√	√
4inch HDMI LCD	480×800	HDMI	IPS	170°	Resistive	SPI	×	×	×	×	√	×	Display ONLY
4inch HDMI LCD (C)	720×720	HDMI	IPS	170°	Capacitive	USB-C / I2C	√	√	×	√	√	√	√
4inch HDMI LCD (H)	480×800	HDMI	IPS	170°	Resistive	SPI	×	×	×	√	√	×	Display ONLY
4.3inch HDMI LCD (B)	800×480	HDMI	IPS	160°	Capacitive	USB	×	×	×	√	√	√	√
5inch HDMI LCD	800×480	HDMI	TFT	—	Resistive	SPI	×	×	×	×	√	×	×
5inch HDMI LCD (with bicolor case)	800×480	HDMI	TFT	—	Resistive	SPI	×	×	×	×	√	×	×
5inch HDMI LCD (B)	800×480	HDMI	TFT	—	Resistive	USB	×	×	×	×	√	×	√
5inch HDMI LCD (B) (with bicolor case)	800×480	HDMI	TFT	—	Resistive	USB	×	×	×	×	√	×	√
5inch HDMI LCD (G)	800×480	HDMI/VGA	TFT	—	Resistive	USB	×	×	×	√	√	×	√
5inch HDMI LCD (H)	800×480	HDMI/VGA	TFT	—	Capacitive	USB	√	×	×	√	√	√	√
5inch HDMI LCD (H) V4	800×480	HDMI	TFT	—	Capacitive	USB	√	×	×	×	√	×	√
5inch HDMI AMOLED	960×544	HDMI	AMOLED	170°	Capacitive	USB	√	√	×	√	√	√	√
5inch 1080x1080 LCD	1080×1080	HDMI	IPS	160°	Capacitive	Type-C	√	√	√	√	√	√	√
5.5inch HDMI AMOLED	1080×1920	HDMI	AMOLED	170°	Capacitive	USB	√	√	×	√	√	√	√
5.5inch HDMI AMOLED (with case A)	1080×1920	HDMI	AMOLED	170°	Capacitive	USB	√	√	×	√	√	×	×
5.5inch 1440x2560 LCD	1440×2560	HDMI	IPS	170°	Capacitive	USB	√	√	×	√	√	×	√
5.5inch 1440x2560 LCD (with case A)	1440×2560	HDMI	IPS	170°	Capacitive	USB	√	√	×	√	√	√	×
6inch HDMI AMOLED	1080×2160	HDMI	AMOLED	160°	×	×	×	×	×	×	√	√	Display ONLY
6.25inch 720x1560 LCD	720×1560	HDMI	IPS	178°	Capacitive	Type-C	√	√	×	√	√	√	√
7inch HDMI LCD	1024×600	HDMI	IPS	170°	Resistive	SPI	×	×	×	×	√	×	Display ONLY
7inch HDMI LCD (B)	800×480	HDMI	TFT	—	Capacitive	USB	×	×	×	×	√	×	√
7inch HDMI LCD (B) (with bicolor case)	800×480	HDMI	TFT	—	Capacitive	USB	×	×	×	×	√	×	Contact

