

Manual

Pump Controller 704

Effective for software version
834048 and later



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CE - CERTIFICATE OF CONFORMITY

This product complies with the requirements concerning electromagnetic compatibility (EMC) stipulated in Council directive no. 89/336/EEC of 3rd May 1989, altered at directive no. 92/31/EEC, on the approximation of the laws of the Member States relating to electromagnetic compatibility.

We declare that the product complies to the values stipulated in EN 50081-1 and EN 50082-1.

General

Thank you for choosing MJK Pump Controller 704. The MJK Pump Controller 704 is a microprocessor controlled pump controller, which is delivered with a hydrostatic measuring system (704P) or ultrasonic measuring system (704U). The pump controller can control up to 4 pumps, valves etc. It is appropriate for plants, where the controller manages the data transfer to a central computer. The pump controller is operated with a combined menu and functional keyboard, making the installation and operation simple and clear.

Hydrostatic measuring system

MJK Pump Controller 704P is delivered with a pressure transmitter, covering measuring ranges from 3 to 30 m (10 to 100 ft). The pressure transmitters are developed for measurement of waste water and liquids with suspended solids. All transmitters are designed as 2-wire 4-20 mA transmitters.

Measurement is based on the following principle. A pressure transmitter is lowered to the bottom of the solids

to measure the hydrostatic pressure. The pressure transmitter transmits an electrical signal proportional to the pressure, resting on the pressure transmitters membrane. The pressure transmitter is connected to the amplifier, where the signal is used for level indication, for limits for start-, stop signals and alarms, as well as for the level proportional 0-20/4-20 mA output signal.

Pressure transmitters are supplied in 2 versions for absolute and gauge pressure.

Ultrasonic measuring system

MJK Pump Controller 704U with ultrasonic measuring system, is delivered with 30 kHz ultrasonic sensor with a resolution of 1 cm (0,3 in). The ultrasonic sensor both sends and receives signals. In the amplifier the signals received from the sensor are converted to a signal proportional to the level.

With the ultrasonic sensor, the system has built in temperature compensation for accurate measurements at varying temperatures.

On the front you find:

Light emitting diodes

There are 4 light emitting diodes (LED's) for indication of operation and alarms. The LED's light up when an output is active - green when used for control and red when used as alarm. The diode flashes during the delay period.

Display

2 x 24 characters text display for indication of user menus and measuring values. When the keys have not been pressed for approx. 1 min, the display will change automatically to show the level.

MENU

By activating the MENU-key, a shift is made to the next main menu, to see the view of the menu.

1 to 4

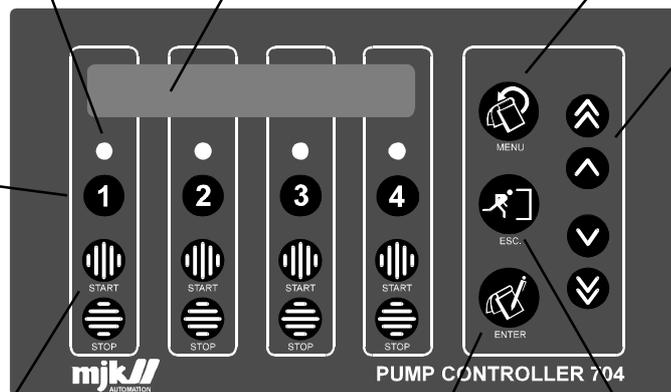
By pressing one of the keys from 1-4 (commonly denominated as #) a reading of the built in datalogger is obtained for number and period of time, the output relays have been active. If flow calculation is applied, a second press will show the pump capacity and the pumped out volume. Third press will show the pumped out volume for the entire pumping station.

START & STOP

The level corresponding the output relay is displayed by pressing one of the 8 START/STOP keys. If the START-key and one of the number keys are pressed simultaneously, the pumps are forced to start. If the STOP-key and one of the number keys are pressed simultaneously, the pumps are forced to stop.

Arrow keys

The arrow keys are used for altering the current setting. In a sub menu with choice the top line will show the valid setting, the bottom line, in parenthesis shows the alternative setting. Use arrow keys to move between the current and not current settings. In and output no. are also changed by activating the arrow keys. By activating the ↑-key, the number of the display will increase. By activating the ↓-key the number will decrease the number.



ENTER

With the ENTER-key selections are confirmed. Also a shift from a main-menu to a sub-menu is carried out with the ENTER-key.

ESC

(ESCAPE=undo): This key will take you back to the previous menu, or undo a choice. By pressing the ESC.-key 2-3 times you always return to the level indication.

Operation of pump controller

The keys under the display give access to the functions used in the daily operation. The MENU key gives access to programming of the pump controller. The programming can be locked separately with an access code i.e. a code must be keyed in, in order to get access to the programming menus.

