
2316 SERIAL CONTROL INTERFACE

CONTENTS

1	APPLICATION	3
2	SPECIFICATION	4
	Functional	4
	Performance	4
	Power Required	4
	General	4
	Connectors	4
3	GENERAL DESCRIPTION	5
	Control Processor (2317)	5
	Inputs/Outputs	6
	Configuration Dil Switches	6
	Indications	6
	Power	6
4	INSTALLATION	7
	Mechanical	7
	Link Settings	7
	PL2-PL7 and PL10 Port 1 RS485/RS232 Select	7
	PL8 and PL9 EPROM Select	7
	Switches	8
	Card Pinouts	9
	Termination Panel 6184 Connector Pinouts	10
	PL1-PL4 Connector Pinout	10
	SK1 Connector Pinout	11
	SK2 Connector Pinout	11
	6830 Control	11
	6248 Control	11

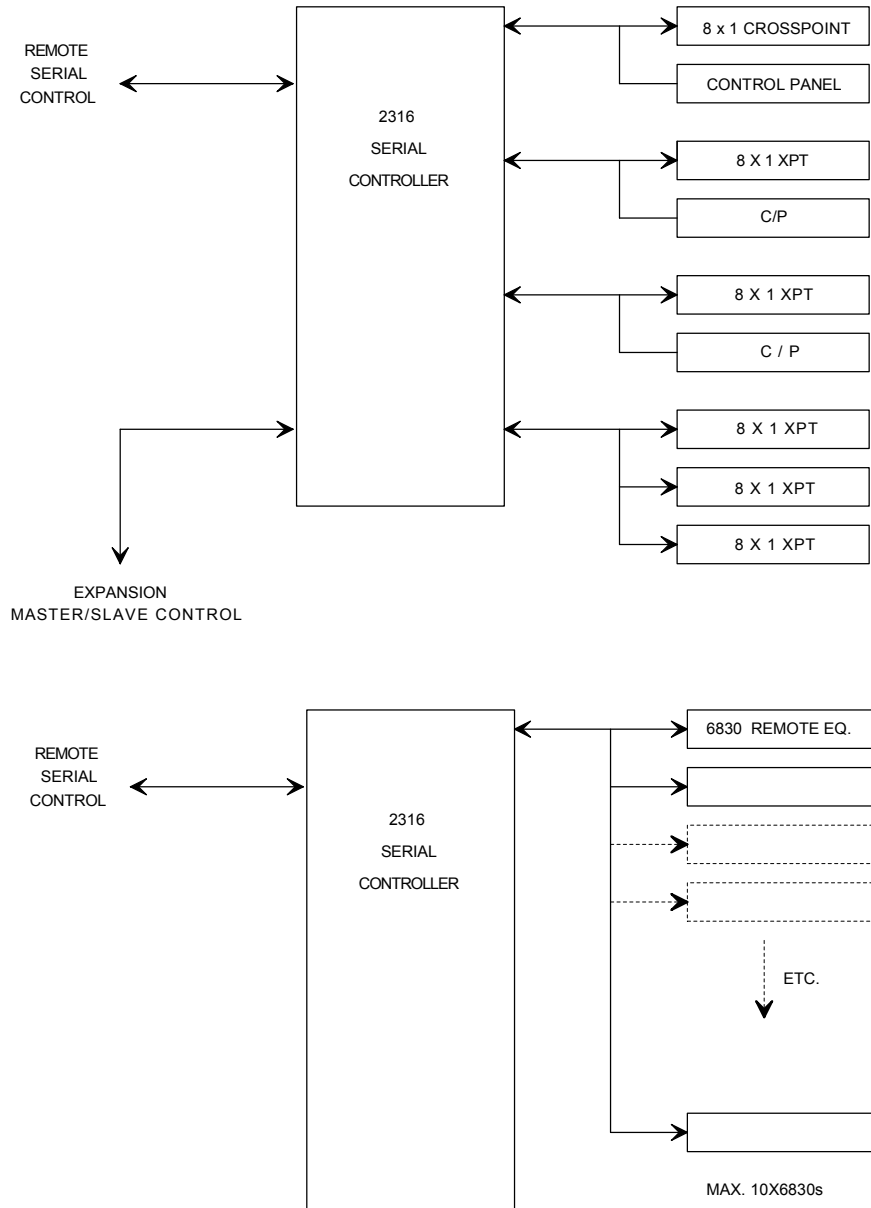
MODULE HANDBOOKS INCLUDED

2317

16x4 Switcher - Control Processor Module

1 APPLICATION

The 2316 is a serial controller for use with our Modular Products range to provide an interface between RS485/RS232 control and parallel controlled modules.



