IQASI25

2x5 ASI MONITOR and SWITCHED DISTRIBUTION AMPLIFIER

Handbook

Version 1

dB Broadcast Ltd has made every effort to ensure the accuracy of information contained within this document which is nevertheless supplied for information purposes only and does not constitute any form of warranty or guarantee.

All trademarks acknowledged.

The information in this document is subject to change without notice.

dB Broadcast Ltd
Registered Office:
Kestrel House
Sedgeway Business Park
Witchford
Ely
Cambridgeshire
UK
CB6 2HY
Tel: +44 (0) 1353 661117
Fax: +44 (0) 1353 665617
Email: sales@dbbroadcast.co.uk
Web: www.dbbroadcast.co.uk
Registered in England No. 2709677

Document history

Date of first publication

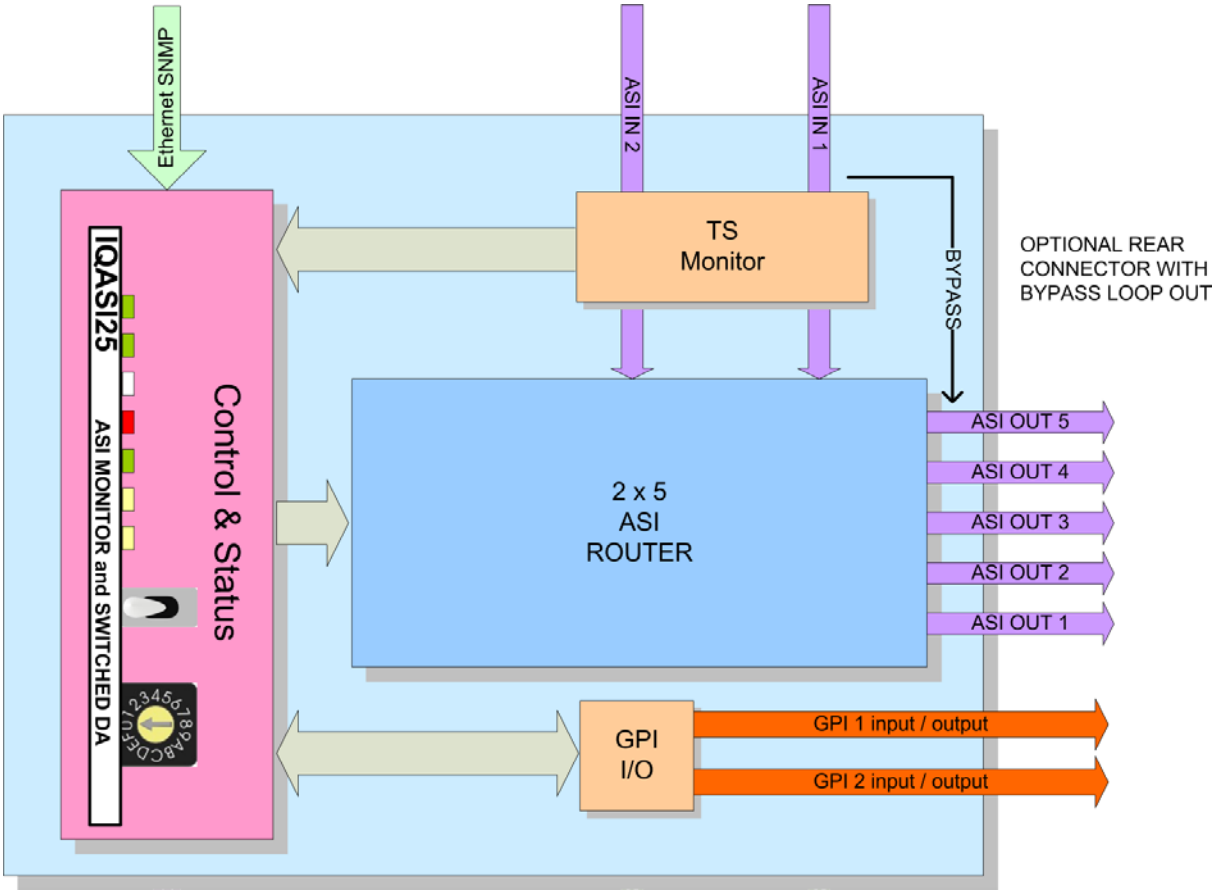
Current issue and date Version 1 June 15

Contents

Introduction

Module Description

The IQASI25 is a cost effective ASI-switched Distribution Amplifier that continuously monitors two MPEG-2 DVB ASI transport streams (TS) and routes the preferred input to 5 identical outputs. It monitors various critical parameters within the transport stream and can be configured so that their status controls switching and alarms.



IQASI25 Overview

Control of the ASI module can be performed from various interfaces including a front panel switch, GPIO lines or Snell RollCall. A bypass function built into an optional rear connector, provides emergency (non-seamless) switching by connecting input 1 to output 5, following power failure or removal of the main PCB.

Feature Summary

The IQASI25 Dual ASI Transport Stream Monitor & Switch provides the following features:

- Dual monitoring and error logging of two DVB, ATSC and MPEG-2 Transport Streams
  - Loss of carrier signal
  - Loss of TS sync
  - Loss of PAT
- Equalised and transformer coupled inputs
- Five re-clocked and non-transformer coupled outputs
- Automatic input switching on error
  - Remains on an input until it fails – no switch if both fail
  - Switch unchanged if both inputs come good simultaneously
- Manual switch to force input selection
- Two configurable GPIO ports
- LED indicators to show input, output, power, CPU and control status
- Fits 3RU (IQH3B) and 1RU (IQH1A) frames with normal and optional emergency bypass rear panels
- SNMP MIB
- RollCall monitoring and control

Order Codes

The following product order codes are covered by this manual:

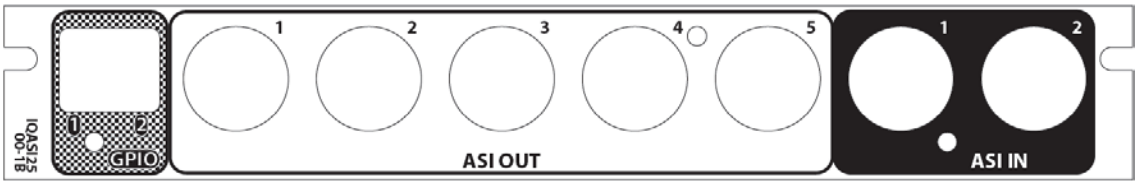
IQASI25	ASI TS switched DA, 2 in and 5 out, includes rear panel for 3RU (IQH3B) enclosures.
IQASI25-02	ASI TS switched DA, 2 in and 5 out, includes rear panel with relay bypass for 3RU (IQH3B) enclosures.

Although IQ modules are interchangeable between enclosures, their rear panels are enclosure specific. Modules with ‘A’ order codes can only be fitted into A-style enclosures while those with ‘B’ order codes can be fitted into either A or B style enclosures.

It may be possible to use the ‘B’ rear connector in an ‘A’ frame by removing the 10 pin connector.

Rear Panels and Enclosures

The following shows the IQASI2500-1B rear panel:



Note The IQASI2500-XXX rear panel (for 'B' frames) has the bypass relay mounted on the back of the panel.

