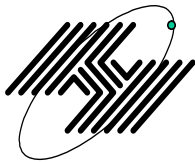


GW816 Specifications

Version : V1.0



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* Design and specifications are subject to change without notice *

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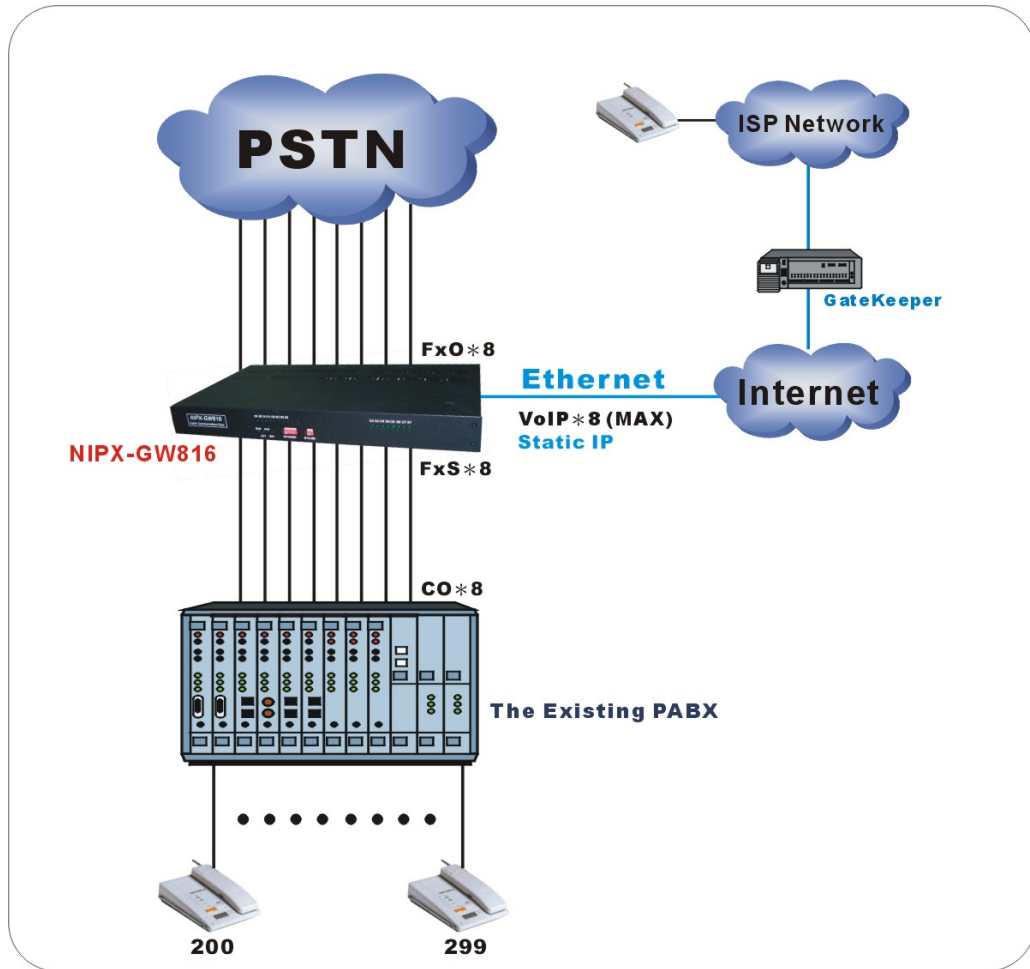
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1、Overview

Kylink's VOIP Gateway as named NIPX-GW816 is a cutting-edge products that supports protocol H.323 and SIP. It's the best gateway to span PSTN and Internet within state of the art design.

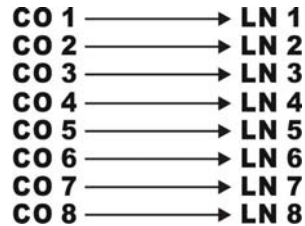
NIPX-GW816 has types A and B, Maximum 16 ports in type A and 8 Ports in type B For your reality configuration, all the specifications and characters in this book are complied with A and B types.

Networking diagram as below is the most popular configuration for VOIP gateway. Obviously, the GW816 will take its place to routing your call from existing PBX to PSTN or Internet automatically. It's not only working as gateway but also providing the simple functions of PBX such as Hotline、caller ID ...etc. In addition, your calls to VOIP will go through PSTN once the Ethernet failure detected.



2 、 Functionality

- (1) Support both H.323 and SIP protocol ◦
- (2) LN to CO (Store & Forward) : The route of outbound calls is depending on the ID table setting.
- (3) CO to LN :
 - (a) Hotline : Forward directly.



