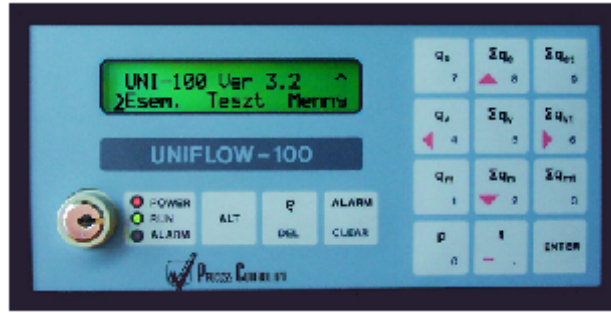




UNIFLOW-100 FLOW COMPUTER



UNIFLOW-100 Flow Computer Short form technical description

The UNIFLOW-100 is a flow computer (signal processing unit and display) of flow measuring circuits (FMC). The UNIFLOW-100 can be used for measuring different gases, liquids, water steam flowing in closed pipelines under pressure. The flow computer is capable to measure volume flow, mass flow, energy flow.

The unit is the third generation of flow computers developed by the Process Control Ltd. The main feature of our new flow computer family is that the UNIFLOW-100 can calculate up to 8 flow measuring circuits. This is an extremely unique feature of the UNIFLOW-100 which can result in rugged measuring systems and the user can save price comparing the solutions with using traditional single measurement loop flow computers.

Why the UNIFLOW-100 is the best choose?

Facts:

- Single unit can measure 8 volume at the same time
- 4 virtual measuring loops can be defined for calculating volume end energy balances
- No program change needed for the different materials and sensors. The same unit can measure different materials (natural and othe gases, steam, hot water, liqudes) applying different measuring methods (orifices plates, turbine meters, vortex, rotametric, induction, ultrasonic and insertion probes such as accutube, itabor, annubar)
- The unit measures volume (volume flow, massflow, diff. pressure) and correction (P, T, density, composition) signals
- The applied calculations meet the requirement of the living International standards (ISO 5167-1:1995, ISO 5168, AGA Rep. 8, GERG, etc.)
- Less transmitters required if the signal is used in more then one measurement loops.
- Pt100 resistor thermometer inputs eliminates the use of temperature transmitters
- Performs the task of supplying the transmitters
- Provides limit checking and control functions are performed
- Cost of one FMC is less compared to the traditional solutions
- The UNIFLOW-100 can perform approved measurement. The cost of the approval is less in the case of multi-loop applications
- The unit parameters can be set by the operator panel or by a PC via the serial interface
- Historical data storage for 36 days
- RS232 or RS485-RS422 serial ports and the MODBUS protocol gives the possibility to integrate the UNIFLOW-100 flow computers into high or low level process control and/or information system.
- Warranty for 3 years
- Available a data logging and process visualization SW developed for up to 64 FMCs. This program runs on a PC, all the typical measuring, data logging, visualisation and archiving functions are implemented. The standard program can easily be extended with user defined operator panels or special functions related to the given technology.
- References: More than 2000 unit works in Hungary and in other countries
- Creation of Flow Measuring Systems with guaranteed accuracy FMCs and/or approvals in co-operation with the Flow-Cont Ltd.

SPECIFICATIONS

Main features

- High performance 16 bit microprocessor
- arithmetic processor option for increased speed demand
- modular structure: I/O cards, interface modules, Flash memory module
- number of measurement loops: 8
- number of virtual measurement loops: 4
- Measured materials: natural and othe gases, steam, (hot) water, liqudes
- Measuring methods and applicable sensors:
 - orifices plates
 - turbine meters
 - vortex
 - rotametric
 - insertion probes (accutube, itabor, annubar)
 - induction
 - ultrasonic
- Measured parameters:
 - volumes (massflow, diff. pressure)
 - correction signals (P, T, density, composition)
- modes of operation: normal (measurement mode), parameter setting, test
- parameter setting possibilities:
 - using the operator panel
 - through a serial interface, using a PC
- parameter and integrated flow values are stored in non-volatile (accumulator backed up) RAM memory
- safety of the parameters: safety key and/or keyword
- interfaces: optional, up to 2 RS232C or RS485/RS422 type
- historical data logging for 36 days 8 (optional)
- not only the signals of a measurement loop, but all existing I/O channels can be used for measuring and data logging

