GO2920 Dual Channel Video Optical Receiver Module Data Sheet

Features

- SMPTE 297-2006 compliant
- Robust error free reception of signals from 50Mbps to 3Gbps
- Supports SD-SDI, HD-SDI and 3G-SDI
- Hot-pluggable
- Digital Diagnostic functions available through the I^2C interface including:
  - Monitoring of receive optical power, supply voltage and module temperature
  - Alarm reporting
  - Module ID polling
- Single +3.3V power supply
- RoHS compliant
- Telcordia GR-468 compliant
- Operating temperature range: 0°C to 70°C (case)
- 56.5mm x 13.4mm x 8.6mm SFP Package

Applications

- SMPTE 297-2006 compatible optical-to-electrical interfaces
- High-density video routers

Description

The GO2920 is a dual channel optical receiver module designed to convert optical serial digital signals to electrical serial digital signals as defined in SMPTE 297-2006. The GO2920 is specifically designed for robust performance in the presence of SDI pathological patterns for SMPTE 259M, SMPTE 344M, SMPTE 292M and SMPTE 424M serial rates.

The GO2920 contains two independent optical receivers. Each receiver is designed to provide error-free reception of signals from 50Mbps to 3Gbps with up to 30km single mode fiber (9/125) when used with the GO2922-3131CM. A maximum distance of 10km is achievable under worst case conditions and 3Gbps pathological. The GO2920 is also hot-pluggable.

The GO2920 provides extensive operational status monitoring through an I^2C interface. For each receiver channel, input optical power is monitored. Other operating conditions such as supply voltage and operating temperature are also monitored. If a parameter monitored is outside the pre-defined range, the alarm flag associated with the parameter will be raised.

Ordering Information

Part Number	Package	Temperature Range
GO2920-CM	SFP	0°C to 70°C

Figure A: GO2920 3G-SDI Dual Channel Video Optical Receiver Module

Revision History

Version	ECR	Date	Changes and/or Modifications
A	141244	August 2006	New document.
B	143832	February 2007	Corrected minor typos and removed references to address B0h that no longer exists. Modified loss of signal optical hysteresis in Table 3-2: Optical Performance Specifications. Added Figure 5-1: Typical Application Circuit.
C	145191	May 2007	Corrected typo in packaging dimension in Table 6-1. Changed Conditions from Video to Pathological and updated Optical Performance Specifications in Table 3-2: Optical Performance Specifications. Updated Serial ID Data Fields in Table 4-2: Module Identification Fields. Updated Total Power Consumption in Table 3-3: DC Electrical Specifications. Changed Typical Power Consumption to 470mW, Wavelengths, and changed Pull-Up Resistor value to 4.7k in Figure 5-1: Typical Application Circuit.
0	147052	August 2007	Converted to Preliminary Data Sheet. Updated Sensitivity values in Table 3-2: Optical Performance Specifications, Total Output Jitter and Rise/Fall Time values in Table 3-3: DC Electrical Specifications and Addresses in Table 4-2: Module Identification Fields.
1	148307	November 2007	Updated receiver wavelength range in Table 3-2: Optical Performance Specifications.
2	149172	May 2008	Updated sensitivity for SMPTE 424M and sensitivity for SMPTE 259M in Table 3-2: Optical Performance Specifications. Removed total output jitter values in Table 3-3: DC Electrical Specifications. Added graphic of product to front page. Moved Ordering Information to front page. Removed List of Tables and List of Figures. Changed Gb/s and Mb/s to Gbps and Mbps.
3	149982	July 2008	Updated document to new Gennum template. Updated Features, Description, Table 3-1, Table 3-2, Table 3-3, Table 3-4 and Table 6-1. Deleted Figure 6-2 and Table 6-1. Other editorial updates.
4	152963	October 2009	Added 7.2 Marking Information, 4.1 I^2C Bus Interface and clarifications on test conditions for various specifications. LOS hysteresis and input power monitoring accuracy specifications were revised. Numerous editorial updates throughout document. Document is now a Data Sheet.

Contents

1. Functional Block Diagram

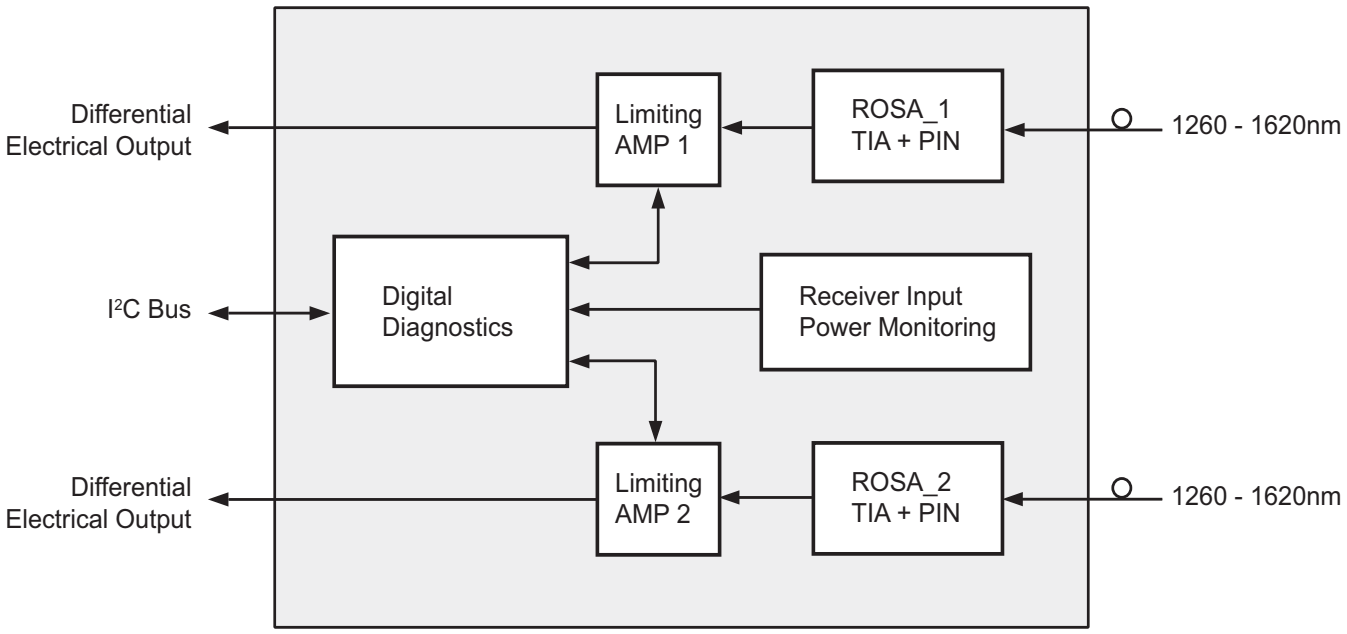

Figure 1-1: GO2920 Functional Block Diagram

2. Pin Specifications

2.1 Pin Configuration

Figure 2-1 shows the host board pad configuraiton for the GO2920. Figure 2-2 shows the edge connector pad configuraiton for the GO2920

