Potomac Electric USD-300-30 Quick Start



1. Connect protective earth (PE) to ground screw on the drive grounding lug shown in Fig1.

Fig1.

2. Connect Motor Power (X2 Connector) according to Fig 2.



Figure 2. Motor power wirings details.

Connect Brake Resistor according to Fig 3.



Figure 3. Brake resistor wirings details.

Motor and Brake resistor connector:

	Pin	Signal	Description
X2	U	Motor phase U	Motor phase U
	V	Motor phase V	Motor phase V
	W	Motor phase W	Motor phase W
i di	PE	PE	Protective Earth
	+	DC Bus +	DC Bus +
	R	Resistor	Brake resistor
	-	DC Bus -	DC Bus -

Make sure that: Cable length < =25m. Wire gauge required varies with drive amperage. 3. Connect Feedback (X8 Connector or X6 connector)

Connect the feedback from the motor to the X6 connector according to Fig.3 if you use Encoder/Commutation Encoder feedback.



Figure 3. Commutation and incremental encoder wiring details.

Commutation Encoder connector:

	Pin	Signal	Description
	1	+5VDC	Encoder power supply
finin Chield	2	~B1-In	~B1-In
	3	B1-In	B1-In
	4	~A1-In	~A1-In
	5	A1-In	A1-In
	6	~Hall1	~Hall1
X6	7	GND	Digital Ground
5pin 15pin	8	GND	Digital Ground
	9	~Z1-In	~Z1-In
0	10	Z1-In	Z1-In
10 nin	11	Hall1	Hall1
ropin	12	~Hall3	~Hall3
	13	Hall3	Hall3
	14	~Hall2	~Hall2
	15	Hall2	Hall2
	16	Shield	Shield

Connect the feedback from the motor to the X8 connector according to Fig.4 if you use Resolver feedback.



Figure 4. Resolver wirings details.

Resolver connector:

ſġſ	<u>.</u>	Pin	Signal	Description
50		1	Sin+	Sin+
L L M	YQ	2	Sin-	Sin-
L O	$\mathbf{\nabla}0$	3	Cos+	Cos+
₿ @ L		4	Cos-	Cos-
R @ ₽	5	Ref+	Ref+	
		6	Ref-	Ref-
1pin		7	Shield	Shield

## 4. Connect I/O (X7 Connector)

Connect the I/O from control system to the X7 connector according to Fig.5 DIN, DOUT pins can be configured.

Analog Inputs, Outputs can be configured.



Figure 5. I/O wirings details.

#### I/O connector:

Pin	Signal	Description
1	GND	Digital Ground
2	Din1	Digital Input 1
3	Din2	Digital Input 2
4	Din3	Digital Input 3
5	Din4	Digital Input 4
6	GND	Digital Ground
7	Ext24V	Open-drain supply
8	Dout1	Reserve
9	Dout2	Digital Output 2
10	Dout3	Digital Output 3
11	Dout4	Digital Output 4
12	GND	Digital Ground
13	Analog-In1+	Analog difference input+
14	Analog-In1-	Analog difference input-
15	Shield	Shield
16	Analog-In2	Aux analog input
17	AGND	Analog Ground
18	Shield	Shield
19	Tacho-In	Tachometer Input

10nin	24nin	20	Analog-out	Analog
rzpin	24pm			Output
		21	Shield	Shield
		22	Analog-out	Analog
h % 5	h 및 F			Output
595	un San San San San San San San San San Sa	23	AGND	Analog Ground
595	ц 🔍 С	24	Shield	Shield
ЦŚQĽ	ц 🔍 С			
L G Q L	G @ Ł			
L C O L	G@LX7			
C @ P				
R @ P	C o P			
100	i o P			
12 8 2	신월전			
12 2 2	비질다			
1735	H 2 6			
	li w F			
1nin	13nin			
1 pin	ropin			

5. Connect Master encoder/Encoder emulation system (X4,5 Connectors) according to Fig.6.



Figure 6. Master encoder/ Encoder emulation wirings details

Encoder emulation connector:

