

SERIES: DM780x | DESCRIPTION: G.hn WAVE-2 SFP MODULE

FEATURES

- SFF 8432 and INF-8074i SFP MSA Compliant
- Functions as a G.hn Wave-2/Ethernet SGMII bridge
- Net data rates up to 1.7 Gbps
- 1.9 W power dissipation
- Configurable downstream/upstream ratio
- Compact design, the smallest in the industry
- 2-Wire interface for Serial ID
- Supports VectorBoost™ technology for broadband access
- Based on GigaWire specification and multi-vendor interoperable
- Incorporates AES-128 encryption
- K.21 protection for lightning surge voltage
- Robust die cast housing
- Bail latch style ejector mechanism with option for push button
- Configurable as a domain master or end-point



MODEL	Speed (G.hn Wave-2) [Gbps]	Interface	Power Consumption max [W]	Reach max [m]	Cable Type	Connector Type
DM7806	1.7	SGMII	1.9	100	AC Powerline	RJ-11
DM7808	1.7	SGMII	1.9	100	Coaxial Cable	F-type (Coax)
DM7809	1.7	SGMII	1.9	100	Twisted Pair	RJ-11

PART NUMBER KEY

DM78 XX X - LED

Type / Product Series
DM78 = Product Series

LED indicators

Connector + Cable Types

06 = RJ-11 + AC Powerline
08 = F-type (Coax) + Coaxial Cable
09 = RJ-11 + Twisted Pair

Configuration

"blank" = No configuration
M = Configured as a Domain Master

ELECTRICAL

Parameter	Conditions / Description	Min	Typ	Max	Units
Supply voltage	Vcc	3.135	3.3	3.465	VDC
Low speed input voltage		-0.5		Vcc+0.3	V
2-wire interface input voltage		-0.3		Vcc+0.5	V
Power consumption	100 m @ 25°C ambient, 1.0 Gbps			2.0	W
Primary function	G.hn Wave-2 / Ethernet SGMII bridge				
Data rate				1.7	Gbps
Reach				100	m
Cable / medium	Phone-line twisted pair cablese				
Broadband enhancement	VectorBoost™ technology				
Technology	G.hn Wave-2				
Traffic Configuration	Configurable downstream / upstream ratio				
Security	AES-128 encryption				
Surge Protection	ITU-T K.21				
Operating mode	Configurable as Domain Master or End Point				

MANAGEMENT INTERFACE

Parameter	Conditions / Description	Min	Typ	Max	Units
Serial interface	I²C 2-wire serial interface for Serial ID and PHY register access				
EEPROM	Serial ID EEPROM at address 0xA0 (SFF-8472 base/extended ID fields)				
Status signals	Rx_LOS (link status), Tx_Fault, Mod_ABS, Rate Select (RS0/RS1)				

SFP PIN ASSIGNMENT

Pin	Symbol	Function	Pin	Symbol	Function
1	VeeT	Transmitter ground	11	VeeR	Receiver ground
2	Tx_Fault	Transmitter fault	12	RD-	Receiver inverted data output (Downstream traffic)
3	Tx_Disable	Transmitter disable	13	RD+	Receiver non-inverted data output (Downstream traffic)
4	SDA	2-wire serial interface data line	14	VeeR	Receiver ground
5	SCL	2-wire serial interface clock	15	VccR	Receiver 3.3V supply
6	Mod_ABS	Module absent, connected to VeeT or VeeR in the module	16	VccT	Transmitter 3.3V supply
7	RS0	Rate select 0	17	VeeT	Transmitter ground
8	Rx_LOS	Receiver loss of signal indication	18	TD+	Transmitter non-inverted data input (Upstream traffic)
9	RS1	Rate select 1	19	TD-	Transmitter inverted data input (Upstream traffic)
10	VeeR	Receiver Ground	20	VeeT	Module transmitter ground

Notes:
1. The module signal grounds should be isolated from the module case.

