AR595
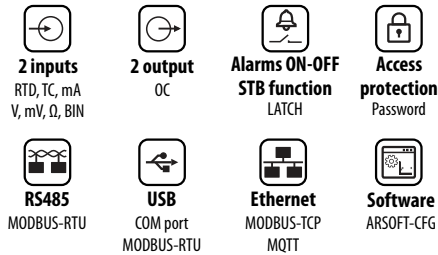
TWO CHANNEL UNIVERSAL TRANSDUCER

Two channel transducer with USB, RS485 and Ethernet interfaces and MODBUS-RTU/TCP and MQTT protocols

2 inputs
RTD, TC, mA
V, mV, Ω, BIN

2 output
OC

Alarms ON-OFF
STB function
LATCH

Access
protection
Password

RS485
MODBUS-RTU

USB
COM port
MODBUS-RTU

Ethernet
MODBUS-TCP
MQTT

Software
ARSOFT-CFG

- measurement of temperature and other physical quantities (humidity, pressure, flow, level, speed, etc.) available through standard digital protocols and communication interfaces
- configurable architecture enablin using in many fields and applications (industrial, **IT technologies**, heating, food, energy, etc.)
- **2 universal measurement inputs** (RTD thermo-resistive, TC thermocouple, analog 0/4÷2020mA, 0÷10V, 0÷60mV, 0÷2m5kΩ) **with mathematical functions** (difference, sum, average, product, greater or lesser of the measurements) available independently for transmission and controlling alarm/control outputs
- **digital input (BIN)** for quick change of transducer operation mode: start/stop of alarm/control, manual/automatic mode for outputs, deletion of errors and STB alarms (LATCH)
- **2** on/off **alarm/control** outputs (bi-state OC) with independent functionalities and control algorithms (SP setpoints defined by the parameter or taken from 1/2 measurement inputs):
  - **ON-OFF with hysteresis** (threshold charaçyeristics for heating and cooling, band alarms within and out of range and with an offset for three-point control)
  - thermostat/controller/safety switch **STB** (alarm state open/closed, deleted with BIN input, can also be used as an **alarm memory** of **LATCH** type, e.g. after exceeding the minimum, maximum or band)
  - **manual mode** (open control loop) with the value of the control signal (MV) programmed by the user in the range of 0÷100%, also available for sensor failure
  - **limiting** the maximum level of the output signal (power)
- **wide range of supply voltages (18÷50Vac / 13÷35Vdc)**
- optional **RS485** serial interface, **MODBUS-RTU** protocol for reading measurements and parameters configuration
- optional **Ethernet** interface, **MODBUS-TCP** and **MQTT** protocols (for the Internet of Things **IoT/M2M**, cloud and mobile applications), the possibility to exchange measurement and configuration data via the **Internet**
- **USB** interface (micro USB connector, standard equipment, for programming parameters and viewing measurements via **MODBUS-RTU** and for updating firmware)
- automatic/constant compensation of RTD and R sensors line resistance and temperature of thermocouple cold junction
- programmable input type, range of indications (for analog inputs), options of alarms/control, communication, access, and other configuration parameters
- access to configuration parameters protected by a user's passwrod or without protection
- parameter configuration via USB port, RS485 or Ethernet and ARsoft-CFG program (for Windows 7/10/11) or user application (using MODBUS-RTU and TCP communication protocols)
- free Arsoft-CFG software enabling the preview of the measured values and quick configuration of single or ready sets of parameters previously saved on the computer for re-use, e.g. in other transducers of the same type (duplication of configuration)
- housing for mounting on the TS35 rail (DIN EN 60715), IP40 from the front and IP20 from the side of connectors
- modern technical solutions, intuitive and simple handling, **high accuracy** and long-term stability as well as resistance to interferences
- optional (in ordering method): RS485 interface and Ethernet (RJ45 connector)

Contents of the package:
- a transducer
- a user manual

Available accessories:
- USB cable (A-micro B) for connection to a computer, length 1.5m
- USB to RS485 converter (with galvanic separation)

