

Commissioners Name:



SPHERE SYSTEMS P/L
 15 Mc Namara Street
 Macleod 3085
 Victoria AUSTRALIA
 www.spheresystems.com.au
 Ph: (03) 9457-6994 Fax: (03) 9457-6995

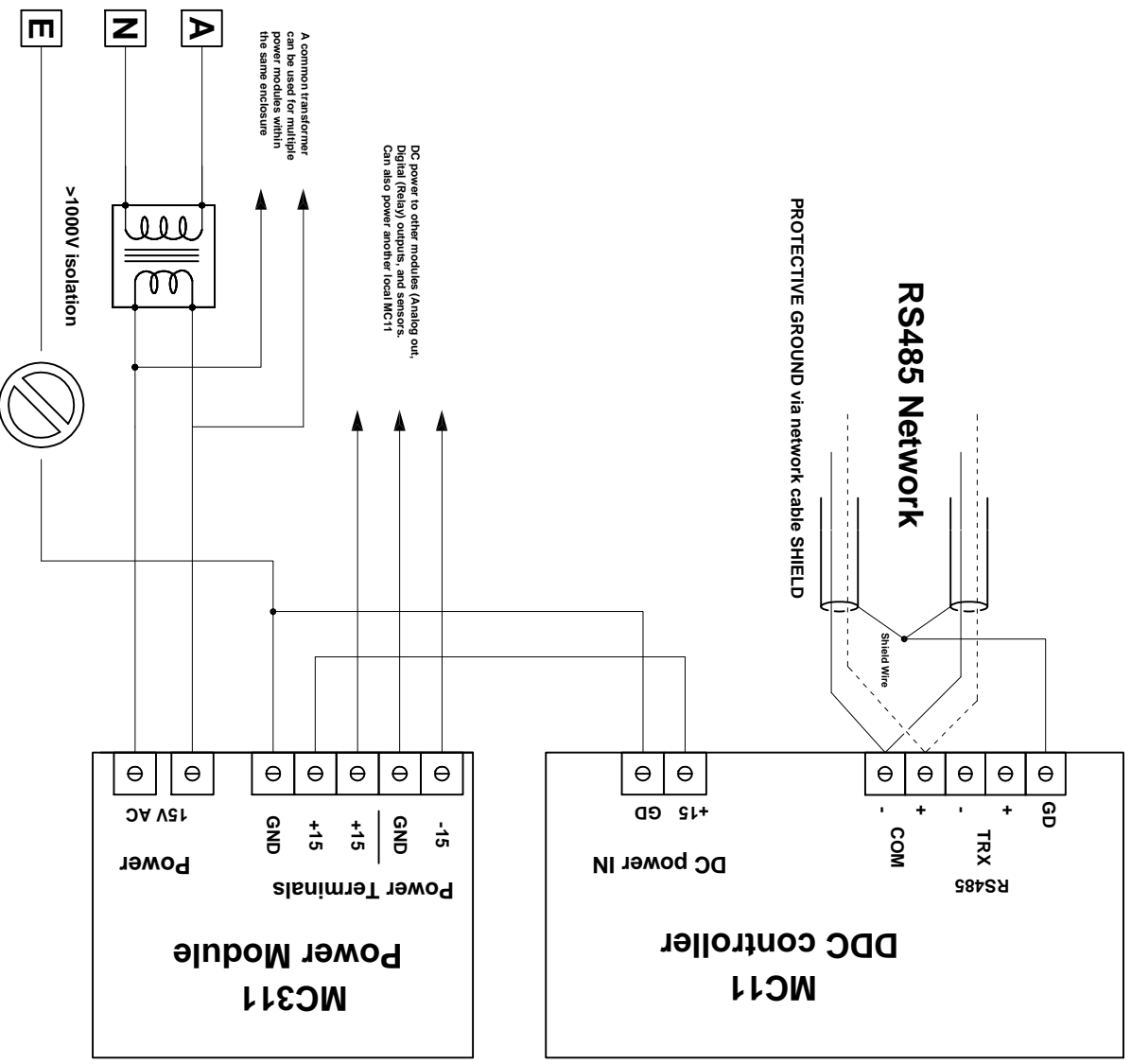
Project: **DDC CONTROL SYSTEM**
 Sheet: **MiniCom Controller**
 Sheet No: 1 of 6
 Drawing No: SPH-106
 Drawn By: PJC
 Checked By: RS

