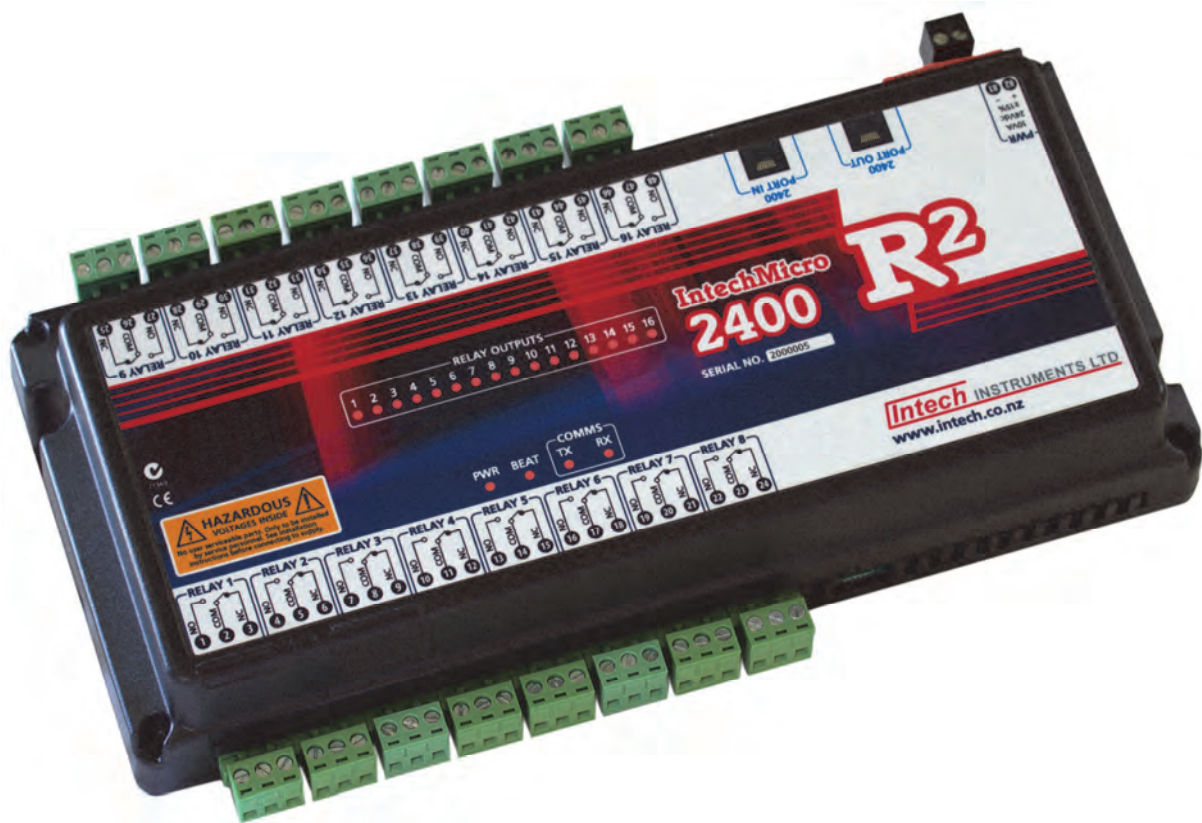


# Intech Micro 2400-R2



## Installation Guide.

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# Intech Micro 2400-R2

16 Channel Relay  
Output Expander  
for 2400-A16 / 2400-M-R.

## Features.

- 16 Isolated Relay Outputs.
- Cascade option for a second 2400-R2.
  - ◊ Enables 32 Isolated Relay Outputs.
- Cost Effective Output Expansion for 2400-A16 and 2400-M-R.
- Easy Programming Via MicroScan.
- Programmable Relay States - NO or NC.
- 24Vdc, 10VA Power Supply.
- Compact DIN Rail Mount Enclosure.
- Easy to Install.



