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ASCOR INCORPORATED
AGiga-tronicsCompany

# Model 3000-535

## 8 CHANNEL PROGRAMMABLE SERIAL INTERFACE

**REVISION B**
**4/29/03**

07500535

Technical Manual

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# MODEL 3000-535

## Overview

This section provides information specific to the Model 3000-535
8 channel Reconfigurable serial interface card assembly (Module).

## Description

The card contains eight serial data interface channels, each of which can be reconfigurable at any time independent of the other channels. Each interface Consists of data, clock, and hand-shake signals 'word' and 'frame'.
Depending on the configuration, data direction may be in or out, and the clock, word, and frame signals may or may not be employed.

Each channel consists of an FPGA and 32K by 32 wide ram for storing incoming or outgoing data. The 32k buffer is divided into 3 regions:
Buffer "A" (8k, beginning of 32k buffer), Buffer "B"(8k, second section of 32k buffer), and the Fill Buffer (4K, after Buffer "B").
The data is programmable in number of bits per word, number of words per frame.

Each channel can generate interrupts, An Interrupt can be generated at the end of every Buffer. Each card supplies a 32-bit status register, which is
Readable at any time. Eight bits are reserved for each of the four channels
On the card. A bit found set represents an interrupt condition.

There are five FPGA devices on the 535 card, one for each of the four channels, and one for the data rate clk generation. The configuration data for the FPGA devices is stored in a flash memory. The flash memory has eight partitions (or mode) of a serial channel, the appropriate flash partition must be erased, a new personality file written to that position, and then user software commands the card to reconfigure that FPGA. The process just described takes a few seconds. All FPGA devices are reloaded from the flash memory at power-up, system reset, or when commanded to under software control.

**Features**

- Eight Serial Channels.
- Each channel can be configured to a new personality in seconds.
- Supports a wide variety of serial communications such as clock/ Data/enable, and Manchester data stream.
- Data rates up to 10M bits per second.
- All serial port signals are differential (RS422), and duplicate or redundant signals are supplied.

Dependent on the configuration, data direction may be in or out, and the clock, word and frame signals may or may not be employed.

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## Relays

There are a total of Sixteen relays on ea. Daughter board that allow the switching between the four channel outputs.

Relay K7 switches between channel J1 and J2 Clock Primary.
Relay K6 switches between channel J1 and J2 Clock Redundant
Relay K8 switches between channel J1 and J2 Data Primary.
Relay K5 switches between channel J1 and J2 Data Redundant.
Relay K1 switches between channel J1 and J2 Word Primary.
Relay K3 switches between channel J1 and J2 Word Redundant.
Relay K2 switches between channel J1 and J2 Frame Primary.
Relay K4 switches between channel J1 and J2 Frame Redundant.
Relay K15 switches between channel J3 and J4 Clock Primary.
Relay K14 switches between channel J3 and J4 Clock Redundant.
Relay K16 switches between channel J3 and J4 Data Primary.
Relay K13 switches between channel J3 and J4 Data Redundant.
Relay K9 switches between channel J3 and J4 word Primary.
Relay K11 switches between channel J3 and J4 word Redundant.
Relay K10 switches between channel J3 and J4 frame Primary.
Relay K12 switches between channel J3 and J4 frame Redundant.

Two Control bits, one control bit from ch. #1 to turn on the first eight
(K8 – K1) relays.
The other bit (ch #3) is for turning on relays (K15 – K9).

Note:-
Channel J1 = FPGA #1.
Channel J2 = FPGA #2.
Channel J3 = FPGA #3.
Channel J4 = FPGA #4.

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# INTERNAL JUMPERS

J5 ( Schematic 85004590 or 85004590-001 - Page 1 )

Determines whether certain pins on the front panel connectors are connected to Digital Ground (DGND) or to Chassis Ground
J5-1 to J5-2 = DGND : J5-1 to J5-3 = Chassis Ground
Normal factory setting is to connect to DGND

J6 ( Schematic 85004590 or 85004590-001 - Page 3 )

Normal factory settings:
For Assembly 85004590 : J6-1 to J6-2
For Assembly 85004590-001 : J6-2 to J6-3

J7 ( Schematic 85004590 or 85004590-001 - Page 2 )

This connector provides a path to programmable IC U11. This device is programmed at the factory with the Model number, Serial Number, etc and repair information concerning this particular module.
No jumpers are used on this connector.

