

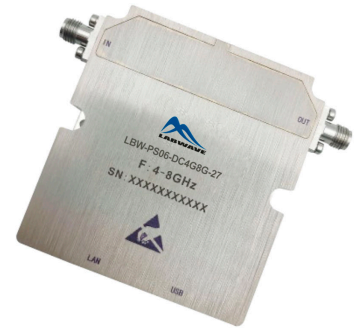


P/N: LBW-PS06-DC4G8G-27

Фазовращатель с цифровым управлением USB / Ethernet
360° 4 ГГц – 8 ГГц

Характеристики:

- Широкий рабочий диапазон частот 4 ГГц - 8 ГГц
- Изменение фазы 360°
- Управление и питание через USB



Parameters	Min	Typ.	Max	Units
Frequency Range	4		8	GHz
Phase Range		360		deg
Control Bits		6		bit
Control Step Size		5.625		deg
Insertion Loss		8.5	9.0	dB
Insertion Loss Temperature Coefficient		0.003		dB / °C
Phase Flatness		±15	±30	deg
Input VSWR		1.5	2.0	: 1
Output VSWR		1.5	2.0	: 1
Input 1dB Compression Point (P1dB)		27		dBm
RF Input power			27	dBm
Input Ip3		45		dBm
Bias Current	210 Typ.			mA
Power Supply	USB(+5.0V)			
Control Interface	USB2.0 & Ethernet(IPV4) (Control Cable Included)			
Weight	0.48 Max.			Ounces
Input / Output Connectors	SMA - Female			
Finish	Nickel Plated			
Material	Aluminum			
Sealing	Hermetically Sealed (Optional)			

Фазовращатель с цифровым управлением USB / Ethernet 360° 4 ГГц – 8 ГГц

Ordering Information

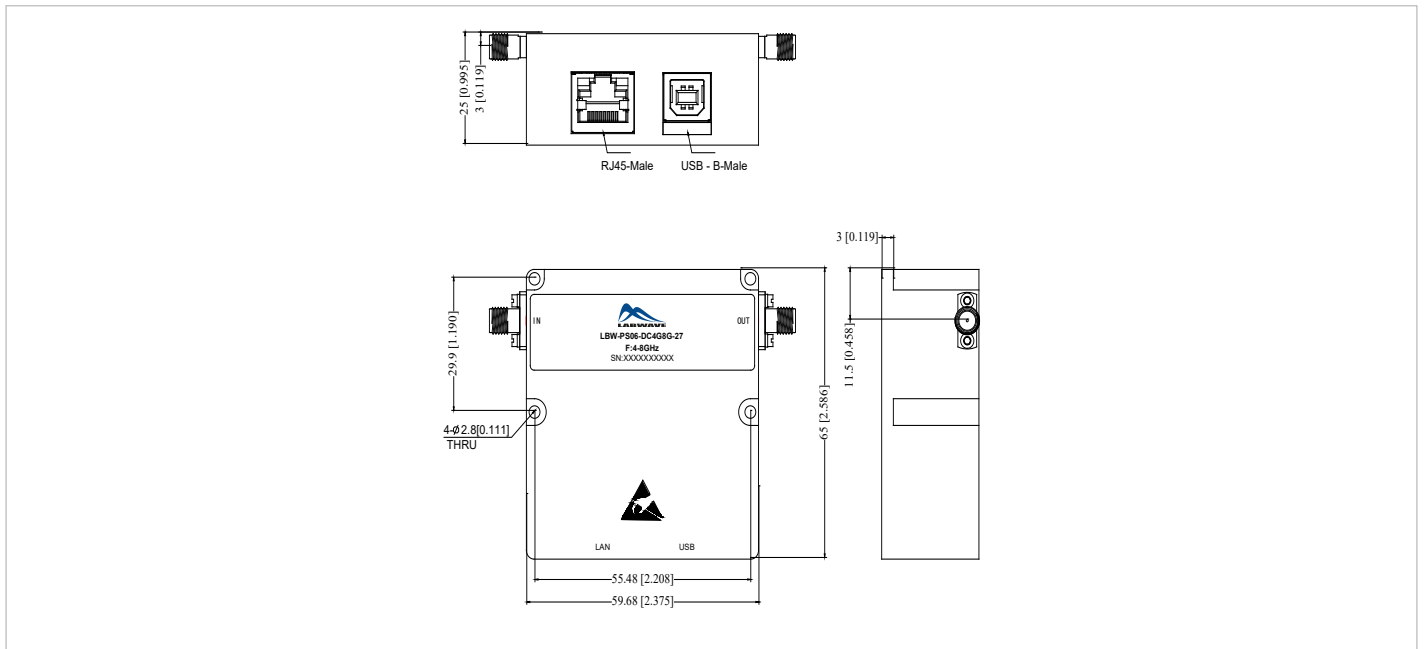
Part No.	Description
LBW-PS06-DC4G8G-27	4-8GHz Digital Phase Shifter

