



# catPro

## Digital Surveillance System Professional Software

### Features:

- Professional, full -featured digital surveillance software
- Full record & review
- Advanced, configurable video motion detection algorithms
- Configurable event recording
- Multiple databases
- 3rd party system integration capability
- Hard drive health monitoring / auto correction utility
- System reports
- Optional software modules with advanced functions
- Optional integrated keyboard

**catPro:** The full-feature software for the Digital Surveillance System (DSS), including both **catPro** and **catLite** interfaces.

With an impressive range of features, powerful functions, significant user customisation, and the capability to integrate seamlessly with related digital systems, the **catPro** is successfully used in a wide range of applications internationally.

### Standard features:

- Connects seamlessly with related systems to enable integrated surveillance
- Simultaneously monitors, records, replays and communicates (quadruplexing)
- Software is continuously evolving in response to market requirements
- Software is upgradeable either remotely via network or modem connection, or locally via portable media (USB key, floppy diskette)
- Optional software modules extend functions and interface features
- Records video, audio, frame sequences and text data
- Records audio synchronously with video
- Fully configurable ring buffer recording databases – unlimited size, rapid search
- Advanced motion detection event trigger based on 2 customisable algorithms
- Advanced “still object” and “removed object” / “placed object” event trigger
- Advanced “removed object” / “placed object” Post Search algorithm
- Remote unit management with health status reporting
- Remote camera touring
- Mouse control of selected dome cameras
- Data Streaming from ATMs and Point-Of-Sale applications
- Triggers system actions based on streamed text data
- Filters / searches streamed text data recordings
- Remote monitoring from any Windows PC with **catViewer**
- Strong network support infrastructure includes advanced facilities for central monitoring and alarm management, remote health monitoring, reporting and maintenance, and system upgrades
- Choice of Wavelet, JPEG, H263 or MPEG2 video compression, and GSM, ADPCM, or MPEG 1 Layer 2 audio compression (hardware dependent)
- Choice of hardware modules for audio and video functions, enabling up to 100 ips PAL (120 ips NTSC) at 360x288 (1 field / CIF) per module of 4 cameras (i.e. 25 ips PAL / 30 ips NTSC per camera). Over 4 modules/16 cameras this provides 400 ips PAL (480 ips NTSC)



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Digital surveillance & beyond

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## Optional features:

- Use either "Lite" or "Professional" interface
- CD-writer archiving
- **cat** Counter object counting and reporting
- **cat** Tracker dome camera motion tracking
- **cat** API Application Programming Interface
- Local USB hard drive backup
- Wavelet, JPEG, H263 or MPEG2 video, dependent on hardware modules
- Synchronised audio, dependent on hardware modules
- Integrated keyboard
- **cat** Alarm central alarm-management (control room) functionality
- Remote diagnostics and maintenance functionality
- **cat** Filer remote file retrieval / archive utility
- Analogue playback video output
- Digital switching of incoming signals to analogue video outputs (e.g. monitors)

## "Event" recording saves resources and storage space

Efficient use of resources and storage space by recording *only* the events of interest - the system can be passive until a "trigger" causes "action".

## "Pre-event" recording captures data from before an event

When an event occurs, pre-event recordings can be retrieved from a temporary storage facility and packaged with the recordings. This is valuable for investigation and prosecution purposes.

## Post Search quickly locates image changes

A powerful search feature is used to quickly locate the point in a series of recordings at which an area of the camera view changed significantly. e.g. when an object was removed from camera view, or placed in camera view.

## Alarm notification by audio and pop-up message

Events can be set up so that when triggered they play an audio file and/or pop-up a message that the operator must either acknowledge with a simple click, or acknowledge by typing his/her password.

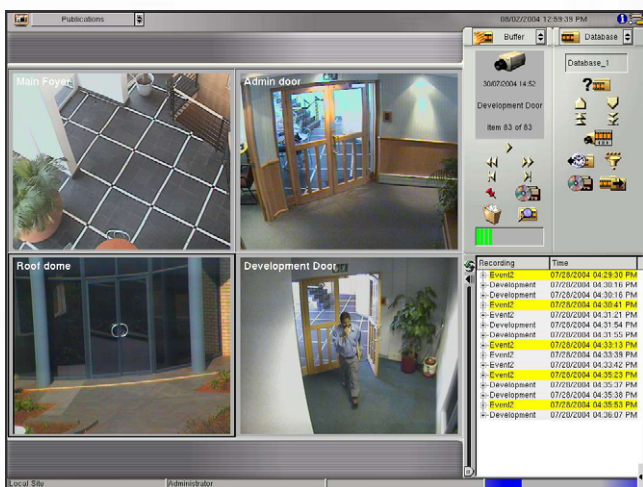
## Alarm notification by SMS (text messaging), email and / or pager

Events can be set up so that when triggered a custom message is sent to SMS, email and/or pager recipients.

