RADIOLOGIC CUT YOUR CABLES

RL-PRIO

Har ni tänkt koppla en radio till er PLC? Varför inte ta bort PLC:n och installera en intelligent radio med inbyggd logik istället? RL-PRIO kan ofta ta hand om all er logik och vara navet i er maskins styrsystem, det lilla inbyggnadsmåttet och den blygsamma strömförbrukningen gör att det nästan alltid finns möjlighet att montera en RL-PRIO i befintligt skåp/kapsling.

Kabelersättning, "Cut your cables", med två st. RL-PRIO kan ni oftast ersätta en eller flera kablar, räkna gärna ut vad en kabel i en industribyggnad kostar när den är beställd, inköpt, monterad och ansluten av en elektriker eller tekniker, det drar snabbt iväg med dolda kostnader, glöm inte kostnaden för all dokumentation på kort och lång sikt. Detsamma gäller utomhus, vad kostar ett 100 meter långt kabeldike med schaktning, ev. grävtillstånd från markägare, kabelskydd, återfyllnad mm? RL-PRIO betalar sig snabbt och kan monteras omgående, många gånger kan vi programmera och skicka enheterna samma eller påföljande dag.

Avståndet behöver inte vara långt för att en intelligent radiostyrning skall vara praktisk och kostnadseffektiv, kanske vill man kunna sitta kvar i hytten på fordonet då man skall aktivera en maskin/applikation som är stationär och betjänar fler fordon. Radiologics Triplexfunktion gör att du kan vara säker på att operatören endast styr rätt maskin och i rätt ögonblick.

RL-PRIO står för Radiologic PLC Radio Input/Output, det vill säga en logisk enhet med radiostyrning, programmerbar för de flesta tredjepartsprodukter som sensorer, logiska IO-enheter, givare, ventiler, reläer, bus-system och reläkort, ja listan kan göras lång.

De grundläggande in- och utgångarna är:

Tio programmerbara ingångar, digitala/analoga Tio programmerbara utgångar, digitala (8x1 A och 2x1 A) RS485-gränssnitt, för programmering och bus-anslutning SMA-antenninterface Display Vrid-/Tryckknapp för programmeringsinställningar

Inom kort kommer vi lansera mjukvaran RL-Tools som gör att ni själva kan utföra enklare programmering av Radiologic-produkterna RL-PRIO, RL-router, RL-display och RL-RC10. För mer avancerade specialprogram med Triplex-lösningar hjälper våra erfarna programmerare och tekniker er att först analysera er applikation och sedan skapa ett förslags- och programmeringsunderlag.

RL-PRIO används oftast som navet i ett Radiologic-system och kan kopplas till alla andra delar i produktfamiljen som handsändaren RL-RC10, touchdisplayen RL-display, GSM- och nätverksmodulen RL-Router för statistik och datainsamling eller RL-USB som kopplar samman Radiologic med en vanlig PC.

RADIOLOGIC **CUT YOUR CABLES**

RL-PRIO

Parameter	Min	Тур	Max	Enhet	Anmärkning
Strömförsörjning					
Spänning, V _{IN}	8,0		35,0	VDC	
Effektförbrukning, P _{VIN}		1		W	
Strömförbrukning, I_{VIN} V _{IN} = 12 V V _{IN} = 24 V		90 45		mA mA	
Ingångar					
Spänning, V _{I0.0} – V _{I0.9} max analogt mätområde	0,0		35,0 30,0	V _{DC} V _{DC}	
Låg signal, V⊩	0,0		5,0	VDC	Programmerbar, 1 – 29 V
Hög signal, V⊮	10,0		35,0	VDC	Programmerbar, 1 – 29 V
Upplösning	10	13		bitar	
Ingångsimpedans	50			kohm	
Utgångar					
Matningsspänning, VLOAD	5,0		30,0	VDC	
Utspänning, V _{Q0.0} – V _{Q0.9}	VLOAD-0,5		VLOAD	VDC	
$\begin{array}{c} \text{Belastning} \\ Q_{0.0} - Q_{0.7} \\ Q_{0.8} - Q_{0.9} \end{array}$			1,0 2,0	A A	
PWM, frekvens	0,01		10	kHz	
PWM, upplösning f _{PWM} < 8 kHz f _{PWM} ≥ 8 kHz	10 9		16 10	bitar bitar	Frekvensberoende
Radio					
Frekvensområde	433,050		434,790	MHz	
Antal kanaler		69			
Kanalseparation		25		kHz	
Datahastighet		4800		bit/s	
Uteffekt		10		mW	+10 dBm
Generellt					
Temperatur	-20		+65	°C	
Fuktighet			95	%RH	Ingen kondensation
Anslutningar					
Ingångar och strömförsörjning Utgångar Seriellt gränssnitt Antenn	12 polig ski 12 polig ski 6 polig skr	ruvplint, m ruvplint, m uvplint, ma RP-SMA	ax 2,5 mm ² ax 2,5 mm ² ax 1,5 mm ²		