Environmental Specifications

Operational Temperature	-40°C~+85°C
Storage Temperature	-50°C~+105°C
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Shock	20G for 11msec half sine wave, 3 axis both directions

Outline Drawing:

All Dimensions in mm (inches) Housing Tolerances ± 0.2 (0.008)



ID	Packing List	QTY
1	Fig a. USB/Ethernet Control RF Phase Shifter	1
2	Fig b. USB2.0 Cable (5 feet / 1.5 meter)	1
3	Fig c. Network Cable (6 feet / 2 meter)	1



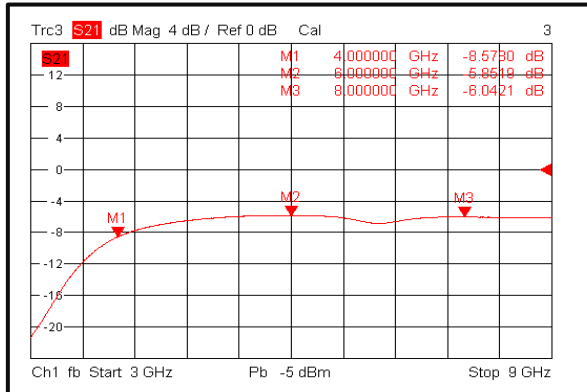
Fig b.



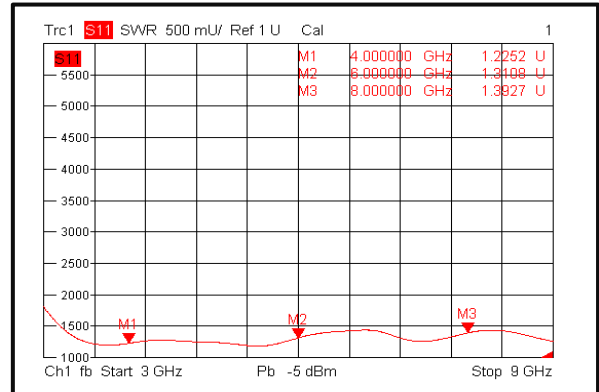
Fig c.