Functional indications

When the pump controller is connected to 230 V, the display will show:

PROGRAM	8340XX
STARTUP	WAIT A MOMENT

If the pump controller is activated for the first time, the display will show the following:

KEY IN NEW VALUES
PRESS ENTER

Now the pump controller can be configured. The settings can always be altered later on. If the sensor type is changed, or if an output relay is either put into service or out of service, the programme will reset and new values must be keyed in.

F0 Level measuring

When the programming is carried out, function F0, level measuring in the display is shown:

MEASURING	1.50 m
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If the pump controller is set up for level output according to a given elevation, both the level and the level relative to the elevation is shown in the display:

MEASURING	1.50 m
ELEVATION	1,65 m

F1 Starts / Operational time

By pressing one of the keys 1-4 number of starts are shown, as well as operation time for any of the relays 1-4 in use. If the relay is configured for operational relay the relay number is shown with a prepositive P for pumps. If the relays are configured as alarms an A will show:

P2	STARTS 4
OPERATIONAL TIME	2.9 h

If the MENU-key is pressed while the functional indication F0 is in the display, access is given to reset the counter and time counter:

P2 RESET COUNTER?
YES: ENTER NO:MENU

P2 RESET TIME-COUNTER?
YES: ENTER NO:MENU

F2 Capacity / Quantity

If key 1-4 is pressed while F1 is in the functional display, menu F2 will show:

P2 CAPACITY	82 m ³ /h
QUANTITY	5508 m ³

The capacity of each single pump is shown at this point, as well as the pumped out volume. When pressing the MENU-key while functional indication F2, access is given to reset the capacity and water quantities (if code is not applied, see menu 3.3):

P2 RESET CAPACITY
YES: ENTER NO:MENU

P2 RESET QUANTITY
YES: ENTER NO:MENU

F3 Pumping station volume

When pressing key 1-4 while functional indication F2 shows on the display, menu F3 will appear:

PUMPING STATION	
QUANTITY	27803 m ³

Displayed here is the pumped out volume for the entire pumping station, as the sum of the pumped out volumes from all the individual pump's. If the MENU key is pressed, the volume can be reset:

P2 RESET QUANTITY
YES: ENTER NO:MENU

F4 Level Start/Stop

F5 Level Set/Reset

By pressing START or STOP keys, the levels activating the relays can be read. If the relay is configured for controlling, the levels for starting and stopping the pump can be read. If the relay is configured as an alarm, the levels for setting and resetting can be read.

If the pump controller is configured for filling (see menu 6.1) the start level will be lower than the stop level, and vice versa if the pump controller is configured for emptying.

LEVEL 2	START 1.80
	STOP 0.20

If the relay is configured as a level alarm, there is an alternative choice of adjusting the set levels to be either higher (high alarm) or the contrary (low alarm) to the reset

level in menu 6.6.3.

LEVEL 1	SET 1.90
	RESET 1.70

When adjusting a level, press one of the arrow keys, consequently the setting will flash. Set the wanted value with the arrow keys and confirm with ENTER. Double arrow alters the value quickly, single arrow alters the value slowly.

The highest value acceptable is the equivalent of the max. level which has been programmed in menu 5.7. The lowest value acceptable is 1% of the measuring range of the sensor (reading in menu 5.1). The lowest range acceptable between start and stop is 1% of the max. level programmed into menu 5.7.

NB: If level indication with elevation is applied, the values must be keyed in according to the elevation.

F6 Forced start

F7 Forced stop

Forced controlling is carried out by pressing one of the keys 1-4 as well as the corresponding key for either start or stop.

If the level is between the start and stop levels the pumps stay started or stopped when the keys are released.

Above or below the interval between the start and stop levels, the pump is only started/stopped while the keys are pressed. The same applies if the level is not in use (menu 6.7.2).

If a pump which is configured for alternating control is run forced, it is run as directly controlled during the forced running. As soon as the forced running is stopped the pump returns to alternating operation.

Programming of pump controller

When function F0 shows in the display press the MENU key for access to the programming menus (if code is not applied, see menu 3.3). Change between the main menus by repeatedly pressing the MENU key. Press ENTER to change to sub menus. Make choices and adjustments in the sub menus with the arrow keys and confirm with ENTER.

1.0 Language

Choose between languages with the arrow keys.

2.0 Key in access code

If access code has been chosen, key it into this menu before the following menus become accessible. Key in code with keys 1-4. Do not confirm with ENTER.

When the code is keyed in, access is given to make alterations of all settings for 10 minutes after last key is pressed.

3.0 Programming of main functions

Access to the configuring menus are obtained by pressing MENU.

3.1 Access code wanted / not wanted

Choose here if access code is to be used for gaining access to the pump controller. If code is selected, it is not allowed to change the settings.

3.2 Key in new access code

If a new access code is wanted, key it into this menu. If the code is to remain unchanged press the MENU key.

3.3 Code only setup / all adjustments

The code can be chosen to only block the setup i.e. menus which are made accessible with the MENU key. Or it can be set to block all settings i.e. also start and stop settings for levels as well as reset of counters.

