E1 GSM Gateway / Channel Bank with 30 x GSM Interface(s)

Product Overview

Aries integrates the WAN E1 interface to the GSM mobile communications network. Aries compact GSM Gateway solution integrates the E1 interface to the GSM network to provide the user with 30, GSM links for mobile communications with an integrated E1 interface.

Applications

Ours E1 GSM Gateway / E1 GSM Channel Bank applications include

- VoIP, VoATM, VoFR, VPN termination to GSM network
- DCME E1 / T1 traffic termination directly to the GSM network
- Connecting remote (distant) locations over GSM networks
- Providing rural connectivity over GSM networks
- Last mile connectivity over GSM networks
- Quick basic telephony provisioning
- Corporate business fixed to mobile / mobile to fixed
- GSM connectivity for river boats, costal cruise ships
- Fixed network back-up via GSM networks
- VPN connectivity between two corporate networks
- Mobile back-up solutions for corporate businesses with high security requirements, and many more applications.

Our GSM gateway also replaces the cumbersome fixed wireless terminals and provides accurate answer supervision and line disconnect supervision, plus a host of other advantages, which include fast connection times (very short PDD) and high ASR rates that compete with the industry's best.

We offers both E1 GSM Gateways and T1 GSM gateways / GSM channel banks.

- The interface of the network side is E1 Digital Interface with CAS R2 digital signaling.
- The interface on the wireless side is up to 30 x GSM links.
- Accurate answer supervision and disconnect supervision.
- Unique caller ID blocking feature (if network allows)
- Echo cancellation up to 128ms. provided - optional
- PRI ISDN (Euro ISDN) Q.931 signaling available - optional
- Remote access monitoring over TCP/IP network - optional
- Unique out-bound calling, user programmable, access feature.
- All 30, GSM channels are dual band - 900MHz and 1800MHz with auto-sense / auto-switching capability.

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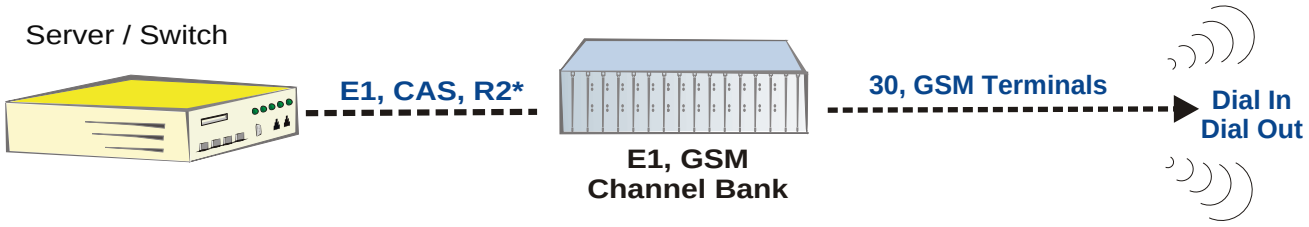
Features & Highlights

- Compact, 30 GSM terminals in a 19-inch chassis.
- GSM is integrated to the E1 Interface.
- Exceptional voice quality. The two wire trans-hybrid analog path (present in the Fixed Wireless Terminals) is eliminated in the innovative design, resulting in improved voice quality, clearer voice and superior channel separation by reducing the susceptibility to echoes that result from the analog two wire trans-hybrid VF paths.
- Disable caller ID (if allowed by the local GSM network).
- Provides accurate billing information ("answer supervision" and "line disconnect supervision") - not provided by Fixed Wireless Terminals.
- Integrated, optional, E1 Echo-Canceller to cancel echo tails from inherent delays of VoIP / VoFR networks - 64ms. uni-directional, 128ms. uni-directional and 64ms. bi-directional options available.
- Lower cost - resulting from complete, GSM wireless to E1 integration.
- Plug-And-Play. Easy to install. Takes only minutes to install and start service.

APPLICATION DIAGRAM

E1 GSM Gateway / Channel Bank with 30 X GSM Interfaces



*PRI ISDN (EURO ISDN) Signalling (Optional).

