## 2.11 FIB1-DATA

The **FIB1-DATA** is a high-performance serial over fiber media converter. These converters fully support Nx64 data transmissions up to 2.048Mbps and completely handle flow control and clocking signals in synchronous applications over fiber media. Additionally, the converters support low speed asynchronous connections as well.

There are five models of **FIB1-DATA** media converters, V.35, RS-232, RS-530, X.21, and RS-449 which are based upon three basic hardware types, V.35, RS-232, and RS-530. The RS-530 hardware is also the source for the X.21 and RS-449 models. All models require adapter cables to adapt the unit's HDB26 interface connectors.

There are two 8 position DIP switches located on the side of the *FIB1-DATA* to configure the units when used standalone. When the *FIB1-DATA* is placed in the *FRM301* with SNMP, the settings are controlled by the chassis management system and any DIP settings are ignored. Additionally, when placed in the managed rack, the remotely linked *FIB1-DATA* unit is also controlled and configured through the management system.



Figure 2-12 FIB1-DATA Media Converter Card

### **Clocking Modes**

There are three clocking schemes for the **FIB1-DATA** converters, shown below.



Figure 2-13 FIB1-DATA Clocking Modes

All models of the **FIB1-DATA** have a physical interface which is DCE. A crossover cable is required when acting as a DTE device. In the first example, the units act as 'Fiber Modems' with the internal clocking unit acting as a master time source and the remote or loop unit recovering timing from the fiber side. In this configuration, both units are acting as DCE.

In the second example, an external clock is received at one unit and the clock is passed to the remote for recovery via the fiber. In this scheme, the left side unit acts as a DTE and a crossover cable is required. The right hand unit recovers clock from the fiber and acts as a DCE.

In our last example, transparent clocking is employed; the transmit clock on one side is used as the source for receive clock on the other. In this scheme the units may act as DCE or DTE depending on the cable used.

LED	Function	State	Status
PWR	Power indicator	On	Converter has power
		Off	Converter has no power
		Blinking	No SNMP is installed in FRM301
FX Link	Fiber link	On	The fiber link is up
		Off	No signal or fiber link is down
		Blinking	Remote side fiber Sync loss
Test	Mode display	On	Any loop back test is on
		Off	Normal status
TD	Mode display	On	"Data Signal" is in "High" state
		Off	"Data Signal" is in "Low" state
		Blinking	Normal Data transmitting status
RD	Mode display	On	"Data Signal" is in "High" state
		Off	"Data Signal" is in "Low" state
		Blinking	Normal Data transmitting status
RTS	Mode display	On	"Data Signal" is in "High" state
		Off	"Data Signal" is in "Low" state
CTS	Mode display	On	"Data Signal" is in "High" state
		Off	"Data Signal" is in "Low" state
DCD	Mode display	On	"Data Signal" is in "High" state
		Off	"Data Signal" is in "Low" state

## LED Status LED Detailed Description

### Loop Back Features of the FIB1-DATA

The **FIB1-DATA** features local and remote loop back functions for both the data port and the fiber connections. When management features are installed in the rack, loop back may be performed from local console, network connected management workstation or from a workstation running the Windows® GUI (Graphical User Interface) software.



Figure 2-14 FIB1-DATA Data Port loop back diagnostic modes



Figure 2-15 FIB1-DATA Optical loop back diagnostic modes

# Chapter 2 Installation

## DIP Switch Settings of the FIB1-DATA (DIP SW 1)

	155 01					Function Description		
DIP SW1						Function Description		
1,2	OFF OFF		Timing mode select:					
				OFF		Recovery		
	OFF ON							
		ON		ON				
3			3			Data Rate group setti	ng	
						N X 64K		
45070			ON	-		Low speed		
4,5,6,7,8	4	5	6	1	8	Data Rate setting		
	0==	0.55	075	0.55	0.55	N X 64K	Low speed	
	OFF	OFF	OFF	OFF	OFF	64K	/5	
	ON	OFF	OFF	OFF	OFF	128K	112.5	
	OFF	ON	OFF	OFF	OFF	192K	150	
	ON	ON	OFF	OFF	OFF	256K	225	
	OFF	OFF	ON	OFF	OFF	320K	300	
	ON	OFF	ON	OFF	OFF	384K	450	
	OFF	ON	ON	OFF	OFF	448K	600	
	ON	ON	ON	OFF	OFF	512K	900	
	OFF	OFF	OFF	ON	OFF	576K	1200	
	ON	OFF	OFF	ON	OFF	640K	1800	
	OFF	ON	OFF	ON	OFF	704K	2400	
	ON	ON	OFF	ON	OFF	768K	3600	
	OFF	OFF	ON	ON	OFF	832K	4800	
	ON	OFF	ON	ON	OFF	896K	7200	
	OFF	ON	ON	ON	OFF	960K	9600	
	ON	ON	ON	ON	OFF	1024K	11400	
	OFF	OFF	OFF	OFF	ON	1088K	19200	
	ON	OFF	OFF	OFF	ON	1152K	28800	
	OFF	ON	OFF	OFF	ON	1216K	38400	
	ON	ON	OFF	OFF	ON	1280K	57600	
	OFF	OFF	ON	OFF	ON	1344K	76800	
	ON	OFF	ON	OFF	ON	1408K	115200	
	OFF	ON	ON	OFF	ON	1472K		
	ON	ON	ON	OFF	ON	1536K		
	OFF	OFF	OFF	ON	ON	1600K		
	ON	OFF	OFF	ON	ON	1664K		
	OFF	ON	OFF	ON	ON	1728K		
	ON	ON	OFF	ON	ON	1792K		
	OFF	OFF	ON	ON	ON	1856K		
	ON	OFF	ON	ON	ON	1920K		
	OFF	ON	ON	ON	ON	1984K		
	ON	ON	ON	ON	ON	2048K	ASYNC MODE	
•		$T_{-1,1}$				<b>D</b> '4 1 1 44'	т	