Analogue current inputs:

- differential inputs
- range: 0-20 mA, 4-20 mA selectable by the range parameters
- resolution: 12 bit
- input impedance: 100 Ω
- allowed maximal common mode: max. 6V

Pt100 resistor thermometer inputs:

- applicable sensors: $W_{100} = 1,3910$ or $1,3850$ or calibrated
- 4 wire measuring mode
- accuracy: ± 0.1 $^{\circ}\text{C}$
- max. resistance of the loop: 500 Ω

Frequency inputs:

- frequency range: 2....5000 Hz
- low level
 - signal level range: 20 mV... 10 V
 - signal types: unipolar, bipolar
 - input impedance: 2 k Ω
 - supply (internal or external): 5 V / 1,7 k Ω
- high level
 - signal level range: 500 mV...15 V
 - signal types: unipolar
 - input impedance: 470 Ω
 - supply (internal or external): 15V/ 470 Ω

Digital inputs:

- contacts with common connection or open collector type signals can be handled as
 - static signal or
 - impulse signal imp. time: min. 200 ms, freq.: max. 0,5 Hz
- supply (internal) 15 V / 6,8 k Ω

Analogue current outputs:

- range: 0-20 mA, 4-20 mA selectable by the range parameters
- resolution: 12 bit
- allowed max. impedance: 450 Ω

Contact outputs:

- unpowered SPST contact outputs
- output ratings: 100 mA, 40 V max.

Serial interfaces:

- types: RS232 or RS485/RS422
- Baud-rates: 1200 ... 19200 Baud selectable by setting the range parameters
- max. cable length: RS232 15 m
- RS485/RS422 1200 m

Operator panel:

- membrane switches with flexible foil cover
- key switch
- 2 lines/20 character LCD display with LED backlight

Output power: for supplying 2 wire transmitter loops

- max. output current: 1x24 V / 200 mA

Accuracy:**in the case of the indicated values, impulse and serial outputs:**

- at the reference circumstances: 0.1 %
- in the 0...50 °C temperature range: 0.16 %

in the case of the analogue current outputs:

- at the reference circumstances: 0.16 %
- in the 0...50 °C temperature range: 0.2 %

Operation ranges:

- temperature: 5 ... 50 °C
- relative humidity: 0 ... 90 %
- power input: 230 V AC +10%,-15%, 50 Hz \pm 3 Hz
(or 24V DC; 20V ... 35V)
- power consumption : 35 VA max.
- climatic construction: normal

Storage temperature: -25...70 °C**Mechanical data:** 192 x 96 x 260 mm box with front panel possible to seal**Connectors:**

- 230 V Mains: 3 pin instrument type
- 24 V DC supply: screw type terminals
- I/O connectors : 25 p. 'D sub' type female connectors
- RS232, RS485 connectors: 9 p. 'D sub' type male connectors

Electrical protection: IP 20, class I

CARDS and OPTIONAL MODULES

The UNIFLOW-100 can perform the flow counting tasks for up to 8 FMCs. The unit has 4 card connectors and this modularity can result in some limitations. The maximal 8 FMCs can only be realised if the card configuration required by the technology has enough input channels for all the needed different type signals to be measured.

The unit allows to configure not only FCMs but all input and output channels. Measured values of all configured I/O channels can be read out on the front panel and can be accessed on the serial interface also. This way those signals which are not part of an FMC also can be handled, eliminating the need for an other instrument.

A UNIFLOW-100 flow computer can be configured from the cards and optional modules listed below.