TYPICAL APPLICATIONS

2 SPECIFICATION

Functional	Serial ports:	1 x RS232 or RS485 (DTE) remote
	Parallel:	32 I/O lines in 4 groups of 8
	Indications:	8 diagnostic LEDs 1 green LED for +5V
	Links:	PL2 - PL7 and PL10 port 1 RS485/RS232 select PL8 and PL9 EPROM select (2317)
	Switches:	SW2, SW3 and SW4 configuration switch SW1 reset
Performance	Communications speed:	Baud rate: 2.4, 4.8, 9.6, 38.4k
Powered Required		14-0-14V a.c. or 15-0-15V to 20-0-20V d.c. @ 125mA approx.
General	Board size:	100mm x 220mm Eurocard
	Weight:	250g approx.
	Temperature range:	
	Operating:	0 °C to +50 °C
Storage:	-10 °C to +70 °C	
Connectors	Card edge:	DIN41612 type B 64 way plug

3 GENERAL DESCRIPTION

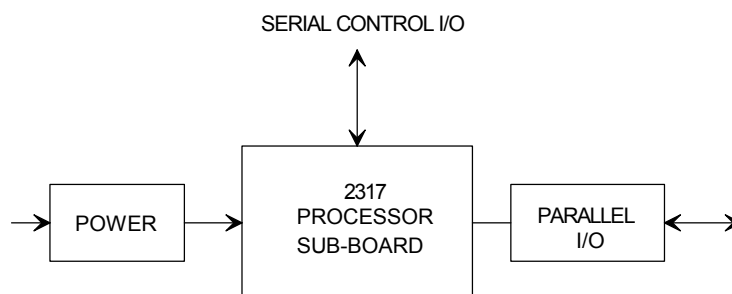
The module comprises of the following main blocks:-

- 2317 Control processor
- Inputs/outputs
- Indication LEDs
- Configuration DIL switches
- Power

The 2316 is an interface card for use between RS485 or RS232 based control systems and button per crosspoint controlled switchers and control panels.

Two serial data ports are provided, one for system communication and the other for master/slave expansion to a second 2316. In addition the card supports 32 control lines, arranged in 4 groups of 8, for selecting crosspoints on button per crosspoint controlled 8 x 1 switcher modules and reading back tallies.

The rear termination panel 6184 provides easy connection to the 2316 module when mounted in a 3U frame.



INTERNAL BLOCK DIAGRAM

Control Processor (2317)

The 2317 is a complete self contained 68HC11 based microprocessor. Its operation is detailed in its own handbook.

Inputs/Outputs

The module provides 32 output control lines in 4 groups of 8 for setting crosspoints and reading back tallies.

The octal latches IC5, 7, 13 and 15 together with the darlington drivers IC11, 12, 17 and 18 pass crosspoint selection pulses to the control lines enabling crosspoint settings to be latched on and by the crosspoint cards.

Crosspoint settings on switcher modules can be read by the control processor via tri-state buffers IC6, 8, 14 and 16 on the data bus.

The 32 I/O lines are wired in groups of 8 to 4, 15 way 'D' type connectors at the rear of the termination panel (6184), allowing up to 4 groups of 8x1 crosspoint cards to be controlled via single 2316. Each port can control up to three modules when all select lines are wired in parallel to allow married control eg. video + 2 audio 8x1 (see example in 'APPLICATIONS')

To simplify interconnection wiring when more than one crosspoint card is used the battery supply (BATTSUP) and frame trigger (FTLOGIC) pins of the 4, 15 way 'D' connectors are each commoned on the rear termination panel.

Configuration DIL Switches

Configuration DIL switches SW2, SW3 and SW4 provide the selection of the following:-

- Baud rate
- Protocol
- Test modes
- Switcher configuration

This is achieved by setting lines PD2 to PD5 and PE0 to PE7 on the microprocessor (2317) to either logic 1 or 0. Resistor networks RN1 and RN2 pull the lines up to +5V when the switches are open circuit.

Indications

Power is indicated by green LED D9. D10 and D11 are software driven 4 red LED arrays used for diagnostic purposes whose use is detailed in the software handbook.

Power

The card can be powered using low voltage a.c. or d.c. supplies which are rectified, smoothed and regulated on board.

During power interruption an on-board battery ensures that the 2317 sub-board RAM retains selections.

The dual power inputs are wired via fuseable resistors FS1 - FS4 to 2 pairs of rectifying diodes D1 - D4, wired in parallel which allows 2 independent sources to supply the card. In the event of loss of power to one the other will power the card. IC2 provides a regulated +5V d.c. output and D9 a 'power good' LED.

