DRIP DROP

INSTALLATION MANUAL
Version: 0809-UK
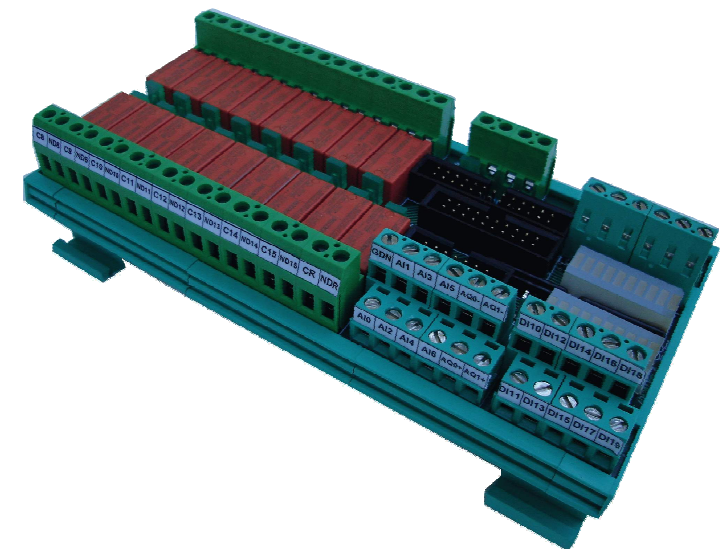
ADA-2000-E
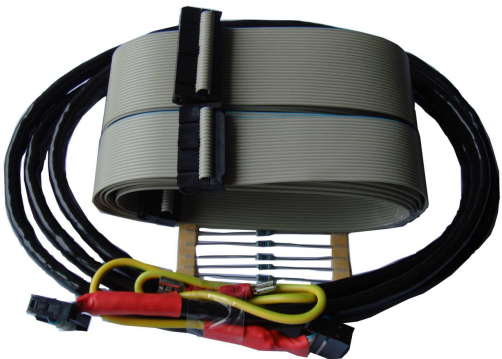
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8   Packing contents

On delivery the packing box of the ADA2000E comes with the following items:

1(one) I/O unit ADA-2000-E
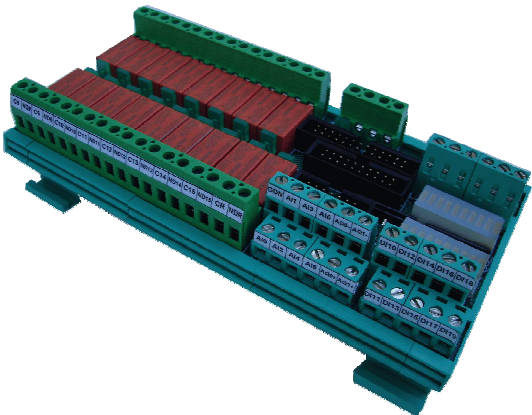
1(one) 1,5 meter long 26 wires flat band cable CSD26/1,5m
1(one) 1,5 meter long 20 wires flat band cable CSD20/1,5m
1(one) 1,5 meter long 14 wires screened cable including
   ground connection CSA14E/1,5 m

7 Accessories and part numbers

Description	Part number	Comments
CPU unit PC-2000-W	20101-03-101	
I/O unit ADA-2000-E	20101-03-110	
Band cable screened CSA14E/1,5 m	20101-03-120	
Band cable flat CSD20/1,5 m	20101-03-130	
Band cable flat CSD26/1,5 m	20101-03-140	
Level sensor SP-25 (0-1m Wg)	40101-06-103	4-20mA
Level sensor SP-25 (0-4m Wg)	40101-06-102	4-20mA
Level sensor SP-25 (0-5m Wg)	40101-06-106	4-20mA
Level sensor SP-25 (0-10m Wg)	40101-06-108	4-20mA
Current transformer E83-2050 (0-50A)	40101-54-104	4-20mA