Фазовращатель с цифровым управлением USB / Ethernet 360° 4 ГГц – 8 ГГц

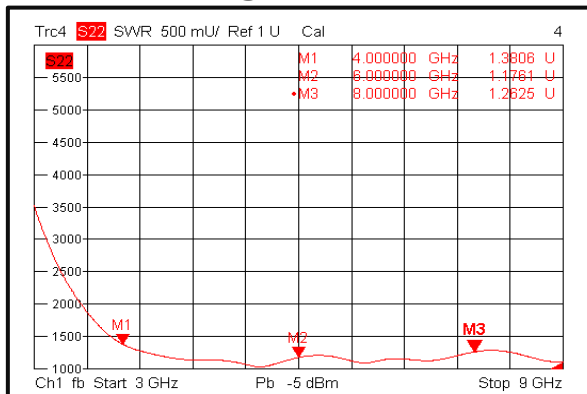
Insertion Loss @+25°C



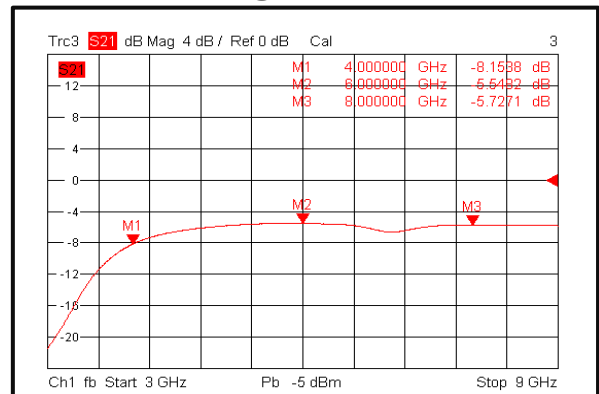
Input VSWR @+25°C



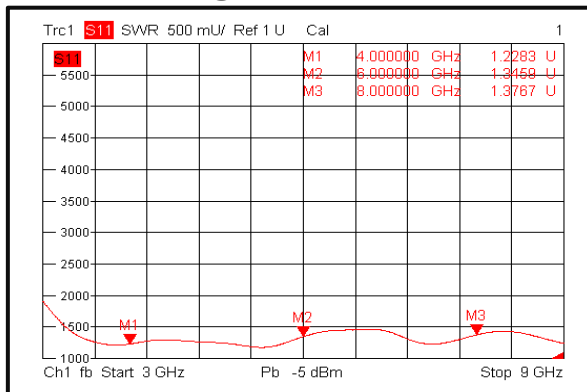
Output VSWR @+25°C



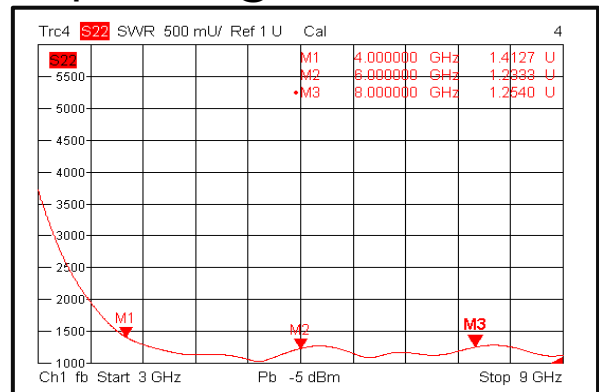
Insertion Loss @-40°C



Input VSWR @-40°C

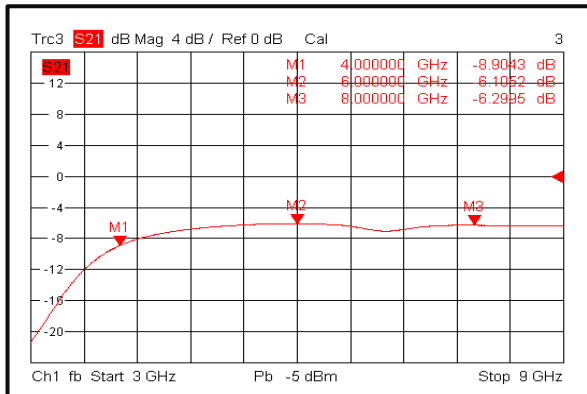


Output VSWR @-40°C