Diodes D12 and D13 are connected to +5V and the incoming lamp supply (LAMPSUP) respectively, allowing the outputs of IC11, 12, 17 and 18 to be pulled up to +5V or the external lamp supply voltage if higher.

4 INSTALLATION



WARNING: This module contains static sensitive components and full anti-static precautions should be taken when handling it.

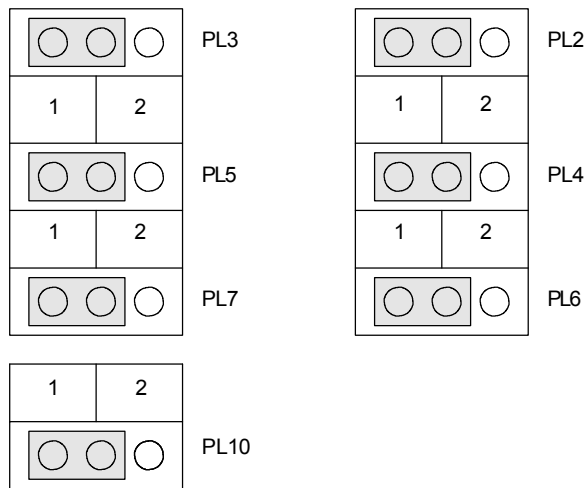
Mechanical

This module is removed and replaced with the system powered or unpowered using card ejectors. When replacing cards care should be taken to push them fully home.

Link Settings

PL2-PL7 and PL10 Port 1 RS485/RS232 Select

PL2 - PL7 and PL10 select between RS485 and RS232 for port 1.

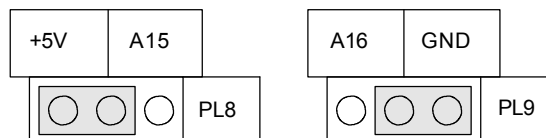


1	2	PORT 1 (DTE)
RS232	RS485	

LINKS SHOWN SET FOR RS232 (1)

PL8 And PL9 EPROM Select

PL8 and PL9 allow the choice of EPROM used on the 2317 sub-board.



LINKS SHOWN SET FOR 27256 EPROM

Switches

For all configurations of the 2316 defined in this section, jumper PL5 located on the 2317 sub-module must be set in the 'NORM' position.

Located on the front edge of the 2316 module are 12 DIL switches arranged in 3 groups of 4, SW2, SW3 and SW4. The following table defines the functions of each of the DIL switches.

SWITCH NO	FUNCTION
SW2-1	Master/Slave Selection (OFF = Master)
SW2-2	Comms Protocol Selection (OFF = General Switcher Protocol)
SW2-3 - SW2-4	Baud Rate Selection (see table below)
SW3-1 - SW3-4 SW4-1 - SW4-2	Switcher Configuration (see table below)
SW4-3 - SW4-4	Slave Block Number Selection (see table below)

BAUD RATE SELECTION

BAUD RATE	SWITCH SW2-3	SWITCH SW2-4
2400	OFF	OFF
4800	ON	OFF
9600	OFF	ON
38,4K	ON	ON

SWITCHER CONFIGURATION

MODE NO	SWITCH CONFIGURATION						NO. of O/Ps	NO. of I/Ps	CONFIGURATION OF CROSSPOINTS
	SW3-1	SW3-2	SW3-3	SW3-4	SW4-1	SW4-2			
0	OFF	OFF	OFF	OFF	OFF	OFF	4	8	4 of 8x1
1	ON	OFF	OFF	OFF	OFF	OFF	3	16	2 of 8x1 + 1 of 16x1
2	OFF	ON	OFF	OFF	OFF	OFF	2	16	2 of 16x1
3	ON	ON	OFF	OFF	OFF	OFF	2	24	1 of 8x1 + 1 of 24x1
4	OFF	OFF	ON	OFF	OFF	OFF	1	32	1 of 32x1 (Dest. expansion)
5	ON	OFF	ON	OFF	OFF	OFF	1	32	1 of 32x1 (Source expansion)
8	OFF	OFF	OFF	ON	OFF	OFF	12	2	4 of triple 2x1 (6132)
16	OFF	OFF	OFF	OFF	ON	OFF	60	256	6830 Bode Equaliser

Notes:

- All other switch positions select mode 0.
- A slave 2316 must be in the same mode as the master 2316.
- The 'NO. OF O/Ps' column defines the number of outputs per 2316, thus when a slave 2316 is used the number of outputs that can be controlled is doubled.

