OC7000
Paperless Recorder-Datalogger

14 Analogue and Digital Input Cards
- Process Signals, Strain Gauges, LVDT
- Temperature RTD and Thermocouples
- Frequencies and Pulses
- AC Signals and Power

6 Analogue and Digital Output Cards
- 4x Analogue Outputs
- 1x Profibus
- 1x Profinet
- 16x NPN and 8x PNP
- 8x Relays
- 6x SSR

General
- 8 Card Slots free selectable
- TFT 5.7" touch screen color Display
- SD Card, USB Flash
- Inputs for external Keyboard and Mouse
- Ethernet 10/100B, RS485 - Modbus
- USB, micro USB
- 2x 512 MB internal Storage
- Supply 80-250V DC/AC, Option 10-30VDC
- 150x150x100mm, Front Protection IP64

Bench Top

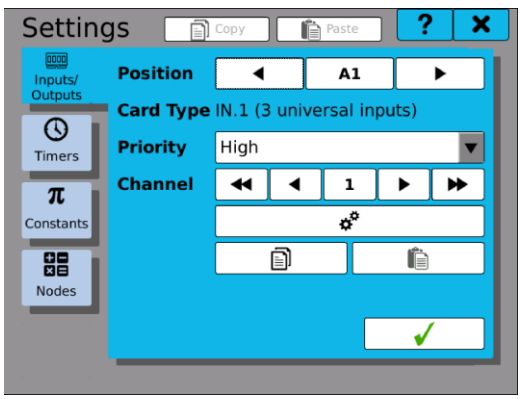
Outdoor Case

OC7000 paperless Recorder-Datalogger is designed for measuring and logging is electric and non-electric parameters in industrial environment. The Recorder has eight plugin slots for free combination of analogue and digital cards. The maximum possible configuration contains 96 input signals which can be measured, stored and displayed at the front screen.

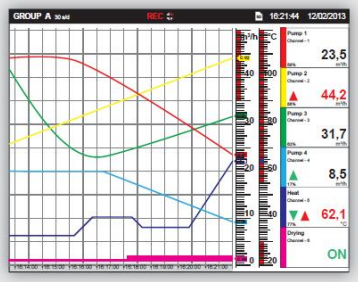
The measured signals of activated inputs are stored in internal 512MB memory in a compressed mode which permits to enlarge up to four times the memory space without sacrificing of speed. The measurements can also be stored on an SD-Card or USB Flash.
The speed is selectable from 1ms to minutes. With e.g. 16 input channels and 1ms rate is the storing time 2 hours.

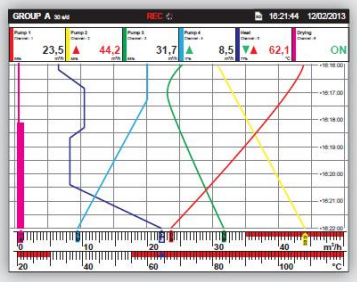
Operation
Selection of functions, setting parameters, calibration and all programming is done at the front TFT high resolution colour display.

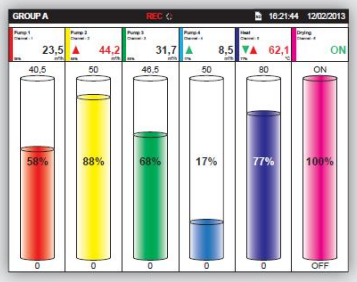
External keyboard or mouse can be connected through internal USB terminal.

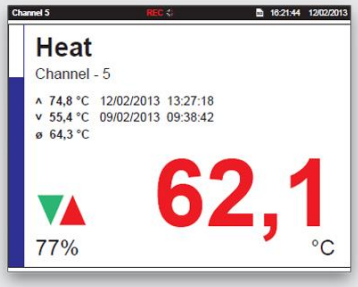


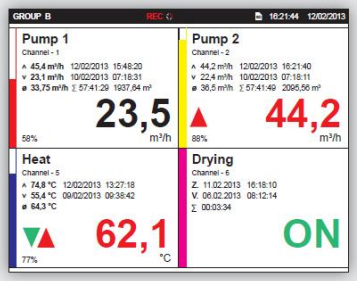
Some Examples of Display Settings

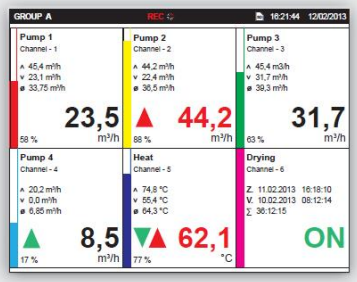






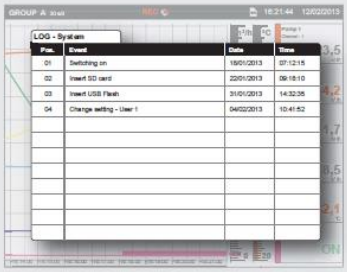


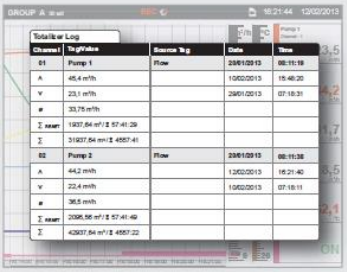




Internal Memory

Records of any activated Input Channel, nod or mathematic function are stored in 512 MB Memory in high compressed mode which permits increasing the physical memory by four times. The measurements can also be recorded at an SD Card or USB Flash. The format can be selected for BIN or CVS, whereas the CVS format requires more memory space.





Sampling Rate	16 Inputs	48 Inputs	80 Inputs	96 Inputs
1 ms	2 h	--	--	--
10 ms	20 h	7,5 h	--	--
1 s	2,5 Month	1 Month	16 Days	13 Days
1 min	13 Years	5 Years	2,5 Years	2,2 Years
10 min	122 Years	52 Years	26 Years	22 Years

Modular Construction

The basic version contains Power Supply, Communication module with Ethernet 10/100, RS485 (ASCII MODBUS), five Digital Inputs and two Digital Outputs, USB and 512MB Memory. Further 8 slots are available for free combination of Input and Output modules.

