



Dynamic Rating, Monitoring, Control and
Communications

DRMCC-T2 **SICM2B USER** **MANUAL**

Revision: 020308



DYNAMIC RATINGS Pty Ltd
310 Springvale Road (PO Box 5)
Glen Waverley, Victoria 3150
Australia
Telephone +613 9560 0411
Facsimile +613 9560 0599
Email drmcc@dynamicratings.com
Web www.dynamicratings.com



REVISION HISTORY

07-Jan-02 M. Witte: Based on Energex document 7236-A4 Rev B
8-Mar-02 M. Witte: Published.

CONTENTS

REVISION HISTORY	2
CONTENTS	2
INTRODUCTION	3
SPECIFICATIONS	3
GENERAL.....	3
COMMUNICATIONS.....	3
DIGITAL INPUTS.....	4
RELAY OUTPUTS.....	4
EXTERNAL ANALOG INPUTS.....	5
INTERNAL ANALOG INPUT.....	5
CONFIGURATION	6
ROTARY SWITCH OPERATION.....	6
SICM2B TERMINAL CONNECTIONS	7
SICM2B POWER/COMMUNICATIONS CONNECTIONS.....	7
SICM2B I/O CONNECTIONS AND DNP MAPPING.....	8
<i>SICM2 VT & INTERPOSING CT CONNECTIONS</i>	8
<i>(CLASS 128) DRMCC / STATISTICAL METERING (VT - STAR - NEUTRAL EARTHED)</i>	9
<i>(CLASS 129) DRMCC / STATISTICAL METERING (VT - STAR - NEUTRAL EARTHED)</i>	9
<i>(CLASS 130) DRMCC / STATISTICAL METERING (VT - DELTA – B PHASE EARTHED)</i>	10
<i>(CLASS 131) DRMCC / STATISTICAL METERING (VT - DELTA – B PHASE EARTHED)</i>	10
<i>(CLASS 132) DRMCC / STATISTICAL METERING (VT – SINGLE PHASE TO PHASE)</i>	11
<i>(CLASS 133) DRMCC / STATISTICAL METERING (VT – SINGLE PHASE TO PHASE)</i>	11
<i>(CLASS 134) DRMCC / STATISTICAL METERING (VT – SINGLE PHASE TO PHASE METH. 2)</i>	12
<i>(CLASS 135) DRMCC / STATISTICAL METERING (VT – SINGLE PHASE TO NEUTRAL)</i>	12
<i>(CLASS 136) DRMCC / STATISTICAL METERING (CIRC. CURRENT TYPE WITH TRANSD.)</i>	13
<i>(CLASS 137) DRMCC / STATISTICAL METERING (CIRC. CURRENT TYPE WITH EXTRA CT)</i>	13
DIGITAL INPUTS.....	14
DIGITAL OUTPUTS.....	14



INTRODUCTION

The Serial Interface Control Module or SICM is a small, low-cost controller used in the DRMCC-T2 system. The SICM2B is a revised version of this original SICM with additional features to increase the flexibility and scope of its usage. The SICM2B retains all the features of the original, but also offers an improved processor, and more digital I/O. The more capable processor gives the SICM2B more flexibility in onboard data processing.

The SICM2B has been developed to interface to DNP 3.00 compatible control systems. This can be achieved via a multi-drop RS485 communications link. The SICM2B provides 16 general-purpose digital inputs. The SICM2B also has eight relay outputs, three voltage and four current analog inputs, and an onboard temperature sensor.

SPECIFICATIONS

GENERAL

Power Supply:	Nominal 24 Volt DC. Range: 20.0V to 29.0V dc. Fused and reverse polarity protected. Approx 65mA quiescent current draw.
System Operating Temperature Range:	-40 to +85°C
Configuration:	Rotary Hex Switches.
Board Dimensions:	290mm (approx.) x 110mm. To fit Weidmuller RS100 profile.
Enclosure/Mounting:	DIN rail mounting. Circuit boards conformal coating.
Noise Immunity:	Designed to be EMC compliant to CE mark and C-tick Mark.
Connections:	Pluggable screw terminal blocks with individual terminal numbering. All cabling to the device enters parallel to the PCB.

