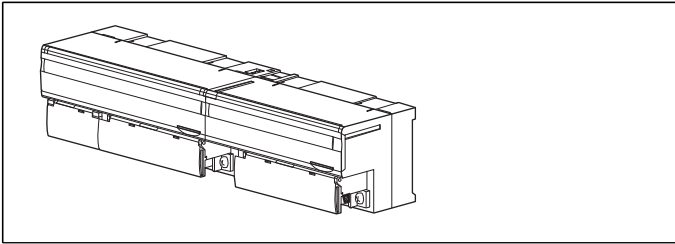


## Remote I/O R7 Series

### MULTI POWER MODULE

(Clamp-on current sensor CLSE, LonWorks)



### ORDERING INFORMATION

- Basic module: R7LWTU-2[1]1-AD4  
Specify a code from below for [1].  
(e.g. R7LWTU-221-AD4)

- Extension module: R7LWTU-EA8

### MODEL: R7LWTU-2[1]1-AD4

### CONFIGURATION

- 2: Single-phase / 2-wire and 3-wire,  
3-phase / 3-wire and 4-wire

### [1] NO. OF SYSTEMS

- 1: 1 system, Di / Pi x 4 (internal power 5 V)  
(no connection with extension module)  
2: 2 systems

### INPUT

- 1: 240 V AC / CLSE

### POWER INPUT

#### Universal

**AD4:** 100 - 240 V AC / 110 - 240 V DC (universal)  
(Operational voltage range 85 - 264 V AC, 50 - 60 Hz /  
99 - 264 V DC, ripple 10 %p-p max.)

### EXTENSION MODULE: R7LWTU-EA8

### I/O TYPE

**EA8:** Di / Pi, 8 points (internal power 5 V)

### FUNCTIONS & FEATURES

The R7LWTU is a Multi Power Module for LonWorks.  
The R7LWTU uses clamp-on current sensors, there is no  
need of current transformers.

Current sensors are easy to install in existing systems. Wide  
input range of 5 to 600 A is available.

All measured values, counter values, display mode, setting  
data are stored in the non-volatile memory when power is  
off.

A 'basic' module can be attached with an 'extension'  
module (except R7LWTU-211-AD4) because of this, it is able  
to use it as 2-circuit power and 8 discrete inputs module.

### RELATED PRODUCTS

- PC configurator software (model: PMCFG)
- XIF File (Device Interface File)

XIF file is used to define a LonWorks device when  
programmed on LonMaker.

The XIF files and Software are downloadable at M-System's  
web site.

To connect the module to a PC a dedicated cable is required  
(refer to M-System's web site or instruction manual).

- Clamp-on current sensor (model: CLSE)

The clamp-on current sensors, not included in this product  
package, must be ordered separately. Required number  
depends upon the system configuration.

### GENERAL SPECIFICATIONS

**Connection:** M3 screw terminals (torque 0.5 N·m)

**Recommended solderless terminal:** Refer to the drawing on  
the end of this section.

**Applicable wire size:** 0.3 to 0.75 mm<sup>2</sup>

**Configuration:** Single phase/2-wire and 3-wire, 3-phase/3-  
wire balanced/unbalanced load, 3-phase/4-wire  
balanced/unbalanced load

**Screw terminal:** Nickel-plated steel

**Isolation:** Sensor core to sensor output or current input or  
voltage input to discrete input to LonWorks or FG to power

#### Measured variables

**Voltage:** 1-N, 2-N, 3-N, 1-2, 2-3, 3-1

**Current:** 1, 2, 3, N

**Active / reactive:**  $\Sigma$

**Power factor:**  $\Sigma$

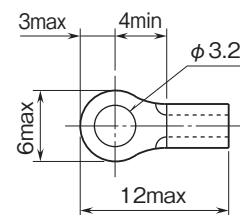
**Frequency**

**Active energy:** Incoming

**Reactive energy:** Incoming

**Status indicator LED:** PWR

#### ■ Recommended terminal size (unit: mm)



**LonWorks COMMUNICATION****Neuron Chip:** FT3150

(NeuronID printed in numbers and bar code [peel-off code 39 format])