# DOCUMENTATION

Schematic 85004590 is common to both assembly 85004590 and 85004590-001.

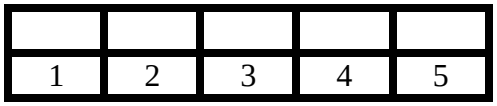
Front panel connectors J1 , J2 , J3 and J4 correspond directly to schematic 85004590.

Front panel connector J5 would correspond to connector J1 on the schematic.
Front panel connector J6 would correspond to connector J2 on the schematic.
Front panel connector J7 would correspond to connector J3 on the schematic.
Front panel connector J8 would correspond to connector J3 on the schematic.

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# Switch SW200 - DETERMINES INTERRUPT LEVEL

SWITCH OPEN = TOWARD PCB EDGE




**PCB EDGE**

( SEE SCHEMATIC 85004580 , SHEET 4 )

When SW5= OFF : permits the automatic configuring of the Xilinx FPGA devices at power up.
When SW5= ON : used by factory technicians when troubleshooting the hardware.

SW1 = BIT0
SW2 = BIT1
SW3 = BIT2
SW4 = SFTCNT

When SW4= OFF : bits 2-4 of A16 register 0x3E are used to determine the VXI IRQ number
When SW4 = ON : dip-switch positions SW1-SW3 determine the IRQ number.

OFF = SWITCH OPEN
ON = SWITCH CLOSED

| SW3 | SW2 | SW1 | INTERRUPT LEVEL |
|---|---|---|---|
| OFF | OFF | OFF | **NO INTERRUPT** |
| OFF | OFF | ON | LEVEL 1 |
| OFF | ON | OFF | LEVEL 2 |
| OFF | ON | ON | LEVEL 3 |
| ON | OFF | OFF | LEVEL 4 |
| ON | OFF | ON | LEVEL 5 |
| ON | ON | OFF | LEVEL 6 |
| ON | ON | ON | LEVEL 7 |

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# MODEL 3000-535

# PRODUCT WARRENTY

Your ASCOR VXI module comes with a 3 year limited warranty. ASCOR warranty obligations are described by and limited to the terms set forth below and apply only in the United States of America. ASCOR warrants this VXI module against defect in material and workmanship for a period of three (3) years from the date of purchase from ASCOR or an authorized ASCOR agent. This warranty applies only to the original purchaser of the VXI module and is not transferable unless authorized in writing by ASCOR in advance of such transfer. This warranty does not cover any incompatibilities due to the user's test environment, hardware, software or any other related system configuration in which the ASCOR VXI module interfaces. Proof of purchase will be required BEFORE any warranty consideration by ASCOR occurs. This warranty does not cover any damage caused by negligence, non-authorized modifications, or parts installed or removed without prior written permission from ASCOR.

This warranty does not apply if the VXI module has been damaged by accident, abuse, misuse, or misapplication, or as a result of service to the product by anyone other than ASCOR or an authorized ASCOR representative. ASCOR VXI products are not designed for or permitted to be used in on-line control systems in hazardous environments such as operation of nuclear facilities, aircraft navigation or control or direct life support. If you use the ASCOR products in such hazardous environments, this warranty is immediately null and void.

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# MODEL 3000-535

## J1

| SIGNAL NAME | SCHEMATIC PIN NUMBERS | CONNECTOR PIN NUMBERS |
|---|---|---|
| RCI1+ | 1 | A |
| RCO1+ | 2 | B |
| PCI1+ | 3 | C |
| PCO1+ | 4 | D |
| RCI1- | 5 | E |
| RCO1- | 6 | F |
| PCI1- | 7 | H |
| PCO1- | 8 | J |
| (1) | 9 | K |
| (1) | 10 | L |
| (1) | 11 | M |
| (1) | 12 | N |
| RDI1+ | 13 | P |
| RDO1+ | 14 | R |
| PDI1+ | 15 | S |
| PDO1+ | 16 | T |
| RDI1- | 17 | U |
| RDO1- | 18 | V |
| PDI1- | 19 | W |
| PDO1- | 20 | X |
| (1) | 21 | Y |
| (1) | 22 | Z |
| (1) | 23 | a |
| (1) | 24 | b |
| RWI1+ | 25 | c |
| RWO1+ | 26 | d |
| PWI1+ | 27 | e |
| PWO1+ | 28 | f |
| RWI1- | 29 | h |
| RWO1- | 30 | j |
| PWI1- | 31 | k |
| PWO1- | 32 | m |
| (1) | 33 | n |
| (1) | 34 | p |
| (1) | 35 | r |
| (1) | 36 | s |
| RFI1+ | 37 | t |
| RFO1+ | 38 | u |
| PFI1+ | 39 | v |
| PFO1+ | 40 | w |
| RFI1- | 41 | x |
| RFO1- | 42 | y |
| PFI1- | 43 | z |
| PFO1- | 44 | AA |
| (1) | 45 | BB |
| (1) | 46 | CC |
| (1) | 47 | DD |
| (1) | 48 | EE |
| PEO- ( 1-4 ) | 49 | FF |
| PEO+ ( 1-4 ) | 50 | HH |