1 Description ADA-2000-W

The ADA-2000-W is the I/O-board for the pump control PC-2000-W.
All I/O-signals are connected via the ADA-2000-E, and the signal interface
between the ADA-2000 and the PC-2000 is made through 3 separate band cables.
All inputs (digital and analogue) are **24 VDC** signals. The digital outputs are
potential free relay contacts where the relay supply is also 24 VDC and the relay
contacts are max. 250VAC at 6A.
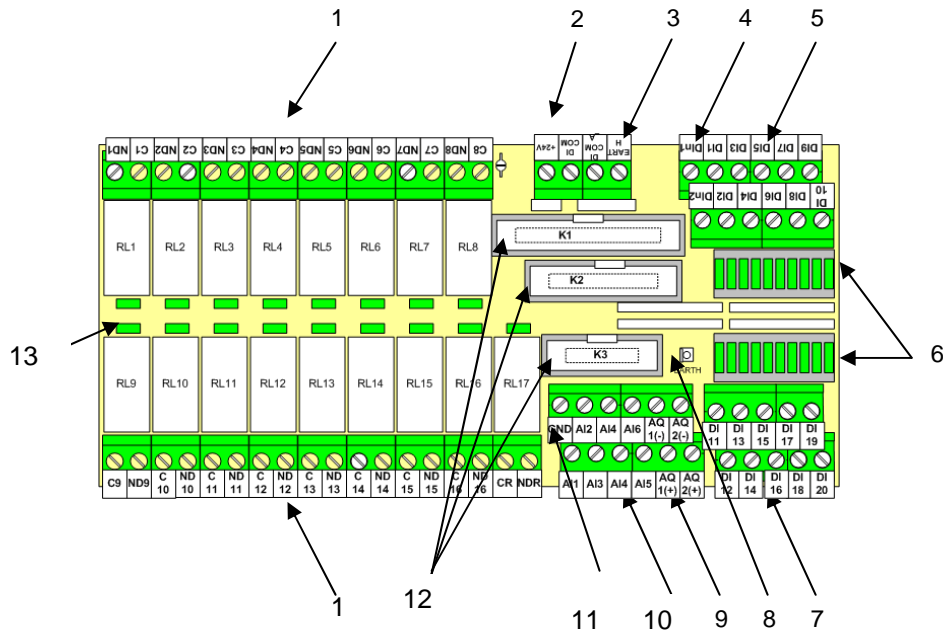
1. Digital outputs max 250 V / 6A	8. Ground connection (flat cable)
2. Power supply 24 VDC	9. Analogue outputs (4-20 mA / 0-10 V)
3. Ground connection	10. Analogue inputs (0/4-20 mA)
4. Digital counter inputs 24 VDC	11. Signal ground (- 24 VDC)
5. Digital inputs (1 – 10) 24 VDC	12. Flat cable connectors
6.Digital inputs status LED´s	13. Digital output status LED´s
7. Digital inputs (11 - 20) 24 VDC	

2   Dimensions and mounting

The I/O device ADA-2000 is mounted on a standard 35 mm DIN-rail in the bottom of the control cabinet. Its dimensions are 160 mm wide by 83 mm high and mounted on the 35 mm DIN rail the total depth is 51 mm. The ADA-2000 and its connecting cables are placed as far away from the pump power cable as possible and never in the same cable trays as the power cables.