TECHNICAL DATA

Number of inputs	2 universal (RTD, thermocouple, analog mA/V/Ω)		
Universal inputs	(programmable, 17 types 18bit A/C processing), measuring ranges		
- Pt100 (RTD, 3- or 2-wire)	-200 ÷ 850 °C	- thermocouple R (TC, PtRh13-Pt)	-40 ÷ 1600 °C
- Pt500 (RTD, 3- or 2-wire)	-200 ÷ 620 °C	- thermocouple T (TC, Cu-CuNi)	-25 ÷ 350 °C
- Pt1000 (RTD, 3- or 2-wire)	-200 ÷ 520 °C	- thermocouple E (TC, NiCr-CuNi)	-25 ÷ 820 °C
- Ni100 (RTD, 3- or 2-wire)	-50 ÷ 170 °C	- thermocouple N (TC, NiCrSi-NiSi)	-35 ÷ 1300 °C
- thermocouple J (TC, Fe-CuNi)	-40 ÷ 800 °C	- current (mA, R_{in} = 50 Ω)	0/4 ÷ 20 mA
- thermocouple K (TC, NiCr-NiAl)	-40 ÷ 1200 °C	- voltage (V, R_{in} = 110 kΩ)	0 ÷ 10 V
- thermocouple S (TC, PtRh 10-Pt)	-40 ÷ 1600 °C	- voltage (mV, R_{in} > 2 M Ω)	0 ÷ 60 mV
- thermocouple B (TC, PtRh30PtRh6)	300 ÷ 1800 °C	- resistive (R, 3- or 2-wire)	0 ÷ 2500 Ω
Response time for measurements (10÷90%)	0,5 ÷ 5 s (programmable, default ~1,0 s)		
Leads resistance (RTD, R)	Rd < 25 Ω (for each line), auto or fixed compensation		
Resistance input current (RTD, R)	400 µA (Pt100, Ni100), 200 µA (Pt500, Pt1000, 2500 Ω)		
Processing errors (in ambient temperature 25°C):			
- basic	- for RTD, mA, V ,mV,R	0,1 % of the measurement range ±1 digit	
	- for thermocouples	0,2 % of the measurement range ±1 digit	
- additional for thermocouples	< 2 °C (thermocouple cold junction temperature compensation)		
- additional caused by ambient temp. changes	< 0,004 % of input range /°C		
Indications range (programmable)	-1999÷9999 (maximum indication range for analog inputs)		
Decimal point position for analog inputs	programmable, 0 ÷ 0.000 , for RTD and thermocouple 0,1 °C or 1 °C		
Outputs (2 independent , OC1÷OC2)	transistor of NPN OC type, 11V, current < 35mA, bi-state		
BIN digital input (bi-state)	contact or voltage <24V, active level: short-circuit or < 0,8V		
Power supply (Usup)	18 ÷ 50 Vdc, <2W (DC voltage)		
	13 ÷ 35 Vac, <2VA (AC current, 50/60Hz)		
Commucation interfaces (indepentent, can be used simultaneously)	-**USB** (type B micro connector, standard)	drivers for Windows 7/10/11 (virtual COM serial port, MODBUS-RTU protocol, Slave)	
	-**RS485** (optional)	MODBUS-RTU protocol (Slave), speed 2,4÷115,2 kbit/s, programmable character format (8N1, 8E1, 8o1, 8N2), galvanically separated	
	- **Ethernet** (optional)	RJ45 connector, 10base-T, protocols TCP/IP: MODBUS-TCP (Serwer), MQTT (client, v.3.1.1), DHCP (client), ICMP (ping), galvanically separated	
LED signalling (A1, A2, Rx/Tx/Stat)	3 LEDs: OC1/2 output status and operation/communication status indication		
Rated operating conditions	0 ÷ 50°C, <90 %RH (no water vapour condensation), air and neutral gases, dust-free		
Protection rating	IP40 from the front, IP20 from the side of the connectors		
Electromagnetic compatibility (EMC)	resistance: acc. to PN-EN 61000-6-2, emissivity: acc. to PN-EN 61000-6-4		
Safety requirements according to PN-EN 61010-1 norm	installation category: II	pollution degree: 2	
	voltage to ground: 300 V for the supply circuit, 50 V for the remaining input and output circuits and communication interfaces		
	insulation resistance > 20 MΩ	height above sea level < 2000 m	

INSTALLATION DATA

Housing and material	for the DIN rail, PC/ABS self-extinguishing
Size and weight	79 x 107 x 35 mm, ~100 g
Mounting	on the TS35 rail (DIN EN 60715)
Cable cross sections	1.5mm²

Dimensions in mm

TERMINAL STRIPS, ELECTRICAL CONNECTION

1. Clamping connections

2. Connection of SSR relay to the OC output of the transducer

Outputs OC1÷OC2

3. Galvanic separation of circuits

Ordering procedure

AR595 / ☐ / ☐

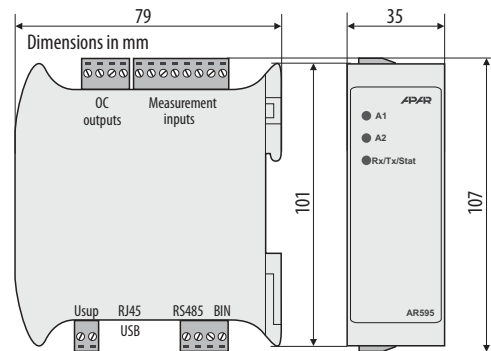| Interface RS *	Code		Interface Ethernet *	Code
interface RS485	**RS485**		Ethernet (10base-T)	**RJ45**

∗ options for additional fee

Ordering examples:

AR595
Standard version, USB interface (no RS485, Ethernet interfaces)

AR595 / RS485
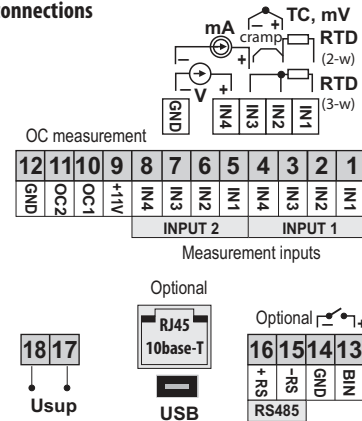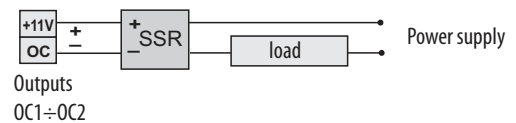USB interface (standard), RS485 interface

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