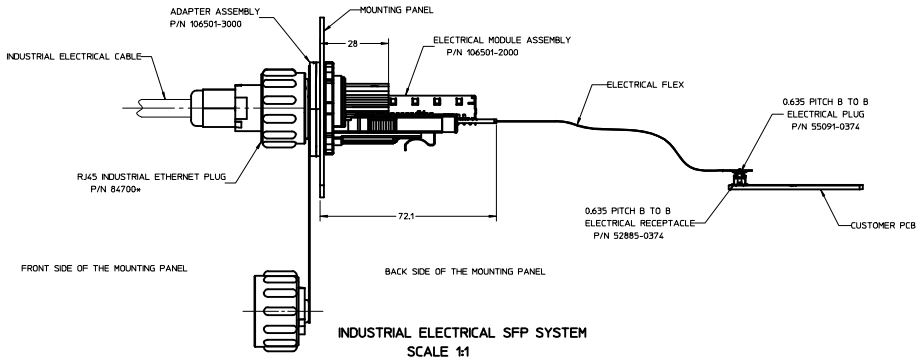
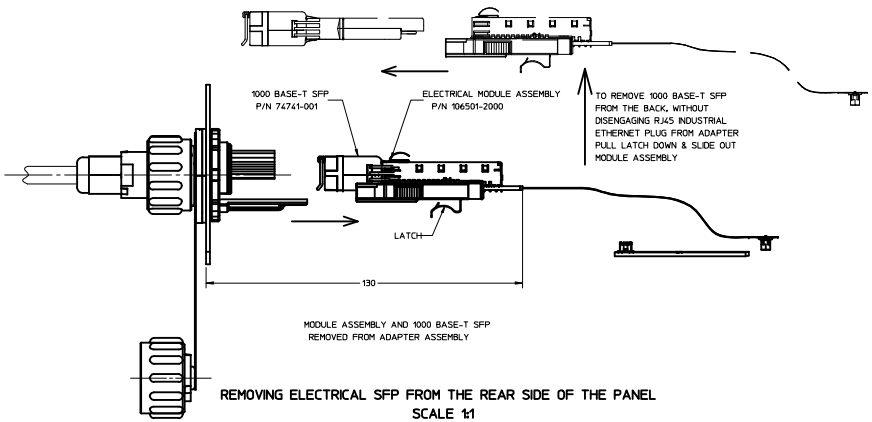
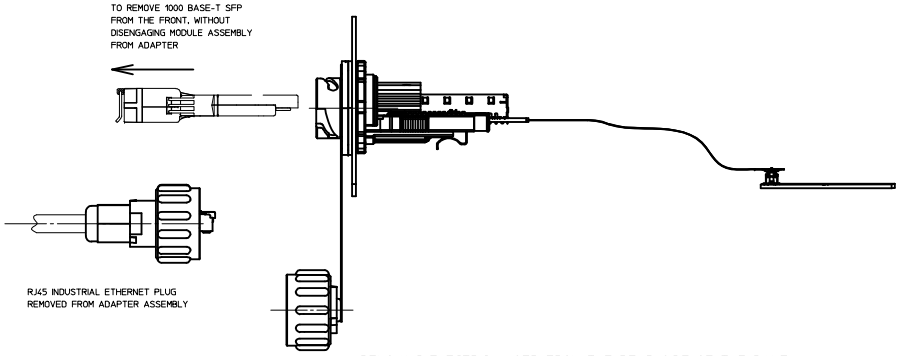


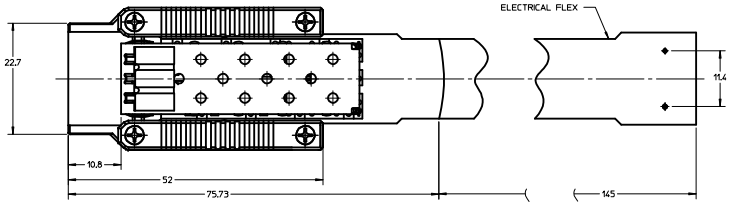
INDUSTRIAL ELECTRICAL SFP SYSTEM
SCALE 1:1

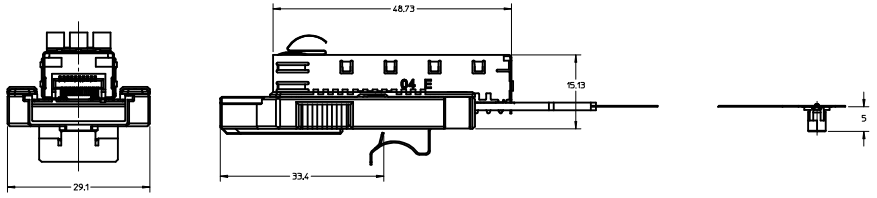


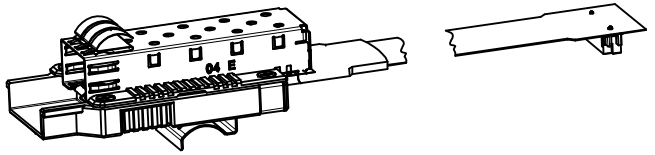
REMOVING ELECTRICAL SFP FROM THE REAR SIDE OF THE PANEL
SCALE 1:1



REMOVING ELECTRICAL SFP FROM THE REAR SIDE OF THE PANEL
SCALE 1:1







ISOMETRIC VIEW

NOTE:
ALL DIMENSIONS ARE FOR REFERENCE ONLY.