If a code has been chosen for all settings, alterations are made by entering menu 2.0 and keying in the code, now access is given to make alterations of all settings for 10 minutes after last key is pressed.

4.0 Measurement level / levels + elevation

Setting of level indication either as absolute measurement or relative measurement according to a given elevation.

An altitude is the level reset-point which is valid on the relevant location, e.g. the elevation of the pumping station above the sea. I.e., if a pumping station is placed 1.25 m above the surface of the sea, and this is keyed in as an elevation, a level measurement of 2.25 m will be indicated as 3.50 m.

If level indication with elevation has been chosen, all start / stop values are programmed according to the elevation.

4.1 Select unit measurement

Level indication and unit of elevation can be chosen as:

m, bar, kPa, cm, mm, l/s, ft or in.

4.2 Select unit volume

Unit of volume can be chosen between

Gal, m³, CF, l

The resolution of measured volumes will be adjusted to the accuracy of flow measurement possible with the pump controller.

4.3 Select unit flow

Unit of flow can be chosen between

m³/h, l/s, MGD, CFS, G/mi

The resolution of measured flow will be adjusted to the accuracy of flow measurement possible with the pump controller.

5.0 Sensor menu - data for mounting

Menus which are accessible, depend on the setup. The pump controller can be either an ultrasonic measuring system or a hydrostatic measuring system. The flow-chart "Programming of Pump Controller 704" at the end of this manual, shows which of the following menus are accessible during system setup.

5.1 Select sensor / span

In ultrasonic measuring systems, the sensor and the amplifier are calibrated together, and the measuring range of the sensor can be read.

In the hydrostatic measuring system, the type of sensor applied can be coded into the system and the measuring scale of the sensor can be read.

5.3 Select comma

When choosing selectable span in hydrostatic measuring systems, the comma is adjusted to set where the decimal point will be in the level readings. The choices are:

1.234, 12.35, 123.4 or 1234

5.4 Select span

When choosing the selectable span with hydrostatic measuring systems; the span is set with the arrow keys. Double arrow changes the value before the comma, single arrow changes the value after the comma.

5.5 Key in elevation

If level indication with elevation has been chosen, the elevation is keyed in at this point.

For ultrasonic systems the elevation is keyed in as the 0-point of measuring.

For hydrostatic measuring systems the sensor is placed in the zero point of the measurement, therefore the elevation for the sensor is keyed in. Use arrow keys for this setting. Double arrow changes the value before the comma, single arrow changes the value after the comma.

5.6 Sensor level

For ultrasonic measuring systems the sensor elevation above the zero point is keyed in. Use the arrow keys for this setting. Double arrow changes the value before the comma, single arrow changes the value after the comma.

5.7 Max level

The max level is set to restrict the setting of start and stop level. Use arrow keys for this setting. Double arrow changes the value before the comma, single arrow changes the value after the comma.

6.0 Output relays programming

In this menu the function for the four output relays are programmed. In menu 6.1 and 6.2 joint settings for the four outputs are programmed. In menu 6.3 to 6.8 the individual outputs are programmed.

6.1 Controlling of emptying / filling

The relays which are configured for control, are programmed to control either an emptying or a filling function. At the emptying function the pump-start levels are higher than the pump-stop levels. At the filling function the pump-start levels are lower than the pump-stop levels.

6.2 Alternating normally / in pairs

At this point the outputs programmed to run as alternating (see menu 6.7.1), can be set up to run normally or in pairs.

At normal alternating, there is alternating between all the outputs which are set up to alternate.

At alternating in pairs, output 1 and 2 are alternated as one of the pairs and between output 3 and 4 as the other pair. If alternating in pairs is chosen all four outputs are used as alternating, and it is therefore not possible to configure any of the relays as alarms or as directly controlled.

6.3 Relay programming

Choose with arrow keys or key 1-4 which output relay is to be programmed, confirm choice with ENTER.

6.4 Relay operating / not operating

Choose whether to have the relay operating or not operating.

6.5 Relay controlling / alarm

Set whether the relay is to be an alarm relay or a pump controlling relay.

When the relays are activated, the light emitting diodes under the display will show, whether it is an alarm relay or a control relay: When an alarm relay is activated the diode will flash a red light; when a control relay is activated the diode will flash a green light.

6.6.1 Relay level alarm / system error

If the relay is set for alarm relay, set the alarm to be a level (high/low) alarm or an alarm for system error.

6.6.2 Relay NC / NO

Choose the relay function for the output, (Normally Open) or (Normally Closed).

6.6.3 Relay set>reset (high) / set<reset (low)

Set the level alarm to be registered as a high or low alarm. If the alarm needs to be a high alarm, choose set > reset. If the alarm needs to be a low alarm choose set < reset.

6.7.1 Relay alternating / directly controlled

The output relays can be set as directly controlled or alternating. At direct control, the start and stop values which have been keyed in for the individual relay activate the outputs, nothing else activates them. At alternating operation the alternating pumps will take it in turns to start up in a cycle, so that when a start level is activated the next relay in the cycle is activated. If several start levels are passed several pumps will consequently be started.