SAFETY AND COMPLIANCE

Parameter	Conditions / Description
Safety approvals	Certified to UL/CSA 60950 and IEC 60950 Compliant to the G.hn certification requirements of ID-337 SFF 8432 and INF-8074i SFP MSA compliant
Flammability	SFP module min. V-0 UL flame rated
RoHS	Compliance with RoHS and Halogen Free

ENVIRONMENTAL

Parameter	Conditions / Description	Min	Typ	Max	Units
Operating temperature	Tc, commercial / industrial grade	-40		85	°C
Storage temperature	Ts	-40		85	°C
Humidity	RH, Relative, Non-condensing	5		95	%

MECHANICAL

Parameter	Conditions / Description	Min	Typ	Max	Units
Form factor	SFP (Small Form-factor Pluggable), MSA compliant				
Housing	Robust die cast				
Connector	F-type (Coax), RJ-11				
Ejector mechanism	Bail latch with option for push button				
Dimensions		2.80 x 0.538 x 0.550			inch

MECHANICAL DRAWING

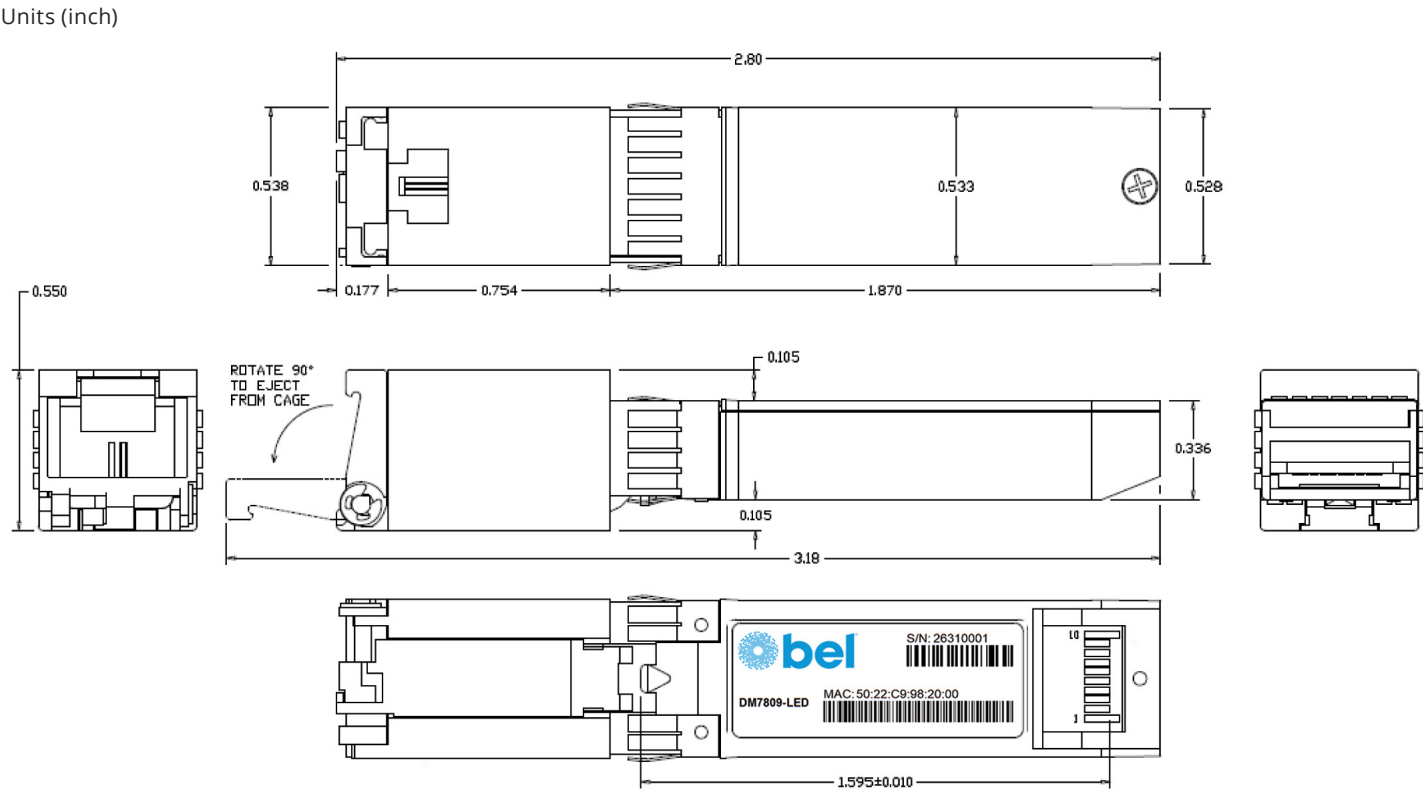


Figure 1. Mechanical drawing

FUNCTIONAL BLOCK DIAGRAM

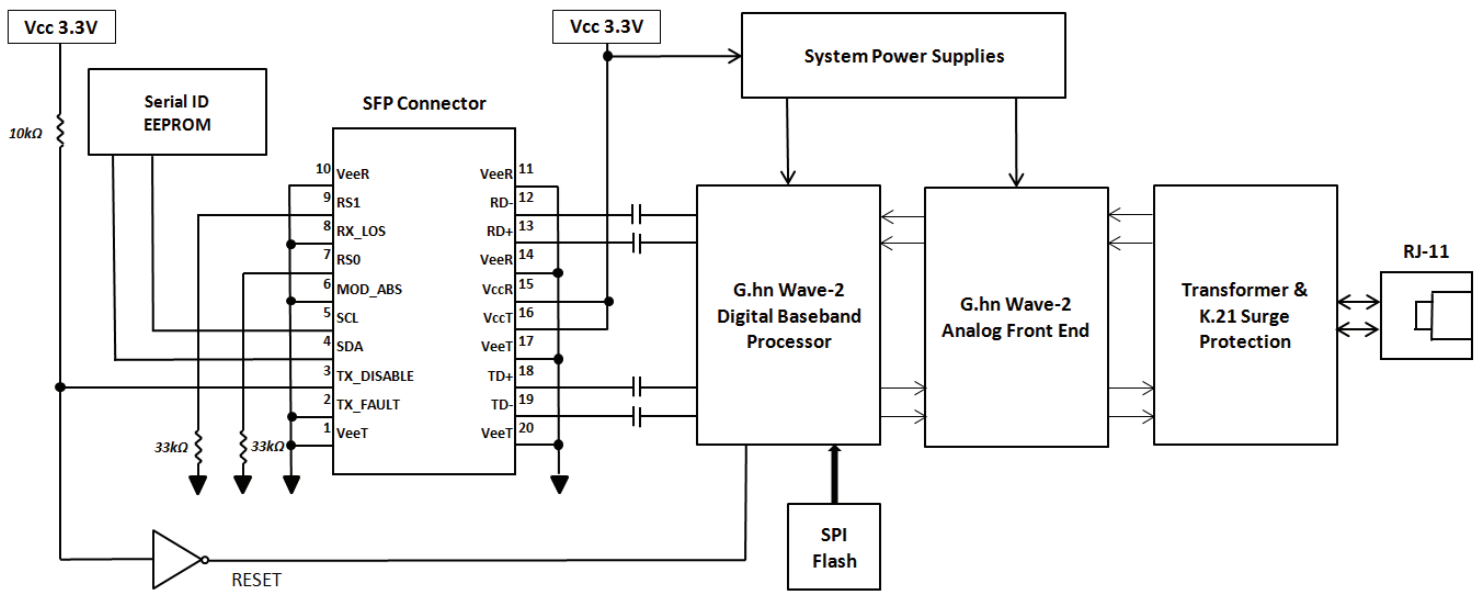


Figure 2. Block diagram

LATCH REQUIREMENTS

Parameter	Conditions / Description	Min	Typ	Max	Units
SFP transceiver insertion	Without cage kick-out spring force; nominal cage			18	N
SFP transceiver extraction	Without cage kick-out spring force; nominal cage			12.5	N
SFP transceiver retention	No functional damage below 90 N	90		170	N
Insertion/removal cycles	No functional damage to module, cage, or connector	50			cycles

Note:
2. Bail-type ejector latch releases the module regardless of row position when adjacent SFP ports are populated; passes RJ-45 connector "wiggle" stress test.