PARTNUMBER	DISPLAY				TOUCH				AUDIO		DEVICE SUPPORT		
	RESOLU-TION	DISPLAY PORT	DISPLAY PANEL	VIEW ANGLE	TOUCH TYPE	TOUCH PORT	TOUGHENED GLASS PANEL	OPTICAL BONDING	SPE-AKER	SIGNAL OUTPUT	PI	JETSON NANO	PC
7inch HDMI LCD (C)	1024×600	HDMI	IPS	170°	Capacitive	USB	×	×	×	×	√	×	√
7inch HDMI LCD (C) (with bicolor case)	1024×600	HDMI	IPS	170°	Capacitive	USB	×	×	×	×	√	×	√
7inch HDMI LCD (H)	1024×600	HDMI/VGA	IPS	170°	Capacitive	USB	×	×	×	√	√	√	√
7inch HDMI LCD (H) (with case)	1024×600	HDMI/VGA	IPS	170°	Capacitive	USB	√	×	×	√	√	√	√
7HP-CAPQLED	1024×600	HDMI	IPS (QLED)	170°	Capacitive	USB	√	×	×	√	√	√	√
7.9inch HDMI LCD	400×1280	HDMI	IPS	170°	Capacitive	USB	√	×	×	√	√	√	√
7.9inch Side Monitor	400×1280	HDMI	IPS	170°	×	×	√	×	√	×	√	√	√
7.9inch Touch Monitor	400×1280	HDMI	IPS	170°	Capacitive	USB	√	×	√	×	√	√	√
8DP-CAPLCD	1280×800	HDMI	IPS	178°	Capacitive	USB	√	√	×	√	√	√	√
8HP-CAPLCD Monitor	1280×800	HDMI/Type-C	IPS	178°	Capacitive	USB	√	√	√	√	√	√	√
8inch 1536x2048 LCD	1536×2048	HDMI	IPS	178°	Capacitive	Type-C	√	√	√	√	√	√	√
8.8inch Side Monitor	480×1920	HDMI	IPS	170°	×	×	×	×	√	×	√	√	Display ONLY
9HP-CAPQLED-B	1280×720	HDMI	IPS (QLED)	178°	Capacitive	USB	√	×	×	√	√	√	√
9.3inch 1600x600 LCD	1600×600	HDMI	IPS	178°	Capacitive	Type-C	√	√	√	√	√	√	√
9.7inch 768x1024 LCD	768×1024	HDMI	IPS	178°	Capacitive	Type-C	√	×	√	√	√	√	√
10.1inch HDMI LCD	1024×600	HDMI	IPS	170°	Resistive	SPI	×	×	×	×	√	×	Display ONLY
10.1inch HDMI LCD (B) (with case)	1280×800	HDMI	IPS	170°	Capacitive	USB	√	×	×	×	√	×	√
10.1inch HDMI LCD (E)	1024×600	HDMI	IPS	170°	Capacitive	USB	√	√	×	√	√	√	√
10.1inch HDMI LCD (G) (with case)	1920×1200	HDMI	IPS	160°	Capacitive	USB	√	√	√	√	√	√	√
10.1inch HDMI LCD (H) (with case)	1024×600	HDMI/VGA	TFT	—	Capacitive	USB	×	×	×	×	√	√	√
10.1inch HDMI LCD (F) (with case)	1024×600	HDMI/VGA	IPS	170°	Capacitive	USB	√	×	√	×	√	√	√
10.1DP-CAPLCD	1280×800	HDMI	IPS	178°	Capacitive	USB	√	√	×	√	√	√	√
10.1HP-CAPQLED	1280×720	HDMI	IPS (QLED)	170°	Capacitive	USB	√	×	×	√	√	√	√
10.1HP-CAPLCD Monitor	1280×800	HDMI/Type-C	IPS	178°	Capacitive	USB	√	√	√	√	√	√	√
10.4HP-CAPQLED	1600×720	HDMI	IPS(QLED)	178°	Capacitive	Type-C	√	√	√	√	√	√	√
10.5inch HDMI AMOLED	2560×1600	HDMI	AMOLED	160°	Capacitive	USB	√	√	√	√	√	√	√
11.6inch HDMI LCD (H)	1920×1080	HDMI	IPS	178°	Capacitive	USB	√	√	×	√	√	√	√
11.6inch HDMI LCD (H) (with case)	1920×1080	HDMI/VGA	IPS	178°	Capacitive	USB	√	×	√	√	√	√	√
11.9inch HDMI LCD	320×1480	HDMI	IPS	170°	Capacitive	USB	√	×	×	√	√	√	√
11.9inch Side Monitor	320×1480	HDMI	IPS	170°	×	×	√	×	√	×	√	√	√
11.9inch Touch Monitor	320×1480	HDMI	IPS	170°	Capacitive	USB	√	×	√	×	√	√	√
13.3inch HDMI LCD (H)	1920×1080	HDMI	IPS	178°	Capacitive	USB	√	×	×	√	√	√	√
13.3inch HDMI LCD (H) (with case)	1920×1080	HDMI/VGA	IPS	178°	Capacitive	USB	√	×	√	√	√	√	√
13.3inch HDMI LCD (H) (with case) V2	1920×1080	HDMI/VGA	IPS	178°	Capacitive	USB	√	×	√	√	√	√	√
13.3inch QHD AMOLED	2560×1440	HDMI/Type-C	AMOLED	178°	Capacitive	Type-C	√	√	√	√	√	√	√
15.6inch HDMI LCD	1920×1080	HDMI	IPS	178°	Capacitive	USB	√	×	×	√	√	√	√
15.6inch HDMI LCD (H) (with case)	1920×1080	HDMI/VGA	IPS	178°	Capacitive	USB	√	×	√	√	√	√	√
15.6inch FHD Monitor	1920×1080	HDMI/Type-C	IPS	178°	Capacitive	Type-C / USB	√	×	√	√	√	√	√
15.6HP-CAPQLED	1920×1080	HDMI	IPS(QLED)	178°	Capacitive	USB	√	√	×	√	√	√	√
15.6inch QLED Monitor	1920×1080	HDMI	IPS(QLED)	178°	Capacitive	Type-C	√	√	√	√	√	√	√
21.5inch FHD Monitor	1080×1920	HDMI	IPS	170°	Capacitive	Type-C	√	√	√	×	√	√	√