6.7.2 Temporary operation

In this menu you choose whether the output relay, which you have chosen for alternating operation, has to be forced stopped after a given amount of time. Operating hours before forced stop is chosen in menu 6.7.3. Please note that if one output is stopped, the next output relay in the alternation sequence will be activated as soon as start level has been reached, and output delay has passed through.

6.7.3 Stop after XXX minutes

If temporary stop is chosen in menu 6.7.2., key in the operating hours that will cause a forced stop of the output. The interval can be set from 1 – 999 minutes.

6.7.4 Level not in use / in use

To avoid all pumps running at the same time in alternating operation, levels can be left unused.

One level minimum, must be left "in use" for the pump controller to function correctly. If the pump controller is set up to alternate in pairs at least one of level 1 and 2 as well as either level 3 or 4 must be left "in use".

6.8 Relay delay

To avoid short error conditions, or levels continuously activating the relays, a delay time can be set. If the connected pumps are not started simultaneously for over load reasons, the delay time can be set differently for the relays.

In case of an error condition or level continuously exceeding, the diode will flash. If the condition proceeds after the delay time has expired the relay will be activated and the diode will be permanently lit.

7.0 mA output programming

Set the voltage analog for the pump controller.

7.1 mA output 0-20mA / 4-20mA

Set the mA output as either a 4-20 mA signal or a 0-20 mA signal.

7.2 mA output 4-20mA / 20-4 mA

Set the voltage output to be either 4-20 mA signal or 20-4 mA signal.

If (0 or 4) - 20 mA is chosen, a high level will give a high mA-signal and a low level a low mA-signal.

If 20 - (4 or 0) mA is chosen, a high level will give a low mA-signal and a low level a high mA-signal.

7.3 mA output 4 mA = (elevation)

If 4-20 mA has been chosen in 7.2, key in which level the low mA value represents. If 20-4 mA has been chosen, the value represented by the high mA is set here.

7.4 mA output 20 mA = (elevation)

If 4-20 mA has been chosen in 7.2, key in here which level the high mA value represents. If 20-4 mA is chosen, key in the value represented by the low mA.

8.0 Pump flow programming

At flow calculation a known volume between two levels is programmed. The pump controller is then able to calculate the flow from the measured level differences. In the flow calculation the fact, that inlets can occur simultaneously with pumping out is taken into consideration.

To calculate flow the following conditions must be met:

1. All start / stop levels must be outside the interval in which calculation takes place.
The flow calculation can only be carried out between the lowest set start level and the highest set stop level with a margin of *sensor span/200*.
2. The connected pumps must regularly run on their own to obtain reliable flow measuring.

If the above mentioned conditions are not present the following message will appear in the display, when entering menu 8.0 is attempted:

PUMP FLOW NOT POSSIBLE
SEE THE MANUAL

This message will also appear if the pump settings are changed, so the conditions are no longer present. If flow calculation is needed again after this, the level must be set so the conditions are present again.

If it is established that all stop / stop levels comply with the above conditions, access is given to menus 8.1 to 8.5.

8.1 Flow calculation yes / no

Choose whether flow calculation is desired.

8.2 Level for volume: Stop

Set the level where known volume stops. If the control is set for the filling function, the stop level is the highest level. If it is set for emptying, this is the lowest level.

8.3 Level for volume: Start

Set the level for the known volume in this menu. If the control is set for filling, the start level is the lowest level, if it is set for emptying, this is the highest level.

8.4 Size of the volume

At this point the known volume is keyed in, between start and stop level. The resolution of the volume will reflect the measurement accuracy of the pump controller.

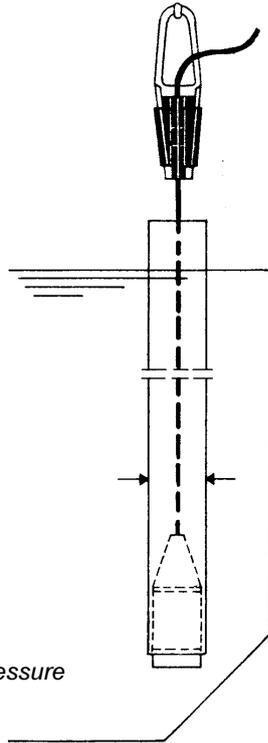
8.5 Correction factor

It is possible to adjust a correction factor. As a starting point it should be reset at 1.00. If heights or other similar uncertain factors regularly occur, the flow can be adjusted by means of control measuring.

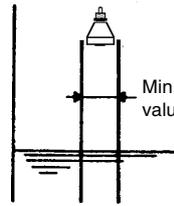
Mounting

Pressure Transmitter

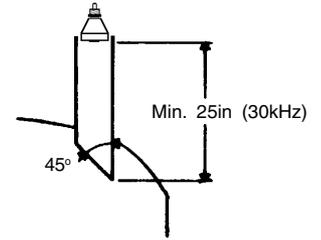
When measuring in a well, it is advantageous to mount the transmitter in a tube, fastening it at the top of the tube by means of the fittings supplied. This mounting facilitates subsequent cleaning and inspection.