## Description.

The 2400-R2 16 Channel Relay Output Expansion Module is used in conjunction with the 2400-A16 / 2400-M-R. This allows the 2400-A16 / 2400-M-R to stand alone as a 16 channel controller/alarm unit. A second 2400-R2 can be then connected to the first 2400-R2, creating a 32 channel controller/alarm unit. The 2400-R2 relay outputs can be used for any combination of control and alarm functions. The control parameters for each of the 16 controllers is downloaded from user friendly MicroScan Software, and stored in permanent memory on the 2400-A16 / 2400-M-R. These parameters include Set-point (SV), Switching Differential, Auto/Manual, Manual Output Setting, Single Action Control = Heat Only or Cool Only, Dual Action Control = Heat/Cool. The 16 controller and or alarms will operate unaffected by computer power downs, reboots, etc. The relay outputs can also be accessed directly from the SCADA.

## Ordering Information.

**2400-R2** 24Vdc  $\pm$ 15%, 10VA Power Supply.

## Other 2400 Models Include:

- 2400-IS: Isolated Auto-Detecting USB/RS232 to RS485/422/232 Converter.
- 2400-A16: Field Station with up to 16 Isolated Universal Inputs, 4 Digital Inputs, 2 Relay Outputs, and 2 Analogue 4~20mA Outputs.
- 2400-M-R: Field Station with up to 16 Non-Isolated RTD Pt100/Pt1000 Inputs, 4 Digital Inputs, 2 Relay Outputs and 2 Analogue 4~20mA Outputs.
- 2400-RB: Wireless Base/Remote for RS485/422/232 Comms.
- 2400-TCP: Wireless Base only for Ethernet TCP/IP Comms.
- 2400-Sleeper: Wireless Battery Option for 2 Universal Inputs.

**Product Liability.** This information describes our products. It does not constitute guaranteed properties and is not intended to affirm the suitability of a product for a particular application. Due to on-going research and development, designs, specifications, and documentation are subject to change without notification. Regrettably, omissions and exceptions cannot be completely ruled out. No liability will be accepted for errors, omissions or amendments to this specification. Technical data are always specified by their average values and are based on Standard Calibration Units at 25C, unless otherwise specified. Each product is subject to the 'Conditions of Sale'.

**Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independent fail-safe back-up system must always be implemented.**

## 2400-R2 Specifications.

<b>Input:</b>	Interfaced with the 2400-A16 / 2400-M-R.	
<b>Relay Outputs:</b>	16 Individually Isolated Changeover Relays with LED Indication on Each Output.	
Functions	When used with a 2400-A16 / 2400-M-R, the relays can be used as: Set-Point (SV) Switching Differential, Auto/Manual, Manual Output Setting, Single Action Control = Cool Only or Heat Only, Dual Action Control = Heat/Cool.	
Contact Material	Gold Clad Silver	
Relay Ratings	Maximum Rating	Approved to Standard
	250Vac, 5A.	UL
	30Vdc, 5A.	

