

DFDA5000 Reserve Manual Controller

With Servo Amplifier

Operation Instruction

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1. Application

- DFDA5000 is a redundant reserve manual controller. It is used in series of the control output channel of the PLC or DCS or PID controller.
- DFDA5000 has two AI inputs. The IN1 is valve position command signal input that comes from the PID control output. The IN2 is the actual valve position feedback signal input.
- DFDA5000 has one AO output. The OUT2 is the valve position feedback output.
- The DFDA5000's control output is two 220VAC power output, they are valve open signal and valve close signal
- DFDA5000 has four DI inputs. The DI1 is force manual control input, that is usually connected to the fail state output of the former PLC or DCS or PID controller. The DI2 is remote manual control input. The DI3 is remote manual open valve command input. The DI4 is remote manual close valve command input. The DI3 and DI4 are effective only as the DI1 or DI2 is effective.
- DFDA5000 has one DO output. That is DFDA5000 manual control mode output.
- DFDA5000 has a RS485 communication port. It can communicate with the upper computer.
- When the DFDA5000 is working in auto control mode, it receives the control output signal (IN1) (i.e. the valve position command signal) from PLC or DCS or PID controller, and compare with the actual valve position feedback signal (IN2) that come from the field valve. If the difference of two signal is not within an allowance dead area, it will output an open or close signal to the valve, both the open signal and close signal, they are all 220vdc power signal, they will drive the servo motor to run until that the difference is less than the allowance dead area. As the difference is less than the allowance dead area, the DFDA5000 will stop to output open or close valve signal. So that the actual valve position always follow the valve position command, follow the PLC or DCS control output.
- When the DFDA5000 is working in manual control mode, the control output signals (valve open signal or valve close signal) are controlled by the key button. As the key “Δ” pressed, it output an open valve signal. As the key “▽”pressed, it output a close valve signal. If both “Δ” key and “▽”key all are not pressed, if output nothing
- When in manual control mode, The DFDA5000 also output a manual control state signal (DO) to the PLC or DCS or PID controller. It makes the PLC or DCS or PID controller's output follow the actual valve position signal that is come from DFDA5000 transmit output.
- The OUT2 (valve position feedback output) is always equal to the IN2 (valve position feedback input) whether in auto control mode or in manual control mode.
- Whether the DFDA5000 is changing from auto control to manual control or changing from manual control to auto control, the valve position will keep constant, i.e. no disturb changing.
- As the PLC or DCS controller go wrong and fail to continue PID control, it will output a fail state signal (DO) to the DFDA5000's DI1, to force the DFDA5000 come into manual control mode, to avoid any wrong control signal output, and keeping the production process continue and steady.
- When new production equipment is under examination, you may make the DFDA5000 working in manual control mode, and control the production equipment with manual operation. As the production equipment is working normally, then change the DFDA5000 to auto control mode. This is an important method for production equipment examination. It will ensure the production equipment working safely.

2. Technique Features

Environment condition: temperature 0~50℃ relative humidity ≤90%

Power supply: 80VAC~260VAC, 50Hz ~60Hz, Power consumption: 4~10W

Accuracy: 0.5%FS+1 digital, Resolution: 1 digital

Outline dimension: 80×160×150mm 160×80×150mm 96×96×112mm

Panel cut-out dimension: $152^{+1.00} \times 76^{+0.74}$ mm $92^{+1.00} \times 92^{+1.00}$ mm

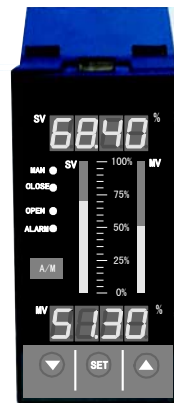
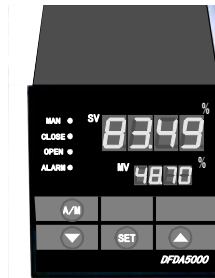
Weights: About 0.5Kg, structure: plug in

3. Ordering Number

Order number					Note
DFDA					Intelligent redundant reserve manual controller with servo amplifier
Design series	5				Electronic power supply
Valve open degree command input		5			0-10mA input
		6			4-20mA input
		7			0-5V input
		8			1-5V input
Control output		0			With valve open and close drive signal output
Actual valve open degree signal input			5		0-10mA input
			6		4-20mA input
			7		0-5V input
			8		1-5V input
Actual valve open degree signal output			5		0-10mA output
			6		4-20mA output
			7		0-5V output
			8		1-5V output
Outline Dimension			V		80×160×150mm
			F		96×96×112mm
			GV		80×160×150mm
Power Supply					220VAC power supply
			D		24VDC power supply
Communication Port					Without communication port
				RS232	With RS232 isolate communication port
				RS485	With RS485 isolate communication port

Note: 96×96×112 mm square type DFDA5000 has not remote control(DI input) function.