ADA-2000

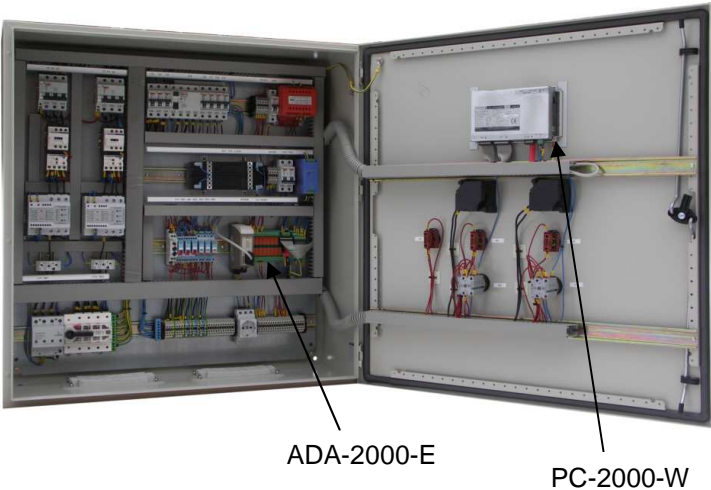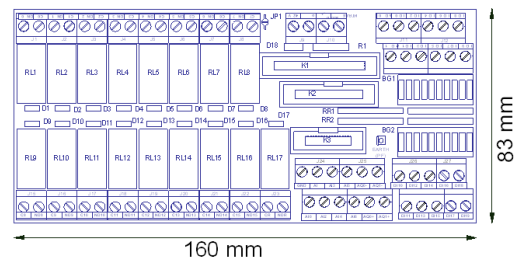

ADA-2000-E   PC-2000-W

Figure 2.1 shows an example of a standard DripDrop electrical panel for 2 pumps where the ADA-2000-W is mounted on a 35 mm DIN rail at the bottom of the control cabinet. In the front door the operator panel PC-2000 is mounted.

5   Technical specification ADA-2000-W

Power supply	24 VDC (19,2 -30 VDC)
Power consumption	0.15 A
Mounting	DIN 35 mm Rail
Dimensions	160 x 83 x 51 mm (W x H x D)
Temp. range (operation)	-5 to +55 degrees °C
Enclosure	IP 30
Digital outputs (relays)	(16) output relays 24 VDC supply
	potential free contacts max load 250 VAC / 6 Amp
Digital inputs	(20) at + 24 VDC
	Opto isolated at 500 V(1 min)
	Type 1 CEI 61131-2
Digital counters	(2) at + 24 VDC
	Opto isolated at 500 V(1 min)
	Max frequency 500 Hz
Analogue inputs	(7) 0/4-20 mA at + 24 VDC
	Max impedance 100 ohm
Analogue output	(1) 4-20 mA at 24 VDC
	Load max. 500 ohm
Analogue output	(1) 0-10 V
	Min Load 1000 ohm

6   Electromagnetic compatibility (EMC)

Electromagnetic compatibility (EMC)					
Description	Standard	Class	Level	Remarks	Test res.
Network frequency magnetic field	CEI 61000-4-8		30A/m		A
Immunity to radiated RF--fields	CEI 61000-4-3	3	10V/m	26MHz-1GHz	A
Electrostatic discharge immunity	CEI 61000-4-2	4	± 8kV	Air discharge	C
			± 4kV	Cont. discharge	C
Radiated emission	SR EN 52022:2004	A		26MHz-1GHz	A

4.7 Signal interface PC2000-W and ADA2000-E

As an interface for all signals from the PC-2000-W unit and the control cabinet, a separate I/O unit is used, the ADA-2000-E I/O board. The interconnection, of all input and output signals between the PC-2000-W and the ADA-2000-E are made with three band cables.

-Flat band cable CSD20/1,5 m connects connector terminal **K2** on ADA-2000-E to **K8** on PC-2000-W, for digital out signals 12 to 16 and digital in 11 to 20.
-Flat band cable CSD26/1,5 m connects connector terminal **K1** on ADA-2000-E to **K9** on PC-2000-W, for digital out 1 to 11 and digital in 1 to 10, counters 1 and 2.
-Screened band cable CSA14E/1,5 m connects connector terminal **K3** on ADA-2000-E to **K10** on PC-2000-W and its corresponding ground cable connects to the ground terminals on the ADA-2000-E as well as the PC-2000-W, for signals AI 1-7 and AO 1-2.

