Liquid level controller
EKC 347

Introduction

Application

The controller is used for regulation of the refrigerant level in:

• Pump reservoirs

• Separators

• Intermediate coolers

• Economisers

• Condensers

• Receivers

System

A signal transmitter will constantly measure the refrigerant liquid level in the reservoir - the controller will receive the signal and subsequently control the valve, in order to control the refrigerant liquid level according to liquid level setpoint.

Signaltransmitter

It is possible to choose between two signal transmitters - either a capacitive rod (AKS 41/41U) or a float switch (38E). With the capacitive rod it is possible to set the refrigerant level within a wide range. The float switch , however provides a limitation due to the stroke, which is only a few centimeters.

EKC 347

The controller receive a signal and are then able to contol low or high side applications. A analog input signal (voltage/current) can displace the setpoint and then remote change of setpoint is thus possible.

EKC 347 does support 3 types of Danfoss expansion valves. (see below)

One analog input is available as feed back from ICM in order to indicate Opening degreee of the ICM.

Expansions valve

Three types of Danfoss expansion valves can be used

ICM - ICM are direct operated motorized valves driven by digital stepper motor type ICAD

MEV - MEV are direct operated motorized valves driven by actuator SMVE

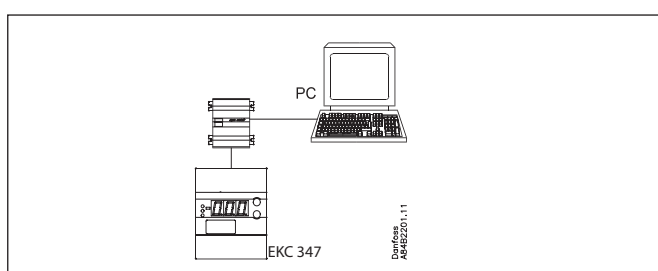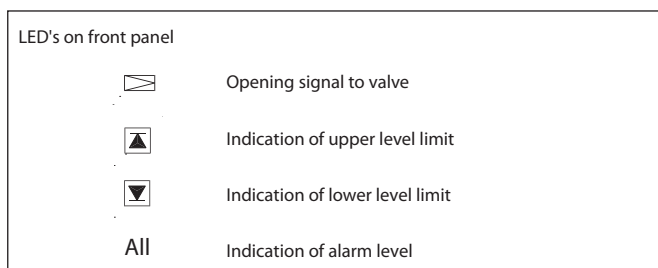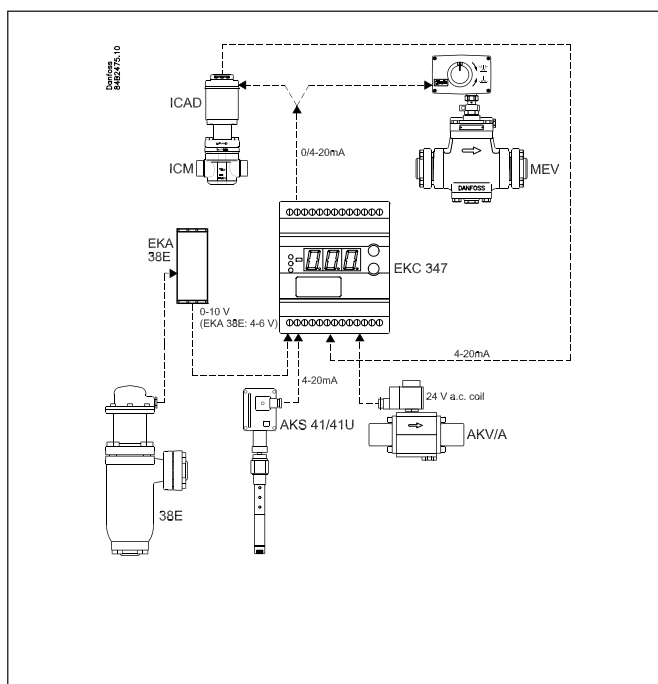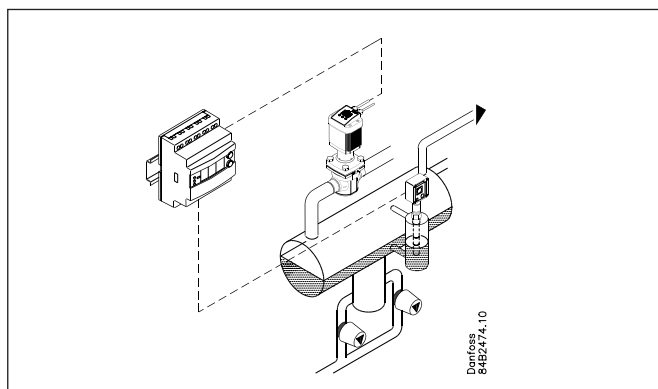AKV/A - AKVA or AKV are pulse-width modulating expansion valves.

Functions

• Liquid level control

• Alarm if the set alarm limits are exceeded

• Relay outputs for upper and lower level limits and for alarm level

• Analog input signal which can displace the reference

• PI control

• Low or High side control

• When AKV/A is selected, a MASTER/SLAVE system can run up to 3 AKV/A with distributed Opening Degree

• Manual control of output

• Limitation of Opening degree possible

• ON/OFF operation with hysteresis

Extra options

• PC operation

The controller can be provided with data communication, so that it may be hooked up with other products in the ADAP-KOOL® range of refrigeration controls. Operation, monitoring and data collection can then be performed from a PC - either in situ or at a service company.

