SPINK CONTROLS®

CE-2424

JAS-ANZ

An ISO 9001:2008
Certified Company

DIGITAL PROCESS CONTROLLER

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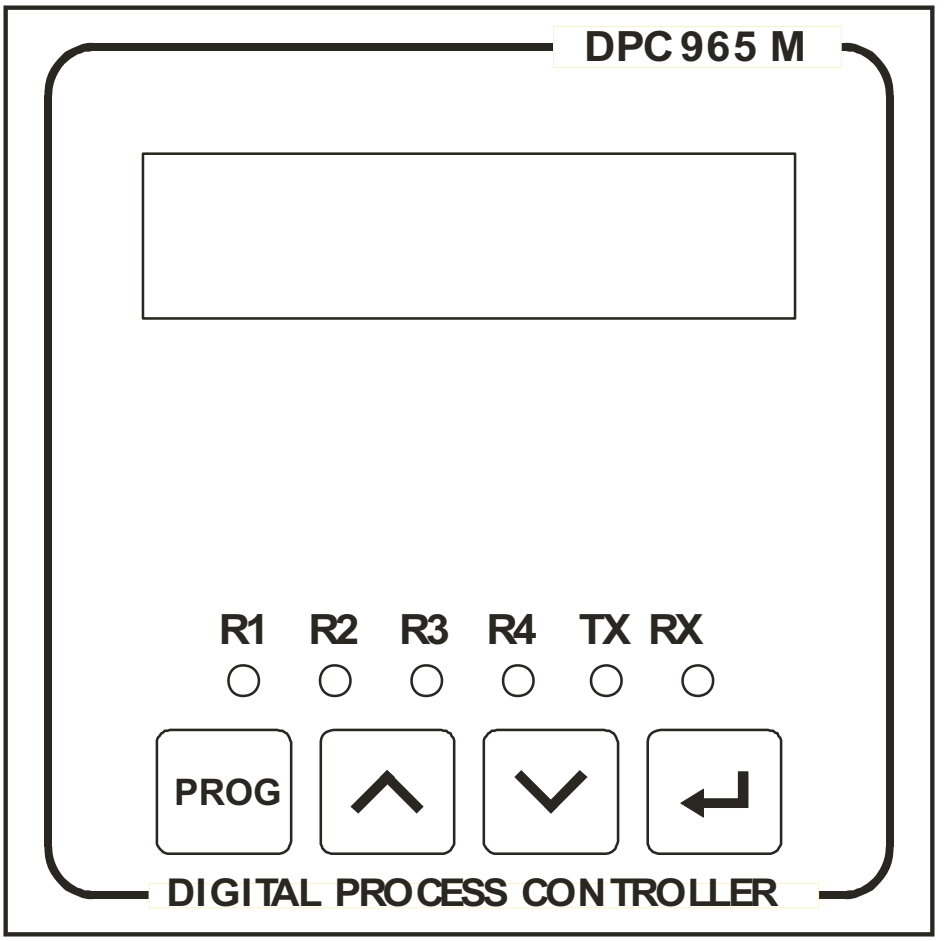

[OPERATOR'S MANUAL]

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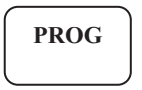
SECTION 1 SPECIFICATIONS

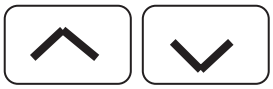
01. Input	: 4 – 20 mA DC linear (accepts & indicates input till 21.6 mA)
02. Display	: 7 segment LED, 5 digits
03. Resolution	: 4 and ½ digit
04. Keyboard	: 4 key tack-tile keyboard
05. Scaling	: span scalable by software
06. Data Storage	: All settings are stored in a battery backed RAM.
07. Relay Outputs	: 4 relay outputs, contact rating 230VAC, 1Amp Configurable as control outputs on separate set points. With predefined logic
08. Supply	: 230 VAC or 110 VAC (Factory set) ±10%, 50 Hz.
09. Power output	: 24 VDC, 120mA power supply is made available for the external transmitter supply.
10. Connections	: On Screw type Terminals
11. Cabinet	: Panel mounting ABS Size – Bazel – 96 x 96 mm (W x H) Cutout – 92 x 92 mm, Depth – 110 mm

SECTION 2 SYSTEM PROGRAMMING

System is provided with four keys, **PROG, UP, DOWN, ENTER**
Key function is as follows.