(1) Digital Ground (DGND) or Chassis Ground. Factory set to DGND. See Schematic 85004590, page 1.

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# MODEL 3000-535

## J2

| SIGNAL NAME | SCHEMATIC PIN NUMBERS | CONNECTOR PIN NUMBERS |
|---|---|---|
| RCI2+ | 1 | A |
| RCO2+ | 2 | B |
| PCI2+ | 3 | C |
| PCO2+ | 4 | D |
| RCI2- | 5 | E |
| RCO2- | 6 | F |
| PCI2- | 7 | H |
| PCO2- | 8 | J |
| (1) | 9 | K |
| (1) | 10 | L |
| (1) | 11 | M |
| (1) | 12 | N |
| RDI2+ | 13 | P |
| RDO2+ | 14 | R |
| PDI2+ | 15 | S |
| PDO2+ | 16 | T |
| RDI2- | 17 | U |
| RDO2- | 18 | V |
| PDI2- | 19 | W |
| PDO2- | 20 | X |
| (1) | 21 | Y |
| (1) | 22 | Z |
| (1) | 23 | a |
| (1) | 24 | b |
| RWI2+ | 25 | c |
| RWO2+ | 26 | d |
| PWI2+ | 27 | e |
| PWO2+ | 28 | f |
| RWI2- | 29 | h |
| RWO2- | 30 | j |
| PWI2- | 31 | k |
| PWO2- | 32 | m |
| (1) | 33 | n |
| (1) | 34 | p |
| (1) | 35 | r |
| (1) | 36 | s |
| RFI2+ | 37 | t |
| RFO2+ | 38 | u |
| PFI2+ | 39 | v |
| PFO2+ | 40 | w |
| RFI2- | 41 | x |
| RFO2- | 42 | y |
| PFI2- | 43 | z |
| PFO2- | 44 | AA |
| (1) | 45 | BB |
| (1) | 46 | CC |
| (1) | 47 | DD |
| (1) | 48 | EE |
| REO- ( 1-4 ) | 49 | FF |
| REO+ ( 1-4 ) | 50 | HH |

(1) Digital Ground (DGND) or Chassis Ground. Factory set to DGND. See Schematic 85004590, page 1.

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# MODEL 3000-535

## J3

| SIGNAL NAME | SCHEMATIC PIN NUMBERS | CONNECTOR PIN NUMBERS |
|---|---|---|
| RCI3+ | 1 | A |
| RCO3+ | 2 | B |
| PCI3+ | 3 | C |
| PCO3+ | 4 | D |
| RCI3- | 5 | E |
| RCO3- | 6 | F |
| PCI3- | 7 | H |
| PCO3- | 8 | J |
| (1) | 9 | K |
| (1) | 10 | L |
| (1) | 11 | M |
| (1) | 12 | N |
| RDI3+ | 13 | P |
| RDO3+ | 14 | R |
| PDI3+ | 15 | S |
| PDO3+ | 16 | T |
| RDI3- | 17 | U |
| RDO3- | 18 | V |
| PDI3- | 19 | W |
| PDO3- | 20 | X |
| (1) | 21 | Y |
| (1) | 22 | Z |
| (1) | 23 | a |
| (1) | 24 | b |
| RWI3+ | 25 | c |
| RWO3+ | 26 | d |
| PWI3+ | 27 | e |
| PWO3+ | 28 | f |
| RWI3- | 29 | h |
| RWO3- | 30 | j |
| PWI3- | 31 | k |
| PWO3- | 32 | m |
| (1) | 33 | n |
| (1) | 34 | p |
| (1) | 35 | r |
| (1) | 36 | s |
| RFI3+ | 37 | t |
| RFO3+ | 38 | u |
| PFI3+ | 39 | v |
| PFO3+ | 40 | w |
| RFI3- | 41 | x |
| RFO3- | 42 | y |
| PFI3- | 43 | z |
| PFO3- | 44 | AA |
| (1) | 45 | BB |
| (1) | 46 | CC |
| (1) | 47 | DD |
| (1) | 48 | EE |
| PEI- ( 1-4 ) | 49 | FF |
| PEI+ ( 1-4) | 50 | HH |

(1) Digital Ground (DGND) or Chassis Ground. Factory set to DGND. See Schematic 85004590, page 1.