Rev	Description	Date
A	Initial Release	8/10/2003

Commission Date:

NETWORK cable integrity is essential for fast intercommunication.
 The SHIELD is the source of PROTECTIVE GROUND for the whole network.
 The cable:

- MUST be specified for RS485. (Nominal Impedance 120 Ohm)
- MUST be a consistent twisted pair (when in multi-pair configuration)
- MUST have polarity maintained
- MUST have shield wire continuous and connected to "G" on each controller.
- MUST be connected to mains EARTH at the network controller ONLY (DP11 and PC)
- MUST be wired serially between controllers with NO BRANCHES
- MUST be terminated at each end with 120 Ohm resistors



DC power to other modules (Analog out, Digital (Relay) outputs, and sensors" Can also power another local MC11

A common transformer can be used for multiple controllers and sensors in the same enclosure

DO NOT CONNECT TO LOCAL EARTH !!

Commissioners Name:

Commission Date:



SPHERE SYSTEMS P/L
 15 Mc Namara Street
 Macleod 3085
 Victoria AUSTRALIA
 www.spheresystems.com.au
 Ph: (03) 9457-6994 Fax: (03) 9457-6995

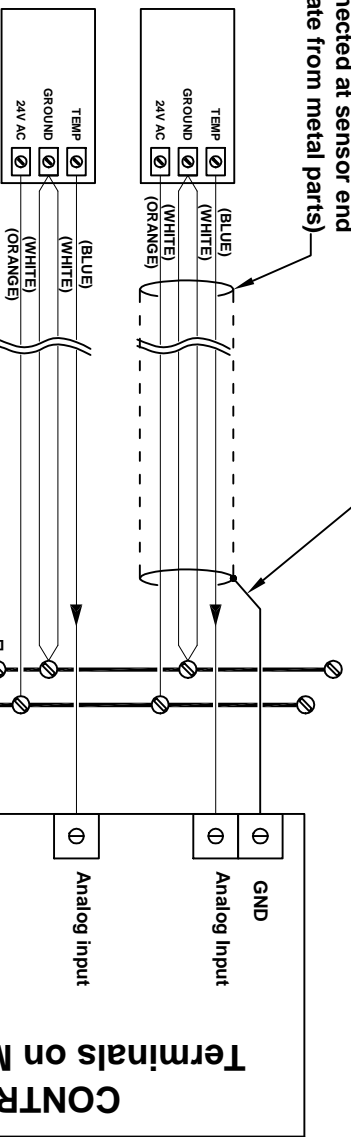
Project		Sheet		Drawing No:		Drawn By:		Checked By:	
DDC CONTROL SYSTEM		2 of 6		SPH-106		PJC		RS	
Powering & RS485 Network									

Rev	Description	Date
A	Initial Release	8/10/2003

Cable screen drain wire options:
 Connect to adjacent GD on Minicom (best)
 Connect to COM on distribution terminal block
 Leave disconnected for actuators.