Press this key to go to programming menus, use same key to exit the programming that is to start indication and control.



Use these keys to scroll channels, menus, numeric values etc.

Use this key to enter the value.

Programming Menus: Basic Keyboard operation in programming menu is as follows.

a) Press **PROG** key to go to programming menus.
b) Press **ENTER** key to select the menu.
c) Press **UP/DOWN** keys to scroll the menus.
d) Press **ENTER** key to set the parameter.
e) Press **PROG** key in main menu to exit programming.

MENU1 -- Set Decimal point for Span

Display shows '**1.dP1** '

In this menu you can set decimal point position (DP) of indicated value from 1 to 4.
Press ENTER key old DP value is displayed and last digit will be blinking. Use UP/DOWN key to change each digit from 0 to 9.
Press ENTER to set that decimal point position.
If you don't want to change the setting, press ENTER key at each digit. System retains old value.
e.g. Say flow rate is 10000 then
if you set DP as 1, then flow rate is displayed as 10000
If you set DP as 2, then flow rate is displayed as 1000**.**0
If you set DP as 3, then flow rate is displayed as 100**.**00
If you set DP as 4, then flow rate is displayed as 10**.**000

Press PROG key to start the indication and return to main menu or Press UP/DOWN keys to scroll menus.

MENU2 -- Set input Span

Display shows '**2.SPAN** '

In this menu you can set span of input from **6 to 32000** corresponding to 20 mA. Input to the system is 4 to 20 mA.

For Span value above 32000, system indicates wrong value.

When you press ENTER key span value is displayed and last digit will be blinking.
Use UP/DOWN key to change each digit from 0 to 9.
Press ENTER at each digit to go to next digit setting.
When all three digits are entered, system checks for correct value i.e. not greater than 32000 and not less than 6.
If the value is ok system comes out of that menu and that value is stored.
If you don't want to change the setting, press ENTER key at each digit. System retains old value.
E.g. If you set span as 300, then for input 20 mA = 300 and 4 mA = 0

Press PROG key to start the indication and return to main menu or Press UP/DOWN keys to scroll menus.

MENU3 -- Set input ZERO value

Display shows '**3.ZERO '**

In this menu you can set Zero of input from **0 to 9999** corresponding to 4 mA.
Press ENTER key old value is displayed and last digit will be blinking.
Use UP/DOWN key to change each digit from 0 to 9.
Press ENTER at each digit to go to next digit setting.
When all three digits are entered, system checks for correct value i.e. not greater than 9999.
If the value is ok system comes out of that menu and that value is stored.
If you don't want to change the setting, press ENTER key at each digit. System retains old value.

E.g. Say your Span is 3000 and **Zero is 1000** then your actual span becomes
3000 - 1000 = **2000**
Then at 12 mA input systems shows value as
1000 (calculated value from span) + 1000 (Zero value) = 2000

Press PROG key to start the indication and return to main menu or Press UP/DOWN keys to scroll menus.

MENU 4 -- Set point 1

Display shows '**4.SP1'**
Here you can set the **Set Point for relay 1**, in the range of Span value.
When you press ENTER key old value is displayed and last digit will be blinking.
Use UP/DOWN key to change each digit,
Press ENTER at each digit to go to next digit setting. When all digits are entered, system checks for correct value If the value is ok system comes out of that menu and that value is stored.
If you don't want to change the setting, press ENTER key at each digit. System retains old value.

Press PROG key to start the Indication and return to main menu or Press UP/DOWN keys to scroll menus.

MENU 5-- Set point 2

Display shows '**5.SP2'**
Here you can set the **Set Point for relay 2**, in the range of Span value.