ENTER DESCRIPTION
EC NO: MF2010-0179
DRWN:LSADAUSKIENE 2009/10/22
CHKD: 2009/10/23
APPR:BANDRE1 2009/10/23
DESCRIPTION
B
REV

QUALITY SYMBOLS
▼=0
▽=0

GENERAL TOLERANCES (UNLESS SPECIFIED)

	mm	INCH
4 PLACES	± ---	± ---
3 PLACES	± ---	± ---
2 PLACES	± ---	± ---
1 PLACE	± ---	± ---
ANGULAR ±1/2°		

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DIMENSION STYLE: MM ONLY
SCALE: 2:1
DESIGN UNITS: METRIC
THIRD ANGLE PROJECTION

DRAWN BY	BG
DATE	12/01/05
CHECKED BY	SE
DATE	12/15/05
APPROVED BY	
DATE	

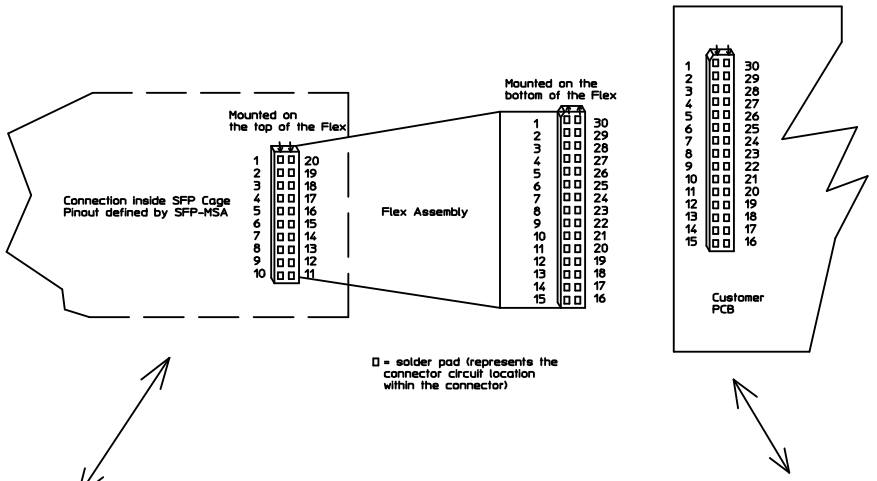
TITLE: INDUSTRIAL ELECTR'L SFP MODULE ASSEMBLY

molex MOLEX INCORPORATED

MATERIAL NO. 1065012000
DOCUMENT NO. SD-106501-2000
SHEET NO. 1 OF 2
SIZE D

Pin #	Name	Function	Plug Sequence (from SFP)	Notes
1	VeeT	Transmitter Ground	1	Note 6
2	TD-	Inv. Transmit Data In	3	Note 9
3	VeeT	Transmitter Ground	1	Note 6
4	TD+	Transmit Data In	3	Note 9
5	VeeT	Transmitter Ground	1	Note 6
6	VccT	Transmitter Power	2	3.3 ± 5%, Note 8
7	Ground	Ground		
8	Ground	Ground		
9	Ground	Ground		
10	VccR	Receiver Power	2	3.3 ± 5%, Note 8
11	VeeR	Receiver Ground	1	Note 6
12	RD+	Received Data Out	3	Note 7
13	VeeR	Receiver Ground	1	Note 6
14	RD-	Inv. Received Data Out	3	Note 7
15	VeeR	Receiver Ground	1	Note 6
16	VeeR	Receiver Ground	1	Note 6
17	VeeR	Receiver Ground	1	Note 6
18	LOS	Loss of Signal	3	Note 5
19	Rate Select	Full or reduced receiver bandwidth	3	Note 4, Low or Open = Reduced Bandwidth, High = Full Bandwidth
20	Ground	Ground		
21	Ground	Ground		
22	Ground	Ground		
23	Ground	Ground		
24	VeeC	Clock Ground	1	Note 6
25	MOD-DEF0	Module Definition 0 (Ground)	3	Note 3, grounded in module
26	MOD-DEF1	Module Definition 1 (Clock)	3	Note 3, 2 wire serial ID interface
27	MOD-DEF2	Module Definition 2 (Data)	3	Note 3, 2 wire serial ID interface
28	TX Disable	Transmitter Disable	3	Note 2, module disables on high or open
29	TX Fault	Transmitter Fault Indication	3	Note 1
30	VeeT	Transmitter Ground	1	