4. Outline Dimension



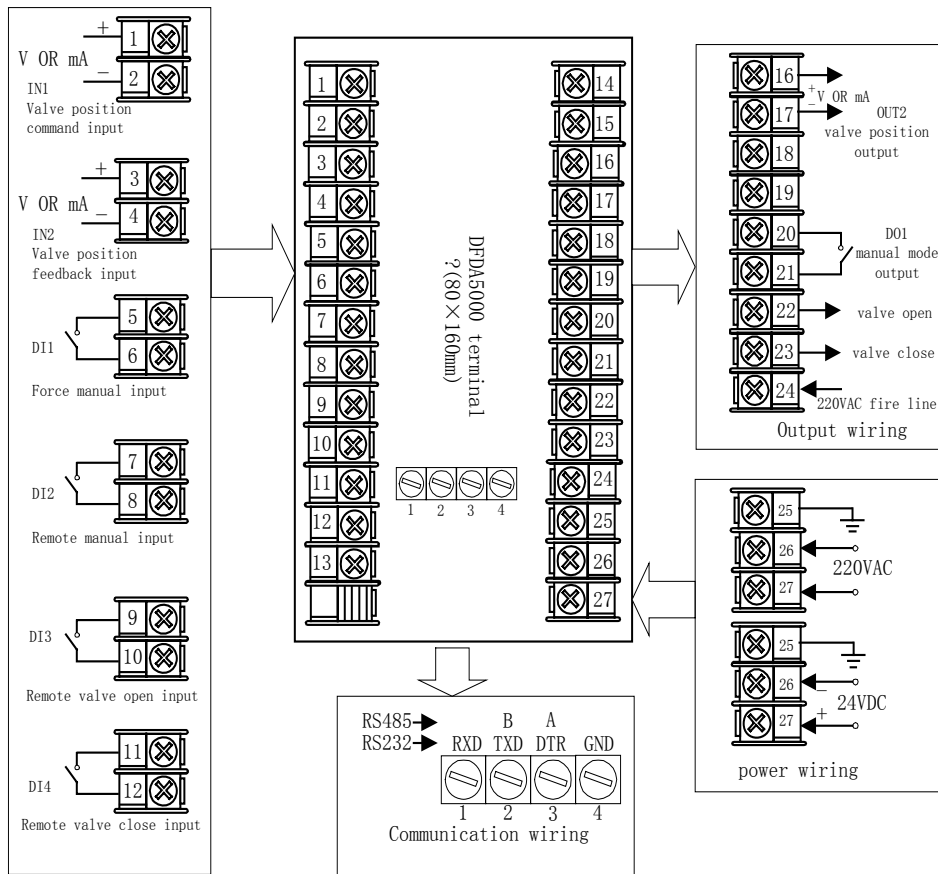
Outline size: $80 \times 160 \times 150\text{mm}$ (vertical)
Panel cutout size: $76^{+0.74} \times 152^{+1.00}\text{mm}$

$96 \times 96 \times 112\text{mm}$ (square)
 $92^{+1.00} \times 92^{+1.00}\text{mm}$