LED's on front panel

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▱	Opening signal to valve
▲	Indication of upper level limit
▼	Indication of lower level limit
All	Indication of alarm level

Application examples

Pump reservoir
Modulating control of injection makes for a more stable liquid level and suction pressure.
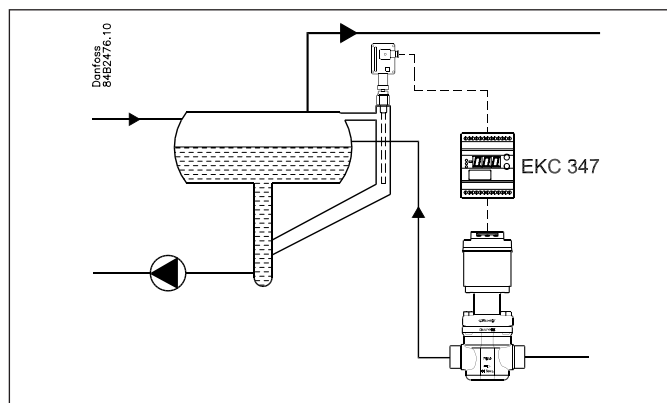
Separator on flooded evaporator
Modulating control and the valve's large capacity range ensure a stable level - even under conditions of quickly changing loads.
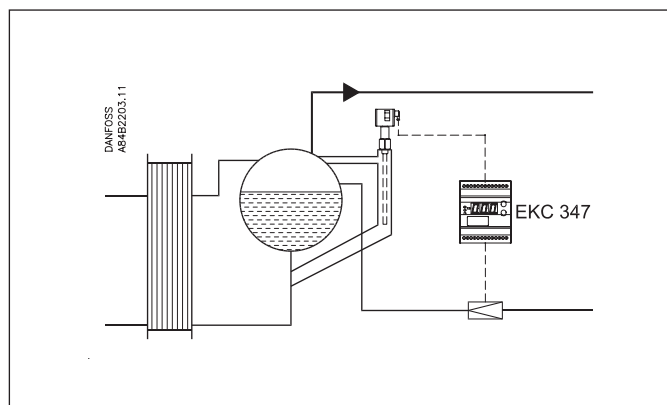
Intermediate cooler
The level transmitter's wide measuring range enables it to monitor the liquid at all levels of the reservoir - and hence to use the signal for safety functions in connection with the max. permissible level
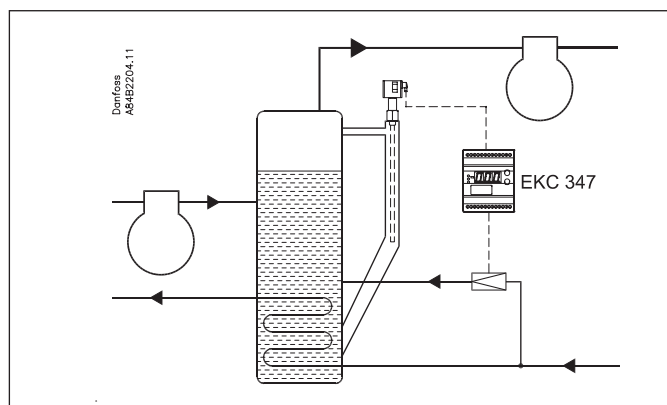
Receiver / condenser
The control system's short reaction time makes it very suited for high-pressure float systems with small refrigerant charges.

Survey of functions

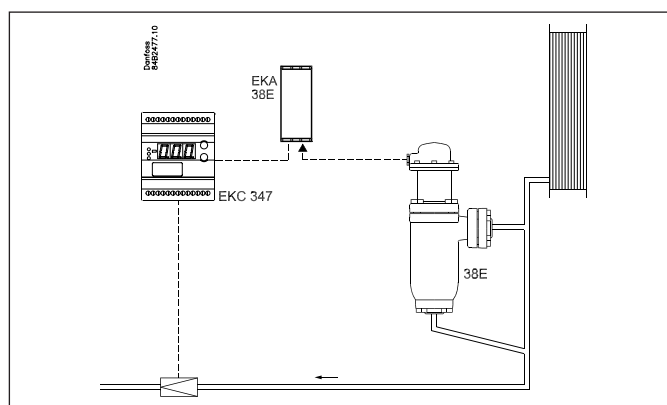| Function	Para-meter	Parameter by operation via data communication
Normal display		**Level control**
The liquid level is indicated in % The % value is calculated on the basis of the input signal and the definition in "o31".	-	Liquid level
The valve's actual opening degree can be displayed by giving the lower button a brief push (1s). Cf. also o17.	-	OD %
Reference		
Set point Regulation is based on the set value provided that there is no external contribution (o10). (Push both buttons simultaneously to set the setpoint).	-	SP Liquid Level
External contribution to the reference This setting determines how large a contribution is to be added to the set reference when the input signal is max (20 mA or 10 V. Cf. also o10). The value is set in %-points.	r06	r06 Ext. Ref.offset
Start/stop of regulation With this setting the level regulation can be started and stopped. Start/stop of level regulation can also be performed with the external contact function. Regulation is stopped if just one of them is OFF.	r12	r12 Main Switch
Alarm		**Level Alarms**
The controller can give alarm in different situations. When there is an alarm the three lowest LED's at the front of the controller will flash, and the alarm relay is cut in		
Limit for upper level Here you set the limit value for the upper level indication. The value is set in %. The relay for the upper level will become activated when the level exceeds the set value.	A01	A01 Upper Dev.
Limit for lower level Here you set the limit value for the lower level indication. The value is set in %. The relay for the lower level will become activated when the level drops below the set level.	A02	A02 Lower Dev.
Time delay for upper level limit When the limit value is exceeded a timer function will start. The relay will not become activated until the set time delay has been passed.The time delay is set in seconds.	A03	A03 Upper Delay
Delay for lower limit level When the limit value is exceeded a timer function will start.The relay will not become activated until the set time delay has been passed. The time delay is set in seconds.	A15	A15 Lower Delay
Limit for alarm level An alarm level can be set which when passed will activate the alarm relay- The value is set in %. Cf. also the definition in A18. If the limit alarm (A3) is not required, it can be avoided by means of the following setting in A16: 100 : If the rising level definition has been chosen. (A18=0 or 2) 0: If the falling level definition has been chosen. (A18=1 or 3)	A16	A16 Limit Alarm
Time delay for alarm level When the alarm level is exceeded a timer function will start. The relay will not become activated until the set time delay has been passed. The time delay is set in seconds.	A17	A17 Limit Delay

