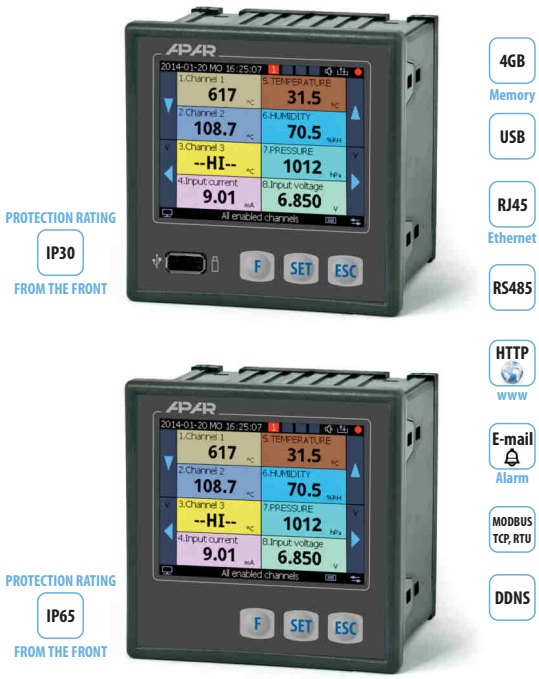
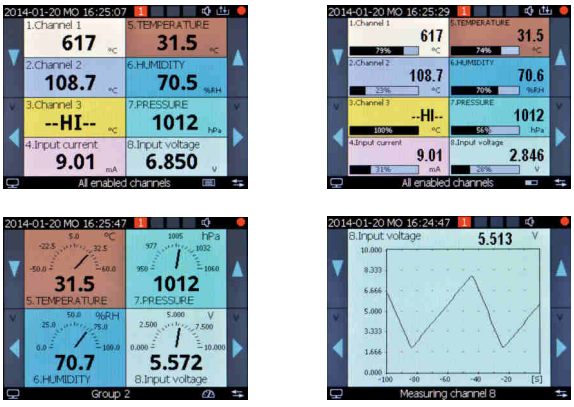
AR207