ANALOGUE INPUT CARDS

IN.1 - 3 x UNIVERSAL INPUT

Number of inputs: 3 — **selectable functions**
Galv. separation: yes

DC

Range:	±60 mV	> 10 MΩ
	±150 mV	> 10 MΩ
	±300 mV	> 10 MΩ
	±1200 mV	1,25 MΩ

PM

Range:	±5 mA	< 200 mV
	± 20mA	< 200mV
	4...20 mA	< 200 mV
	±2 V	> 10 MΩ
	±5 V	1,25 MΩ
	±10 V	1,25 MΩ

OHM

Range: 0…100 Ω
0...1 kΩ
0…10 kΩ
0…30 kΩ (only 2 or 4 terminal connection)
Terminals: 2, 3 or 4 wire

RTD

Type Pt: EU>100/500/1000 Ω, 3850 ppm/°C
US > 100 Ω, with 3 920 ppm/°C
RU > 50/100 Ω with 3 910 ppm/°C
Type Ni: Ni 1000 / Ni 10 000 with 5000/6 180 ppm/°C
Type Cu: Cu50 / Cu 100, with 4260/4 280 ppm/°C
Connection: 2, 3 or 4-wire terminals

T/C

Range:	EU • Pt xxxx	-50°…450°C
	US • Pt 100	-50°…450°C
	RU • Pt 50	-200°…1 100°C
	RU • Pt 100	-200°…450°C
	Cu 100/4 280	-200°…200°C
	Cu 100/4 260	-50°…200°C
	Ni xxxx	-50°..250°C

Type	J (Fe-CuNi)	-100 … 900°C
	K (NiCr-Ni)	-100°…1 300°C
	T (Cu-CuNi)	-200°…400°C
	E (NiCr-CuNi)	-100°…800°C
	B (PtRh30-PtRh6)	700°…1 820°C
	S (PtRh10-Pt)	100°...1 760°C
	R (Pt13Rh-Pt)	100°...1 760°C
	N (Omegalloy)	-0°…1 300°C
	L (Fe-CuNi)	-100°…900°C

ACCURACY
T/C: 25 ppm/°C
Accuracy: ±0,15% from range
Rate: 100 samples/s
Recomm. positions: A1, A2, A3, A4

DU

Excitation for LinPot: 2,5VDC / 6mA (500 Ω minimum value)

ANALOGUE INPUT CARDS

IN.2 - 4 x U- INPUT

Number of inputs:	4
Galv. separation:	yes
Range:	0…5 mA, < 200 mV
	0…20 mA, < 200 mV
	4...20 mA, < 200 mV
	±2 V > 10 MΩ
	±5 V 1,25 MΩ
	±10 V 1,25 MΩ
	±40 V 1,25 MΩ
TC:	25 ppm/°C
Accuracy:	0,2% from range
Rate:	1000 samples/s
Recommended positions:	A1, A2, A3, A4

IN.4 - 4 x T/C- INPUT

Number of inputs: 4
Galv. separation: yes

Type:	J (Fe-CuNi)	-100°…900°C
	K (NiCr-Ni)	-100°...1 300°C
	T (Cu-CuNi)	-200°…400°C
	E (NiCr-CuNi)	-100°...800°C
	B (PtRh30-PtRh6)	700 ... 1820°C
	S (PtRh10-Pt)	100 ... 1760°C
	R (Pt13Rh-Pt)	100 ... 1760°C
	N (Omegalloy)	-0 ... 1300°C
	L (Fe-CuNi)	-100 ... 900°C
TC:	25 ppm/°C	
Accuracy:	±0,2% from range	
Rate:	1000 Samples / sec	
Rec. Positions:	A1, A2, A3, A4	

IN.6 - 12x CURRENT INPUT

Number of inputs:	12
Galv. separation:	no
Range:	±5 mA < 200 mV
	±20 mA < 200 mV
	4...20 mA < 200 mV
TC:	25 ppm/°C
Accuracy:	±0,2% from range
Rate:	1 000 samples/s
Recomm. positions:	A1, A2, A3, A4

IN.3 - 4 x RTD- INPUT

Number of inputs: 4
Galv. separation: yes

Type Pt:	EU > 100/500/1 000 Ω, with 3 850 ppm/°C	
	US > 100 Ω, with 3 920 ppm/°C	
	RU > 50/100 Ω with 3 910 ppm/°C	
Type Ni:	Ni 1 000/ Ni 10 000 with 5 000/6 180 ppm/°C	
Type Cu:	Cu 50/Cu 100 with 4 260/4 280 ppm/°C	
Connection:	2 or 3-wire	
Range:	EU • Pt xxxx	-50°…450°C
	US • Pt 100	-50°…450°C
	RU • Pt 50	-200°…1 100°C
	RU • Pt 100	-200°…450°C
	Cu 100/4 280	-200°…200°C
	Cu 100/4 260	-50°…200°C
	Ni xxxx	-50°..250°C
TC:	25 ppm/°C	
Accuracy:	±0,2% from range	
Rate:	1000 samples/s	
Rec. positions:	A1, A2, A3, A4	

IN.5 - 5 x RTD- INPUT

Number of inputs: 5
Galv. separation: no

Type Pt:	EU > 100/500/1000 Ω, with 3850 ppm/°C	
	US > 100 Ω, with 3 920 ppm/°C	
	RU > 50/100 Ω with 3 910 ppm/°C	
Type Ni:	Ni 1000/ Ni 10000 with 5000/6 180 ppm/°C	
Type Cu:	Cu 50/Cu 100 with 4 260/4 280 ppm/°C	
Connection:	2, 3 or 4-wire	
Range:	EU • Pt xxxx	-50°…450°C
	US • Pt 100	-50°…450°C
	RU • Pt 50	-200°…1 100°C
	RU • Pt 100	-200°…450°C
	Cu 100/4 280	-200°…200°C
	Cu 100/4 260	-50°…200°C
	Ni xxxx	-50°...250°C
TC:	25 ppm/°C	
Accuracy:	±0,2% from range	
Rate:	1 000 samples/s	
Rec. positions:	A1, A2, A3, A4	

