PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions



How to... Connect the RIA700 to a FLEX 2100, FLEX or FLEX 2ch. – 4ch.



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General information

If you only connect the USB-Cable to power the RIA700 the communication ports and analog inputs and outputs will not work. The power supply via the USB-Cable is for changing parameter only.



The RIA700 can be connected to a FLEX, FLEX2100 or a FLEX 2ch. – 4ch.using the Ethernet or CAN bus connection. It is possible to connect up to 5 RIA700's using Ethernet or CAN bus.

Note: make sure that you connect the DAC power supply otherwise the DAC outputs will not work.



Using the device power supply:





COMMON DAC-1 and COMMON DAC-2 are internally connected to the -DAC SUPPLY. When using the device power supply for the DAC, the current loop will include the SUPPLY- of the device power supply.

	SHIELD -DAC SUPPLY +DAC SUPPLY COMMON DAC-2 +CURRENT OUT-2
	SHIELD COMMON DAC-1 +CURRENT OUT-1

Using an external power supply:



In this example the current loop is isolated from the device power supply.



Ethernet

Note: you can only use the Ethernet Buslink or the CAN bus Buslink. You cannot use the Ethernet Buslink and CAN bus Buslink at the same time.

Use an Ethernet crossover cable to connect the RIA700 to a FLEX, FLEX2100 or FLEX 2ch. – 4ch directly, or use a switch to connect one or more RIA700's.

Set up the FLEX

Go to Menu → System Setup → Port Setup → Ethernet Setup. Enter an IP Address.

	Ethernet Set	up TA	C:00000065 L:00000100
IP Number	192.	168.151.06:	
Subnet Mask	255.	255.255.00(
Gateway	000.	000.000.000	
Speed		Auto	+
Name			EDIT
X Cancel	» Ne	xt 🗸 🗸 🗤	
RENNIGH		IM	DICATOR / CONTROLLER

Note: the first 3 numbers must be the same as the RIA700.

Now press Next, Set Buslink Address on "1" and Buslink Subaddr on "1". Press OK to save settings.

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	Eth	erne	t Setup	TAC: CAL:	00000065
Port			6768		EDIT
Buslink Ad	ldress	-	1		+
Buslink Su	baddr	-	1	+	ĔDIT
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				INDIC	ATOR / CONTROLLER



Setup the RIA700

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Connect the RIA700 to a PC using a USB-cable and open Pi Mach II and double click on **RIA700**, then double click on **System Setup**, then double click on **Communication**, then double click on **Ethernet**, set the **IP address**. Click on **Apply** to save settings.

Note: the first 3 numbers must be the same as the FLEX.

n ² IdCode: 0628, Device Version: 01.02, Build: 05, Serial: 14070006, Module Version: 00.00, Build: 00, Project: C:\Pi test								
File Project Environment View Tools Help								
💕 On-Line 🐵 Eirmware Update Manager 🖶 Program Builder 🥞 Flex Builder 🔲 Watches 🛛 🛃 Exit								
📙 🖳 Display 🛛 🕨 Control 🌑 Tasks 🛛 🏪 1/0 🐖 Indicator & Registers 📼 Labels 🚝	🕎 Display 🕨 Control 🌒 Tasks 🛛 🏪 1/0 🚎 Indigator & Registers 🖚 Labels 📰 Results 🛛 🎆 Printer Layout 🅭 Printer Ticket 🖉 💭 Clock 🗠 Scope 🛛 🔞 Manage							
□- Penko □- Device root □- RIA700 Analog	Class: Penko Path: 1.1.1.	.Device root.RIA700 Analog.System Setup.Communication.Ethernet 3.2.2						
-1.1.1.1 Name = RIA700 4 inputs, 2 outputs E-Live B-System	MAC	00:C0:16:01:93:75						
ial- System Setup ial- Service	Name	Penko						
⊟- Communication ⊕-RS485	Address	192 . 168 . 151 62						
Ethernet 1113221M4C = 00:C0:16:01:02:75	Mask	255 . 255 . 255 . 0						
-1.1.1.3.2.2.2 Name = Penko	Gateway	0 . 0 . 0 . 0						
- 1.1.1.3.2.2.4 Mask = 255.255.255.0 - 1.1.1.3.2.2.5 Gateway = 0.0.0.0	DHCP	DISABLE						
B-Factory recall	Discover	Import Properties (CSV)						
ACTIVE USB USB open								

Double click on **Ethernet Buslink**. Set the address of the first SGM on **Address "1**" and the **Sub address** on "2". Click on **Apply** to save settings.