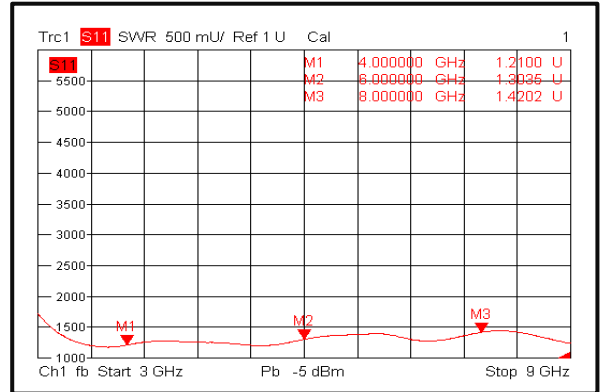


Фазовращатель с цифровым управлением USB / Ethernet 360° 4 ГГц – 8 ГГц

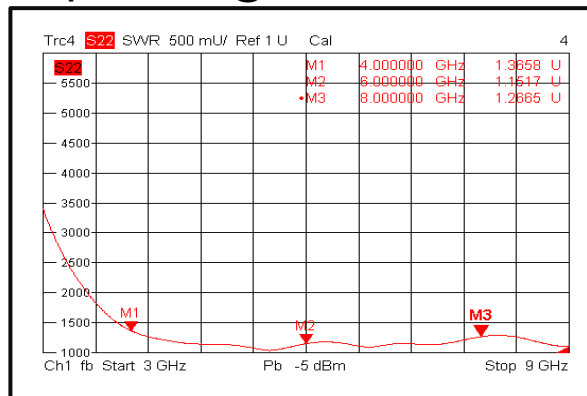
Insertion Loss @+85°C



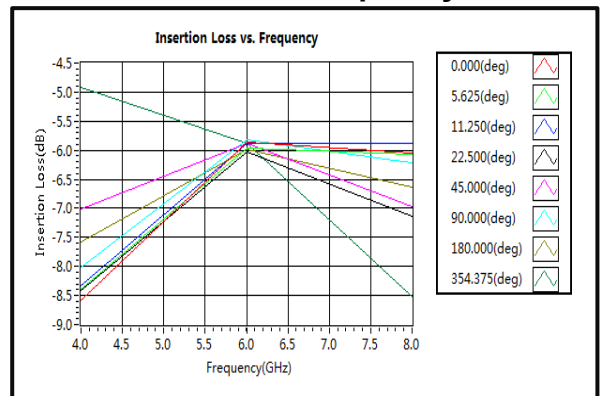
Input VSWR @+85°C



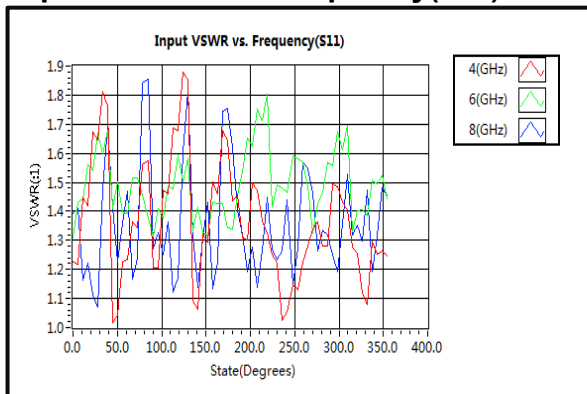
Output VSWR @+85°C



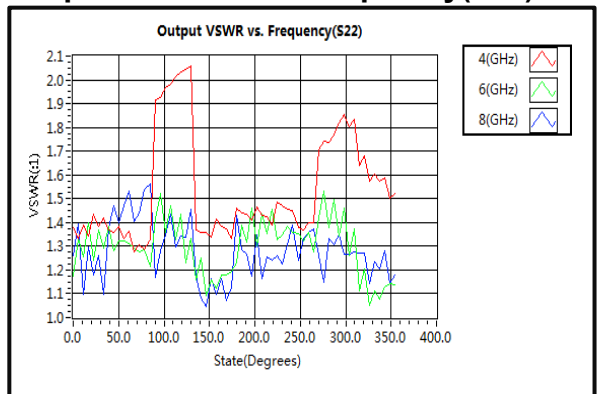
Insertion Loss vs. Frequency



Input VSWR vs. Frequency(s11)

