# ULVAC

YO02-0872-DI-006-00

# **Dry Vacuum Pump** LR,HR,UR-Series **Quick Manual**

### Introduction

This quick manual is for quick check of operation and display of the product. Please refer to instruction manual attached in advan ce for detailed information about operation, precautions, safety an d Warranty Terms for proper use. https://showcase.ulvac.co.ip/ia

# 1.Setting

Upon receipt of the instrument, unpack it and check it to see that it is not damaged in transit and that accessories aresupplied as specified

Product name	Qty
N2 joint	1
Power connector	1
Remote control connector	1
RS232C/RS485 connector	1
Quick manual	1







No	Controls	Sign	Functions
1	POWER	CN1	Applies AC Power.
2	BREAKER SWITCH (DRP)	MCB1	Turns ON/OFF the power.
3	BREAKER SWITCH (MBP)	MVB2	Turns ON/OFF the power.
4	REMOTE CONTROL	CNI2	Used for remote operation and signal input/output.
5	RS232C	CNI3	Used for connection with the computer.
6	N2 INLET		N2 inlet port. (Φ6.35 SWAGELOCK)
7	WATER INLET		Cooling water inlet port(Rc3/8)
8	WATER OUTLET		Cooling water outlet port(Rc3/8)
9	STOP SWITCH		Used for stop of the pump.
10	CONTROLLER	PCTL	Used for operation of the pump.
11	N2 CONTROL PANEL		N2 Regulates nitrogen gas flow rate.



# Fig.3 N<sub>2</sub> CONTROL PANEL

No	名称	サイン	機能
12	N2 PRESS. REGULATOR	RG1	N2 Regulates the secondary pressure of nitrogen gas.
13	N2 PRESS. GAUGE	PG1	N2 Displays the secondary pressure of nitrogen gas.
14	N2 GAS BALLAST VALVE	NV1	Regulates the flow rate of gas ballast gas.

## 3. Power Wiring

Material selection, installation and operation of wiring should be done according to the rules and codes applied in your country (e.g. fire fighting law, electric installation code, etc).



Fig.4 LR,HR,UR,60/90/180/300/600/1200/1800 Connector



## Fig.5 LR,HR,UR,420/421/3601 Connector

## 4. Wiring for remote control

If the external interlock function is not used (used when an interlock with equipment other than a system in which the pump is installed is activated), connect 1 and 20 by a jumper wire or if the remote emergency stops function (only AC line is shut down) is not used, connect 4 and 22 by a jumper wire. If this wiring is not connected between these pins, the pump will recognize it as an external interlock command or an emergency shutdown command and will not start. (Refer to Fig.6)



#### 5.Pin assignment

NO	1/0	item	Specifications	
			CIOSE	OPEN
1	IN	External interlock	Normal	External interlock stop
2				
3	IN	Pump start	Run	Stop
4	IN	Remote emergency shutdown	Normal	Emergency shutdown
5	IN	Alarm reset	reset	
6	IN	WATING MODE	%The setting in the opti	ons
7	IN	Seal gas valve	Valve open	Valve close
8	OUT	DDD-to-t-t-bb-	Duran in a	A4 -4
9		DRPstart check	Running	At stop
11	OUT	REMOTE/LOCAL status	Remote	Local
12	OUT	Emergencyshutdown status check	Normal	At emergency stop
13	OUT	WATING MODE check	%The setting in the opti	ons
14	OUT	Ready check	Ready	Under preparation
15	OUT	Alarms in a batch	Normal	Alarm
16	OUT	Warnings in a batch	Normal	Alarm
17				
18				
19	OUT	OUT 9-16 COM		
20	IN	IN 1 COM		
21			1	1
22	IN	IN 3-7 COM		
23	OUT	Duran and an and a second second	Nia mara al	14/
24		Purge gas warning	Normal	Warning
20		DPP temperature	Normal	Warning
20	001	warning	Normai	wanning
27	OUT	MBP temperature	Normal	Warning
		warning		
28	OUT	DRP current (power) alarm	Normal	Alarm
29	OUT	DRP current (power) warning	Normal	Warning
30	OUT	MBP current (power) alarm	Normal	Alarm
31	OUT	MBP current (power) warning	Normal	Warning
32	OUT	Pumping pressure alarm %HR/UR	Normal	Alarm
33	OUT	Pumping pressure warning ※HR/UR	Normal	Warning
34	OUT	System error	Normal	
35				
36				
37	OUT	OUT 24-34 COM	1	

\*Waiting modes for pins Nos. 6 and 13 cannot be used. Special support is available for some models of the LR3601-R and UR series. \*Do not connect pins 2, 8, 17, 18, 21, 23, 35, 36.

