

TB8100 considerations that could be taken into account before purchasing to ensure you get the configuration most suited to your application.

There have been cases of customers who have purchased TB8100's not understanding which configuration of TB8100 is most suited for the application that they have arrived at a compromised solution with what they ended up with, or returning modules to be swapped with modules more appropriate to the TB8100 application that they have.

Below is a quick check list of applications, uses & topics that you should consider before placing an order. Also further to that is an FAQ section that address's some commonly asked questions.

To date many of the TB8100 configuration issues that have cropped up relate to confusion over the 12V/28V PMU/PA used, this seems to have caused the greatest confusion with customers with such topics as the PMU doesn't charge batteries, having a 28V PMU rack when a 12V PA rack was more suited or confusion with power save not being supported on dual PMU racks etc.

Please Consider:

- Basic stuff: frequency, power, bandwidth (affect reciter and PA type)
- Use of functionality that may require SFE's like:
 - multiple CTCSS tone requirements (Adv prof & TM SFE)
 - power saving requirements (Power Save SFE)
 - Remote diagnostics via a phone line (Alarm Centre SFE)
- Single or dual base station required in each subrack (affects PMU)
- Solar site or wind generator powered site (affects PMU/PA)
- mains only powered, no DC battery backup required (affects PMU/PA)
- DC battery powered site, no mains available (affects PMU/PA)
- Mains powered with battery backup (affects PMU/PA)
- interfacing to 4W E&M devices (like mux's, Omnitronics audio bridges etc) (affects SIF)
- trunking channel (affects SIF)
- TTR and link (affects if interfacing cabling is supplied)
- non-TTR(line controlled) base and link (affects if interfacing cabling is supplied)
- base station connected to telephone interconnect (affects if interfacing cabling is supplied)
- base connected to line interface unit (ie Omnitronics 900 series LIU) (affects SIF & affects if interfacing cabling is supplied)
- QS2 channel
- remote diagnostics method like RS232 mux port, phone line, GSM, CDMA, Ethernet (affects SIF & SFE)
- multiple reciter remote diagnostics (affects if APS or Ethernet hub/switch is required)
- VoIP linking (ie. using Omnitronics IPR-400 or Cisco routers with 4WE&M cards)
- Paging base (with or without linking) (affects SIF, and paging interface)
- Simplex base (is coax relay required?)
- use of TB8100 digital I/O and signalling tones to control TB8100 functions (this may determine type of SIF and if Adv Prof SFE is required)
- Data applications (affects configuration regarding type of audio filtering required)
- Hot standby required (affects if TA-2444-01 is required, and if Adv Prof & TM SFE required)
- Some combinations of coax relay, remote diagnostic, hot standby may no be valid combinations due to SIF and/or single/dual base subrack constrictions
- Product codes of spare TB8100 parts and modules are to be made available in the new upcoming Dealer Price Book, we often get calls from customers asking what is the model of TB8100 modules

TB8100 FAQ – 19/2/2007

TB8100 AC/DC Power Supply and Power Amp FAQ (also refer to the TB8100 Specifications Manual (MBA-00001-xx))

Q. Does the TB8100 TBA30XX Power Management Unit (PMU) charge batteries?

A. No. Battery charging must be accomplished by a 3rd party battery charging arrangement. (Refer to Tait Application Note **AN-022**)

Q. What input voltage sources can the PMU accept?

A. 240VAC only; 12Vdc only; 24Vdc only; 48Vdc only; 240VAC & 12Vdc; 240VAC & 24Vdc; 240VAC and 48Vdc

Q. What voltage does the PMU output?

A. 28Vdc. This is used to power the 28VPAs and the reciter (the reciter can actually be powered from 10.5V to 32V). The 28Vdc comes from the connectors on the front of the PMU which are 1 x low current black 8-pin Molex (for the reciter's) and 2 x high current green 2-pin Phoenix connectors (for the PA's). Also the PMU has a secondary auxiliary (40W) voltage output which is present on a green 2 pin Phoenix connector on the back of the PMU. This auxiliary voltage can be used for powering low current devices like audio bridges, line interface units, telephone interconnects, coax relays etc.

Q. Can the Auxiliary output voltage be different to the DC input voltage?

A. Yes. The auxiliary output voltage comes off a plug in daughter board in the PMU which can be either 12, 24 or 48Vdc and is therefore independent of the DC input voltage.