Figure 4.6 illustrates how the three band cables are connected between the PC-2000-W and the ADA-2000-E units. The screened analogue cable has a separate ground cable that provides the ground connection to the PC-2000-W panel mounted unit.
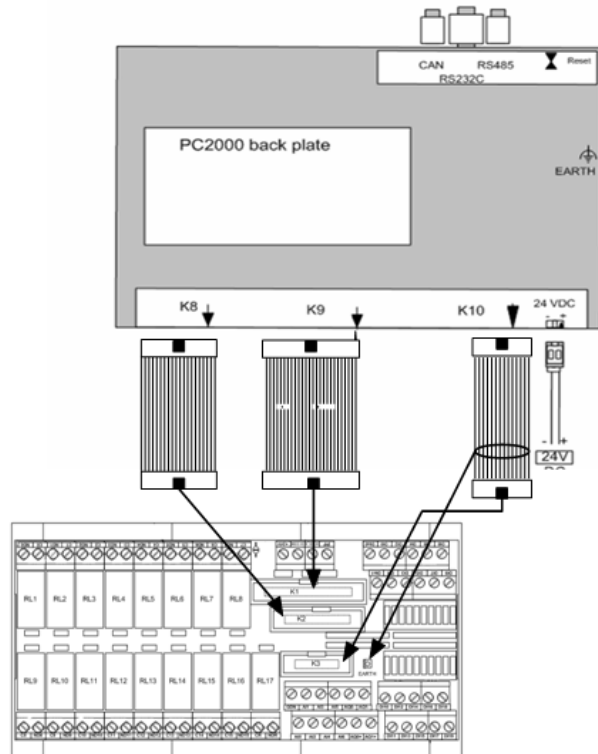
3 I/O-signals

I/O No.		Type	Signal	Notes
AI	1	Level signal (Pressure signal)	4-20 mA	
AI	2	Flow signal	4-20 mA	
AI	3	P1 Motor current / Running confirm.	4-20 mA	
AI	4	P2 Motor current / Running confirm.	4-20 mA	
AI	5	P3 Motor current / Running confirm.	4-20 mA	
AI	6	P4 Motor current / Running confirm.	4-20 mA	
AI	7	Attendance alarm / Intruder alarm	4-20 mA	

DI	1	Low level switch	NO	mostly NC
DI	2	High level switch	NO	
DI	3	Overflow switch	NO	
DI	4	P1 Not in auto (M-0-A)	NO	mostly NC
DI	5	P1 Motor protection	NO	
DI	6	P1 Thermo protection	NO	mostly NC
DI	7	Internal alarm 1, External block. P1	NO	
DI	8	P2 Not in auto (M-0-A)	NO	mostly NC
DI	9	P2 Motor protection	NO	
DI	10	P2 Thermo protection	NO	mostly NC
DI	11	Internal alarm 2, External block. P2	NO	
DI	12	P3 Not in auto (M-0-A)	NO	mostly NC
DI	13	P3 Motor protection	NO	
DI	14	P3 Thermo protection	NO	mostly NC
DI	15	Internal alarm 3, External block. P3	NO	
DI	16	P4 Not in auto (M-0-A)	NO	mostly NC
DI	17	P4 Motor protection	NO	
DI	18	P4 Thermo protection	NO	mostly NC
DI	19	Internal alarm 4, External block. P4	NO	
DI	20	Block all pumps / Phase failure	NO	

CI	1	Flow meter / Rain meter (Pulses)	--	
CI	2	Energy meter / Flow meter (Pulses)	--	

AO	1	Analogue out (4-20 mA)	4-20 mA	Mirror of AI 1- 7
AO	2	Analogue out (0-10 V)	0-10V	Mirror of AI 1- 7