The IQASI25 modules can only be fitted in the following enclosures:

Note An IQH3B enclosure accepts modules with either "A" or "B" order codes. An IQH3A or IQH1A enclosure accepts modules with "A" order codes only.

B-style Enclosures

IQH3B-S-0, IQH3B-S-P

Note The IQH3B enclosure provides two internal analogue reference inputs. These inputs are applicable to modules with "B" order codes only.

A-style Enclosures

IQH1A-S-P

Note RollCall capability is enabled for compatible modules in these frames by ensuring that they are fitted with the appropriate RollCall adaptor, card or module.

General safety summary

Every care has been taken in the design, manufacture, assembly and testing of this product to obviate health and safety risks to personnel and to prevent fire or other hazards. However, please review the following safety precautions for continued protection.

Product inspection. On receipt of the unit, open the box and verify that the unit and all accessory items included. Save the shipping carton and packing materials in case it becomes necessary to return the unit to dB Broadcast for service or repair.

Suspected damage or failure. Do not operate the product. Have it inspected by qualified service personnel or contact dB Broadcast or an authorised distributor.

No user serviceable parts. Return to dB Broadcast or an authorized distributor for repair.

General use. This product must only be used as specified in this manual. Failure to follow any ratings or directions for use may impair the protection provided.

Caution statements identify conditions or practices that could result in damage to this product or other property.

Cuts and abrasions. When handling the equipment, guard against cuts or abrasions from sharp edges or components.

Take anti-static precautions. Since this unit contains exposed PCB and electronic components, ensure proper anti-static precautions are observed when handing this equipment.

Provide proper ventilation. To prevent product overheating, provide proper ventilation.

Operating environment. The unit is for indoor use in a fixed rack. See the Specification chapter for further environmental, physical, certification and safety information.

Do not operate in wet or damp conditions.

Do not operate in an explosive atmosphere.

Power See the Specification chapter. All ratings must be observed.

Toxic content. Unwanted or obsolete components must be disposed of safely as some may release toxic vapours if incinerated.

Lithium battery

A lithium battery may be located in this product to provide back up for the real-time clock. In normal operation battery life is in excess of 5 years. If the real-time clock becomes erratic when cycling the power, the battery may need replacing. Replacement should only be performed by a ‘skilled and competent technician’, or by returning to dB Broadcast for repair.

Danger of explosion if battery is incorrectly replaced.

In case of difficulty. Please refer to dB Broadcast.

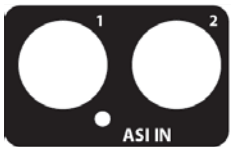
Installation

Connections

This section applies to both the IQASI2500-1A and IQASI2500-1B frame variants.

ASI Inputs

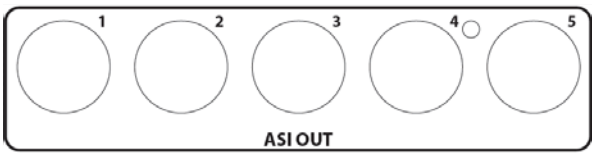
Two Transport Streams routed to five outputs under control of the integrated 2x2 TS switch.

ASI IN	Rear Connector View
1 and 2	

Two transformer coupled ASI TS (270MBit/s) inputs using 75Ω BNCs.

ASI Outputs

Five outputs are provided using 75Ω BNCs.

ASI OUT	Rear Connector View
1 to 5	

Five non-transformer coupled ASI TS (270MBit/s) outputs.

External Control I/O

Two general purpose interface lines on screw terminals are configurable as inputs or outputs.

GPIO	Function	Rear Connector View	
1	Input or Output		A ground is present on the screw terminal's centre pin.
2	Input or Output		

Opto-coupled inputs have a pull-up 2.2KΩ resistor to +5V, (1.6mA to ground).

The output relay is rated 1A @ 30V DC switching to ground.

Operation

The IQASI25 offers minimal switching to prevent unnecessary disruptions of the TS; it remains locked to its current input until that input fails. If the alternate input has failed, no switch will occur. The TS input switch operates on:

Loss of Carrier

Loss of Carrier is always enabled

Loss of TS Sync

Five consecutive correct sync bytes are required for sync acquisition. Two or more corrupted sync bytes will result in sync loss. The alarm condition will be enunciated if there were no occurrences of TS Sync Loss in a rolling 1 second analysis window. The alarm's initial state is with the alarm being set (sounding) as TS sync is considered lost until acquired. The presence of this alarm mutes the PAT alarm. Loss of TS Sync is always enabled.

Loss of TS Sync is triggered from any of the following three elements

- TS_sync_loss
- or Sync_ud_error (No TS sync within 0.4Seconds)
- or 2xK28.5s between each TS packet rule violated

Loss of PAT

Loss of PAT is enabled / disabled by RollCall. A 16 position rotary switch (SW1) is used to configure the PAT upper distance threshold.

Switch Position	Time (s)	Comment
0	0.5	Default standard limit
1	0.1	
2	0.2	
3	0.3	
4	0.4	
5	0.5	
6	0.6	
7	0.7	
8	0.8	
9	0.9	
A	1.0	
B	1.2	
C	1.4	
D	1.6	
E	1.8	
F	2.0	

Control Modes

There are several methods of controlling the module:

- Using the front panel switch
- Using General Purpose Inputs / Outputs (GPIO)
- Via RollCall

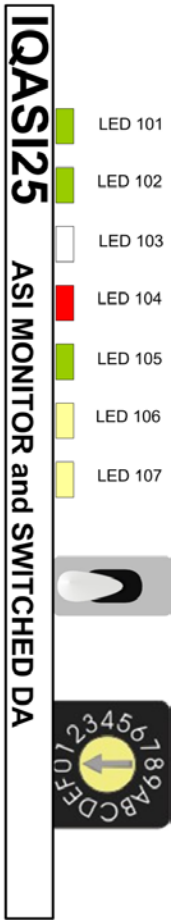
Each method uses different control modes which have a fixed order of precedence:

Priority	Mode	Description
Highest	Local	Front panel switching
	Remote External	GPIO switching
Lowest	Auto	RollCall

In most circumstances, the device will be connected to operate in one control mode only, leaving the other modes available for occasional use.

Front Panel (Local Mode)

The following section describes the Front Panel and its operation. The illustration below shows the front panel and its interface.

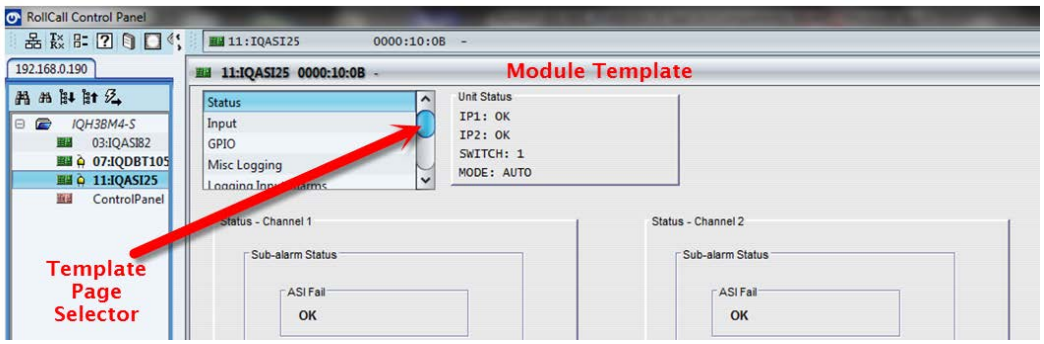
Front Panel	Interface	Description
	**LED 101**	Green, Power good
	LED 102	Green, Processor running
	LED 103	Red, Input 1 absent (Off = present)
	LED 104	Red, Input 2 absent (Off = present)
	LED 105	Green, Auto switch
	LED 106	Yellow, Output is Input 1
	LED 107	Yellow, Output is Input 2
	SW102	Three position control switch
	Left (Toward PCB)	Output forced to Input 1
	Centre	Remote control is used
	Right (Away from PCB)	Output forced to Input 2
	SW1	16 position selector – see Loss of PAT table above

RollCall Control Panel

RollCall is a control and monitoring system for products complying with the Snell RollCall protocol. It can also monitor third party equipment via SNMP, serial or GPI interfaces.