Q. Does one PMU do all of the above different input and output voltage combinations?

A. No. There are 21 types of PMU options, so check carefully which one is required before purchasing.

Q. Do I have to have a PMU to power the TB8100 subrack?

A. No. There are 2 types of power sources for the TB8100 subrack.

1. a subrack which has a TB8100 PMU which can have AC or DC or AC/DC inputs, and 28Vdc output to power the reciters and 28Vdc PA's in the base station subrack.
2. a subrack which has NO PMU, but rather has 12Vdc PA's. In this 12Vdc PA base station subrack, the external 12Vdc source connects into a green 2 pin Phoenix connector on the back of the 12Vdc PA. The thin red/black cable coming out the front of the PA is actually the DC volts out of the PA that powers the reciter. Note: Be aware of an important difference between the 28VPA and the 12V PA, and that is on the 28VPA the thick red/black cable coming out the front of the PA is actually the 28VDC voltage from the PMU into the PA). All you need is an external 12Vdc power source.

Q. What RF power ratings is the 12Vdc PA available in?

A. The 12Vdc PA is available in 50W and 5W versions in VHF-Hi, UHF & 900MHz bands. 100W PA's are 28Vdc only and therefore must be powered by a 28Vdc PMU.

Q. Is the 12Vdc PA powered base station cheaper than an equivalent 28Vdc PMU powered base station?

A. Yes. There is no PMU and the 12Vdc PA is cheaper than the 28Vdc PA.

Q. Which base station has more efficient power consumption figures, such as would be suited to solar sites.

A. The 12Vdc PA powered base station is more energy efficient than the 28Vdc PMU powered base station..

Q. I have a TB8100 with a AC/DC or DC PMU but it does not switch on when I power it by DC power only (no AC connected) from my workshop bench power supply, is it faulty?

A. Not necessarily. The terms 12, 24 and 48 Volt power supplies are loosely aligned to their actual nominal voltages. For example the nominal voltage of a "12volt" supply/battery is around 13.5volts, the nominal voltage of a "24 volt" supply/batteries is around 27volts and the nominal voltage of a 48volt supply/batteries is around 54volts. Therefore the loosely termed 12, 24 and 48volts supply would actually be on the very "low" voltage side if they were actually supplying these voltages. Although the minimum operating voltages of the TB8100 are 9.5V (12V PMU), 19V (24V PMU) & 38V (48V PMU), the minimum start-up voltages of the TB8100 are 11.7V (12VPMU), 23.4V (24V PMU) and 46.8V (48V PMU). This could mean that if you were using your variable bench DC power supply and had it set to output 48V, allowing for cable loss or slight inaccuracy in the meters, it may actually not be supplying the 46.8Vdc to the PMU that it needs to start. So make sure that you use the nominal voltage appropriate to your PMU for normal operation and not the

minimum (unless you're actually doing min. and max. voltage range tests of course). Please refer to the **"TB8100 Specifications Manual"** (MBA-00001-0x where x = current revision number) which has all the start-up and shutdown PMU voltage parameters.

Q. If I purchase an AC only or a DC only PMU, can I later upgrade it to a AC/DC PMU?

A. No, it is not supported due to electrical safety concerns. Choose carefully initially, if you think you may want both AC and DC down the track, purchase an AC/DC PMU up front.

Q. How does the PA or PA's in a 12VPA TB8100 subrack utilize power save?

A. There is a red/black cable(s) with black 2 pin Molex connectors on each end that comes with the 12V PA subracks. This connects from the 2 pin Molex on the back of the PA to the 2 pin Molex on the back of its associated reciter. You need to then fit a DB15 or DB25 connector onto the reciter and link the Digital Output 1 pin to the +Aux Volts pin on the Drange connector and then program the appropriate "Deep Sleep" mode in the Service Kit. Also refer to Section 2.2 in the TB8100 Installation Guide that comes with each TB8100 base for a detailed explanation.