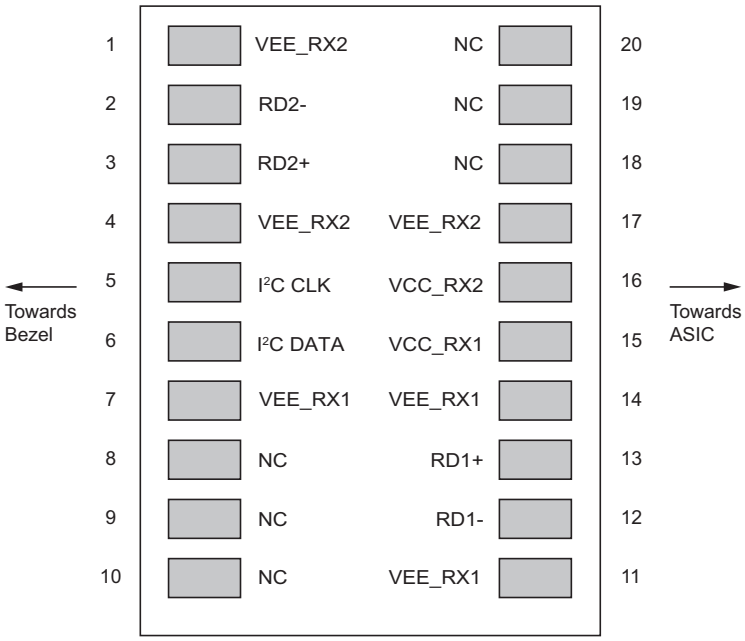

Figure 2-1: GO2920 Host Board Pad Configuration

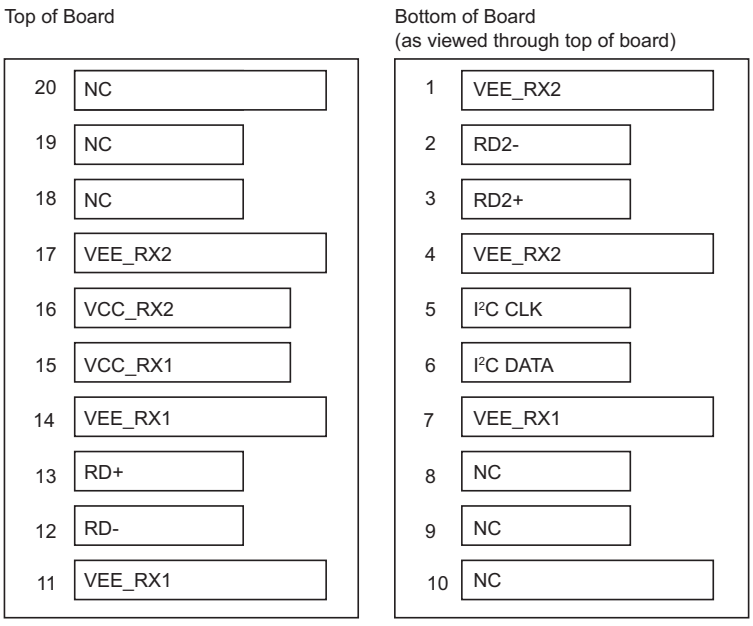

Figure 2-2: GO2920 Edge Connector Pad Configuration

2.2 Pin Descriptions

Table 2-1 lists the pin descriptions for the GO2920.

Table 2-1: Pin Descriptions

Number	Name	Type	Description
1	VEE_RX2	Ground	Receiver Channel 2 Ground Connection
2	RD2-	Output	Negative Differential Output (AC-coupled internally)
3	RD2+	Output	Positive Differential Output (AC-coupled internally)
4	VEE_RX2	Ground	Receiver Channel 2 Ground Connection
5	I^2C CLK	Digital (Input)	I^2C Clock
6	I^2C DATA	Digital (Bi-Directional)	I^2C Data
7	VEE_RX1	Ground	Receiver Channel 1 Ground Connection
8	NC	No Connect	No Connection
9	NC	No Connect	No Connection
10	NC	No Connect	No Connection
11	VEE_RX1	Ground	Receiver Channel 1 Ground Connection
12	RD1-	Output	Negative Differential Output (AC-coupled internally)
13	RD1+	Output	Positive Differential Output (AC-coupled internally)
14	VEE_RX1	Ground	Receiver Channel 1 Ground Connection
15	VCC_RX1	Power	Receiver Channel 1 Power Supply
16	VCC_RX2	Power	Receiver Channel 2 Power Supply
17	VEE_RX2	Ground	Receiver Channel 2 Ground Connection
18	NC	No Connect	No Connection
19	NC	No Connect	No Connection
20	NC	No Connect	No Connection

Notes:

1. Each channel has an independent power and ground connection.
2. All VEE_RX1 are connected together inside the module.
3. All VEE_RX2 are connected together inside the module.

2.3 Host Board Power Supply Requirements

The host board is required to provide a regulated and filtered power supply of 3.3V +/- 5% for the GO2920 via the on board SFP connector. Figure 2-3 shows the recommended board supply filtering. When the host board is loaded with a resistive load in place of the SFP module and sourcing the maximum rated current, the peak-to-peak power supply noise measured on the SFP connector should comply to Table 2-2.