Contact

Enclosure series aluCASE

ROLEC.de

Type: AC 300

Material-No.: 191.300.100
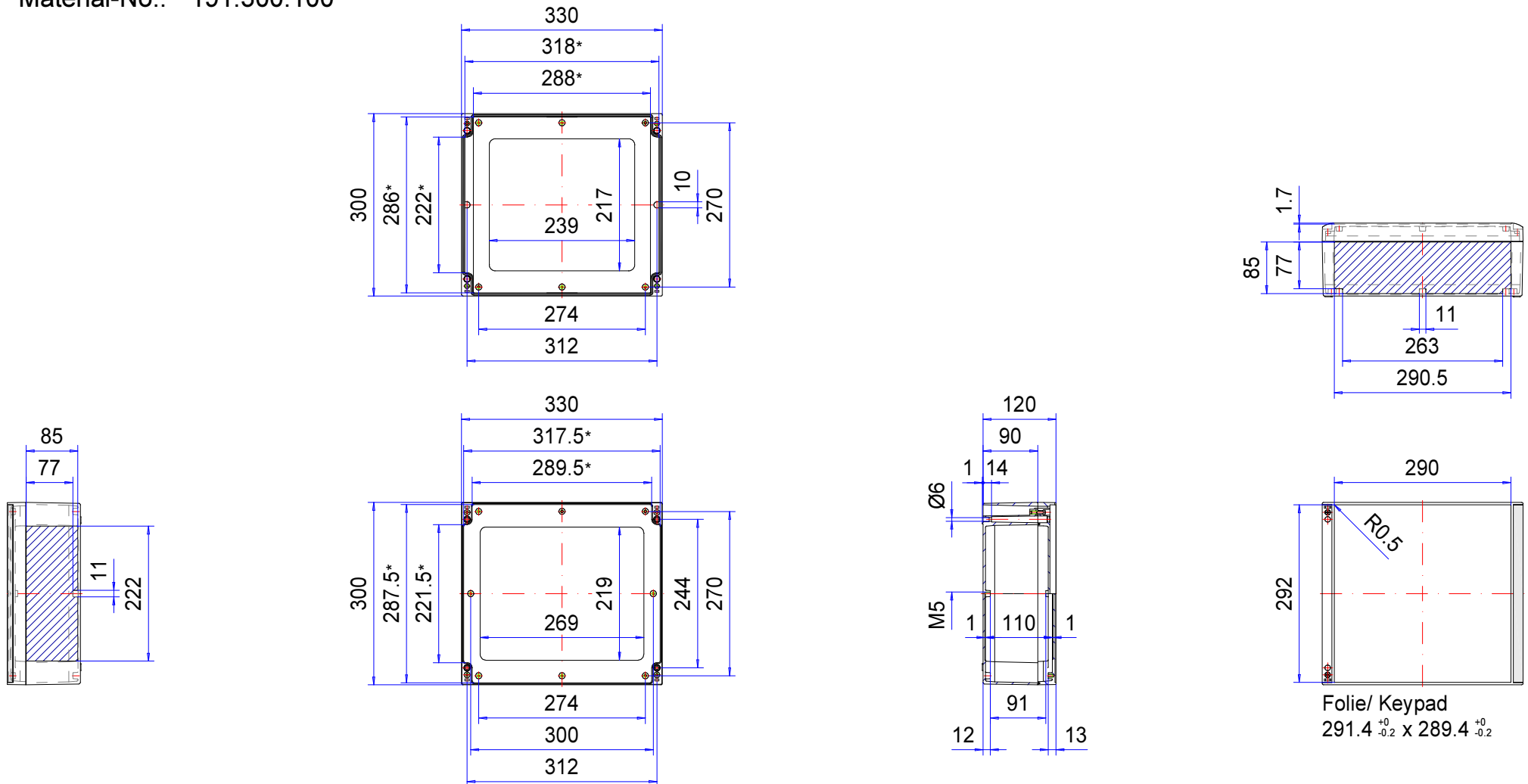
* Please note: Mould slope for casting ejection, dimensions in the amount of the bottom!