ADA-2000 - Plintanslutning

DO	1	ND1	C1	P1 Start/ Stop	NO	
DO	2	ND2	C2	P1 Reset Motor Prot,	NO	
DO	3	ND3	C3	P2 Start/Stop	NO	
DO	4	ND4	C4	P2 Reset Motor Prot,	NO	
DO	5	ND5	C5	P3 Start/Stop	NO	
DO	6	ND6	C6	P3 Reset Motor Prot,	NO	
DO	7	ND7	C7	P4 Start/Stop	NO	
DO	8	ND8	C8	P4 Reset Motor Prot,	NO	
DO	9	ND9	C9	Agitator/ Flushing	NO	
DO	10	ND10	C10	Not used	NO	
DO	11	ND11	C11	Attendance alarm	NO	For alarm horn –Alarm is sent.
DO	12	ND12	C12	Alarm (not ackn.)	**NC**	
DO	13	ND13	C13	Alarm (active)	**NC**	
DO	14	ND14	C14	Not used	NO	
DO	15	ND15	C15	Not used	NO	
DO	16	ND16	C16	Modem reset	**NC**	Interrupts the power to GSM-modem.

4   Electrical connections

4.1   Power supply 24 V DC

The power supply to the ADA-2000 is 24 V dc and should be protected by 150mA fuses, these fuses are dimensioned for the load of the PC-2000-W and ADA-2000-E only, all additional 24 VDC load requires larger or separate fuses. This is this same power source that will supply the **PC-2000-W** (Operator interface and CPU)
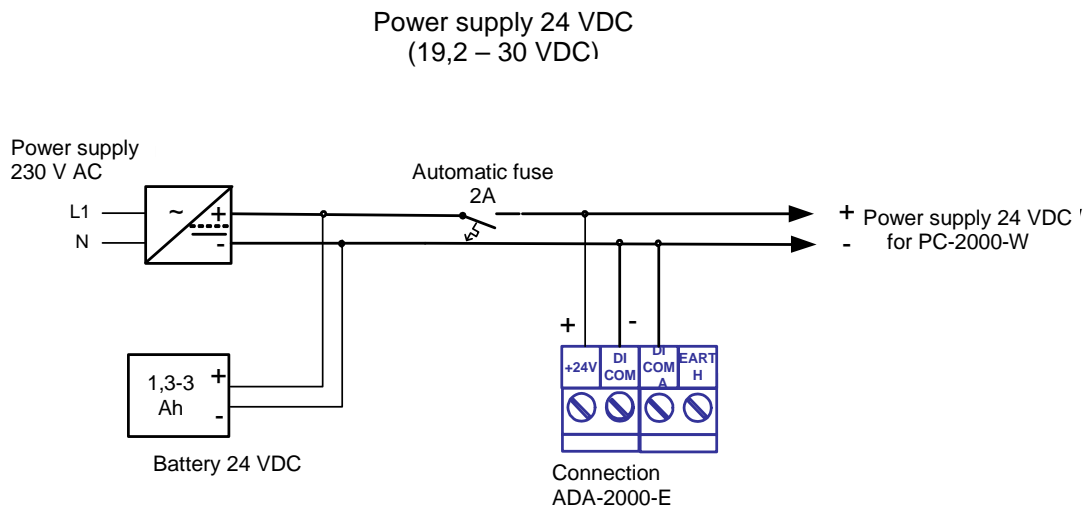
Power supply 24 VDC
(19,2 – 30 VDC)

Figure 4.1 shows a typical power supply connection to the PC-2000-W and ADA-2000-E units with battery back-up.

If the utility power has problems with transients due to atmospheric discharges etc. a surge protection device should be installed at the 230 V AC supply line.

If the utility power has problems with unstable supply voltage (over/under voltage) it is recommended to install a stabilizing device at the 230 V AC supply line.

Inputs with digital pump running confirmation

If pump current transducers are not used, and pump running confirmation is required, the analogue inputs AI 3, 4, 5 and 6, are used as "digital" inputs by connecting a resistance (supplied with the unit) in series with the running confirmation indicator contact (normally a contactor aux contact).