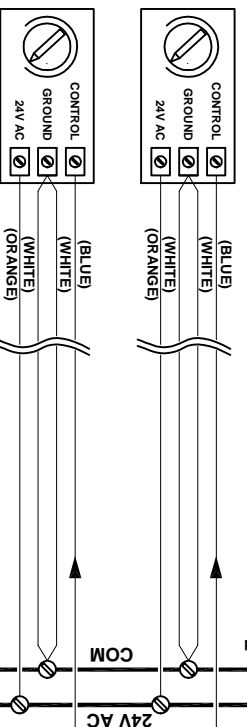
NOT connected at sensor end
 (insulate from metal parts)

0 to 10V
 SENSORS
 eg: Temperature,
 Humidity & etc

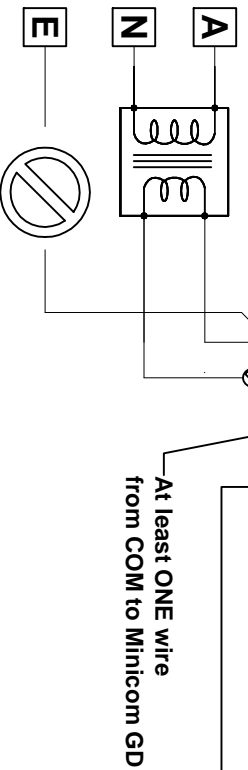


Suggested Colours

0 to 10V
 ACTUATORS
 eg: Valves,
 Dampers & etc



Suggested Colours



DO NOT CONNECT TO LOCAL EARTH !!

Commissioners Name:

Commission Date:



SPHERE SYSTEMS P/L
 15 Mc Namara Street
 Macleod 3085
 Victoria AUSTRALIA
 www.spheresystems.com.au
 Ph: (03) 9457-6994 Fax: (03) 9457-6995

Project **DDC CONTROL SYSTEM**

Sheet **24V AC Sensor & Actuator Wiring**

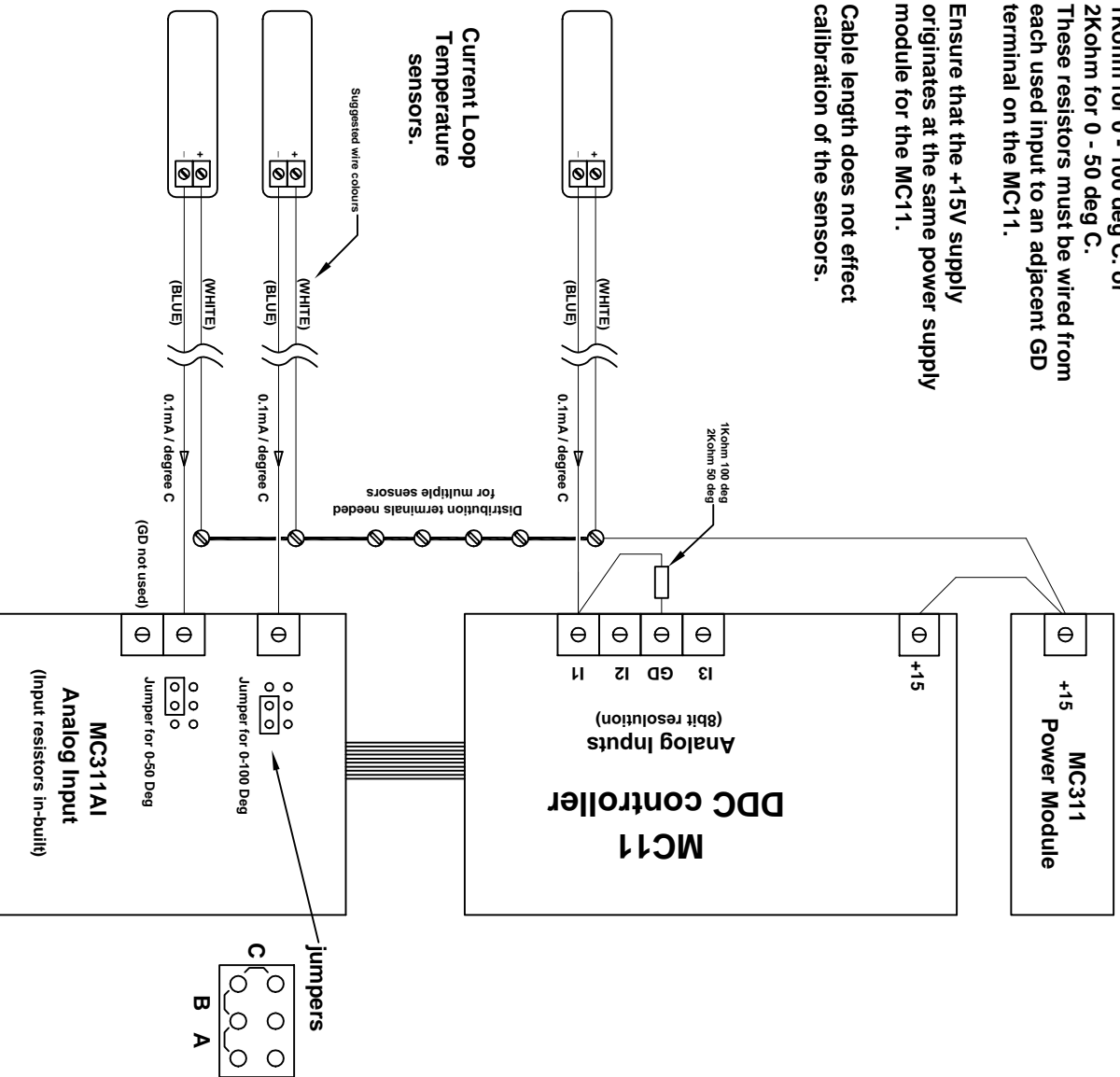
Sheet No: 3 of 6
 Drawing No: SPH-106
 Drawn By: PJC
 Checked By: RS