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Configuration of limit alarm (A3) level and lower limit alarm(A2) for pump cut-out. To define whether the limit alarm (A3) is linked to rising (A18=0) or falling level (A18=1). It is also possible to configure the Relay for lower level limit when lower limit alarm (A2) is detected. Dedicated to switch off pumps at low level alarm. 0: Rising level. When liquid level is higher than A16, and time in A17 has expired, A3 alarm is generated. 1: Falling level . When liquid level is lower than A16, and time in A17 has expired, A3 alarm is generated. 2: Same function as if A18=0, but in addition (to that: - When liquid level is higher than A02. No A2 alarm and Relay for lower level limit, gives ON signal (cut in) on terminal 8 and 10. - When liquid level is lower than A02 and time in A15 has expired. A2 alarm is generated and Relay for lower level limit, gives OFF signal (cut out) on terminal 8 and 10. 3: Same function as if A18=1, but in addition (to that: - When liquid level is higher than A02. No A2 alarm and Relay for lower level limit, gives ON signal (cut in) on terminal 8 and 10. - When liquid level is lower than A02 and time in A15 has expired. A2 alarm is generated and Relay for lower level limit, gives OFF signal (cut out) on terminal 8 and 10.	A18	A18 Lim. LowMode
Function Alarm relay when A1, A2 or A3 alarms are detected. 0: Alarm relay to be activated when A1 or A2 or A3 are detected. 1: Alarm relay only to be activated when A3 is detected.	A19	A19 Alarm type (With setting = 0 the alarm is also transmitted via the data communication)
Alarm relay The alarm relay will become activated if one of the set limits is exceeded or if the controller loses the input signal from the level-measuring unit.		With data communication the importance of the individual alarms can be defined. Setting is carried out in the "Alarm destinations" menu. See also page 11.
Control parameters		**Injection Settings**
Definition of regulating principle Here you set whether the controller is to open or close the valve when the liquid level is rising. Low (0): Regulation on the low-pressure side. The valve closes when liquid level is rising. High (1): Regulation on the high-pressre side. The valve opens when liquid level is rising.	n35	n35 Low/High Pr.
Period time An AKV/A valve is operated with pulses of a given length. The length depends on the opening degree required. If a large opening degree is required, the pulse will last for an entire period time. A period time will thus comprise both open and closed valve.	n13	n13 AKV per.time
P - band If the value is reduced the regulating range will be reduced. (The P-band will be near the reference).	n04	n04 P-band
I: Integration time Tn The I-link can be made passive by setting the value at max. (600s) (If the Tn value is increased the regulation becomes slower).	n05	n05 Tn sec.
Neutralzone The function is only active if the selected expansion valve is of type ICM or MEV	n34	n34 Neutralzone
Min. opening degree Here you can make a setting if you require a limitation of the valve's working range.	n33	n33 OD Min.
Max. opening degree Here you can make a setting if you require a limitation of the valve's working range.	n32	n32 OD Max.