CARDS

Card type	Ch. Nr	Signal types	Remarks
ANI8	8	4-20 (0-20) mA current inputs	parameter selectable
	1	24V/200mA transmitter power supply output	only at the 1. card position
PT4	4	Pt100 (RTD) inputs	4 wire
ANI4/ PT2	4	4-20 (0-20) mA current inputs	parameter selectable
	2	Pt100 (RTD) inputs	4 wire
	1	24V/200mA transmitter power supply output	only at the 1. card position
FR6	6	impulse inputs	high and low input levels, externally or internally supplied
DI24	24	contact inputs	internally supplied static or impulse
FDIO 284	2	frequency inputs	high and low input levels, externally or internally supplied
	8	contact inputs	internally supplied, static or impulse
	4	contact outputs	not supplied, static or impulse (SPST)
DRO8	8	contact outputs	not supplied static or impulse (SPST)
DRO1 6	16	contact outputs	not supplied static or impulse (SPST or SPDT)
ANKI4	4	4-20 (0-20) mA current outputs	parameter selectable

Cards can be arranged in a likely order.

OPTIONAL MODULES

Module	Name	Remarks
RS232	serial interface module	
RS485-RS422	serial interface module	jumper selectable
FLASH	Flash memory module	for historical data storage

The UNIFLOW-100 can be equipped with up to 2 serial ports. The optional serial port can be RS232 or RS485-RS422 type.

The optional FLASH module serves for historical data storage of the characteristic data of an hour, such as average, minimal, maximal values, premium volume consumption values with time stamp and long term data storage of the events.

- Summarised and average values, stored for 36 days
 - summarised volume, mass and energy flow
 - average, min. and max. pressure and temperature
 - min. and max. value of the volume or mass or energy flow (selectable)
- Premium consumption events (max. 50)
 - start and end time of an event
 - the quantity of the premium consumption
 - the maximal value of the premium consumption
- Error events (max. 50)

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TERMINALS

ANI8 0-20mA analogue input module		
Chan. Nr	25p. 'D sub'	
	(+)	(-)
1	14	1
2	15	2
3	16	3
4	17	4
5	18	5
6	19	6
7	20	7
8	21	8
24V _{out}	22	9

PT4 Pt100 resistor thermometer module		
Chan.Nr	25p. 'D sub'	
	(+)	(-)
1	14(U) 15(I)	1(U) 2(I)
2	16(U) 17(I)	3(U) 4(I)
3	18(U) 19(I)	5(U) 6(I)
4	20(U) 21(I)	7(U) 8(I)

ANI4/PT2 4-20mA analogue and Pt100 input module		
Chan. Nr	25p. 'D sub'	
	(+)	(-)
1	14	1
2	15	2
3	16	3
4	17	4
5	18(U) 19(I)	5(U) 6(I)
6	20(U) 21(I)	7(U) 8(I)
24V _{out}	22	9

ANK14 4-20mA analogue output module		
Chan. Nr	25p. 'D sub'	
	(+)	(-)
1	14	1
2	15	2
3	16	3
4	17	4

FDIO284 Impulse in/ contact in / contact out module		
Chan Nr	25p. 'D sub'	
	1 f _{in}	(+)
L _{lev}	6	5
H _{lev}	8	7 /Guard
2 f _{in}	(+)	(-)
L _{lev}	19	18
H _{lev}	21	20/Guard
3 out	14	1
4 out	15	2
5 out	16	3
6 out	17	4
7 in	13	9
8 in	13	22
9 in	13	10
10 in	13	23
11 in	13	11
12 in	13	24
13 in	13	12
14 in	13	25