- (b) Hotline with idle channel auto hunting when the hotline party in busy.
- (4) Forwarding Caller ID from PSTN to existing PBX.
- (5) The calls to VOIP will auto routing to CO when G.K off-line or Ethernet port fault detected, maximum 16 digits, the system allowed to add or delete the digits when auto route, additional inter-digit delay function (1~3 seconds adjustable) before the destination number send out.
- (6) LN call to LN: dial LN number directly.
- (7) Maintenance console : RS-232 and Telnet and Internet port for maintenance.

3 、 System specifications and characters

3.1 specification of interface port

3.1.1 Ethernet Port

One RJ-45 connector, utilize Single port 10/100Mbps Fast Ethernet Phyceiver, provide functions as below:

- (1) IEEE 802.3/802.3u compliant.
- (2) Support half/full duplex operation.
- (3) Support IEEE 802.3u clause 28 auto negotiation.
- (4) Adaptive Equalization.
- (5) Support Link Down Power Saving mode operation.
- (6) Speed/duplex/auto negotiation adjustable.

3.1.2 FXO Port

- (1) Comply with PSTN01 specifications for PSTN terminal devices access certification. EMC and electric specification including.
- (2) Support DTMF and FSK caller ID.

3.1.3 FXS Port

- (1) Provide BORSCH facilities for FXS.
- (2) Battery Feed Voltage: DC+24V.
- (3) Ringer: sine wave AC45~86Vrms.
- (4) Provide polarity reverse.
- (5) Support power failure transfer FXO-FXS and By-Pass routing.

3.1.4 RS-232 Port

9-Pin D-SUB female connector, 38400bps/8/N/1, non flow control signal.

3.2 Capacity

3.2.1 Switching capability and interface capacity

GW816 type A provides 8 voice channels as non-blocking in switching network as well as 4 channels in type B.

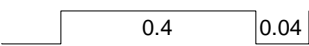
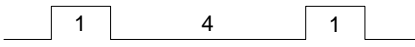
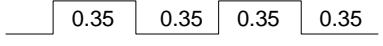
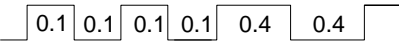
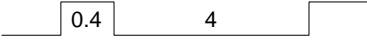
POTS8 interface card provides 4 FXO (CO) and 4 FXS (LN) ports. Equipped with two POTS8 in type A and one in type B.

3.2.2 DTMF Receiver

- DTMF receiver, 8 channels simultaneously, frequency tolerance $\leq \pm 2\%$, signal continuous time $> 40\text{ms}$, minimum duration between signal $> 40\text{ms}$, lowest signal level $> -31\text{dBm}$, Dual frequency level gap $\leq 6\text{dB}$.
- FSK receiver, 8 channels simultaneously for receiving Caller ID from FXS port.

3.2.3 Tones specification

- Indication tone, harmonic distortion < 10 %.

type	frequency(Hz)	Cadence (Second)	Level(dBm0)
Dial tone	450±25	continuously	-10±3
Special dial tone	450±25		-10±3
Ring back tone	450±25		-10±3
Busy tone	450±25		-10±3
Error tone	450±25		-10±3
Complete tone	950±50	continuously	-20±3
Howling tone	950±50	continuously	-6±3
Call waiting tone	450±25		-20±3
Test tone	2600±5	continuously	-8±1

- DTMF signal

Signal continuous time > 40ms, minimum duration between signal > 40ms, lowest signal level > -31dBm, Dual frequency level gap $\leq 2 \pm 1$ dB.

Digit	Low level frequency(Hz)	High level frequency(Hz)	Output level(dBm0)
1	697±1.5%	1209±1.5%	-9±3/-7±3
2	697±1.5%	1336±1.5%	-9±3/-7±3
3	697±1.5%	1477±1.5%	-9±3/-7±3
A	697±1.5%	1633±1.5%	-9±3/-7±3
4	770±1.5%	1209±1.5%	-9±3/-7±3
5	770±1.5%	1336±1.5%	-9±3/-7±3
6	770±1.5%	1477±1.5%	-9±3/-7±3
B	770±1.5%	1633±1.5%	-9±3/-7±3
7	852±1.5%	1209±1.5%	-9±3/-7±3
8	852±1.5%	1336±1.5%	-9±3/-7±3
9	852±1.5%	1477±1.5%	-9±3/-7±3
C	852±1.5%	1633±1.5%	-9±3/-7±3
*	941±1.5%	1209±1.5%	-9±3/-7±3
0	941±1.5%	1336±1.5%	-9±3/-7±3
#	941±1.5%	1477±1.5%	-9±3/-7±3
D	941±1.5%	1633±1.5%	-9±3/-7±3