## Remote desktop monitoring and management

**cat** Viewer enables monitoring, management and setup from a remote Windows system.

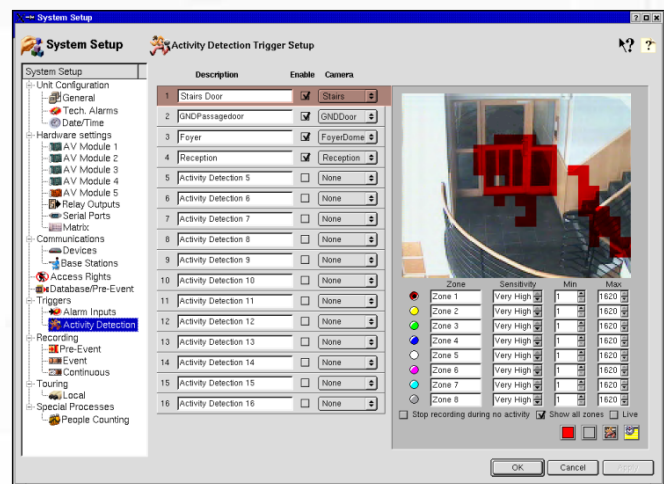
## Multi-functional Graphical User Interface



Main Screen with 4 live camera images

The graphical user interface has areas for camera displays, control panels and information displays. Only functions that are enabled are visible (e.g. without an audio card there is no audio panel visible).

## Logically arranged Software Set-up



Activity detection setup with 8 motion tracking zones (**cat**Tracker) Setup is integrated into a single screen with a vertical navigation bar. Only users with the appropriate user access rights can configure the system settings.

## System flexibility enables effective custom applications

The **cat**Pro is used in many applications across a range of industries because it is customisable in its configuration, functions, hardware, graphical user interface, software modules, and language:

- **cat**API Application Programming Interface enables **cat**Pro to be programmatically integrated with other applications such as access control, building management and point of sale applications.
- It can be configured as a recording capture station or a **cat**Base base station.
- Different video cards provide options on recording speed and quality, and optional audio cards enable audio functions.
- Optional number and type of cameras and hard drives.
- Types of archive media include USB Key, CD and DVD (internal Writers or USB (portable) Writers). It is also possible to fit a local USB2 hard drive, for manual and automatic backup of data.

- Configurable number and size of recording databases.
- Custom Layout of the user interface – users can customise, save, load and share screen layouts.
- Security parameters:
  - Password-based access control for 10 levels of user
  - Access can be further restricted on many parameters, including:
    - Databases
    - Cameras
    - Operator panels
    - Printing
    - Sites / units
    - System functions and setup
  - Configurable, time-restricted local user logon periods.
- Standard types of “triggers” that stimulate a system response include
  - Digital video motion detection
  - Input on a parallel port
  - “Still”, “removed” or “placed” object
  - Time
  - Input on a serial data port
- Optional modules increase the range of triggers to include API user input and keyboard user input.
- Types of “actions” that the system can take based on specific triggers include
  - Record single images
  - Record streaming text data
  - Contact a base station
  - Enable motion tracking
  - Send an email
  - Synchronise video and audio (Wavelet) or record MPEG audio-video
  - Enable a relay output to perform an action
  - Display a particular sequence of cameras (“tour”)
  - Send a text message
  - Control a matrix
- Special features are pre-built into the system and may be unlocked with a simple software key, enabling users to quickly activate these features once they have remotely ordered and purchased the appropriate licenses.

### User-configurable recording databases to optimise storage and retrieval of recordings

The catPro can be configured to store recordings in a way that

- Optimises the use of recording space
- Increases the time it takes to fill the recording media
- Eases the manual search, location, replay, archiving, backup, and possible use of data in investigations, complaints and legal disputes.
- It is possible to create and manage up to 8 databases, to which data from the various inputs to the system may be recorded. The databases may span between 1 and 4 hard disk drives. This provides flexibility for:
  - Where data is recorded,
  - How long it will be stored, and
  - How it will be searched and retrieved.

Database searching is enhanced by a powerful search facility with optional filters.

Databases can be independently backed up to a local USB hard drive, either manually or automatically, without affecting surveillance/recording functions.