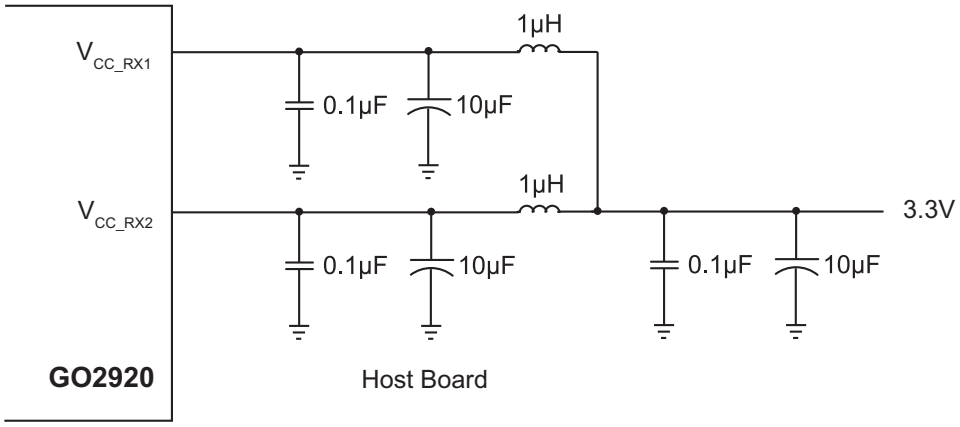

Figure 2-3: Recommended Host Board Supply Filtering

Table 2-2: Maximum Allowable Host Board Power Supply Noise at V_{CC}_Rx

Frequency (KHz)	Peak-to-Peak Noise Amplitude (%)
0.02-1000	2
1000-10000	3

2.4 Optical Connector Requirements

An LC connector with PC/UPC polish is required for each port.

3. Product Specifications

3.1 Absolute Maximum Ratings

Table 3-1 lists the absolute maximum ratings for the GO2920. Conditions exceeding the limits listed may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions outside those listed in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Table 3-1: Absolute Maximum Ratings

Parameter	Conditions	Value/Units
Supply Voltage	–	4.0V
Operating Case Temperature	–	$-20°C \leq T_{CASE} \leq 85°C$
Storage Temperature	–	$-40°C \leq T_{STG} \leq 85°C$
Receiver Optical Input Power	–	5dBm
ESD tolerance on all pins	–	±1kV HBM
Relative Humidity (non-condensing)	–	5% - 95% RH

3.2 Optical Performance Specifications

Table 3-2 lists the optical performance specifications for the GO2920.

Table 3-2: Optical Performance Specifications

V_{CC} = 3.3V ±5%, T_C = 0°C to 70°C. Typical values are at V_{CC} = 3.3V, T_A = 25°C unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Notes
Wavelength	λ	–	1260	–	1620	nm	–
Sensitivity for SMPTE 259M 143-360Mbps	–	Pathological	–	-22	-20	dBm	1
	–	PRBS	–	-23	-21	dBm	1
Sensitivity for SMPTE 344M 540Mbps	–	Pathological	–	-22	-20	dBm	1
	–	PRBS	–	-23	-21	dBm	1
Sensitivity for SMPTE 292M 1.485Gbps	–	Pathological	–	-22	-20	dBm	1
	–	PRBS	–	-23	-21	dBm	1
Sensitivity for SMPTE 424M 2.97Gbps	–	Pathological	–	-20	-18	dBm	1
	–	PRBS	–	-23	-20	dBm	1
Overload	–	2.97Gbps	0	–	–	dBm	1

Table 3-2: Optical Performance Specifications (Continued)

V_{CC} = 3.3V ±5%, T_C = 0°C to 70°C. Typical values are at V_{CC} = 3.3V, T_A = 25°C unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Notes
Loss of Signal Asserted	–	2.97Gbps PRBS ER=7dB	-29	–	–	dBm	–
Loss of Signal De-asserted	–	2.97Gbps PRBS ER=7dB	–	–	-23	dBm	–
Loss of Signal Optical Hysteresis	–	2.97Gbps PRBS ER=7dB	0.5	–	–	dB	–
Maximum Back Reflection	–	–	–	–	-27	dB	–
Input Power Monitoring Accuracy	–	–	-2	–	2	dB	–

NOTES

1. The sensitivity and overload specification refers to the input power levels for BER = 1E-12 (7dB ER input signal). Pathological test patterns are Gennum defined patterns that are more stressful that SDI check field patterns.

3.3 DC Electrical Specifications

Table 3-3 lists the DC electrical specifications for the GO2920. Figure 3-1 shows the definition of the differential signal level.

Table 3-3: DC Electrical Specifications

V_{CC} = 3.3V ±5%, T_C = 0°C to 70°C. Typical values are at V_{CC} = 3.3V, T_A = 25°C unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Notes
Operating Temperature Range	T_{CASE}	–	0	–	70	°C	1
Power Supply Voltage	V_{CC}	–	3.13	3.3	3.47	V	1
Total Power Consumption	–	–	–	470	545	mW	–
Differential Output Data Amplitude	VP-P_{Diff}	–	0.550	0.660	0.850	Vpp	2
Digital Input Low	V_{IL}		0	–	0.8	V	–
Digital Input High	V_{IH}		2	–	V_{CC}	V	–

NOTES

1. Outside the specified range, performance is not guaranteed.
2. Each leg must be terminated to a 50Ω (single-ended) termination. Signals are AC coupled internally within the module.

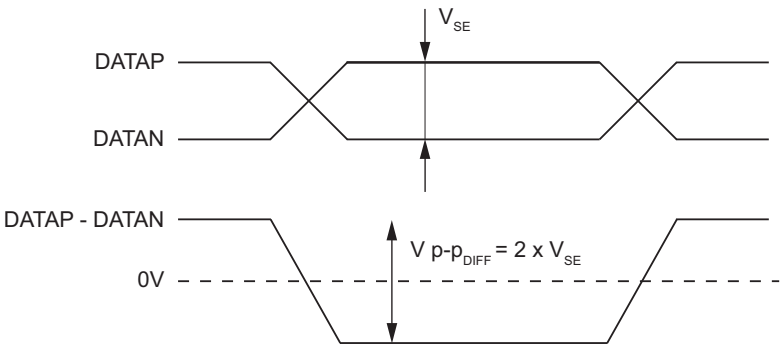

Figure 3-1: Definition of Differential Signal Level

3.4 AC Electrical Specifications

Table 3-4 lists the AC electrical specifications for the GO2920.

Table 3-4: AC Electrical Specifications

V_{CC} = 3.3V ±5%, T_C = 0°C to 70°C. Typical values are at V_{CC} = 3.3V, T_A = 25°C unless otherwise specified.