**Power:** 24Vdc  $\pm$ 15%, 10VA.

### **Safety Compliance:**

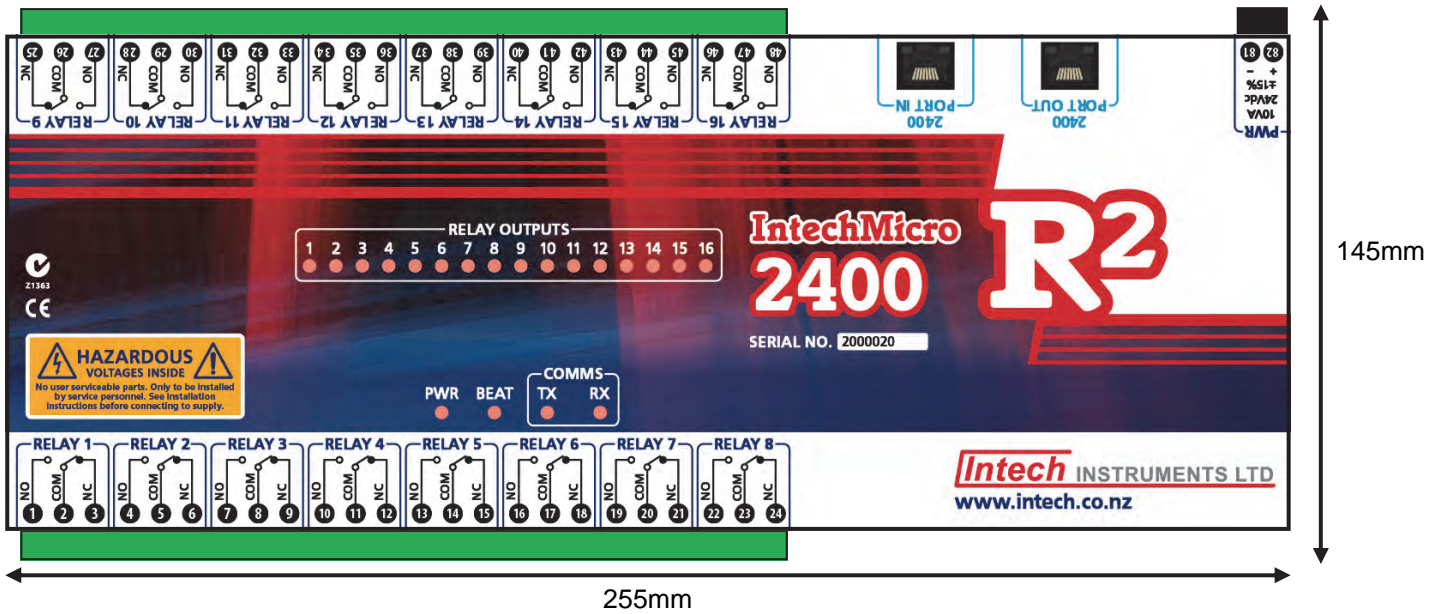
EMC Emissions Compliance	EN 55022-A.
EMC Immunity Compliance	EN 50082-1.
Safety Compliance	EN 60950.

### **General Specifications:**

RF Immunity	$<\pm 1\%$ Effect FSO Typical.
Operating Temperature	0~60°C.
Storage Temperature	-20~80°C.
Operating Humidity	5~85%RH Max. Non-Condensing.
Housing	Material ABS Inflammability V0 (UL94)
Mounting	35mm Symmetrical Mounting Rail.
Dimensions	L=255, W=145, H=60mm.
Weight	0.95kg Includes Packaging.

Contact INTECH INSTRUMENTS for more detailed programming information.

## 2400-R2 Terminals and Layout Dimensions.



## 2400-R2 LED Descriptions.

LED Name	LED Functions
Relay Outputs	Indicates when their respective output relay is energised.
PWR	On Indicates Power Is Applied
BEAT	Heart Beat. Continual Flashing indicates the Station is healthy.
Comms TX	Active when station is transmitting serial data.
Comms RX	Active when station is receiving serial data.