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💻 <u>D</u> isplay	🕨 Control 🌒 Tasks 🛛 🧏 1/0 🚎 Indicator & Registers 📼 Labels 🗮	R <u>e</u> sults	👬 Printer Layout 👗 Printer Tic	ket 🛛 🖲 <u>C</u> lock 🗠 <u>S</u> cope	୍ଟିତ Manage		
- Penko - Device	root 700 Analog	Cla Pa	ass: Penko.Device root.RIA ath: 1.1.1.3.2.4	700 Analog.System Se	tup.Communication.I	thernet BusLink	
	1.1.1.1 Name = RIA700 4 inputs, 2 outputs Live System	Addre	255	1			
	System Setup	Sub a	ddress	4			
	 RS485 Ethernet BusLink I.1.1.3.2.4.1 Address = 1 I.1.1.3.2.4.2 Sub address = 2 CAN Buslink Output Control Analog input Factory recall 	Di	iscover Import Properti	es (CSV)		Арріу	
ACTIVE USB	USB open						
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Double click on **Output Control** and set **Address** to "1", **Sub address** to "1" and **Enable** to "**ON**". Click on **Apply** to save settings.

n ⁷ IdCode: 0628, Device Version: 01.02, Build: 05, Serial: 14070006, Module Version: 00.00, Build: 00, Project: C:\Pi test								
File Project Environment View Tools Help								
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💭 Display 🕨 Control 🌒 Tasks 🛛 🏪 1/0 📪 Indigator & Registers 🖚 Labels 🗮 Results 🛛 🏭 Printer Layout 🅭 Printer Ticket 🖉 Diock 🗠 Scope 🛛 👔 Manage								
⊡-Penko ⊡-Device root ⊡-RIA700 Analog	Class: Penko.Device root.RJ Path: 1.1.1.3.2.6	IA700 Analog.System Setup.Communication.Output (Control					
-1.1.1.1 Name = RIA700 4 inputs, 2 outputs B Live B System	Address	1						
⊡- System Setup ⊡- Service	Sub address	1						
Communication R5485 Ethernet Ethernet BusLink CAN Buslink Output Control -1.1.1.3.2.6.1 Address = 1 -1.1.3.2.6.3 Enable = On E Analog input	Enable	On						
⊕-Analog output ⊕- Factory recall	Discover Import Prope	rties (CSV)	Apply					
ACTIVE USB USB open								

If you want to connect more than one RIA700, use the following settings for the RIA700's:

Device	Inputs			Output control			
number	Ethernet	Buslink					
	Address	Sub address	Inputs 1-4	Address	Sub Address	Enable	
			Indicator:				
1	1	2	116-119	1	1	On	
2	1	3	131-134	1	1	On	
3	1	4	146-149	1	1	On	
4	1	5	161-164	1	1	On	
5	2	1	201-204	1	1	On	



CAN bus

Note: you can only use the Ethernet Buslink or the CAN bus Buslink. You cannot use the Ethernet Buslink and CAN bus Buslink at the same time.

First of all you will need to connect one or more RIA700's to the FLEX, this can be done by connecting a cable with two wires and a shield parallel (**CanH** goes to **Can-H1**, **CanL** goes to **Can-L1** and **Shield** goes to **Shield**). Place a resistor of 120 Ω between **Can-H1** and **Can-L1** of the FLEX.

Connect the RIA700's to a FLEX 2100

FLEX 2100		RIA700 NO:1	RIA700 No:2	RIA700 No:3
CanH	Connect to	CanH	CanH	CanH
CanL	Connect to	CanL	CanL	CanL
Shield	Connect to	Shield	Shield	Shield

Connect the RIA700's to a FLEX or FLEX 2ch. – 4ch.