Folie/ Keypad
291.4 $^{+0}_{-0.2}$ x 289.4 $^{+0}_{-0.2}$

Enclosure material	GD-Al Si 12 (DIN 1725)		Gasket	Dosed, PUR
Lid screws	4x stainless steel 1.4567 (V2A), captive		Ingress protection	IP66 EN 60529
Assembly screws	5x M5x8, galvanized steel		Weight	3.354 g
Design covers	2x Aluminium, silver anodized		Coating	Powder coating RAL 7040, window grey
Lid supports	2x Polypropylene (PP), window grey		Tolerance	GTA 13/5 DIN 1688-4 (outside dimensions ±0,5mm)

191.300.100
aluCASE AC 300

Product overview

Material	Aluminium
Protection Class	IP 66/EN 60529
Color	RAL 7040
Certifications	CSA (optional), Germanischer Lloyd (optional), UL (optional), GOST
Length (L)	330 mm
Width (W)	300 mm
Height (H)	120 mm
Weight (g)	3353 g

aluCASE
THE PREMIUM ENCLOSURE FOR ELECTRONICS & DEVICES

IP 66, IP 67 - Optional: IP 69K

The key product features:
• Enclosure material: diecast aluminium
• Enclosure surface: powder coating, RAL 7040
• Integrated lid support
• Transparent lid for the sizes AC 092K and ACF 110K
• Enclosure can be mounted even when the lid is fitted
• Integrated recess in lid for membrane keypad or front plate
• Clip-on design covers
• Lid screws in stainless steel 1.4567
• Enclosure seal: TPE moulded gasket, PUR

---

aluCASE is a highly attractive and very versatile range of diecast aluminium enclosures for industrial electronics. The design is perfect for mounting to a wall or a machine, or for use as a mobile instrument. The enclosures are sealed to IP 67 for indoor and outdoor applications. Hot jet wash IP 69K is also available. The enclosures can be mounted without opening the lid which means your electronics remain protected at all times. Whatever the application, aluCASE provides the very best housing solution for your components.

Designer features include a recessed lid, for fitting a membrane keypad, front plate or product label, clip-on design covers in plastic or aluminium that hide the lid screws and mounting holes, integrated hinges and lid retaining straps (on most models). Two versions are available with transparent lids.
Threaded screw bosses are provided in the base and lid for PCBs, mounting plates, DIN rails etc. Cable glands and other accessories are also available.

We can supply aluCASE enclosures fully customised to your requirements.

Enclosure sizes
29

Additional info
Can be fastened while enclosure is closed

Integrated recess in the lid for a membrane keypad, front plate or label

Integrated PP (polypropylene) lid support strap

2 sizes available with transparent lids

Clip-on design covers, standard: Plastic POM (polyoxymethylene), similar to RAL 7040 window grey

Optional: Anodised aluminium design covers

Optional: Exterior hinges made from anodised aluminium with no visible outer screws

Enclosure
Diecast aluminium alloy
EN AN-44300 DIN EN 1706
(GD Al Si 12/DIN 1725)
1° mould slope for casting ejection > internal circumference dimensions decrease by 1° towards enclosure bottom.

Fastening
Separate screw channels

Internal mounting
M5 fastening thread on the enclosure base and in the lid

Ingress protection
IP 66, IP 67 / EN 60529
Optional: IP 69K / DIN 40050

Gasket
TPE moulded gasket, silicone-free
Optional: Silicone gasket

Lid screws
Stainless steel 1.4567, captive

Surface
Powder coating RAL 7040, window grey
Optional: Special colours
Optional: Corrosion protection

Customising
Learn more about our full customising service for installation-ready enclosures

Full-Service-Products

Customization according to your wishes.