Elektromagnetisk kompatibilitet	
R&TTE	EN 300220-2, EN 301489-1, EN 301489-3, EN 50371
LVD	EN 60950-1
EMC	EN 55022, EN 61000-4

Hårdvaruoptioner

Isolerad RS485

Parameter	Min	Тур	Max	Enhet	Anmärkning
Seriellt gränssnitt					
Datahastighet	300		115200	baud	
Databitar		7, 8 eller 9			
Paritet	Ing	jen, jämn, u	dda		
Stoppbitar		1 eller 2			
Bussanslutning					
Kabellängd			1000	m	Beroende på datahastighet
Signalspänning A eller B, Vı Differentiellt A – B, Vı _D	-7 -12		+12 +12	V V	
Skyddsfunktioner	-	r		1	
ESD Human body model Charged device model			±15 ±1	kV kV	
Isolation					
Max spänning, Viso kontinuerligt kortvarigt (1 s)			50 500	V _{DC} V _{DC}	
Strömförsörjning (strömförsörjs	internt från R	L-PRIO)			
Effektförbrukning, Pvin			0,7	W	Utöver RL-PRIO

Monteras internt i RL-PRIO. Anslutning via skruvplint, max 1,5 mm².



Mjukvaruoptioner

Expansion till 20 in-/utgångar finns som tillval. Expansion till 30 in-/utgångar kan levereras i kundanpassad mjukvara.

MODBUS master

MODBUS master kan levereras som option i kundanpassad mjukvara. Stödjer kommunikation med standard MODBUS I/O enheter.

MODBUS slav

MODBUS slav kan levereras som option i kundanpassad mjukvara. Stödjer standard MODBUS funktioner. OBS! Tillgänglig Q4/13.



RL-PRIO med MODBUS

Funktioner

- 64 bitar för styrning av andra LogicLink enheter.
- 64 bitar för data från andra LogicLink enheter.
- I/O bitar åtkomliga via 8 st. 16-bitars register.
 - Register 0 3: 64 bitar insamlade data från andra enheter.
 Läsbara med READ HOLDING REGISTERS (3) eller READ INPUT REGISTERS (4).
 - Register 4 7: 64 bitar för styrning av andra enheter.
 Skrivbara med WRITE MULTIPLE REGISTERS (16).
 - Läsbara med READ HOLDING REGISTERS (3).

• Watchdog för övervakning av MODBUS skrivningar. Om ingen skrivning skett inom den angivna tiden nollställs registren för styrning.

MODBUS

- MODBUS RTU protokoll.
- Standardinställd på adress 1, konfigurerbar i RL LogicLink.
- Fast konfigurerad för 19200 baud, 8 bitar, jämn paritet (E), 1 stoppbit.¹
- Stödjer MODBUS funktion 3, 4 och 16.²
- Anslutning via den 6 poliga jackbara plinten X3 på RL-PRIO:



Observera att märkningen på RS485-anslutningar kan variera och att det kan vara nödvändigt att växla A och B beroende på polaritet.

Register

REGISTER	FUNKTION	ANMÄRKNING
0	Statusbit 0 – 15	
1	Statusbit 16 – 31	READ HOLDING REGISTERS (3) eller
2	Statusbit 32 – 47	READ INPUT REGISTERS (4)
3	Statusbit 48 – 63	
4	Kommandobit 0 – 15	
5	Kommandobit 16 – 31	READ HOLDING REGISTERS (3) eller
6	Kommandobit 32 – 47	WRITE MULTIPLE REGISTERS (16)
7	Kommandobit 48 – 63	

² Fler funktioner kan implementeras i framtida versioner av firmware.

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¹ Andra alternativ kan finnas tillgängliga i framtida versioner av firmware.