Selecting Template Pages

The **Template Page** scroll box selector for an opened module always appears at the top left of its **Template Display** area.



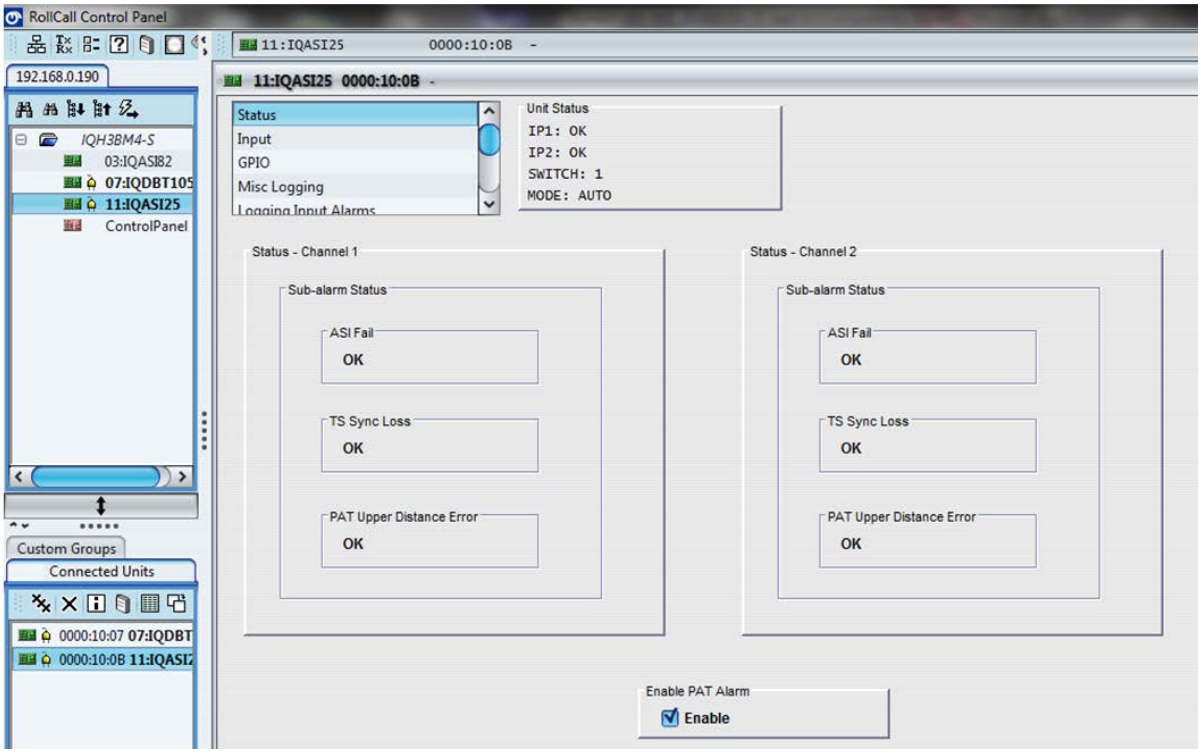
Right-click anywhere in an opened template for quick access to all pages.

IQASI25 Template Pages

Alarm	Description
Status	Alarm status and PAT alarm enable
Input	Input select and input names
GPIO	GPI input/output configuration page
Misc Logging	Miscellaneous logging items
Logging Input Alarms	Input alarm logging
Logging Inputs	Input logging
Logging Output Status	Output status logging
Memory 1-16	Memories
RollTrack	RollTrack control
Setup	General setup and reset
Factory Control	Factory use only – only visible to users with Factory permissions

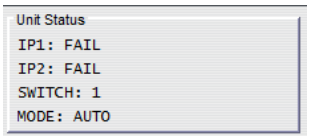
Status

The status page shows the **Status** for the different **Sub Alarms** for **Input Channel 1** and **2**, **Switch Mode** and the **PAT Alarm Enable** (disable) control.



Unit Status

The **Unit Status** panel provides information about the inputs, the switching state and the current mode:



Field	Description
IP1	Input 1 and its associated value, OK, FAIL
IP2	Input 2 and its associated value, OK, FAIL
Switch	Which of the Inputs is selected; either 1 or 2
Mode	Which mode the module is in Local, Remote, Ext or Auto

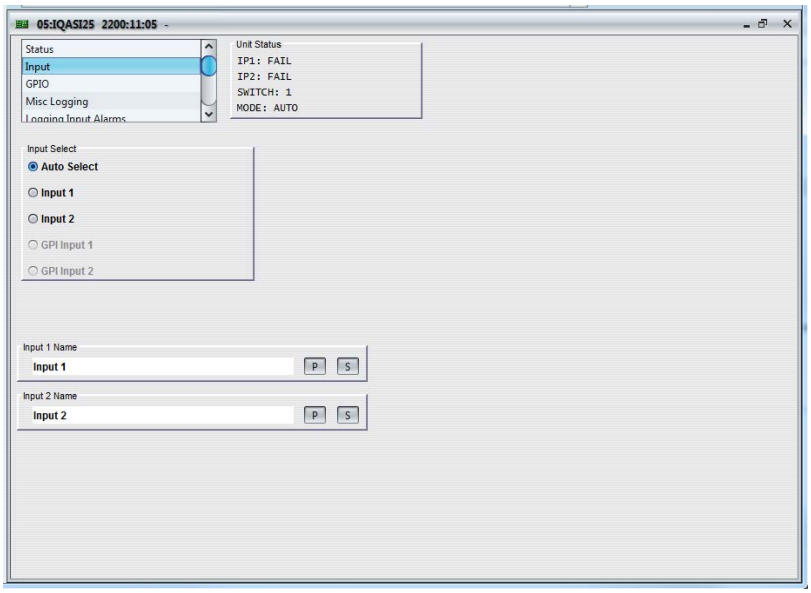
Input Status

Each Channel has three alarms. Any alarm meeting the test condition will cause the input to switch. They each can have the states: **On** or **Fail**.

Alarm	Description
ASI Fail	Based upon loss of carrier
TS Sync Loss	Sync acquisition requires five consecutive correct sync bytes. Two or more corrupted bytes result in sync loss. The alarm condition is cancelled when there are no TS Sync Loss events for one second. The alarm's initial state is **on** (sounding) as TS sync is considered lost until acquired. The presence of this alarm mutes the PAT alarm.
PAT Upper distance Error	The effect of the PAT Upper Distance Error alarm will be ignored if the Enable PAT Alarm control is NOT selected.