**ROLEC®**

Our *passion* is enclosures.

Expert advice

Everything begins with individual advice. We'll be pleased to support you with your project and find solutions for every requirement. Customer-specific solutions are our speciality.

Sample service

Test our products with your internal mounting. We'll be pleased to send you a sample enclosure for inspection with no strings attached.
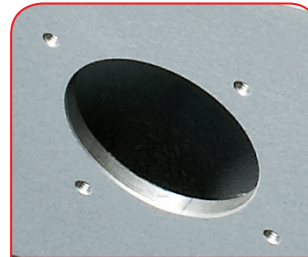
Drilling

We'll manufacture every enclosure for you according to your exact specifications – whether they involve precise drilling or large tolerance.

Mil ling

Thanks to our modern CNC production, we can quickly and efficiently mill custom-fit cut-outs and contours to match your exact specifications.

Engraving

Our services also include engraving your logo and other elements, which we can of course perform in any colour you desire.

Lasering

We can process stainless steel enclosures and plates quickly and reliably according to your individual requirements thanks to our in-house lasering centre.

Powder coating

We can powder coat enclosures, command enclosures and suspension systems in any RAL colour you desire. Custom colours are of course also possible.

Painting

We can also paint all our enclosures in any RAL colour you desire. The application of primer and special colour structures are possible, as well.

Serigraphy

If desired, we can apply your logo and lettering or other markings using serigraph printing.

Digital printing

Digital printing is pa rticularly worthwhile for low-volume order s and for realising complex pa tterns or images.

EMC enclosures

We offer our conFORM low-price standard EMC enclosure to protect your internal mounting against electromagnetic radiation. On request, we can also supply an EMC-compliant version of any other ROLEC enclosure.

Displays

We are able to offer the right made-to-measure display for all our enclosures – in varying sizes and degrees of robustness depending on the application.
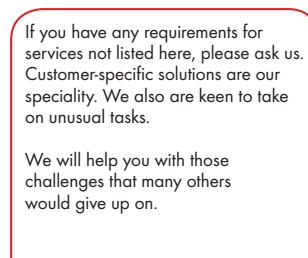

Accessories

ROLEC's portfolio also includes matching front plates, mounting plate, supporting rails and terminal blocks as well as a range of cable glands, blanking plugs etc.

Assembly

Would you like to have all your components supplied already assembled? No problem. Our assembly team will be pleased to perform all assembly work on your behalf.

Our Service

If you have any requirements for services not listed here, please ask us. Customer-specific solutions are our speciality. We also are keen to take on unusual tasks.

We will help you with those challenges that many others would give up on.

CURRENT TRANSFORMER TECHNICAL DATA

Janitza®

Cable split core current transformers

Series KUW1 for insulated cable up to max. 18 mm diameter

Type	Primary current in A	Secondary current in A	Power in VA (at the end of the wire)	Class	Cable length in m	Diameter Primary conductor in mm	Weight (kg)	Item no.
KUW1/30-60	60	1	0.2	3	3	18	0.3	**15.03.510**
KUW1/30-75	75	1	0.2	3	3	18	0.3	**15.03.511**
KUW1/30-100	100	1	0.2	3	3	18	0.3	**15.03.512**
KUW1/30-125	125	1	0.2	3	3	18	0.3	**15.03.513**
KUW1/30-150	150	1	0.2	3	3	18	0.3	**15.03.514**
KUW1/30-200	200	1	0.2	1	3	18	0.3	**15.03.515**
KUW1/30-250	250	1	0.2	1	3	18	0.3	**15.03.317**
KUW1/40-100	100	1	0.2	1	3	18	0.4	**15.03.320**
KUW1/40-125	125	1	0.2	1	3	18	0.4	**15.03.321**
KUW1/40-150	150	1	0.2	1	3	18	0.4	**15.03.322**
KUW1/40-200	200	1	0.2	0.5	3	18	0.4	**15.03.325**
KUW1/40-250	250	1	0.2	0.5	3	18	0.4	**15.03.326**
KUW1/40-150	150	5	1	1	0.5	18	0.4	**15.03.329**
KUW1/40-200	200	5	1	1	0.5	18	0.4	**15.03.330**
KUW1/40-250	250	5	1	0.5	0.5	18	0.4	**15.03.331**