RL-PROP Tekniska data

Parameter	Min	Тур	Max	Enhet	Anmärkning
Strömförsörjning					
Spänning, V _{IN} Funktionell	8,0		35,0	V _{DC}	
$0 - 10 V \text{ ut}$ $R_{L} \ge 1 k\Omega$ $1 k\Omega > R_{L} \ge 670 \Omega$	13		35	V _{DC}	
$0/4 - 20 \text{ mA ut, 4 utgångar aktiva}$ $R_{L} = 500 \Omega$	13		35	VDC	0,6 W @ V _{AQ0.x} = 10 V
RL = 100 Ω 0/4 – 20 mA ut, 8 utgångar aktiva	8		32	VDC	0,6 W @ V _{AQ0.x} = 2 V
$R_{L} = 500 \Omega$ $R_{L} = 100 \Omega$	13 8		25* 17*	V dc V dc	$\begin{array}{c} 0,3 \ W @ \ V_{AQ0.x} = 10 \ V \\ 0,3 \ W @ \ V_{AQ0.x} = 2 \ V \end{array}$
Effektförbrukning, Pv⊪		1,2	6	W W	0 V ut på alla utgångar Full last på alla utgångar
Strömförbrukning, I _{VIN} $V_{IN} = 12 V$ $V_{IN} = 24 V$		80 50	300 250	mA mA	Typvärde vid 0 V ut på alla utgångar, maxvärde vid full last på alla utgångar
Ingångar					
Spänning, V _{I0.0} – V _{I0.9} max analogt mätområde	0,0		35,0 30,0	V _{DC} V _{DC}	
Låg signal, V _{IL}	0,0		4,0	V _{DC}	Programmerbar, 1 – 29 V [†]
Hög signal, Vін	5,0		35,0	VDC	Programmerbar, 1 – 29 V [†]
Upplösning	10	13		bitar	
Ingångsimpedans	100			kohm	
Utgångar					
0 – 10 V ut Belastning I _{AQ0.0} – I _{AQ0.7} Lastimpedans Kortslutningsskydd	1 15		10‡ 24	mA kΩ mA	Max utspänning: [V⊪ - 3] V
$\begin{array}{l} 0/4-20\mbox{ mA ut}\\ Utspänning V_{A00.0}-V_{A00.7}\\ Lastimpedans, V_{IN}=12\mbox{ V}\\ Lastimpedans, V_{IN}=24\mbox{ V} \end{array}$	0		V _{IN} – 3 450 1050	V _{DC} Ω Ω	V _{AQ0.x} ≤ 9 V V _{AQ0.x} ≤ 21 V
Radio					
Frekvensområde	433,050		434,790	MHz	
Antal kanaler		69			
Kanalseparation		25		kHz	
Datahastighet		4800		bit/s	
Uteffekt		10		mW	+10 dBm
Generellt	-				
Temperatur	-20		+65	°C	
Fuktighet			95	%RH	Ingen kondensation
Anslutningar	-			1	
Ingångar och strömförsörjning Utgångar Seriellt gränssnitt Antenn	12 polig s 4 polig s 6 polig s	skruvplint, ma: kruvplint, max kruvplint, max RP-SMA	x 2,5 mm ² 1,5 mm ² 1,5 mm ²		4 st, 2 utgångar per block

Seriellt gränssnitt för konfigurering, mjukvaruuppdatering och lokal expansion finns som standard. Max kabellängd 1 m.

* Högre matningsspänning kan tillåtas om högsta omgivningstemperatur minskas.

† Programmerbarhet endast tillgänglig i vissa firmware.

[‡] Högre belastning kan tillåtas om inte alla utgångar används, eller om högsta omgivningstemperatur minskas.

2020-10-05

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RL-PROP-PRELIMINÄR SPECIFIKATION-1D

Elektromagnetisk kompatibilitet	
RED LVD	EN 300220-2, EN 301489-1, EN 301489-3, EN 50566 EN 60950-1
EMC	EN 55022, EN 61000-4

Anslutningar





Hårdvaruoptioner

Isolerad RS485

Se datablad för RL-PRIO för detaljer.

Mjukvaruoptioner

Mjukvaruoptioner kommer inom kort.

2020-10-05

RL-PROP-PRELIMINÄR SPECIFIKATION-1D

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2(2)



RL LogicLink

Program overview





Devices



Inputs in bold are sent to one or more devices. Outputs in bold are controlled from a remote device.

Hovering over an input or output will highlight where it's connected.



Clicking an input will start a new connection, see below for details.

Clicking on, or hovering over, the ellipsis (...) below the inputs opens a popup menu with all signals that can be sent from the device, including the outputs. This allows long range repetition of signals by linking several devices in a chain.

A similar popup menu is available for connecting the outputs when there is more than 10.

Remote controls

The remote controls have the inputs placed on top of the corresponding button, and indicators in place of outputs.



RL-RC10 has 10 two-stage buttons and 3 dual color indicators. The two-stage buttons result in two signals from each button; n.1 for the first stage and n.2 for the second.

The indicators are bi-color and numbered with LED1 on the left, G for green and R for red. The 4th indicator, on the right, is reserved for battery status.

Tip: The first stage signal will remain active when button is pressed to second stage.

Tip: It is possible to get a yellow indication by activating red and green at the same time.



RL-RC8 has 4 buttons and 10 indicators in its default setting. Activating the Multiple functions setting will give a total of 64 virtual buttons and 64 indicators. See below for details and section *Multiple functions* for available options.

Note: Future versions will allow the indicators to be customized to show icons and symbols instead of the default numbers.

RL-RC8 with multiple functions



MODBUS Slave

RL-PRIO-MB #1					
MB Wr R4.0 R4.1		MB Rd R0.0 R0.1			
R4.2 R4.3		R0.2 R0.3			
R4.4		R0.4			
R4.6		R0.6			
R4.7 R4.8		R0.7 R0.8			
R4.9	— —	R0.9			

RL-PRIO with integrated MODBUS slave.