\*( )LR3601 displays the power value.

# 6.Setting of Nitrogen Gas Pressure · flow rate

#### 1) Open the valve on the supply side to apply nitrogen gas pressure.

2) The regulator is factory locked. Pull the knob until it clicks to unlock it and regulate the pressure on the pump side to 0.05 to 0.10 MPa (gauge pressure).\*Fig.8

3) The seal gas flow rate is controlled by a fixed orifice. Gas flows at a rate of 5.0 SLM within the range of 0.05 to 0.1 MPa. Regulation is not required.

4) After the pump has started, set the gas ballast gas flow rate according to the process.\*Fig.9

\*The LR3601-R is not equipped with a gas ballast gas adjustment valve.



# 7.Setting of water flow rate

Adjust the flow rate of the cooling water with the primary pressure or the device flow rate adjustment valve so that it flows at 5 L / min or more. If the operation is continued when the flow rate of the cooling water is less than the specified amount, the pump may break down. Secure the specified flow rate. \*When using multiple pumps, connect the cooling water pipes in parallel. If connected in series, the cooling capacity will be insufficient and it may cause a malfunction.

### 8. Prior Operation

- 1) Ensure that all the piping and wiring works are completed.
- 2) Open the cooling water valve, and ensure that no water leakage is

observed

3) Turn the nitrogen regulator fully counterclockwise, and open supply valve,

- and ensure that no nitrogen gas leakage is observed.
- 4) Turn ON the host equipment breaker (M/D).
- 5) Turn ON the breaker (MCB1, MCB2) on the pump.

6) Initialize is displayed for initialization and operation cannot be performed immediately after the breaker is turned ON. Perform the following operation after verifying that Waiting appears about 30 seconds later.

# 9. Description of Controller



	<u> </u>	g. re controller	
No	Control	Sign	Function
1	START switch	START	Starts the pump.
2	STOP switch	STOP	Stops the pump.
3	MODE switch	MODE	Selects a setting item.
4	Input change switch	$\nabla$	Changes over the set value.
		Δ	Changes the selected content of setting.
5	ENTER switch	ENTER	Determines the selected item and setting.
6	RESET switch	RESET	Resets the alarm.
7	BZ. MUTE switch	BZ MUTE	Stops buzzer sound.
8	REMOTE/LOCAL	REMOTE/	Changes over the
	switch	LOCAL	REMOTE/LOCAL mode.
9	Display	LCD	Displays the current status with characters.
10	RUN lamp	LED1 (green)	The lamp lights when the pump starts.
11	REMOTE lamp	LED2(green)	The lamp lights when the pump is running in the REMOTE mode.
12	WARNING lamp	LED3(orange)	The lamp lights when WARNING is given.
13	ALARM lamp	LED4(red)	The lamp lights when ALARM is given.
14	Buzzer	BZ	The buzzer sounds in case of WARNING or ALARM.

# 10.Start and Stop

LOCAL operation				
Run	<ul> <li>①[CONDITION /STAND-BY] or status is displayed on the controller display.</li> <li>②Press the [START] switch on the controller.</li> <li>③The pump starts and the [RUN] lamp on the controller lights.</li> <li>④[CONDITION / RUNNING] or status is displayed on the controller display.</li> </ul>			
Stop	<ol> <li>Press the [STOP] switch on the controller.</li> <li>The pump stops and the [RUN] lamp on the controller goes off.</li> <li>[CONDITION /STAND-BY] or status is displayed on the controller display.</li> </ol>	STOP O		
REMOTE operation				
Run	Turn on Pump start signal. The pump starts.	3-22pin close		
Stop	Turn off Pump start signal. The pump stops.	3-22pin open		

#### ULVAC SHOWCASE



You can download the instruction manual from here.

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