TB8100 Software Features (SFE) FAQ (also refer to Tait Technical Note TN-999)

Q. What is a software feature (SFE)?

A. SFE's are enhanced software functionality that can be activated in the reciters by "software keys" obtained from Tait. The currently available software features are:

1. Alarm Centre SFE (TBAS010) – Allows the TB8100 to "dial out" via a Hayes AT landline, GSM or CDMA modem to a computer with "Alarm Centre" software installed on it and leave a error log, additionally the "Alarm Centre" computer can send an email out with the alarm details.-
2. Advanced Profiles and Task Manager SFE (TBAS020)– which gives you access to the multi-CTCSS tone panel function of the TB8100, also gives access to user configurable Channel and Signaling profiles over and above the "default" profiles, and also gives access to up to 200 lines of Task Manager as opposed to 20 for the default setup.
3. Power Saving SFE (TBAS030) – Allows large power consumption savings in the base station by activating access to various power cycling modes (for example a standby current consumption of 1Amp for a typical PMU powered base station may drop down to a standby current consumption of around 100mA).

Q. Are any SFE's "free" with base station purchases?

A. Yes, only with the following base station packages:

- If a 28Vdc PMU base station with a single channel is purchased then that comes with "free" Advance Profiles SFE (TBAS020) and "free" Power Saving SFE (TBAS030).
- If a 28Vdc PMU base station with a dual channel is purchased then that comes with "free" Advance Profiles SFE (TBAS020) in each reciter only.
- If a 12Vdc PA base station with either a single or dual channels is purchased then that comes with "free" Power Saving SFE (TBAS030) in each reciter only.
- Alarm Reporting SFE (TBAS010) is always a chargeable extra.

Q. Why is the Power Saving SFE (TBAS030) not included free with a 28Vdc PMU powered dual base, but is included free with a 12Vdc PA powered dual base?

A. The power saving mode when using a PMU is not compatible with a dual channel base station because there is an internal 10W standby module in the PMU that powers the TB8100 base station when in deep power saving modes. This 10W standby module does not have the capacity to handle 2 channels, only one channel.

Q. Does the AC PMU do 110VAC as well as 240VAC?

A. Yes, the AC PMU does from 88V to 264VAC.

Q. I have a -48VDC power source, is this compatible with the 48VDC PMU?

A. Yes, on all the DC PMU's (12V, 24V & 48V), the DC input is isolated from common ground so positive or negative input voltage sources are OK.

TB8100 Reciter System Interface's (SIF) FAQ

Q. What is a SIF?

A. A SIF is a card located inside the back of a reciter that has the external radio I/O D-range interface connector (either DB15 or DB25) mounted on it. This connector will contain typical radio signalling functions

like audio, gating, keying and some digital I/O. Some versions of SIF also have a 2nd connector which is a data connector (either a RS232 DB9 or a Ethernet RJ-45) for connection to various serial or Ethernet capable devices for the purposes of monitoring, configuring and diagnosing the TB8100.

Q. Are all the SIF's the same price?

A. No. An Ethernet SIF is an additional \$300 (List) more than the other SIF's.

Q. When I order a TB8100 base station or reciter do I need to specify what SIF is fitted?

A. Yes. All reciters whether sent individually or as part of a base station come with a SIF fitted, and there is no "default" SIF so to speak, you need to specify which SIF you want fitted, just as you would specify the RF frequency band of the unit. So look at the SIF descriptions below to help decide which is most suitable for the application.

Q. Is it easy to change a SIF in the reciter from one type to another or to replace a faulty one?

A. Yes. Refer to section 5.1 of the TB8100 Service Manual (MBA-00016-0x where x = current version number) for details. When replacing the SIF with a different type, if you want the software Product code (that you see when you look at the reciter with the Service Kit and Calibration Kit software) to match the new SIF then you will have to send it back to Tait, as the factory version of the software is required to change Product codes. However if you can live with the software product code not matching the actual product then there is no adverse affects to this. Also check the Rx and Tx balanced and unbalanced line levels after you have replaced the SIF as you may need to do a balanced and unbalance line level calibration using the TBA0STU Calibration Test Unit with the TB8100 Calibration Kit software, though generally this is not required.

Q. What do the different SIF's do?

A. There are a variety of SIF's available to provide an interface solution to the base station that is most suited to the devices that are going to connect to the base. The following is a brief run down on the different SIF's currently available:

- **TBA-SP-S0B0 SIF Isolated Audio**

- DB25 connector with:
 - Galvanically (transformer) isolated balanced input and output audio lines
 - Non isolated unbalanced input and output audio lines
 - 6 digital inputs
 - 2 digital outputs
 - 4 digital input/outputs
 - 1 Tx coax relay drive output
 - Tx Key & Rx Gate
 - Typical applications.
 - When E & M (opto isolation) signalling is not required
 - Interfacing to standard radio interface devices like LIU's, phone interconnects, other RF transceivers etc
 - When the maximum number of digital I/O is required.
 - If Tx coax relay operation is required
 - If TA2444 change over module is to be used