ANALOGUE INPUT CARDS

IN.7 - 12x VOLTAGE INPUT

Number of inputs:	12	
Galv. separation:	no	
Range:	±2 V	> 10 MΩ
	±5 V	1,25 MΩ
	±10 V	1,25 MΩ
	±40 V	1,25 MΩ
TC:	25 ppm/°C	
Accuracy:	±0,2% from range	
Rate:	1 000 samples/s	
Rec. positions:	A1, A2, A3, A4	

IN.8 - 2x STRAIN GAUGE INPUT

Number of inputs:	2
Galv. separation:	yes
Range:	2…4 mV/V
	4…8 mV/V
	8…16 mV/V
Sensor supply:	10 VDC, load ≥ 80 Ω
TC:	25 ppm/°C
Accuracy:	±0,02% from range
Rate:	1000 samples/s
Recomm. positions:	A1, A2, A3, A4

IN.9 - 3x PM INPUT U-I

Number of inputs:	3	
Galv. separation:	yes	
Range:	± 5 mA	< 200 mV
	± 20 mA	< 200 mV
	4…20 mA	< 200 mV
	± 2 V	> 10 MΩ
	± 5 V	> 1,25 MΩ
	± 10 V	> 1,25 MΩ
TC:	25 ppm/°C	
Accuracy:	±0,02% from range	
Rate:	1000 samples/s	
Recomm. positions:	A1, A2, A3, A4	

IN.11 - 8x ANALOGUE-DIGITAL INPUT

Number of inputs:	8
Galv. separation:	no
Range:	12 … 250 V AC/DC
TC:	25 ppm/°C
Accuracy:	±0,02% from range
Rate:	1000 samples/s
Recomm. positions:	A1, A2, A3, A4

IN.12 - 12x PULSE INPUT

Number of inputs:	12
Galv. separation:	no
Range:	10 … 30 VDC
	PNP / NPN adjustable
	comparison level
Frequency:	0,1Hz … 10 kHz
Mode:	Counter, Frequency meter
TC:	25 ppm/°C
Accuracy:	±0,01% from range (Freq.)
Recomm. positions:	A1, A2, A3, A4

IN.14 - 2x LVDT INPUT

Number of inputs:	2
Galv. separation:	yes
Input:	3, 5, 6 wire terminals
	1 / 3 / 5 VAC
Frequency:	2.5, 5, 10kHz
TC:	25 ppm/°C
Accuracy:	±0,02% from range
Recomm. positions:	A1, A2, A3, A4

IN.13 - 2x FAST PULSE INPUT

Number of inputs:	2
Galv. separation:	yes
Range:	5/24 VDC
	PNP/NPN/contact/TTL
	adjustable comparison level
Frequency:	0,1Hz … 1 MHz
Mode:	Up/Down, Frequency,
	Incremental Counter
TC:	25 ppm/°C
Accuracy:	±0,01% from range (Freq.)
Recomm. positions:	A1, A2, A3, A4

DIGITAL OUTPUT CARDS

OUT.1 - 4x RELAY

Number of outputs:	4
Galv. separation:	yes
Type:	digital, menu adjustable
Outputs:	4x relay, SPDT (Form C) (250 VAC/50 VDC, 3 A)*
Contact closure:	< 10 ms
Relay:	1/8 HP 277 VAC 1/10 HP 125 V, Pilot Duty D300
Recomm. positions:	B2, B3, B4, B5

OUT.2 - 8x RELAY

Number of outputs:	8
Galv. separation:	yes
Type:	digital, menu adjustable
Outputs:	8x relay, SPDT (Form A) (250 VAC/50 VDC, 3 A)*
Contact closure:	< 10 ms
Relay:	1/8 HP 277 VAC 1/10 HP 125 V, Pilot Duty D300
Recomm. positions:	B2, B3, B4, B5

OUT.3 - 8x OPEN COLLECTOR NPN

Number of outputs:	8
Galv. separation:	no
Type:	digital, menu adjustable
Outputs:	8 x OC, NPN (30VDC/100 mA)
Contact closure:	< 0,2 ms
Recomm. positions:	B2, B3, B4, B5

OUT.4 - 16x OPEN COLLECTOR NPN

Number of outputs:	16 with common end
Galv. separation:	no
Type:	digital, menu adjustable
Outputs:	16x OC, NPN (30 VDC/100mA)
Contact closure:	< 0,2 ms
Recomm. positions:	B2, B3, B4, B5

OUT.5 - 8x OPEN COLLECTOR PNP

Number of outputs:	8
Galv. separation:	no
Type:	digital, menu adjustable
Outputs:	8x open collector, PNP (30 VDC/700 mA)
Contact closure:	< 0,2 ms
Recomm. positions:	B2, B3, B4, B5

OUT.6 - 6x SSR

Number of outputs:	6
Galv. separation:	no
Type:	digital, menu adjustable
Outputs:	6x SSR (250 VAC/1 A)*
Contact closure:	< 0,2 ms
Recomm. positions:	B2, B3, B4, B5