Input

This page is used for selecting which input is switched to the output as well as assigning user defined input names.



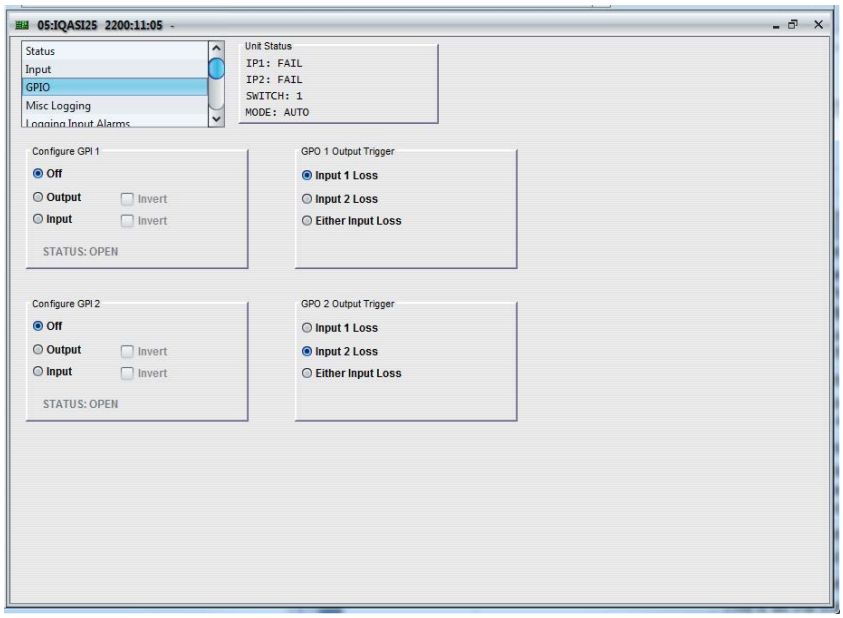
To change the name of Input 1 or Input 2, type the name in the text field and click **S**. To return the name to its factory default, click **P**.

Input Select

Alarm	Description
Auto Select	Input selection is based on the chosen switching criteria and its current state
Input 1	Input 1 forced
Input 2	Input 2 forced

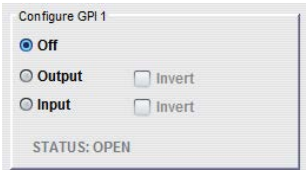
GPIO

This page is used to configure the two GPI lines available as screw terminals on the rear connector.



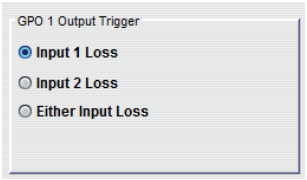
Configure GPI 'n'

This is used to configure the GPI as an input or an output.



GPO 'n' Output Trigger

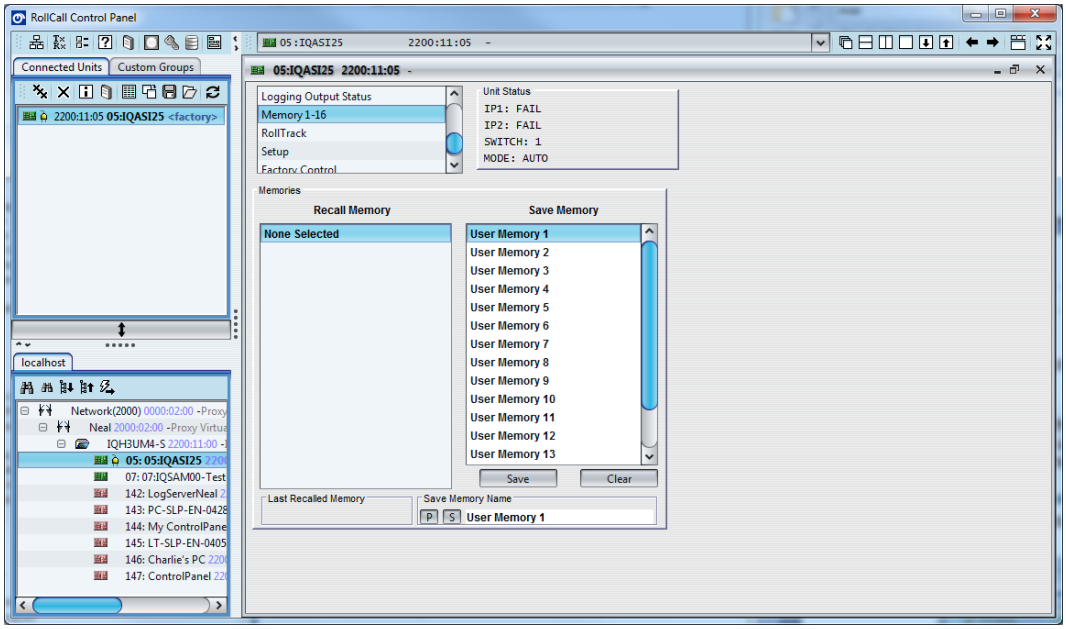
This is used to configure when the GPO is asserted.



Memories

The Memories page allows the present configuration to be saved to memory, or to recall a previously saved configuration.

Each save memory has a default name that can be changed to a more meaningful description.



User memories do not recall log field ‘states’ - that is, whether a log value has been enabled or disabled. User memories will also not recall RollTrack settings.

Recall Memory

This column lists the settings that have been previously saved. If no settings have been saved, **None Selected** is displayed.

To recall the settings saved in a memory: In the **Recall Memory** column, select the memory to recall by clicking on it. The recalled settings will be applied and the memory name will appear in the **Last Recalled Memory** section.

Save Memory

This column lists the 16 pre-set memory names that are available for use.

To save settings: In the **Save Memory** column, select a memory location, and then click **Save**. The current settings are saved and the memory appears in the **Recall Memory** column.

To clear a memory location: In the **Save Memory** column, select a memory location, and then click **Clear**. The current settings stored for that memory are cleared. After you clear a memory location, it disappears from the **Recall Memory** list.

Last Recalled

The **Last Recalled** pane displays the most recently recalled memory. If any of the settings have been changed since it was recalled, an asterisk will be displayed after the memory name.

Save Memory Name

This option enables the pre-set memory names to be changed (to something more memorable or meaningful), if required.

To change a memory name: In the **Save Memory Name** field, type the new memory name, and then click the **S** button. To return the memory to its default preset value, click **P** button.

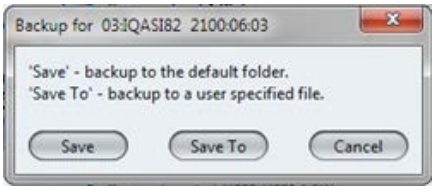
Savesets

Savesets allow predetermined RollControl fields to be saved to file which can then be used to either transfer the settings to another card, or used as a backup of the settings for that card.

Saving a Saveset

1. To use the Saveset feature, click on Save from the **Connected Units** toolbar.

   The Backup dialog box appears.



2. Either click the **Save** button to save the unit state to the default backup folder, or click the **Save To** button to save the unit state to a user specified file.

Restoring a Saveset

1. From the **Connected Units** toolbar, click on the Restore folder icon (8th icon from the left).

The Restore dialog box appears.