	Shield		Pin	Signal	Description
			1	A-Out	A-Out
	1pin		2	~A-Out	~A-Out
	o c 9pin	X4	3	B-Out	B-Out
	X4    • °		4	~B-Out	~B-Out
	e finin		5	GND	Digital Ground
	5pin-10pin		6	Z-Out	Z-Out
			7	~Z-Out	~Z-Out
		8	GND	Digital Ground	
		9	GND	Digital Ground	
			10	Shield	Shield

Master encoder connector:



6. Connect drive communication RS-485 (X9 Connector) according to Fig.7



## Figure 7. drive communication wirings details

## RS-485 Connector:

	Pin	Signal	Description
	1	А	A (Data+)
	2	В	B (Data-)
	3	Т	Terminator
1pin	4	Com	RS ground

7. Connect AC input power as shown in Fig. 8. Do not apply power until all hardware connections are made.



Figure 8. AC Input power wiring diagram

	Pin	Signal	Description
	А	L1	Main A
A B C ÷	В	L2	Main B
<u>V1</u>	C	L3	Main C
	PE	PE	Protective Earth

AC Input power connector:

#### Ethernet connection to USD

If USD has Ethernet connection (see X9 socket):

1. Load configuration utility for Ethernet connection with USD device.

The utility is located at:

http://www.moxa.com/support/sarch result.aspx?prod id=66&type id=5&type=soft

MO	ХЛ <sup>®</sup>			МҮ МОХ	A   Partner Zone   Internation	al Sites   Contact Us Search
About Moxa	Products	Applications	Knowledge Center	Support	News & Events	Where to Buy
Location: Home >> Sup	port >> NE-4110A					Hi! Please sign in
NE-4110A					🖂 E-Mail this Page	🖶 Print this Page
					Moxa Member Log	gin
• Datashets • Manuals	Drivers     Firmware     Libraries     Vilities	• Applica • Function • Installa • Other • Program • Specifi	tion • Prod n iion mming cations	luct Page	Email Address Password Remember Can't remember Click here to ret	me your password? rieve it
Utilities for NE-4110A Operating system Plea	ise Select 💌				New User?	l
NPort Search Utility Version 1.13. Released A Details and release notes > Download 859.6 KB	Apr 17, 2012					

Figure 9

2. Install NPort Search Utility and run it (file nploc.exe). Turn on USD. Make sure that USD is connected to local network via X9 socket. Press Search button:

🔎 NPort Se	arch Utility								
<u> </u>	on <u>V</u> iew <u>H</u> el	P							
<u> </u>	<u> </u>	🧟 Search	≝ IP Locate	 Console	e Assign IP Un-L	r 😫 ock Upgrade			
No 🛆 🛉	lodel		LAN1 MAC Addres	s L	AN1 IP Address	LAN2 MAC Address	LAN2 IP Address	Status	
Search Result - 0 (s)									

Figure 10

#### If NPort Search Utility finds the USD, the IP Address will be indicated:

Dert 🖉	Search Utility					_	
<u> </u>	nction <u>V</u> iew <u>H</u> elp						
<u>E</u> xit	<u> </u>	≝ ⊑ IP Locate Con	sole Assign IP Un-L	ock U <u>p</u> grade			
No 🛆	Model	LAN1 MAC Address	LAN1 IP Address	LAN2 MAC Address	LAN2 IP Address	Status	
1	NE-4110A	00:90:E8:23:E5:B4	109.123.156.197				
-							
Search Resu	Search Result - 1 NPort(s)						

## Figure 11

# 3. Double click of mouse button at indicated IP Address will open web-browser. Make correction of parameters according pictures and press button Submit:

🔄 Мой Диск — Яндекс. Диск 🛛 🗙	Network Enabler Web Conso ×		- @ ×
← → C 🗋 109.123.156.	197		☆ ≡
🔁 Main Menu	Network Settings		
Overview	Г		
💼 Basic Settings	IP address	109.123.156.197	
Network Settings	Netmask	255.255.255.128	
Le Port 1	Gateway	109.123.156.196	
Operating Settings	IP configuration	Static	
Accessible IP Settings	DNS server 1		
🖻 🔄 Auto warning Settings	DNS server 2		
E-mail and SNMP Trap		SNMP Setting	
Event Type	SNMP	O Enable O Disable	
Digital IO	Community name	public	
DIO Monitor	Contact		
Serial Command Mode     Change Password	Location		
Load Factory Default		IP Address report	
Save/Restart	Auto report to IP		
	Auto report to UDP port	4002	
	Auto report period	10 seconds	
		Submit	



🖊 🔄 Мой Диск — Яндекс. Диск 🛛 🗙 🛛	Moh Anox - Pragesc. Anox x Y 🗅 Network Enabler Web Conso x 📃 🗐 💈				
← → C 🗋 109.123.156.	197		☆ =		
🔄 Main Menu	Serial Settings				
Overview		Port=01			
Basic Settings     Network Settings	Port Alias				
🖻 🔄 Serial Settings		Serial Parameters			
Port 1	Baud Rate	115200 💌			
L Operating Sectings	Data Bits	8 🕶			
🗀 Accessible IP Settings	Stop Bits	2 💌			
Auto warning Settings	Parity	None M			
Event Type	Flow Control	None			
🖻 🔄 Digital IO	FIFO	⊙ Disable ○ Enable			
DIO Settings	Interface	RS-422			
DIO Monitor	Apply the above settings to all serial ports				
Serial Command Mode Serial Command Mode Change Password Load Pacsword Save/Restart Save/Restart	Subma				
109.123.156.197/03.htm?Port=01					

Figure 13

🖸 Moli Alvox - Shuaesc. Alvox - X 🗈 Network Enabler Web Conso: X 💼				
← → C 109.123.156.197				
🔁 Main Menu	Operating Settings			
Overview		Port=01		
Basic Settings	Operation mode	TCP Server Mode		
a Serial Settings	TCP alive check time	0 (0 - 99 min)		
Port 1	Inactivity time	0 (0 - 65535 ms)		
Port 1	Max connection	1 (1 - 4)		
Accessible IP Settings		Data Packing		
Auto warning Settings	Delimiter 1	0 (Hex) Enable		
Event Type	Delimiter 2	0 (Hex) Enable		
🖻 🔄 Digital IO	Force transmit	20 (0 - 65535 ms)		
DIO Settings		TCP Server Mode		
Serial Command Mode	Local TCP port	4001		
Change Password	Apply the above settings to all serial ports	JL		
Save/Restart	Submit			
109.123.156.197/04.htm?Port=01				

Figure 14

# 4. Run DriveLink. Choose device as USD and software version of USD. Choose Ethernet connection:

	Drive Selection / Communication Setup	Х		
MECHATRONICS Drive Selection Communication Setup				
REVETENCE -	Drive Information			
	Drive Series USD			
a Potomac Electric Company	Software Version 1.31			
	Communication Medium			
	O Serial / USB to Serial Converter	Modify		
	Info: [COM4:01]	Maralife		
and the second	Info: [Station:100.423.456.407]	WOUTY		
	○ USB (direct to drive)	Modify		
	Info: [01]			
To work Offline select drive information and click 'Select Drive / Work Offline' button or click	0 %			
on the 'Connect to Drive / Go Online' button to automatically scan the drive connected and go online. Press Cancel to abort.	Communication Setup	Scan Drive		
Connect to Drive / Go Online Select Drive / Work Offline 🄀 Cancel				