3.3 Audio transmission characters

- (1) FXS loop and leakage resistor :
 - (a) maximum loop resistor (exclude phone set) : 1200Ω.
 - (b) minimum leakage resistor : 30KΩ.
- (2) Insertion Loss :
 - (a) FXS to FXS : < 1±0.5dB(measure at 1KHz).
 - (b) FXS to FXO : < 1dB(measure at 1KHz).
- (3) Frequency loss distortion (800Hz loss as reference, comply to CCITT -REC G.712)
 - (a) 300 ~ 600 Hz : -0.5 ~ +1.0 dB.
 - (b) 600 ~ 3000 Hz : -0.5 ~ +0.5 dB.
 - (c) at 3400 Hz : 0 ~ 3.0 dB.
- (4) FXS to FXO Return Loss :
 - (a) Echo Return Loss : >20dB.
 - (b) Singing Return Loss : >12dB (measure at 1KHz).
- (5) Cross talk between FXS : >70dB.
- (6) FXS to FXS idle channel noise : <23dBnc.
- (7) FXO Longitudinal Balance : >46dB (200 ~ 3000Hz).
- (8) Isolation resistor : chassis to cable>5MΩ, chassis to power>5MΩ, power to ground>10MΩ.

3.4 Electric characters

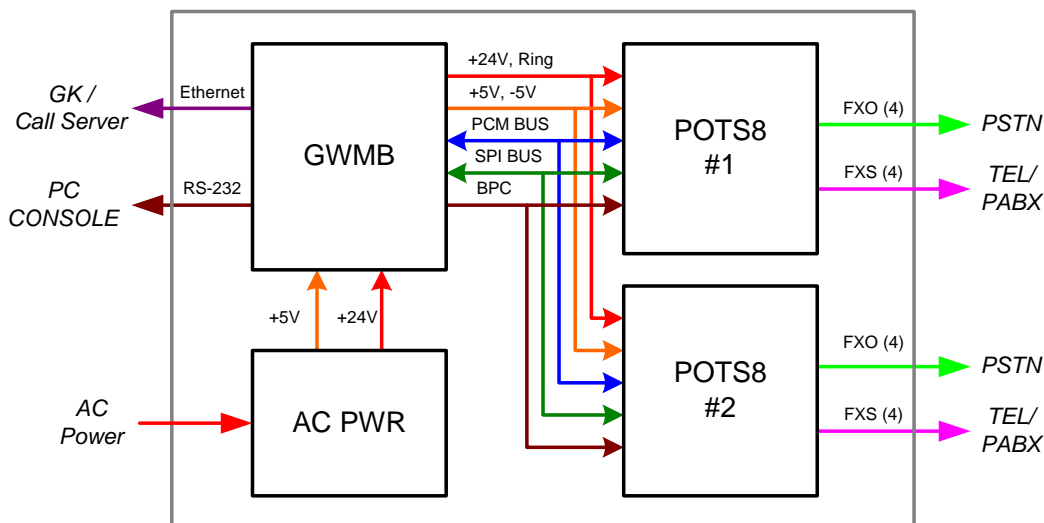
- (1) Alternative input power AC110V or AC220V.
- (2) FXS for telephone set and CO Trunk of PBX connection.
- (3) FXO for connection of fixed line where from PSTN service provider. Comply with PSTN01.
- (4) Humidity : 0 ~ 95%.
- (5) Temperature : (A) operation : -10 C ~ +65 C. (B)store : -20 C ~ +70 C.
- (6) EMC character : Comply with CNS 13438 C6357.
- (7) Safety character : Comply with CNS 14336 C5268.

3.5 Reliability

MTBF ≥ 2 Year / Failure.

4、System architecture

4.1 Diagram



4.2 Hardware description

- (1) GW-816 hardware consists of AC PWR, GWMP & POTS8 Cards.
- (2) GWMP card is the core of process control and PCM switching network. FXO and FXS on POTS8 are main interface to exterior network or terminal devices.
- (3) GWMP providing 8 channels voice-packaged and unpackaged by DSP chipset, it's also has the capability of PCM switching network and tone generation for subscribers, equipped with 32-bit CPU for processing the H.323 and SIP protocol.
- (4) GWMP with one 10/100Mbps Ethernet Port, that enable to connect H.323 Gate Keeper or SIP Call Server. Additional RS-232 Port used for data setting on PC Console.
- (5) GWMP also provide DC/AC ringer generator for ringing on telephone set as well as DC/DC switching power output -5V for OPA on POTS8.
- (6) POTS8 provide 4 FXO for interface to external line from PSTN provider.
- (7) POTS8 provide another 4 FXS for interface to telephone set and CO Trunk of PBX, the reverse polarity can be configured for billing, and power failure transfer circuit for system failure.
- (8) AC PWR mainly is provide input AC110V or AC220V transfer to output DC24V, +5V for GWMP card、POTS8 card.