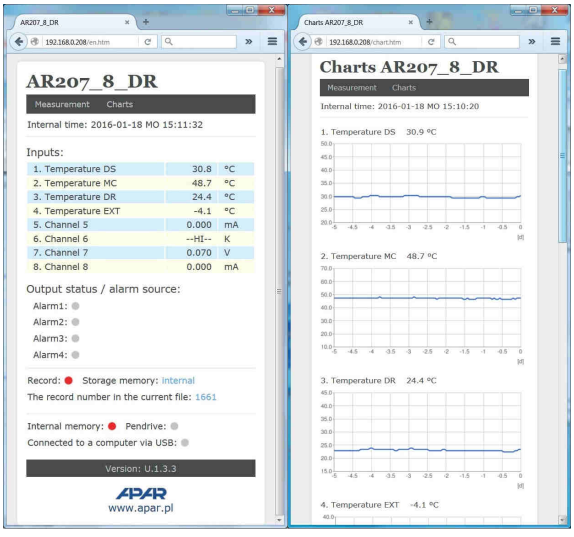
Multi-channel data recorder



Methods of data presentation



Web Server



- measurement and recording of temperature from thermoresistance sensors and thermocouples and other physical values (humidity, pressure, level, flow, speed, etc.) processed to a standard electrical signal (0/4÷20mA, 0÷10V, 0÷60mV, 0÷850Ω) or pulse signals (frequency, flow, counting, etc.)
- 16 analog measurement inputs (mA, V) or 8 universal inputs (thermoresistance, thermocouple and analog) or 8 mixed inputs (4 universal and 4 pulse), not galvanically insulated
- pulse inputs used for flow measurement, frequency or pulses counter (totalizer) with reset input, can be used also as a bistable (digital) inputs
- 4 alarm/regulation outputs with sound and visual operating status signaling and e-mail notifications, programmable characteristics, and the possibility to assign any measurement channels that trip the alarm
- a color graphic display, LCD TFT, 320x240 points (QVGA) with a touch screen, brightness adjustment, and programmable background color for individual measurement channels
- rich standard equipment with serial interfaces: USB (cooperation with a computer and USB memories), RS485 and Ethernet (100base-T, TCP/IP protocols), MODBUS-RTU and MODBUS-TCP
- saving data in standard text files stored in the recorder's internal memory (4 GB) or in a USB memory (FAT system) with possible edition in spreadsheets in such software as Microsoft Excel and OpenOffice Calc
- web server for cooperation with any web browser (Opera, IE, Firefox, etc.), the site contains information on active measurement channels, time, status of outputs, recording, etc., with the possibility to present charts using the Google Chart API service (permanent Internet access is required to present charts)
- the DDNS service, which enables easy access over the Internet a recorder connected to a network that has no fixed public IP address, through a friendly Internet address defined by the user; the service is available only for registered users of popular DDNS services, such as DynDNS (www.dyndns.org), No-IP (www.no-ip.com), and DNS-O-Matic (www.dnsomatic.com)
- a programmable language of the menu and the site saved on web server (Polish, English)
- programmable F button for quick selection of one of the available functions: stop/start of recording, copying or transfer of archives into USB memory, blocking of outputs, sound alarms or touch screen and keypad, device and internet services status
- programmable types of inputs, ranges of indications, alphanumeric description of channels and measurement groups, options of recording, alarms, display, communication, access, and other configuration parameters
- access to configuration parameters protected with a user password or not protected with a password
- parameter configuration methods:
  - from the film keypad and a touch screen located on the front panel of the device
  - via the USB, the RS485, or the Ethernet and the ARSOFT-CFG free software (Windows Vista/7/8/10) or a user's application, the MODBUS-RTU and MODBUS-TCP communication protocols
  - from configuration files saved in the USB memory or on a computer disk
- available protection of measurement data from unauthorized copy or modification
- graphic and text methods of presentation of the measured values (bar graph, analog indicator, chart)
- grouping of measurement channels to be displayed, with automatic formatting of the screen
- internal real time clock with a battery backup power supply (up to 8 years of continuous operation)
- an integrated 24 V DC power supply supplying the field transducers, flowmeters, etc.
- compensation of line resistance for resistance sensors in 2- or 3-wire connection
- compensation of thermocouple cold tip temperature (automatic or permanent)
- enclosed free software enabling graphic or text presentation of recorded result (ARSOFT-WZ3) and configuration of parameters (ARSOFT-CFG)
- recording of data until the memory is full (at least 300 days of continuous operation with recording of 16 channels every 1 s)
- a broad selection of methods of initiation of recording (continuous, limited by date and time, repeated daily, over or under a permission threshold connected with any measurement channel)
- USB drivers for Windows 7/8/10
- possibility to distinguish archives from many recorders of the same time thanks to individual assignment of an identification number (ID)
- clearly visible status of operation of recording, memory, USB port, alarms, file and disk operations, serial transmission (USB, RS485, Ethernet), etc.
- high accuracy and immunity to interferences
- possibility to latest firmware upgrade via USB memory

How to order

AR207 / □ / □ / □/ □ / □ / □ / □

Protection rating	Code
IP30 (USB also from the front)	IP30
IP65 (USB only at connector side)	IP65

The number and type of inputs	Code
8 universal inputs	8
16 current inputs	16A
16 voltage inputs	16U
4 universal + 4 pulse inputs	4P4

Output 1, 2, 3, 4	Code
relay	P
for SRR	S

Supply	Code
230 Vac	S1
24 Vac/dc	S2

Order examples:

AR207 / 8 / S1 / P / P/ P / P / IP30
supply 230 Vac, 8 universal inputs;
4 relay outputs, protection rating from the front IP30

AR207 / 8A8U / S2 / P / P/ P / P / IP65
supply 24 Vac/dc, 8 current inputs, 8 voltage inputs;
4 relay outputs, protection rating from the front IP65 (USB available only from connector side)

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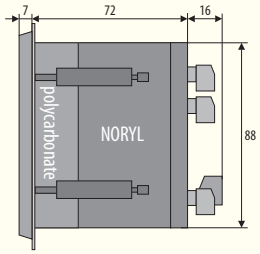
TECHNICAL DATA

