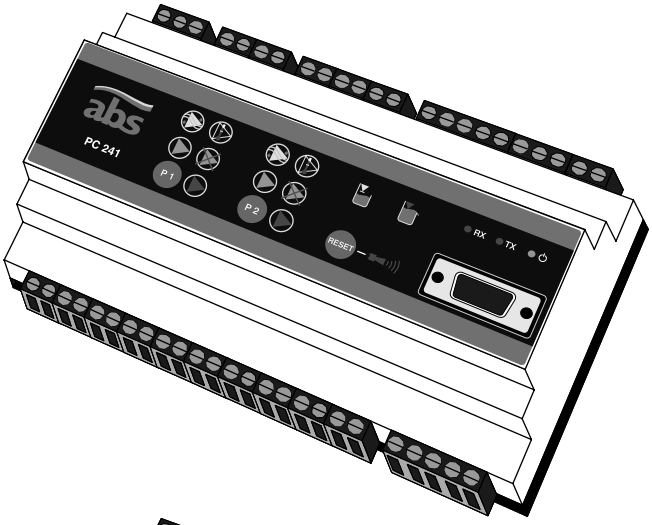
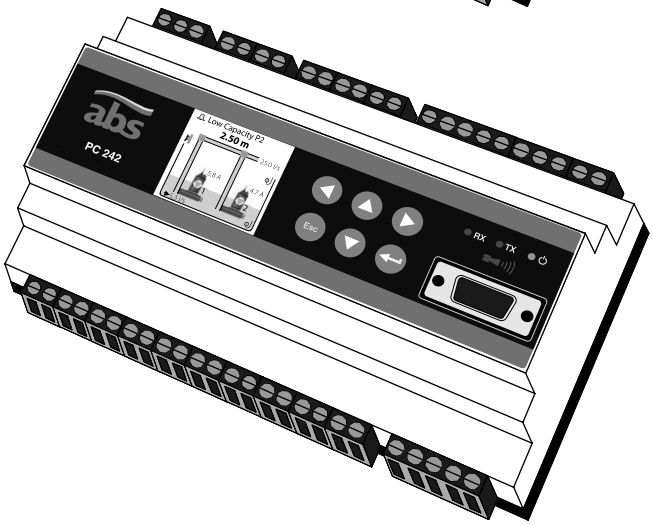
ABS advanced pump controller
PC 241/242





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Installation Guide

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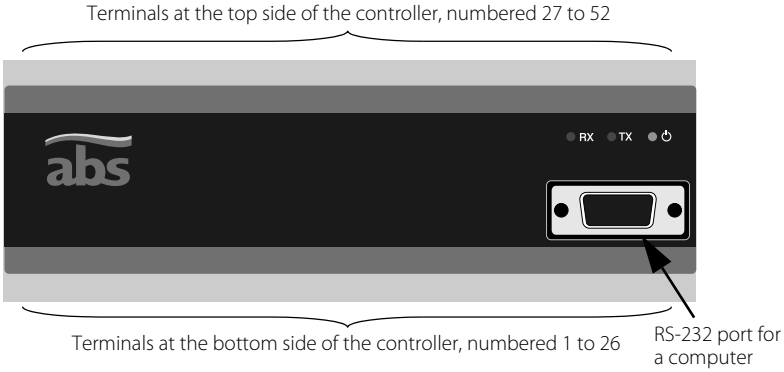
INSTALLATION

Mount the controller

Mount the controller on a 35 mm DIN rail. The physical dimensions of the controller is: 86x160x60 mm (3.39x6.30x2.36 inch) (HxWxD). If it doesn't easily snap onto the rail, you can pull the small tab at the bottom side of the unit, using a small screwdriver.

Make all connections

There are a total of 46 terminals that may be connected to power, sensors, switches, relays and a modem; these terminals are numbered from 1 to 52 according to the following figure:



WARNING! Ensure that **all power is off**, and that **all** output devices to be connected to the controller also are turned **off** before you connect anything!

Table 1 shows all connections to terminals 1–26 at the bottom side of the controller. The usage of the configurable *Digital In* shown in the table is the default configuration.

"Digital In" means a signal that is either *on* or *off* — *high* or *low*, where *high* is between 5 and 34 volts DC. *Digital In* may be connected to either passive devices, such as switches, or active devices that are powered and deliver signals. Figure 1 shows how to connect such devices to the *Digital In* terminals.

Table 2 shows all connections to terminals 27–52 at the top side of the controller. The usage of the configurable *DO 4, 5, 6* and *AI 4* shown in the table is the default configuration. "DO" stands for "Digital Outputs", which are terminals to relays inside the controller.