**Transceiver:** FT-X1 (equivalent to FTT10A)**Transmission speed:** 78 kbps

Twisted-pair cable

**Distance, free topology:** 500 meters

Max. 64 nodes/channel

**LNS:** Ver. 3.0 Service Pack 8 or higher**Status indicator:** ONLINE, ERR, TX/RX, SVCE (service)**Operation switch:** Service, reset**INPUT SPECIFICATIONS****Frequency:** 50 / 60 Hz (45 – 65 Hz)• **Voltage Input****Rated voltage**

Line-to-line (delta voltage): 240 V

Line-neutral (phase voltage): 138 V

**Consumption VA:**  $\leq U_{LN}^2 / 300 \text{ k}\Omega$  / phase**Overload capacity:** 200 % of rating for 10 sec., 120 % continuous**Selectable primary voltage range:** 50 – 400 000 V• **Current Input****CLSE-R5:** 0 – 5 A AC**CLSE-05:** 0 – 50 A AC**CLSE-10:** 0 – 100 A AC**CLSE-20:** 0 – 200 A AC**CLSE-40:** 0 – 400 A AC**CLSE-60:** 0 – 600 A AC**Overload capacity:** 120 % continuous, 500 % for 10 sec.**Selectable primary current range:** 1 – 20 000 A (only with CLSE-R5, refer to the configurator settings)**Operational range****Current:** 0 – 120 % of the rating**Voltage:** 10 – 120 % of the rating**Active/reactive power:**  $\pm 120$  % of the rating**Frequency:** 45 – 65 Hz**Power factor:**  $\pm 1$ ■ **Discrete input****Common:** Negative common**Maximum frequency:** 10 Hz**Minimum pulse width:** 50 msec.**Totalized pulse range:** 0 - 9 999 999**Count at overflow:** Reset and restart at '0.'**Detecting voltage/current:** 5 V DC / 5 mA approx.**Detecting levels:**  $\leq 5 \text{ k}\Omega$  /  $\leq 2 \text{ V}$  for ON; $\geq 100 \text{ k}\Omega$  / 4 V for OFF**Operation mode:** Discrete and pulse counter**INSTALLATION****Power consumption**• **AC:**

Basic module: &lt; 5 VA

Basic with extension module: &lt; 6 VA

• **DC:**

Basic module: &lt; 1.5 W

Basic with extension module: &lt; 2 W

**Operating temperature:** -10 to +55°C (14 to 131°F)**Storage temperature:** -20 to +65°C (-4 to +149°F)**Operating humidity:** 30 to 90 %RH (non-condensing)**Atmosphere:** No corrosive gas or heavy dust**Mounting:** DIN rail**Weight:****Basic module:** 200 g (0.44 lbs)**Extension module:** 90 g (0.2 lbs)**PERFORMANCE****Accuracy** (at 10 - 35°C or 50 - 95°F, 45 – 65 Hz)

Add the accuracy of the current sensor for overall values.

**Voltage:**  $\pm 0.5$  % of the rating**Current:**  $\pm 0.5$  % of the rating**Power:**  $\pm 1.0$  % of the rating**Power factor:**  $\pm 1.5$  %**Energy:**  $\pm 2.0$  % of the rating (range 5 - 100 %, PF 1)**Frequency:**  $\pm 0.1$  % of the rating

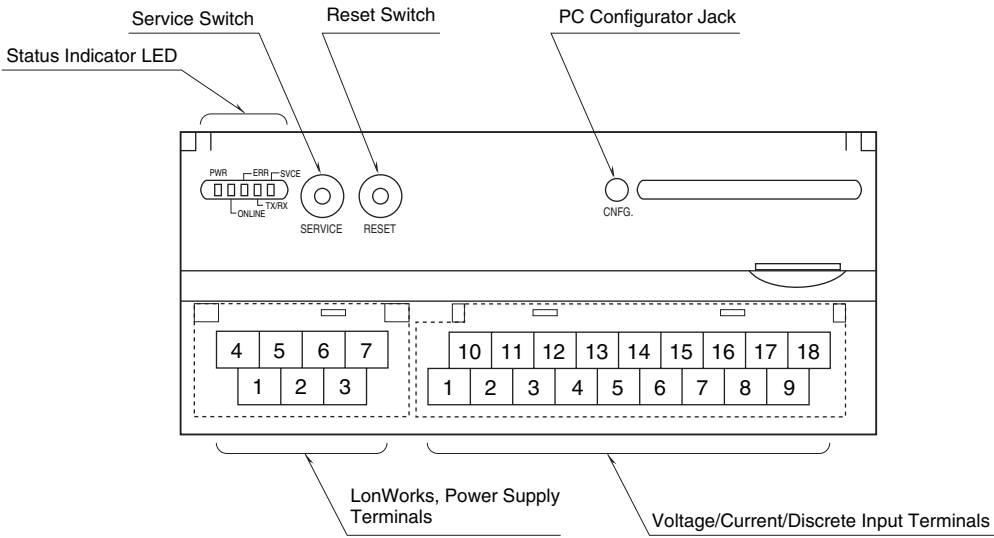
The described accuracy levels are ensured at the input 1 % or more for phase 2 current with 3-phase/3-wire unbalanced load and for neutral current with 1-phase/3-wire.