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Ours Integrated E1 / T1 GSM Channel Bank - PROS	Third Party, component solutions comprising of E1 / T1 Channel Banks and 24 (T1) / 30 (E1) Fixed Wireless Terminals - CONS
1. Integrated and Compact. 24 (T1), or 30, (E1) GSM channels in a compact 6U high, 19-inch rack-mountable shelf.	1. Discreet and poorly managed solution comprising of a channel bank and discreet and 24 (T1) / 30 (E1) Fixed Wireless Terminals.
2. Integrated, Single Power Input: -48VDC or AC Mains. Both options are provided.	2. Individual, 24 (T1) / 30 (E1) Fixed Wireless Terminals with 30, separate power inputs. Difficult to manage.
3. 3.5dB gain, external antennas with 2 meter Rg174 cable and antenna trays. Easy to manage.	3. Absence of External Antennas provides no additional signal gain.
4. Offers Remote and Integrated Graphical User Interface (GUI) Management to monitor all GSM channels. This option allows the USER to view and monitor the status of ALL 24 / 30 GSM channels, including FAULTS on any of the individual GSM channels, remotely, over a TCP-IP network.	4. No management facility to monitor the GSM terminals remotely, or to view the channel or fault status on any of the GSM channels.
5. Integrated, 64ms. and 128ms. Echo-Canceller option. This option allows the USER to install a 64ms. / 128ms. Echo Canceller in the same 19-inch chassis, to effectively remove any echoes resulting From VoIP and VoFR network delays.	5. No option of ANY Echo-Canceller, which are often essential and required in VoIP and VoFR call termination, owing to unacceptable echoes which often result from network delays.
6. Direct E1 - A Law to GSM Conversion, or, Direct T1 Mu Law to GSM conversion, with patented (patent pending) noise reduction technology. Greatly improves voice quality and voice clarity.	6. Poor coupling of analog lines (from the E1/ T1 channel banks) to GSM Fixed Wireless Terminals often results in the analog lines picking up a lot of GSM transmission noise often resulting in unacceptable voice quality and poor quality service.
7. Greater product reliability. Integration results in greater product reliability and results in less downtime resulting from a low failure rate.	7. Poor product reliability resulting from low integration, poor management and a high number of individual components that are required to be managed (24 or 30 individuals Fixed Wireless Terminals, each with separate power supplies, and the channel bank.

Ours Integrated E1 / T1 GSM Channel Bank - PROS	Third Party, component solutions comprising of E1 / T1 Channel Banks and 24 (T1) / 30 (E1) Fixed Wireless Terminals - CONS
8. Unique dial-out,user programmable access. USER PROGRAMMABLE, call directory interface. This optional feature, unique to E1 / T1, GSM Multiplexer, allows the USER to program "out-bound" calls (GSM Network to E1 / T1), to be restricted to a list of USER pre-programmed numbers only. This feature can be used to provide limited access to out-going calls (GSM Network to E1 / T1), on dedicated channels, which the service provider may wish to RESERVE only for its SUBSCRIPTION CUSTOMERS wishing to use out-bound long-distance services (GSM Network to E1 / T1), through VoIP / VoATM networks. This option also allows the USER to RESTRICT, or to ALLOW all calls originating from the GSM Network to E1 / T1 VoIP / VoATM Gateway.	8. No USER PROGRAMMABILITY to RESTRICT or ALLOW calls based a USER PROGRAMMABLE directory. No such feature is provided, or offered in the Fixed Wireless Terminal Channel Bank solution.
9. Accurate CALL METERING resulting from accurate answer-supervision and line-disconnect supervision since the integrated E1 / T1, GSM Channel Bank derives its answer-supervision (required for the call-metering function), from the SS7 based GSM Network Signaling / GSM Switch.	9. Unreliable CALL METERING resulting from a battery reversal based, or VAD based (Voice Activated) answer supervision, which is based on analog technology and prone to errors. A VAD based answer supervision offers unreliable CALL METERING, in comparison with the integrated E1 / T1, GSM Channel Bank which derives its answer-supervision (required for the call-metering function), from the SS7 based GSM Network Signaling / GSM Switch.
10. Low Cost. Integration also results in cost reduction when compared with a component based, discreet solution comprising of a T1 / E1 channel bank PLUS 24 / 30 Fixed Wireless Terminals.	10. Higher cost. The cost appears to be even higher, the absence of any available features, and if poor product management, poor product integration resulting in lower product reliability is taken into consideration.