SLAVE BLOCK NUMBER SELECTION

SLAVE NO	SW4-3	SW4-4	FUNCTION
0	OFF	OFF	Sources 33-64 or 2nd Destination range
1	ON	OFF	Sources 65-96 or 3rd Destination range
2	OFF	ON	Sources 97-128 or 4th Destination range
3	ON	ON	Not used

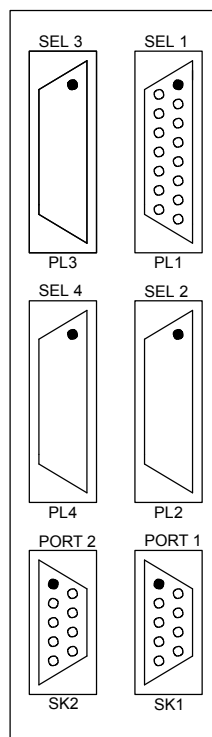
Notes:

- Only 1 slave 2316 can be connected to a master 2316
- Normally the slave block number should be set to 0, but other block numbers can be used if holes are required in the switcher
- These switches are ignored if a master 2316.

Card Pinouts

PIN NO	FUNCTION		PIN NO
	ROW B	ROW A	
1	SELECT 3-1	SELECT 1-1	1
2	SELECT 3-2	SELECT 1-2	2
3	SELECT 3-3	SELECT 1-3	3
4	SELECT 3-4	SELECT 1-4	4
5	SELECT 3-5	SELECT 1-5	5
6	SELECT 3-6	SELECT 1-6	6
7	SELECT 3-7	SELECT 1-7	7
8	SELECT 3-8	SELECT 1-8	8
9	GND	GND	9
10	GND	GND	10
11	SELECT 4-1	SELECT 2-1	11
12	SELECT 4-2	SELECT 2-2	12
13	SELECT 4-3	SELECT 2-3	13
14	SELECT 4-4	SELECT 2-4	14
15	SELECT 4-5	SELECT 2-5	15
16	SELECT 4-6	SELECT 2-6	16
17	SELECT 4-7	SELECT 2-7	17
18	SELECT 4-8	SELECT 2-8	18
19	GND	GND	19
20	N/C	LAMPSUP	20
21	AC1/DC1+	AC1/DC1+	21
22	AC1/DC 1-	AC1/DC1-	22
23	GND	GND	23
24	GND	GND	24
25	AC2/DC2+	AC2/DC2+	25
26	AC2/DC 2-	AC2/DC2-	26
27	RX2-	TX1-/TX	27
28	TX2+	RX1+/RX	28
29	RX2+	TX1+/N/C	29
30	TX2-	RX1-/N/C	30
31	GND (RS232)	GND (RS485)	31
32	CHASSIS	CHASSIS (RS232)	32

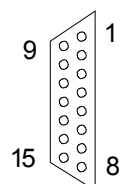
Termination Panel 6184 Connector Pinout



PL1-PL4 Connector Pinout

Parallel control interface, 15 way "D" type plug.

PIN	FUNCTION	PIN	FUNCTION
1	$\overline{\text{SEL 1}}$	9	N/C
2	$\overline{\text{SEL 2}}$	10	BATTSUP
3	$\overline{\text{SEL 3}}$	11	N/C
4	$\overline{\text{SEL 4}}$	12	FTLOGIC
5	$\overline{\text{SEL 5}}$	13	LAMP SUP
6	$\overline{\text{SEL 6}}$	14	GND
7	$\overline{\text{SEL 7}}$	15	CHASSIS
8	$\overline{\text{SEL 8}}$		



SK1 Connector Pinout

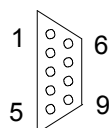
Selectable RS485/RS232 serial control interface (DTE) 9 way 'D' type socket

PIN NO	FUNCTION		PIN NO
	RS485	RS232	
1	CHASSIS	N/C	1
2	TX-	RX	2
3	RX+	TX	3
4	GND	N/C	4
5	N/C	CHASSIS	5
6	GND	N/C	6
7	TX+	N/C	7
8	RX-	N/C	8
9	CHASSIS	N/C	9

SK2 Connector Pinout

Expansion RS485 serial control interface (DCE) 9 way 'D' type socket.

PIN NO	FUNCTION
1	CHASSIS
2	RX-
3	TX+
4	GND
5	N/C
6	GND
7	RX+
8	TX-
9	CHASSIS



6830 Control

See 6830 handbook for details of 6830 configuration and connections.

6248 Control

See 6248 handbook for details of 6248 configuration and connections.

This page intentionally left blank