**Sampling time:****Frequency:**  $\leq 1$  sec.**Other:**  $\leq 500$  msec.**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC**Dielectric strength:**

2000 V AC @ 1 minute (current input or voltage input or discrete input to LonWorks or FG to input power)

1000 V AC @ 1 minute (current input or voltage input to discrete input)

EXTERNAL VIEW



■ STATUS INDICATOR LED

LED	STATUS	COLOR	OPERATION
PWR	ON	Green	Internal power 5V normal operating
	OFF		Internal power 5V abnormality
ONLINE	ON	Green	Online
	Blink $\approx 2$ Hz		Wink message recived
	OFF		Abnormality
ERR	ON	Red	Writing in non-volatile memory
	Blink $\approx 0.5$ Hz		No input or input overflow
	Blink $\approx 2$ Hz		Abnormality
	OFF		Normal operating
TX/RX	ON	Green	In communication
	OFF		No connection
SVCE	ON	Green	Internal program error
	Blink $\approx 0.5$ Hz		No network service
	OFF		Normal operating

## TERMINAL CONNECTIONS

System / Application	Terminal	System / Application	Terminal
Single phase / 2-wire		Single phase / 3-wire Three phase / 3-wire unbalanced load (2CT)	
Three phase / 3-wire, balanced load		Three phase / 4-wire, balanced load	
Three phase / 4-wire, unbalanced load			

Caution: Use CLSE for CT.  
Grounding is unnecessary for low-voltage circuit.

## CONNECTION DIAGRAMS

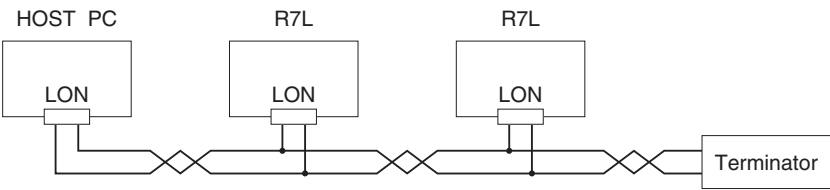
### ■ POWER SUPPLY, LonWorks TERMINAL ASSIGNMENT

4	5	6	7
NET1	NET2	U (+)	V (-)
1	2	3	
NET1	NET2	FG	

NO.	ID	FUNCTION, NOTES
1	NET1	LonWorks communication 1
2	NET2	LonWorks communication 2
3	FG	FG
4	NET1	LonWorks communication 1
5	NET2	LonWorks communication 2
6	U (+)	Power input
7	V (-)	Power input

Note: LonWorks wiring must be paired between Net1 terminals and/or Net2 terminals.

■ HOST PC CONNECTION



TERMINAL ASSIGNMENTS

■ BASIC MODULE

• 1 Circuit, 4 point discrete

10	11	12	13	14	15	16	17	18
P3	NC	NC	1ch 1K	1ch 2K	1ch 3K	DI1+	DI3+	COM
1	2	3	4	5	6	7	8	9
P1	P2	N	1ch 1L	1ch 2L	1ch 3L	DI2+	DI4+	COM