ANALOGUE OUTPUT CARDS

AO.1 - 2x ANALOGUE OUTPUT

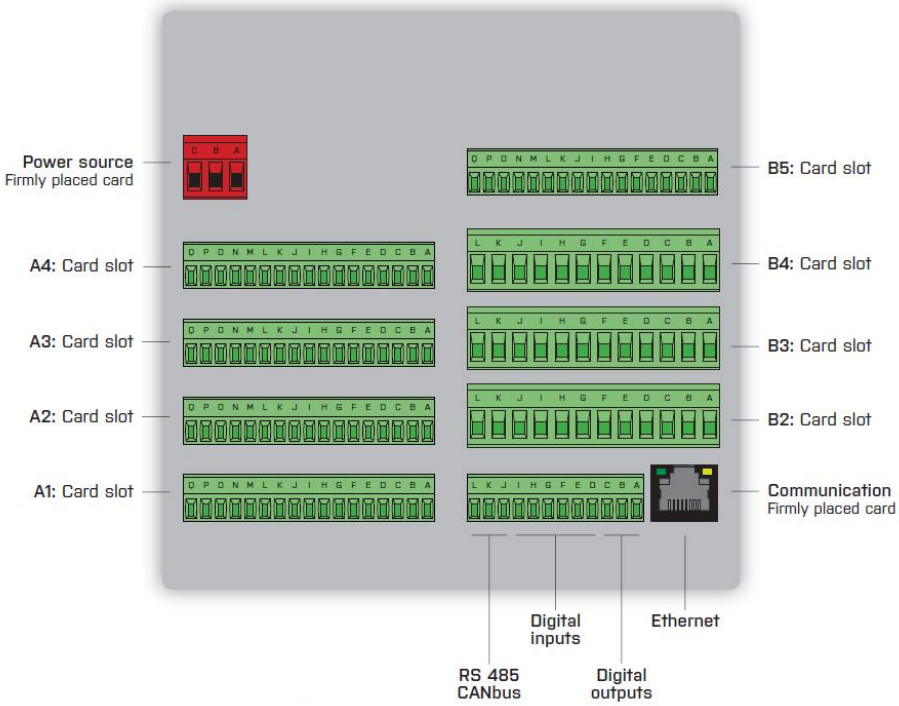
Number of outputs:	2
Galv. separation:	yes
Type:	isolated, programmable, 16 bit DAC, type and range adjustable
Nonlinearity:	0.1% from range
TC:	15 ppm/°C
Rate:	response < 1 ms
Voltage:	0…2 V, 5 V, 10 V, ± 10V
Current:	0 - 5, 20 mA, 4 - 20 mA max. 600 Ω/12V
Recomm. positions:	B2, B3, B4, B5

AO.2 - 4x ANALOGUE OUTPUT

Number of outputs:	4
Galv. separation:	yes
Type:	isolated, programmable, 16 bit DAC, type and range adjustable
Nonlinearity:	0.1% from range
TC:	15 ppm/°C
Rate:	response < 1 ms
Voltage:	0…2 V, 5 V, 10 V, ± 10V
Current:	0 - 5, 20 mA, 4 - 20 mA max. 600 Ω/12V
Recomm. positions:	B2, B3, B4, B5

TERMINALS

Rear of the Instrument



Slots A are intended for fast Analogue Modules

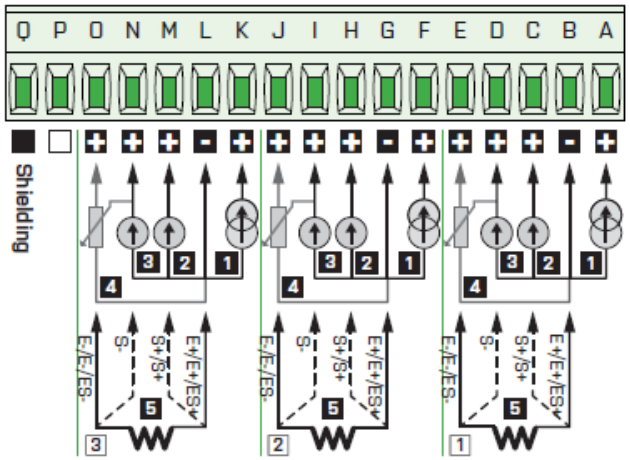
The Slot B5 is intended for Profibus and Profinet only.

All other slots can be freely used for Input and Output Modules

INPUT MODULES - Terminals connection

IN.1 3x Universal input

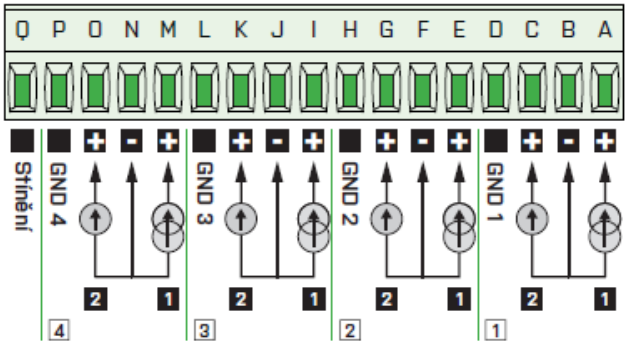
UNI.1



1 **PM:** 0...5/20 mA/4...20 mA
2 **PM:** ±2 V/±5 V/±10 V/±40 V
3 **DC:** ±60/±150/±300/±1 200 mV
T/C: J/K/T/E/B/S/R/N/L
4 **DU:** Lin. potentiometer (> 500 Ω)
5 **OHM:** 0...0,1/1/10/30 kΩ/Auto
RTD: Pt 50/100/500/1 000
Cu: Cu 50/100
Ni: Ni 1 000/10 000