FLEX or FLE	X 2ch. – 4ch.	RIA700 NO:1	RIA700 No:2	RIA700 No:3
Can-H1	Connect to	CanH	CanH	CanH
Can-L1	Connect to	CanL	CanL	CanL
Shield	Connect to	Shield	Shield	Shield

Set on the last RIA700 the jumper above the CAN bus connector in termination "ON" position. This will terminate the bus. The jumper is located above the CAN bus connector.

The CAN bus termination is done with a jumper:





Setup the FLEX

Go to Menu \rightarrow System Setup \rightarrow Port Setup \rightarrow CAN1 Port. Set Protocol on "Buslink", Baudrate on "250 kbs", Buslink Address on "1" and Buslink Subaddr on "1". Press OK to save settings. Press Home to return to the main screen.



Setup the RIA700

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Open Pi Mach II and double click on **RIA700**, then double click on **System Setup**, then double click on **Communication**, then double click on **CAN Buslink**. Set **Protocol** on **"Buslink"**, **Buslink Address** on **"1"**, **Buslink Sub address** on **"1"** and the **Baudrate** on **"250K"**. Click on **Apply** to save settings.

π ² IdCode: 0628, Device Version: 01.02, Build: 05, Serial: 14070006, M	Iodule Version: 00.00, Build: 00, Project: C:\Pi test
File Project Environment View Tools Help	
💕 On-Line 🛛 🛞 Eirmware Update Manager 🐔 Program Builder 🔮	Fjex Builder 📃 Watches 🚽 Exit
💻 Display 🕨 Control 🎆 Tasks 🧏 1/0 🚎 Indicator & Regist	ers 📼 Labels 🗮 Results 🛛 🏥 Printer Layout 🎩 Printer Ticket 🛛 🜑 Clock 🗠 Scope 🛛 隆 Manage
⊡- Penko ⊡- Device root	Class: Penko.Device root.RIA700 Analog.System Setup.Communication.CAN Buslink Path: 1.1.1.3.2.5
⊡ RIA700 Analog	
— 1.1.1.1 Name = RIA700 4 inputs, 2 outputs ⊞ Live ⊞ System	Protocol Buslink 💌
⊟- System Setup ⊞- Service	Buslink Address 1
⊡- Communication ⊞- RS485	Buslink Subaddress 2
⊕ Ethernet	Baudrate 250k 💌
CAN Buslink 1.1.1.3.2.5.1 Protocol = Buslink 1.1.1.3.2.5.2 Buslink Address = 1 1.1.1.3.2.5.3 Buslink Subaddress = 2 1.1.1.3.2.5.4 Baudrate = 250k ⊕ Output Control ⊕ Analog input ⊕ Factory recall	
	Discover Import Properties (CSV)
ACTIVE USB Open	

Double click on **Output Control** and set **Address** to "**1**", **Sub address** to "**1**" and **Enable** to "**On**". Click on **Apply** to save settings. The Buslink Address and Buslink Sub address must have the same address as the FLEX if you want to connect one or more RIA700's to your FLEX.

² IdCode: 0628, Device Version: 01.02, Build: 05, Serial: 14070006, Module Version: 00.00, Build: 00, Project: C:\Pi test							
ile Project Environment View Tools Help							
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⊡- Penko ⊡- Device root ⊡- RIA700 Analog	Class: Penko.Do Path: 1.1.1.3.2	evice root.RIA700 Analog.System Setup.Communication.0 .6	utput Control				
- 1.1.1.1 Name = RIA700 4 inputs, 2 outputs E-Live E-System	Address						
⊡- System Setup ⊡- Service	Sub address	1					
Communication P. R5485 CAN Buslink CAN Buslink CAN Buslink CAN Buslink I.1.1.3.2.6.1 Address = 1 I.1.1.3.2.6.3 Sub address = 1 I.1.1.3.2.6.3 Enable = On Analog input Factory recall	Enable	On 💌					
	Discover	Import Properties (CSV)	Apply				
ACTIVE USB Open							

If you want to connect more than one RIA700, use the following settings for the Indicators:

Device	Inputs			Output co	ontrol	
number	CAN bus I	Buslink				
	Address	Sub address	Inputs 1 – 4 Indicator:	Address	Sub Address	Enable
1	1	2	116-119	1	1	On
2	1	3	131-134	1	1	On
3	1	4	146-149	1	1	On
4	1	5	161-164	1	1	On
5	2	1	201-204	1	1	On



Analog inputs

Double click on **Analog input**, then double click on **Input 1** and double click on **Configuration**. Here you can set the **Range**. Click on **Apply** to save the changes. The settings you can choose are listed below.