Tube-mounted pressure transmitter

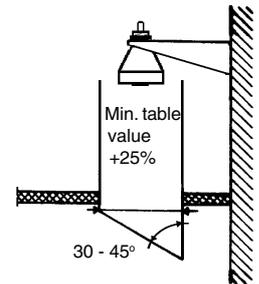


Sensor mounted in tube for scum protection.



Sensor mounted near the top of a closed container.

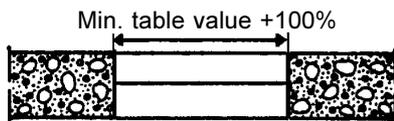
When measuring through a hole in for example a metal plate or grate, a pipe that ends near the lower edge of the sensor should be applied as shown here:



Ultrasonic Sensor

When mounting the sensor for example at the top of a well or a container, ensure that no pipes or cables etc. are disturbing the path between the sensor and the liquid surface. The maximum distance between the sensor and the surface must not exceed the measuring range of the transmitter. Optimum operation is obtained by placing the sensor approx. 1 m (3 ft) for 30 kHz sensor, and approx. 0.5 m (1,7 ft) for the 100 kHz sensor, above the maximum liquid level. The sensor should be positioned perpendicular to the liquid surface (check with a spirit level!). When installing the sensor, ensure that the signal is able to pass any obstruction, taking in consideration that signal spreads relative to the sensor/surface distance as described in the table. If the signal travels along a hard surface such as the side of a well or tank, the table values can be applied directly. Otherwise you may refer to the following mounting examples.

If a sensor is mounted above an obstruction ex. a concrete deck, we recommend that it should be installed as shown below:



If the upward edges on the obstruction are angled as shown below, the sensor can be mounted as the following:

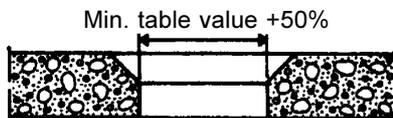
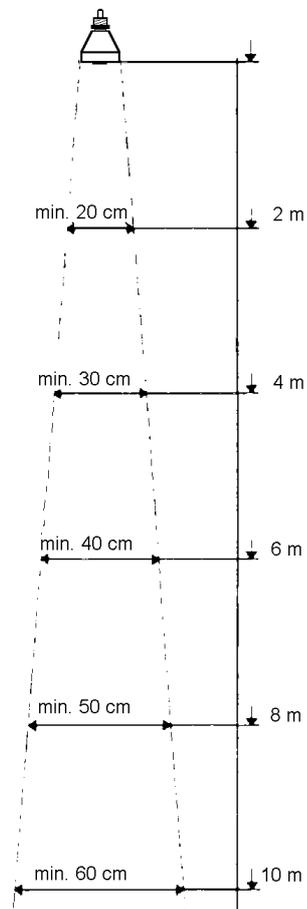


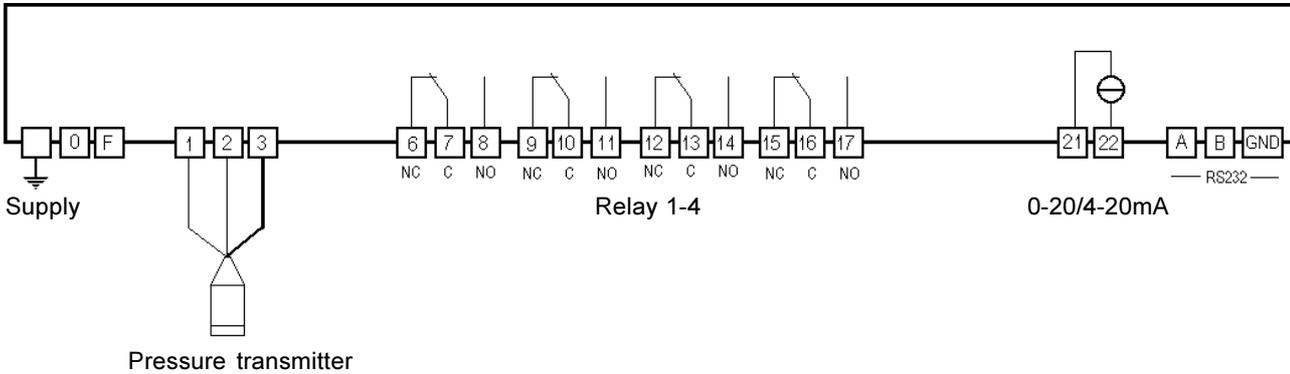
Table values for the signal spreading relative to sensor/surface distance.