IN.2 4x PM input U-I

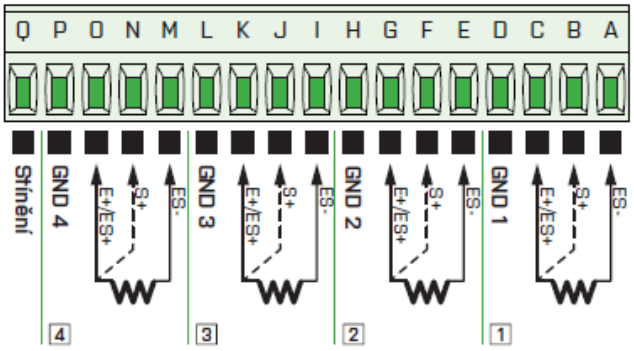
IN.2



1 **DC - I:** ±5/±20 mA/4...20 mA
2 **DC - U:** ±2/±5/±10/40 V

IN.3 4x RTD input

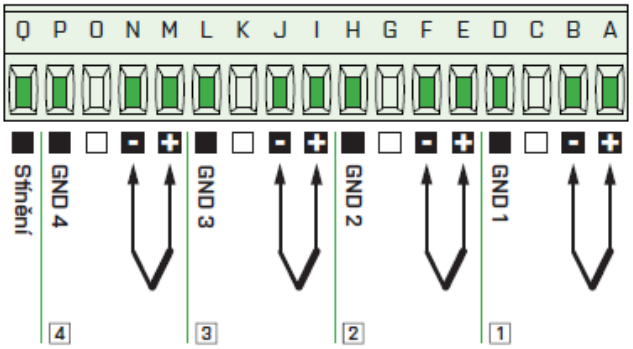
IN.3



OHM: 0...0,1/1/10/100 kΩ/Auto
RTD: Pt 50/100/500/1 000
Cu: Cu 50/100
Ni: Ni 1 000/10 000

IN.4 4x T/C input

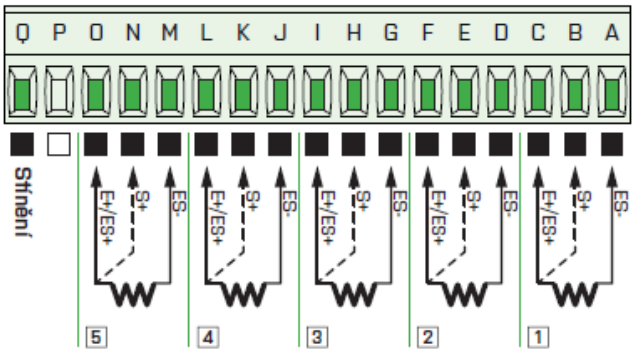
IN.4



T/C: J/K/T/E/B/S/R/N/L

IN.5 5x RTD input

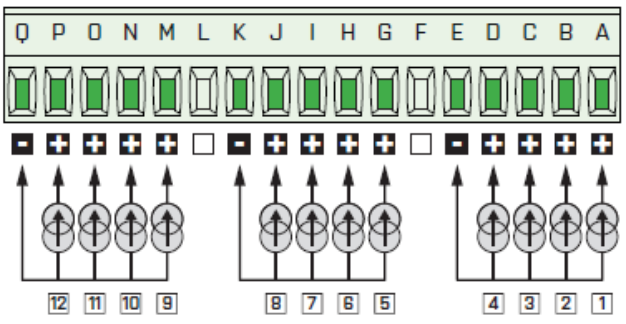
IN.5



OHM: 0...0,1/1/10/100 kΩ/Auto
RTD: Pt 50/100/500/1 000
Cu: Cu 50/100
Ni: Ni 1 000/10 000