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	P1	Voltage Input P1	10	P3	Voltage Input P3
2	P2	Voltage Input P2	11	NC	Unused
3	N	Voltage Input N	12	NC	Unused
4	1ch 1L	1ch current input 1L	13	1ch 1K	1ch current input 1K
5	1ch 2L	1ch current input 2L	14	1ch 2K	1ch current input 2K
6	1ch 3L	1ch current input 3L	15	1ch 3K	1ch current input 3K
7	DI2 +	Discrete input 2	16	DI1 +	Discrete input 1
8	DI4 +	Discrete input 4	17	DI3 +	Discrete input 3
9	COM	Discrete input common	18	COM	Discrete input common

• 2 Circuits

10	11	12	13	14	15	16	17	18
P3	NC	NC	1ch 1K	1ch 2K	1ch 3K	1ch 1K	2ch 2K	2ch 3K
1	2	3	4	5	6	7	8	9
P1	P2	N	1ch 1L	1ch 2L	1ch 3L	2ch 1L	2ch 2L	2ch 3L

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	P1	Voltage Input P1	10	P3	Voltage Input P3
2	P2	Voltage Input P2	11	NC	Unused
3	N	Voltage Input N	12	NC	Unused
4	1ch 1L	1ch current input 1L	13	1ch 1K	1ch current input 1K
5	1ch 2L	1ch current input 2L	14	1ch 2K	1ch current input 2K
6	1ch 3L	1ch current input 3L	15	1ch 3K	1ch current input 3K
7	2ch 1L	2ch current input 1L	16	2ch 1K	2ch current input 1K
8	2ch 2L	2ch current input 2L	17	2ch 2K	2ch current input 2K
9	2ch 3L	2ch current input 3L	18	2ch 3K	2ch current input 3K