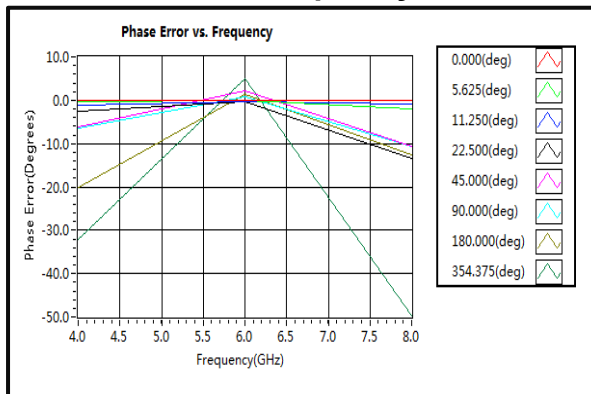


Output VSWR vs. Frequency(s22)

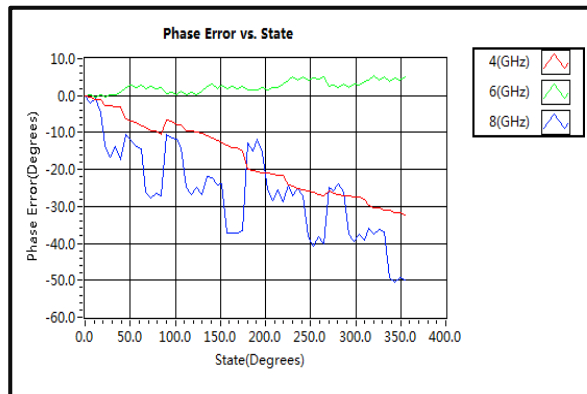


Фазовращатель с цифровым управлением USB / Ethernet 360° 4 ГГц – 8 ГГц

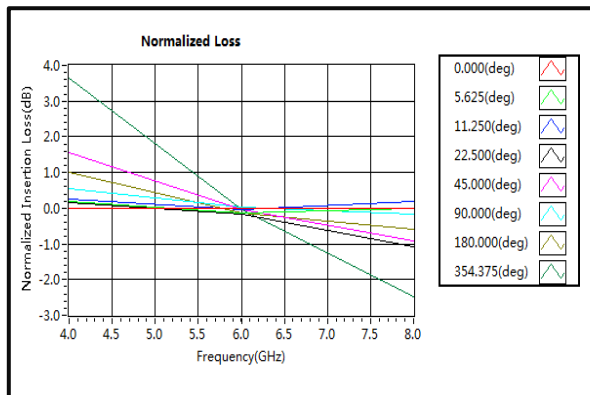
Phase Error vs. Frequency



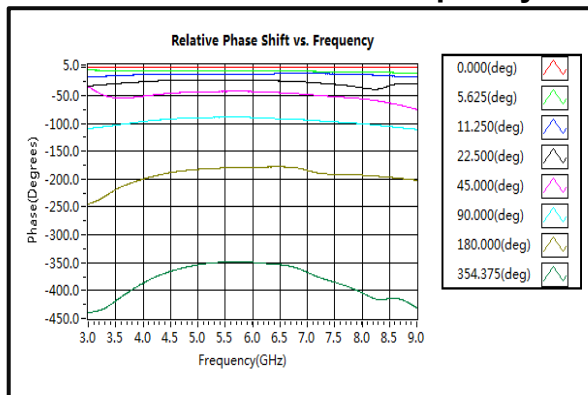
Phase Error vs. State



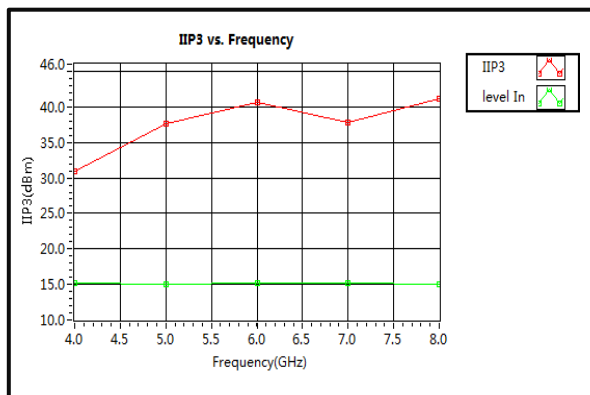
Normalized Loss. All States



Relative Phase Shift vs. Frequency



IIP3



Фазовращатель с цифровым управлением USB / Ethernet 360° 4 ГГц – 8 ГГц

Control content description

Format Requirement	USB (virtual serial port) Configuration	LAN Interface	Range of Parameters
a.All commands must end with a semicolon. b.All commands are case insensitive. c.Comma is used to separate multiple parameters in commands. d.All commands are suitable for USB(virtual serial port) and LAN interface.	Baud Rate :115200 Data bits : 8 Parity : None Stop bits : 1 Flow Type :None	IP address and Port. Default:192.168.1.225 :5100; use 'USB Control panel.exe' to update.	x(Step): 1~2^n ,n is control bits.

Command specification

ID	Order	Description	Return	Example
1	*IDN?;	Query product information	Product PN ,SN, Manufacturer ,version	*IDN?;
2	Reset;	Reset the product	/	Reset;
3	PS:PS x;	Set phase step	Phase value	PS:PS2; Return : 2*step size
4	PS:PS?;	Query current phase value	Phase step, Phase value	PS:PS? Return :2, 2*step size
5	PS:PSS?	Query phase step size	Phase step size	PS:PSS? Return : step size