Allows control of 64 outputs and reading of 64 inputs.

The writable outputs are shown on the left (as they are considered inputs to the radio link), and the readable inputs are on the right (outputs from the radio link).

Note: The physical inputs/outputs on RL-PRIO-MB are not available for configuration. *A future firmware version may allow them to be controlled over MODBUS.*

Connection type

There are two possible connection types, addressed and broadcast. Addressed is the default and provides the greatest security against interference and manipulation, but only allows 1-to-1 connections. Because all messages are addressed using unique device IDs, interference from other devices is highly unlikely, but replacing a device requires reconfiguring the other devices too.

Broadcast allows for simple replacement of a device or having a preprogrammed spare remote in store, controlling multiple devices with a single remote control, sending status feedback to a remote control from multiple devices and much more.

Broadcast can be activated in the project options. Connections will still be created as 1-to-1 until broadcast is actually needed. When broadcast is enabled a few new options become available:

- 1. Multiple IDs can be set for each device. This is useful for creating several devices identical function, for example multiple remote controls.
- 2. A connection can have several destinations. This is very similar to assigning multiple IDs, but it also allows a connection to connect to different device types, or to different outputs in each device. An additional destination is added to an existing connection by Shift-Clicking on the device image or output.
- 3. A connection can have several sources. This is for example useful for sending status messages to a mobile remote control from several fixed devices. It's important to note that all device need to be transmitting the same data otherwise the indications on the remote may flicker when several devices are in range. A source can be added to an existing connection by Shift-Clicking an input signal on the new source. At present it is required that all sources use the same set of signals.

Project options	×
Addressing Use addressed messages (14o-1) Allow broadcast messages (14o-N, N4o-1, N4o-M)	
OK Cancel	

Device options

Name

Name of the device, can be anything, e.g. a description of the function, placement of device. Maximum length is 20 characters.

Device ID

ID number of the device. Used to address radio transmissions to/from this device and filter out radio transmissions from other devices. Can be found on the label on the side/back of device.

Tip: RL-RC8 displays the ID when placed on the charger.

Use PLC

Allows use of a custom PLC program to add more functionality like toggle outputs, delays, sequence logic and more.

Note: Not available for all device types

Global alarm output (Q0.9)

Turns output Q0.9 into a global alarm output signal. The global alarm is the sum of all the link alarm signals, so that if one or more of the radio links fail, this output will be activated. The alarm signal is active high.

Note: Not available for all device types

Additional I/O

Activates 10 additional inputs and 10 additional outputs by linking two RL-PRIO devices with a RS485 jumper.

Only available on RL-PRIO.

MODBUS Address

Address of the internal MODBUS slave.

Only available on RL-PRIO-MB.

MODBUS Timeout

Time limit for the internal MODBUS slave. If no master access has occurred during this time, the slave will reset all command registers. Set to zero to disable timeout function.

Only available on RL-PRIO-MB.

Multiple functions

Activates a function selection option on RL-RC8 to allow more than 4 actions to be controlled, or to select between different receivers. With 4 buttons per function, up to 16 functions can be selected, 2 buttons gives 32 possible functions and 1 button gives 64 possible functions. The number of indicators available for each function will be the same as the number of buttons.

Only available on RL-RC8.

C Device settings	×∣
Name:	
RL-PRIO #1	
Device ID:	
Use PLC	
Global alarm output (Q0.9)	
Additional I/O	
OK Cancel	

B Device settings	×
Name: RLPRIO-MB #1 Device ID: 	
Use PLC Global alarm output (Q0.9) MODBUS Address: 1 ↔ MODBUS Timeout: 1000 ↔ ms	
OK Cance	el

B Device settings	×
Name:	
RL-RC8 #1	
Device ID:	
Use PLC	
Global alarm output (G	(0.9)
Multiple functions	
Number of functions:	Buttons per function
2 🖨	○ 1 ○ 2 ● 4
	OK Cancel

Connections

Clicking on an input will start a new connection from this input. Click additional inputs on the same device to add them to the connection. Shift-click a second input to select a continuous block of inputs

Already connected outputs will turn grey to indicated that they're in use.

Clicking on a device, rather than a specific output, will connect signals to the first free output on device.

Clicking anywhere outside a device will abandon the new connection.



Click on, or hover over, the ellipsis (...) below the inputs to open a popup menu with all signals that can be sent by a device.

Changing connection options

To modify an existing connection, either click the corresponding block arrow, or Ctrl-click one of the signals in it. Hovering over a block arrow will highlight the signals connected through it.

When the connection is selected the block arrow will change color, and the connection options at the bottom of the main window will activate, see below for details. Changing any of the options will automatically store this in the connection so there is no need to confirm or save the new options.