The power must be DC between 9 and 34 volts. Figure 2 shows how to connect a power-fail switch to *Digital In 9* (terminal 11) and how to connect a battery pack for uninterrupted operation.

The modem should be connected according to Figure 3.

For recommended ABS products, see the *Accessories* chapter in the *ABS advanced pump controller PC 241/242 User Guide*, located on the CD.

While connecting the leakage sensors (terminal 17 through 20), we recommend a separate reference wire to each sensor to protect against magnetic induced ground currents. However, it may also work with a common ref-wire for both sensors, provided that it is also connected to the ground on the PC 241/242.

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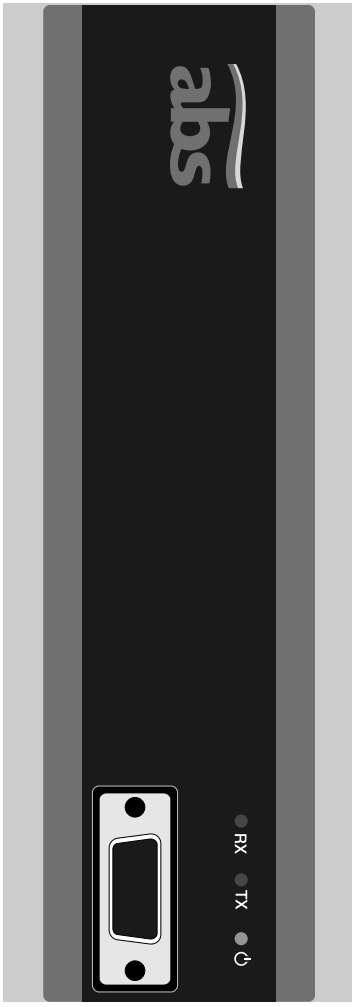
Table 1 *Terminals at the bottom side of the pump controller*

Usage/Description	Name[i]			#
Voltage supply, 9–34V DC ⇒		V^+	⌀	1
		⏚	⌀	2
Overflow sensor	Digital In 1	→	⌀	3
HIgh-level float	Digital In 2	→	⌀	4
Fallen motor protector for pump 1	Digital In 3	→	⌀	5
Fallen motor protector for pump 2	Digital In 4	→	⌀	6
From switch indicating that pump 1 is *not* in auto	Digital In 5	→	⌀	7
From switch indicating that pump 2 is *not* in auto	Digital In 6	→	⌀	8
From switch indicating that pump 1 is running	Digital In 7	→	⌀	9
From switch indicating that pump 2 is running	Digital In 8	→	⌀	10
Power failure	Digital In 9	→	⌀	11
From switch indicating that staff is in station	Digital In 10	→	⌀	12
Low-level float	Digital In 11	→	⌀	13
Fallen motor protector for motor connected to DO 6	Digital In 12	→	⌀	14
Pulse channel 1 (usually for a precipitation meter)	Digital In 13	→	⌀	15
Pulse channel 2 (usually for an energy meter)	Digital In 14	→	⌀	16
Leakage sensor for pump 1		→	⌀	17
ref is the negative reference point—it may be connected to ground		ref	⌀	18
Leakage sensor for pump 2		→	⌀	19
ref is the negative reference point—it may be connected to ground		ref	⌀	20
				21
Modem. See Figure 3 for how to connect different types of modems.	GND	⏚	⌀	22
	RXD	→	⌀	23
	TXD	←	⌀	24
	RTS	←	⌀	25
	CTS	→	⌀	26



i. "Digital In" means a signal that is either *on* or *off* (*high* or *low*), where *high* is anything between 5 and 34 volts DC and *low* is anything below 2 volts. All digital inputs are configurable in the menu Settings > Digital Inputs, but the configuration shown here is the default one. The arrows indicate the direction of information; the only outgoing signals here are TXD and RTS for the modem.

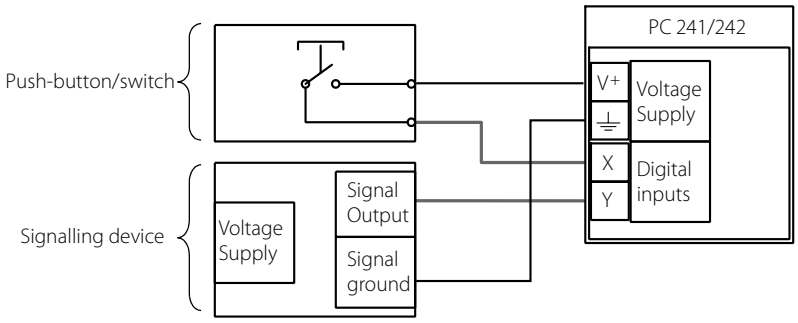


Figure 1 The *Digital In* terminals may be connected to either passive devices, such as switches, or active devices that are powered and deliver signals. Connect devices according to the figure.