Miscellaneous		Miscellaneous
Valve and output signal The controller can control three types of expansion valves - ICM, MEV or AKV/A. With AKV/A up to three EKC 347 controllers can be linked up to a MASTER/SLAVE function (this function is only used if there is a need for several parallel AKV/A expansion valves). The application is selected with one of the following settings: 1: ICM or MEV. AO: 4-20 mA 2: ICM or MEV. AO: 0-20 mA 3: AKV/A, AO: 4-20 mA 4: AKV/A, AO: 0-20 mA or, if the master/slave function is used:: 5: AKV/A, MASTER 6: AKV/A, SLAVE 1/1. AO:4-20 mA 7: AKV/A, SLAVE 1/1. AO:0-20 mA 8: AKV/A, SLAVE 1/2. AO:4-20 mA 9: AKV/A, SLAVE 1/2. AO:0-20 mA 10: AKV/A, SLAVE 2/2. AO:4-20 mA 11: AKV/A, SLAVE 2/2. AO:0-20 mA 12: AKV/A, SLAVE 1/1. AO:4-20 mA - AO always updated 13: AKV/A, SLAVE 1/1. AO:0-20 mA- AO always updated 14: AKV/A, SLAVE 1/2. AO:4-20 mA- AO always updated 15: AKV/A, SLAVE 1/2. AO:0-20 mA- AO always updated 16: AKV/A, SLAVE 2/2. AO:4-20 mA- AO always updated 17: AKV/A, SLAVE 2/2. AO:0-20 mA- AO always updated With settings 1 and 2 the AO [mA] signal is dedicated for the motor valve ICM or MEV. With settings 3, 4, AO [mA] will be send out a signal for process indications. With settings 6, 7, 8, 9, 10 or 11, AO [mA] on EKC 347 SLAVE, will be send out a signal for process indications. With settings 12, 13, 14, 15, 16 or 17, AO will also be updated (active) when DI is OFF	o09	o09 AO type
Reference displacement If you wish to connect a signal that is to displace the controller's control reference, the signal must be defined in this menu. The signal is connected to terminals 19-21 or 20-21 0: No signal 1: 4 - 20 mA 2: 0 - 20 mA 3: 2 - 10 V 4: 0 - 10 V (The min. value will give no displacement. The max. value will displace the reference with the value set in menu r06).	o10	o10 AI type
Input signal from the level-measuring unit The input signal for terminals 14-16 or 15-16 must be defined: 0: No signal 1: Current signal of 4-20 mA 2: Voltage signal. The voltage range must be set in the next two menus. (If the connections are a master/slave system and the signal to the master is 4 to 20 Ma, the setting in the slave modules must also be selected to 1 – this must be done, even if the signal is connected to the voltage input).	o31	o31 Levelsign.
Voltage signal's lower value (only if the setting in 031 = 2).	o32	o32 Lev. V. Low
Voltage signal's upper value (only if the setting in o31 = 2)	o33	o33 Lev. V. High
Position signal If a ICM valve is selected it is possible to have ICM valve position as a [mA] feed back signal 0: Not used 1: ICM mA feedback signal from connected ICAD. 2: Not used	o34	o34 Valve feedb.
Frequency Set the net frequency.	o12	o12 50 / 60 Hz (50=0, 60=1)
Address If the controller is built into a network with data communication, it must have an address, and the master gateway of the data communication must then know this address. These settings can only be madewhen a data communication modulehas been mounted in the controller and the installation of the data communication cable has been completed. This installation is mentioned in a separate document "RC8AC"..		Following installation of a data communication module, the controller can be operated on a par with the other controllers in ADAP-KOOL® refrigeration controls.
The address is set between 1 and 60	o03	-
The address is sent to the gateway when the menu is set in pos. ON (The setting will automatically change back to Off after a few seconds.)	o04	-

Language This setting is only required when data communication is connected to the controller. Settings: 0=English, 1=German, 2=French, 3=Danish, 4=Spanish, 5=Italian, and 6= Swedish When the controller is operated via data communication, the texts in the right-hand column will be shown in the selected language. When you change the setting to an other language you must activate o04 before "the new language" can be visible from the AKM program.	o11	o11 Language
Selection of parameter for displays and AO The selection depends on the setting made in menu "o34". The selected value to display is also send to AO, except when ICM, MEV or AKV/A as MASTER, has been selected as valve type (o09=1 or 2 or 5) If o34 has been set at 0, the subsequent setting of o17 will mean: 0: The liquid level will be shown in the "normal display" 1: The valve's opening degree OD will be shown in the "normal display" If o34 has been set at 1, the subsequent setting of o17 will mean: 0: The liquid level will be shown in the "normal display" 1: The ICM valve position feed back signal [%] will be shown in the "normal display" The normal display has now been selected. If the other is requested, activate the controllers lowest button This will give a display showing of liquid level/opening degree - or vice versa. After five seconds the display will revert to the original mode.	o17	o17 Display / AO
Manual control of outputs In connection wit service the individual relay outputs and the AKV/A output can be put in pos. ON. But not until regulation has been stopped. OFF: No override 1: Relay for upper level is ON 2: Relay for lower level is ON 3: AKV/A output is ON 4: Alarm relay is activated (terminals 12 and 13 will be connected)	o18	-
Service		**Service**
A number of controller values can be printed for use in a service situation		
Read liquid level	u01	u01 Liquid level
Read the control reference (Set reference + any contribution from external signal)	u02	u02 Liq. Lev Ref
Read valve's opening degree	u24	u24 OD %
Read value of the external current signal (reference displacement) which is received on terminals 19-21	u06	u06 Ext. Ref. mA
Read value of the external voltage signal (reference displacement) which is received on terminals 20-21	u07	u07 Ext. Ref. V
Read value of the current signal (level signal) received on terminals 15-16	u30	u30 Levelsign. mA
Read value of the voltage signal (level signal) received on terminals 14-16	u31	u31 Levelsign. V
Read value of the current signal (position signal from the valve) received on terminals 17-18	u32	u32 Valve fb mA
Read position signal from the valve. The value is converted into % of the total opening degree	u33	u33 Valve fb %
Read value of the delivered current signal (terminals 2-5)	u08	u08 AO mA
Read status of input DI (start/stop input)	u10	u10 DI
	--	DO1 Limit alarm Read status of alarm relay ON is operating status with alarm
	--	DO2 Upper alarm Read status of the relay for the upper level limit
	--	DO3 Lower alarm Read status of the relay for the lower level limit
Operating status		
Operating status of the controller can be called forth in the display. Push briefly (1s) the upper button. If there is a status code, it will be shown on the display. (Status codes have lower priority than alarm codes. In other words, you cannot see a status code, if there is an active alarm.) The individual status codes have the following meanings:		EKC State (0 = regulation)
S10: Level regulation stopped by the internal or external start/ stop		10
S12: Liquid level had exceeded A01 limit or Liquid level is lower than A02 limit		12

Operation

Display

The values will be shown with three digits, and after an operation the controller will return to its standard mode and show the measured liquid level.
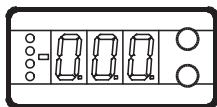
Light-emitting diodes (LED) on front panel

There are LED's on the front panel which will light up when the corresponding relay is activated.