## Series KUW2 for insulated cable max. 28 mm diameter

Type	Primary current in A	Secondary current in A	Power in VA (at the end of the wire)	Class	Cable length in m	Diameter Primary conductor in mm	Weight (kg)	Item no.
KUW2/40-200	200	1	0.2	1	3	28	0.3	**15.03.351**
KUW2/40-250	250	1	0.2	1	3	28	0.3	**15.03.352**
KUW2/40-300	300	1	0.2	1	3	28	0.3	**15.03.354**
KUW2/40-400	400	1	0.2	1	3	28	0.4	**15.03.356**
KUW2/40-500	500	1	0.2	0.5	3	28	0.4	**15.03.358**
KUW2/40-250	250	5	1	1	0.5	28	0.3	**15.03.353**
KUW2/40-300	300	5	1	1	0.5	28	0.3	**15.03.355**
KUW2/40-400	400	5	1	1	0.5	28	0.3	**15.03.357**
KUW2/40-500	500	5	1	1	0.5	28	0.3	**15.03.359**

Series KUW4/60 for insulated cable up to max. 42 mm diameter

Type	Primary current in A	Secondary current in A	Power in VA (at the end of the wire)	Class	Cable length in m	Diameter Primary conductor in mm	Weight (kg)	Item no.
KUW4/60-250	250	1	0.5	1	5	42	0.6	**15.03.565**
KUW4/60-300	300	1	0.5	1	5	42	0.6	**15.03.566**
KUW4/60-400	400	1	0.5	0.5	5	42	0.6	**15.03.568**
KUW4/60-500	500	1	0.5	0.5	5	42	0.6	**15.03.570**
KUW4/60-600	600	1	0.5	0.5	5	42	0.6	**15.03.572**
KUW4/60-750	750	1	0.5	0.5	5	42	0.6	**15.03.574**
KUW4/60-800	800	1	0.5	0.5	5	42	0.6	**15.03.576**
KUW4/60-1000	1,000	1	0.5	0.5	5	42	0.6	**15.03.578**
KUW4/60-300	300	5	0.5	1	3	42	0.6	**15.03.367**
KUW4/60-400	400	5	0.5	1	3	42	0.5	**15.03.369**
KUW4/60-500	500	5	0.5	1	3	42	0.6	**15.03.371**
KUW4/60-600	600	5	0.5	0.5	3	42	0.5	**15.03.373**
KUW4/60-750	750	5	0.5	0.5	3	42	0.6	**15.03.375**
KUW4/60-800	800	5	0.5	0.5	3	42	0.6	**15.03.377**
KUW4/60-1000	1,000	5	0.5	0.5	3	42	0.6	**15.03.379**

Janitza®

Series KUW4.2/60 for insulated cable up to max. 2 x 42 mm diameter

Type	Primary current in A	Secondary current in A	Power in VA (at the end of the wire)	Class	Cable length in m	Diameter Primary conductor in mm	Weight (kg)	Item no.
KUW4.2/60-250	250	1	0.5	1	5	42 x 84	0.7	**15.03.580**
KUW4.2/60-300	300	1	0.5	1	5	42 x 84	0.8	**15.03.581**
KUW4.2/60-400	400	1	0.5	0.5	5	42 x 84	0.7	**15.03.583**
KUW4.2/60-500	500	1	0.5	0.5	5	42 x 84	0.8	**15.03.585**
KUW4.2/60-600	600	1	0.5	0.5	5	42 x 84	0.7	**15.03.587**
KUW4.2/60-750	750	1	0.5	0.5	5	42 x 84	0.8	**15.03.589**
KUW4.2/60-800	800	1	0.5	0.5	5	42 x 84	0.8	**15.03.591**
KUW4.2/60-1000	1,000	1	0.5	0.5	5	42 x 84	0.8	**15.03.593**
KUW4.2/60-300	300	5	0.5	1	3	42 x 84	0.7	**15.03.382**
KUW4.2/60-400	400	5	0.5	1	3	42 x 84	0.8	**15.03.384**
KUW4.2/60-500	500	5	0.5	1	3	42 x 84	0.6	**15.03.386**
KUW4.2/60-600	600	5	0.5	0.5	3	42 x 84	0.7	**15.03.388**
KUW4.2/60-750	750	5	0.5	0.5	3	42 x 84	0.8	**15.03.390**
KUW4.2/60-800	800	5	0.5	0.5	3	42 x 84	0.8	**15.03.392**
KUW4.2/60-1000	1,000	5	0.5	0.5	3	42 x 84	0.8	**15.03.394**