## 2400-R2 Power Supply Connections.

Terminals:	81	82
	-	+

**Power Supply:** 24Vdc  $\pm$ 15%, 10VA.

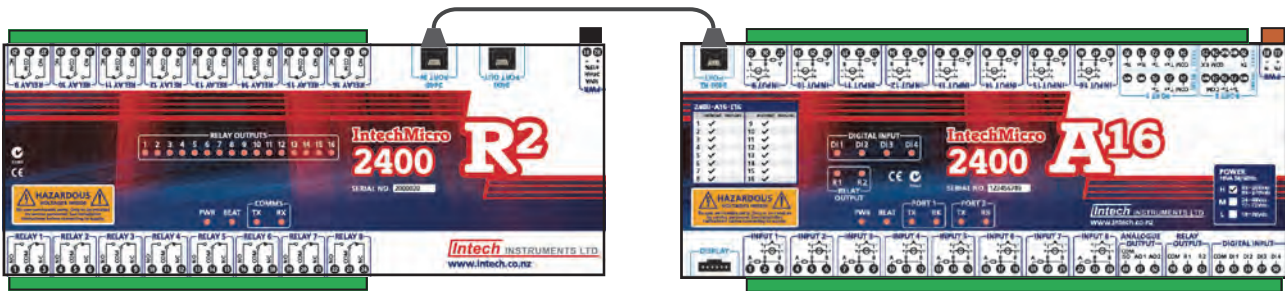
**NEVER connect mains power to terminals 81 and 82!**



## 2400-R<sub>2</sub> Output Connection Diagrams.

### 2400-A16 & 2400-M-R Relay Output Expansion - Using 2400-R<sub>2</sub> Relay Expansion.

Output relay expansion is available using the 2400-R<sub>2</sub>, 16 relay output expansion module. This allows the 2400-A16 / 2400-M-R to stand alone as a 16 channel controller/alarm unit. The 2400-R<sub>2</sub> relay outputs can be used for any combination of control and alarm functions. The control parameters for each of the 16 controllers is downloaded from user friendly MicroScan Software, and stored in permanent memory on the 2400-A16 / 2400-M-R. These parameters include Setpoint (SV), Output Switching Differential, Auto/Manual, Manual Output Setting, Single Action Control; Heat Only or Cool Only, Dual Action Control; Heat and Cool. The 16 controller/alarms will operate unaffected by computer power downs, reboots, etc. The relay outputs can also be accessed directly from the SCADA.



### Connecting the 2400-R<sub>2</sub> to the 2400-A16 / 2400-M-R.

1. Power to both stations must be off before installing the Ethernet type cable supplied with the 2400-R<sub>2</sub>.
2. Connect one end of the cable to the '2400 PORT IN' on the 2400-R<sub>2</sub> station, and other end to the '2400 PORT' on the 2400-A16 / 2400-M-R. Ensure both ends of the cable are firmly connected.
3. If a second 2400-R<sub>2</sub> is used, connect another Ethernet cable from the '2400 PORT OUT' on the first 2400-R<sub>2</sub>, to the '2400 PORT IN' on the second 2400-R<sub>2</sub>.
4. The 2400-R<sub>2</sub> must be enabled in the programming dialogue boxes. Advanced '2400-R<sub>2</sub> Relay Expander' options.

For detailed programming info, refer to 'Programming 2400-Series Remote Station' in the MicroScan Manual.

**Note 1.** The **2400-R<sub>2</sub>** connects to the 2400-A16 / 2400-M-R via standard Ethernet cable (note this is not an Ethernet port).

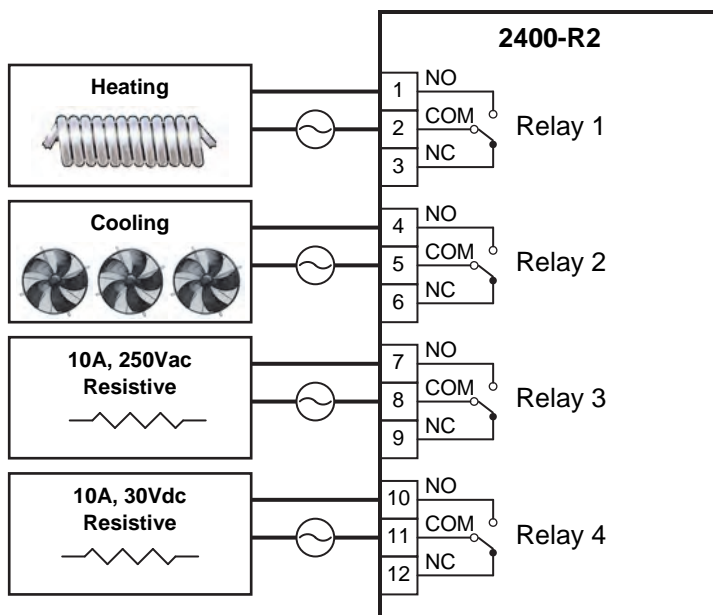
**Note 2.** The 2400-A16 or 2400-M-R do **not** connect to the **2100-R<sub>2</sub>** or **2100-R**.