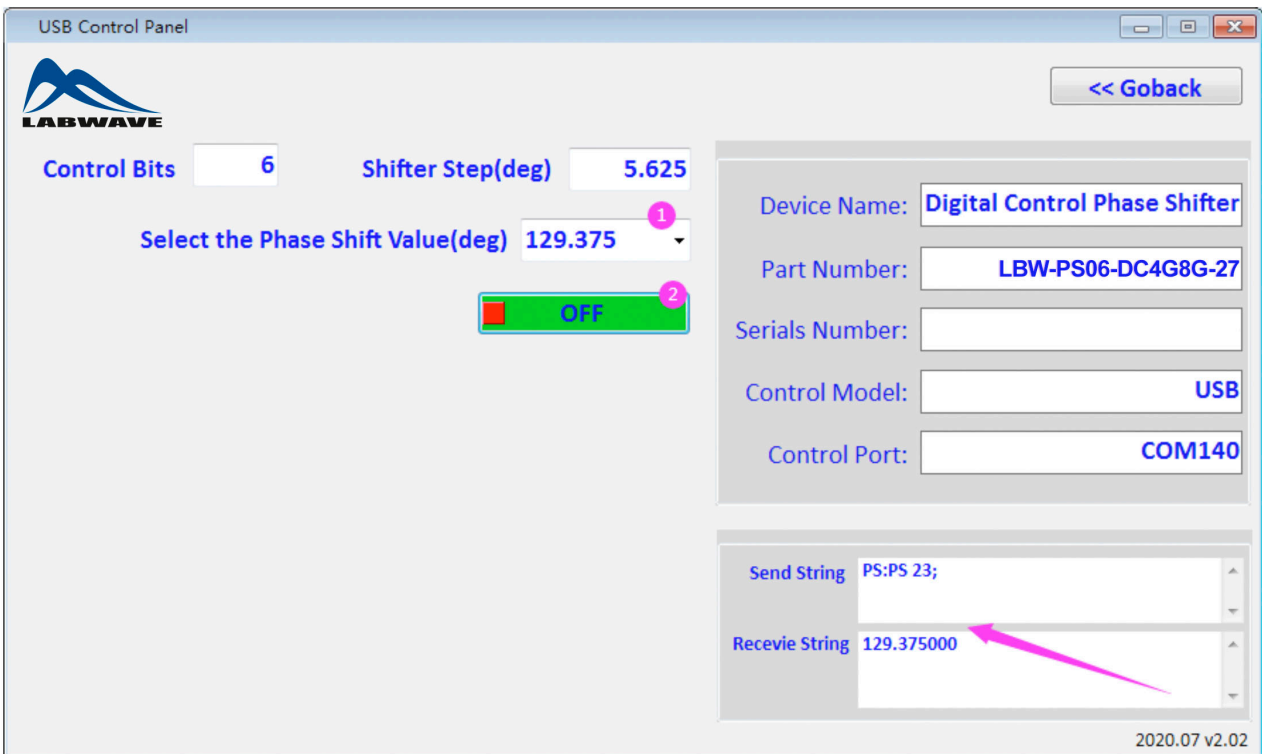
Error code query

ID	Return	Description
1	E1	Missing semicolon
2	E2	Incorrect command
3	E3	Missing space character
4	E4	Out of range parameters