Setting	Jumper	Description
RAW		16 bit DAC value
0 – 24 mA	Yes	The minimum and maximum input of the analog input.
0 – 20 mA	Yes	The minimum and maximum input of the analog input.
4 – 20 mA	Yes	The minimum and maximum input of the analog input.
4 – 24 mA	Yes	The minimum and maximum input of the analog input.
0 – 10 V	No	The minimum and maximum input of the analog input.
-10 – 10 V	No	The minimum and maximum input of the analog input.
-5 – 5 V	No	The minimum and maximum input of the analog input.

Note: make sure that you set the Range the same as the device it is attached to.

You can set Input 2, 3 and 4 the same way as Input 1.





Analog outputs

Double click on **Analog output**, then double click on **Output 1** and double click on **Configuration**. Here you can set the **Parameters**.

π^2 IdCode: 0628, Device Version: 01.02, Build: 05, Serial: 14070006, Module Version: 00.0	00, Build: 00, Project: C:\Pi test\
File Project Environment View Tools Help	
📝 On-Line 🛛 🛞 Eirmware Update Manager 🗜 Program Builder 🧠 Flex Builder 💷 👿	atches 🚽 Egit
🗍 💻 Display 🗼 Control 🌰 Tasks 🛛 🏪 1/0 📪 Indigator & Registers 👄 Labels 🚆	Results 🛛 👯 Printer Layout 👗 Printer Ticket 🛛 🌑 Clock 🗠 Scope 🛛 🛐 Manage
Penko Device root Device Analog	Class: Penko.Device root.RIA700 Analog.System Setup.Analog output.Output 1.Configuration Path: 1.1.1.3.4.1.2
-1.1.1.1 Name = RIA700 4 inputs, 2 outputs B-Live B-System	Indicator 2
⊟- System Setup ⊕- Service	Minimum Level 0
E- Communication	Maximum Level 1000
Ethernet Ethernet BusLink ≡	Range 4-20mA 💌
 CAN Buslink ⊕ Output Control ⊕ Analog output ⊖ Analog output ⊕ Output 1 ⊕ Configuration □ Configuration □ 1.1.1.3.4.1.2.1 Indicator = 2 -1.1.1.3.4.1.2.3 Maximum Level = 0 -1.1.1.3.4.1.2.4 Range = 4-20mA ⊕ Output 2 	Discover Import Properties (CSV) Apply
ACTIVE USB USB open	

Indicator: The DAC output will look at this indicator.

Minimum Level: The DAC output will give out its lowest value at this level. (Level of Indicator 2)

Maximum Level: The DAC output will give out its highest value at the this level. (Level of Indicator 2)

Range:

Note: make sure that you set the Range the same as the device it is attached to.

Setting	Jumper	Description
RAW		16 bit DAC value
0 – 24 mA	Yes	The minimum and maximum input of the analog input.
0 – 20 mA	Yes	The minimum and maximum input of the analog input.
4 – 20 mA	Yes	The minimum and maximum input of the analog input.
4 – 24 mA	Yes	The minimum and maximum input of the analog input.
Val. and and		

You can set Output 2 the same way as Input 1.



Control the DAC outputs manually

It is possible to control the DAC outputs. Double click on **System Setup**, double click on **Analog output**, then double click on **Output 1** and double click on **Manual**.