2. Either click the Restore button to restore the unit state from the default backup folder or click the Restore From button to restore the unit state from a user specified file.

Restoring a Saveset can take time, depending on the number of differences there are between products' current settings, to those of the Saveset being recalled.

Product controls are not locked during the recall time.

Although, products settings can be changed during a recall, changes will not be registered until the recall has finished. It is therefore advisable to wait until the Saveset has been applied, by checking the **Recall** state shown on the **Input Status** panel.

Logging

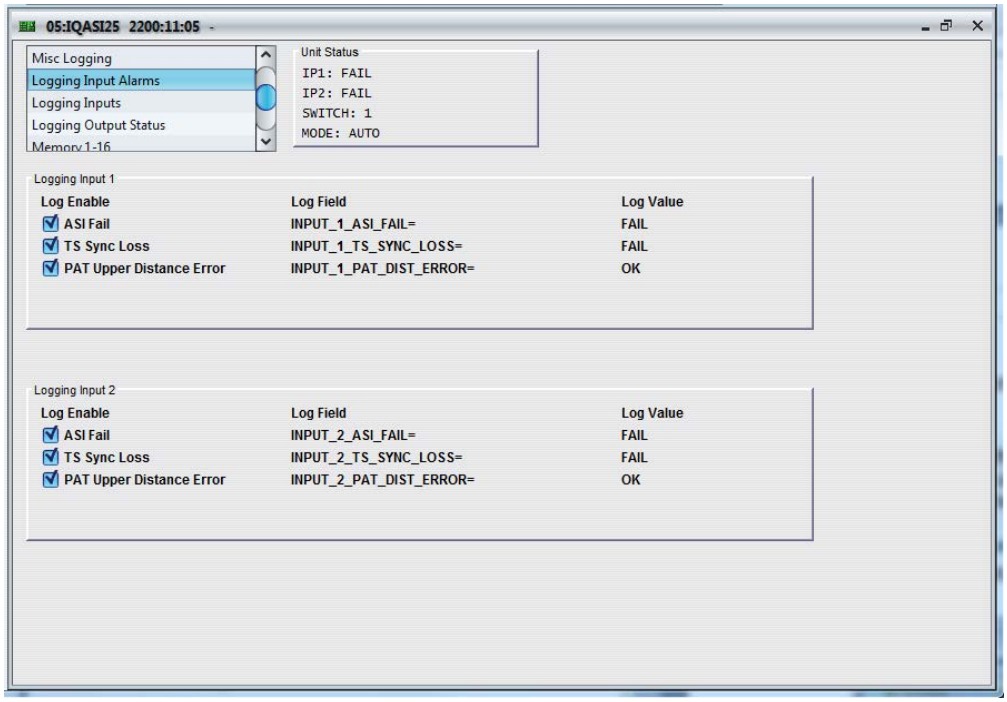
Information about several parameters can be made available to a logging device that is connected to the RollCall network.

Each logging screen comprises three columns:

- **Log Enable** – Select the check boxes that correspond to the parameters for which log information should be collected
- **Log Field** – Displays the name of the logging field
- **Log Value** – Displays the current log value

Logging Input Alarms

The **Logging Input Alarms** page is used to select which fields should be enabled for each of the two inputs.

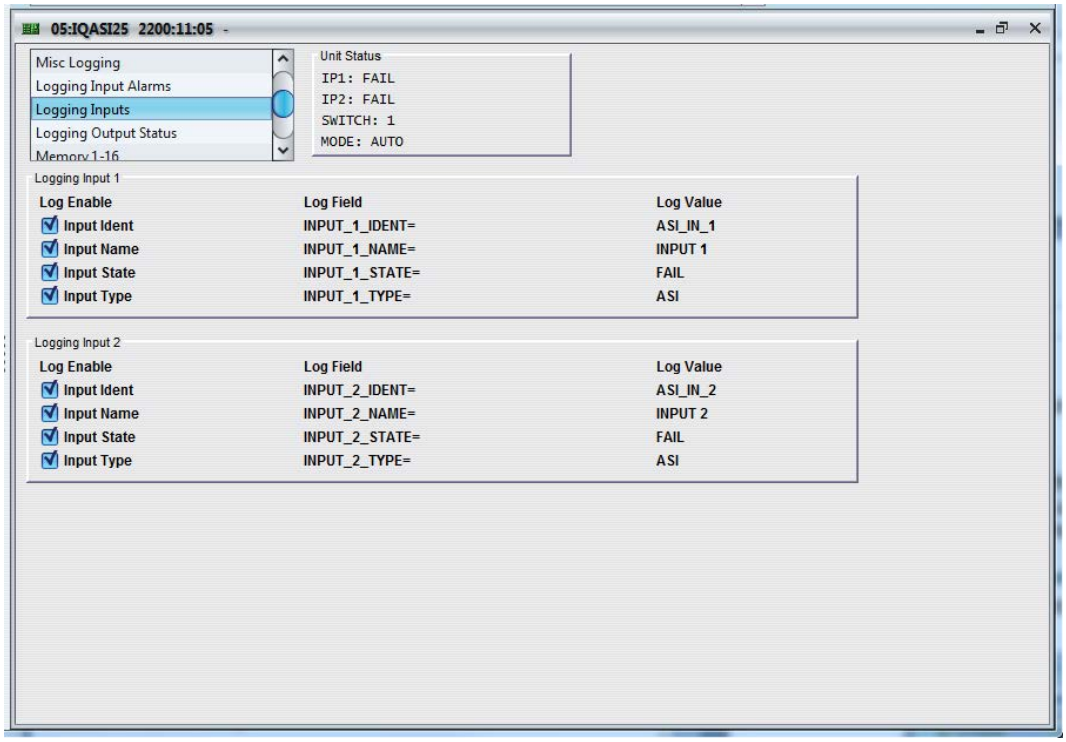


Logging Field	Description
INPUT_N_ASI_FAIL=	The alarms are as previously described for the Input Status. The alarm will indicate **Fail** if the parameter is outside of the alarm range but will only be acted upon if the alarm is enabled in the primary configuration and/or the alarm outputs. "OK" – The alarm is silent "FAIL" – The alarm is active
INPUT_N_TS_SYNC_LOSS=	
INPUT_N_PAT_UD_ERROR=	

Where N is the input number.

Logging Inputs

The **Logging Inputs page** displays the current log information for each of the two inputs.