Technical Specifications

E1 Interface Card

Number of E1 Interfaces	One
Conformity	G.703
Frame Structure	As per ITU-T (CCITT) G.704
Signaling	Channel Associated Signaling (R2 Generic) in accordance with ITU-T Q.421, and ITU-T Q.422 Complies to both ITU-T Q.421, and ITU-T Q.422. *PRI ISDN (Euro ISDN) Signaling optional Extra
PCM Sampling Rate	8000 samples / second.
Encoding Law	A Law
Bit Rate	2048Kbps 50ppm.
Code	HDB3
Nominal Impedance	120 Ohms Standard (75 Ohms Optional)
Connector	RJ45 (120 Ohms Impedance)
Peak Voltage of a mark For 120 Ohms Balanced Interface	3.0 Volt 0.3 Volt.
Pulse Mask	As per ITU-T (CCITT) Rec. G.703
Output Jitter	<0.05UI (in the frequency range of 20Hz to 100KHz).
Permissible Attenuation	6dB at 1MHz
Return Loss at: 51.2 KHz to 102.4 KHz. 102.4 KHz to 2048 KHz 2048 KHz to 3072 KHz	 > 12dB > 18dB > 14dB
Jitter Tolerance	As per ITU-T (CCITT) G.823
Loss and Recovery of Frame Alignment	As per Clause 3 of ITU-T (CCITT) G.732
Loss and Recovery of Multi-Frame Alignment	As per Clause 5.2 of ITU-T (CCITT) G.732

Power Supply Card

Input DC voltage	-48V DC (nominal)
Range of input	-40V to -60V DC
Output voltages	+5V
Full Load Output Current	18A@5VDC
Input Voltage Reversal Protection	Provided in the Card
Over Current Protection	20A for +5V
Short Circuit Protection	Current limit - 20A. Recovers on removal of short
Under Voltage	< 4.5V
Over Voltage	5.4V to 5.6V
Efficiency at full load	>80%
Ripple at full load	<5mVrms
Spike at full load	<50mV
Power Consumption	120 Watts (Worst Case)

GSM Access Card

Number of GSM Interfaces	1 ~ 30 (Stackable, 1 thru 30).
Type	Dual Band EGSM 900 MHz and EGSM 1800 MHz.
Compliance	Compliant with ETSI GSM Phase 2+ standard (Normal MS) Class 4 (2W @ 900MHz) Class 1 (1W @ 1800 MHz)
Approvals	Fully Type Approved to GSM Standards
SIM Interface Internal Tray	Toolkit Class 2. 3V Reader
Voice Features	Full Rate, Enhanced Full Rate And Half-Rate (FR/EFR/HR)
DTMF	Dual Tone Multi FrequencyFunction (DTMF) Dialing Support

Alarms

An alarm shall be displayed in LED L1 / L2 for the following reasons

1. Invalid SIM Card
2. Unregistered SIM Card
3. Faulty SIM Card
4. Faulty GSM Module
5. GSM Access Card Out of Range

Echo Canceller Card

- Provides voice echo cancellation of up to 64ms / 128ms
- Conforms to ITU-T G.165 and ITU-T G.168
- G.164 /G.165 disable tone detection
- Non-Linear Processor with Comfort Noise Insertion
- Narrow-Band Detector
- Eliminates long echo tail.

E1 Echo Canceller - E1 Interface (Optional)

Number of Interfaces	2, 1 - Input (RJ-45) 1 - Output (RJ-45)
Conformity	G.703
Frame Structure	As per ITU (CCITT) G.704
Signaling	Pass-Through
PCM Sampling Rate	8000 Samples / sec
Encoding Law	A Law as per ITU (CCITT) G.711
Bit Rate	2048 Kbps ±50 ppm
Code	HDB3
Nominal Impedance	120Ω balanced
Peak Voltage of a mark For 120 Ω Balanced interface	3.0 V ± 0.3 V
Peak Voltage of a space for 120Ω Balanced interface	0 V ± 0.3 V
Nominal Pulse Width	244 ns
Pulse Mask	as per ITU (CCITT) Rec. G.703
Output Jitter	< 0.05 UI (in the frequency range of 20Hz to 100 Khz)
Permissible Attenuation	6 dB at 1 MHz
Return Loss at: 51.2 KHz to 102.4 Khz 102.4 KHz to 2048KHz 2048KHz to 3072 Khz	 > 12dB > 18dB > 14dB
Jitter Tolerance	As per ITU (CCITT) G.823
Loss and recovery of frame alignment :	As per clause 3 of ITU (CCITT) G.732
Loss and recovery of multiframe alignment :	As per clause 5.2 of ITU (CCITT) G.732

Mechanical Specifications:

Rack Mounting	Standard 19-Inch DIN Rack
Height	6U (265 mm)
Depth	290 mm
Width	19-inch (477mm)
Weight	12Kgs. (Net)

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