COMMUNICATIONS

Protocol:	DNP 3.00 – Level 1.
Data Rate:	Selected by rotary switch (300, 1200, 2400, 4800, 9600, 19200, 38400, 57600 bps).
Serial Interface:	2 pair (full duplex) RS485 multidrop, with a floating terminal provided for looping the RS485 cable screen.
Indicators:	LED on RX (red) and TX (green).
Protection:	Transient suppressors on RS485 lines.
Line Termination:	RS485 port has link selectable 120ohm line terminating resistors on the board.

DIGITAL INPUTS

Quantity:	16.
Isolation:	2kV rms 60s each input to all other inputs and ground.
Input Voltage Range:	10VDC/30VAC to 140VDC/AC.
Input Current Requirements:	250 μ A – 4.25mA (depending on voltage; applies to all inputs except 9 & 11). 1mA constant current source on inputs 9 and 11.
Indicators:	LED indication on each input.
Filtering:	Input filters to eliminate external noise (including fast transient / burst test) and software debouncing. DC inputs longer than 20msec to be detected.
Protection:	150Volt MOV across each input and reverse polarity protection.

RELAY OUTPUTS

Quantity and Type:	8 relays. Fully sealed.
Power Supply:	nominal 24 Volt DC. Range: 19.0V to 27.0V dc. Fused and reverse polarity protected.
Contacts:	One changeover set per relay. 10A contact at 250VAC/30VDC.
Connections:	Same Terminal blocks as Base Module for contacts, as well as two additional terminals for 24VDC relay power. All three connections brought out for each relay (common, N/C, N/O).
Indicators:	LED indication on each output.
Isolation:	2kV rms 60s between each set of contacts connected together, all other contacts and ground. 1kV rms 60s across open contacts.
Protection:	Diode and fuse protection on 24VDC input to Output Module.
General:	All 8 relays may be energised continuously, subject to the external 24VDC supply having sufficient capacity.
Fail-safe Feature:	If communications to the SICM2B are lost for a period of 300 sec or power is lost then all relays are de-energised.

EXTERNAL ANALOG INPUTS

Number of Channels:	7.
Resolution of ADC:	12-bits.
AC Inputs 1 - 3:	0 – 150V rms. 3kHz sampling, RMS every 4096 samples.
AC Inputs 4 - 6:	0 – 10mA rms. 3kHz sampling, RMS every 4096 samples.
AC input 7:	Additional input current, 0 – 10mA rms, 3kHz sampling, RMS every 4096 samples. This input may be used for measuring a fourth AC current (e.g. circulating current) or a DC current input from a transducer (e.g. Tap Position).
Protection:	5 Volt MOV on each current input. 150 Volt MOV on each voltage input.
Filtering:	1100Hz R-C filter on each input plus EMC filtering for fast transient / burst test.
Accuracy:	Voltage and current – better than 0.5% of range at 25°C; better than 1% of range from –40°C to +85°C.
Isolation:	Analogs not isolated from each other, but all analogs are isolated to earth: 2kV rms 60s.

INTERNAL ANALOG INPUT

Quantity Monitored:	Board Temperature (-40 to +110°C).
Quantity Calculated:	Frequency (46 – 50Hz), Watts & Vars.
Sampling:	Updated every 1.4 seconds.
Accuracy:	Board temperature $\pm 2.5^{\circ}\text{C}$ (note that the sensor does not read air temperature. It gives an 'indication only' of the circuit board temperature at one location). Frequency, Watts and Vars – better than 0.5% of range at 25°C; better than 1% of range from –40°C to +85°C.

CONFIGURATION

The SICM2B is configured using the four rotary hex switches SW1 – SW4.

ROTARY SWITCH OPERATION

Switch 1 - Address (range 1 – 15).
This address is changed dynamically; i.e. the SICM2B does not have to be restarted for the address change to take effect.
SICM2B is commonly address 2.

Switch 2 - Bit rate of RS485 comms port as per table.

Switch Posn	Bit Rate (bps)
0	300
1	1200
2	2400
3	4800
4	9600
5	19200
6	38400
7	57600

SCIM2B bit rate is 19200.

Switch 3 - Second byte of Class.

Switch 4 - First byte of Class.

eg: Class 128 (80 hex) would be set as Switch 4 to position 8 and Switch 3 to position 0.