## 2400-R2 with 2400-A16 / 2400-M-R Relay Output Allocation Table for Single Action Controller.

16 controllers, one relay per controller.

Input to Output Control Configuration			
Controller	Analogue Input	Relay No.	Control Mode
1	1	1	Heat Only or Cool Only
2	2	2	Heat Only or Cool Only
3	3	3	Heat Only or Cool Only
4	4	4	Heat Only or Cool Only
5	5	5	Heat Only or Cool Only
6	6	6	Heat Only or Cool Only
7	7	7	Heat Only or Cool Only
8	8	8	Heat Only or Cool Only
9	9	9	Heat Only or Cool Only
10	10	10	Heat Only or Cool Only
11	11	11	Heat Only or Cool Only
12	12	12	Heat Only or Cool Only
13	13	13	Heat Only or Cool Only
14	14	14	Heat Only or Cool Only
15	15	15	Heat Only or Cool Only
16	16	16	Heat Only or Cool Only

### 2400-R2 Relay Output Connection Example for Single Action Controllers.



**Note 1.** With relays NOT energised, and 'Normally Off' state selected (refer Note 3)

NO = Normally Open.

COM = Common.

NC = Normally Closed.

Heating Relay: NO, closes when heating required.  
Cooling Relay: NO, closes when cooling required.

**Note 2.** All relays are change-over.

**Note 3.** Each relay can be configured for a 'Normally ON' or 'Normally OFF' output state. (E.g. for fail safe operation.) The 'Normally ON/OFF' settings are retained in software on power down, but the relays are de-energised. The 'Normally ON/OFF' state of the relay can be changed in the Advanced dialog box for the on-board relays, or using the Relay States dialog box for the 2400-R2. Refer to MicroScan Configuration Manual.