Programming is same as SP1.
Press PROG key to start the Indication and return to main menu or Press UP/DOWN keys to scroll menus.

MENU 6-- Set point 3

Display shows '**6.SP3**'
Here you can set the **Set Point for relay 3**, in the range of Span value.

Programming is same as SP1.
Press PROG key to start the Indication and return to main menu or Press UP/DOWN keys to scroll menus.

MENU 7-- Set point 4

Display shows '**4.SP4**'
Here you can set the **Set Point for relay 4**, in the range of Span value.

Programming is same as SP1.
Press PROG key to start the Indication and return to main menu or Press UP/DOWN keys to scroll menus.

MENU 8 -- Set Hysteresis

Display shows '**8.HYS**'

Here you can set hysteresis for relay operation.
Its programming range is from 0 to 9999 and is common for all four set points.

When you press ENTER key old value is displayed and last digit will be blinking.
Use UP/DOWN key to change each digit,
Press ENTER at each digit to go to next digit setting. When all digits are entered, system checks for correct value if the value is ok system comes out of that menu and that value is stored.
If you don't want to change the setting, press ENTER key at each digit. System retains old value.

Press PROG key to start the Indication and return to main menu or Press UP/DOWN keys to scroll menus.

RELAY OPERATION:
At power on of Instrument relay1 is turned on if relay 4 is off.
It means if input is lower than SP4 relay1 will turn on at power on.

Relay2 turns on at SP2
Relay3 turns on at SP3
Relay4 turns on at SP4

When relay4 on SP4 is turn on relay1 will turn off.

System has maximum four relays operating on set points SP1 to SP4 respectively. The hysteresis programmed is common to all and is + ve.

Relay turned ON at actual input value = >Set point + Hysteresis
Relay turned OFF at actual input value <= Set point

MENU 9 -- Set Station ID

This setting is used for SERIAL communication

Display shows '**9.Stn**'
Here you can set the Station ID for the unit required for serial communication.
The ID value is programmable from **01 to 99**.

Press ENTER key old value is displayed and last digit is blinking.
Use UP/DOWN key to change each digit, Press ENTER at each digit to go to next digit setting.
If you don't want to change the setting, press ENTER key at this digit. System retains old value.

Press PROG key to start the Indication and return to main menu or Press UP/DOWN keys to scroll menus.

MENU 10 -- Set Baud Rate

This setting is used for SERIAL communication

Display shows '**10.SbP**'
Here you can set the BAUD rate for the unit required for serial communication.
The value is programmable from 0 to 9 which corresponds to
300,600,1200,2400,3600,4800,7200,9600,19200,38400 baud rate.

Press ENTER key old value is displayed and digit will be blinking.
Use UP/DOWN key to change the digit,
Press ENTER to set the baud rate.

If you don't want to change the setting, press ENTER key at this digit. System retains old value.

After baud rate is set system asks for PARITY setting.

Display shows '**Pr. '**

On lower display old setting is displayed, Press UP/DOWN keys to scroll the option from **' none ', ' odd ', ' even '.**
Press ENTER at required option. System sets that parity.

If you don't want to change the setting, press ENTER key at this digit. System retains old value.

Press PROG key to start the indication and return to main menu or Press UP/DOWN keys to scroll menus.

MODBUS data structure for serial communication

Address	Data
40001	Indicated value
40002	Decimal point position
40003	Span
40004	Zero
40005	SP1
40006	SP2
40007	SP3
40008	SP4
40009	Hysteresis
40010	Actual input mA value

You get value without decimal point.

MENU 11 -- Set Password

Display shows '**11.PASS**'

Here you can give numeric value as PASSWORD for programming the unit.
Password value can be from 0000 to 9999.

To set the value:

Press ENTER key, system asks for OLD password.
Use UP/DOWN key to change each digit from 0 to 9.
Press ENTER at each digit to go to next digit setting.

When all four digits are entered, system checks for correct value, if the value is ok system asks for NEW password.
Use above procedure to set new value.