Dimension diagrams All dimensions in mm

KUW1/30   **KUW1/40**   **KUW2/40**   **KUW4/60**   **KUW4.2/60**
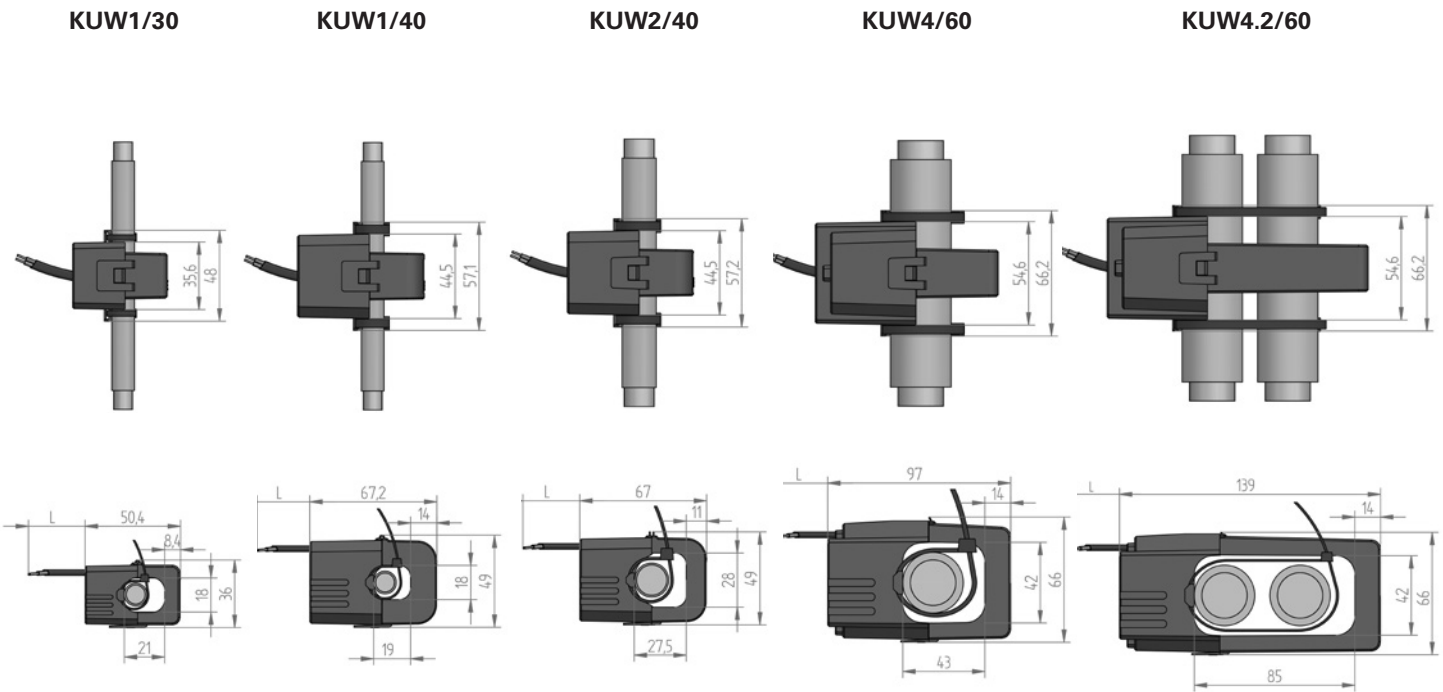
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Sales partner

Janitza®

Type MKSZR 200

Low-voltage Voltage Transformer, Double-pole Insulated for Indoors
Safety and Installation Instructions. Please read before use!

