This manual contains important safety informations about installation and use of this equipment. Ignoring this informations could result in injuries or damages.

It is strictly forbidden to use this equipment with radioactive chemicals!

OPERATING MANUAL FOR "DIN DIGITAL CD" CONTROLLER

Read carefully!

ENGLISH Version

R1-11-05

“DIN Digital” series instruments comply with the following European regulations:

EN60335-1 : 1995, EN55014, EN50081-1/2, EN50082-1/2, EN6055-2, EN60555,3

Based on directive CEE 73/23 c 93/68 (DBT Low voltage directive) and directive 89/336/CEE (EMC Electromagnetic Compatibility)

GENERAL SAFETY GUIDELINES

Danger!

In emergencies the instrument should be switched off immediately! Disconnect the power cable from the power supply!

When using instrument with aggressive chemicals observe the regulations concerning the transport and storage of aggressive fluids!

When installing outside European Community, always observe national regulations!

Manufacturer is not liable for any unauthorized use or misuse of this product that can cause injury or damage to persons or materials!

Caution!

Instrument must be accessible at all times for both operating and servicing. Access must not be obstructed in any way!

Feeder should be interlocked with a no-flow protection device.

Instrument and accessories must be serviced and repaired by qualified and authorised personnel only!

Always read chemical safety datasheet!

Always wear protective clothing when handling hazardous or unknown chemicals!

Index

GENERAL DESCRIPTION 4
CONTROL PANEL 4
ELECTRICAL WIRINGS: 5
VIEW ON MENU 6
SETTING SETPOINTS: 1)SETPN 6
Out mA 7
CALIBRATION: 2)CALIB 8
DELAY: 3) Delay 9
RESERVED: 4) Reserv 9
PASSWORD SETUP: 1) New Pw 10
STANDBY SETUP: 2) Stand 10
MANUAL WORKING MODE: 3) Serv. 11
ERROR MESSAGES 11

Introduction

GENERAL DESCRIPTION

"DIN Digital CD" measures and controls Conductivity in industrial process. It is possible to set two ON/OFF setpoints and a current signal for connecting a chart recorder or a metering pump. It is possible to set the current output on 0÷20 or 4÷20 mA. LCD backlight display facilitates reading in high luminosity conditions. The instrument is cased into a plastic box for DIN mounting.

CONTROL PANEL

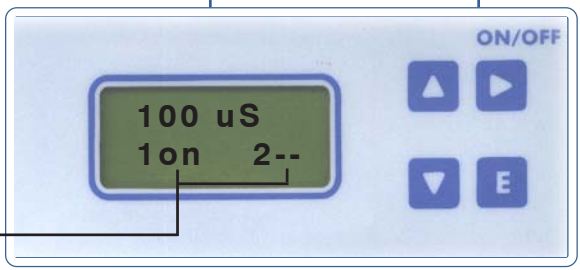
Display

LCD backlight display facilitates reading in high luminosity conditions. It provides constant indications regarding operating conditions and equipment status.

SetPoint status. Ex: "1ON" setpoint 1 is active. "2--" setpoint 2 is not active.

Keyboard

A convenient keypad allows easy and quick access to the menu for easy programming and calibrating operations.



UP" key

"DOWN" key

"RIGHT" (ON/OFF - ESC) key

"ENTER" key

Into normal operating mode press "UP" or "DOWN" key for instrument's details.

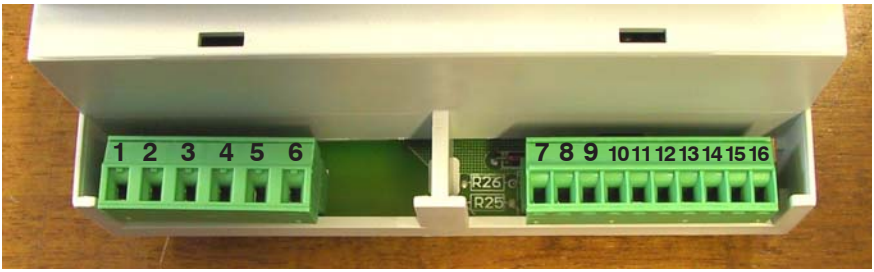
Use keyboard (up, down, left and right) to make a selection or change set values. Press the "RIGHT" key to go back in previous menu or cancel entered data.

The "Enter" key confirms the selection.

Press "RIGHT" key for about 4 seconds to switch off the instrument (the display shows OFF). Repeat the sequence to return to the normal operating mode.

To reset the instrument (restore default settings) unplug power supply and keeping pressed "UP" and "DOWN" keys, plug in power supply. The instrument will show "Checksum Error- Press any key". Press any key to continue.