When user press PROG key system asks for password display shows

P. 0000

Enter Password you given. If password entered is wrong system displays

P. P-Err

Press ENTER key to exit and start counter.
Press PROG key again to make new ENTER for password.

To clear the Password, give **0000** as password. Now system does not ask for password for programming.

Press PROG key to start the indication and return to main menu or Press UP/DOWN keys to scroll menus.

Power Output: 24 VDC, 120 mA output is made available from the system to use as a supply for the external transmitter if used.
This is made available on terminals – refer wiring diagram for Loop Powered or direct mA input connections.

Mains supply connection: System is provided with two input supply connections as 110 VAC and 230 VAC. As per the requirement only one option is brought on the back connector.

Color code for the supply connections from internal transformer is
LIVE – 230 VAC – RED
LIVE – 110 VAC – YELLOW
NEUTRAL – BLACK
EARTH – GREEN

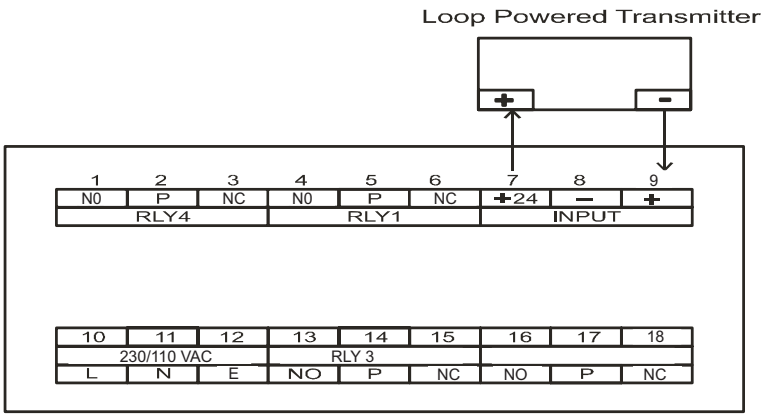
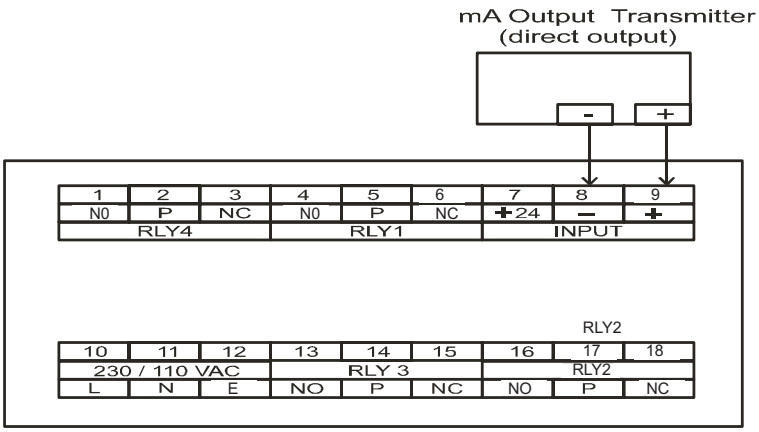
If it is required at site to change the supply type –
1. Remove Top Cover of the cabinet.
2. Remove present LIVE wire from transformer soldered at the FUSE terminal.
   Fix this wire with proper insulation inside.
3. Connect required LIVE wire from transformer to the same FUSE terminal.
4. Fix Top cover again.
5. Now make sure that you are giving correct power to the system as per current changes made.

FUSE: System is provided with FUSE protection for mains supply variations. If you found the FUSE burnt because of high voltage, replace the FUSE by new one. **Fuse rating is 230VAC, 100mA** . After replacing the fuse, if it again burnt out then there is a problem in the system. Do not replace fuse send system for repairs.

SECTION 3: PRECAUTIONS

1. Give correct supply to the system.
2. Use proper size wire (max. 1.5 sqmm.) for termination.
3. Set span and decimal point as required.
4. If you connect the mA in reverse fashion or when input is below 0 mA system displays Zero value.

SECTION 4: CONNECTION DIAGRAM

DPC 965M- SPINK

BACK CONNECTION DETAILS