The upper LED will indicate the valve's opening degree. A short pulse indicates a slow liquid flow and a long pulse a fast liquid flow.

The three lowest LED's will flash, if there is an error in the regulation.

In this situation you can upload the error code on the display and cancel the alarm by giving the uppermost button a brief push.

The buttons

When you want to change a setting, the two buttons will give you a higher or lower value depending on the button you are pushing. But before you change the value, you must have access to the menu. You obtain this by pushing the upper button for a couple of seconds - you will then enter the column with parameter codes. Find the parameter code you want to change and push the two buttons simultaneously. When you have changed the value, save the new value by once more pushing the two buttons simultaneously.

 Gives access to the menu (or cutout an alarm)

 Gives access to changes

 Saves a change

Examples of operations

Set reference
1. Push the two buttons simultaneously
2. Push one of the buttons and select the new value
3. Push both buttons again to conclude the setting

Set one of the other menus
1. Push the upper button until a parameter is shown
2. Push one of the buttons and find the parameter you want to change
3. Push both buttons simultaneously until the parameter value is shown
4. Push one of the buttons and select the new value
5. Push both buttons again to conclude the setting

Literature survey:

Menu survey

SW = 1.1x

Function	Parameter	Min.	Max.	Fac. setting
Normal display				
Read the measured liquid level	-		%	50.0
If you wish to see the actual opening degree, give the lower button a brief push	-		%	0
If you wish to set the required setpoint you obtain access by pushing both buttons simultaneously	-	0%	100%	100
Level control				
External contribution to the reference. Cf. also o10. Value is set in %-points.	r06	-100	100	0.0
Start / stop of level control	r12	OFF/0	ON/1	1
Alarm				
Upper level limit	A01	0 %	100%	85
Lower level limit	A02	0%	100%	15
Time delay for upper level limit	A03	0 s	999 s	50
Time delay for lower level limit	A15	0 s	999 s	10
Level alarm limit	A16	0 s	999 S	20
Delay for level alarm	A17	0 s	999 s	0
The level alarm is linked to: 0: Rising level (higher level than A16) 1: Falling level (lower level than A16) 2: Same function as if A18=0. When A2 alarm is generated and Relay for lower level limit, gives OFF signal (cut out) 3: Same function as if A18=1 When A2 alarm is generated and Relay for lower level limit, gives OFF signal (cut out).	A18	0	3	0
Function for Alarm relay when A1, A2 or A3 alarms are detected. 0: Alarm relay to be activated when A1 or A2 or A3 are detected. 1: Alarm relay only to be activated when A3 is detected.	A19	0	1	0
Regulating parameters				
P - band	n04	0%/Off	200%	30
I: Integration time Tn	n05	60	600/Off	400
Period time (only if AKV/A valve is used)	n13	3 s	10 s	6
Max. opening degree	n32	0%	100%	100
Min. opening degree	n33	0%	100%	0
Neutral zone (only for ICM or MEV valve)	n34	2%	25%	2
Definition of regulating principle Low: On the low-pressure side (valve closes when liquid level is rising) High: On the high-pressure side (valve opens when liquid level is rising)	n35	Low/0	Hig/1	0
Miscellaneous				
Controller's address	o03*	0	60	0
ON/OFF switch (service-pin message)	o04*	OFF	ON	
Define valve and output signal: 1: ICM or MEV. AO: 4-20 mA 2: ICM or MEV. AO: 0-20 mA 3: AKV/A, AO: 4-20 mA 4: AKV/A, AO: 0-20 mA Or if a master/slave function is used: 5: AKV/A, MASTER 6: AKV/A, SLAVE 1/1. AO:4-20 mA 7: AKV/A, SLAVE 1/1. AO:0-20 mA 8: AKV/A, SLAVE 1/2. AO:4-20 mA 9: AKV/A, SLAVE 1/2. AO:0-20 mA 10: AKV/A, SLAVE 2/2. AO:4-20 mA 11: AKV/A, SLAVE 2/2. AO:0-20 mA 12: AKV/A, SLAVE 1/1. AO:4-20 mA - AO always updated 13: AKV/A, SLAVE 1/1. AO:0-20 mA- AO always updated 14: AKV/A, SLAVE 1/2. AO:4-20 mA- AO always updated 15: AKV/A, SLAVE 1/2. AO:0-20 mA- AO always updated 16: AKV/A, SLAVE 2/2. AO:4-20 mA- AO always updated 17: AKV/A, SLAVE 2/2. AO:0-20 mA- AO always updated	o09	1	17	1