ELECTRICAL WIRINGS:



1 - 2: Power Supply (24VAC* or 115VAC* or 230VAC*). * See instrument's label

3-4: Setpoint 1 output - free contact.
5-6: Setpoint 2 output - free contact.

7-8: Conductivity probe (7 Red; 8 Black).
9-10: Temperature compensation probe. 9 (GND) ; 10 (NTC).

11-12: Current output (0÷20mA o 4÷20mA) proportional to read value. 11(-) ; 12 (+).

13-14-15-16: See the following paragraph.

***Note**:*
Conductivity probes with built in temperature compensation (for example ECDCC/1) have 4 wires + shield.
Connect red and black wires to conductivity blocks.
Connect white and green wires to temperarure blocks.
Connect shield to ground 9 (GND).

"SEPR" CONFIGURATION.

The instrument is set to work without a proximity sensor. If needed, proximity sensor turns the instrument into stand-by mode if there isn't flow. Instrument's display shows "NO FLOW".

Connect "SEPR" to blocks 13(blue), 15(black), 16(brown). Connect together block 14 with block 13.

To work without a "SEPR" and with the same functionality use blocks 15 and 16 as a free contact. Connect together block 14 with block 13.

Using "SEPR" or the free contact, two instruments can be controlled. Connect block 14 and 15 from master instrument to another instrument "Din Digital" (slave). Finally follows the previous described connections for the master instrument.

POWER SUPPLY FUSE PROTECTED (0,5A)

Installation

VIEW ON MENU

Make connections and plug the instrument. Instrument's version message on display confirms that the instrument is on. The display shows also the probe reading status and if setpoints are active. Press "E" for about 4 seconds to enter into setup menu.

Note: During setup the instrument is in "Stand-by" mode. If user doesn't press any key for one minute the instrument will return to normal working mode.

To enter into setup menu, a password is needed. If this the first time that user enters into this menu or if the password is not changed, simply press "E". Use "UP" and "DOWN" keys to scroll.

"MAIN" menu is configured as follows:

1)Setup: This menu is divided into **1)Setpn** ; **2)Calib** ; **3)Delay**.

2)Param: This menu is divided into **1)New Pw** ; **2)Stand**.

3)Serv.: service mode.

SETTING SETPOINTS: 1)SETPN

"Out 1" and "Out 2" are relay's driven outputs. The instrument can be programmed to operate in "On/Off" mode or "Proportional" mode.

"Proportional" mode can be selected in % between 10 and 100.

Select "SETUP" from "MAIN" menu. Select "SETPN" and press "E". The display shows:

Setpoint
1) Out 1

Pressing "UP" or "DOWN" key the display will show in succession:

Setpoint
1) Out 1

Setpoint
2) Out 2

Setpoint
3) Out mA

Select the setpoint to set (Out 1 or Out 2) using "UP" and "DOWN" keys, press "E" to confirm. "Out mA" allows to set the current output based on two Conductivity values. In the next example setpoint 1 (Out 1) has been set.

The instrument shows:

1a) ->OFF
1100uS

Pressing twice “RIGHT” key the display will show:

1b) ->ON
1000uS

“1a)” and “1b)” are working range values. Every range is set by a value that operates relay output. Using default values, the setpoint 1 will drive a pump that will increase the conductivity value. The pump will switch on for uS values minor than 1000uS and switch off when reaches 1100uS: **this is the ON/OFF working mode.** The difference between the two uS (1100 e 1000) is called HYSTERESIS. To avoid damaging the relay do not set Hysteresis under 100uS.

PROPORTIONAL mode. The output relay is modulated (ON/OFF) depending on uS values set in 1a) and 1b). Ex.: Proportional mode between 1100uS (0%) and 1000uS (100%). In this way the relay will be on for values between 0 and 1000uS, it will be on for values higher than 1100uS. For values between 1000uS and 1100uS the relay will be on or off depending on calculated percentage.
The calculation is based on a 100 seconds time. If Conductivity reaches 1030uS the relay will be on for 70 seconds and off for 30 seconds. To set the PROPORTIONAL functioning mode substitute percentual value to “ON” and “OFF”.

It is not possible to enter mixed values (ex.: 100% for SP1 and ON for SP2). In this case it will not possible save them.

In proportional mode the instrument doesn’t show % values for setpoints status but only if they are on or off.

It is possible modify setpoint status (on,off, %) and setpoint values with RIGHT key on the function to modify and using “UP” and “DOWN” key to change the value. Enter the value and save by pressing “E” to save.

Repeat sequence for setpoint 2 (OUT2).

Press “E” key to exit from setpoint setting. The display will show “SetPoint Saved” and it return to the previous menu.