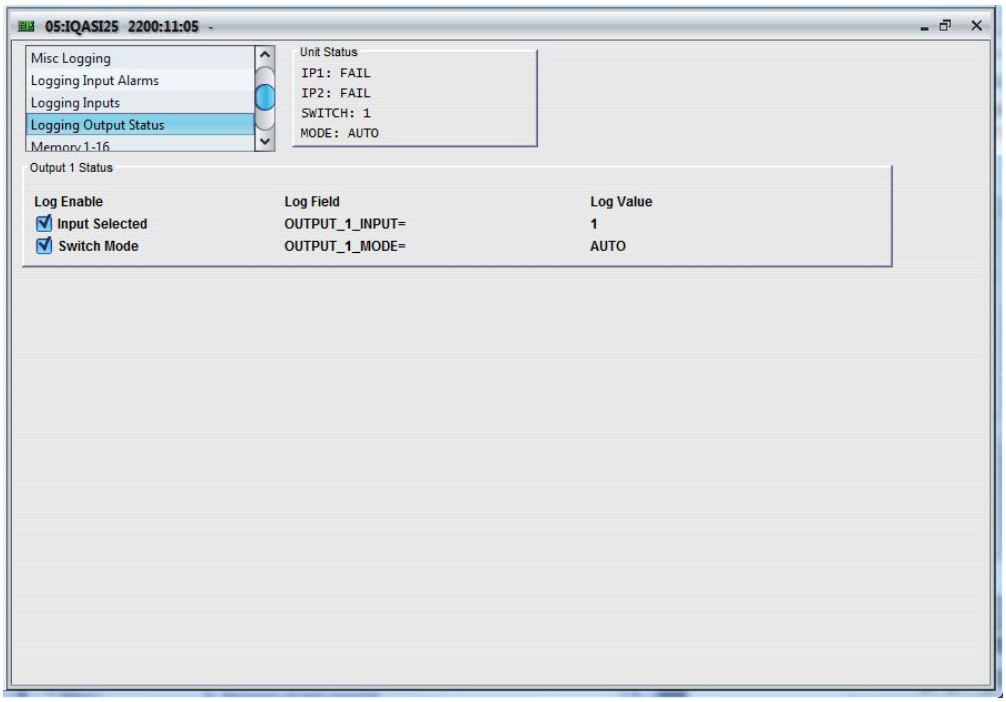


Log Field	Description
INPUT_N_IDENT=	A system defined identified for the input, based on the rear ID
INPUT_N_NAME=	The name of the input, as defined in the **Setup** page
INPUT_N_STATE=	"OK" – the input signal is good "FAIL" – the input signal is not detected
INPUT_N_TYPE=	This displays the type of input as specified by the unit's configuration: i.e. "ASI"

Where N is the input number.

Logging Output Status

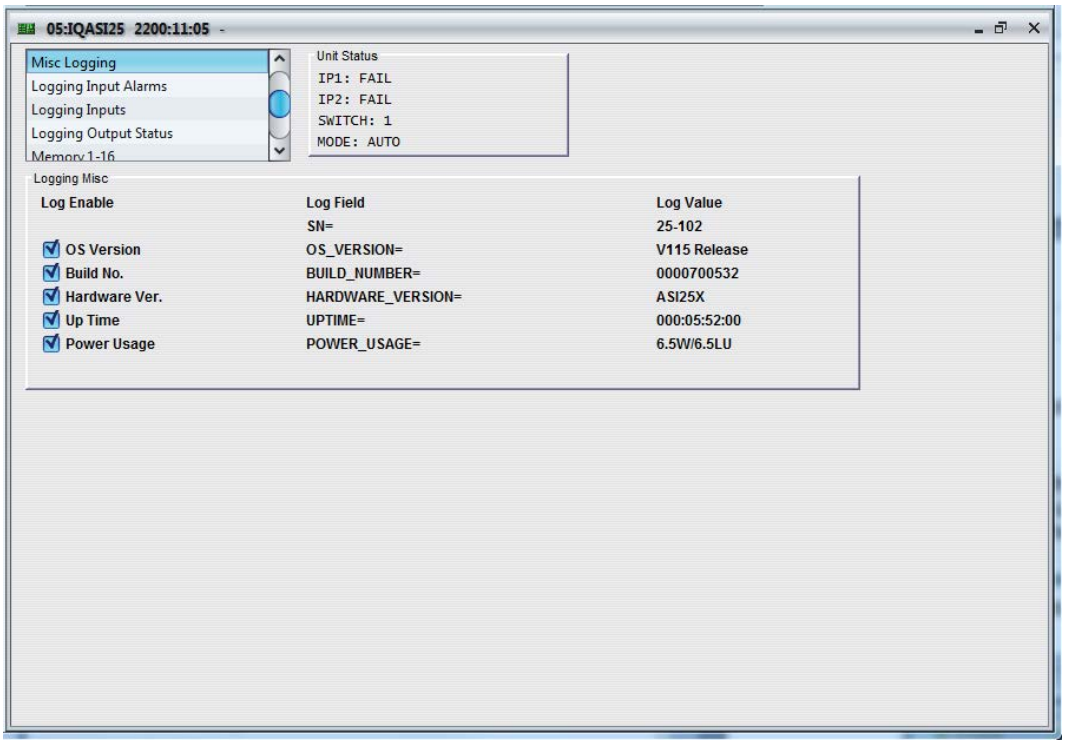
The **Logging Output Status** page is used to select which fields should be enabled for the output.



Logging Output Status	Description
OUTPUT_1_INPUT=	"1" or "2" – The source selected for the output
OUTPUT_1_MODE=	This reports which switching mode is being deployed, namely: "REMOTE" – Forced switching "AUTO" – IQASI25 decision based switching

Logging Miscellaneous

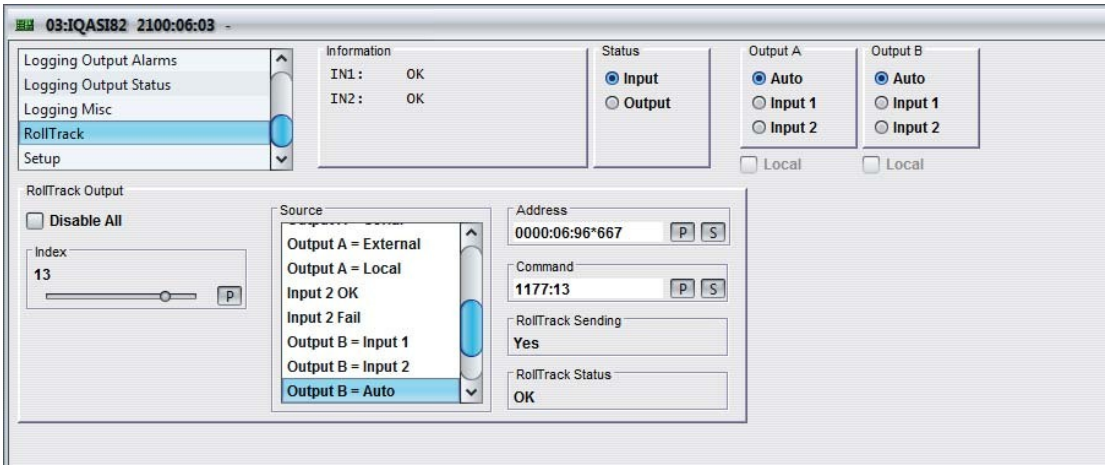
The **Logging Misc** menu is used to select which fields should be enabled for the unit's basic parameters.