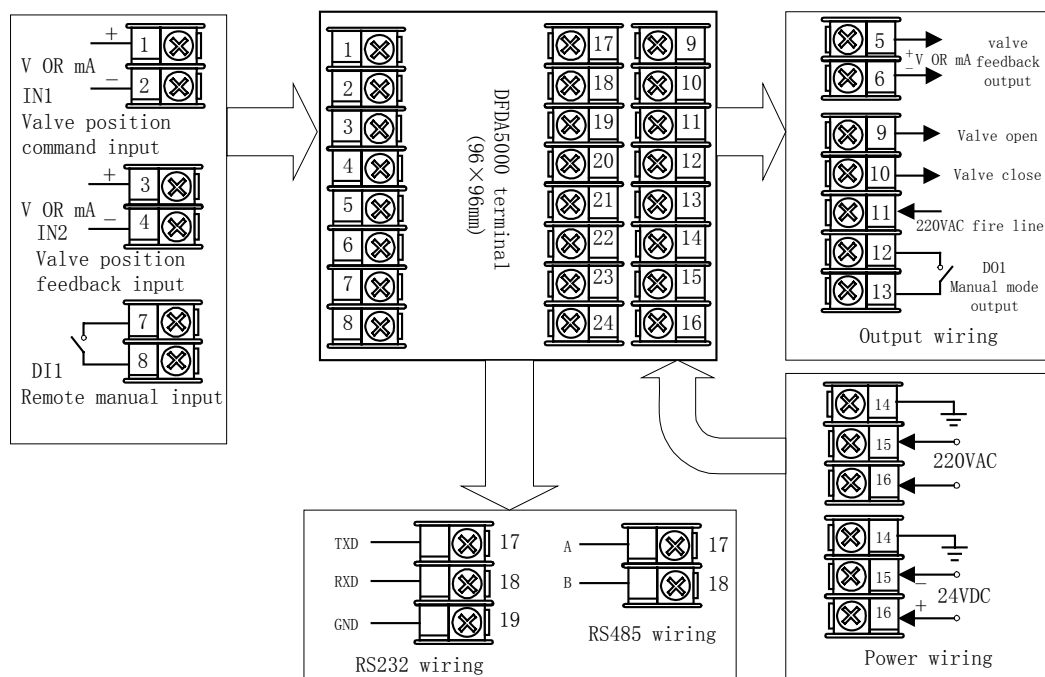
$80 \times 160 \times 150\text{mm}$ (light BAR)
 $76^{+0.74} \times 152^{+1.00}\text{mm}$

Name		Contents
Display	Up display	- In auto control mode, it indicates the valve position command output value - In manual control mode, it indicates the valve position command output value - In initial state, it indicates (DFDA) - In parameter setting mode, it indicates parameter name or value - It indicates , if IN1 or IN2 input line is break out
	SV bar graph	It indicates the valve position command output value.
	Lower display	- In auto control mode, it indicates the actual valve position feedback value - In manual control mode, it indicates the actual valve position feedback value - In initial state, it indicates - In parameter setting mode it indicates or parameter name - It indicate if IN2 input line is break out
	MV bar graph	It indicate actual valve position feedback value
Operation		- In manual control mode, press it will close the valve - In parameter setting mode, press it will decrease the parameter valve
		- In working mode, press it will enter the parameter setting mode - In parameter setting mode, press it to confirm the setting value
		- In manual control mode, press it will open the valve - In parameter setting mode, press it will increase the parameter valve
		Press it will change the working mode between auto and manual control e
LED lamp	MAN	In manual control mode, it lights
	ALARM	If the valve position alarm is active, it lights