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# MODEL 3000-535

## J4

| SIGNAL NAME | SCHEMATIC PIN NUMBERS | CONNECTOR PIN NUMBERS |
|---|---|---|
| RCI4+ | 1 | A |
| RCO4+ | 2 | B |
| PCI4+ | 3 | C |
| PCO4+ | 4 | D |
| RCI4- | 5 | E |
| RCO4- | 6 | F |
| PCI4- | 7 | H |
| PCO4- | 8 | J |
| (1) | 9 | K |
| (1) | 10 | L |
| (1) | 11 | M |
| (1) | 12 | N |
| RDI4+ | 13 | P |
| RDO4+ | 14 | R |
| PDI4+ | 15 | S |
| PDO4+ | 16 | T |
| RDI4- | 17 | U |
| RDO4- | 18 | V |
| PDI4- | 19 | W |
| PDO4- | 20 | X |
| (1) | 21 | Y |
| (1) | 22 | Z |
| (1) | 23 | a |
| (1) | 24 | b |
| RWI4+ | 25 | c |
| RWO4+ | 26 | d |
| PWI4+ | 27 | e |
| PWO4+ | 28 | f |
| RWI4- | 29 | h |
| RWO4- | 30 | j |
| PWI4- | 31 | k |
| PWO4- | 32 | m |
| (1) | 33 | n |
| (1) | 34 | p |
| (1) | 35 | r |
| (1) | 36 | s |
| RFI4+ | 37 | t |
| RFO4+ | 38 | u |
| PFI4+ | 39 | v |
| PFO4+ | 40 | w |
| RFI4- | 41 | x |
| RFO4- | 42 | y |
| PFI4- | 43 | z |
| PFO4- | 44 | AA |
| (1) | 45 | BB |
| (1) | 46 | CC |
| (1) | 47 | DD |
| (1) | 48 | EE |
| REI- ( 1-4 ) | 49 | FF |
| REI+ ( 1-4 ) | 50 | HH |

(1) Digital Ground (DGND) or Chassis Ground. Factory set to DGND. See Schematic 85004590, page 1.

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# MODEL 3000-535

## J5

| SIGNAL NAME | SCHEMATIC PIN NUMBERS | CONNECTOR PIN NUMBERS |
|---|---|---|
| RCI5+ | 1 | A |
| RCO5+ | 2 | B |
| PCI5+ | 3 | C |
| PCO5+ | 4 | D |
| RCI5- | 5 | E |
| RCO5- | 6 | F |
| PCI5- | 7 | H |
| PCO5- | 8 | J |
| (1) | 9 | K |
| (1) | 10 | L |
| (1) | 11 | M |
| (1) | 12 | N |
| RDI5+ | 13 | P |
| RDO5+ | 14 | R |
| PDI5+ | 15 | S |
| PDO5+ | 16 | T |
| RDI5- | 17 | U |
| RDO5- | 18 | V |
| PDI5- | 19 | W |
| PDO5- | 20 | X |
| (1) | 21 | Y |
| (1) | 22 | Z |
| (1) | 23 | a |
| (1) | 24 | b |
| RWI5+ | 25 | c |
| RWO5+ | 26 | d |
| PWI5+ | 27 | e |
| PWO5+ | 28 | f |
| RWI5- | 29 | h |
| RWO5- | 30 | j |
| PWI5- | 31 | k |
| PWO5- | 32 | m |
| (1) | 33 | n |
| (1) | 34 | p |
| (1) | 35 | r |
| (1) | 36 | s |
| RFI5+ | 37 | t |
| RFO5+ | 38 | u |
| PFI5+ | 39 | v |
| PFO5+ | 40 | w |
| RFI5- | 41 | x |
| RFO5- | 42 | y |
| PFI5- | 43 | z |
| PFO5- | 44 | AA |
| (1) | 45 | BB |
| (1) | 46 | CC |
| (1) | 47 | DD |
| (1) | 48 | EE |
| PEO- ( 5-8 ) | 49 | FF |
| PEO+ ( 5-8 ) | 50 | HH |

(1) Digital Ground (DGND) or Chassis Ground. Factory set to DGND. See Schematic 85004590, page 1.