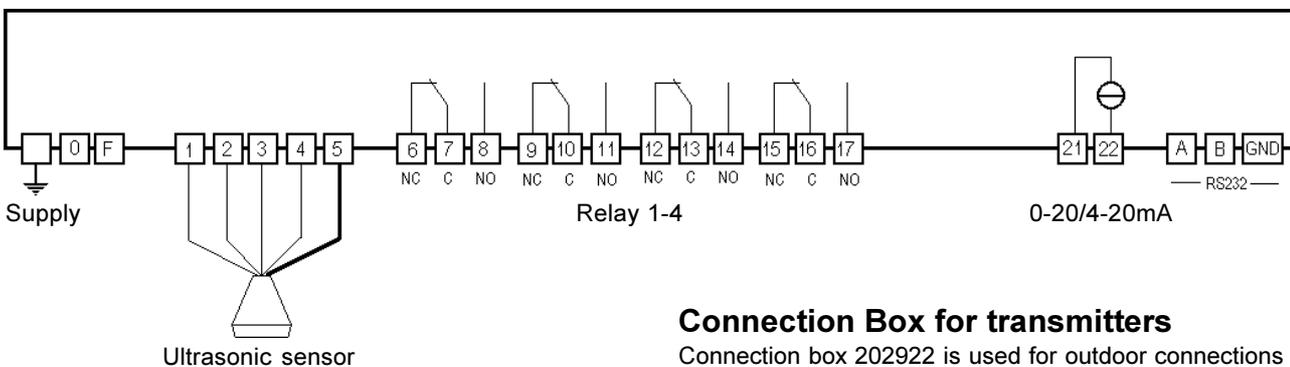
Electrical Connection

Electrical connection of the pump controller for hydrostatical and ultrasonic measuring systems respectively.

Hydrostatic Measuring System



Ultrasonic Measuring System



Connection Box for transmitters

Connection box 202922 is used for outdoor connections of cables from the pressure transmitter. The box is made of ABS plastic, and the housing meets IP65. The box is ventilated in consideration of the tube for pressure equalizing. This allows the cable to be extended with ordinary installation-cable from the box.

Connection box 200590 is used to connect the ultrasonic sensor with cable.

The connection boxes have a plug for connection of an indicator. When the indicator is applied the lid is replaced with a display.

Internal Adjustments

Level measurement

The Pump Controller 704 is factory pre-set for level measurement and pumps or valves control.

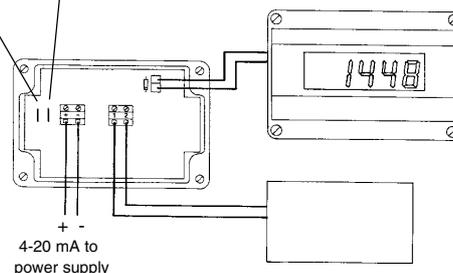
Zero point, span and response time

The Pump Controller 704 is factory pre-set for level measurement in water. The response time is set to minimum at delivery. When replacing the transmitter or when using the 704P for differential level measurement or measurements in pressure or vacuum tanks, it may be necessary to reset both the zero point and the span. The resetting is carried out by simulating the zero point and the span. Depending on the use, it may also be necessary to reset the response time. If the pump controller is used in liquids with a specific gravity different from that of water (e.g. sludge), the span will need to be adjusted. If the pump controller 704U is used in water with foam or uncalm surfaces, it might be necessary to adjust the gain.

Electrical diagram

Soldering bridge "Display" (indicator)

Soldering bridge "Connected up in series"



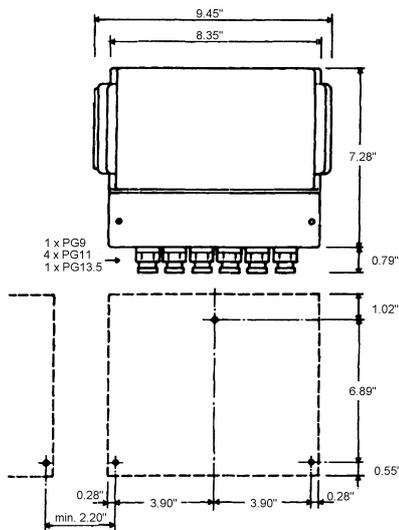
Changing the EPROM

If the EPROM with the pump control program is to be replaced, you must follow these instructions:

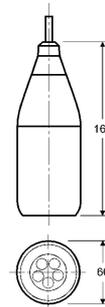
1. Turn off the pump controller
2. Turn off all pumps, to ensure that no accidents will occur when the pump controller is turned back on. This can be accomplished by disconnecting the pumps at the terminals on the pump controller.
3. Remove the top lid
4. Remove the EPROM (IC5) from the socket, be very careful not to ruin the IC.
5. Insert the new EPROM (IC5), the notch must face upwards as shown on printboard, be very careful not to ruin the IC.
6. Mount the top lid once again.
7. Configure the new pump control program.
8. Connect the pumps again.