Limitations

Each device can receive a total of 32 signals from other devices, including the optional alarm signals.

All signals sent from a device are collected into a connection block. At the receiving device, all signals appear as continuous block. The order of signals within this block is currently fixed. Input signals are collected first, starting with the lowest numbered input, then the output signals, PLC input signals and finally the PLC output signals. This means that:

- It does not matter in which order signals are selected; they will always be collected in the same order.
- Adding a signal will move all higher numbered signals to make room for the new signal.

Note: A future firmware update may allow the outputs to be re-arranged, but there is currently no schedule for when this might available.

Multiple connections

There can be only one connection between from device A to device B and only one from device B to device A. Trying to create a second connection between two devices will open the Merge connections dialog.

Clicking *Yes* will merge the two connections as shown above, but please note that the outputs of the new connection may have changed compared to where the output was clicked. Clicking *No* will close the dialog and allow for selecting a different receiving device.

Aerge conne	ections?	X
	A connection already exists between RL-PRIO ≠1 and RL-PRIO ≠2. Only one connection is allowed for each pair of devices. The existing connection contains the following 5 signal(s): (0.) -> (0.0 0.) -> (0.1 0.) -> (0.1 0.) -> (0.2 0.3 -> (0.3 0.3 -> (0.4) 0.3 -> (0.4) 0.3 -> (0.1 0.3 -> (0.1 0.3 -> (0.2) 0.3 -> (0.2) 0.3 -> (0.2) 0.3 -> (0.2) 0.3 -> (0.4) 0.4 -> (0.4) 0.5 -> (0.4) 0.5 -> (0.5) (new) Please note that the order of signals at the receiving device may hav changed compared to the existing connection. Merging will preserve the options set for the existing connection an will ignore any options set for the new connection. Would you like to merge the signals of the new connection with the existing connection?	re d
	Ja Ne	:

Note: The merge is required because of the way the radio communication works, and there is no way to rearrange the order of the outputs. This limitation may be lifted in a future version.

Connection options

At the bottom of main window.

Connection			
Cyclic updates	Timeout: 5 s Reset remote inputs on timeout	More 1802161680	New
Editing connection	from RL-PRIO #1 to RL-PRIO #2		Delete

Cyclic updates

The current state of connected signals will be transmitted each time there is a change in one or more of the signals. Activating cyclic updates will transmit the current signal state cyclically, even when there are no signal changes allowing the receiving device to detect a failed radio link.

How often the current state is transmitted is selected automatically based on the timeout setting.

Activating cyclic updates is recommended for most applications and is required to use the timeout function.

If not activated, the state of the signals is only transmitted when there is a change in one or more of the signals, or if the device is restarted.

Timeout

The maximum amount of time that may pass between received transmissions before the link fails.

The default value of 5 seconds works fine for most applications, but if a longer time can be accepted this will improve the stability of the link.

Shorter times, down to 2 seconds, will also work, but generates more radio transmission and thus limits the maximum number of devices in the same area.

A timeout of 1 second is possible but should only be used if the application requires it and preferably only between two devices. Sporadic link failures may occur if used between multiple devices in the same area.

Reset remote inputs on timeout

Tells the receiving device to reset all connected signals if the radio link fails, i.e. 5 seconds after the last received transmission in this example.

Alarm signal for remote input block

Adds an additional signal on the receiving device that goes active (high) if the link has failed. I.e. if 3 signals are connected from the sending device, 4 signals will appear in the receiving device, the 4th being the alarm signal.

Allow multiple

Allow multiple senders to control the remote input signals simultaneously. Normally only one sender at a time, the first one to connect, is allowed to control the input to prevent conflicting signals. All other senders are locked out until the first one stops transmitting and the timeout expires.

Note: Only available for broadcast connections.

Momentary function

Changes the connection to only transmit when at least one signal is active, similar to a simple remote control. Only available when cyclic updates are active, as timeout is required for correct function. The sender will make one final transmission when all signals are inactive to clear the inputs.

When active, the global alarm in the destination will not be set when the connection is offline. If an alarm signal is needed, "Alarm signal for remote input block" can be used.

Tip: Usually best combined with "Reset remote inputs on timeout" to clear signals in case the final transmission is disturbed.

More...

Opens a dialog window with connection details. Apart from the list of signals on the right, the options are the same as above.

New

Starts a new empty connection. Click an input to select the sending device.

Tip: A new connection can be started by simply clicking any input directly.

Delete

Deletes the selected connection.

Tip: Use Undo the restore an accidental deletion.