Continued from previous page

Define the input signal on terminals 10, 20, 21 (external reference displacement) 0: OFF 1: 4-20 mA 2: 0-20 mA 3: 2-10 V 4: 0-10 V	o10	0	4	0
Language 0=English, 1=German, 2=Frensh, 3=Danish, 4=Spanish, 5=Italian, 6=Swedish. When you change the setting you must also activate o04.	o11*	0	6	0
Set supply voltage frequency	o12	0/50 Hz	1/60 Hz	0
Selection of parameter for display and AO (except from when o09=1,2 or 5) If o34 = 0: 0: Liquid level is show 1: Valve's opening degree OD will be shown If o34 = 1: 0: Liquid level is show 1: The ICM valve position feed back signal [%] will be shown	o17	0	1	0
Manual control of outputs: OFF: No manual control 1: Upper level relay put in pos. ON 2: Lower level relay put in pos. ON 3: AKV/A output put in pos. ON 4: Alarm relay activated (cut out)	o18	OFF	4	0
Define input signal (level signal) on terminals 14, 15, 16 0: OFF 1: 4-20 mA 2: 0-10 V (also set the voltage values in the next two menus) Read functional description if the connection used is a master/slave function.	o31	0	2	1
Define input signal's lower value for terminal 14, if required	o32	0.0 V	4.9 V	4.0
Define input signal's upper value for terminal 14, if required	o33	5.0 V	10 V	6.0
Define input signal on terminals 17-18 0: Not used 1: ICM mA feedback signal from ICAD connected 2: Not used	o34	0	2	0
Service				
Read liquid level	u01			%
Read liquid level reference	u02			%
Read external contribution to the reference	u06			mA
Read external contribution to the reference	u07			V
Read current signal on the analog output	u08			mA
Read status of input DI	u10			
Read valve's opening degree	u24			%
Read level signal	u30			mA
Read level signal	u31			V
Read signal from ICM/ICAD	u32			mA
Read signal from ICM/ICAD converted into %	u33			%

*) This setting will only be possible if a data communication module has been installed in the controller.

Factory setting
If you need to return to the factory-set values, it can be done in this way:
- Cut out the supply voltage to the controller
- Keep both buttons depressed at the same time as you reconnect the supply voltage

Error messages

The controller can give the following messages:		
E1	**Error message**	Errors in the controller
E12		The external reference contribution is outside the range
E21		Level signal outside the range 1)
E22		Signal from ICM/ICAD outside the range
A1	**Alarm message**	Upper level limit reached
A2		Lower level limit reached
A3		Alarm level limit reached

1)
If E21 is detected. EKC 347 will force the valve to close or open the valve depending af n35

If Low presure has been selected. (n35=0)
The valve is forced to fully closed, however if Min. Opening Degree (n33) is higher than 0 the valve will open to the value of n33

If High presure has been selected. (n35=1)
The valve is forced to fully open, however if Max. Opening Degree (n32) is lower than 100 the valve will open to the value of n32

Ordering

Type	Function	Code No.
EKC 347	Liquid level controller	**084B7067**
EKA 173	Data communication module (accessories), (FTT 10 module)	**084B7092**
EKA 174	Data communication module (accessories), (RS 485 module) with galvanic separation	**084B7124**

Level transmitter/controller: ....Kindly refer to catalogue RK0YG
AKV / AKVA Valves:................................Kindly refer to catalogue RK0YG
MEV valves and SMVE
motor operation ....Kindly refer to catalogue RD4MA
ICM and ICAD.............. ....Kindly refer to catalogue RD4YB

Data

|		
Supply voltage	24 V a.c. +/-15% 50/60 Hz, 60 VA (the supply voltage is galvanically separated from the input and output signals. Input/output are not individual galvanic isolated)	
Power consumption	Controller 20 W coil for AKV	5 VA 55 VA
Input signal	Level signal	4-20 mA or 0-10 V
	Reference displacement	4-20 mA, 0-20 mA, 2-10 V or 0-10 V
	ICM valve feedback signal	From ICAD 0/4-20 mA
	Contact function start/stop of regulation	
Relay output	2 pcs. SPST	AC-1: 4 A (ohmic)
Alarm relay	1 pcs. SPST	AC-15: 3 A (inductive)
Current output	0-20 mA or 4-20 mA Max. load: 500 ohm	
Valve connection	ICM - via current output MEV - via current output AKV/A- via 24 a.c. Pulse-Width Modulating output	
Data communication	Possible to connect a data communication module	
Ambient temperature	During operation During transport	-10 - +55°C -40 - +70°C
Enclosure	IP 20	
Weight	300 g	
Mounting	DIN rail	
Display	LED, 3-digits	
Terminals	max. 2.5 mm² multicore	
Approvals	EU Low Voltage Directive and EMC demands re CE-marking complied with. LVD-tested acc. to EN 60730-1 and EN 60730-2-9 EMC-tested acc. to EN50081-1 and EN 50082-2	
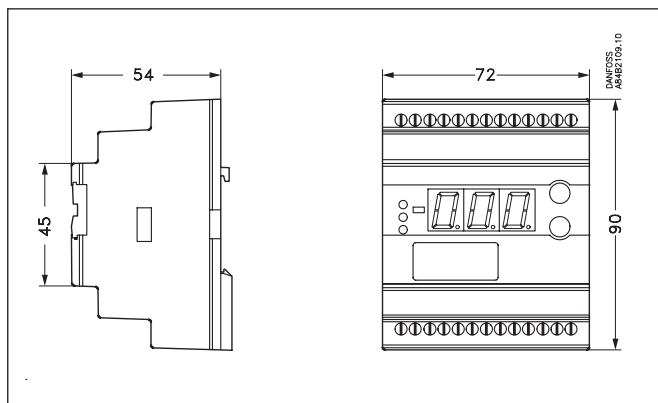
Connections

Necessary connections
Terminals:
25-26   Supply voltage 24 V a.c.
15-16   Signal from level transmitter type AKS 41 **or**
14-16   Signal from converter unit type EKA 38E
23-24   Expansion valve type AKV or AKVA **or**
2-5   Expansion valve type: ICM with ICAD **or** MEV with SMVE
1-2   Switch function for start/stop of regulation. If a switch is not connected, terminals 1 and 2 must be shortcircuited.