π^2 IdCode: 0628, Device Version: 01.02, Build: 05, Serial: 14070006, Module Version: 00.0	00, Build: 00, Project: C:\Pi test\		
File Project Environment View Tools Help			
📗 💕 On-Line 🛛 🛞 Eirmware Update Manager 🚦 Program Builder 🍓 Flex Builder 🔲 👾	atches 🛃 E <u>x</u> it		
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⊡- Penko ⊡- Device root ⊡- RIA700 Analog	Class: Penko.Device root Path: 1.1.1.3.4.1.1	t.RIA700 Analog.System Setup.Analog output.Out	out 1.Manual
-1.1.1.1 Name = RIA700 4 inputs, 2 outputs E Live System	Manual output level	0,00 %	
i System Setup i Service		Manual control	
⊡- Communication ⊕ RS485		Manual 0.00%	
		Manual 100.00%	
CAN Buslink Output Control		Manual off	
Analog input Analog utput			
⊕- Configuration ⊕- Output 2			
B- Factory recall			
	Discover Import Pr	roperties (CSV)	Apply
ACTIVE USB USB open			

Manual output level: here you can set the DAC output manually in a percentage.

Manual control: click on Manual control to set the DAC output with an percentage you have set in the Manual output level.

Manual 0.00%: click on this button the set the DAC output to 0.00%

Manual 100.00%: click on this button the set the DAC output to 100.00%

Manual off: click on this button to stop the manual output, the output will now look at the selected Indicator.



Checking the connection

To check if the connection works, use the FLEX and go to **Menu** \rightarrow **Status** \rightarrow **Indicators** \rightarrow **Device**. Now you should see the 4 analog inputs from 116 to 119 if they are switched on.

The2 analog outputs are shown at 102 and 103 (this depends which Indicators the analog outputs are following).

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
101: 19.857 $121:$ $141:$ $161:$ $181:$ $102:$ 37.70 $122:$ $142:$ $162:$ $182:$ $103:$ 54.56 $123:$ $143:$ $163:$ $183:$ $104:$ $124:$ $144:$ $164:$ $184:$ $105:$ $125:$ $145:$ $165:$ $185:$ $106:$ $126:$ $146:$ $166:$ $186:$ $107:$ $127:$ $147:$ $167:$ $187:$ $108:$ $128:$ $148:$ $168:$ $188:$ $109:$ $129:$ $149:$ $169:$ $189:$ $110:$ $130:$ $150:$ $170:$ $190:$ $111:$ $131:$ $151:$ $171:$ $191:$ $112:$ $132:$ $152:$ $172:$ $192:$ $113:$ $133:$ $153:$ $173:$ $193:$ $114:$ $134:$ $154:$ $174:$ $194:$ $115:$ $135:$ $155:$ $175:$ $195:$ $116:$ 37.91 $136:$ $156:$ $176:$ $196:$
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115: 135: 155: 175: 195: 116: 37.91 136: 156: 176: 196:
116: 37.91 136: 156: 176: 196:
117: 54.91 137: 157: 177: 197:
118: 24.14 138: 158: 178: 198:
119: 22.78 139: 159: 179: 199:
120: 140: 160: 180: 200:
Device 🔗 Back





About PENKO

Our design expertise include systems for manufacturing plants, bulk weighing, check weighing, force measuring and process control. For over 35 years, PENKO Engineering B.V. has been at the forefront of development and production of high-accuracy, high-speed weighing systems and our solutions continue to help cut costs, increase ROI and drive profits for some of the largest global brands, such as Cargill, Sara Lee, Heinz, Kraft Foods and Unilever to name but a few.

Whether you are looking for a simple stand-alone weighing system or a high-speed weighing and dosing controller for a complex automated production line, PENKO has a comprehensive range of standard solutions you can rely on.

Certifications

PENKO sets high standards for its products and product performance which are tested, certified and approved by independent expert and government organizations to ensure they meet – and even – exceed metrology industry guidelines. A library of testing certificates is available for reference on:

http://penko.com/nl/publications_certificates.html

PENKO Professional Services

PENKO is committed to ensuring every system is installed, tested, programmed, commissioned and operational to client specifications. Our engineers, at our weighing center in Ede, Netherlands, as well as our distributors around the world, strive to solve most weighing-system issues within the same day. On a monthly basis PENKO offers free training classes to anyone interested in exploring modern, high-speed weighing instruments and solutions. A schedule of training sessions is found on: www.penko.com/training

PENKO Alliances

PENKO's worldwide network: Australia, Belgium, Brazil, China, Denmark, Germany, Egypt, Finland, France, India, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Syria, Turkey, United Kingdom, South Africa, Slovakia Sweden, Switzerland and Singapore. A complete overview you will find on: www.penko.com/dealers