Parameter	Symbol	Condition	Min	Max	Units
Bit Rate	BR	–	50	3000	Mbps
Rise/Fall Time	t_r / t_f	20% to 80%	–	135	ps
Time to Initialize	t_init	From power on	–	300	ms
Rx_LOS Assert Time	t_loss_on	Time from Rx_LOS state to Rx_LOS assert	–	10	ms
Rx_LOS Deassert Time	t_loss_off	Time from non-Rx_LOS state to Rx_LOS deassert	–	10	ms
Serial ID Clock Rate	f_serial_clock	–	–	400	kHz

3.5 Supporting Circuit Specifications

3.5.1 In-Rush Current Control Circuit

Due to the hot-pluggable requirement, the GO2920 has built-in circuits to limit the in-rush current upon hot insertion. The specifications of the in-rush limiting circuits are summarized in Table 3-5.

Table 3-5: In-rush Current Limiting Circuits Specifications

Parameter	Value
Maximum in-rush current ramp rate	50mA/ms
Maximum in-rush current	30mA over steady state

4. Digital Diagnostics

4.1 I²C Bus Interface

The I²C interface allows reading of diagnostic information from the module. It is comprised of I²C DATA and I²C CLK pins. All address and data bytes are transmitted through the I²C DATA pin. The I²C DATA and I²C CLK pins are open-collector and they must be pulled high (4.75kΩ recommended) externally to the module. Data on the I²C DATA pin may only change during I²C CLK 'low' time periods. Data changes during I²C CLK 'high' periods will indicate either a START or STOP condition. Operations and conditions are described as follows:

START Condition

The START condition is originated by the host. A high-to-low transition of I²C DATA while I²C CLK 'high' defines a START condition that must precede any other command, see Figure 4-1.

STOP Condition

The STOP condition is originated by the host. A low-to-high transition of I²C DATA while I²C CLK 'high' defines a STOP condition, see Figure 4-1.

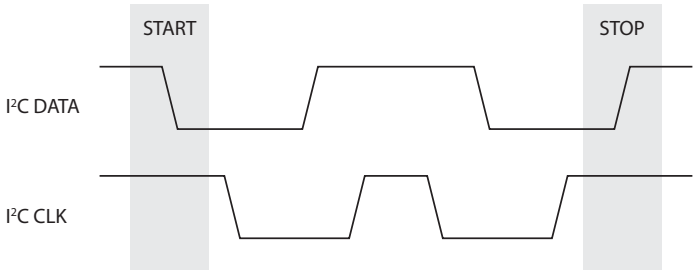

Figure 4-1: I²C START and STOP Condition

Acknowledge or ACK Condition

The acknowledge condition occurs when the I²C DATA pin is pulled 'low' during the ninth clock pulse following an address or data byte. The module originates this condition after it has received a block or data address. The host originates this condition during a sequential address read operation.

Addressing Operation

The module must receive a block address following a START condition to enable a read operation. The block address is clocked into the module MSB to LSB. There are three read operations: current address read, random read, and sequential address read.

Note that by the convention specified in the SFP MSA, 7-bit block addresses are left shifted by one bit when expressing them in hex. Block addresses for the different

memory regions are specified in Section 4.2. Block addresses A0h, A2h and B2h would therefore be transmitted defined as binary 1010000, 1010001 and 1011001 respectively.

Current Address Read Operation

The module has an internal register that maintains the data address used during the last read operation, incremented by one. If the most recent data address was FFh, then the register resets to 00h. Once the block address is clocked in by the host with the R/W bit set 'high', the module follows with an ACK condition, and the data byte located at the current data address is serially clocked out of the module MSB to LSB. The operation is terminated when the host does not provide an ACK condition and initiates a STOP condition. See Figure 4-2.

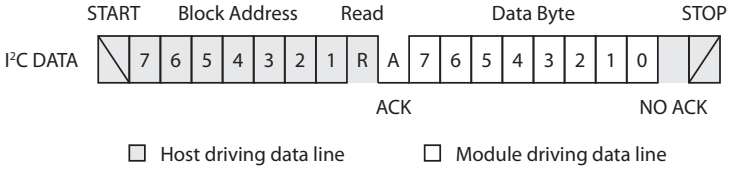

Figure 4-2: I²C Current Address Read Operation

Random Address Read Operation

A random read operation requires a dummy write sequence to load in the data address. Once the block and data addresses are clocked in by the host followed by an ACK condition provided by the module, the host must generate another START condition. The host now initiates a current address read operation by sending the block address with the R/W bit set 'high'. The module provides an ACK condition and serially clocks out the data byte. The operation is terminated when the host does not provide an ACK condition and initiates a STOP condition. See Figure 4-3.

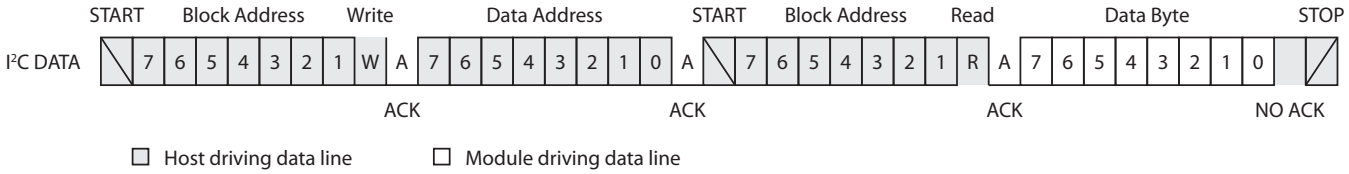

Figure 4-3: I²C Random Access Read Operation

Sequential Address Read Operation

The sequential address read operation is initiated by either a current address read or random address read operation. After the host receives the first data byte, it responds with an ACK condition. As long as the module receives the ACK condition after a data byte is read, the host can clock out additional data bytes from the module. After the data address reaches FFh, it resets to 00h. The operation is terminated when the host does not provide an ACK condition and initiates a STOP condition. See Figure 4-4.

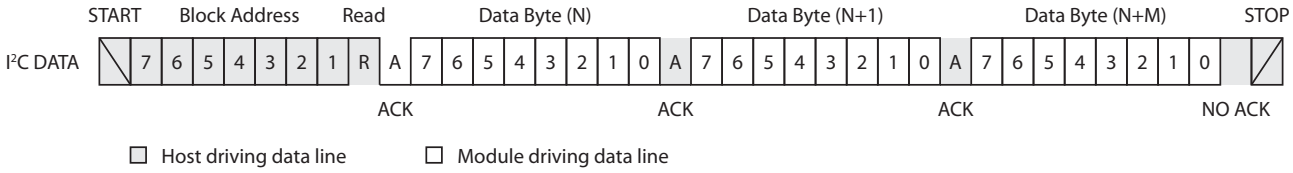

Figure 4-4: I²C Sequential Read Access Operation

4.2 Serial Interface Memory Map

Module identification and digital diagnostic monitoring information is accessible through the memory map addresses shown in this section. The items below outline the different block addresses of the module:

- Block address A0h contains serial ID information of the module.
- Block address A2h contains alarm flags, warning flags, thresholds and real-time digital diagnostic features set for channel 1.
- Block address B2h contains alarm flags, warning flags, thresholds and real-time digital diagnostic features set for channel 2.