FR6 Impulse input module		
Chan Nr	25p. 'D sub'	
	1 f _{in}	(+)
L _{lev}	1	14
H _{lev}	2	15/Guard
2 f _{in}	(+)	(-)
L _{lev}	3	16
H _{lev}	4	17/Guard
3 f _{in}	(+)	(-)
L _{lev}	5	18
H _{lev}	6	19/Guard
4 f _{in}	(+)	(-)
L _{lev}	7	20
H _{lev}	8	21/Guard
5 f _{in}	(+)	(-)
L _{lev}	9	22
H _{lev}	10	23/Guard
6 f _{in}	(+)	(-)
L _{lev}	11	24
H _{lev}	12	25/Guard

DRO8(16) Contact output module		
Chan Nr	25p. 'D sub'	
	1	1
2	6	4
3	14	15
4	19	17
5	8	9
6	13	11
7	20	21
8	25	23
(9)	(1)	(3)
(10)	(6)	(5)
(11)	(14)	(16)
(12)	(19)	(18)
(13)	(8)	(10)
(14)	(13)	(12)
(15)	(20)	(22)
(16)	(25)	(24)
(17)	(1)	(7)

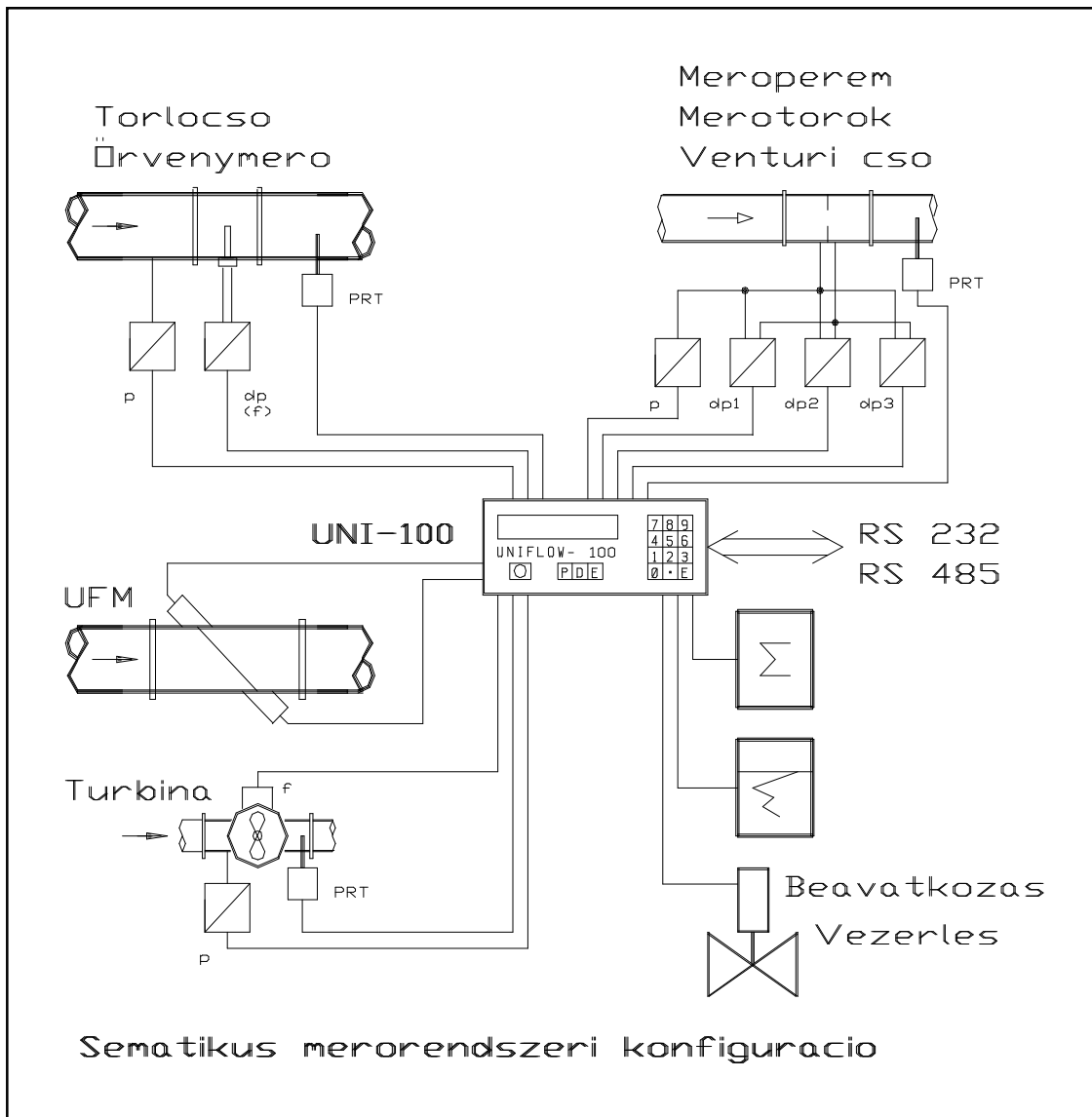
DI24 Kontaktus bemeneti modul			
ch.	cs.p	ch.	cs.p
1	1	13	8
2	14	14	20
3	2	15	9
4	15	16	21
5	3	17	10
6	16	18	22
7	4	19	11
8	17	20	23
9	5	21	12
10	18	22	24
11	6	23	13
12	19	24	25
com.	7		

