Rockwell

PARALLEL PROCESSING SYSTEM (PPS)
APPLICATION NOTE

TDI (10371) STAND-ALONE

This application note describes the connections required to use the Telecommunications Data Interface for stand-alone serial operation. The A and B clocks required for the TDI can be easily supplied using Rockwell's Clock Generator (Part No. 10706) with control straps set for 256 KHz and using a 3.579545 MHz color TV crystal.

The TDI connections for serial operation are listed below. All unlisted pins must be left open-circuit.

Pin 06, WIO – Connect pull up of 68K to 100K ohms to VSS.

Pin 10, ACKI – Connect pull up of 68K to 100K ohms to VSS.

Pin 11, VSS – +5V Power Supply.

Pin 12, PINH – Strap to VSS (+5V).

Pin 13, BRS – Strap to VSS (+5V).

Pin 14, VDD – –12V Power Supply; decouple with 0.1 microfarad ceramic capacitor at the chip

Pin 15, CLKA – System Clock. Must be 256 KHz from PPS or 10706 clock chip

Pin 16, CLKBP – System Clock. 10706 is strapped: Pin 9 = VSS
Pin 8 = VDD
Pin 7 = VSS

Pin 18, RI – Receiver Input, TTL threshold, edges detected. Drive with unloaded CMOS or unloaded TTL driver. If driving with OP AMP, use diode clamp to +4.5V.

Pin 20, CDS – Carrier Detect Select Strap, VSS = 8 ms turn-on, nominal, with a "Marking" input signal.

Pin 21, RSDO – Receiver Serial Data Output; TTL "1" = Mark, TTL "0" = Space. Connect pull down of 6.8K ohms to VDD (–12V).

Pin 22, RCD – Receiver Carrier Detect Output, TTL "1" = On, TTL "0" = Off. Connect pull down of 6.8K ohms to VDD (–12V).

Pin 23, 10MS – Ten-Millisecond Square Wave, 50 Hz, connect pull down of 6.8K ohms to VDD (–12V). Leave open if unused.

Pin 25, MS – Mode Select Strap; VDD = Serial.

Pin 26, TSDI – Transmitter Serial Data Input; TTL "1" = Mark, TTL "0" = Space. Drive with unloaded CMOS or unloaded TTL Driver.

Pin 28, VSEL 2 – No connection.

Pin 29, VSEL 1 – Ground; return for Transmitter Output Drivers.

Pin 30, FS – Frequency Select Strap; VDD = Wider Range (Bell 202).

Pin 31, SPO – From Special Power On Reset Circuit.

Pin 32, OPS – Strap to VSS (+5V).

Pin 33, TO4 – Connect through 16.1K ohms to Summing Node.

Pin 34, TO3 – Connect through 10.0K ohms to Summing Node.

Pin 35, TO2 – Connect through 10.0K ohms to Summing Node.

Pin 36, TO1 – Connect through 16.1K ohms to Summing Node.

Pin 37, RQS – Request to Send Input; TTL "1" = Transmitter On, TTL "0" = Transmitter Off. Drive with unloaded CMOS or unloaded TTL Driver.

The SPO input must be toggled after power on. The circuit below simulates the action of the PPS CPU during power-on reset.
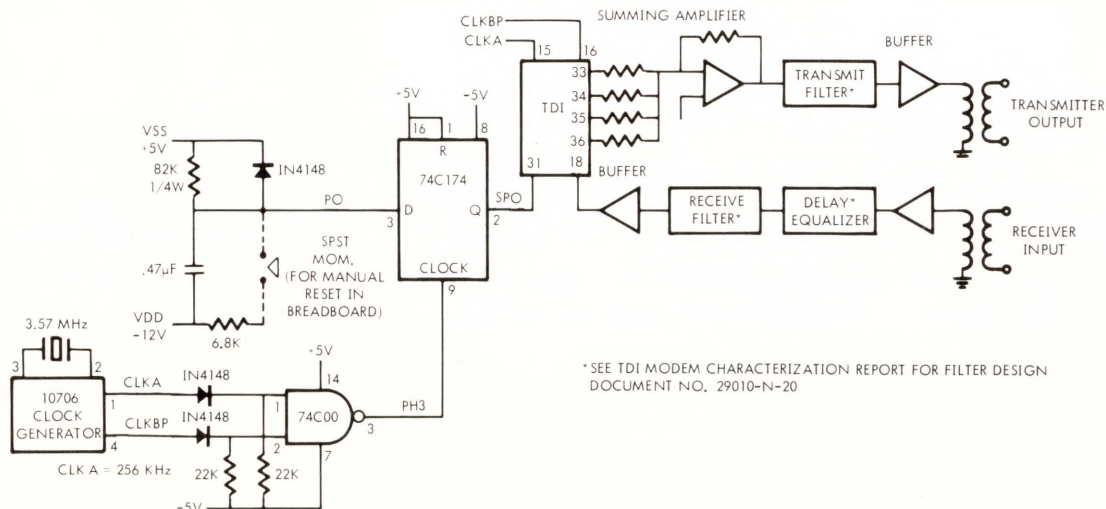
* SEE TDI MODEM CHARACTERIZATION REPORT FOR FILTER DESIGN DOCUMENT NO. 29010-N-20