Application dependent connections
Terminal:
12-13   Alarm relay. See A19 and A18
8-10   Relay for lower level limit. See A18 for setting of ON (cut in) or OFF(cut out) function
9-10   Relay for upper level limit. There is connection between 9 and 10 when the set value is passed
17-18   ICM valve feedback signal from ICAD 0/4-20 mA
19-21   Current signal **or**
20-21   Voltage signal from other regulation (for external reference displacement)
3-4   Data communication
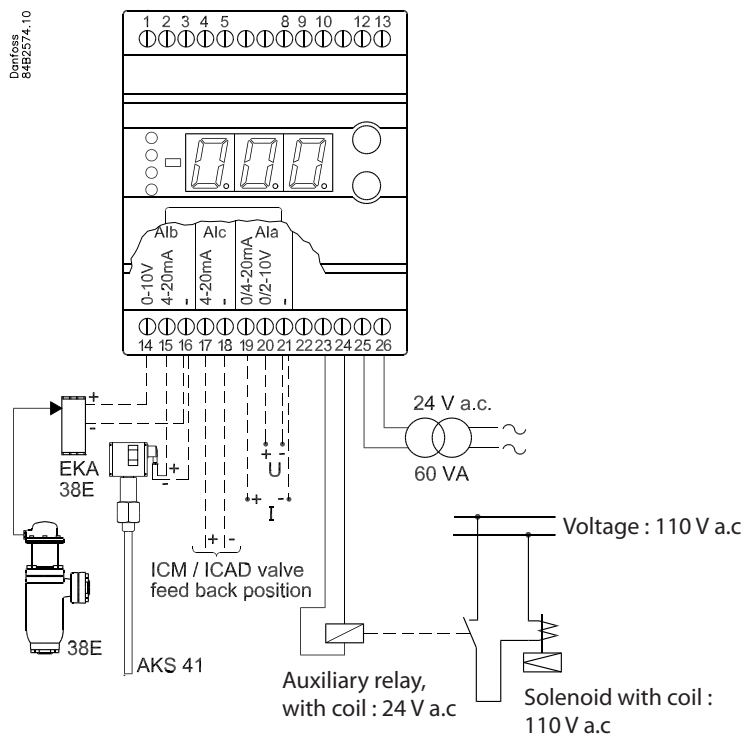   Mount only, if a data communication module has been mounted.
            It is <u>important</u> that the installation of the data communication cable be done correctly. Cf. separate literature No. RC8AC...
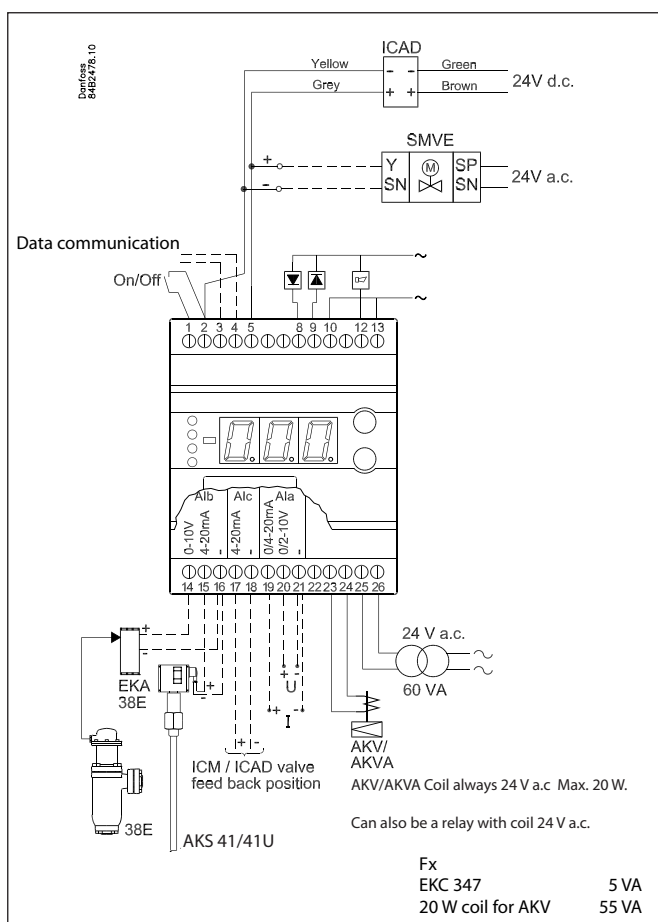
Connections examples
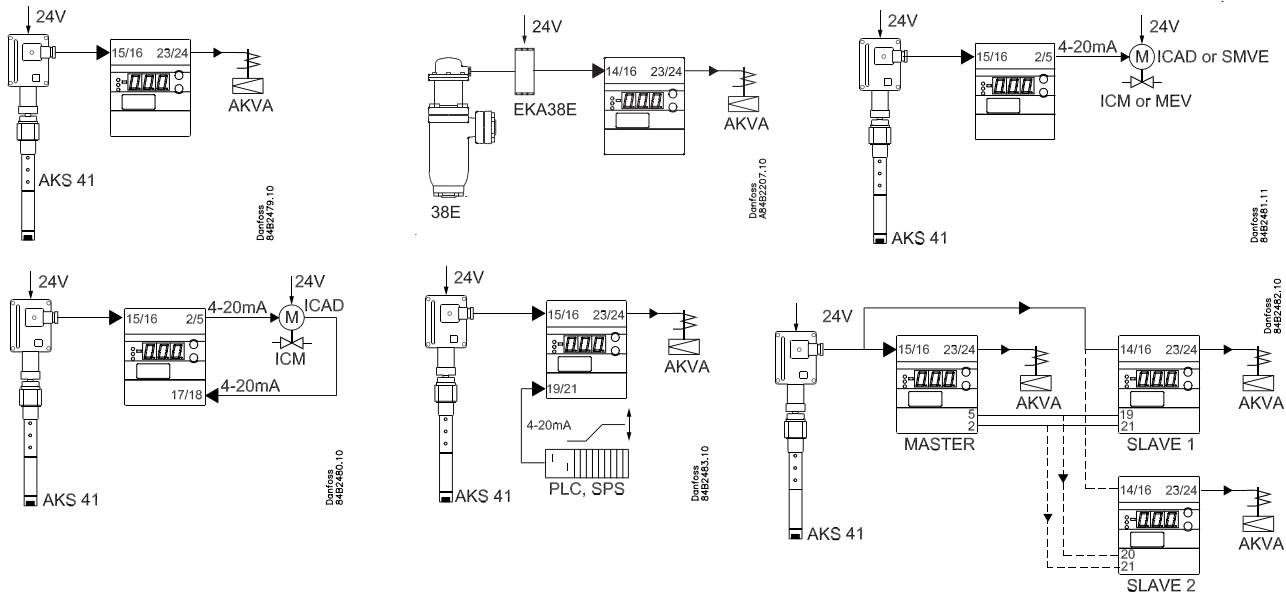
EKC 347 – ON/OFF Application. Open/Close solenoid valve with coil 110 V