COM1, COM2			
csp	RS232	RS485	RS422
1		RxTx-	Tx-
2	RxD	RxTx+	Tx+
3	TxD		Rx+
4			Rx-
5	GND	GND	GND
6			
7			
8	CTS		
9			

* Only at the 1. card position!

24V_{out} max. current: 200mA!

Unused Pt100 inputs requires a short circuit on the related 4 input points!

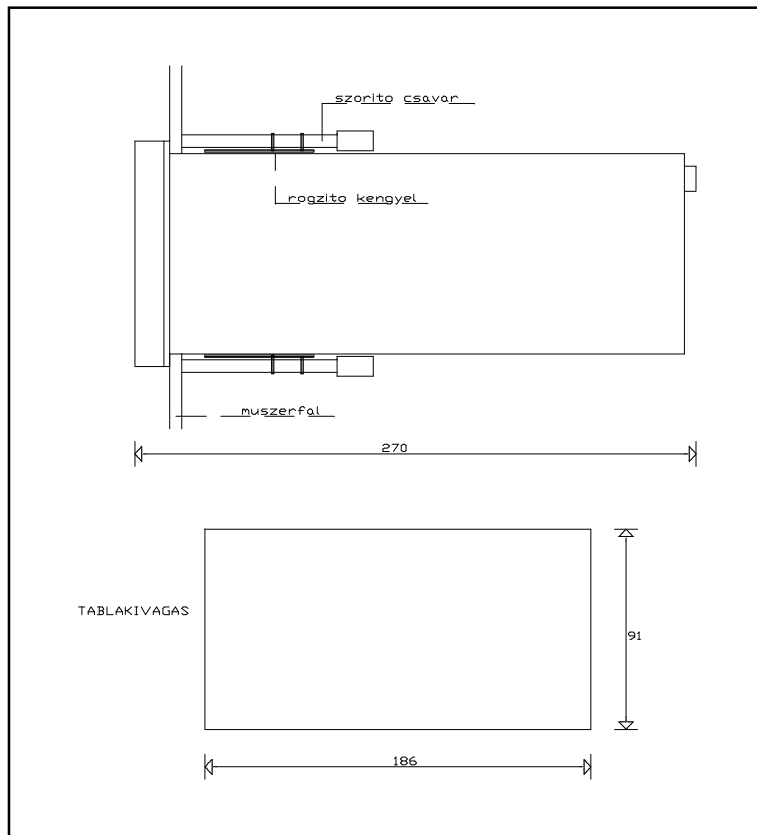
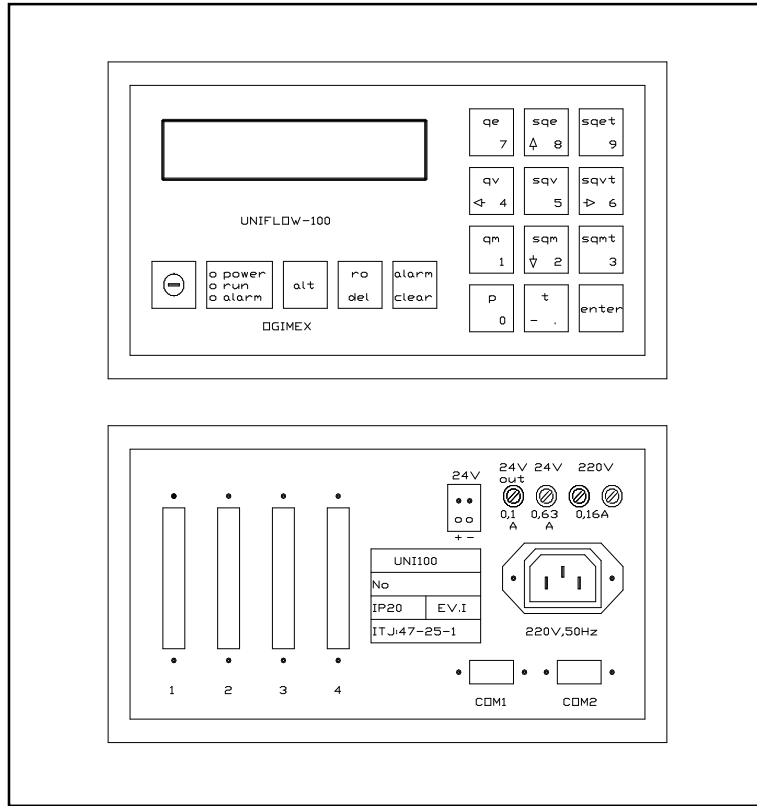