#### Table 2-1 FIB1-DATA, DIP switch 1 setting

DIP	Switch	Settings	of the	FIB1	-DATA	(DIP	SW 2	)
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	DIP Switch	n Number 2 Table		
Switch and State		Function Description		
	1	Data port RC polarity setting:		
OI	FF	Normal		
0	N	Inverted		
2	2	Data port TC polarity setting:		
OI	FF	Normal		
0	N	Inverted		
:	3	Data port ETC polarity setting:		
OI	FF	Normal		
0	N	Inverted		
4		Data port RTS setting:		
OFF		Follow CTS		
0N		Always ON		
5		Far End Fault (FEF) Setting		
OI	FF	Disabled		
0	N	Enabled		
e	6	Loop Back Selection		
OI	FF	Fiber Loop Back		
0	N	Data Port Loop Back		
7	8	Loop back test setting		
OFF	OFF	All loop back off		
ON	OFF	Local Loop Back (LLB)		
OFF	ON	Remote Loop Back (RLB)		
ON	ON	Request Remote Loop Back (RRLB)		

Table 2-2 FIB1-DATA DIP switch 2 setting

For more detailed technical specifications, please refer to Chapter 1, Introduction.

When the *FIB1-DATA* is ordered with a V.35 interface, the unit comes with a HDB26 male to MB34 Female adapter cable, 1 meter long. The pin assignment follows the table below.

Abbreviation	HDB26		MB34	V.35
	PIN#		PIN#	Circuit
FG	1	$\leftrightarrow$	A	Frame
SG	7	$\leftrightarrow$	В	Signal Ground
TD(A)	2	$\leftrightarrow$	Р	TD(A)
TD(B)	11	$\leftrightarrow$	S	TD(B)
RD(A)	3	$\leftrightarrow$	R	RD(A)
RD(B)	21	$\leftrightarrow$	Т	RD(B)
RTS(A)	4	$\leftrightarrow$	С	RTS
CTS(A)	5	$\leftrightarrow$	D	CTS
DSR(A)	6	$\leftrightarrow$	E	DSR
DTR(A)	20	$\leftrightarrow$	Н	DTR
DCD(A)	8	$\leftrightarrow$	F	DCD
ETC(A)	24	$\leftrightarrow$	U	ETC(A)
ETC(B)	16	$\leftrightarrow$	W	ETC(B)
TC(A)	15	$\leftrightarrow$	Y	TC(A)
TC(B)	23	$\leftrightarrow$	AA	TC(B)
RC(A)	17	$\leftrightarrow$	V	RC(A)
RC(B)	25	$\leftrightarrow$	X	RC(B)
RLB	9	$\leftrightarrow$	HH	RL
LLB	18	$\leftrightarrow$	JJ	LL
ТМ	10	$\leftrightarrow$	KK	ТМ

Table 2-3 FIB1-DATA V.35 cable

When the **FIB1-DATA** is ordered with a RS-530 interface, the unit comes with a HDB26 male to DB25 Female adapter cable, 1 meter long. The pin assignment follows the table below.

Abbreviation	HDB26		DB25	RS-530
	PIN#		PIN#	Circuit
FG	1	$\leftrightarrow$	1	Frame
SG	7	$\leftrightarrow$	7	AB
TD(A)	2	$\leftrightarrow$	2	BA(A)
TD(B)	11	$\leftrightarrow$	14	BA(B)
RD(A)	3	$\leftrightarrow$	3	BB(A)
RD(B)	21	$\leftrightarrow$	16	BB(B)
RTS(A)	4	$\leftrightarrow$	4	CA(A)
RTS(B)	13	$\leftrightarrow$	19	CA(B)
CTS(A)	5	$\leftrightarrow$	5	CB(A)
CTS(B)	14	$\leftrightarrow$	13	CB(B)
DSR(A)	6	$\leftrightarrow$	6	CC(A)
DSR(B)	22	$\leftrightarrow$	22	CC(B)
DTR(A)	20	$\leftrightarrow$	20	CD(A)
DTR(B)	12	$\leftrightarrow$	23	CD(B)
DCD(A)	8	$\leftrightarrow$	8	CF(A)
DCD(B)	26	$\leftrightarrow$	10	CF(B)
ETC(A)	24	$\leftrightarrow$	24	DA(A)
ETC(B)	16	$\leftrightarrow$	11	DA(B)
TC(A)	15	$\leftrightarrow$	15	DB(A)
TC(B)	23	$\leftrightarrow$	12	DB(B)
RC(A)	17	$\leftrightarrow$	17	DD(A)
RC(B)	25	$\leftrightarrow$	9	DD(B)
RLB	9	$\leftrightarrow$	21	RL
LLB	18	$\leftrightarrow$	18	LL
ТМ	10	$\leftrightarrow$	25	ТМ