The 16-bit digital diagnostic monitoring information is internally calibrated over Gennum's specified operating temperature and voltage. Alarm and warning threshold values are calibrated in the same manner and can be interpreted as defined below.

Internally measured module temperature is represented as a 16-bit signed two's complement value in increments of 1/256 degrees Celsius, yielding a total range of -128°C to +128°C. To calculate the temperature, treat the two's complement value as a 16-bit unsigned integer and divide it by 256. If the result is greater or equal to 128, subtract 256 from the result. See Table 4-1 for temperature conversion examples.

Table 4-1: Temperature Conversion Examples

MSB (BIN)	LSB (BIN)	Temperature (°C)
01000000	00000000	64°C
01000000	00001111	64.059°C
01011111	00000000	95°C
11110110	00000000	-10°C
11011000	00000000	-40°C

Internally measured module supply voltage is represented as a 16-bit unsigned integer with the voltage defined as the full 16-bit value with the LSB equal to 100µV, yielding a total range of 0 to +6.55V. To calculate the supply voltage, multiply the 16-bit unsigned integer by 100µV.

Internally measured RX optical power is represented as a 16-bit unsigned integer with the power defined as the full 16-bit value with the LSB equal to 0.1µW, yielding a total

range of 0 to 6.5535 mW (~ -40 to +8.2 dBm). To calculate the RX optical power, multiply the 16-bit unsigned integer by 0.1µW.

Table 4-2: Module Identification Fields

Block Address: A0h

Address	Size	Name	Description and Value
0	1	Identifier	Type of serial transceiver. 82h
1	1	Ext. Identifier	Extended identifier of type of serial transceiver. 04h
2	1	Connector	Code for connector type. 07h for LC connectors.
3	1	Standards Compliance	41h, for SMPTE259M/344M/292M/424M and SMPTE 297M.
4-10	8	Transceiver Code	Code for electronic compatibility or optical compatibility. Not applicable for GO2920.
11	1	Encoding	Code for serial encoding algorithm. Value: 03H for NRZ.
12	1	BR, Nominal	Nominal bit rate, units of 100 Mbps, 1Eh for 3Gbps.
13	1	Reserved	Xxh
14	1	Length (9mm) - km	Link length supported for standard SFM, units of km, 1Eh (30km at HD-SDI with GO2922).
15	1	Length (9mm)	Link length supported for standard SFM, units of 100 m, 00h
16	1	Length (50mm)	Link length supported for 50/125 mm fiber, units of 10 m. 00h
17	1	Length (62.5mm)	Link length supported for 62.5/125 mm fiber, units of 10 m. 00h
18	1	Length (Copper)	Link length supported for copper, units of meters. 00h
19	1	Reserved	Xxh
20-35	16	Vendor name	SFP with OM transceiver vendor name (ASCII). G E N N U M
20	1	G	47h
21	1	E	45h
22	1	N	4Eh
23	1	N	4Eh
24	1	U	55h
25	1	M	4Dh
26-35	10	–	20h for each byte

Table 4-2: Module Identification Fields (Continued)

Block Address: A0h

Address	Size	Name	Description and Value
36	1	Reserved	–
37-39	3	Vendor OUI	SFP with OM transceiver vendor IEEE company ID. 00 00 00h
40-55	16	Vendor PN	Part number provided by SFP with OM transceiver vendor. G O 2 9 2 0 C M
40	1	G	47h
41	1	O	4Fh
42	1	2	32h
43	1	9	39h
44	1	2	32h
45	1	0	30h
46	1	C	43h
47	1	M	4Dh
48-55	9		20h
56-58	3	Reserved	–
59	1	Vendor Rev	Revision level for part number provided by vendor.
60-61	2	NA	–
62	1	Reserved	Xxh
63	1	CC_BASE	Check code for Base ID Fields (The value of the lower 8 bits of the sum of the contents from address 0 to 62).
64-65	2	Options	Indicates which optional SFP with OM signals are implemented.
64	1	Reserved	Xxh
65	1	–	x000001xh
66	1	BR, max	Upper bit rate margin, units of %, 5h.
67	1	BR, min	Lower bit rate margin, units of %, 5Fh.
68-83	16	Vendor SN	Serial number provided by vendor (ASCII)
84-85	2	Year	Manufacturing date code (ASCII).
86-87	2	Month	Manufacturing date code (ASCII).
88-89	2	Day	Manufacturing date code (ASCII).
90-91	2	Blank	–
92	1	Calibration flag	28h for calibrated average input power

Table 4-2: Module Identification Fields (Continued)

Block Address: A0h

Address	Size	Name	Description and Value
93	1	–	90h, Enhanced alarm/warning flags
94	1	Reserved	Xxh
95	1	CC_EXT	Check code for the Extended ID Fields (The value of the lower 8 bits of the sum of the contents from address 64 to 94)
96-127	32	Reserved	Vendor specific

Table 4-3: Alarms and Warning Thresholds

Block Address: A2h for Receive Channel 1, B2h for Receive Channel 2

Address	Size	Name	Description and Value
0-1	2	Temp High Alarm	MSB at lower address. 70°C case temp.
2-3	2	Temp Low Alarm	MSB at lower address. 0°C case temp.
4-5	2	Temp High Warning	MSB at lower address. 65°C case temp.
6-7	2	Temp Low Warning	MSB at lower address. 5°C case temp.
8-9	2	Supply Voltage High Alarm	MSB at lower address. 3.6V
10-11	2	Supply Voltage Low Alarm	MSB at lower address. 3.0V
12-13	2	Supply Voltage High Warning	MSB at lower address. 3.47V
14-15	2	Supply Voltage Low Warning	MSB at lower address. 3.14V
16-31	16	N/A	–
32-33	2	Rx Power High Alarm	MSB at lower address. 0dBm.
34-35	2	Rx Power Low Alarm	MSB at lower address. -20dBm.
36-37	2	Rx Power High Warning	MSB at lower address. -2dBm.
38-39	2	Rx Power Low Warning	MSB at lower address. -18dBm.
40-95	56	Reserved.	–