Signal block settings	- 🗆 X
Sender:	🔽 10.0: Manöverknapp upp 🔺
RL-PRIO #1 V	✓ I0.1: Manöverknapp stopp
Receiver: RL-PRIO #2	
Multiple senders One at a time Allow multiple	☐ 10.4 ☐ 10.5: Lampa till ☐ 10.6: Lampa från ☐ 10.7 ☐ 10.8 ☐ 10.9
Cyclic updates Timeout: 5	0.5 Q0.0: Kör upp Q0.1: Kör ner Q0.2: Stopp Q0.3: Lampa till Q0.4 Q0.5

Write configuration to devices

Assign ID-numbers

Before it's possible to write configuration to any device in the project, all devices must have ID-numbers assigned. The ID-number is printed on the label on the side or on the back of the device. For RL-RC10 the label is inside the battery compartment. The ID-number is 9 digits and looks something like this: 020-000-185.

Tip: RL-RC8 displays the ID when placed on the charger.

Open the device options dialog to fill in the ID-number of each device. When set, the ID-number will be displayed at the bottom of the device.



Configuration cable

To write the configuration to a device, a configuration cable is needed. This can be obtained from a RadioLogic distributor. Because all devices can also be configured via radio, it is not necessary to have different cables for different devices.

The first time the cable is used, it is necessary to select the correct serial port in the program. This is done from *Options – Communication*...

Select the serial port assigned to the cable, and leave the baud rate at 9600. The correct serial port is usually shown during the driver installation, but can also be found in Windows Device Manager.

Tip: To start the Device Manager simple open the Start menu and type devmgmt.msc and hit enter. Look under "Ports (COM and LPT)". (Win7 and Win10)

Write configuration to all

To make it easy to make changes, the program can write the configuration to all devices at once, while being connected to just one of the devices in the project.

To use this feature, connect the configuration cable to one of the devices and click *Write configuration to all*... on the project menu, or hit F5.

Senar port.		Baud rate	¢	
COM3	\sim	9600	\sim	

A dialog will open, showing the progress of the write.

Write configuration to RL-PRIO #1 (020-000-037)	Write configuration to RL-PRIO #2 (020-000-067)	Write configuration to RL-PRIO #2 (020-000-067)
Setial port: Baud rate:	Serial port: Baud rate:	Serial port: Baud rate:
COM2 v 9600 v	COM2 V 9600 V	COM2
RL-PRIO #1 1/2	RL-PRIO #2 2/2	RL-PRI0 #2 2/2
Writing configuration	Writing configuration	Write completed Close

If only one device was modified, only this device will be written, the other(s) will be checked for correct configuration and only written if necessary.

Note: Updating the firmware in a device will erase its configuration.

Write configuration to a single device

It is also possible to write configuration to a specific device. This is done from the device menu, or by rightclicking the device and selecting Write configuration ...

Click Write in the dialog box to start.

Note: Sometimes changes in one device will also require changes in a connected device, check the status icon in the lower left corner of each device to see if a write is needed, or use the write-all feature.

Read configuration

In a future version it will be possible to read the configuration from a device.

How to ...

Add a device

- 1. Open the project menu and click on one of the Add RL-... options.
- 2. The new device will appear in the project window.
- or
- 1. Right-click somewhere in the empty project area and select one of the Add RL-... options in the popup menu.

Note: New devices will be placed to the right of any existing devices.





Remove a device

- 1. Select the device to remove by clicking on it.
- 2. Open the device menu and click Remove.
- 3. Device and all connections to it is removed.

or

- 1. Right-click on the device and select Remove from the popup menu.
- 2. Device and all connections to it is removed.

Tip: Use Undo the restore an accidental deletion.

Note: Restoring a device with Undo will place it to the right of existing devices, not where it originally was.

Create a connection

I.e. connect an input on one device to an output on another device. This assumes there already are two or more devices in the project.

- 1. Click on the desired input.
- 2. Click on the output to be controlled by the input.
- 3. The connection is created and a block arrow appears to indicate this.



Device	Options	Help
Settings		
Signal n	ames	
PLC cod	e	÷
Remove		N
Write co	nfiguration	



More

Modify a connection

Timeout:

Editing connection from RL-PRIO #1 to RL-PRIO #2

Momentary function

- 1. Select the connection by clicking on the related block arrow.
- 2. Change options, or

Connection Cyclic updates

Allow multiple

Add or remove inputs by clicking on them. The connected outputs will update automatically.

Modify options

5 🖨 s 🗹 Reset remote inputs on timeout

Alarm signal for remote input block







Select the default communication settings

- 1. Click Options, and then Communication...
- 2. Select the desired serial port and baud rate in the dialog box.
- 3. The settings will now be used as default when writing configuration to a device.

Note: The baud rate should normally be left at 9600.

Serial port:		Baud rate:		
COM3	\sim	9600	\sim	

PLC editor

Several RadioLogic devices have an internal PLC that may be used to implement custom functionality like sequences and delays. The program inside can be edited using the PLC Editor built into RL LogicLink.



The networks are evaluated in the order shown in the network tree. Networks can be arranged in groups according to their function.

PLC network

Each network has a single output, although it is possible to assign more than one bit in a single network.