The analogue GDN terminal has to be connected to the ADA2000 negative 24 VDC supply.
AI7 is used with a resistance connected in series with an alarm switch for personal alarm or intruder alarm.

Figure 4.6 Analogue input configuration using digital pump running confirmation through a resistance connected in series with the running confirmation indicator contacts in the control cabinet.
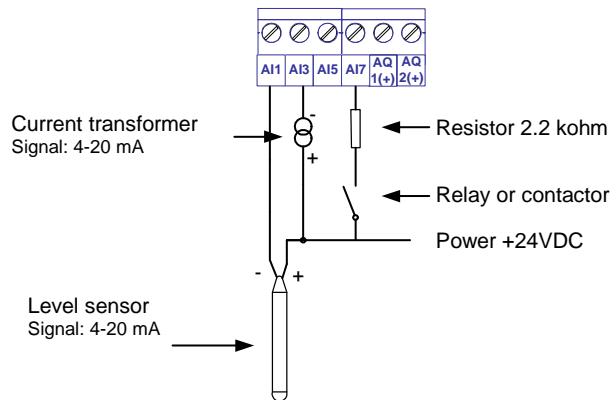
4.6 Analogue inputs

Inputs with pump current transducers for running confirmation

All analogue devices are supplied with +24VDC, voltage to its positive terminal.
The negative terminal of the device is connected to the corresponding analogue input terminal on the I/O board (AI 1-7).
The analogue GDN terminal has to be connected to the ADA-2000 negative 24 VDC supply.
AI7 is used with a resistance connected in series with an alarm switch for personal alarm or intruder alarm.

Current transformer
Signal: 4-20 mA

Resistor 2.2 kohm

Relay or contactor

Power +24VDC

Level sensor
Signal: 4-20 mA

The figure left shows how to connect the analogue inputs.

1. Use of a 0/4-20 mA sensor where the 24 VDC is connected to the + side of the sensor and the sensor minus (-) side of the analogue input.

2. Use of input with digital function where a resistor is connected in series to the input.

4.2 I/O-signals description

Digital outputs- the unit has 16 relay outputs which are galvanic separated to allow that different voltages can be used. Each relay has an indicating diode which shows that   the relay is activated
Each relay has a maximum load of 6 Amperes. Maximum voltage is 250 VAC or 30 VDC.

Digital pulse inputs – the unit has 2 digital pulse inputs which are supplied with 24 VDC . These are opto isolated up to 500V (l min) and allows a max. frequency of 500 Hz.

Digital inputs – the unit has 20 digital inputs which are supplied with 24 VDC. Opto isolated up to 500 V. *For digital inputs 11 to 20 to work it is necessary to connect the DI COM terminal connector to DI COM A terminal connector.* All digital inputs have an indicating diode which shows when the input is activated.

Analogue inputs – the unit has 7 analogue current inputs, 0 or 4 to 20 mA. Input 1 and 2 are used as normal current inputs, and inputs 3 to 7 can be used as normal current inputs or for certain functions as digital inputs when a resistor is connected in series.