Out mA

This function allows to program the current output for driving a metering pump or a chart recorder.It is possible to program in 0÷20mA mode or 4÷20mA mode in the working range between 0 and 2000uS. The current output and the working range may be modified. Ex.: it is possible to set 4mA at 0uS and 20mA at 1000uS. In this case, if you connect a metering pump it will dose at the maximum flow at 0uS. The pump will reduce the flow when Conductivity decrease and it will stop at 1000uS. If you connect a chart recorder, a graphic curve will be printed. Use “UP” and “DOWN” keys to change these settings. Press “RIGHT” key to scroll through the options. Press “E” to confirm.

CALIBRATION: 2)CALIB

Choose “CALIB” from “Setup”. Display shows:

Calib
1)Zero

Press “UP” key. Display shows:

Calib
2) Slope

Zero calibration.

When display shows “1) Zero” press “E” to enter into zero calbration procedure. Display shows:

R --.--uS
C 0.00uS

To calibrate probes (K1) as mod. ECDIC/1 remove it from probe holder and calibrate it to air. Wait until “R” value is stable. **ATTENTION: IT IS NOT NECESSARY THAT “R” VALUE WILL BE THE SAME OF “C” VALUE.** Press “E” to confirm. Display shows:

Calibr.
Success.

Slope calibration.

When display shows “2) Slope” press “E” to enter into slope calbration procedure. Display shows:

Temp Cal
25°C

This is the buffer solution or the plant temperature. It is not possible modify this value. Press “E” to continue. The instrument will show:

Comp.
3%

This is the temperature compensation coefficient. Modify this value according with the table on the buffer solution / chemical product bottle, using “UP” and “DOWN” keys. Press “E” to confirm. The instrument will show:

R --.-- uS
C 84uS

If you are using a 84 uS (or a different one compatible with working range) buffer solution press “E” otherwise enter the buffer solution value used by “UP” and “DOWN” keys and press “E”.
Connect the probe to the instrument. Insert the probe tip into the 84 uS buffer solution and wait until R value (read value) is stablized and then press “E” to confirm the calibration.

ATTENTION: IT IS NOT NECESSARY THAT “R” VALUE WILL BE THE SAME OF “C” VALUE.

If the procedure is correct the instrument will show a confirmation message otherwise a numbered error message will be displayed (see table on page 10). Is an error occurred, repeat the procedure. Otherwise press “RIGHT” key to esc from procedure.

DELAY: 3) Delay

t's possible to set an activation delay for each output when the instrument reaches the setpoint values. Default value is set to 0. Select "DELAY" from "SETUP" menu. The instrument will show:

OUT1
10 Sec.

Press "RIGHT" key. The instrument will show:

OUT2
5 Sec.

Delay time can be set from 0 (no delay) to 60 seconds. Press "E" to confirm. The display will show the confirmation message "DELAYS SAVED".

PASSWORD SETUP: 1) New Pw

To avoid undesired access to the instrument a 4 number password may be set. Using “UP” or “DOWN” keys, from “Param” menu choose “1) New Pw”, press “E” to confirm. The display shows:

NEW PW
-> 0 0 0 0

Use “UP” and “DOWN” keys to modify th first digit. Use “RIGHT” key to go on the next digit. Press “E” to confirm. The instrument will show the new password for 2 seconds and then will return to the main menu.

STANDBY SETUP: 2) Stand

For a good electrodes polarization a delayed startup (every time the instrument is powered) may be set. Select “2)STAND” from “Param” menu. The display will show:

STANDBY
-> 02 Sec.

It is possible to set the delay using “UP” and “DOWN” keys. The time can be set between 0 (no delay) to 60 seconds. Press “E” to confirm. The display will show the confirmation message “Stand-by Saved” for 2 seconds.

MANUAL WORKING MODE: 3) Serv.

This function allows to manual control the external relays contact (SP1 / SP2).
The display will show 1 or 2 to show the selected setpoint/output. The output status can be set “ON” or “OFF” using “UP” key for SP1 and “DOWN” key for SP2. “ON” is the status of N.O contact closed and N.C. contact open. “OFF” is the status of N.O. contact open and N.C. contact closed.

ERROR MESSAGES

If the display shows an error message, use the following table:

ERROR 1:	*Buffer solution error during calibration. Try again using a different buffer solution.*
ERROR 2:	*Buffer solution read error during calibration. Try again using a different buffer solution.*
ERROR 3:	*N/A*
ERROR 4:	*Offset error. Verify sample and repeat procedure.*

When dismantling an instrument please separate material types and send them according to local recycling disposal requirements. We appreciate your efforts in supporting your local Recycle Environmental Program. Working together we'll form an active union to assure the world's invaluable resources are conserved.