Фазовращатель с цифровым управлением USB / Ethernet 360° 4 ГГц – 8 ГГц

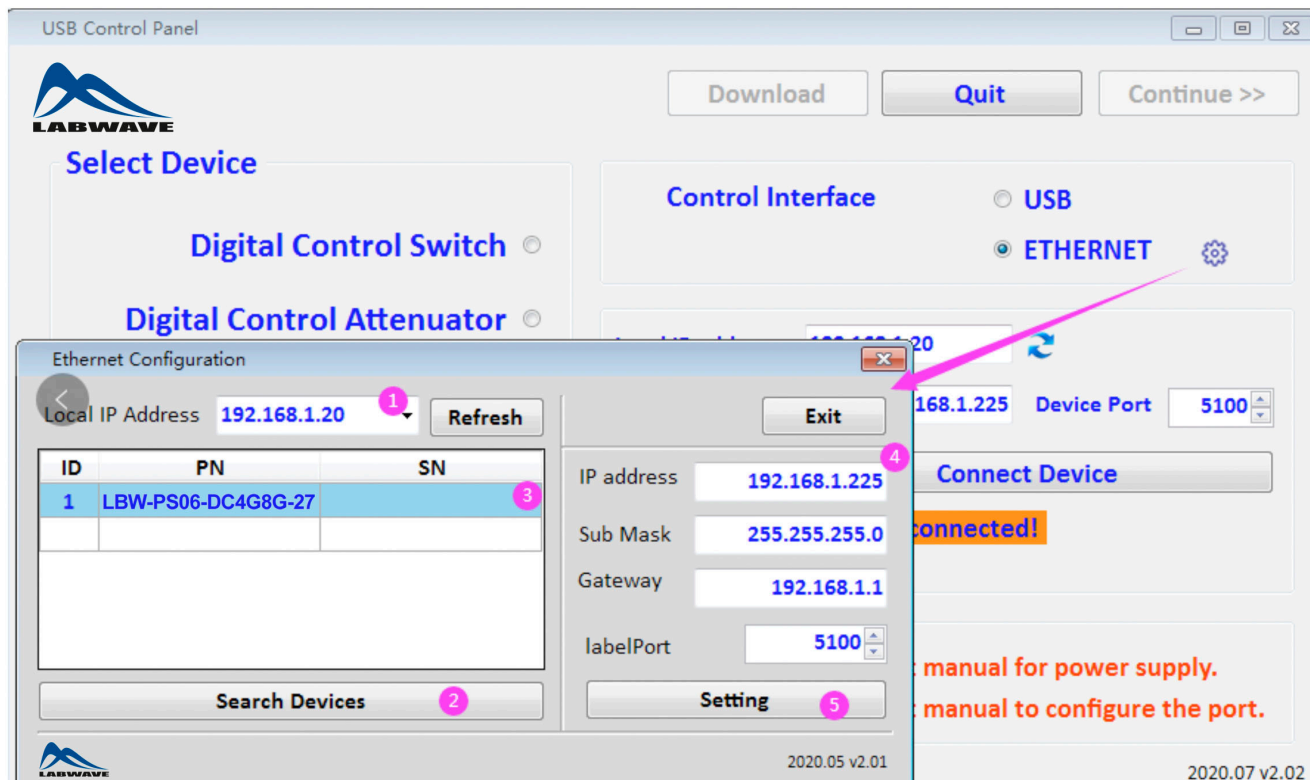


The screenshot shows the 'USB Control Panel' window. On the left, under 'Select Device', three options are listed: 'Digital Control Switch', 'Digital Control Attenuator', and 'Digital Control Phase Shifter' (selected with a pink circle 1). On the right, the 'Control Interface' is set to 'USB' (pink circle 2). Below that, a dropdown menu shows 'COM140' (pink circle 3). A 'Connect Device' button is highlighted with a pink circle 4. Below the button, a text box displays 'The device number is:' and 'Device IP:192.168.1.225:5100', with a pink arrow pointing to the IP address. At the top right, there are 'Download', 'Quit', and 'Continue >>' buttons (pink circle 5). A 'Notes' section at the bottom contains two instructions: '1. Please refer to the product manual for power supply.' and '2. Please refer to the product manual to configure the port.' The version number '2020.07 v2.02' is in the bottom right corner.



The screenshot shows the 'USB Control Panel' window in a control state. On the left, 'Control Bits' is set to '6' and 'Shifter Step(deg)' is '5.625'. A dropdown menu for 'Select the Phase Shift Value(deg)' shows '129.375' (pink circle 1). Below it is a green 'OFF' button with a red square icon (pink circle 2). On the right, a 'Device Information' section shows: 'Device Name: Digital Control Phase Shifter', 'Part Number: LBW-PS06-DC4G8G-27', 'Serials Number: [empty]', 'Control Model: USB', and 'Control Port: COM140'. Below this is a 'Send String' field with 'PS:PS 23;' and a 'Recevie String' field with '129.375000' (pink arrow). A '<< Goback' button is at the top right. The version number '2020.07 v2.02' is in the bottom right corner.