Gates

	AND gate			10.0	I0.1	Q0.0
	gave			0	0	0
10.0	&		2 or more inputs	0	1	0
10.1		-00.0	Output is True when all inputs are True	1	0	0
		6010	મન	1	1	1

	OR gate	
10.0_	≥1	
10.1		-Q6

2 or more inputs
Output is True when at least one of the inputs is True
t -

10.0	10.1	Q0.0
0	0	0
0	1	1
1	0	1

1

Q0.0

0

1

1

1 1



	10.0	10.1	- U
2 or more inputs	0	0	
2 of more inputs	0	1	
Output is True when an odd number of inputs are True	1	0	
€ - [1	1	

Pulse gate

	MØ	
10.0—	Р	Q0.0

Sets the output True for one cycle each time the input goes True
Requires a memory flag for internal state storage
Note: Do not re-use the memory flag for other functions



10.0

Q0.0 ____

Timers

On delay timer

10.0 On delay	Output is delayed for the set time after input goes True	I0.0
R0 R	If input goes False before the time has elapsed, the output does	
520 ms T	not go True	Q0.0
10.0 - R R0 - R 520 ms - T	Output is delayed for the set time after input goes True If input goes False before the time has elapsed, the output does not go True	Q0.0

Off delay timer

10.0_	Off delay	
RØ-	R	
350 ms —	т	—Q0.0

	10.0	
Output is kept True for the set time after input goes False		
Input must be True for at least one cycle to start	Q0.0 🔤	

Pulse timer

10.0—	Pulse	Output is True for a maximum of set time		_
RØ	R	If input goes False before set time, output also	o goes False	
670 ms —	т	-Q0.0		-

Note: Use a separate register for each timer. Re-using a register for multiple timers will cause undefined behavior.

Output gates

Store gate



Writes the value of the input to the output each cycle





Sets the output to True if input is True, otherwise does nothing

	10.0	Q0.0
	0	Х
	1	1
Х	= previo	ous state



Resets the output to False if input is True, otherwise does nothing



SR gate



Sets the output to True is S is True, resets the output to False if R is True, otherwise does nothing R has priority if both are True

10.0	10.1	Q0.0
0	0	Х
0	1	0
1	0	1
1	1	0
Х	= previ	ous state

Symbol table

The symbol table is used to add descriptions to the respective inputs/outputs and memories to make the PLC program easier to read.

The descriptions will be shown above the input/output.

the PLC	RL-PRIO #1 - PLC Editor	
	File Edit View Gates Help	
output.	🗄 🗋 📂 🛃 🦳 Show code F9 🔄 亞 亞 北	∄∣∽ব ∙া
1	G-Outputs Symbol table	
	Networ Show network tree Networ Show one group at a time	cycle pu
	Network 4 Network 5 Network 6 RL-RC8 #1: 81	<i>M</i>
Symbol table		
Symbol Q2.8	Description	^
Q2.8		

Sy	mbol	Description	*
Q2	.8		
Q2	.9		
IU	0	RL-RC8 #1: B1	
IU	1	RL-RC8 #1: B2	
UI	2		
Network 1: Single cycle pulse from B1	3		
II	4		
Memory B1 B1 pulse - decrease UI	5		
M4 M0 UI	6		
RL-RC8 #1: B1 D	7		
UI0 - UI	8		
IU	9		
U	10		
Network 2: Single cycle pulse from B2	11		
UI	12		
Memory 82 82 pulse - increase UI	13		
M5 M1 UI	14		
RL-RC8 #1: B2	15		

Terminology

Broadcast

<u>A connection that is sent to multiple receivers at the same time. While this is generally true for all radio</u> transmissions, RadioLogic normally filters out any transmissions from unknown devices and only allows messages from know devices. With the broadcast function, a message can be sent to multiple receivers at the same time, while filtering out messages from unknown devices.

Connection

One or more signals connected via radio between two devices.

Cyclic updates

Cyclic transmission of current signal state even when there are no signal changes.

Firmware

The software inside a RadioLogic device. Can be updated and replaced to add/change the functionality of a device.

Firmware key

A license key required to run a firmware on a device. One firmware key is required for each device/firmware combination.

Firmware updates do not require a new firmware key, unless stated in the firmware description (very rare).

Global alarm

Alarm output on RL-PRIO indicating that one or more of the radio links have failed.

Input

Physical input on a device. Refer to the device datasheet for details.

Output

Physical output on a device. Controlled from a remote device or by the internal PLC. Refer to the device datasheet for details.

PLC

Several RadioLogic devices have an internal Programmable Logic Controller that may be used to implement custom functionality like sequences and delays.

PLC input

Internal input to the PLC inside a device. When the PLC is running a custom program, this is where the remote input signals are connected.

PLC output

Internal output from the PLC inside a device. Can be sent to other devices together with, or instead of, the inputs.

Radio link

Another name for a connection in RL LogicLink.