Dimensions

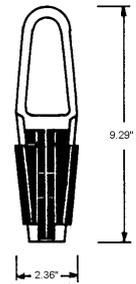
Amplifier



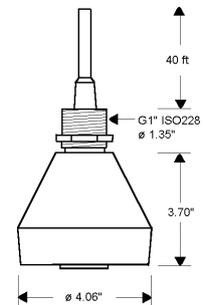
Pressure transmitter



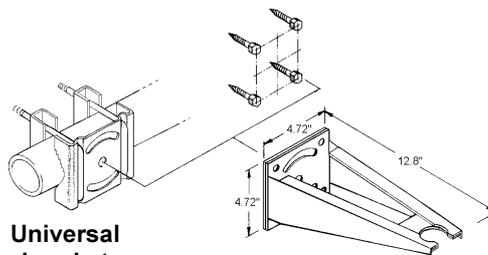
Bracket



Ultrasonic sensor



Wall mounting



Universal bracket

Bracket for ultrasonic sensor

Maintenance

The pump controller and the ultrasonic sensor does not require any particular maintenance. When cleaning the pressure transmitter, care must be taken not to damage the membrane.

Ordering Details

Part no.:	Specifications:
201040	704U-1111 Controller, with 7005-1013, range 0 - 10 m
202025	704P-1103 Controller, input 4-20mA (only absolute pressure)
202030	704P-1104 Controller, input 4-20mA
202035	704P-1114 Controller, with 7060-1413, range 0-3 m
202040	704P-1124 Controller, with 7060-1423, range 0-10 m
202045	704P-1134 Controller, with 7060-1433, range 0-30 m
202050	704P-1113 Controller, with 7050-1413, range 0-10 m (With air pressure compensation)

Accessories

200050	Update from old version of 704 to new version (from serial no. 9500)
200052	Extra input for reference transmitter for level difference measuring. (Order transmitter separate)
200055	Galvanic separation of mA output
200105	Panel Mounting kit
200115	Local mounting set with rain roof

Accessories Ultrasonic Sensor 7005:

200205	Universal bracket
200220	Bracket for ultrasonic sensor 7005
200590	Connection box for cable for sensor 7005
200595	Cable not in standard length for sensor 7005
690010	Cable for ultrasonic sensor 7005

Accessories Pressure Transmitters 7050 and 7060:

202920	Cable not in standard length for transmitters 7050/7060
202922	Connection box for cable with compensation tube
202923	Connection box as 202922 with plug for programming unit
691010	Cable for hydrostatic transmitter 7050
691014	Cable for hydrostatic transmitter 7060

Specifications

Ultrasonic Sensor 7005-1013

Measuring range:	0,75-10 m
Frequency:	30 kHz
Beam spread:	3°
Temperature:	-20 - +60 °C
Dimensions:	Ø 103 × 94 mm
Materials:	PP green / POM, black
Cable:	12 m shielded oilresistant PVC, can be extended to 100 m
Protection:	IP 68, withstands immersion, max. 1 bar

Pressure Transmitter 7050 or 7060

Measuring range:	0-10m Transmitter 7050-1413, absolute pressure 0-3m Transmitter 7060-1413, gauge pressure 0-10m Transmitter 7060-1423, gauge pressure 0-30m Transmitter 7060-1433, gauge pressure
Function:	2 wire, 4-20 mA
Accuracy:	±1%
Temperature:	-10 - +60 °C
Dimensions:	Ø 60 × 140mm
Materials:	House: PP Diaphragm: Acid-proof steel, AISI 316 L
Cable:	2 x 0,5mm ² , length 12 m (with 7060-1433: 35m), can be extended
Mounting:	On bracket (supplied).
Protection:	IP 68, waterproof, withstands immersion, max. 3 bar

Amplifier 704

Measuring range:	Determined by sensor, scaleable in range -999.99 - +999.99 (m, bar, kPa, cm, mm, l/s, ft or in))
Voltage:	220 - 240/110 - 120/24V AC, consumption approx. 10V A
Temperature:	-20 - +60 °C.
Input signal:	From ultrasonic sensor, pressure transmitter or 4 - 20 mA
Accuracy:	±1%
Outputs:	Analog: 0-20/4-20 mA max. 500W Digital: 4 relays with voltage free charge-over contact Inductive load: 250V, 4A ohmic, max. 100V A Data: RS232
Indication:	Menus and other text in clear language, measured values in the range -100m to +300m
Operation:	From keyboard: Menu and function control
Dimensions:	185 x 240 x 115mm (hxwxd)
Materials:	Polystyrol, with clear cover
CE:	EN50081-1, EN50082-1
Protection:	IP 65

Pumping Station name:	Pumping Station no.:	Date:
	Serial no.:	Sensor no.:

ACCESS CODE		MEASURING SYSTEM				CONTROLLER FOR	
yes	no	ultrasonic		hydrostatic		pump out	pump in
code		level		level and altitude			
sensor and span							
select unit	m	bar	kPa	cm	mm		
select comma	1 . 234	12 . 34	123 . 4	1234			
select span							
altitude							
sensor altitude							
max. level							
sensor level (704U)							
ALTERNATING							
normal		in pairs					

RELAY PROGRAMMING													
	in use		relay for		at control		at alternating control		at alarm		at level alarm		relay delay
	yes	no	control	alarm	alter-nating	direct	level in use	level not in use	system failure	level alarm	set > reset	set < reset	
relay 1													sec.
relay 2													sec.
relay 3													sec.
relay 4													sec.