Фазовращатель с цифровым управлением USB / Ethernet 360° 4 ГГц – 8 ГГц



The screenshot displays the 'USB Control Panel' software interface. The main window has a title bar with standard window controls and buttons for 'Download', 'Quit', and 'Continue >>'. The interface is divided into several sections:

- Select Device:** Contains radio buttons for 'Digital Control Switch' and 'Digital Control Attenuator'.
- Control Interface:** Features radio buttons for 'USB' and 'ETHERNET', with a gear icon next to 'ETHERNET'.
- Ethernet Configuration (pop-up window):** This window is the focus, showing:
 - Local IP Address:** A dropdown menu set to '192.168.1.20' with a 'Refresh' button.
 - Device List Table:** A table with columns 'ID', 'PN', and 'SN'. The first row is highlighted in blue and contains the values '1', 'LBW-PS06-DC4G8G-27', and an empty 'SN' field.
 - Configuration Fields:** Input fields for 'IP address' (192.168.1.225), 'Sub Mask' (255.255.255.0), 'Gateway' (192.168.1.1), and 'labelPort' (5100).
 - Buttons:** 'Exit', 'Connect Device', and 'Setting' buttons.

At the bottom of the main window, there is a footer with the LABWAVE logo, the version '2020.05 v2.01', and the date '2020.07 v2.02'. A pink arrow points from the 'ETHERNET' radio button in the main window to the 'Connect Device' button in the pop-up window.

ID	PN	SN
1	LBW-PS06-DC4G8G-27	