Remote input

An input received from another device over radio.

RSSI

Received signal strength indication, a measure of how strong the received signal is.

Main window

File Edit View Project Device Options Help RL-PRIO #1* RL-PRIO #2* Project Options Options </th <th>The w project* - RL LogicLink</th> <th>×</th>	The w project* - RL LogicLink	×
RL-PRIO #** RL-PRIO #** Pods Odpds 101 001 102 003 103 003 104 005 105 1 106 New 107 New 108 New 109 005 109 005 109 005 109 005 109	File Edit View Project Device Options Help	
Correction Cyclo updates Timeout: 51-21 is Reset remote inputs on timeout. Reset remote input so the Reset remote input routes Reset remotes Reset rem	RL-PRIO #1 PRIO #2 Ipots Odpds 00.0 00.1 ID 0.0 00.1 00.2 ID 0.0 00.1 00.2 ID 0.0 0.0 00.1 ID 0.0 0.0 00.1 ID 0.0 0.0 00.1 ID 0.0 0.0 00.1 ID 0.0 0.0 0.0 ID 0.0<	
Click an input to begin connecting, or Ctrl-Click an already connected input/output to edit	Connection □ Cyclic updates Timeout: 5 ⊕ s □ Reset remote inputs on timeout. More	
Click an input to begin connecting, or Ctrl-Click an already connected input/output to edit	Alarm signal for remote input block Delete	
	Click an input to begin connecting, or Ctrl-Click an already connected input/output to edit	.::



Project name, the asterisk (*) indicates the project has been modified since it was last saved.



Device name, automatically assigned when added to project, but may be changed to describe function/placement etc. Maximum length is 20 characters. The asterisk (*) indicates the device has been changed since the project was last saved.



Left side of a device lists the physical inputs.

Right side lists either the physical outputs, or the inputs to the PLC inside the device.



Blue exclamation mark indicates the device has been modified since last configuration write.

Green check mark indicates the configuration was written successfully.

€

AND-gate on the right indicates PLC is running custom code. Double-click to edit.

1 AND-ga

AND-gate with yellow exclamation mark indicates PLC-editor is open.



One-way connection between devices.

Two-way connection between devices, each direction has its own settings.

Right-to-left connection selected, connection options at bottom of window active.

Menus

File

Standard commands for opening, saving, etc.

Edit

Undo, redo, cut, paste, etc.

Note: Cut and paste is currently limited to text fields. Future version will allow cutting and pasting of devices and connections too.

View

- Show connection details

Toggles visibility of the connection details frame at the right of the main window.

før New project - RL LogicLink	
File Edit View Project Device Options Help	
	@ New prater - R. Lopkins
	File Edit View Project Davice Options Help
	Signals sent to other devices
	Delate This put public defined
	Address
	Signata received from other devices
vedio	
Cycle-update Tread 10 a Paral remote instances Instances	
Harn signality: weeks input black.	
I devices to project using the Project menu	
	Connection
	Code and an American America American American A
	Ann sgrafhr mule ing. 1806.
	Add devices to passed using the Passed menu

Project

- Add RL-PRIO, RL-...

Add a new device to the project.

- Options...

Project global options. No options to choose from at this time.

- Check configuration

Verifies the validity of the current project configuration. Shows a warning if any of the connections or selected options is likely to cause problems.

- Write configuration to all...

Writes the configuration to all devices in the project.

Makes sure the configuration in all devices is up to date. Only modified devices will be written, the remaining will only be checked for correct configuration.

Note: Before using this command the first time, it is necessary to select which communication port to use. See Options - Communication...



Device

Only available when a device is selected.

- Settings...

Opens the device settings dialog including setting of device ID and activation of custom PLC code.

Note: Double-clicking a device also opens the dialog.

- Signal names...

Opens the signal names dialog to edit signal descriptions for inputs and outputs. Signal descriptions are shown in tool tip hints when hovering over an input or output.

- PLC code

- Edit Opens the PLC editor.

opens the ride editor.

- Import from file...

Replaces the current PLC code with the selected file.

- Export to file...

Exports the current PLC code to a file.

- Remove

Removes the device and all connections to it from the project.

Note: Does not ask for confirmation before removing the device. Use Undo to restore in case of accidental removal.

- Write configuration...

Writes the configuration to the selected device. If the device is already up-to-date, a dialog appears allowing writing the configuration anyway.

Note: Writing the configuration even when the device is up-to-date should not be necessary, but can help if the device does not function properly.

- Read configuration...

Not yet available.

Options

- Communication...

Sets the default communication options for reading/writing configuration. Serial port – select the port of the configuration cable. Baud rate – set to 9600 for all devices unless otherwise noted in the device description/firmware description.

Help

- Check for updates...

Checks the RadioLogic server for updates to the program. There is no automatic check for updates, so it's recommended to run this check manually occasionally.

- About...

Shows the current version of the program.

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