Table 4-4: Alarms and Real Time Diagnostic information

Block Address: A2h for Receive Channel 1, B2h for Receive Channel 2

Adress	Size	Name	Description and Value
96	1	Temperature MSB	Internally measured module temperature (approximately case temp + 12°C)
97	1	Temperature LSB	Internally measured module temperature (approximately case temp + 12°C)
98	1	V_{CC} MSB	Internally measured module supply voltage
99	1	V_{CC} LSB	Internally measured module supply voltage
100-103	4	N/A	–
104	1	Rx Power MSB	Internally measured Rx power
105	1	Rx Power LSB	Internally measured Rx power
106-109	9	Reserved	–
110	1	Reserved	Bit 7-2
		LOS	Bit 1: Indicates Rx_LOS state
		Data_Ready	Bit 0
111	1	Temp Update	Bit 7 goes to high after a temperature update
		V_{CC} Update	Bit 6 goes to high after a V_{CC} update
		Reserved	Bit 5-4
		Rx Power Update	Bit 3 goes to high after a Rx input power update
		Reserved	Bit 0-2
112	1	Temp High Alarm Flag	Bit 7, set when the internal temperature exceeds the high temp alarm threshold
		Temp Low Alarm Flag	Bit 6, set when the internal temperature goes below the low temp alarm threshold
		Supply Voltage High Alarm Flag	Bit 5, set when the internal V_{CC} exceeds the supply voltage high alarm threshold
		Supply Voltage Low Alarm Flag	Bit 4, set when the internal V_{CC} goes below the supply voltage low alarm threshold
		N/A	Bit 0-3
113	1	Rx Power High Alarm Flag	Bit 7, set when the monitored Rx power exceeds the Rx power high alarm threshold
		Rx Power Low Alarm Flag	Bit 6, set when monitored Rx power current goes below the Rx power low alarm threshold
		Reserved	Bit 0-5

Table 4-4: Alarms and Real Time Diagnostic information (Continued)

Block Address: A2h for Receive Channel 1, B2h for Receive Channel 2

Adress	Size	Name	Description and Value
114-115	2	Reserved	–
116	1	Temp High Warning Flag	Bit 7, set when the internal temperature exceeds the high temp warning threshold
		Temp Low Warning Flag	Bit 6, set when the internal temperature goes below the low temp warning threshold
		Supply Voltage High Warning Flag	Bit 5, set when the internal V_{CC} exceeds the supply voltage high warning threshold
		Supply Voltage Low Warning Flag	Bit 4, set when the internal V_{CC} goes below the supply voltage low warning threshold
		N/A	Bit 0-3
117	1	Rx Power High Warning Flag	Bit 7, set when the monitored Rx power exceeds the Rx power high warning threshold
		Rx Power Low Warning Flag	Bit 6, set when the monitored Rx power goes below the Rx power low warning threshold
		Reserved	Bit 0-5
118-127	10	Reserved	–

Table 4-5: Writeable Area

Block Address: B2h

Address	Size	Name	Description and Value
128-247	120	Writeable Area	–
248-255	8	Reserved	–

5. Application Reference Design

5.1 Typical Application Circuit

Figure 5-1 shows a typical application circuit for the GO2920.

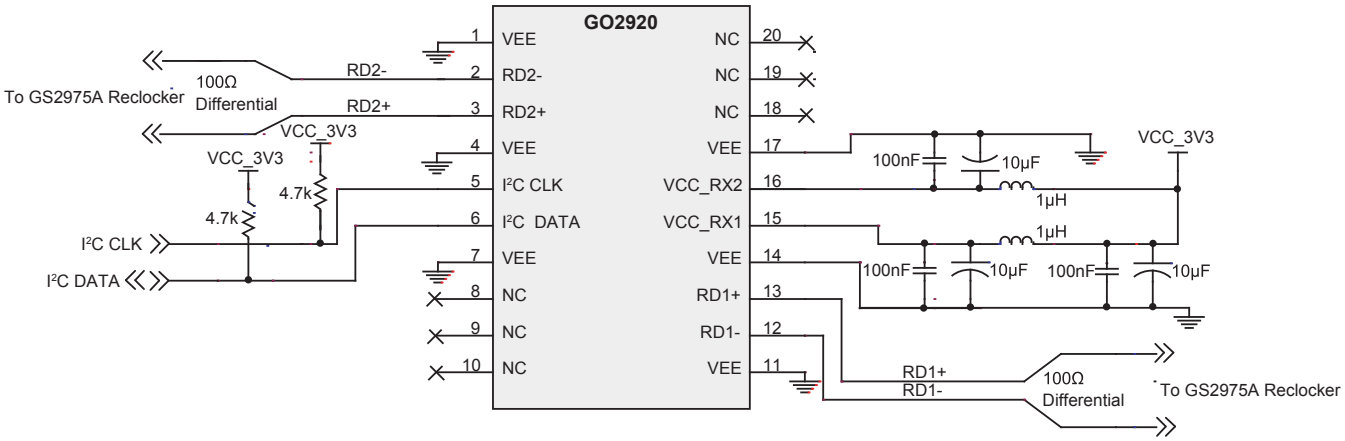

Figure 5-1: Typical Application Circuit

6. References and Relevant Standards

Table 6-1: References and Relevant Standards

INF-8074i Rev 1.0	SFP (Small Formfactor Pluggable) Transceiver
SMPTE 259M-2008	SDTV Digital Signal/Data – Serial Digital Interface
SMPTE 292M-2008	1.5 Gb/s Signal / Data Serial Interface
SMPTE 297-2006	Serial Digital Fiber Transmission System for SMPTE 259M, SMPTE 344M, SMPTE 292 and SMPTE 424M Signals
SMPTE 344M-2000	540 Mb/s Serial Digital Interface
SMPTE 424M-2006	3 Gb/s Signal/Data Serial Interface

7. Package Information

7.1 Package Dimensions

A common mechanical outline, as shown in Figure 7-1, is used for all SFP modules.