### Advanced security features inhibit unauthorized system access and tampering

The catPro has rigorous security features to prevent tampering and unauthorized access, to protect the integrity of data recordings and to protect the data transferred between systems:

*Access Security:*

- User Access is configurable at an Administrator-level plus ten further levels of user, accessed by user name and password.
- Access can be further restricted on the set-up and viewing of databases, cameras, sites (units), communications and access to system functions and system software operational panels and set-ups.
- Local user logon periods can be set allowing an operator only to be logged on for a maximum time (e.g. 8 hours or an 8-hour shift), and thereafter the user is required to re-enter user name and password. This eliminates the potential problem of a user taking over a system on another user’s logon at the end of shift.
- Database access for remote users is controlled from the local system rather than the remote system.
- It is possible to “hide” selected databases and camera views from levels of system users.

*Access-controlled system shutdown:*

Only Administrator-level users or users with appropriately assigned rights are able to shut down the system. So long as the unit itself is locked beyond reach, and users do not have access to the system power source, they are unable to stop the surveillance functions by shutting the system down.

*Detection of blocked camera lenses:*

An optional technical alarm warns the user and/or a control room if an image is recorded at less than 6KB from any camera, as would happen with the spray-painting or blocking of camera lenses, or sudden loss of focus.

*Detection of unusual system shutdowns:*

An optional technical alarm warns the user and/or a control room if unusual system shutdowns or reboots have occurred.

*Data Security – images exported with signatures:*

For prosecution and legal purposes images are digitally signed with a unique identifier that is lost if an attempt is made to manipulate the image.

### Strong technical support ensures proper system application

Support facilities include:

- Automatic supply of software upgrades that are distributed to remote units electronically via TCP/IP or dialup.

- Complete remote system diagnostics - it is possible to have remote software configuration, diagnostics, maintenance, and upgrades performed directly by the product developer.
- Email-based Support Desk
- Website downloads

#### Flexible integration with other digital systems

The **catPro** flexibly integrates with existing products and systems such as:

- Data networks
- ATMs
- Building management systems.
- Existing security systems

#### System stability enables reliable automation

This stability is essential for applications that rely on strongly automated functions. It is based on

- Cohesive integration of the software into the NetBSD operating system
- Built-in tests that perform continual self-diagnosis to ensure that the system is quickly aware of anomalies or dysfunctions
- A Watchdog timer that auto-reboots the system

#### Object-oriented software architecture enables uncomplicated upgrades

The object-oriented software architecture ensures that product functions can be added, deleted, or edited without altering the underlying architecture, and outdated hardware can be replaced simply by changing the application hardware's driver; a significant advantage given the speed of hardware obsolescence. Continuous **catPro** enhancements are made possible by re-arranging modular functions on top of the stable foundation. These software upgrades are regularly available via dealers and the Internet. The **catPro** therefore provides a surveillance solution that is modular, scalable and upgradeable.

#### Remote operation and management

From anywhere in the world users can dial in to remote units and

- Configure them
- Fetch reports
- View live camera (with audio)
- Transmit recordings
- Set up dialup alarms
- Maintain
- Replay recordings
- Run camera tours
- Diagnose
- Upgrade software
- Control dome cameras via PTZ controls
- Activate switches (e.g. doors and alarms)

#### Optional control room monitoring



With additional **catAlarm** command and control software, the **catPro** can be configured to function as an alarm control station, from which to manage multiple recording stations. Recording stations do not necessarily require personnel or user interfaces (monitor, keyboard, mouse) - they can be configured to automatically dial a control station when certain actions take place (e.g. a technical alarm, an event alarm, or repetitive triggering within a given time period). Because communications are global, it is quite feasible for control stations to monitor recording stations across continents.

#### Remote diagnostics and maintenance

With the built-in remote diagnostics and maintenance capability, a team at a centralised location can handle technical monitoring, diagnostics and maintenance for an unlimited number of units across the globe, responding to technical issues such as unusual system power downs, camera faults and communication faults. This has advantages:



- Reduces maintenance, personnel and training costs
- Improves levels of customer service
- Increases profit

#### Optional **catAPI** Application Programming Interface (API) for integration with other systems

The **catAPI** ActiveX API is a powerful tool for integrating Windows applications and **catPro** functions, empowering users to tightly integrate the **catPro** functionality within their existing information infrastructure. This enables an information strategy to be geared up from simple data retrieval into sophisticated Windows-based executive information systems.

For example, using the **catAPI**, a user with a Point Of Sale (POS) system can utilise a video clip of all transactions at each till by viewing this clip embedded within the POS management software when reviewing the POS transactions.

Integration is possible across any existing systems, including access control, surveillance and building management systems.

#### Optional integrated keyboard

The optional KBD-6000 keyboard has been designed specifically to meet the needs of **catPro** operators. Fully programmable, it provides exceptional integration with **catPro** functions that historically have only been accessible from the graphical user interface. With an ergonomic design and pleasing textured charcoal finish, the KBD-6000 is both an aesthetic and a functionally effective complement to the system.