- **TBA-SP-S0C0 SIF Isolated Audio, E&M**

- DB25 connector with:
 - Galvanically (transformer) isolated balanced input and output audio lines
 - Non isolated unbalanced input and output audio lines
 - 2 digital inputs
 - 2 digital outputs
 - 4 digital input/outputs
 - 1 Tx coax relay drive output
 - Tx Key & Rx Gate
 - Optically isolated E & M (Tx Key and Rx Gate)
 - Typical applications.
 - When E & M (opto isolation) signalling is required for example when connecting to 4WE&M mux ports, 619 audio bridges, 4WE&M VoIP interfaces etc.
 - Interfacing to standard radio interface devices like LIU's, phone interconnects, other RF transceivers etc
 - When some digital I/O is required
 - If Tx coax relay operation is required
 - If TA2444 change over module is to be used

- **TBA-SP-S0L0 SIF TaitNet, RS232**

- DB15 connector to interface directly with TaitNet system, with:
 - Galvanically (transformer) isolated balanced input and output audio lines
 - Non isolated unbalanced input and output audio lines
 - 1 digital input
 - 3 digital outputs
 - Tx Key & Rx Gate
 - D9 RS232 connector
 - Provides serial monitoring, diagnostics, and configuration connection to each reciter
 - Typical applications.
 - When E & M (opto isolation) signalling is not required
 - When minimal digital I/O is required
 - If Tx coax relay operation is not required
 - For direct connection to TaitNet trunking controllers
 - IF TBA101B POCSAG paging board is required

- **TBA-SP-S0K0 SIF TaitNet, Ethernet**

- DB15 connector to interface directly with TaitNet system, with:
 - Galvanically (transformer) isolated balanced input and output audio lines
 - DIP switch selectable between:
 1. Unbalanced input & output audio lines, Tx Key & Rx Gate input/output lines (4 pins)
or
 2. Optically isolated E & M signaling (4 pins)
 - 4 x digital input/outputs
 - DIP switch selectable between:
 1. RSSI output (1 pin)
or
 2. Tx coax relay drive output (1 pin)
 - RJ45 Ethernet connector
 - Provides Ethernet monitoring, diagnostics, and configuration connection to each reciter, however not VoIP.
 - Typical applications.
 - When E & M (opto isolation) signalling is required for example when connecting to 4WE&M mux ports, 619 audio bridges, 4WE&M VoIP interfaces etc.
 - When minimal digital I/O is required
 - If Tx coax relay operation is required
 - For direct connection to TaitNet trunking controllers
 - IF TBA101B POCSAG paging board is required

Monitoring, diagnostics and configuring the TB8100 FAQ

Q. Can you connect the RS232 cable to the TB8100 front panel RS232 port if the reciter(s) in the subrack have a TBA-SP-S0L0 TaitNet RS232 SIF fitted so as to use the Service Kit or Calibration Kit?

A. No. You must connect the RS232 cable to the RS232 port on the back of each reciter, as the TB8100 front panel RS232 port is disabled if the reciters have the RS232 SIF's fitted. Refer to **TN-931** for more details

Q. Can you connect the RS232 cable to the TB8100 front panel RS232 port if the reciter(s) in the subrack have a TBA-SP-S0K0 TaitNet Ethernet SIF fitted?

A. Sometimes. The RS232 serial port on the front panel is active for about 10seconds after the TB8100 powers up. If there is no serial connection within that period, like a Service Kit or Calibration Kit detected, then the reciters will revert to Ethernet connectivity only. However, if there is no IP address programmed into the reciter then the front panel serial port will remain active. Refer to **TN-1142** for more details.

Q. How do I connect the TB8100 Service Kit to the channel 2 reciter in a dual channel rack via the TB8100 front panel RS232 port?

A. If there is not already a serial communications yet to Ch1, then press the Ch 2 (II) button on the front panel and select "Connect" using the Service Kit. If there is serial communications connection already between the Ch 1 reciter, then you need to select "Disconnect" in the Service Kit, then press the Ch2 button on the front panel, and then "Connect" using the Service Kit. Confirm you are connected to Ch2 by just checking the serial number of the reciter displayed in the connect window in the Service Kit with the actual serial number printed on the back of the Ch 2 reciter.