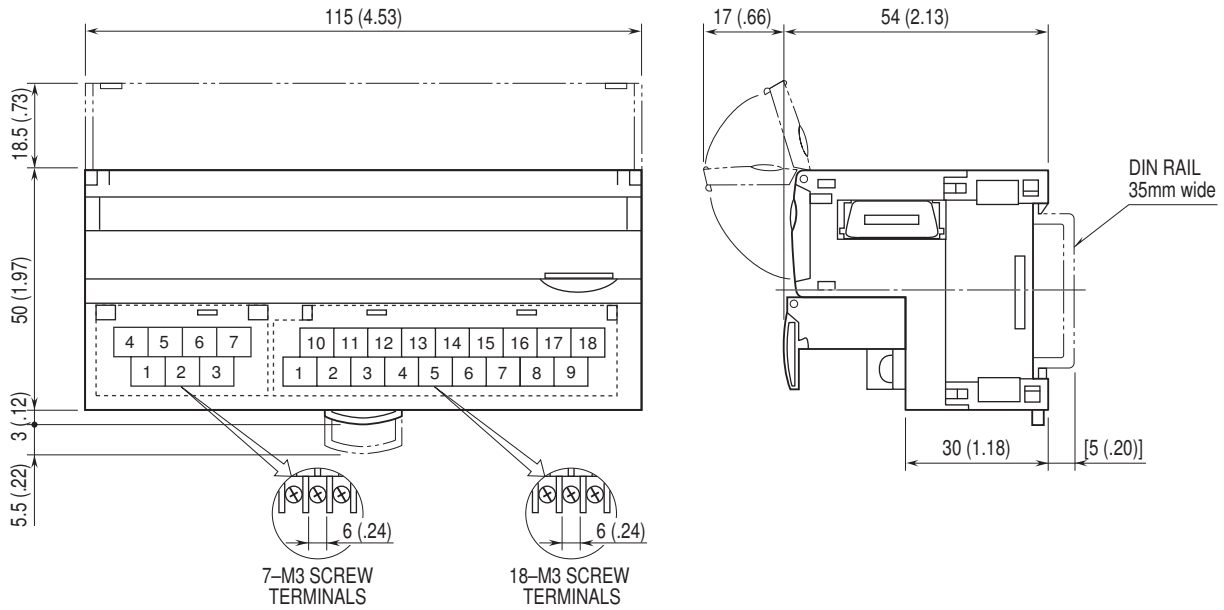
■ EXTENSION MODULE

6	7	8	9	10
COM	DI1+	DI3+	DI5+	DI7+
1	2	3	4	5
COM	DI2+	DI4+	DI6+	DI8+

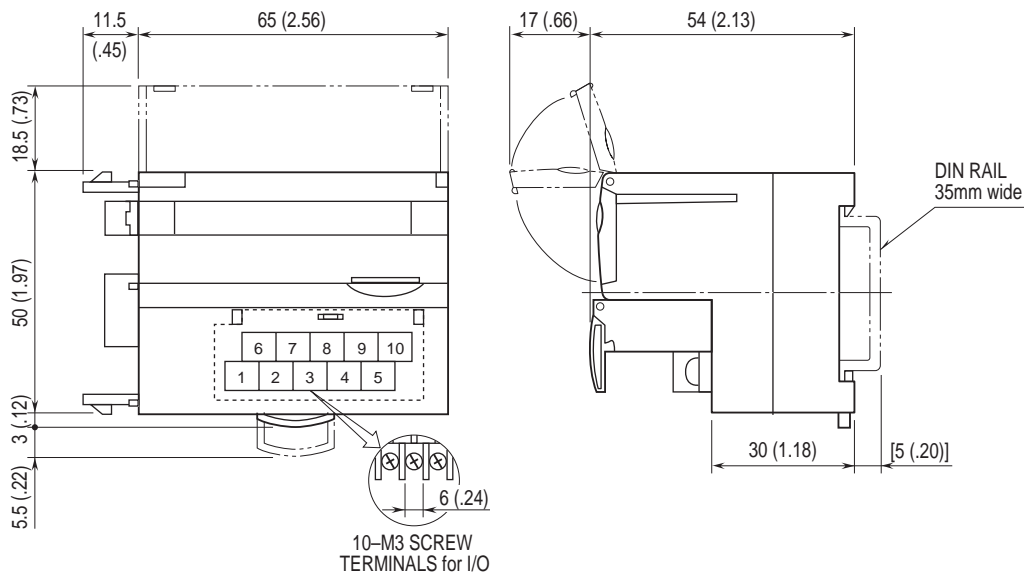
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	COM	Common	6	COM	Common
2	DI2 +	Discrete input 2	7	DI1 +	Discrete input 1
3	DI4 +	Discrete input 4	8	DI3 +	Discrete input 3
4	DI6 +	Discrete input 6	9	DI5 +	Discrete input 5
5	DI8 +	Discrete input 8	10	DI7 +	Discrete input 7