Number of measurement inputs	16 analog or 8 universal/pulse inputs, not galvanically isolated		
Universal inputs (programmable, 16 types), measurement ranges **(1)**			
- 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 ÷ 620 °C	- thermocouple E (TC, NiCr-CuNi)	-25 ÷ 850 °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, Rwe = 100 Ω)	0/4 ÷ 20 mA
- thermocouple K (TC, NiCr-NiAl)	-40 ÷ 1200 °C	- voltage (V, Rwe = 150 kΩ)	0 ÷ 10 V
- thermocouple S (TC, PtRh 10-Pt)	-40 ÷ 1600 °C	- voltage (mV, Rwe > 2 M Ω)	0 ÷ 60 mV
- thermocouple B (TC, PtRh30PtRh6)	300 ÷ 1800 °C	- resistance (R, 3-wire or 2-wire)	0 ÷ 850 Ω
Current analog input (mA, programmable, 2 types)		0/4 ÷ 20 mA (Rwe = 100 Ω) **(2)**	
Voltage analog input (V, programmable, 2 types)		0/2 ÷ 10 V (Rwe = 200 kΩ) **(2)**	
Pulse input			
- supported sensors outputs		open collector PNP and NPN, contact (reed)	
- frequency range		0.035Hz ÷ 10kHz **(3)**	
- minimum duration of low/high level		25us **(3)**	
- range of indications (totalizer / counter capacity)		99999 [units]	
- waiting time for a pulse (for flow and frequency)		0.1s ÷ 30s	
- switch debounce time (insensibility time for contacts)		without or programmable range 0,05 ÷ 50ms	
Response time (10 ÷ 90%)		1 ÷ 5 s (programmable)	
Resistance of leads (RTD, R)		Rd < 25 Ω (for each line)	
Resistance input current (RTD, R)		650 µA (Pt100, Ni100, 850Ω), 150 µA (Pt500, Pt1000), multiplexed	
Processing errors (at ambient temperature of 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 (compensation of temperature of cold tips)	
- additional from ambient temperature		< 0.005% of the input range /°C	
Range of indications (programmable)		-9999 ÷ 19999 (resolution of analog inputs), 0 ÷ 99999 (pulse inputs)	
Resolution / dot position		programmable, 0 ÷ 0,000, for thermometric inputs 0,1 °C or 1 °C	
Communication interfaces (in IP30 version USB also accessible from the front)	**- USB** (A4 socket type, programmable mode of operation)	- slave mode (device, communication with a computer)	drivers for the Windows 7/8/10 exchangeable disk (mass memory) + virtual COM serial port (MODBUS-RTU protocol)
		- master mode (host)	support of USB memory (pendrive) up to 4 GB
	- RS485	MODBUS-RTU protocol, SLAVE, speed 2.4÷115.2 kbit/s, sign format 8N1, galvanic separation	
	- Ethernet	100base-T, RJ45, web server, MODBUS-TCP, e-mail client (SMTP), DDNS server client, TCP/IP protocols: DHCP (client, server), SMTP, NetBIOS, ICMP, UDP, TCP, data transfer up to 135 kB/s (depending on the network)	
Data recording interval		programmable 1 s to 8 hours **(4)**	
Data storage memory (non-volatile, recording of approx. 27x10^6 measurements from 16 channels and 4 GB memory):			
- internal		4GB, FAT32 file system, micro SDHC card, industrial, MLC	
- external USB memory (pendrive)		FAT16, FAT32, maximum size 4 GB, pendrive, A4 type socket	
Real time clock (RTC)		quartz, date, time, takes leap years into account, **CR1220** lithium battery	
Outputs (4 separate)	- relay	5A / 250Vac (for resistance loads), SPST	
	- SSR (optional)	ansistor, type NPN OC, 24V, internal resistance 850 Ω	
Display		LCD TFT, 320x240 points - QVGA, 3.5", background brightness adjustment	
Touch panel		resistance, integrated with LCD display	
Power supply (Usup)	- 230Vac	85 ÷ 260 Vac/ 7VA	
	- 24Vac/dc (option)	20 ÷ 50 Vac/ 7VA, 22 ÷ 72 Vdc/ 7W	
Power supply of field transducers		24Vdc/200mA (100 mA in the case of the 24 VAC/DC supply)	
Rated operating conditions		0 ÷ 50°C, <100 %RH (no condensation), air and neutral gases, no dust	
Protection rating		IP65 or IP30 from the front, IP20 from the side of the connections	
Electromagnetic compatibility (EMC)		immunity: according to the PN-EN 61000-6-2, emission: PN-EN 61000-6-4	
Safety requirements according to PN-EN 61010-1 standard		overvoltage category: II	pollution degree: 2
		voltage to the ground (earth): 300 V for power supply and output relay circuits, 50 V for other inputs/outputs circuits and communication interfaces	
		insulation resistance > 20 MΩ	height above sea level < 2000 m