IN.6 12x DC input, current

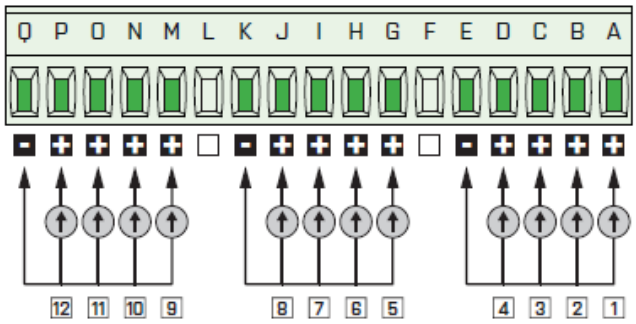
IN.6



DC - I: ±5/±20 mA/4...20 mA

IN.7 12x DC input, voltage

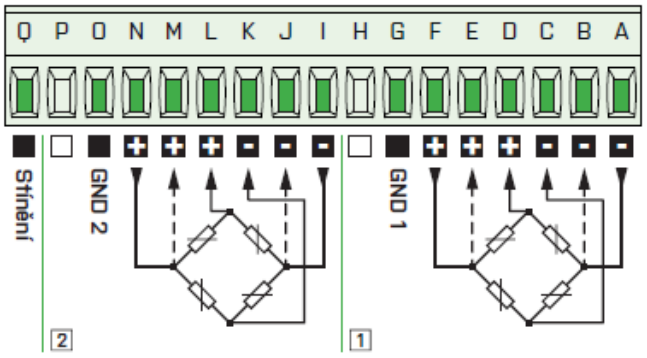
IN.7



DC - U: ±2/±5/±10/40 V

IN.8 2x input for strain gauges

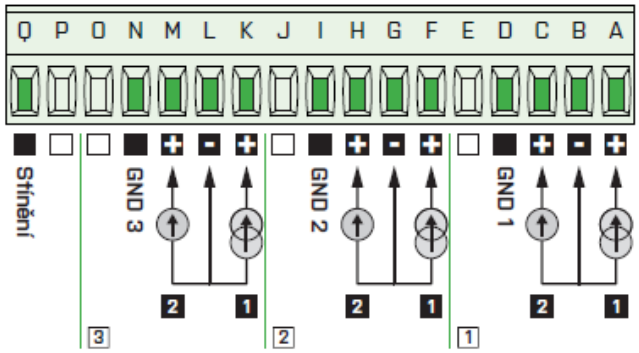
IN.8



DMS: 1...16 mV/V

IN.9 3x PM input U-I

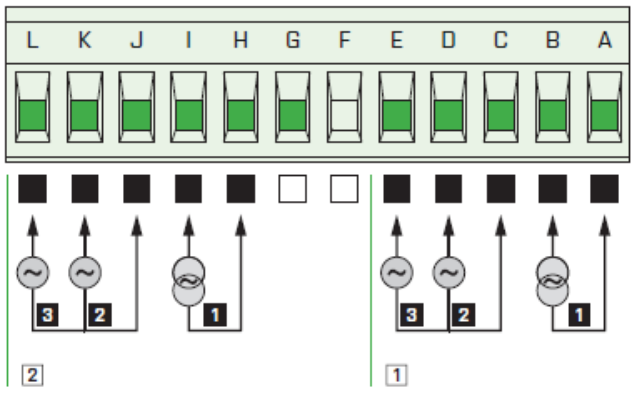
IN.9



1 **DC - I:** ±5/±20 mA/4...20 mA
2 **DC - U:** ±2/±5/±10/40 V

IN.10 2x AC/PWR input

IN.10

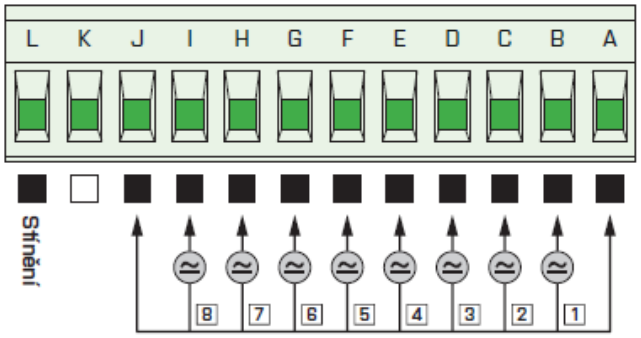


1 **AC - I:** 0...60/150/300 mV
0...1/2,5/5 A

2 **AC - U1:** 0...10/250 V
3 **AC - U2:** 0...120/450 V

IN.11 8x Digital input

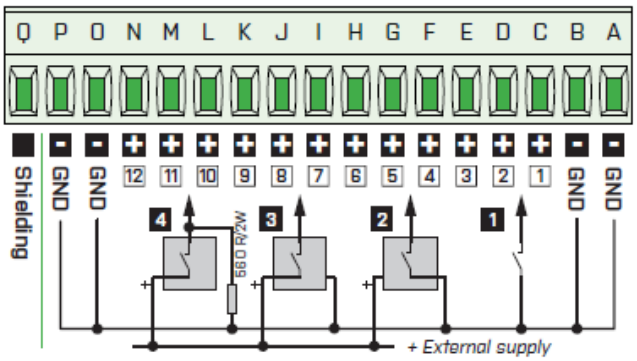
IN.11



AC/DC: 12...250 V AC/DC

IN.12 12x Pulse input

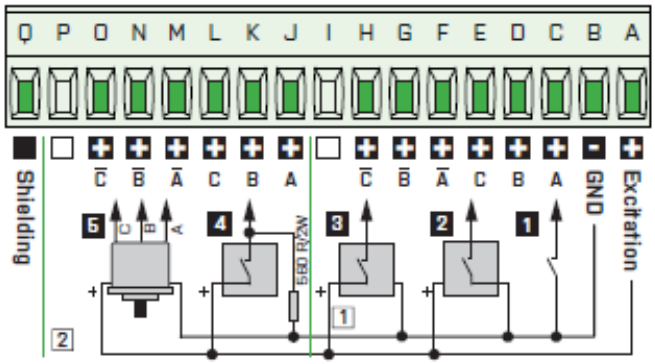
IN.12



1 contact
2 2-wire sensors, **PNP** NO
3 3-wire sensors, **PNP** NO
4 3-wire sensors, **NPN** NO

IN.13 2x Fast pulse input

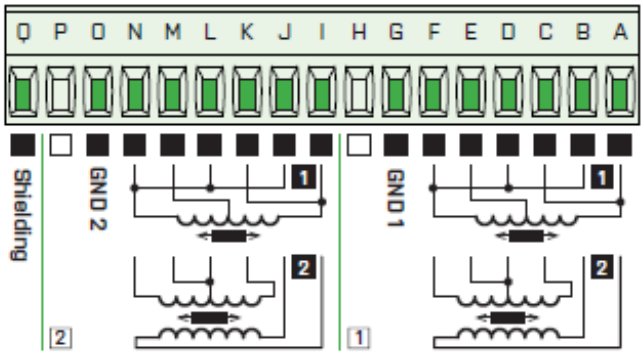
IN.13



1 contact
2 2-wire sensors, **PNP** NO
3 3-wire sensors, **PNP** NO
4 3-wire sensors, **NPN** NO
5 IRC sensors, **NPN** NO