4.3 I/O-signal connections

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Figure 4.3 Digital output configuration
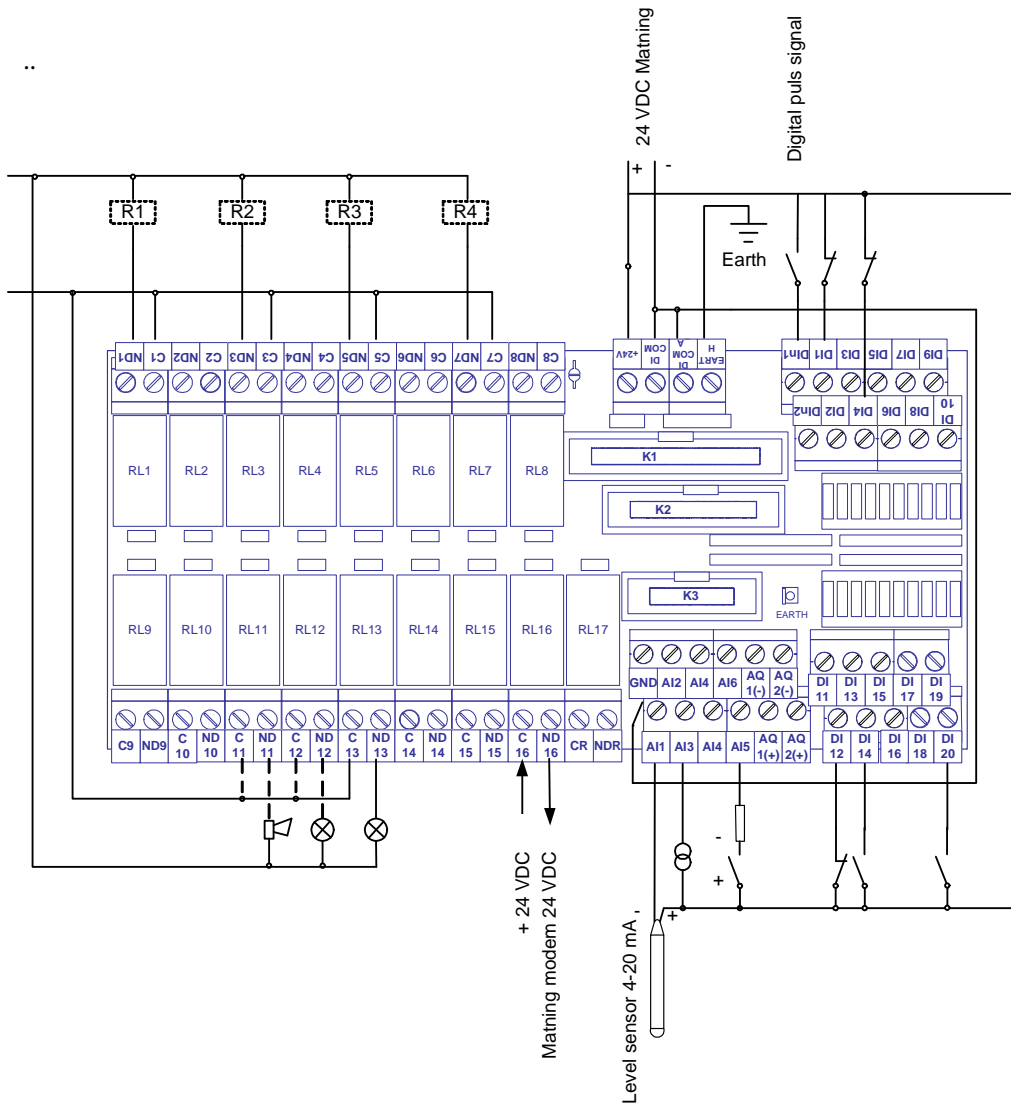
4.4 Digital inputs and counters

All digital input signals are supplied with 24 VDC control voltage.
All digital inputs are opto isolated. All inputs have a corresponding LED showing the status.

Figure 4.4 Digital input and counters configuration.

4.5 Digital outputs

The 16 digital outputs are output relays with a maximum load of 250 VAC1 / 6 Amps. The Out put signal is provided by an external supply through the contact of the output relays. All relays are isolated from each other in order to allow for more than one voltage in the control circuits. All "common" terminals on the corresponding control voltage have to be interconnected for each corresponding control voltage group. All outputs have a corresponding LED showing the status. On the pump on/off outputs the signal is connected in series with the "pump in auto" switch.

Output No 16 is used for resetting the GSM modem at pre-set intervals in case that the modem gets "hung-up"