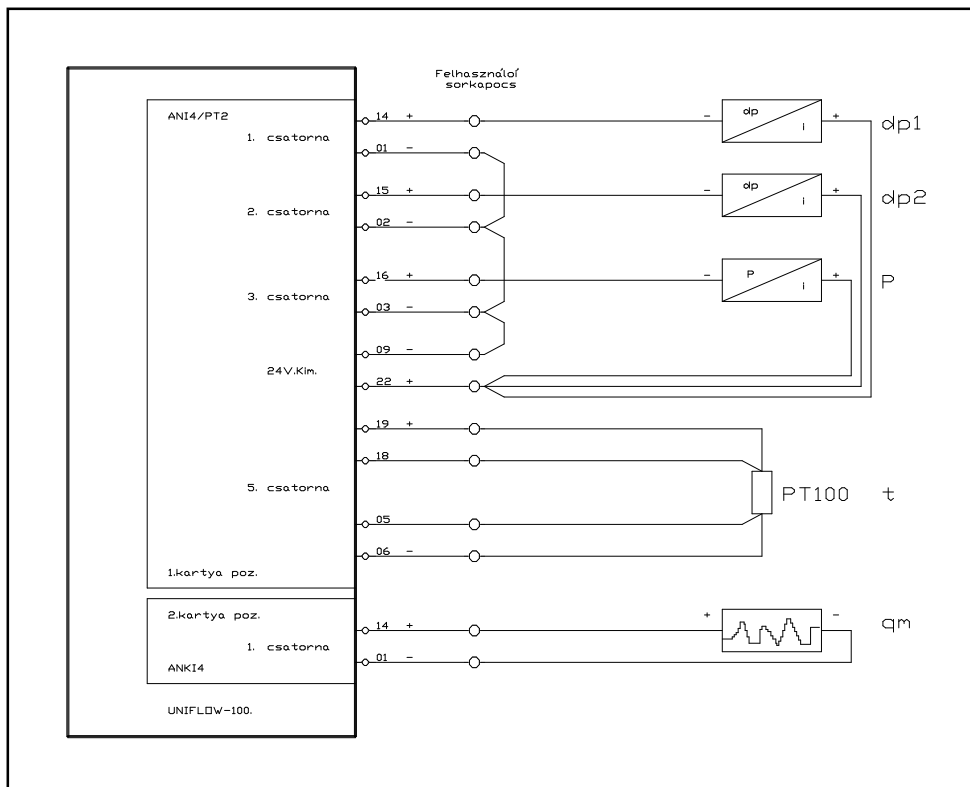
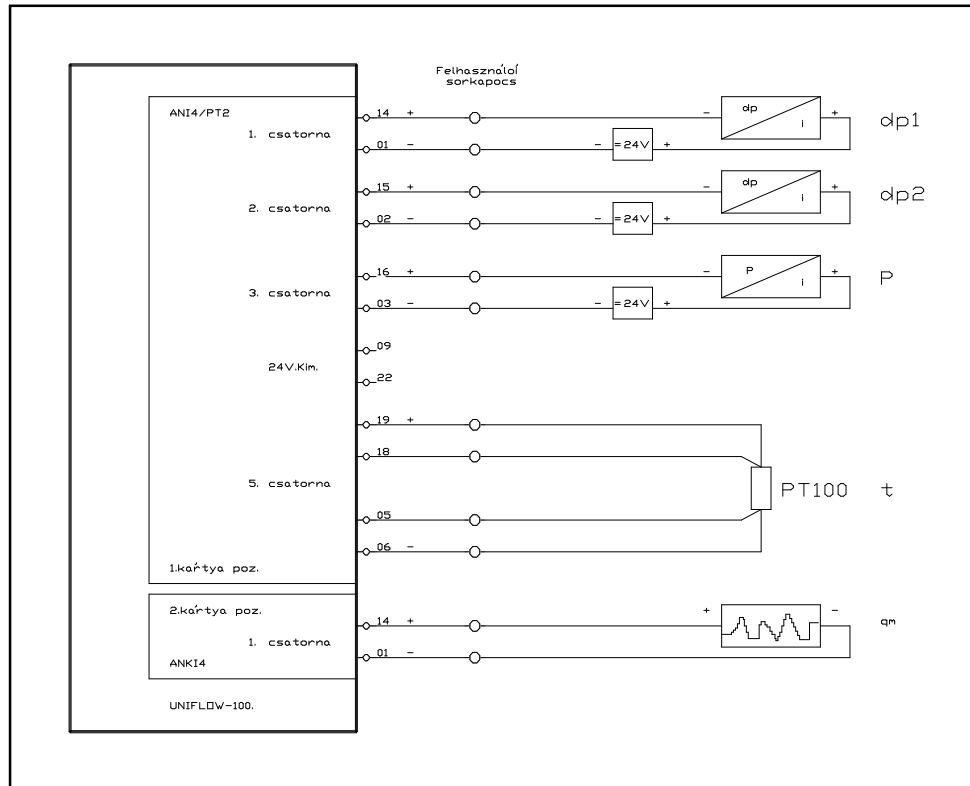
Design and realisation of Flow Measuring Systems

For design, renewing, optimizing and realise the primary measurement and Flow Measuring Systems we offer our most skilled co-operating partner: the Flow-Cont Ltd.

The Flow-Cont Ltd. knowledge in the field of metrology and the practice in the field of measurement technics helped us to develop the HW, SW and the user interface of the UNIFLOW-100 Flow Computer.

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As an example here is a wiring scheme of an FCM equipped with doubled differential pressure volume signal transmitter. For the correction signal measurement the FCM has pressure transmitter and resistor thermometer for temperature. All the transmitters are supplied by the UNIFLOW-100. The resistor thermometer is connected directly to the UNIFLOW-100, eliminating the use of a transmitter.