ON/OFF application
Beside of modulating PI control EKC 347 does also support ON/OFF operation with hysteresis.

To ensure this operation:
P.Band must be (n04)=0%//OFF
Hysteresis is given by (n34)
Setpoint as normal procedure. (pushing the upper/lower buttons simultaneously)
Low or High side system. (n35)

Low pressure system
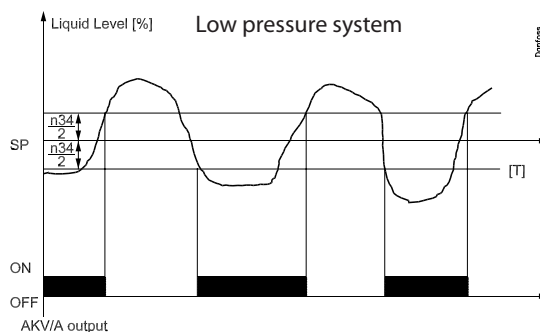
Data communication

This page contains a description of a few of the possibilities you will have when the controller is provided with data communication.

If you want to know more about operation of controllers via PC, you may order additional literature.

Examples

Each controller is provided with a plug-in module.

The controllers are then connected to a two-core cable.

The cable can be connected to a gateway type AKA 245.

This gateway will now control the communication to and from the controllers.

It will collect temperature values and it will receive alarms. When there is an alarm the alarm relay will be activated for two minutes.

The gateway can now be connected to a modem.

When an alarm occurs from one of the controllers, the gateway will - via the modem - make a phone call to the service company.

At the service company a modem, gateway and PC with system software type AKM have been installed.

All the controllers' functions can now be operated from the various menu displays.

The programme will for example upload all the collected temperature values once a day.

Example of menu display
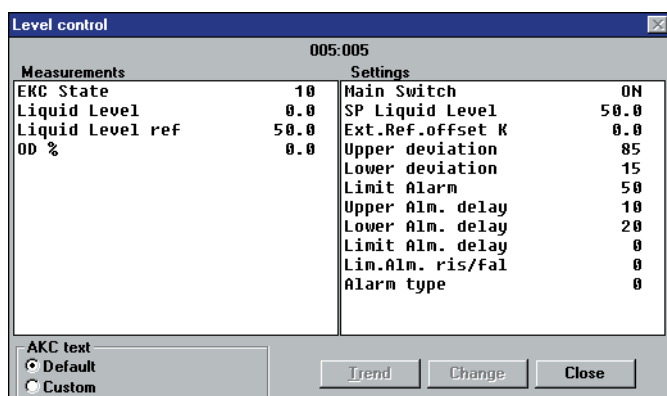
• Measurements are shown at one side and settings at the other.

• You will also be able to see the parameter names of the functions on page 4-7.

• With a simple change-over the values can also be shown in a trend diagram.

• If you wish to check earlier temperature measurements, you can see them in the log collection.

Alarms

If the controller is extended with data communication, it will be possible to define the importance of the transmitted alarms.
The importance is defined with the setting: 1, 2, 3 or 0. When the alarm then arises at some time, it will result in one of the following activities:

1 = Alarm
The alarm message is sent off with alarm status 1. This means that the gateway that is the master in the system will have its alarm relay output activated for two minutes. Later, when the alarm ceases, the alarm text will be retransmitted, but now with status value 0.

2 = Message
The alarm text is transmitted with status value 2. Later, when the "message" lapses, the alarm text is retransmitted, but now with status value 0.

3 = Alarm
As "1", but the master gateway's relay output is not activated.

0 = Suppressed information
The alarm text is stopped at the controller. It is transmitted nowhere.

RC-ET