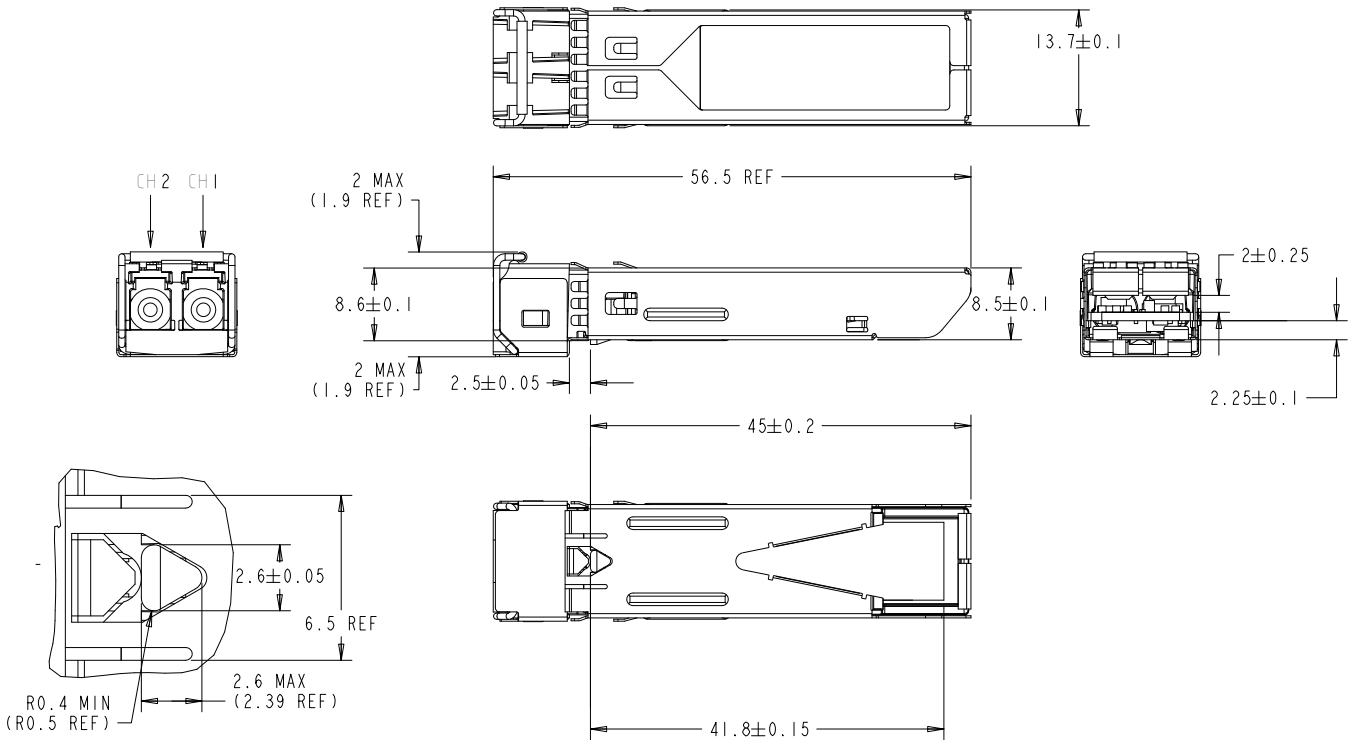

Figure 7-1: Common SFP Package Outline

7.2 Marking Information

Figure 7-2 illustrates the markings on the GO2920. Table 7-1 provides a description of the parameters in the marking diagram.

Figure 7-2: GO2920 Marking Diagram

Table 7-1: Marking Parameter Description

Parameter	Description
ZZZZZZZZ	8-digit serial number.
yyyyWww	Date code. Example: 2008W36