If you choose another configuration than the default one for Digital In and Digital Out, make notes accordingly in Table 3 and Table 4 on page 4.

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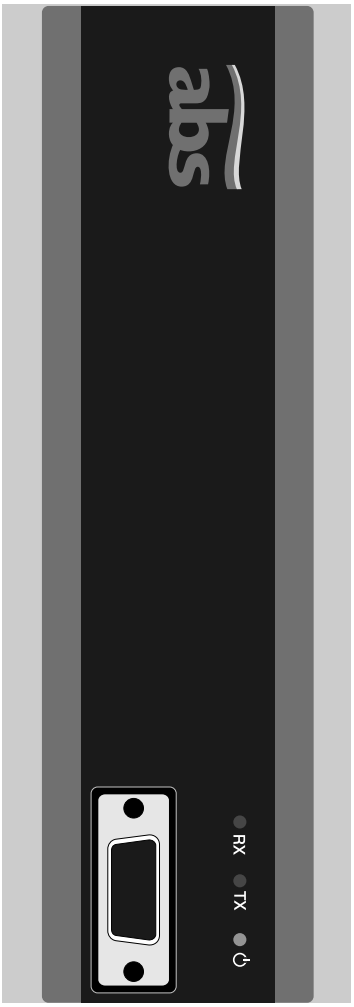

Table 2 *Terminals at the top side of the pump controller*

#	Usage	Description
27	DO[i] 1. Alarm output	Normally closed
28		Relay for alarm
29		Normally open
30		
31	DO[i] 2. Pump 1 control	For start/stop of pump 1
32		
33	DO[i] 3. Pump 2 control	For start/stop of pump 2
34		
35		
36	DO[i] 4. Modem supply; or options set for DO 4	Options: reset motor prot., pump failure, remote control, personal alarm indication
37		
38	DO[i] 5. Personal alarm indication; or options set for DO 5	Options: reset motor prot., pump failure, modem supply, remote control
39		
40	DO[i] 6. Mixer/cleaner/drain pump control. Default is mixer.	For start/stop of a mixer, cleaner or drain pump, depending on the setting of DO 6
41		
42		
43	V^+ → Powering analog sensors	V^+ feeds the analog sensors. The value of each input is either in the range 4–20 mA or 0–20 mA, and this is configured in the menu: Settings > Analogue Inputs.
44	← AI[ii] 1. Level sensor	
45	← AI[ii] 2. Motor current for pump 1	
46	← AI[ii] 3. Motor current for pump 2	
47	← AI[ii] 4. Pressure sensor	
48	⏚ Common for temperature sensors	The ⏚ is connected to V^-, and is used as the reference ground for the temperature sensors.
49	← AI[ii] 5. Temperature sensor, pump 1	
50	← AI[ii] 6. Temperature sensor, pump 2	
51	Reserved for future use	
52		

i. DO means Digital Output. It is a relay that may either be *normally closed* or *normally open*. See the menu Settings > Digital Outputs for configuration of these relays. DO 4, 5 and 6 can optionally be used for other purposes than the default ones shown in this table.
WARNING: Since high and low voltage relay terminals require some insulation distance between them, these relay terminals are divided into three groups: (1) DO 1; (2) DO 2-3; (3) DO 4-6. Within each group, the manoeuvre voltage must be the same category (high or low), whereas it may differ between the groups.

ii. AI means Analogue Input. They are all sensing the current in the range 4–20 mA or 0–20 mA. This is configured in the menu Settings > Analogue Inputs. AI 4 can optionally be used for other purpose than a pressure sensor.

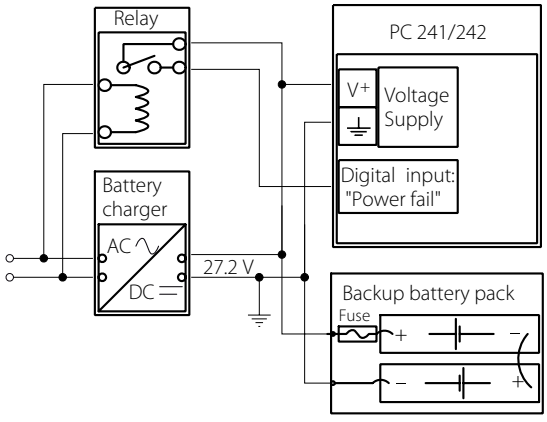

Figure 2 The power must be DC between 9 and 34 volts, but if it also charges batteries, it should be 27.2 V.