PIN	NAME	POLARITY	FUNCTION	PIN	NAME	POLARITY	FUNCTION
1	ID8	+5V = 0 -12V = 1	Instruction Data Bus	22	RCD	+5V = 1 0V = 0	Receiver Carrier Detect Output (+5V = 1 = Carrier, Detect On). Connect pull down of 6.8K ohms to VDD (-12V)
2	SL3	+5V = 0 -12V = 1	Address Strap	23	10MS	+5V = 1 0V = 0	10 ms Square Wave (50 Hz) Output. Connect pull down of 6.8K ohms to VDD (-12V)
3	ID7	+5V = 0 -12V = 1	Instruction Data Bus	24	TSDO	+5V = 1 0V = 0	Transmitter Serial Data Output (UART Output). Connect pull down of 6.8K ohms to VDD (-12V)
4	SL2	+5V = 0 -12V = 1	Address Strap	25	MS	+5V = PPS Mode -12V = External Mode	Mode Select Strap
5	ID6	+5V = 0 -12V = 1	Instruction Data Bus	26	TSDI	+5V = 1 0V = 0	Transmitter Serial Data Input (+5V = 1 = Mark if MS = -12V). Drive with unloaded CMOS or unloaded TTL Driver
6	WIO	+5V = 0 -12V = 1	Memory Write/Input-Output Enable, PPS Input	27	INT2	+5V = Interrupt Request -12V = No Request	Interrupt Request Output Connect pull down of 6.8K ohms to VDD
7	ID5	+5V = 0 -12V = 1	Instruction Data Bus	28	No Connection		
8	SL1	+5V = 0 -12V = 1	Address Strap	29	VSEL 1	0V or -5V	Return Supply for Transmitter Output Pins 33, 34, 35, 36 (May be -12V). Decouple with 0.1 microfarad ceramic at chip
9	ACKO	+5V = 0 -12V = 1	Interrupt Acknowledge Output				
10	ACKI	+5V = 0 -12V = 1	Interrupt Acknowledge Input	30	FS	+5V = CCITT -12V = BELL	Modem Frequency Select Strap
11	VSS	+5V	Power Supply	31	SPO	+5V = Normal -12V = Reset	Synchronized Power On Reset (from CPU)
12	PINH	+5V = with parity -12V = without parity	Parity Inhibit Strap	32	OPS	+5V = Odd -12V = Even	Odd Parity Select Strap
13	BRS	+5V = 1200 Baud -12V = 9600 Baud	Baud Rate Select Strap for UART only (Modem will only operate at 0-1200 Baud)	33	TO4	+5V = 0 VSEL1 = 1	Modulator Output No. 4. +5V = 0 = Off State. Connect through 16.1K ohms to Summing Node.
14	VDD	-12V	Power Supply. Decouple with 0.1 microfarad ceramic at chip	34	TO3	+5V = 0 VSEL1 = 1	Modulator Output No. 3. +5V = 0 = Off State. Connect through 10.0K ohms to Summing Node.
15	CLKA	+5V = 0 -12V = 1	System Clock must be 256 KHz from PPS or 10706 Clock Chip	35	TO2	+5V = 0 VSEL1 = 1	Modulator Output No. 2. +5V = 0 = Off State. Connect through 10.0K ohms to Summing Node.
16	CLKBP	+5V = 0 -12V = 1	System Clock 10706 is strapped: Pin 9 = VSS Pin 8 = VDD Pin 7 = VSS	36	TO1	+5V = 0 VSEL1 = 1	Modulator Output No. 1. +5V = 0 = Off State. Connect through 16.1K ohms to Summing Node.
17	Test 8	+5V = 1 0V = 0	Chip Test. Output of no use in System. Connect pull down of 6.8K ohms to VDD, or leave open	37	RQS	+5V = On 0V = Off	Transmitter On/Off Control if MS = -12V. Drive with unloaded CMOS or unloaded TTL Driver.
18	RI	+5V = 1 0V = 0	Receiver Input, TTL threshold, edges detected. Drive with unloaded CMOS or unloaded TTL Driver. If driving with OP AMP, use Diode Clamp to +4.5V.	38	ID1	+5V = 0 -12V = 1	Instruction Data Bus
19	RSDI	+5V = 1 0V = 0	Receiver Serial Data Input (UART Input if MS = -12V). Drive with unloaded CMOS or unloaded TTL Driver	39	ID2	+5V = 0 -12V = 1	Instruction Data Bus
20	CDS	+5V = Normal Delay -12V = Short Delay	Carrier Detect Strap	40	ID3	+5V = 0 -12V = 1	Instruction Data Bus
21	RSDO	+5V = 1 0V = 0	Receiver Serial Data Output (Demodulator Output). Connect pull down of 6.8K ohms to VDD (-12V)	41	ID4	+5V = 0 -12V = 1	Instruction Data Bus
				42	SL4	+5V = 0 -12V = 1	Address Strap

* SUPERSEDES ALL PREVIOUS INFORMATION

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