7.3 PCB Layout Recommendations

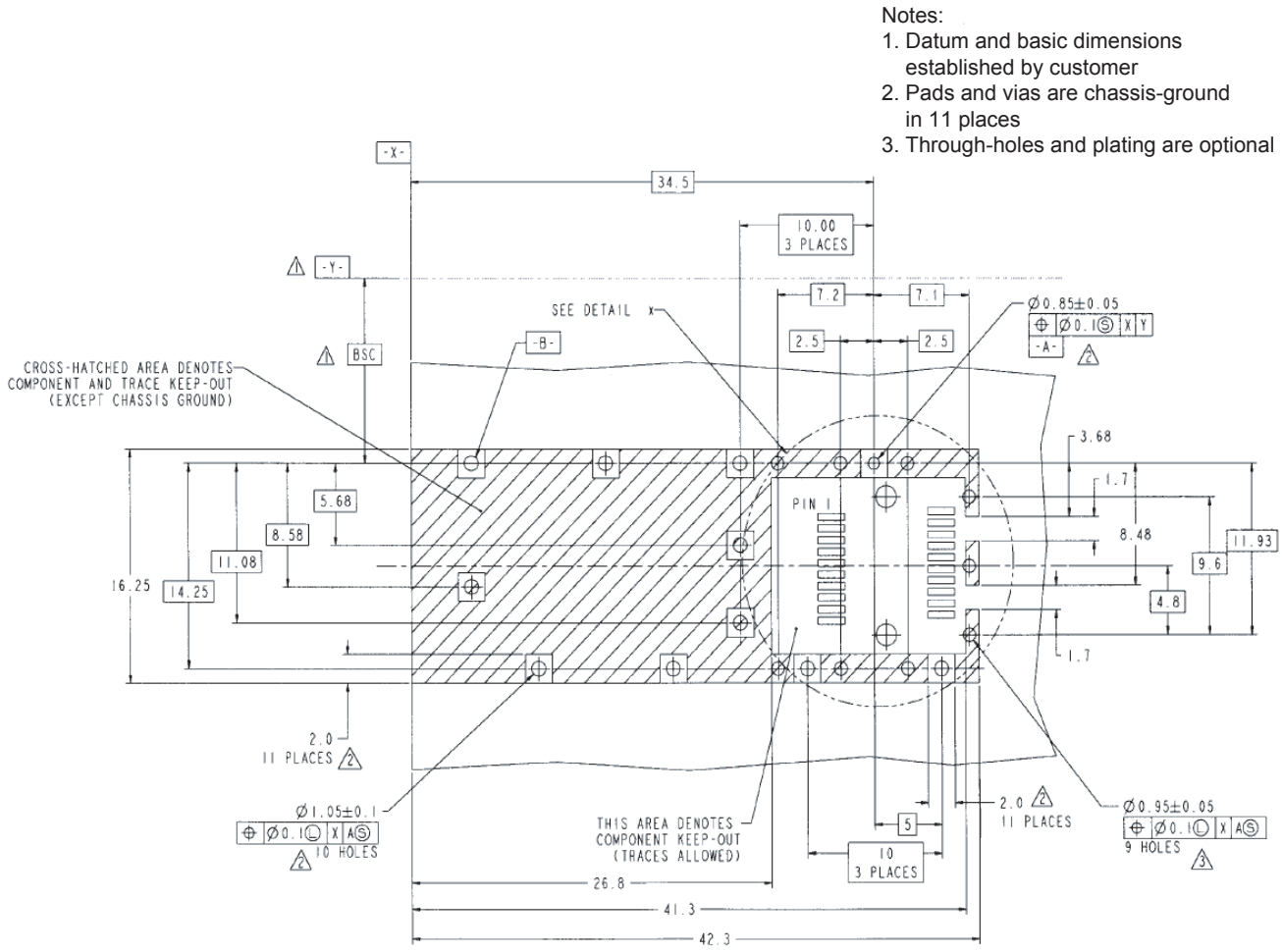

Figure 7-3: Host PCB Layout

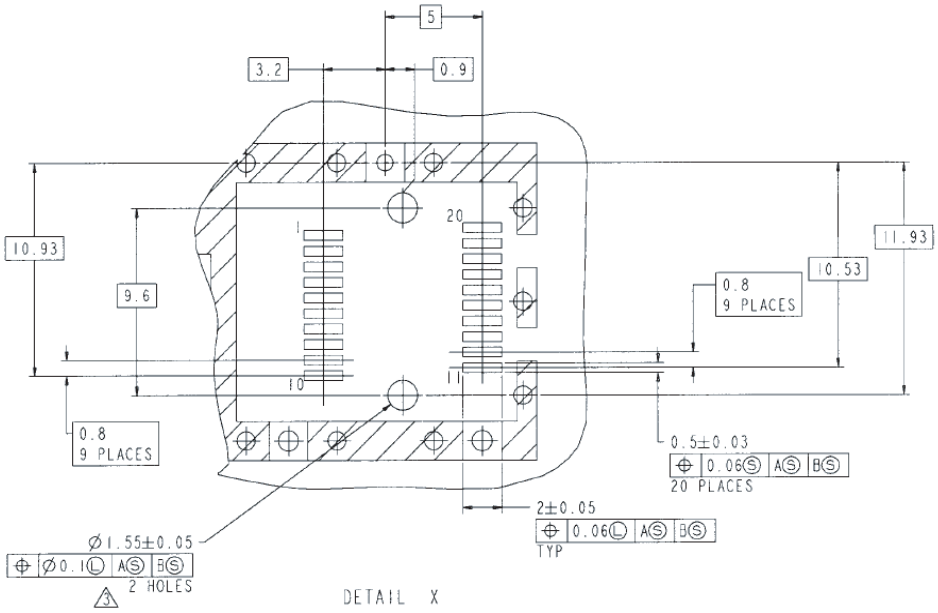

Figure 7-4: Detailed Host PCB Layout

DOCUMENT IDENTIFICATION
DATA SHEET
The product is in production. Gennum reserves the right to make changes to the product at any time to improve reliability, function or design, in order to provide the best product possible.

CAUTION
ELECTROSTATIC SENSITIVE DEVICES
DO NOT OPEN PACKAGES OR HANDLE EXCEPT AT A STATIC-FREE WORKSTATION

GENNUM CORPORATE HEADQUARTERS
4281 Harvester Road, Burlington, Ontario L7L 5M4 Canada
Phone: +1 (905) 632-2996
E-mail: corporate@gennum.com
Fax: +1 (905) 632-2055
www.gennum.com

OTTAWA
232 Herzberg Road, Suite 101
Kanata, Ontario K2K 2A1
Canada
Phone: +1 (613) 270-0458
Fax: +1 (613) 270-0429

CALGARY
3553 - 31st St. N.W., Suite 210
Calgary, Alberta T2L 2K7
Canada
Phone: +1 (403) 284-2672

UNITED KINGDOM
North Building, Walden Court
Parsonage Lane,
Bishop's Stortford Hertfordshire, CM23 5DB
United Kingdom
Phone: +44 1279 714170
Fax: +44 1279 714171

INDIA
#208(A), Nirmala Plaza,
Airport Road, Forest Park Square
Bhubaneswar 751009
India
Phone: +91 (674) 653-4815
Fax: +91 (674) 259-5733

SNOWBUSH IP - A DIVISION OF GENNUM
439 University Ave. Suite 1700
Toronto, Ontario M5G 1Y8
Canada
Phone: +1 (416) 925-5643
Fax: +1 (416) 925-0581
E-mail: sales@snowbush.com
Web Site: http://www.snowbush.com

MEXICO
288-A Paseo de Maravillas
Jesus Ma., Aguascalientes
Mexico 20900
Phone: +1 (416) 848-0328

JAPAN KK
Shinjuku Green Tower Building 27F
6-14-1, Nishi Shinjuku
Shinjuku-ku, Tokyo, 160-0023
Japan
Phone: +81 (03) 3349-5501
Fax: +81 (03) 3349-5505
E-mail: gennum-japan@gennum.com
Web Site: http://www.gennum.co.jp

TAIWAN
6F-4, No.51, Sec.2, Keelung Rd.
Sinyi District, Taipei City 11502
Taiwan R.O.C.
Phone: (886) 2-8732-8879
Fax: (886) 2-8732-8870
E-mail: gennum-taiwan@gennum.com

GERMANY
Hainbuchenstraße 2
80935 Muenchen (Munich), Germany
Phone: +49-89-35831696
Fax: +49-89-35804653
E-mail: gennum-germany@gennum.com

NORTH AMERICA WESTERN REGION
691 South Milpitas Blvd., Suite #200
Milpitas, CA 95035
United States
Phone: +1 (408) 934-1301
Fax: +1 (408) 934-1029
E-mail: naw_sales@gennum.com

NORTH AMERICA EASTERN REGION
4281 Harvester Road
Burlington, Ontario L7L 5M4
Canada
Phone: +1 (905) 632-2996
Fax: +1 (905) 632-2055
E-mail: nae_sales@gennum.com

KOREA
8F Jinnex Lakeview Bldg.
65-2, Bangidong, Songpagu
Seoul, Korea 138-828
Phone: +82-2-414-2991
Fax: +82-2-414-2998
E-mail: gennum-korea@gennum.com