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# MODEL 3000-535

## J6

| SIGNAL NAME | SCHEMATIC PIN NUMBERS | CONNECTOR PIN NUMBERS |
|---|---|---|
| RCI6+ | 1 | A |
| RCO6+ | 2 | B |
| PCI6+ | 3 | C |
| PCO6+ | 4 | D |
| RCI6- | 5 | E |
| RCO6- | 6 | F |
| PCI6- | 7 | H |
| PCO6- | 8 | J |
| (1) | 9 | K |
| (1) | 10 | L |
| (1) | 11 | M |
| (1) | 12 | N |
| RDI6+ | 13 | P |
| RDO6+ | 14 | R |
| PDI6+ | 15 | S |
| PDO6+ | 16 | T |
| RDI6- | 17 | U |
| RDO6- | 18 | V |
| PDI6- | 19 | W |
| PDO6- | 20 | X |
| (1) | 21 | Y |
| (1) | 22 | Z |
| (1) | 23 | a |
| (1) | 24 | b |
| RWI6+ | 25 | c |
| RWO6+ | 26 | d |
| PWI6+ | 27 | e |
| PWO6+ | 28 | f |
| RWI6- | 29 | h |
| RWO6- | 30 | j |
| PWI6- | 31 | k |
| PWO6- | 32 | m |
| (1) | 33 | n |
| (1) | 34 | p |
| (1) | 35 | r |
| (1) | 36 | s |
| RFI6+ | 37 | t |
| RFO6+ | 38 | u |
| PFI6+ | 39 | v |
| PFO6+ | 40 | w |
| RFI6- | 41 | x |
| RFO6- | 42 | y |
| PFI6- | 43 | z |
| PFO6- | 44 | AA |
| (1) | 45 | BB |
| (1) | 46 | CC |
| (1) | 47 | DD |
| (1) | 48 | EE |
| RDO- ( 5-8 ) | 49 | FF |
| RDO+ ( 5-8 ) | 50 | HH |

(1) Digital Ground (DGND) or Chassis Ground. Factory set to DGND. See Schematic 85004590, page 1.

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# MODEL 3000-535

## J7

| SIGNAL NAME | SCHEMATIC PIN NUMBERS | CONNECTOR PIN NUMBERS |
|---|---|---|
| RCI1+ | 1 | A |
| RCO7+ | 2 | B |
| PCI7+ | 3 | C |
| PCO7+ | 4 | D |
| RCI7- | 5 | E |
| RCO7- | 6 | F |
| PCI7- | 7 | H |
| PCO7- | 8 | J |
| (1) | 9 | K |
| (1) | 10 | L |
| (1) | 11 | M |
| (1) | 12 | N |
| RDI7+ | 13 | P |
| RDO7+ | 14 | R |
| PDI7+ | 15 | S |
| PDO7+ | 16 | T |
| RDI7- | 17 | U |
| RDO7- | 18 | V |
| PDI7- | 19 | W |
| PDO7- | 20 | X |
| (1) | 21 | Y |
| (1) | 22 | Z |
| (1) | 23 | a |
| (1) | 24 | b |
| RWI7+ | 25 | c |
| RWO7+ | 26 | d |
| PWI7+ | 27 | e |
| PWO7+ | 28 | f |
| RWI7- | 29 | h |
| RWO7- | 30 | j |
| PWI7- | 31 | k |
| PWO7- | 32 | m |
| (1) | 33 | n |
| (1) | 34 | p |
| (1) | 35 | r |
| (1) | 36 | s |
| RFI7+ | 37 | t |
| RFO7+ | 38 | u |
| PFI7+ | 39 | v |
| PFO7+ | 40 | w |
| RFI7- | 41 | x |
| RFO7- | 42 | y |
| PFI7- | 43 | z |
| PFO7- | 44 | AA |
| (1) | 45 | BB |
| (1) | 46 | CC |
| (1) | 47 | DD |
| (1) | 48 | EE |
| PEI- ( 5-8 ) | 49 | FF |
| PEI+ ( 5-8 ) | 50 | HH |

(1) Digital Ground (DGND) or Chassis Ground. Factory set to DGND. See Schematic 85004590, page 1.