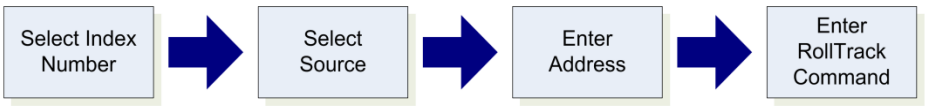
Logging Miscellaneous	Description
SN=	Displays the module serial number, which consists of an S followed by eight digits (Note – cannot be deselected)
OS_VERSION=	Displays the operating system name and version. For example, KOS V115
BUILD_NUMBER=	Displays the software build number
HARDWARE_VERSION=	Displays the hardware version number
UPTIME=	Displays the time since the last restart in the format ddd:hh:mm:ss
ROL_STATES=	The status of any RollTracks that have been enabled. Valid values are: OK, Disabled, or FAIL
REAR_ID=	Displays the rear panel type number
REAR_STATUS=	Displays the status of the rear panel
SLOT_WIDTH=	Displays the slot width
SLOT_START=	The first slot number the rear occupies. Use in conjunction with SLOT_WIDTH to determine the slots that the unit occupies.
POWER_USAGE=	Displays the power rating for the module. This is a maximum rating not a live power reading,

RollTrack

The **RollTrack** menu allows information to be sent via the RollCall™ network, to other compatible units connected on the same network.



Configuring a RollTrack Action



The following sections explain each RollTRack configuration operation in more detail.

Disable All

When checked, all RollTrack functions are disabled.

Index

Use the slider to select an index number to identify the RollTrack **action** being configured. Up to 16 actions can be created. Click the Index **P** button to select the default preset value.

Source

Select the RollTrack input from the source menu. **Unused** is displayed if no source is selected.

RollTrack Source	Description
Unused	No RollTracks sent.
Input 1 OK	Input 1 is good
Input 1 Fail	Input 1 is bad
Input 2 OK	Input 2 is good
Input 2 Fail	Input 2 is bad

Address

This item enables the address of the selected destination unit to be set.

The address may be changed by typing the new destination in the text area and then selecting the address **S** button to save the selection. Clicking the address **P** button returns to the default preset destination.

The RollTrack address consists of four sets of numbers, for example, 0000:10:01*99:

- The first set (0000) is the network segment code number.
- The second set (10) is the number identifying the (enclosure/mainframe) unit.
- The third set (01) is the slot number in the unit
- The fourth set, 99 in the example, is a user-configured number that identifies the destination unit in a multi-unit system. This ensures that only the correct unit responds to commands. If left at 00, an incorrectly fitted unit may respond unexpectedly.

Rolltracks can be internally looped back using address FFFF:00:00.

Command

This item enables a command to be sent to the selected destination unit.

The command may be changed by typing a code in the text area and then selecting the command **S** button to save the selection. Clicking the command **P** button returns to the default preset command.

The RollTrack command consists of two sets of numbers, for example: 84:156:

- The first number (84) is the actual RollTrack command
- The second number (156) is the value sent with the RollTrack command

RollTrack Sending

A message is displayed here when the unit is actively sending a RollTrack command.

Possible messages are:

Messsage	Description
No	The message is not being sent.
Yes	The message is being sent.

RollTrack Status

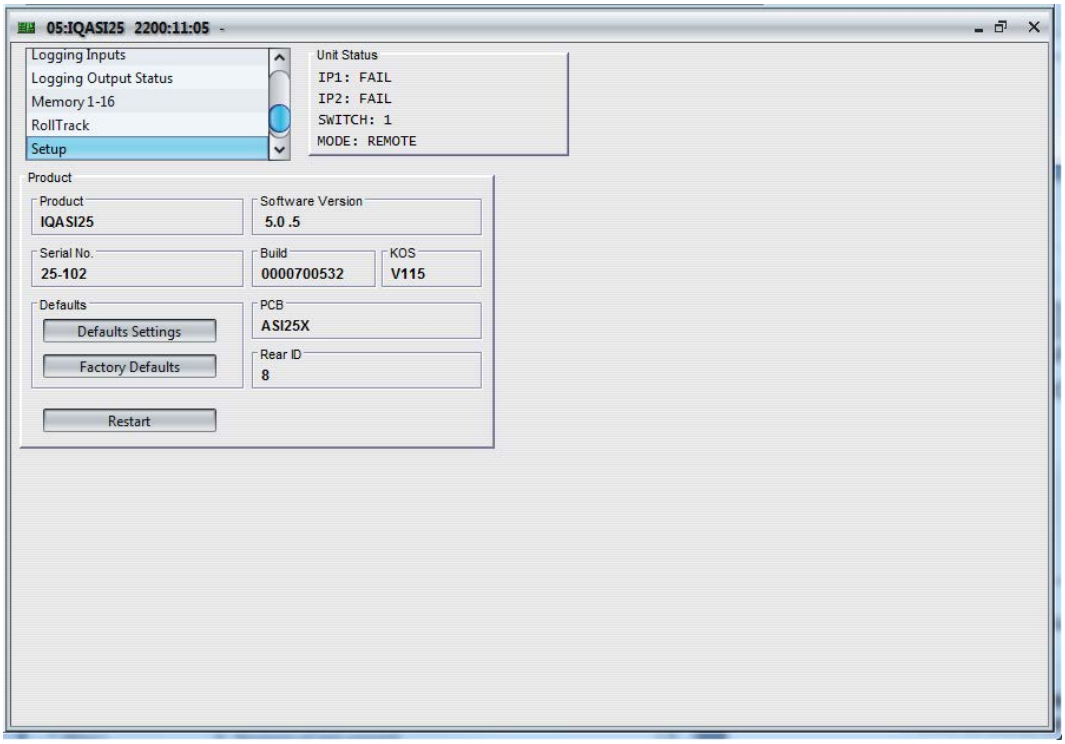
A message is displayed here to indicate the status of the currently selected RollTrack index. Possible RollTrack Status messages are:

RollTrack Source	Description
OK	RollTrack message sent and received OK.
Unknown	RollTrack message has been sent but it has not yet completed.
Timeout	RollTrack message sent but acknowledgement not received. This could be because the destination unit is not at the location specified.
Bad	RollTrack message has not been correctly acknowledged at the destination unit. This could be because the destination unit is not of the type specified.
Disabled	RollTrack sending is disabled.

For additional and/or updated information regarding Rolltrack Actions and their configuration, please refer to the Snell IQGateway manual.

Setup

The **Setup** menu display basic information about the module, such as the serial number and software versions. Functions are provided to restart the module or return all settings to their factory or default settings.



Item	Description
Product	The name of the module
Software Version	The currently installed software version number
Serial No	The module serial number
Build	The factory-build number. This number identifies all parameters of the module
KOS	The operating system version number
PCB	The Printed Circuit Board revision number
Rear ID	The rear panel type

Factory Defaults

Resets module settings to their factory defaults.

Restart

The Restart button reboots the module, simulating a power-up/power-down cycle.

This page is only visible in **supervisor** mode; accessible via the RollCall Control Panel.