**Note 4.** LED indication on each output when each relay is energised.

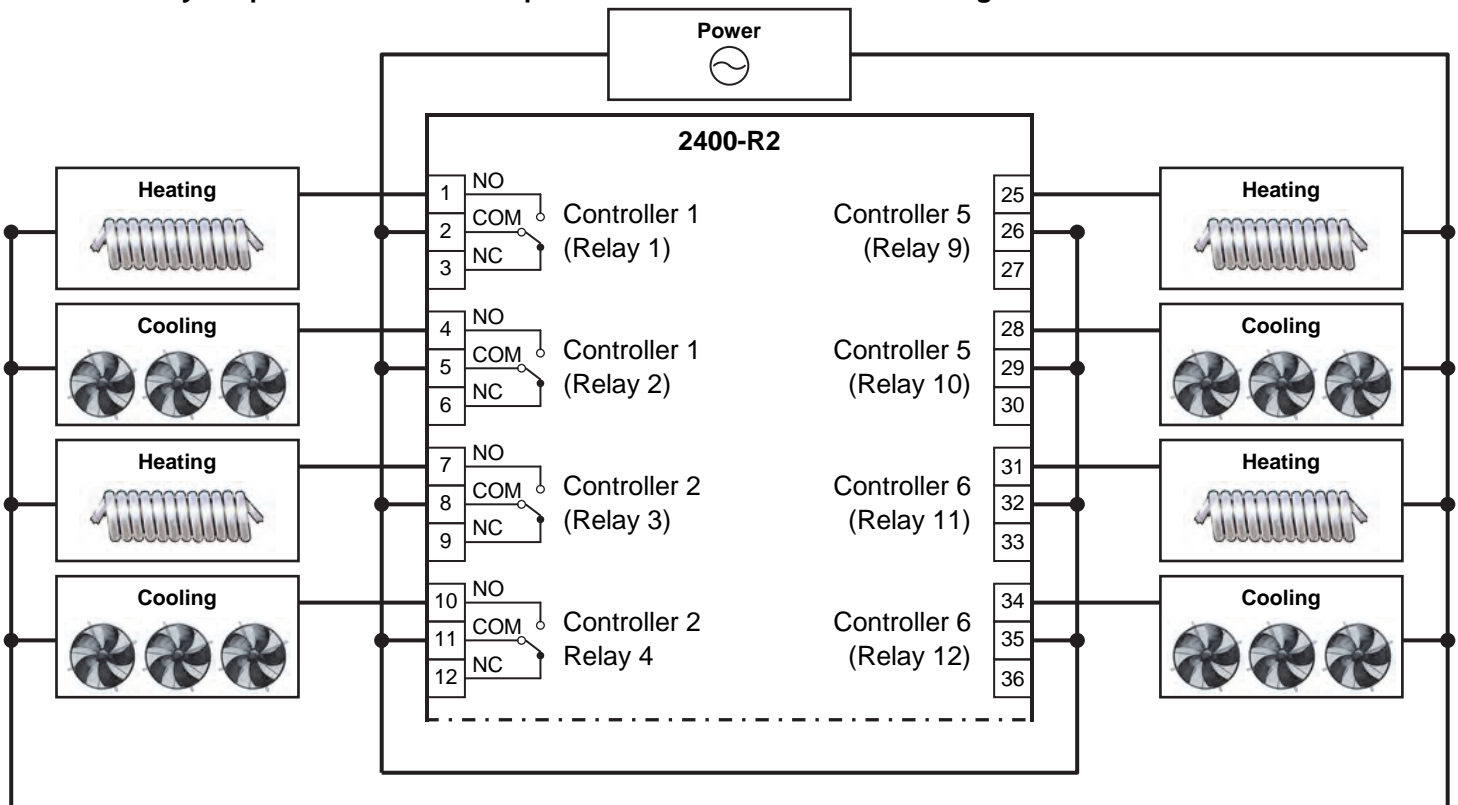
**Note 5.** Single Action Setting is a global setting for the station.

## 2400-R2 with 2400-A16 / 2400-M-R Relay Output Allocation for Dual Action Controller.

Eight controllers, two relays per controller.

Input to Output Control Configuration					
Controller	Analogue Input	Relay No.	Control Action Heat Only Relay	Control Action Cool Only Relay	Control Mode
1	1	1	1	2	1 Heat
		2			2 Cool
2	2	3	3	4	3 Heat
		4			4 Cool
3	3	5	5	6	5 Heat
		6			6 Cool
4	4	7	7	8	7 Heat
		8			8 Cool
5	5	9	9	10	9 Heat
		10			10 Cool
6	6	11	11	12	11 Heat
		12			12 Cool
7	7	13	13	14	13 Heat
		14			14 Cool
8	8	15	15	16	15 Heat
		16			16 Cool

### 2400-R2 Relay Output Connection Example for Dual Action Controllers - Single 2400-R2.



Note 1. With relays NOT energised, and 'Normally Off' state selected (refer Note 3).

**NO** = Normally Open.

**COM** = Common.

**NC** = Normally Closed.

Heating Relay: **NO**, closes when heating required.

Cooling Relay: **NO**, closes when cooling required.

Note 2. All relays are change-over.

Note 3. Each relay can be configured for a 'Normally ON' or 'Normally OFF' output state. (E.g. for fail safe operation.) The 'Normally ON/OFF' settings are retained in software on power down, but the relays are de-energised. The 'Normally ON/OFF' state of the relay can be changed in the Advanced dialog box for the onboard relays, or using the Relay States dialog box for the 2400-R2. Refer to MicroScan Configuration Manual.