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# MODEL 3000-535

## J8

| SIGNAL NAME | SCHEMATIC PIN NUMBERS | CONNECTOR PIN NUMBERS |
|---|---|---|
| RCI8+ | 1 | A |
| RCO8+ | 2 | B |
| PCI8+ | 3 | C |
| PCO8+ | 4 | D |
| RCI8- | 5 | E |
| RCO8- | 6 | F |
| PCI8- | 7 | H |
| PCO8- | 8 | J |
| (1) | 9 | K |
| (1) | 10 | L |
| (1) | 11 | M |
| (1) | 12 | N |
| RDI8+ | 13 | P |
| RDO8+ | 14 | R |
| PDI8+ | 15 | S |
| PDO8+ | 16 | T |
| RDI8- | 17 | U |
| RDO8- | 18 | V |
| PDI8- | 19 | W |
| PDO8- | 20 | X |
| (1) | 21 | Y |
| (1) | 22 | Z |
| (1) | 23 | a |
| (1) | 24 | b |
| RWI8+ | 25 | c |
| RWO8+ | 26 | d |
| PWI8+ | 27 | e |
| PWO8+ | 28 | f |
| RWI8- | 29 | h |
| RWO8- | 30 | j |
| PWI8- | 31 | k |
| PWO8- | 32 | m |
| (1) | 33 | n |
| (1) | 34 | p |
| (1) | 35 | r |
| (1) | 36 | s |
| RFI8+ | 37 | t |
| RFO8+ | 38 | u |
| PFI8+ | 39 | v |
| PFO8+ | 40 | w |
| RFI8- | 41 | x |
| RFO8- | 42 | y |
| PFI8- | 43 | z |
| PFO8- | 44 | AA |
| (1) | 45 | BB |
| (1) | 46 | CC |
| (1) | 47 | DD |
| (1) | 48 | EE |
| REI- ( 5-8 ) | 49 | FF |
| REI+ ( 5-8 ) | 50 | HH |

(1) Digital Ground (DGND) or Chassis Ground. Factory set to DGND. See Schematic 85004590, page 1.

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# Programming

The following sections describe the operational characteristics of the 3000-535

| SECTION | FILE NAME | NUMBER OF PAGES |
|---|---|---|
| SERIAL MODULE BUS<br>REGISTERS, MODE 2000 | SERIAL MODULE BUS.DOC<br>MODE2000_REG.DOC | 6<br>3 |
| UPLINK<br>REGISTERS, UPLINK MODE | UPLINK3.DOC<br>UPLINKREGMAP.DOC | 8<br>3 |
| DOWNLINK<br>REGISTERS, MODE DOWNLINK | DOWNLINK1.DOC<br>DWNLNKREGMAP.DOC | 10<br>4 |
| EXTERNAL CLOCK<br>REGISTERS, EXTERNAL CLK. MODE | EXTERNAL CLOCK.DOC<br>EXTERNALCLK.DOC | 4<br>2 |
| TACHOMETER<br>TACHOMETER INTERFACE OPERATION | TACHOMETER.DOC<br>MODE2001_REG.DOC | 9<br>7 |
| RELEVANCE TIMER<br>REGISTERS, RELEVANCE_TIMER MODE | RELEVANCE TIMER.DOC<br>RELAVTIMRREG.DOC | 4<br>5 |

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# MODEL 3000-535

## MODULE ASSEMBLY & SCHEMATIC DRAWINGS

### Upper Level Assembly

| | | |
|---|---|---|
| **PL90401490** | **-** | **Parts List** |
| **Assy90401490** | **-** | **Assembly Drawing** |

### Sub-Assembly PWAs

| | | |
|---|---|---|
| **PL85004580** | **-** | **Parts List** |
| **Assy85004580** | **-** | **Assembly Drawing** |
| **Sch85004580** | **-** | **Schematic Drawing** |
| | | |
| **PL85004590** | **-** | **Parts List** |
| **Assy85004590** | **-** | **Assembly Drawing** |
| **Sch85004590** | **-** | **Schematic Drawing** |
| | | |
| **PL85004590-001** | **-** | **Parts List** |
| **Assy85004590-001** | **-** | **Assembly Drawing** |
| **Sch85004590** | **-** | **Schematic Drawing** |

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