IN.14 2x input for LVDT sensors

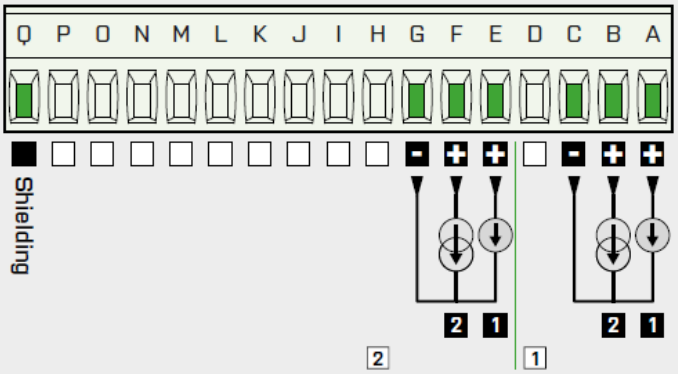
IN.14



1 3-wire LVDT sensors
2 5-wire LVDT sensors

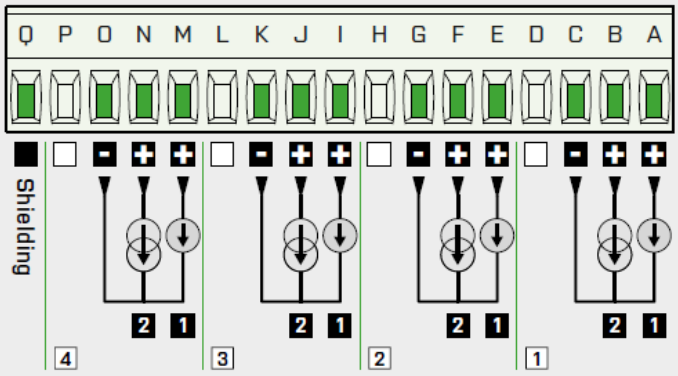
ANALOGUE OUTPUT CARDS - Terminals

AO.01



1 Analog output - voltage
2 Analog output - current

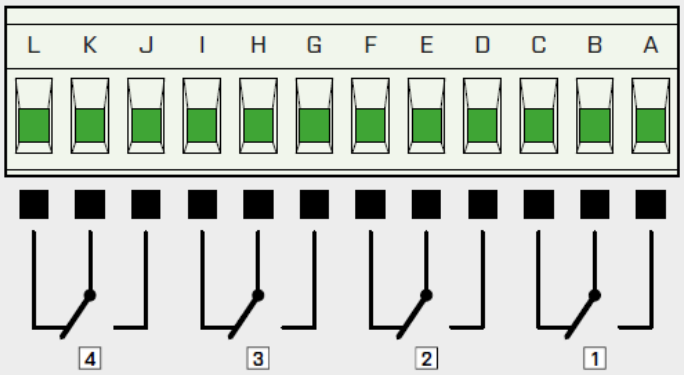
AO.02



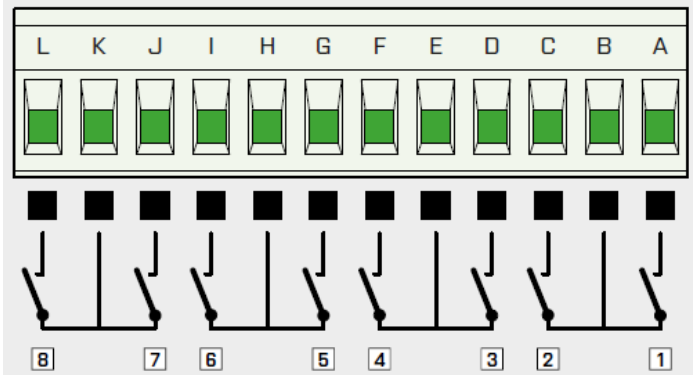
1 Analog output - voltage
2 Analog output - current

DIGITAL OUTPUT CARDS - Terminals

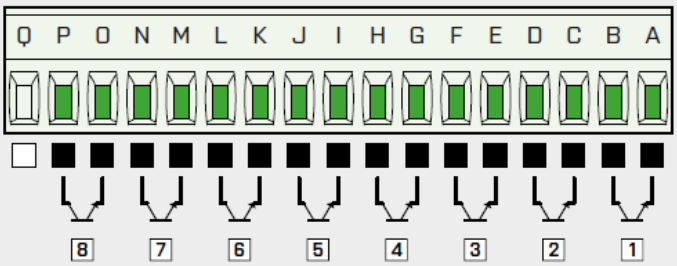
OUT.1



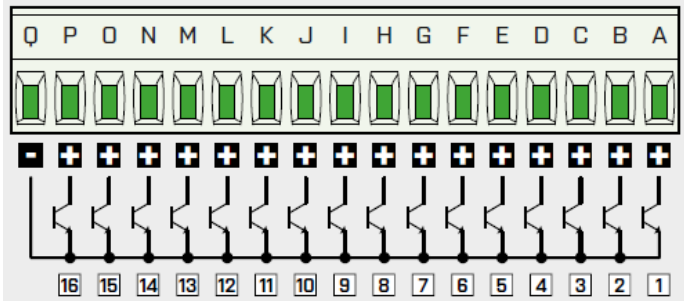
OUT.2



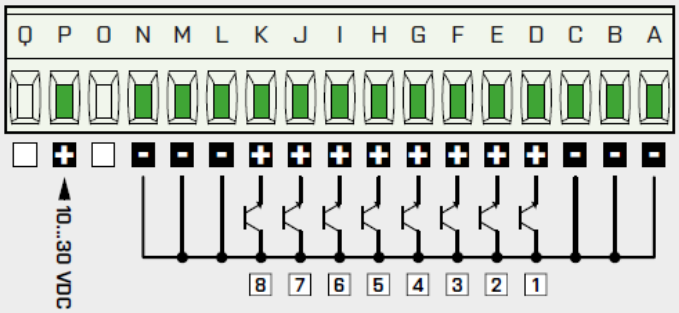
OUT.3



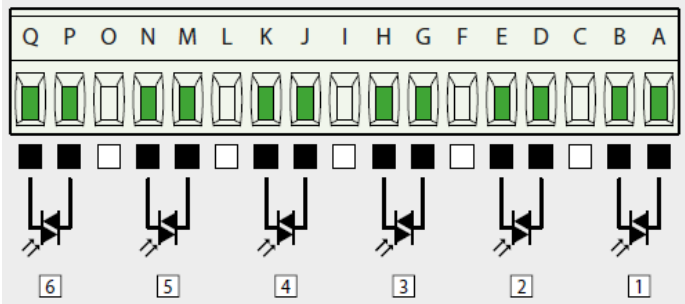
OUT.4



OUT.5

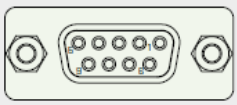


OUT.6



DATA OUTPUTS

DO.1

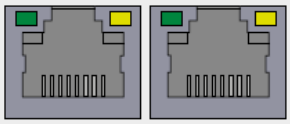


PROFI BUS

Pin asignment

- **3** **B:** RxD/TxD-P data reception/transmission, positive
- **4** **CNTR:** signal for repeater control
- **5** **DGND:** reference potential for data and +5 V
- **6** **VP:** +5 V
- **8** **A:** RxD/TxD-N data reception/transmission, negative