Q. I want to set up the VCO and RF front end using the Calibration Test Unit (TBA0STU) so how do I connect the TB8100 Calibration Kit to the channel 2 reciter in a dual channel rack via the TB8100 front panel RS232 port?

A. Connect the RS232 cable between the PC and the TB8100 front panel RS232 port. In the TB8100 Calibration Kit select “Connect” then switch power onto the base station, within a few seconds of switching power on press the Ch 2 (II) button on the front panel, and the Calibration Kit should connect to the CH 2 reciter. Confirm the connection to Ch 2 by checking the displayed serial number in the Calibration Kit against the serial number on the back of the Ch 2 reciter.

Q. If you want to do the basic alignment of the TB8100 to set up the VCO and RF front end, however you do not have a Calibration Test Unit (CTU), can you do it?

A. Yes. To set up the VCO you do not use the CTU, you only need to use the Calibration Kit software that comes on the TB8100 Product CD that ships with each TB8100. However, as for the RF front end alignment, if you do not have the CTU then you can still set it up as you would a T800. All you need to do is have the base station powered on, you will also need to have the reciter out of the subrack (the cables coming into the front of the reciter are long enough to be able to have the reciter outside the rack while the DC, IDC, Exciter – PA SMA cables are still connected). You will need to get the alignment tools through the reciter case to access the RF front end helicals. Then just generate into the Rx antenna port of the receiver as you would any other receiver and adjust the helicals for best SINAD sensitivity.

Note: For the Rx front end tuning, if you do not have a CTU, you do NOT connect the Calibration Kit software and goto the “Tune Rx Front End” option which takes you to the graphical Rx front end setup display. This graphical method of setting up the front end only works with the broadband noise generator found in the CTU, not with a RF frequency generated from a test set.

Q. What are the ways that the TB8100 can “send alarms” to that can be logged by a remote computer, or even emailed to somebody?

A. There are 2 mechanisms that alarms can be sent from the TB8100 base without any user interaction.

1. Serially via a dial-up Hayes AT connection. The modem can be a landline, GSM or CDMA modem. This requires the TBAS010 Alarm Centre SFE to be activated in each reciter affected. There needs to be a computer set up with the Alarm Centre software (included on the TB8100 Programming CD along with the Service Kit and the Calibration Kit software) running, and this computer should have a Hayes AT dial up modem connection. If this computer also has a internet connection it will be able to send any alarm logs received to email addresses. When an alarm situation occurs the TB8100 will dial the phone number of the Alarm Centre and drop an alarm log on the Alarm Centre. Refer to **TN-742** and **TN-906** for more details.
2. Via an Ethernet connection. This requires an Ethernet SIF be fitted into the reciters affected. It does not require any SFE's. It requires that a computer on the same IP network that the TB8100 base is connected to have 3rd party “syslog” software running, this is the Ethernet equivalent of the Hayes AT only Alarm Centre software. When an alarm occurs the TB8100 will send a “syslog” message that the “syslog” software will log, and if configured accordingly can also send out emails with the alarm information. For more details on how to configure the Ethernet connectivity option refer to **TN-1142**.

Q. Can the TB8100 with Ethernet SIF connected; send base station alarms as SNMP traps?

A. Yes and No. Currently the TB8100 does not natively support sending alarms as SNMP traps. However, various version of “syslog” software (ie. “Kiwisyslog”) do convert syslog messages to SNMP traps.

Q. How can you connect to multiple reciters on one radio site to be remotely monitored via a single serial connection?

A. That is achieved by utilizing an Asynchronous Port Switch (APS). This unit will allow multiple serial devices on the site, like TB8100 reciters fitted with TaitNet/RS232 SIF's or via the front panel RS232 ports on single channel TB8100's, to utilize one serial line coming into the site. This serial line could be an RS232 port on a mux connected to a microwave or it could be via a modem (landline, GSM, CDMA). The Tait part number for the APS is a TBAA03-0x (x=1 to 6 depending on model) and these units are available in 8,16 or 32 RS232 port versions, these units all have an Ethernet port and are available in AC or DC.

TB8100 Applications FAQ

Q. Can the TB8100 do POCSAG paging?

A. Yes in 5W, 50W and 100W versions. There is a POCSAG Interface PCB that mounts on the back of any of the reciters that have SIF's with a DB15 radio connector on them (ie. TaitNet/RS232 and TaitNet/Ethernet

SIF's) called a TBA101B that accepts POCSAG data (512, 1200 or 2400baud) from a POCSAG modem or controller. Refer to **TN-1047** more details.