5. Terminal Wiring

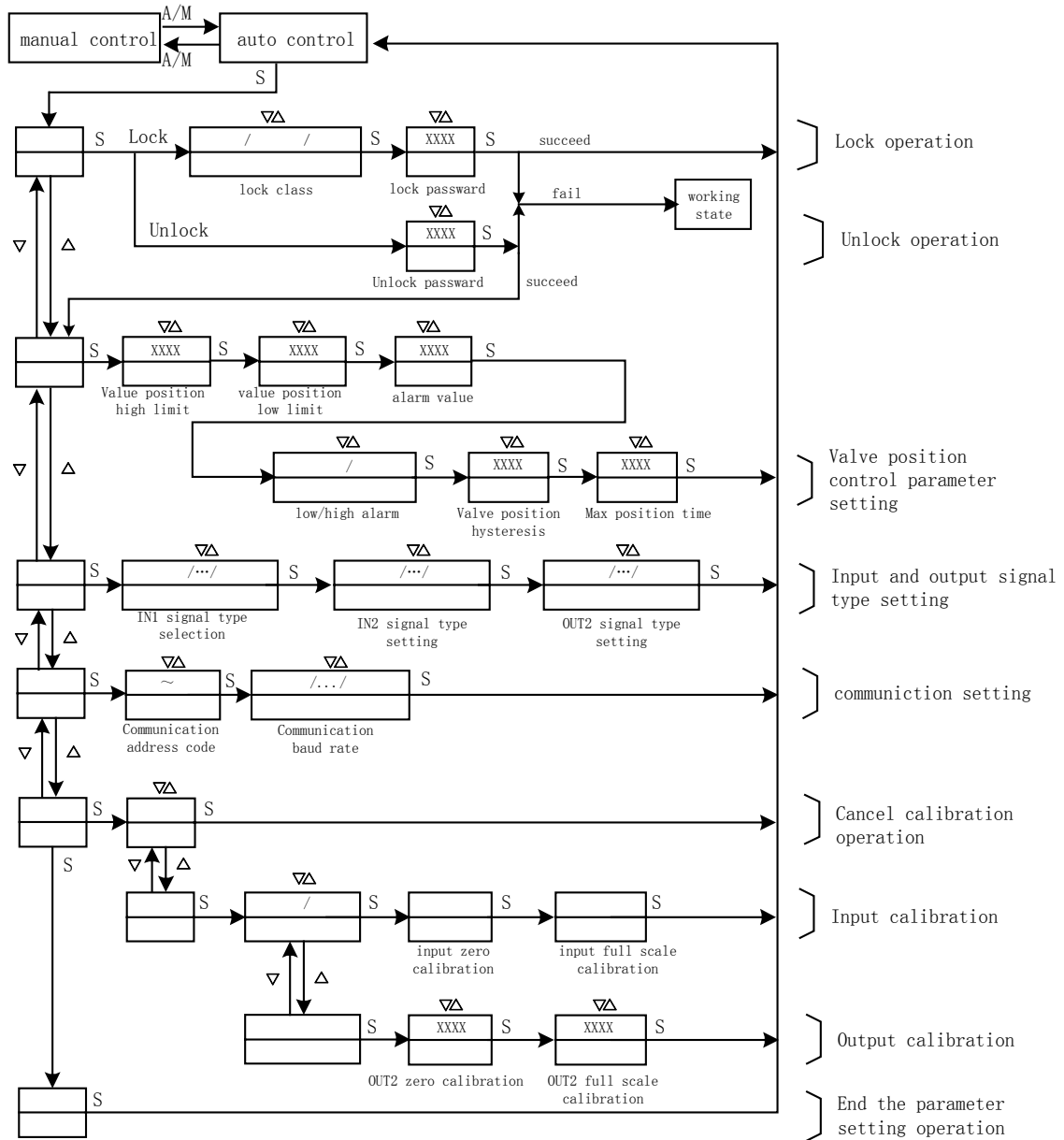


Notes: If there is difference between operation instruction and meter case back wiring, the case back wiring is the right.



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6. Key operation diagram



7. Detailed explanation of parameter setting operation

MENU AND OPERATION		FACTORY SETTING
Locking function menu		
	● Entry of the menu group of lock or unlock ● Press key “SET” to enter ● Press key “Δ” or “▽” to exit	
/	● Select lock class - ALL: lock all menus - Set: Lock all menus except the menus of SP, PID and t.sp - Cal: Only lock calibration menu and correction menu ● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to confirm	
XXXX	● Set lock code ● Press key “Δ” or “▽” to change the code ● Press key “SET” to confirm ● “00” is invalid code	
Unlocking function menu		
XXXX	● The menu to input unlock code ● Press key “Δ” or “▽” to input unlock code ● Press key “SET” to enter ● If unlock code is right go to alarm setting menu, if wrong go out parameter setting program	

Set alarm parameters

MENU		FACTORY SETTING
	● Press key “SET” to enter ● Press key “Δ” or “▽” to exit	
XXXX	● max valve setting ● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to confirm	
XXXX	● min valve setting ● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to confirm	
XXXX	● alarm setting ● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to confirm	
/	● high alarm , low alarm ● Press key “Δ” or “▽” to modify the alarm value ● Press key “SET” to confirm	

XXXX	● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to enter ● Hyst≤0.5%	
XXXX	● time setting ● Press key “Δ” or “▽” to modify the setting (second) ● Press key “SET” to confirm	

input or output setting

MENU		FACTORY SETTING
- /.../ - ● input setting - : 0~10mA - : 4~20mA - : 0~5V - : 1~5V ● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to confirm		4~20mA
- /.../ - ● input value input setting - :0~10mA - :4~20mA - :0~5V; - :1~5V ● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to confirm		4~20mA
- /.../ - ● feedback value output setting - : 0~10mA - : 4~20mA - : 0~5V - : 1~5V ● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to confirm		4~20mA

Set communication parameters

MENU		FACTORY SETTING
● Entry of the menu group communication parameters ● Press key “SET” to enter ● Press key “Δ” or “▽” to exit		
XXXX ● Set communication address ● Press key “Δ” or “▽” to modify the address (range 01-254) ● Press key “SET” to confirm		
XXXX ● Set communication baud rate ● Press key “Δ” or “▽” to modify the setting ● Press key “SET” to confirm : 1200bps : 2400bps : 4800bps : 9600bps		