DO.2



Port 1 Port 2

PROFI NET

HOW TO ORDER

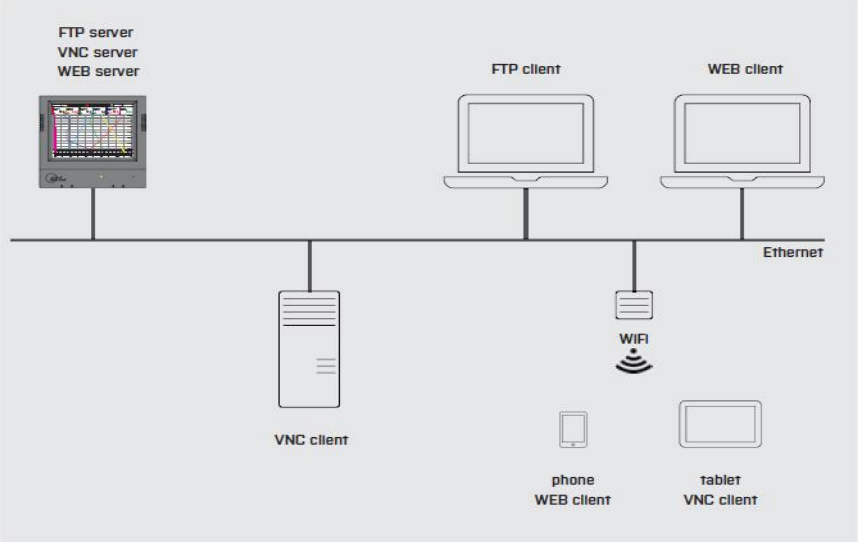
OC7000 • ☐ ☐ • ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ • ☐

Supply	10-30V AC/DC isolated	0											
	80-250V AC/DC isolated	1											
Wi-Fi Module	without		0										
	Standard Temp. Range		1										
	Industrial Temp. Range		2										
Code				•	•	•	•	•	•	•	•	•	

CODES Input and Output Modules

Code	Type	Function	Range	Accuracy of Range	Resolution	Sampling	Isolation
0	PW.0	Supply	10…30V AC/DC				YES
1	PW.1	Supply	80…250V AC/DC				YES
A	IN.1	3x Universal Input	DC: ±60/±150/±300/±1200mV PM: 0-5mA/0-20mA/4-20mA/±5V/±10V/±40V OHM: 100 Ω/1kΩ/10kΩ/30kΩ RTD: Pt-50/Pt-100/Pt-500/Pt-1000 Cu: Cu-50/Cu-100 Ni: Ni-1000/Ni-10 000 TC: J/K/T/E/B/S/N/R/L DU: Linear Potentiometer > 500Ω	± 0.15%			YES
B	IN.2	4x Process Monitor isolated	0-5mA/0-20mA/4-20mA/±2V/±5V/±10V/±40V	±0.2%	16 Bit	< 1000	YES
C	IN.3	4x RTD isolated	Pt-50/100/1000, Ni-1000/10 000, Cu-50/100	±0.2%	16 Bit	< 1000	YES
D	IN.4	4x TC isolated	J,K,T,E,B,S,R,N,L	±0.2%	16 Bit	< 500	YES
E	IN.5	5x RTD	Pt-50/100/1000, Ni-1000/10 000, Cu-50/100	±0.2%	16 Bit	< 500	NO
F	IN.6	12x Current Input	±5mA/ ±20mA/4-20mA	±0.2%	16 Bit	< 1000	NO
G	IN.7	12x Voltage Input	±2V/±5V/±10V/±40V	±0.2%	16 Bit	< 1000	NO
H	IN.8	2x Load Cell with supply	1 … 16mV/V	±0.02%	24 Bit	< 1000	YES
I	IN.9	3x precision Process Monitor	0/4-20mA/ ±5V/±10V	0.02%	24 Bit	< 1000	YES
J	IN.10	2x V_{RMS}, POWER A_{RMS}, Freq. Calculation of Q, S, cos fi	Input U: 0…10V / 0-120V / 0-250V / 0-450V Input I: 0-60mV/150mV/300mV, 0-1A / 2,5A / 5 A	±0.3%		< 10	YES
K	IN.11	8x Digital Input	12V…250V AC/DC			<1 ms	NO
L	IN.12	12x Counter / Frequency	0-30V, PNP, NPN, with Threshold, 0.1Hz to 10kHz				NO
M	IN.13	2x UP-DOWN Quadrature	5/24V, TTL, Threshold selectable, 0.1Hz to 1MHz				NO
N	IN.14	2x LVDT Sensors	3/5/6 Terminals, 1/3/5V AC, 2.5/5/10kHz	±0.02%	24 Bit	< 1000	YES
P	OUT.1	4x Relay SPDT	250V AC, 30VDC, 3A			< 10ms	
Q	OUT.2	8x Relays SPST	250V AC, 30VDC, 3A			< 10ms	
R	OUT.3	8x NPN OC	30V DC, 100mA			< 0.2ms	
S	OUT.4	16x NPN OC, common E	30V DC, 100mA			< 0.2ms	
T	OUT.5	8x PNP OC	30V DC, 100mA			< 0,2ms	
U	OUT.6	6x SSR	250V AC, 1A			< 0.2ms	
V	AO.1	2x Analogue Output isolated	0-2V/5V/10V, ±10V, 0-5mA, 0/4-20mA (600 Ω /12V)	±0.1%		< 1ms	YES
W	AO.2	4x Analogue Output isolated	0-2V/5V/10V, ±10V, 0-5mA, 0/4-20mA (600 Ω /12V)	±0.1%		< 1ms	YES
Y	DO.1	PROFIBUS					
Z	DO.2	PROFINET					

Communication



OC7000 - Basic Version contains Ethernet 10/100 BASE with following features:

- ✓ Screen Display
- ✓ Transfer of stored Data
- ✓ Recording of Events

- ✓ E-Mail sending
- ✓ Time-Synchronizing
- ✓ DHCP, TCP / IP Mode (User Side)

ORBIT CONTROLS AG
Zürcherstrasse 137
CH-8952 Schlieren/ZH

Tel: +41 44 730 2753
www.orbitcontrols.ch
info@orbitcontrols.ch