SICM2B TERMINAL CONNECTIONS

All input and output connections to the SICM2B are via pluggable screw terminal blocks. The screw terminal blocks can be unplugged to speed replacement of the unit for maintenance. The power and communications connections are detailed in the following. The definitions for the digital input, relay output, and analog input connections are type/class specific and are detailed in following.

NOTE: The sockets for the terminal blocks are not numbered. The terminal numbers only appear on the terminal blocks themselves. It is therefore crucial to ensure that the terminal blocks are plugged into the correct sockets before commencing wiring. The terminal positions appear on the drawings.

SICM2B POWER/COMMUNICATIONS CONNECTIONS

Function	Connector/Terminal Number
+Supply Volts	J1 – terminal 24
Supply return	J1 – terminal 25
RS485 Rx+	J1 – terminal 26
RS485 Rx-	J1 – terminal 27
RS485 Tx-	J1 – terminal 28
RS485 Tx+	J1 – terminal 29
Not Connected	J1 – terminal 30
GND	J1 – terminal 31

SICM2B I/O CONNECTIONS AND DNP MAPPING

SICM2 VT & INTERPOSING CT CONNECTIONS

SICM Class & Rotation	VT	SICM Terminals									
		32	33	34	35	36	37	38,39	40,41	42,43	44,45
128 ABC / 129 ACB	AN,BN,CN - N Earthed	Va	Vn	Vb	Vn	Vc	Vn	Ia	Ib	Ic	transd
130 ABC / 131 ACB	AB,CB - B Earthed	Va	Vb	Vc	Vb			Ia	Ib	Ic	transd
132 ABC / 133 ACB	AB - B Earthed	Va	Vb	Va	Vb			Ia	Ic	Ib	transd
133 ABC / 132 ACB	BA - A Earthed	Vb	Va	Vb	Va			Ib	Ic	Ia	transd
132 ABC / 133 ACB	BC - C Earthed	Vb	Vc	Vb	Vc			Ib	Ia	Ic	transd
133 ABC / 132 ACB	CB - B Earthed	Vc	Vb	Vc	Vb			Ic	Ia	Ib	transd
132 ABC / 133 ACB	CA - A Earthed	Vc	Va	Vc	Va			Ic	Ib	Ia	transd
133 ABC / 132 ACB	AC - C Earthed	Va	Vc	Va	Vc			Ia	Ib	Ic	transd
134 ABC	AB – B Earthed	Va	Vb					Ic			transd
134 ACB	BA – A Earthed	Vb	Va					Ic			transd
134 ABC	BC – C Earthed	Vb	Vc					Ia			transd
134 ACB	CB – B Earthed	Vc	Vb					Ia			transd
134 ABC	CA – A Earthed	Vc	Va					Ib			transd
134 ACB	AC – C Earthed	Va	Vc					Ib			transd
135 ABC / 135 ACB	AN – N Earthed	Va	Vn					Ia			transd
135 ABC / 135 ACB	BN – N Earthed	Vb	Vn					Ib			transd
135 ABC / 135 ACB	CN – N Earthed	Vc	Vn					Ic			transd
136 Circ current	Any (see note below)	V ₁₁	V ₁₂	V ₂₁	V ₂₂	V ₃₁	V ₃₂	I ₁	I ₂	I ₃	transd
137 Circ current	Any (see note below)	V ₁₁	V ₁₂	V ₂₁	V ₂₂	V ₃₁	V ₃₂	I ₁	I ₂	I ₃	I ₄

*** NOTE:** SICM Terminals 33,35,37,39,41,43 and 45 are all internal common points.
 VT Secondary Inputs 110V Phase-Phase or 63.5 Phase-Neutral.
 CT Secondary Inputs 5mA.
 44,45 Transducer inputs (0 – 10 mA DC nom, 14 max)
 Terminal 38, 40, 42 and 44 are the +ve polarity terminals.
 Connections are as per terminal markings, not phase rotation.
 Phase rotation is taken into consideration by the Class.
 Current input on terminals 40, 41, are not required for internal Watts and Vars calculation, required for current monitoring only
 For classes 136 and 137, it would be normal to connect the single available VT (either phase to neutral or phase to phase) to all three voltage inputs on the SICM. I₁, I₂, and I₃ would normally be used for total line current, load current, and circulating current CT inputs. Each of these currents is used as an input into a single phase wattmeter element, along with the corresponding voltage input. I₄ is an extra CT input which can be used for current monitoring only.