Connect a power-fail switch to *Digital In 9* (terminal 11) according to the figure.

For uninterrupted operation in case of power failure, connect a battery pack according to the figure.

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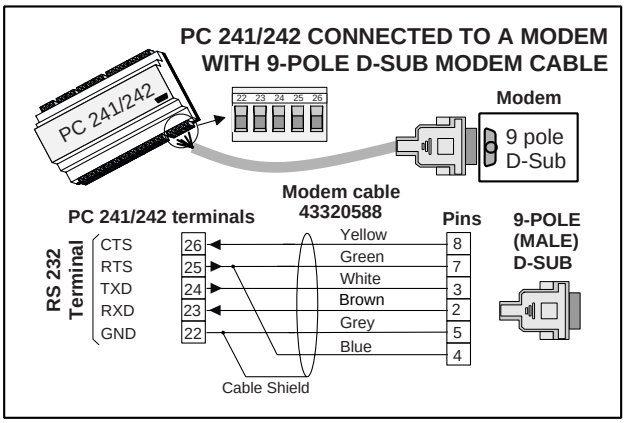

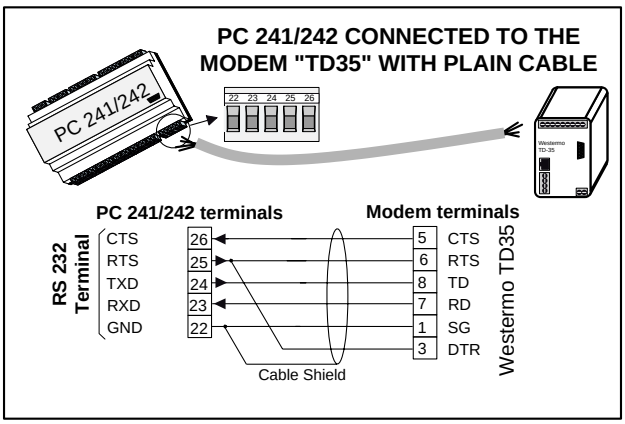

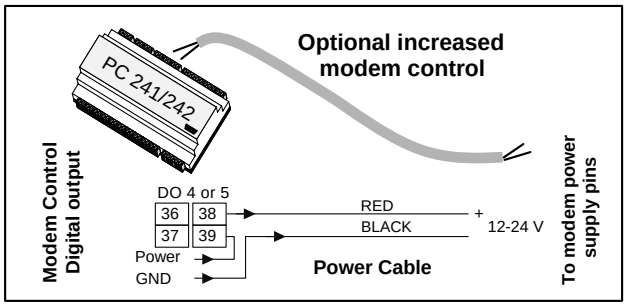

Figure 3 Depending on the type of modem, connect according to the figure. Modem cable 43320588 can be ordered from ABS.

Table 3 *Customized configuration for Digital In*

Usage	Name	#
	Digital In 1 → ⊘	3
	Digital In 2 → ⊘	4
	Digital In 3 → ⊘	5
	Digital In 4 → ⊘	6
	Digital In 5 → ⊘	7
	Digital In 6 → ⊘	8
	Digital In 7 → ⊘	9
	Digital In 8 → ⊘	10
	Digital In 9 → ⊘	11
	Digital In 10 → ⊘	12
	Digital In 11 → ⊘	13
	Digital In 12 → ⊘	14
Pulse channel 1	Digital In 13 → ⊘	15
Pulse channel 2	Digital In 14 → ⊘	16

Table 4 *Customized configuration for Digital Out*

#	Relay	Usage
36	DO 4	
37		
38	DO 5	
39		
40	DO 6	
41		

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Declaration of Conformity

As defined by:
EMC-Directives 89/336/EEC and 92/31/EEC, Low Voltage Directive 73/23/EEC, Directive for CE-Marking 93/68/EEC

(GB)	**Declaration of Conformity**	(SE)	**Försäkran om överensstämmelse**
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ABS Control & Monitoring, Rökerigatan 20, Box 5207, SE-121 18 Johanneshov, Sweden

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ABS advanced pump controller PC 241/242

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Stockholm 2006-02-01

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