REGULATORY & QUALIFICATION TESTING

Test	Method / Condition
Radiated Emission (RE)	Meets FCC Part 15 requirements (10.0 kHz – 18.0 GHz)
Electrostatic Discharge (ESD)	IEC 61000-4-2 (Direct: 8 kV air / 4 kV contact; Indirect: 8 kV contact); Criteria B
Accelerated Aging	85°C case temperature, powered at 3.3V, 2000 hours
Relative Humidity (non-operational)	MIL STD 202G Method 103B, 85°C /85% RH for 1000 hours
Mechanical Shock	Half-sine wave, 1500G peak, 0.5 ms pulse width, 5 times per direction for 6 directions
Vibration	Random vibration, 20 G over 2–2000 Hz, 4 min per cycle, 4 cycle per axis.
Temperature Cycling	-5°C to +85°C, 10-minute dwell, 8-minute transition, 100 cycles (16 operational + 16 nonoperational units). No electrical/physical degradation permitted.

SERIAL IDENTIFICATION (EEPROM, ADDRESS A0h)

Data Address	Field Size	Field Name	Field Description	Field Value	Value Description
BASE ID FIELDS					
0	1	Identifier	Type of transceiver	03	SFP TRANSCEIVER
1	1	Ext. Identifier	Extended identifier of type of serial transceiver	04	WITH SERIAL ID
2	1	Connector	Code for connector type	00	Unspecified (RJ-11) Twisted Pair
3-10	8	Transceiver	Code for electronic or optical compatibility	00,00,00,00,00,00,40,00	Wave-2 G.hn is Undefined in SFF8472
11	1	Encoding	Code for serial encoding algorithm	00	UNSPECIFIED
12	1	BR, Nominal	Nominal signaling rate, units of 100Mbps/sec	11	1.7 Gbps
13	1	Rate Identifier	Type of rate select functionality	00	UNSPECIFIED
14	1	Length (SMF, km)	Link length supported for single mode fiber, units of km	00	NA
15	1	Length (SMF)	Link length supported for single mode fiber, units of 100 m	00	NA
16	1	Length (50mm)	Link length supported for 50mm OM2 fiber, units of 10 m	00	NA
17	1	Length (62.5mm)	Link length supported for 62.5mm OM1 fiber, units of 10 m	00	NA
18	1	Length (cable)	Link length supported for copper or direct attach cable, units of m	64	100m
19	1	Length (OM3)	Link length supported for 50mm OM3 fiber, units of 10 m	00	RESERVED
20-35	16	Vendor name	SFP vendor name (ASCII)	42,65,6C,20,50,6F,77,65,72,20,49,6E,63,2E,20,20	Bel Power Inc. (ASCII)
36	1	Transceiver	Code for electronic or optical compatibility	00	Unspecified
37-39	3	Vendor OUI	SFP transceiver vendor IEEE company ID	50,22,C9	Bel Power Inc. OUI
40-55	16	Vendor PN	Part number provided by SFP transceiver vendor (ASCII)	TBD	DM780x (ASCII)
56-59	4	Vendor rev	Revision level for part number provided by vendor (ASCII)	TBD	
60-61	2	Wavelength	Laser wavelength (Passive/Active Cable Specification Compliance)	00,00	RESERVED
62	1	Unallocated		00	RESERVED
63	1	CC_BASE	Check code for Base ID Fields (addresses 0 to 62)	VARIES	
EXTENDED ID FIELDS					
64-65	2	Options	Indicates which optional SFP signals are implemented	20,10	Power Class 3, TX_DISABLE implemented
66	1	BR, max	Upper bit rate margin, units of %	00	
67	1	BR, min	Lower bit rate margin, units of %	00	
68-83	16	Vendor SN	Serial number provided by vendor (ASCII)	VARIES	(ASCII)
84-91	8	Date code	Vendor's manufacturing date code	VARIES	YY-MM-DD-LOT#
92	1	Diagnostic Monitoring Type	Indicates which type of diagnostic monitoring is implemented (if any)	00	None included
93	1	Enhanced Options	Indicates which optional enhanced features are implemented (if any)	00	None included
94	1	SFF-8472 Compliance	Indicates which revision of SFF-8472 the transceiver complies with	00	None included
95	1	CC_EXT	Check code for the Extended ID Fields (addr. 64 to 94)	VARIES	
VENDOR SPECIFIC ID FIELDS					
96-127	32	Vendor Specific	Vendor Specific EEPROM	All FF's	
128-255	128	Reserved	Reserved	All FF's	

REVISION HISTORY

Rev.	Description	Date
1	Initial release	08/11/2026