CAUTION: Care must be taken while testing not to apply a potential across the common terminals as this will result in damage to the SICM.



DRMCC-T2 SICM2B USER MANUAL

(CLASS 128) DRMCC / STATISTICAL METERING (VT - STAR - NEUTRAL EARTHED)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS AN (63.5V AC nom, 150 max) (O/P Internally Generated VOLTS AB)	25.6 counts/V	AI 0	0
34,35	VOLTS BN (63.5V AC nom, 150 max) (O/P Internally Generated VOLTS BC)		AI 1	1
36,37	VOLTS CN (63.5V AC nom, 150 max) (O/P Internally Generated VOLTS CA)		AI 2	2
38,39	LOAD A (5mA AC nom, 10 max)	409.6 counts/mA	AI 3	3
40,41	LOAD B (5mA AC nom, 10 max)		AI 4	4
42,43	LOAD C (5mA AC nom, 10 max)		AI 5	5
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	6
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	7
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	8
	WATTS ([Vab.la+Vcb.lc])	±1478 counts/W	(Calc)	9
	VARS ($\sqrt{3} \cdot [Vcb.lc - Vab.la]$)	±1478 counts/V.Ar	(Calc)	10

(CLASS 129) DRMCC / STATISTICAL METERING (VT - STAR - NEUTRAL EARTHED)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS AN (63.5V AC nom, 150 max) (O/P Internally Generated VOLTS AB)	25.6 counts/V	AI 0	0
34,35	VOLTS BN (63.5V AC nom, 150 max) (O/P Internally Generated VOLTS BC)		AI 1	1
36,37	VOLTS CN (63.5V AC nom, 150 max) (O/P Internally Generated VOLTS CA)		AI 2	2
38,39	LOAD A (5mA AC nom, 10 max)	409.6 counts/mA	AI 3	3
40,41	LOAD B (5mA AC nom, 10 max)		AI 4	4
42,43	LOAD C (5mA AC nom, 10 max)		AI 5	5
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	6
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	7
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	8
	WATTS ([Vab.la+Vcb.lc])	±1478 counts/W	(Calc)	9
	VARS ($\sqrt{3} \cdot [Vab.la - Vcb.lc]$)	±1478 counts/V.Ar	(Calc)	10



DRMCC-T2 SICM2B USER MANUAL

(CLASS 130) DRMCC / STATISTICAL METERING (VT - DELTA – B PHASE EARTHED)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS AB (110V AC nom, 150 max)	25.6 counts/V	AI 0	0
34,35	VOLTS CB (110V AC nom, 150 max)		AI 1	1
36,37	Not Available		AI 2	
38,39	LOAD A (5mA AC nom, 10 max)	409.6 counts/mA	AI 3	2
40,41	LOAD B (5mA AC nom, 10 max)		AI 4	3
42,43	LOAD C (5mA AC nom, 10 max)		AI 5	4
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	5
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	6
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	7
	WATTS ([Vab.la+Vcb.lc])	±1478 counts/W	(Calc)	8
	VARS ($\sqrt{3} \cdot [Vcb.lc - Vab.la]$)	±1478 counts/V.Ar	(Calc)	9

(CLASS 131) DRMCC / STATISTICAL METERING (VT - DELTA – B PHASE EARTHED)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS AB (110V AC nom, 150 max)	25.6 counts/V	AI 0	0
34,35	VOLTS CB (110V AC nom, 150 max)		AI 1	1
36,37	Not Available		AI 2	
38,39	LOAD A (5mA AC nom, 10 max)	409.6 counts/mA	AI 3	2
40,41	LOAD B (5mA AC nom, 10 max)		AI 4	3
42,43	LOAD C (5mA AC nom, 10 max)		AI 5	4
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	5
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	6
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	7
	WATTS ([Vab.la+Vcb.lc])	±1478 counts/W	(Calc)	8
	VARS ($\sqrt{3} \cdot [Vab.la - Vcb.lc]$)	±1478 counts/V.Ar	(Calc)	9