DIMENSIONS INSTALLATION DATA

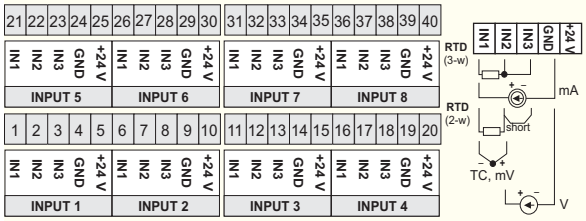
Fixing methods	grips on the side of the enclosure
Enclosure dimensions and weight	96 × 96 × 79 mm, ~420 g
Panel window	92 × 89 mm
Material	self-extinguishing NORYL 94V-0, polycarbonate



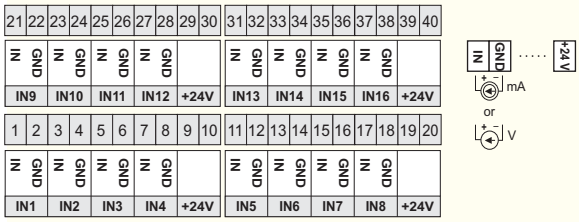
Dimensions in mm

ELECTRICAL CONNECTIONS

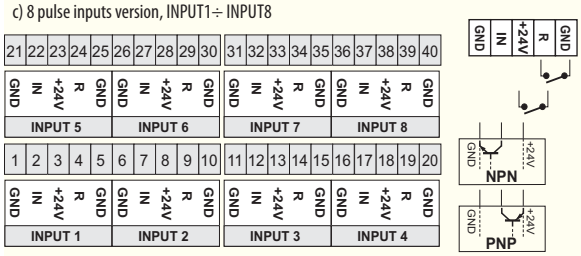
a) 8 universal inputs version, (RTD, TC, mA, V, mV, R), INPUT1÷ INPUT8



b) 16 analog inputs version, (mA lub V), IN1÷ IN16

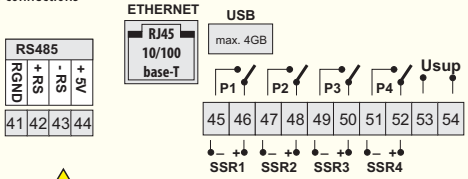


c) 8 pulse inputs version, INPUT1÷ INPUT8



d) 4 universal and 4 pulse inputs version, INPUT1÷ INPUT8
- INPUT1÷ INPUT4 according to point a), above
- INPUT5÷ INPUT8 according to point c), above

e) other connections



NOTE:

In the IP30 version, the USB connection is also available on the front panel.

DO NOT USE SIMULTANEOULYWITH THE BACK CONNECTION!

Notes : (1) - applies only to the recorder version with universal inputs
(2) - applies only to the recorder version with analog inputs (current or voltage)
(3) - for simultaneously measured flow and flow balance from the same sensor: 50 µs (5kHz) or 100 µs (2,5kHz) (details in chapter 12.5. PULSE MEASUREMENT INPUTS CONFIGURATION)
(4) - in the case of recording interval of 1 s, the recording may be uneven during the transfer of the archive over the Ethernet and also due to the excessive number of files, their size, and the type and brand of the USB (pendrive) memory used

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