Figure 15

Drive Selection / Communication Setup					
MECHATRONICS <sup>®</sup> Drive Selection <sup>®</sup> Communication Setup					
<b>ECVCTENAC</b>	Setup				
<b>MOTOLEMS</b>	St	tation Names	IP Address	Port	
a Potomac Electric Company	💿 Di	irect IP Connection	109.123.156.197	4001	
	St	tation1	109.123.156.197	4001	
	O St	tation2	109.123.156.197	4001	
1000	St	tation3	109.123.156.197	4001	
	O St	tation4	109.123.156.197	4001	
	O St	tation5	109.123.156.197	4001	
	O St	tation6	109.123.156.197	4001	
1.5	O St	tation7	109.123.156.197	4001	
	O St	tation8	109.123.156.197	4001	
To work Offline select drive information and click 'Select Drive / Work Offline' button or click					
on the 'Connect to Drive / Go Online' button to automatically scan the drive connected and go online. Press Cancel to abort.		Back to Drive Select	tion		
		Connect to Drive ,	/ Go Online	Select Drive	/ Work-Offline X Cancel

5. Choose Communication setup page and install the IP Address.

Figure 16

# 6. Choose Drive Selection Page and press Connection button:

	Drive Selection / Communication Setup	x		
MECHATRONICS	VECHATRONICS			
REVETENCE	Drive Information			
	Drive Series USD			
a Potomac Electric Company	Software Version 1.31			
× (9 . 1	Communication Medium			
	Serial / USB to Serial Converter Info: [COM4:01]	Modify		
E mines	Ethernet     Info: [Station:109.123.156.197]	Modify		
	USB (direct to drive)	<u>Modify</u>		
	Info: [01]			
To work Offline select drive information and click 'Select Drive / Work Offline' button or click	0 %			
on the 'Connect to Drive / Go Online' button to automatically scan the drive connected and go online. Press Cancel to abort.	🧭 Test 🛛 🚽 Communication Setup	🕵 Scan Drive		
	Connect to Drive / Go Online Select Drive / Work Offline	Cancel		

Figure 17

7. If connection exists, the status of it will be indicated in Status Bar of DriveLink as ONLINE:



Now you can change parameters of the device according to your requirements.

### Connection to USD via USB/RS485 converter

#### If USD has RS485 interface (see X9 socket): 1. Choose Connection as Serial/USB Serial Converter (page Drive Selection)

Drive Selection / Communication Setup				
MECHAIRONICS	Drive Information			
<b>GSYSTEMS</b>				
	Drive Series USD			
a Potomac Electric Company	Software Version 1.31			
	Communication Medium			
6	<ul> <li>Serial / USB to Serial Converter</li> </ul>	Modify		
	Info: [COM1:01]			
C Mineral	⊖ Ethernet	Modify		
	Info: [Station:192.168.1.20]			
	○ USB (direct to drive)	Modify		
	Info: [01]			
To work Offline select drive information and	0.0/			
click 'Select Drive / Work Offline' button or click	0 %			
automatically scan the drive connected and go		<b>F</b>		
online. Press Cancel to abort.	Test Communication Setup	Scan Drive		
	Connect to Drive / Go Online Select Drive / Work C	Offline X Cancel		
Figure 19				

2. Choose the number of virtual COM-port which is used of USB/RS485 converter (page Communication Setup). The number of virtual COM-port can be determine via Device Manager of Windows.

Drive Sele <mark>tion / Communication Setup</mark>					
MECHATRONICS® SYSTEMS a Potomac Electric Company	Drive Selectic Connection Type © Direct link (Operator / RS422 / RS485) RTS Control				
	Setup Communications Port Drive Serial Communication Address Baud Rate Setting Parity Selection	COM1       ▼         01       Hex.         115200       ▼         No Parity       ▼			
To work Offline select drive information and click 'Select Drive / Work Offline' button or click on the 'Connect to Drive / Go Online' button to automatically scan the drive connected and go online. Press Cancel to abort.	Back to Drive Selection	Drive / Work Offline			

Figure 20

3. Return on page Drive Selection and press on button Connect to Drive. If communication is successful, status bar of DriveLink will indicate status ONLINE



Now you can change parameters of the device according to your requirements.