DRMCC-T2 SICM2B USER MANUAL

(CLASS 132) DRMCC / STATISTICAL METERING (VT – SINGLE PHASE TO PHASE)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS PHASE TO PHASE (V_{f_1}) (110V AC nom)	25.6 counts/V	AI 0	0
34,35	VOLTS PHASE TO PHASE (V_{f_2}) (110V AC nom)		AI 1	1
36,37	Not Available		AI 2	
38,39	LOAD (I_{f_1} PHASE) (5mA AC nom, 10 max)	409.6 counts/mA	AI 3	2
40,41	LOAD (I_{f_2} PHASE) (5mA AC nom, 10 max)		AI 4	3
42,43	LOAD (I_{f_3} PHASE) (5mA AC nom, 10 max)		AI 5	4
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	5
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	6
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	7
	WATTS ($[V_{f_1} \cdot I_{f_1} - V_{f_2} \cdot I_{f_3}]$)	±1478 counts/W	(Calc)	8
	VARS ($\sqrt{3} \cdot [-V_{f_2} \cdot I_{f_3} - V_{f_1} \cdot I_{f_1}]$)	±1478 counts/V.Ar	(Calc)	9

(CLASS 133) DRMCC / STATISTICAL METERING (VT – SINGLE PHASE TO PHASE)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS PHASE TO PHASE (V_{f_1}) (110V AC nom)	25.6 counts/V	AI 0	0
34,35	VOLTS PHASE TO PHASE (V_{f_2}) (110V AC nom)		AI 1	1
36,37	Not Available		AI 2	
38,39	LOAD (I_{f_1} PHASE) (5mA AC nom, 10 max)	409.6 counts/mA	AI 3	2
40,41	LOAD (I_{f_2} PHASE) (5mA AC nom, 10 max)		AI 4	3
42,43	LOAD (I_{f_3} PHASE) (5mA AC nom, 10 max)		AI 5	4
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	5
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	6
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	7
	WATTS ($[V_{f_1} \cdot I_{f_1} - V_{f_2} \cdot I_{f_3}]$)	±1478 counts/W	(Calc)	8
	VARS ($\sqrt{3} \cdot [V_{f_1} \cdot I_{f_1} + V_{f_2} \cdot I_{f_3}]$)	±1478 counts/V.Ar	(Calc)	9



DRMCC-T2 SICM2B USER MANUAL

(CLASS 134) DRMCC / STATISTICAL METERING (VT – SINGLE PHASE TO PHASE METH. 2)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS PHASE TO PHASE (110V AC nom, 150 max)	25.6 counts/V	AI 0	0
34,35	Not Available		AI 1	
36,37	Not Available		AI 2	
38,39	LOAD (5mA AC nom, 10 max)	409.6 counts/mA	AI 3	1
40,41	Not Available		AI 4	
42,43	Not Available		AI 5	
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	2
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	3
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	4
	WATTS $(\sqrt{((\sqrt{3} \cdot V \cdot I)^2 - (\sqrt{3} \cdot v \cdot I)^2)})$	±1478 counts/W	(Calc)	5
	VARS ($\sqrt{3} \cdot V \cdot I$)	±1478 counts/V.Ar	(Calc)	6

(CLASS 135) DRMCC / STATISTICAL METERING (VT – SINGLE PHASE TO NEUTRAL)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS PHASE TO NEUTRAL (63.5V AC nom, 150 max) (O/P Internally generated phase to phase VOLTS)	25.6 counts/V	AI 0	0
34,35	Not Available		AI 1	
36,37	Not Available		AI 2	
38,39	LOAD (5mA AC nom, 10 max)	409.6 counts/mA	AI 3	1
40,41	Not Available		AI 4	
42,43	Not Available		AI 5	
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	2
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	3
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	4
	WATTS (3.V.I)	±1478 counts/W	(Calc)	5
	VARS $(\sqrt{((3 \cdot V \cdot I)^2 - (3 \cdot v \cdot I)^2)})$	±1478 counts/V.Ar	(Calc)	6