Cancel calibration operation

Calibrate zero point and full scale point of input

Calibrate zero point and full scale point of the output

MENU		FACTORY SETTING
	● Entry of the calibration menu group ● press key “SET” to enter ● Press key “Δ” or “▽” to exit	
/	● :Cancel calibration operation, ● YES: Enter calibration operation ● Press key “SET” to confirm	
/	● In1: Provided valve ● In2: Feedback valve ● Press key “SET” to confirm	
	● Calibrate the zero-point’s value of the input signal. ● The zero point calibration value of 0-10mA/4-20mA input is 0.000mA ● The zero point calibration value of 0-5V/1-5V input is 0.000V ● Press key “SET” to confirm	
	● Calibrate the full scale value of the input ● 0-10mA/4-20mA input is 20.000mA. ● 0-5V/1-5V input is 5.000V ● Press key “SET” to confirm	
	● Calibrate the zero-point’s feedback value of the output signal. ● Press key “SET” to confirm ● Press key “Δ” or “▽” to exit	
XXXX	● Calibrate zero point of the output signal ● Press key “Δ” or “▽” to modify the output value to zero point calibration Value (read the output from the meter connected to the output terminal).’ ● Press key “SET” to confirm ● The zero point calibration value of 0-10mA/4-20mA output is 4.000mA. ● The zero point calibration value of 0-5V/1-5V output is 1.000V.	4mA
XXXX	● Calibrate the full scale of output signal. ● Press key “Δ” or “▽” to modify the output value to full scale calibration value (Please read the actual output from the meter connected to the output terminal. ● Press key “SET” to confirm ● The full scale calibration value of 0-10mA/4-20mA output is 20.000mA. ● The full scale calibration value of 0-5V/1-5V output is 5.000V.	20mA

End the operation of setting the parameters

MENU		
	● This is the menu to end the operation of parameter setting. ● Press key “SET” to confirm ● Press key “Δ” or “▽” to exit	

L. Remote manual control

- The local manual control takes precedence over remote control.
- When remote manual control is active (DI2=ON), the remote valve open (DI3) and close (DI4) is effective to the local Δ and ▽ keys.

8. Trouble elimination

Trouble		Cause	Eliminate method
Not lighting		Power fail	Check the power
		Power terminal fail	Take out the device core and check the power terminal
		Device go wrong	Contact to the distribute or manufacture
LED display		Input type setting wrong	Check the input type setting
		Input signal overflow	Check the input signal
		Input signal line break	Check the input signal wire
		Input type wrong	Check the input type setting
		Input signal overflow	Check input signal
		Calibration wrong	Calibration the input again
LED display	Input type wrong	Check input type setting	
	Input signal under -range	Check input signal	
	Calibration wrong	Calibration the input again	
Display wrong		Input type wrong	Check the input type setting
		Correction menu setting wrong	Check the correction setting menu
		Input wire wrong	Check the input wire
		Input signal wrong	Check the input signal
Can not enter the corresponding menu		Device type wrong	Contact to the distribute or manufacture
		The menu be locked	Unlock the menu
Can't unlock the menu		Have not the menu	Contact to the distribute or manufacture
		Lose the unlock code	Contact to the distribute or manufacture
Display change suddenly		Electro-magnetic contactor spark influence	Remove the spark with a spark absorber
		Signal disturbance too strong	Depart the input signal cable from the power line
		Power disturbance too strong	Depart the device power from the power motor/transducer.
		Field cable confusion	VDC load connect a parallel reverse diode
			Signal cable depart from power cable
			Using shield signal cable, the shield connect to the earth
		Power pollution	Depart the device power supply from other power supply
			Depart the device power from the SCR device/transducer
			Add a on line power supply
Power unit fail		Power supply wrong	Check the power supply cleaner
Relay action wrong		Power supply pollution	Instead of a independent power supply ; Add a power supply cleaner
		Contactor spark influence	Add a spark absorber to the AC contactor Add a parallel reverse diode to the DC load

8.1 Overcoming the severe field disturbance

- Signal cable should depart from the power supply, and must be the shield cable, and the shield must be connected to the signal earth, to avoid the signal influence
- The device power should be an independent power, a cleaning power, and should not be connected to other polluted power
- If the field disturbance is severe and method listing in table 4.1 is be of no effect, please add a EMC-filter to the power, to the input, to the relay output

8.2 Accessories

- An operation instruction
- A QC certificate