Rev	Description	Date
A	Initial Release	8/10/2003

Current Loop temperature sensors draw 0.1mA/DegC into an input of 1Kohm for 0 - 100 deg C, or 2Kohm for 0 - 50 deg C. These resistors must be wired from each used input to an adjacent GD terminal on the MC11.

Ensure that the +15V supply originates at the same power supply module for the MC11.

Cable length does not effect calibration of the sensors.



Analog input cards have 0 - 10V input range with 12 bit resolution. (1 in 4096)

With no links input is 0 - 10V

Link A = 1K ohm input
10 mA = 10V = 100 degC

Link B = 2K ohm input
5 mA = 10V = 50 degC

Link A&C = 500 ohm
4 - 20 mA = 2 - 10V

Commissioners Name:

Commission Date:



SPHERE SYSTEMS P/L
15 Mc Namara Street
Macleod 3085
Victoria AUSTRALIA
www.spheresystems.com.au
Ph: (03) 9457-6994 Fax: (03) 9457-6995

Project **DDC CONTROL SYSTEM**

Sheet **Current loop Temperature Sensors**

Sheet No: 4 of 6
Drawing No: SPH-106
Drawn By: PJC
Checked By: RS

Rev	Description	Date
A	Initial Release	8/10/2003



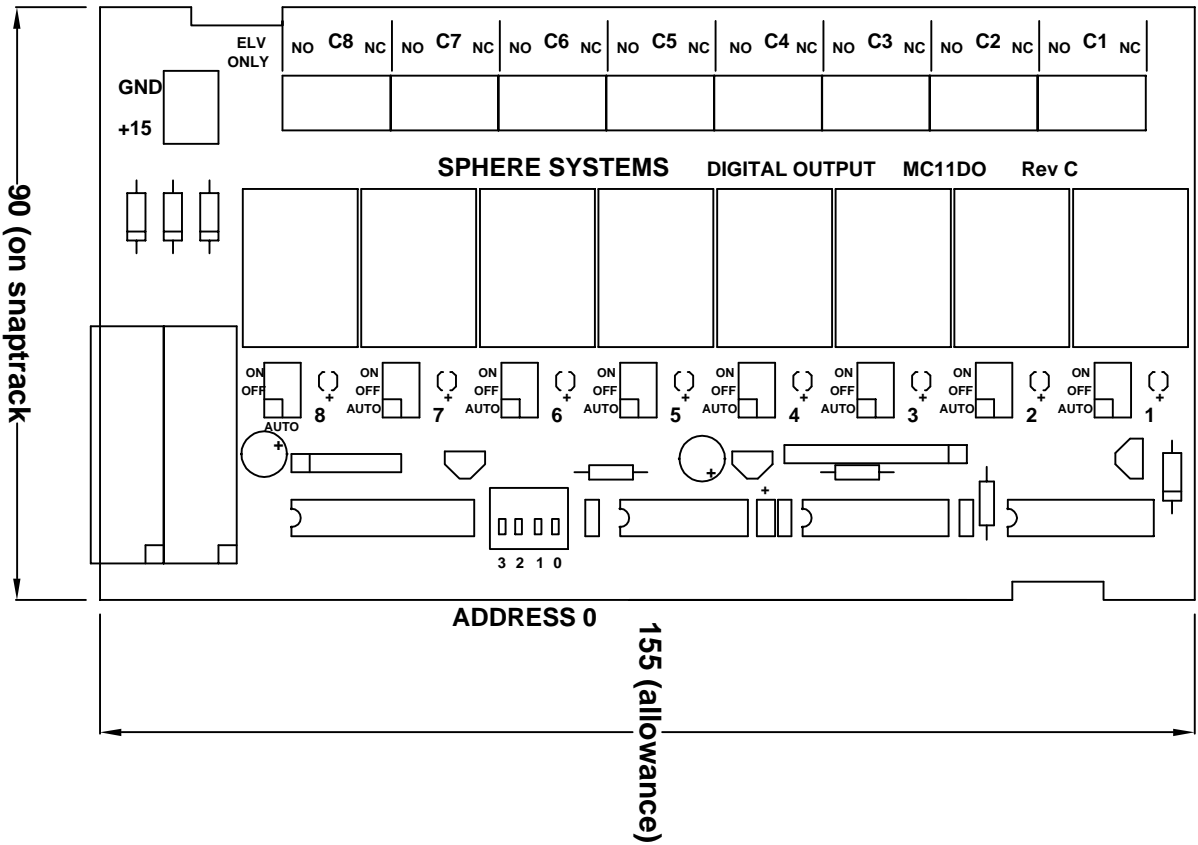
Ph: (03) 9457-6994 Fax: (03) 9457-6995

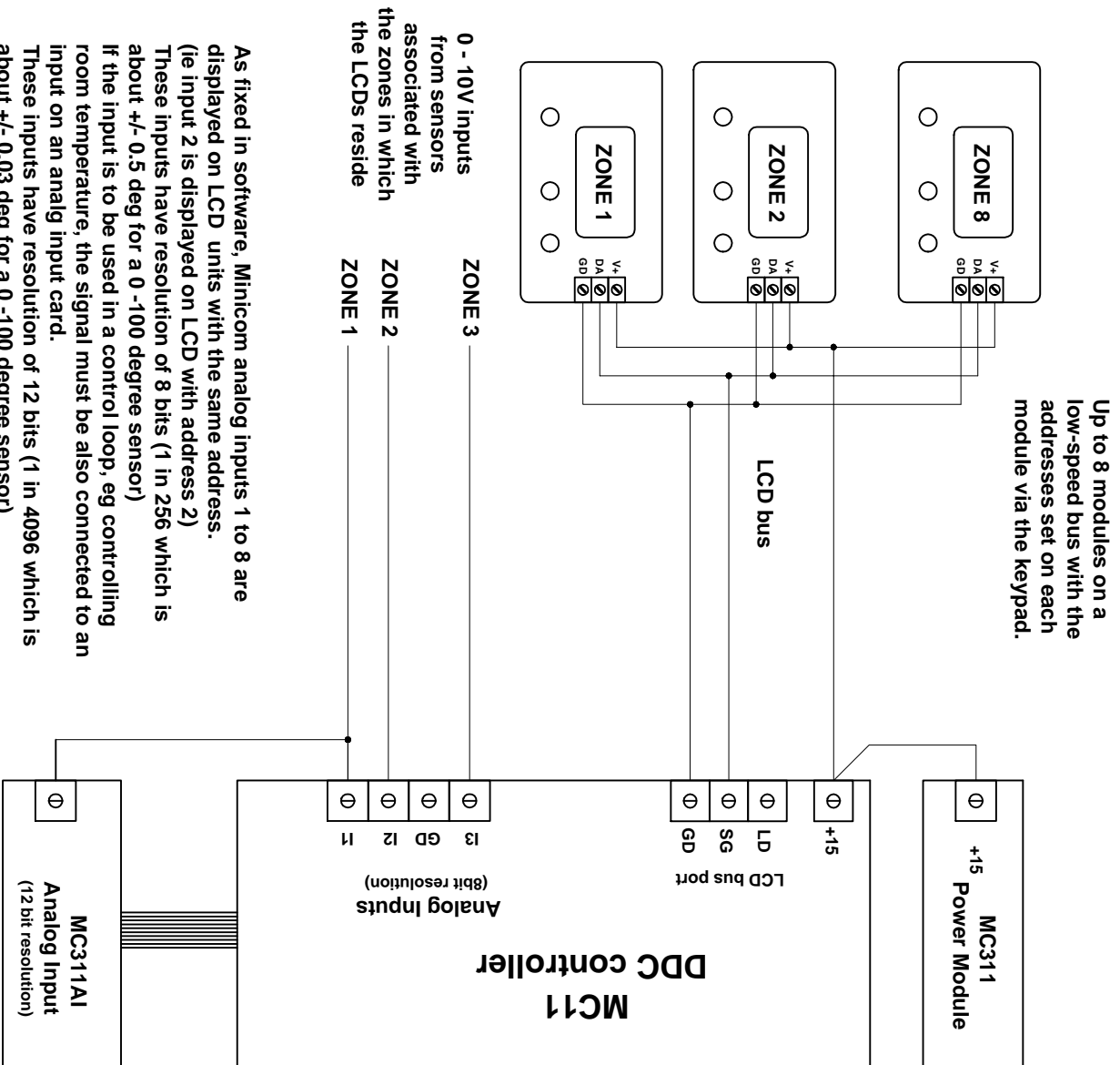
SPHERE SYSTEMS P/L
 15 Mc Namara Street
 Macleod 3085
 Victoria AUSTRALIA
 www.spheresystems.com.au

Commissioner's Name:

Commission Date:

Project		Sheet		Rev	
DDC CONTROL SYSTEM		5 of 6		A	
Relay Contact Output		Drawing No: SPH-106		Description	
Initial Release		Drawn By: PJC		Date	
8/10/2003		Checked By: RS			





As fixed in software, Minicom analog inputs 1 to 8 are displayed on LCD units with the same address. (ie input 2 is displayed on LCD with address 2)
 These inputs have resolution of 8 bits (1 in 256 which is about +/- 0.5 deg for a 0 -100 degree sensor)
 If the input is to be used in a control loop, eg controlling room temperature, the signal must be also connected to an input on an analog input card.
 These inputs have resolution of 12 bits (1 in 4096 which is about +/- 0.03 deg for a 0 -100 degree sensor)

Commissioner's Name:

Commission Date:



SPHERE SYSTEMS P/L
 15 Mc Namara Street
 Macleod 3085
 Victoria AUSTRALIA
 www.spheresystems.com.au
 Ph: (03) 9457-6994 Fax: (03) 9457-6995

Project: **DDC CONTROL SYSTEM**
 Sheet: **LCD Modules and wiring**
 Sheet No: 6 of 6
 Drawing No: SPH-106
 Drawn By: PJC
 Checked By: RS

Rev	Description	Date
A	Initial Release	8/10/2003