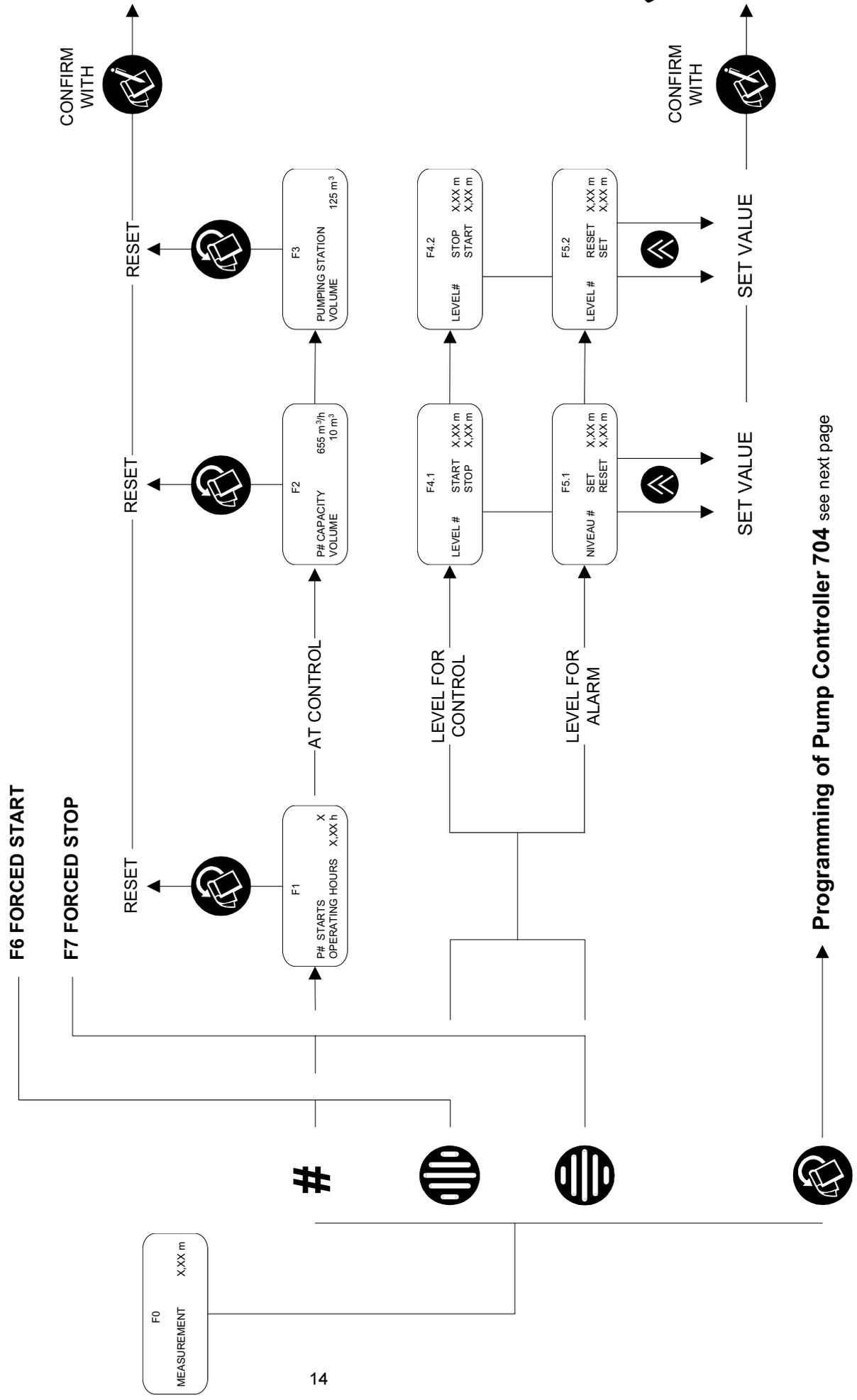
mA OUTPUT					
mA span		mA orientation			
4 - 20 mA	0 - 20 mA	0/4 - 20 mA	20 - 0/4 mA	0 / 4 mA =	
				20 mA =	

PUMPFLOW CALCULATION		
	yes	no
level for volume start		
level for volume stop		
the volumes capacity		
correction factor		

START / STOP LEVELS		
	start	stop
relay 1		
relay 2		
relay 3		
relay 4		

Operation of Pump Controller 704

sign valid for key 1,2,3 & 4



Programming of Pump Controller 704

sign valid for relay no. 1,2,3 & 4

