RIO Expansion Modules

Counter Module — RIO C24-10

Slide contacts for internal bus

Inputs/outputs X1.0 ... X2.7

Voltage output 24 V X2.21/X2.22

Supply voltage: +24 V DC

0 V DC

Contacts for internal bus

Channel monitoring (yellow: cursor, green: status)

Potential relaying +24 V DC

0 V DC

Block diagram
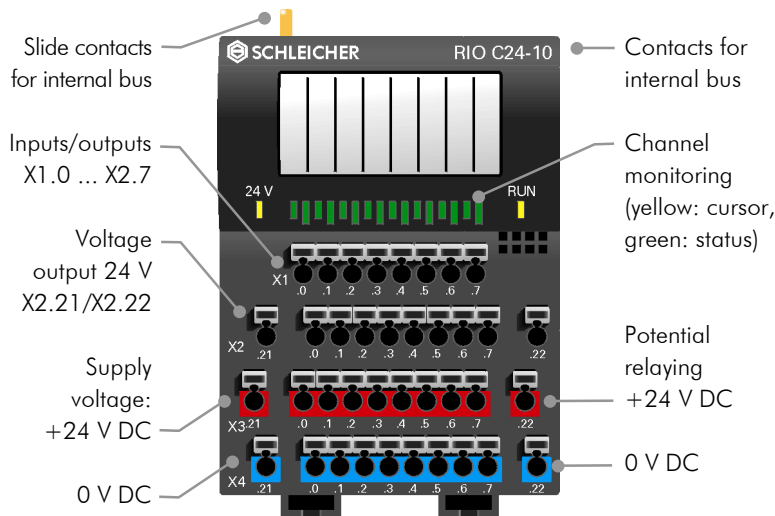

RIO C24-10

The RIO C24-10 expert module provides up to 4 mutually independent up/down counters. They count clock pulse signals. Other inputs can be used to control counting, alter the counting direction and reset the counter. The counter value is compared with up to two thresholds. If the value exceeds or falls below the threshold the outputs switch.

▶ Choice of two 32-bit counters or four 16-bit counters
▶ Counting range 0 to $2^{32}-1$ or 0 to $2^{16}-1$
▶ Counting frequency up to 200 kHz
▶ 32-bit counter has comparison with two threshold values
▶ 16-bit counter has comparison with one threshold value
▶ 24 V DC inputs / outputs
▶ Counting controlled via gate signal
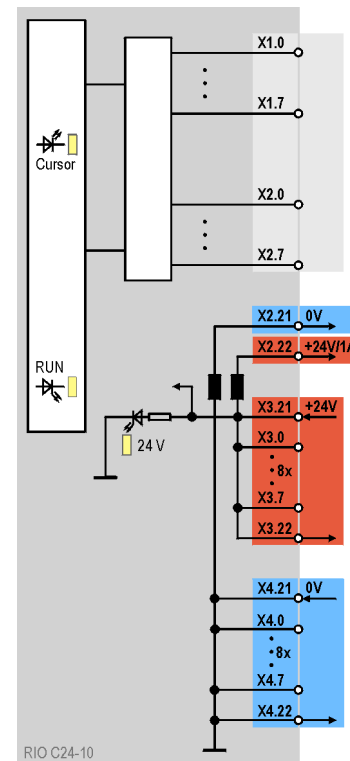▶ Two clock generators can be connected per counter (up/down)

The counter module can handle five different input types:
▶ *Clock pulse+* (incrementer pulses, counter is incremented on rising signal edge)
▶ *Clock pulse-* (decrementer pulses, counter is decremented on rising signal edge)
▶ *Gate* (as long as the gate signal is active, the counter is active)
▶ *Direction* (as long as the direction signal is active, the counter direction is reversed)
▶ *Reset* (as long as the reset signal is active, the counter is reset)

Each counter has three inputs. The first two are connected to *Clock pulse+* and *Gate* enable, the third to one of the remaining types (*Clock pulse-*, *Direction*, *Delete*). The result is three input combinations, which make optimal use of the available channels and cover all the usual applications.

The counter module is configured by a PLC via the bus coupler, or directly by the microLine PLC. This means it can easily be adapted for its application.

Technical Data RIO IP20

Electrical data	
Supply voltage	24 V DC ± 20% max. 5% residual ripple

Connection system		
Sensors / actuators	Spring terminal	
Field bus	Profibus-DP:	Subminiature, 9-pin
Supply voltage	Interbus:	Screw terminals
	CAN DeviceNet / CANopen:	Open style connector
	Spring terminal	
Cable cross-section	Finely stranded 0.14 – 1.5 mm^2, single-core 0.5 – 2.5 mm^2	

Housing and installation		
Type of protection	IP 20 to EN 60529	
Dimensions (W x H x D)	RIO microLine PLC:	74.5 x 93 x 51 mm
	RIO BC Bus Couplers:	74.5 x 93 x 51 mm
	RIO EC Bus Couplers:	63 x 93 x 51 mm
	RIO Expansion Modules:	69 x 93 x 51 mm
	RIO Compact I/Os:	69 x 93 x 51 mm
	RIO Terminal Extensions:	69 x 36 x 45 mm
Rail	DIN rail EN 50022-35	
Installation position	Vertical, free air circulation	

Climatic Conditions	
Ambient operating temperature	0 ... +55°C (category KV to DIN 40040)
Storage temperature	–25 ... +70°C (category HS to DIN 40040)
Relative humidity	30 ... 95% (category F to DIN 40040), no condensation
Air pressure in operation	860 ... 1060 hPa

Mechanical strength	
Vibration	10 ... 57 Hz constant amplitude 0.075 mm
	57 ... 150 Hz constant acceleration 1 g (to DIN IEC 68-2-6)

Electromagnetic compatibility	
Electrostatic discharge	EN 61000-4-2: 4 kV contact discharge
Electromagnetic fields	EN 61000-4-3: field intensity 10 V/m, 80 ... 1000 MHz
Burst	EN 61000-4-4: 2 kV on DC supply lines, 1 kV on I/O signal and serial interface lines
Interference emissions	EN 55011: Limit Category A, Group 1