Table 2-4 FIB1-DATA RS-530 cable

When the **FIB1-DATA** is ordered with a RS-449 interface, the unit comes with a HDB26 male to DB37 Female adapter cable, 1 meter long. The pin assignment follows the table below.

Abbreviation	HDB26		DB37	RS-449 Circuit
	PIIN#		PIIN#	Circuit
FG	1	$\leftrightarrow$	1	Frame
SG	7	$\leftrightarrow$	19,20,37	SG,RC,SC
TD(A)	2	$\leftrightarrow$	4	SD(A)
TD(B)	11	$\leftrightarrow$	22	SD(B)
RD(A)	3	$\leftrightarrow$	6	RD(A)
RD(B)	21	$\leftrightarrow$	24	RD(B)
RTS(A)	4	$\leftrightarrow$	7	RS(A)
RTS(B)	13	$\leftrightarrow$	25	RS(B)
CTS(A)	5	$\leftrightarrow$	9	CS(A)
CTS(B)	14	$\leftrightarrow$	27	CS(B)
DSR(A)	6	$\leftrightarrow$	11	DM(A)
DSR(B)	22	$\leftrightarrow$	29	DM(B)
DTR(A)	20	$\leftrightarrow$	12	TR(A)
DTR(B)	12	$\leftrightarrow$	30	TR(B)
DCD(A)	8	$\leftrightarrow$	13	RR(A)
DCD(B)	26	$\leftrightarrow$	31	RR(B)
ETC(A)	24	$\leftrightarrow$	17	TT(A)
ETC(B)	16	$\leftrightarrow$	35	TT(B)
TC(A)	15	$\leftrightarrow$	5	ST(A)
TC(B)	23	$\leftrightarrow$	23	ST(B)
RC(A)	17	$\leftrightarrow$	8	RT(A)
RC(B)	25	$\leftrightarrow$	26	RT(B)
RLB	9	$\leftrightarrow$	14	RL
LLB	18	$\leftrightarrow$	10	LL
ТМ	10	$\leftrightarrow$	18	ТМ

Table 2-5 FIB1-DATA RS-449 cable

When the FIB1-DATA is ordered with a X.21 interface, the unit comes with a HDB26 male to DB15 Female adapter cable, 1 meter long. The pin assignment follows the table below.

Abbreviation	HDB26		DB15	X.21
	PIN#		PIN#	Circuit
FG	1	$\leftrightarrow$	1	Shield
SG	7	$\leftrightarrow$	8	Ground
TD(A)	2	$\leftrightarrow$	2	Transmit(A)
TD(B)	11	$\leftrightarrow$	9	Transmit(B)
RD(A)	3	$\leftrightarrow$	4	Receive(A)
RD(B)	21	$\leftrightarrow$	11	Receive(B)
RTS(A)	4	$\leftrightarrow$	3	Control(A)
RTS(B)	13		10	Control(B)
DCD(A)	8	$\leftrightarrow$	5	Indication(A)
DCD(B)	26		12	Indication(B)
ETC(A)	24	$\leftrightarrow$	7	Ext. Timing(A)
ETC(B)	16	$\leftrightarrow$	14	Ext. Timing(B)
RC(A)	17	$\leftrightarrow$	6	Signal Timing(A)
RC(B)	25	$\leftrightarrow$	13	Signal Timing(B)

Table 2-6 FIB1-DATA X.21 cable

When the FIB1-DATA is ordered with a RS-232 interface, the unit comes with a HDB26 male to DB25 Female adapter cable, 1 meter long. The pin assignment follows the table below.

Abbreviation	HDB26		DB25	RS-232			
	PIN#		PIN#	Circuit			
FG	1	$\leftrightarrow$	1	Frame			
SG	7	$\leftrightarrow$	7	SG			
TD	2	÷	2	TD			
RD	3	$\rightarrow$	3	RD			
RTS	4			RTS			
CTS	5		5	CTS			
DSR	6		6	DSR			
DTR	20	$\leftrightarrow$	20	DTR			
DCD	8		8	DCD			
ETC	24		24	ETC			
TC	15		15	TC			
RC	17		17	RC			
Table 2.7 FIR1 DATA PS 232 cable							

Table 2-7 FIB1-DATA RS-232 cable