Industrial SFP Circuit Wiring Scheme



□ = solder pad (represents the connector circuit location within the connector)

SFP Pinout

1 (key)	VeeT	VeeT	20
2	TXFault	TD-	19
3	TX Disable	TD+	18
4	MOD-DEF(2)	VeeT	17
5	MOD-DEF(1)	VccT	16
6	MOD-DEF(0)	VccR	15
7	Rate Select	VeeR	14
8	LOS	RD+	13
9	VeeR	RD-	12
10	VeeR	VeeR	11

Connector wiring on Customers PCB

1 (key)	VeeT (ground)	VeeT (ground)	30
2	TD-	TXFault	29
3	VeeT (ground)	TX Disable	28
4	TD+	MOD-DEF(2)	27
5	VeeT (ground)	MOD-DEF(1)	26
6	VccT	MOD-DEF(0)	25
7	Ground	VeeC (ground)	24
8	Ground	Ground	23
9	Ground	Ground	22
10	VccR	Ground	21
11	VeeR (ground)	Ground	20
12	RD+	Rate Select	19
13	VeeR (ground)	LOS	18
14	RD-	VeeR (ground)	17
15	VeeR (ground)	VeeR (ground)	16

NOTES:

Plug Sequence = Pin engagement sequence during hot plugging of SFP Module.

1) TX Fault is an open collector/drain output, which should be pulled up with a 4.7K - 10K W resistor on the host board.
Pull up voltage between 2.0V and VccT, R+0.3V. When high, output indicates a laser fault of some kind. Low indicates normal operation.
In the low state, the output will be pulled to < 0.8V.

2) TX disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7 - 10 K W resistor.
Its states are:
Low (0 - 0.8V): Transmitter on
(>0.8, < 2.0V): Undefined
High (2.0 - 3.465V): Transmitter Disabled
Open: Transmitter Disabled

3) Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7K - 10K W resistor on the host board.
The pull-up voltage shall be VccT or VccR (see Section IV for further details).

Mod-Def 0 is grounded by the module to indicate that the module is present
Mod-Def 1 is the clock line of two wire serial interface for serial ID
Mod-Def 2 is the data line of two wire serial interface for serial ID

4) This is an optional input used to control the receiver bandwidth for compatibility with multiple data rates (most likely Fibre Channel 1x and 2x Rates).
If implemented, the input will be internally pulled down with > 30k W resistor. The input states are:
Low (0 - 0.8V): Reduced Bandwidth
(>0.8 , < 2.0V): Undefined
High (2.0 - 3.465V): Full Bandwidth
Open: Reduced Bandwidth

5) LOS (Loss of Signal) is an open collector/drain output, which should be pulled up with a 4.7K - 10K W resistor. Pull up voltage between 2.0V and VccT, R+0.3V.
When high, this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use).
Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.

6) VeeR, VeeT, and VeeC may be internally connected within the SFP module.

7) RD-/+: These are the differential receiver outputs. They are AC coupled 100 W differential lines which should be terminated with 100 W (differential) at the user SERDES.
The AC coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines
will be between 370 and 2000 mV differential (185 - 1000 mV single ended) when properly terminated.

8) VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V ± 5% at the SFP connector pin.
Maximum supply current is 300 mA. Inductors with DC resistance of less than 1 W should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage.
When the recommended supply filtering network is used, hot plugging of the SFP transceiver module will result in an inrush current of no more than 30 mA greater
than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module. Each Vcc will be individually filtered near the SFP connector.

9) TD-/+: These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 W differential termination inside the module.
The AC coupling is done inside the module and is thus not required on the host board. The inputs will accept differential swings of 500 - 2400 mV (250 - 1200 mV single-ended),
though it is recommended that values between 500 and 1200 mV differential (250 - 600 mV single-ended) be used for best EMI performance.

ENTER DESCRIPTION
EC NO: MF2010-0179 2009\10\22
DRWN:LSADAUSK(ENE 2009\10\23
CHKD: 2009\10\23
APPR:BANDRE1
DESCRIPTION
B
REV

QUALITY SYMBOLS
▼=0
▽=0

GENERAL TOLERANCES (UNLESS SPECIFIED)

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1 PLACE	± ---	± ---
ANGULAR ±1/2°		

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DIMENSION STYLE: MM ONLY
SCALE
DESIGN UNITS: METRIC
THIRD ANGLE PROJECTION

DRAWN BY: BG DATE: 12/01/05
CHECKED BY: SE DATE: 12/15/05
APPROVED BY: DATE

TITLE: INDUSTRIAL ELECTR'L SFP MODULE ASSEMBLY

molex MOLEX INCORPORATED

MATERIAL NO.: 1065012000
DOCUMENT NO.: SD-106501-2000
SHEET NO.: 2 OF 2
SIZE: D