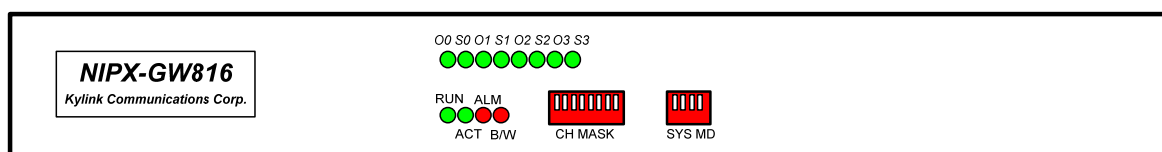
4.3 Appearance and Interface

4.3.1 Appearance

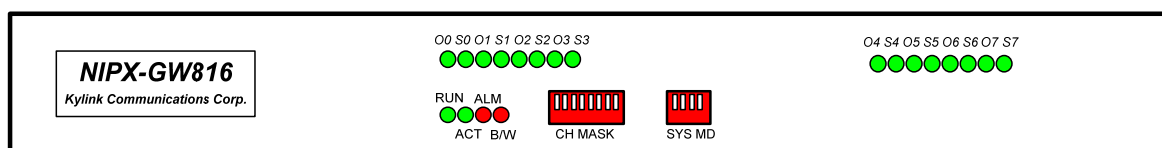
- (1) 19" / 1U chassis for rack mount.
- (2) Material : iron galvanized, black color.



4.3.2 Front panel indication



8-port view of front panel

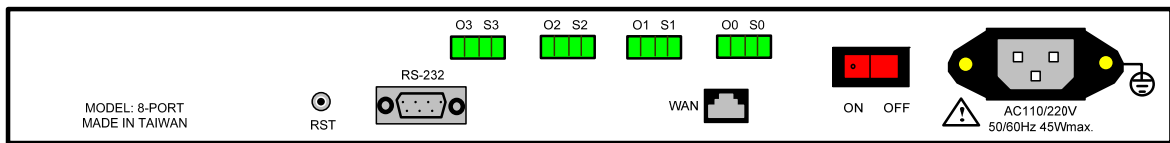


16-port view of front panel

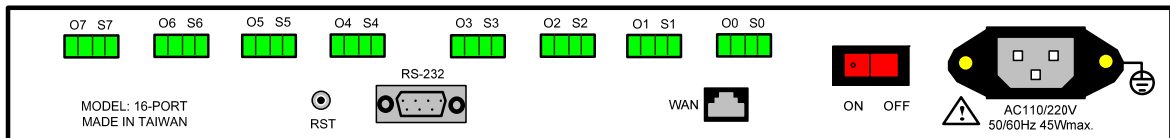
Indication of LED and switch :

- (1) CHN Mask: 8-bit Dip switch corresponding to 8-port FXS/FXO enable/disable, on upper position is enable, down is disable.
- (2) CHN Mask: 4-bit Dip switch, bit-0: ON=SIP MODE; OFF=H.323.
- (3) GWMP LED:
 - (a) RUN: indicate the working status. 0.5 flashing when normal.
 - (b) ACT : the indication of WAN connectivity.
 - (c) ALM : the indication of malfunctions.
 - (d) BYWAY : the indication of By Way status.
- (4) FXO/FXS LED:
 - (a) O0~O7 (3): the indication of FXO status. LED on when in busy and off when idle.
 - (b) S0~S7 (3): the indication of FXS status. LED on when in busy and off when idle.

4.3.3 Back panel indication



8-port view of back panel



16-port view of back panel

Description of connection and switch :

- (1) Power SW: Power switch of the main unit.
- (2) AC I/P: AC input jack.
- (3) O0~O7(3) : 2-pin of terminal-block jack for each FXO, connect to fix line from PSTN provider.
- (4) S0~S7(3) : 2-pin of terminal-block jack for each FXS, connect to telephone set and CO Trunk of PBX.
- (5) RS-232 : RS-232 9-pin D-SUB female connector for maintenance PC Console.
- (5) WAN : RJ-45, 8P8C Jack, 10/100 Ethernet Port.
- (6) RST: Reset button.