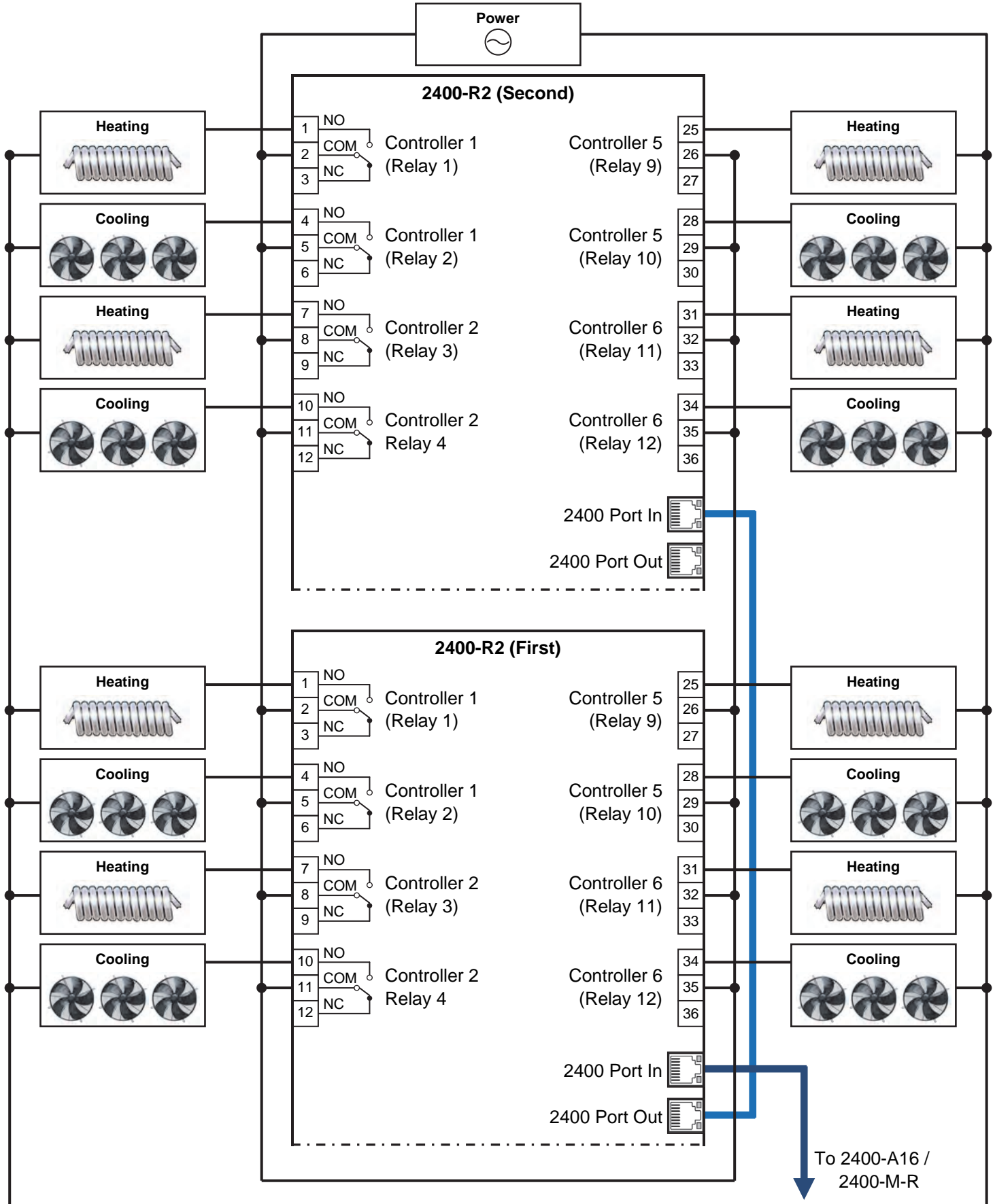
Note 4. LED indication on each output when each relay is energised.