(CLASS 136) DRMCC / STATISTICAL METERING (CIRC. CURRENT TYPE WITH TRANSD.)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS 1 (150V max)		AI 0	0
34,35	VOLTS 2 (150V max)	25.6 counts/V	AI 1	1
36,37	VOLTS 3 (150V max)		AI 2	2
38,39	LOAD 1 (10mA max)		AI 3	3
40,41	LOAD 2 (10mA max)	409.6 counts/mA	AI 4	4
42,43	LOAD 3 (10mA max)		AI 5	5
44,45	TRANSDUCER (0-10mA DC nom)	409.6 counts/mA	AI 6	6
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	7
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	8
	WATTS 1 ($V_1 \cdot I_1$)	±2560 counts/W	(Calc)	9
	VARS 1 ($\sqrt{(V_1 \cdot I_1)^2 - (V_1 \cdot I_1)^2}$)	±2560 counts/V.Ar	(Calc)	10
	WATTS 2 ($V_2 \cdot I_2$)	±2560 counts/W	(Calc)	11
	VARS 2 ($\sqrt{(V_2 \cdot I_2)^2 - (V_2 \cdot I_2)^2}$)	±2560 counts/V.Ar	(Calc)	12
	WATTS 3 ($V_3 \cdot I_3$)	±2560 counts/W	(Calc)	13
	VARS 3 ($\sqrt{(V_3 \cdot I_3)^2 - (V_3 \cdot I_3)^2}$)	±2560 counts/V.Ar	(Calc)	14

(CLASS 137) DRMCC / STATISTICAL METERING (CIRC. CURRENT TYPE WITH EXTRA CT)

Terminal Number	Analogues		I/O Posn	DNP Pt
32,33	VOLTS 1 (150V max)		AI 0	0
34,35	VOLTS 2 (150V max)	25.6 counts/V	AI 1	1
36,37	VOLTS 3 (150V max)		AI 2	2
38,39	LOAD 1 (10mA max)		AI 3	3
40,41	LOAD 2 (10mA max)	409.6 counts/mA	AI 4	4
42,43	LOAD 3 (10mA max)		AI 5	5
44,45	LOAD 4 (10mA max)	409.6 counts/mA	AI 6	6
	SICM TEMP (-40 to +110°C)	±10 counts/°C	AI 7	7
	FREQUENCY (46-86.95Hz, 0 counts = 46Hz)	100 counts/Hz	(Calc)	8
	WATTS 1 ($V_1 \cdot I_1$)	±2560 counts/W	(Calc)	9
	VARS 1 ($\sqrt{(V_1 \cdot I_1)^2 - (V_1 \cdot I_1)^2}$)	±2560 counts/V.Ar	(Calc)	10
	WATTS 2 ($V_2 \cdot I_2$)	±2560 counts/W	(Calc)	11
	VARS 2 ($\sqrt{(V_2 \cdot I_2)^2 - (V_2 \cdot I_2)^2}$)	±2560 counts/V.Ar	(Calc)	12
	WATTS 3 ($V_3 \cdot I_3$)	±2560 counts/W	(Calc)	13
	VARS 3 ($\sqrt{(V_3 \cdot I_3)^2 - (V_3 \cdot I_3)^2}$)	±2560 counts/V.Ar	(Calc)	14

DIGITAL INPUTS

Terminal Number	Alarm Name	DNP Pt
+1,-2	Miscellaneous Input	0
+3,-4	Miscellaneous Input	1
+5,-6	Miscellaneous Input	2
+7,-8	Miscellaneous Input	3
+9,-10	Miscellaneous Input	4
+11,-12	Miscellaneous Input	5
+13,-14	Miscellaneous Input	6
+15,-16	Miscellaneous Input	7
+17,-18,-19	Miscellaneous Input	8
+22,-20	Miscellaneous Input	9
+47,-48,-49	Miscellaneous Input	10
+50,-51	Miscellaneous Input	11
+52,-53	Miscellaneous Input	12
+54,-55	Miscellaneous Input	13
+56,-57	Miscellaneous Input	14
+58,-59	Miscellaneous Input	15

DIGITAL OUTPUTS

Terminal Number			Name	DNP Pt (Note)
NO	NC	COM		
70	71	72	REL 1	1
73	74	75	REL 2	2
76	77	78	REL 3	3
79	80	81	REL 4	4
82	83	84	REL 5	5
85	86	87	REL 6	6
88	89	90	REL 7	7
91	92	93	REL 8	8
94			24V DC Supply (+ve)	
95			24V DC Supply (-ve)	

Notes:

DNP Points vary between SICM2B and SICM3B. This table specifically applies to SICM2B.