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

### ■ BASIC MODULE



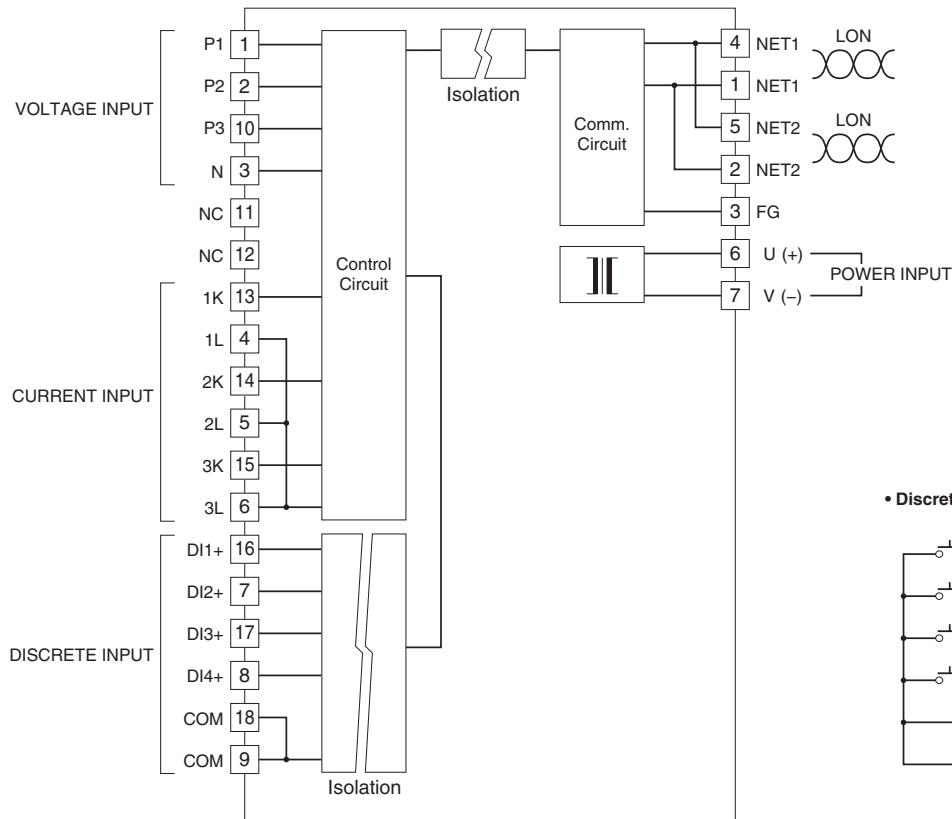
### ■ EXTENSION MODULES



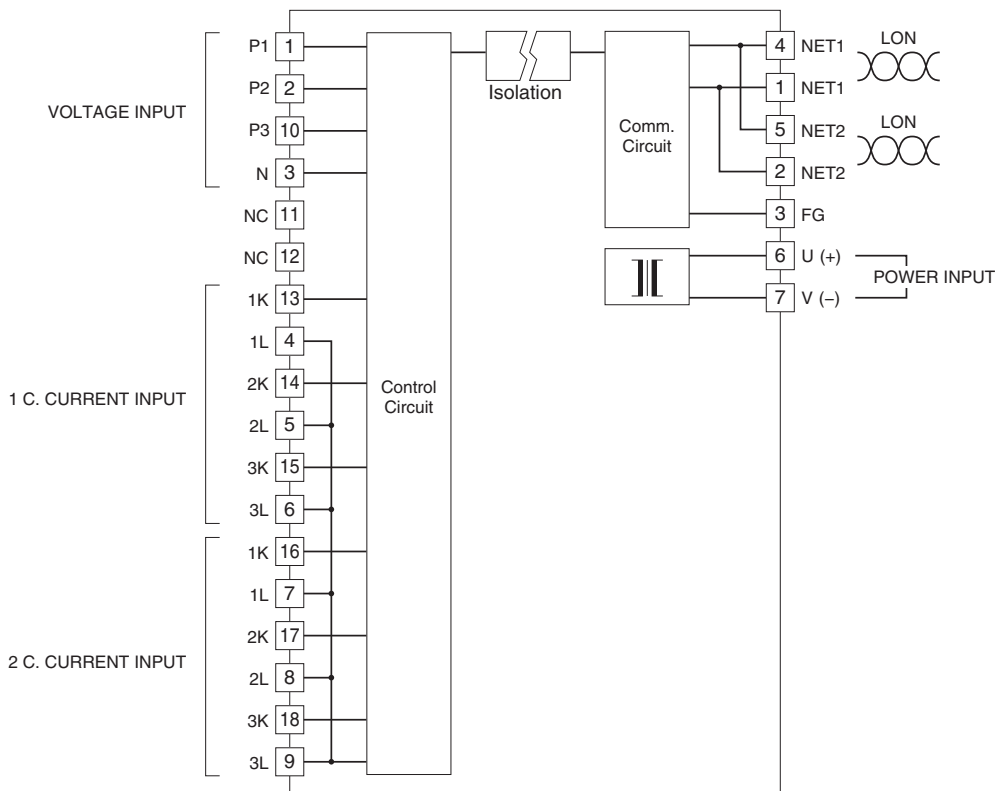
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

### ■ BASIC MODULE

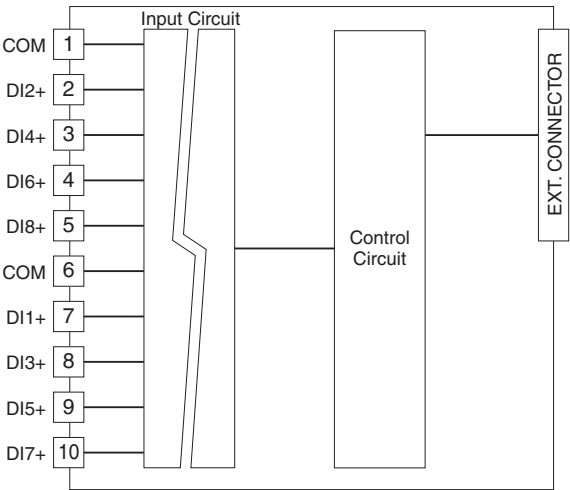
- 1 Circuit, 4 point discrete



- 2 Circuits



■ EXTENSION MODULE



Specifications are subject to change without notice.