References

International standards:

[1] ISO/IEC 13818-1 Second Edition (2000-12-01)

Information technology – Generic coding of moving pictures and associated audio information: Systems

European standards:

[2] BS EN 50083-9 (2002)

Cable networks for television signals, sound signals and interactive services – Part 9: Interfaces for CATV/SMATV headends and similar professional equipment for DVB/MPEG-2 transport streams

[3] EN 300 468 V1.4.1 (2000-11)

Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems

US standards:

[4] ATSC Doc. A/65A Rev. A – 31 May 2000

Program and System Information Protocol for Terrestrial Broadcast and Cable (Revision A) and Amendment No.1

Technical reports:

[5] ETSI TR 101 290 V1.2.1 (2001-05)

Digital Video Broadcasting (DVB); Measurement guidelines for DVB systems

Glossary

8-VSB	Eight discreet amplitude level, “vestigial side-band” broadcast transmission technology. VSB is an analogue modulation technique used to reduce the amount of spectrum needed to transmit information through cable TV, or over-the-air broadcasts used in the NTSC (analogue) standard. 8-VSB is the U.S. ATSC digital television transmission standard.
Adjacent Channel Interference	Interference caused by extraneous power from signal in an adjacent channel. The problem is often caused by the inability to produce perfect filters without roll off. See *Frequency Offset*.
Ambient	The atmospheric conditions surrounding a given item. Normally in terms of factors which influence or modify, such as temperature or humidity.
Amplitude	The magnitude of variation in a changing quantity from its zero value.
ASI	Asynchronous Serial Interface.
Attenuation	A reduction in power. It occurs naturally during wave travel, through lines, waveguides, space or a medium such as water. It may be produced intentionally by placing an attenuator in circuit. The amount of attenuation is generally expressed in decibels per unit of length.
ATSC	Advanced Television Systems Committee. Formed to establish technical standards for US advanced television systems. Also, the name given to the digital broadcast transmission standard.
Bandwidth	The range of frequencies over which signal amplitude remains constant (within some limit) as it is passed through a system.
BER	Bit Error Rate. A measure of the errors in a transmitted signal. Bit errors are caused by interference or loss of signal, which can result in disruption to the stream of bits composing the DTV picture.
BNC	A radio frequency connector with an impedance of 75Ω, designed to operate in the 0 to 4 GHz frequency range.

C/N	Carrier to Noise ratio. A measurement of the ratio of RF signal power to noise power.
COFDM	Coded Orthogonal Frequency Division Multiplexing. An Orthogonal FDM scheme transmits many streams of data on multiple carries simultaneously. Orthogonality reduces co-channel interference and multiple carries minimises losses due to selective interference. The Coded version, C(OFDM) uses integrated forward error-correction coding and statistical analysis based on channel-state information (CSI) to achieve substantial performance benefits compared to uncoded or non-CSI OFDM. COFDM resists fading, is very tolerant of multipath interference and is well suited to building Single-Frequency Networks (SFNs). It is used extensively in European digital television (DVB-T) and digital radio (DAB) systems.
dB (Decibel)	A logarithmic unit used to describe signal ratios. For voltages dB = 20 Log10(V1/V2).
DID	Data identifier.
DTV	Digital television. This comprises all the components of digital television, including HDTV, SDTV, datacasting and multicasting.
DVB	Digital Video Broadcasting
DVB-C	Digital Video Broadcasting baseline system for digital cable television.
DVB-S	Digital Video Broadcasting baseline system for digital satellite television.
DVB-T	Digital Video Broadcasting baseline system for digital terrestrial television.
DVB-T2	An extension of DVB-T that allows higher modulation order using advanced error detection and correction (from DVB-S2) to allow higher bit rates.
FEC	Forward Error Correction. A receiver technique for correcting errors in the received data.
Frequency Offset	Intentional shift of a radio carrier frequency to avoid interference with other transmitters. See *Adjacent Channel Interference*.

GHz	Gigahertz. One billion cycles per second (10^9 cps).
Headend	Electronic control centre of a cable system. The site for collecting signals from many sources, processing them and preparing them for distribution.
kHz	Kilohertz. One thousand cycles per second (10^3 cps).
LDPC	Low Density Parity Check.
LSB	Least Significant Bit.
MER	Modulation Error Ratio.
MHz	Megahertz. One million cycles per second (10^6 cps).
MPLP	The DVB-T2 Multiple Physical Layer Pipe (MPLP) allows multiple PLP's to be present in the DVB-T2 modulation. The DVB-T2 allows for up to 256 PLP's to be defined.
Modulation	A process that moves information around in the frequency domain in order to facilitate transmission or frequency-domain multiplexing.
MPEG	Moving Picture Experts Group. Industry standard for compressing and decompressing digital audio video signals
MSB	Most Significant Bit.
MSps	Mega-symbols per second.
Multiplexer	An electronic device that allows multiple channels to be combined into a single signal.
OFDM	See COFDM.
Packet	A variable-sized unit of information that can be sent across a packet-switched network.
PAL	Phase Alternating Line. 50 Hz video format used in much of the world outside of the USA.
PCR	Program clock reference.
PID	Packet identifier.

PLP	Physical Layer Pipe. See MPLP.
PSI / SI	Program specific information.
QAM	Quadrature Amplitude Modulation. A digital modulation technique that allows very efficient transmission of data over media with limited available bandwidth.
QPSK	Quadrature Phase Shift Keying. A digital technique that is widely employed in direct broadcast satellite or terrestrial transmission systems
RF (Radio Frequency)	In broadcasting applications, the signal after the modulation process.
RS	Reed-Solomon.
SNR	Signal to Noise Ratio.
Symbol Rate	Replacement term for Baud; a unit of signalling speed, the number of times a signal on a communications circuit changes.
Termination	An impedance at the end of transmission line that matches the impedance of the source and of the line itself. Proper termination prevents amplitude errors and reflections. ASI transmissions use 75Ω transmission lines, so a 75Ω terminator must be at the end of any signal path.
Tuner	Any device or apparatus used for selecting and controlling the operating frequency of a circuit or equipment, such as the channel selector in a television receiver.
UTP	Unshielded Twisted Pair.
Viterbi	Algorithm for Forward Error Correction.

Specification

Inputs and Outputs

Signal Inputs	
Number and Type:	2 off – ASI TS (270 Mbit/s)
Electrical:	Transformer coupled 75Ω 800mV p-p
Connector/Format:	BNC
Standards:	DVB-ASI, EN50083-9
Input Cable Length:	<400M (Image 1000HD)
Signal Outputs	
Number and Type:	5 off – ASI TS (270 Mbit/s)
Electrical:	Transformer coupled 75Ω 800mV p-p
Output Jitter:	<0.2UI
Connector/Format:	BNC
Standards:	DVB-ASI, EN50083-9
General Purpose Interface	
GPI Number:	2, configurable as input or output
Electrical:	Input: Opto 2.2KΩ to +5V, (1.6mA to ground)
	Output: A @ 30V DC switching to ground
Connector/Format:	Standard Snell screw terminal

Indicators

Front Panel / Card Edge	Status	Indication
Power:	OK	Green
CPU:	OK	Green Flashing
Input 1/2 (Fail)Status:	OK Fail	Off Red
Auto:	Selected	Green
Output Source1/2 :	Selected	Yellow

Power Consumption and Environmental

Module Power Consumption:	?.? W Max (A frames) 4.2W PR Max (B frames)
Operating Temperature	0-40°

Refer to the Snell IQ Enclosure manual for an explanation of Power Rating (PR) units.

Start Up Time

Start Up Time:	4 secs processor, FPGA instantaneous

RollCall Features

Status:	Input and Output alarm status
Primary Config:	ASI switch configuration
PID List:	PID management
Alarm Outputs:	Enable / disable
User Memories	16
Logging:	Input Status Input Alarms Output Status Misc
RollTrack Controls	On/off, Index, Source, Address' Command' Status' Sending
Backup/Restore	Unlimited Savesets for RollCall Fields/Settings
Setup	Software Versions, Serial Numbers, Build, KOS, PCB Version, Rear ID, Defaults Settings, Factory Defaults, Restart