> **General:** The low-voltage voltage transformer works on the principle of the inductive transformer. The secondary side is galvanically separated from the primary side. The instrument transformer is used in switchgear, switching device combinations and power distribution systems in connection with secondary devices (relay, meter, indication instruments). The housing is made from glass fibre reinforced polycarbonate. Refer to the rating plate on the device for the operational specifications.
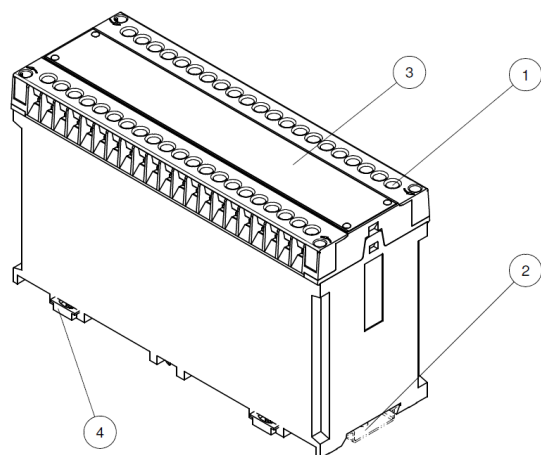
1. Terminals M 3,5,
   Screw with plus-minus slot,
   Terminal cross-sections:
   2x 1,5 mm^2 each (flexible)
   Wire with bushing
   acc. to DIN 46 228-1/-2/-3/-4),
   2x 2,5 mm^2 each (solid),
   Tightening torque: 0,8 Nm max.
2. Snap-on fastener on top-hat rail
   acc. to DIN EN 60715-TH 35
3. Rating plate
4. Slider for Snap-on
   mounting bracket
   acc. to ET 4720-1-2
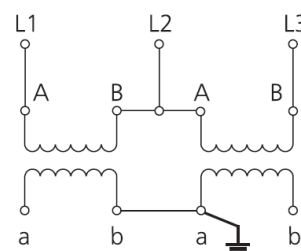
Circuit diagram for V-Circuitry
(special case)

Unpacking
Check the instrument transformer for completeness and integrity. Pay attention to sharp edges on the housing. You could get cut on them. If the instrument transformer show any signs of external damage there is the risk of an electric shock when putting it into operation.

Storing
Store the instrument transformer at an ambient temperature from -5°C to +40°C. The relative atmospheric humidity should be <95% and non-condensing.

Transporting
The instrument transformer can be transported without any aids. If any damage occurs during transporting or storage, please contact us directly.

> Ensure a safe working environment - during assembly, installation, commissioning, shut-down and during inspection work on the electrical system.

Mounting and Installing
You may undertake the following installation work only if you have the necessary expertise and know-how for the electrical installation.

> ⚡ Shut down the associated electrical system before assembly. Otherwise there is the risk of suffering **an electric shock!**

► Mount the instrument transformer on a top-hat rail by using the snap-on fixture. Make sure that the mounting surface is even.

► When using two double pole insulated voltage transformers in an open delta circuit, ground the secondary windings connected with each other at only one transformer (see circuit diagram).

► Avoid mechanical tensions during operation. Make sure that no dynamic loads act on the instrument transformer.

> ⚡ Do not short-circuit the secondary circuit of the voltage transformer under any circumstances. With a short-circuited secondary winding, the voltage transformer will be thermally overloaded.
> **There is risk of death!** Furthermore, the induced currents endanger the functional safety of the voltage transformer.

Putting into Operation
Satisfy yourself that the instrument transformer is mounted properly and the secondary and primary cables are connected correctly. Have you maintained the tightening torques specified?

► In case of downstream earthing measures, ensure you did not integrate a short-circuit loop.

► If you are unsure, please contact an experienced colleague or contact us directly.

Operating
► During operation, you should not touch the primary or secondary terminals. Make sure that unauthorised persons and children cannot access the instrument transformer.

► You must not operate the instrument transformer with secondary short-circuit (refer to the safety instructions given in *Mounting and Installing*).

Shutting down
Shut down the associated electrical system. Ensure that the system remains de-energised while working on the instrument transformer.

Disassembling
Follow the work steps as described under *Shutting down.* First, observe and follow the safety instructions given in *Mounting and Installing.* Then, loosen the secondary and primary terminals and the snap-on fixture.

Cleaning
Follow the work steps as described under *Shutting down.* Observe and follow the safety instructions given in *Mounting and Installing.*

Maintaining
The instrument transformer is maintenance-free.

Do not rectify faults on your own!
The instrument transformer cannot be repaired. If you suspect that the instrument transformer is defective, please contact us immediately.

Disposing
Dispose of the instrument transformer in accordance with the national provisions of the country in which you are operating it.