Q. Can the TB8100 do automated changeover to a secondary TB8100 when a failure occurs?

A. Yes. The TA2444-01 Changeover Module pcb fits onto the back of the reciter that has a DB25 connector on the SIF. There is a primary channel and a secondary channel, that can either be in the same TB8100 subrack (dual channel subrack) or can be in 2 separate TB8100 subrack. The TA2444 Changeover Module pcb plugs into the DB25 connector on the back of the primary reciter and a 2nd smaller pcb plugs onto the back of the DB25 connector on the back of the secondary reciter, with a 25 way ribbon cable between the 2 pcbs. Refer to the **"TA2444-01 Change-over Module Operation and Service Manual"** and **TN-1187** for more details.

Q. I want to do remote, either via serial or Ethernet, diagnostics of a TB8100 hot-standby installation that is configured using a TA2444-01, is this possible?

A. Yes and No. The TA2444-01 is not compatible with reciters fitted with a TaitNet/RS232 SIF or a TaitNet/Ethernet SIF because both of these SIF's utilize a DB15 radio connector, while the TA2444-01 plugs into a SIF with a DB25 connector. This means that Ethernet diagnostics of the TB8100, both primary and secondary bases, is not easily possible. (There are various serial to Ethernet devices, including the APS mentioned above, which could be utilized if there is an Ethernet connection into the radio site). If you want connect to the primary and secondary channel serially, the 2 x TB8100 channels would have to be in separate subracks and the RS232 port on the front of each subrack would be utilized, probably connected to an APS which could be connected to a modem.

Q. What sort of data can the TB8100 transmit and receive?

A. The TB8100 has been tested on transmit and receive up to 9600bps using GMSK and C4FM with external modems. Generally if you want to use the TB8100 to repeat data (ie. rather than have a modem connected to the base which receives and transmits the data), you would externally loop the Rx Audio pin to the Tx Audio and the Rx Gate and Tx Key on the rear SIF connector, as this method allows you to bypass the standard audio filters that apply to the internally software selected TTR mode. Refer to **TN-1114** for more details.

Q. Does the TB8100 have external (remote) channel change capability?

A. Yes. The TB8100 digital I/O pins can be programmed as external channel select inputs. These can be configured as either BCD or Binary channel inputs. Refer to the SIF descriptions above for details on how many inputs you have available. Depending on the SIF you can externally access up to the maximum of 255 channels. A common method of addressing the channel select inputs has been to use an Omnitronics 970DD DTMF Channel change decoder which has been connected to a RF link to the site, and when the correct DTMF sequence is transmitted from a user and received by the link the 970DD decodes the sequences and changes the TB8100 channel select inputs to the appropriate channel on the TB8100 base.

Q. I would like to remotely channel change a TB8100 that has simplex channels (therefore uses a TX coax relay) and would like to remotely monitor the TB8100, what is an easy method?

A. If you only need to channel change and monitor a single channel then a reciter fitted with either of the DB25 SIF's or the TaitNet/Ethernet DB15 SIF is appropriate, as these 3 SIF's have a Tx coax relay output. The TaitNet/RS232 DB15 SIF has no Tx relay output and is not suitable for simplex Tx relay operation. If you only need to change up to 15 channels (binary method) then you could use the TaitNet Ethernet DB15 SIF, which would allow you to utilize an Ethernet connection to the TB8100 for the purposes of remote monitoring. If you have a requirement to access more channels then you would need to use one of the DB25 SIF's as these have more digital I/O available for external channel select. With the DB25 SIF's the remote monitoring would occur serially via the TB8100 front panel RS232 port.

Q. What if I wanted to do the above, however channel change and monitor 2 x TB8100 channels instead of 1?

A. You could use either a dual TB8100 subrack with reciters fitted with TaitNet Ethernet SIF's, provided that you only wanted to address a maximum of 15 channels (binary) remotely and you had an Ethernet connection to the site for remote monitoring. If you have a serial connection (ie. modem or RS232 port on a mux) then you would need to fit 2 x TB8100 single channel subracks and connect the 2 x RS232 cables from the RS232 ports on the 2 x TB8100 front panels to either an APS connected to a modem, or perhaps to 2 x GSM/CDMA modems.