Note 5. In Dual Action mode, if the controller is set to heat only, the cool relay is always off. If the controller is set to cool only, the heat relay is always off. Likewise when using Manual Mode in the heat only mode, only the state of the heat relay can be changed, and on the cool only mode, only the state of the cool relay can be changed.

Note 6. Dual Action Setting is a global setting for the station.



2400-R2 Relay Output Connection Example for Dual Action Controllers - Cascaded 2400-R2.



Note 1. With relays NOT energised, and 'Normally Off' state selected (refer Note 3).

**NO** = Normally Open.      **COM** = Common.      **NC** = Normally Closed.

Heating Relay: **NO**, closes when heating required.      Cooling Relay: **NO**, closes when cooling required.

Note 2. All relays are change-over.

Note 3. Each relay can be configured for a 'Normally ON' or 'Normally OFF' output state. (E.g. for fail safe operation.)

The 'Normally ON/OFF' settings are retained in software on power down, but the relays are de-energised.

The 'Normally ON/OFF' state of the relay can be changed in the Advanced dialog box for the onboard relays, or using the Relay States dialog box for the 2400-R2. Refer to MicroScan Configuration Manual.

Note 4. LED indication on each output when each relay is energised.

Note 5. In Dual Action mode, if the controller is set to heat only, the cool relay is always off. If the controller is set to cool only, the heat relay is always off. Likewise when using Manual Mode in the heat only mode, only the state of the heat relay can be changed, and on the cool only mode, only the state of the cool relay can be changed.

Note 6. Dual Action Setting is a global setting for the station.

## ***Wiring and Installation.***

**THE 2400-R2 IS TO BE INSTALLED AND SERVICED BY SERVICE PERSONNEL ONLY. NO OPERATOR / USER SERVICEABLE PARTS.**

All power and signals must be de-energised before connecting any wiring or Mounting.

### **Mounting.**

\* Also refer to Connection Diagrams and Notes.

1. Mount in a clean environment in an electrical cabinet on 35mm symmetrical mounting rail.
2. Draft holes must have minimum free air space of 20mm. Foreign matter must not enter or block draft holes.
3. Do not subject to vibration or excess temperature or humidity variations.
4. Avoid mounting in cabinets with power control equipment.
5. To maintain compliance with the EMC Directives, the 2400-R2 is to be mounted in a fully enclosed steel fire cabinet. The cabinet must be properly earthed, with appropriate input/output entry points and cabling.

### **Power Supply Wiring.**

1. Use Only Instrument Quality Power Supplies.
2. Using 24Vdc  $\pm 15\%$  power supply, connect +Ve wire to terminal 82, and the -Ve wire to 81.
3. NEVER connect mains power to terminals 81 and 82.

### **Analogue Signal Wiring.**

1. All signal cables should be good quality overall screened INSTRUMENTATION CABLE with the screen earthed at one end only.
2. Signal cables should be laid a minimum distance of 200mm from any power cables.
3. For 2 wire current loops, 2 wire voltage signals or 2 wire current signals, Austral Standard Cables B5102ES is recommended. For 3 wire transmitters and RTDs Austral Standard Cables B5103ES is recommended.
4. It is recommended that you do not ground current loops and use power supplies with ungrounded outputs.
5. Lightning arrestors should be used when there is a danger from this source.
6. Refer to diagrams for connection information.

### **Commissioning.**

1. Check that all the above conditions have been met, and the wiring checked, before applying power to the 2400-R2.
2. Check each relay output functions correctly, and the relay specifications are not being exceeded.

### **Software Programming.**

The 2400-R2 is a slave to the 2400-A16 / 2400-M-R, to setup the 2400-R2 option on a 2400-A16 / 2400-M-R; select 'Expansion Out Modules' in the station programming software. Refer to the 2400-A16 / 2400-M-R Installation Guide, and 'Programming 2400 Series Remote Station' in the MicroScan Manual.