#### Optional manual or automatic database backup to USB hard disk drive

Database recordings can be manually or automatically backed up to a hard disk drive in a local USB2 hard disk drive enclosure, for later replay by means of the free **catPlayer** on a Windows PC.

## Specifications

Model		Operating System	
CAT-5000 catPro, DSS Professional Software		NetBSD 1.6.1	
Screen Display			
Single or Quad Unit screen displays	1-16 cameras can be displayed from a single unit, or the screen can be quartered, with possible 1-4 cameras from each of 4 different remote units	Fast resize	Camera views can be resized with simple mouse clicks
Layouts	Screen Layouts can be customised, saved, loaded, and made available to other users	Control Panels	Icon-based panels include camera, audio, buffer, database, telemetry, relay outputs, analogue outputs, streaming text data, matrix, and local camera tour.
Video Specifications (based on VOM-2000/2100 Wavelet Video Only Module and AVM-3000/3100 MPEG Audio and Video module)			
General	<ul style="list-style-type: none"> <li>Digital video transmit, record and playback.</li> <li>As many as 5 video modules</li> </ul>	Resolution options	<ul style="list-style-type: none"> <li>720x576 pixels maximum; scaleable options (4CIF, 2CIF, CIF).</li> <li>Select either 1 or 2 fields per frame recording.</li> <li>Remote display in Hi, Lo, B/W or H263.</li> </ul>
Video std	CCIR/PAL and EIA/NTSC		
Compression	Wavelet, JPEG, H263 or MPEG2 (depends on hardware modules), with selectable compression ratios.	Video inputs (cameras)	Up to 20 inputs (4 per AV module)
Audio Specifications (based on AOM-1000 Audio Module, or AJA-1000 Audio Jack Assembly)			
General	<ul style="list-style-type: none"> <li>Digital audio transmit, record and playback.</li> <li>Independent bi-directional channel per AV module.</li> <li>Broadcast feature</li> </ul>	Compression	GSM, ADPCM, or MPEG 1 Layer 2 (depends on hardware modules)
		Audio inputs	4 per AOM-1000 or AJA-1000. Audio recording can be synchronised with video recording
		Audio outputs	4 per AOM-1000
Alarms			
Alarm triggers to initiate or halt system actions	<ul style="list-style-type: none"> <li>Motion detection (36), Still object detection (16)</li> <li>Inputs (16)</li> <li>Streaming text data</li> <li>User specified triggers via Application Programming Interface (API)</li> </ul>		<ul style="list-style-type: none"> <li>Retrieve and record pre-alarm images from buffer</li> <li>Record the image that initiated a motion detection, with the motion indicated</li> <li>Record a specified image sequence</li> <li>Record Video</li> <li>Record Audio</li> <li>Record synchronised video and audio</li> <li>Notify Base Station / Control Room</li> <li>Send custom message to email recipients</li> <li>Send custom message to SMS (cell phone text messaging) recipients</li> <li>Send custom message to Pager recipients</li> <li>Switch the display to a custom view that facilitates operator response</li> <li>Enable relay output (close door, switch on lights, activate alarm, etc)</li> <li>Perform automatic matrix action</li> <li>Display live cameras on analogue monitors</li> <li>Activate the Motion Tracker (add-on software module)</li> </ul>
Technical Alarm triggers to initiate system actions / remote maintenance team response	<ul style="list-style-type: none"> <li>Camera failure or camera lens blockage</li> <li>Unusual event statistics</li> <li>Communication failure</li> <li>Archiving media full or failed</li> <li>System fault or anomaly</li> <li>Control station cannot poll recording station</li> </ul>	Automated Alarm Actions by the system	
Automated Notifications for Alarms and Technical Alarms	<ul style="list-style-type: none"> <li>Notification to Operator by audible sound and / or pop-up message (3 levels of notification, requiring degrees of acknowledgement)</li> <li>Notification to non-operators by means of SMS (cell phone text-messaging), Email and Pager custom message.</li> <li>Notification to Control Station / Control Room by means of alarm queue, requiring action and acknowledgement.</li> </ul>		
Streaming Text Data			
General	<ul style="list-style-type: none"> <li>Data index recording from serial port interface.</li> <li>Programmable interface to ATM, point-of-sale system, access control system, etc.</li> <li>Triggering of system actions based on text data inputs</li> <li>Filter and search recorded text data based on logical text data parameters</li> </ul>	Operator Diagnostics and System Monitoring	
		Status Log (Sherlock)	Process for operator to export system configuration and email to support desk for remote diagnostics.
		Statistics Display	Dynamic statistics display of numerous system and communications processes.
		Configuration Display	CPU, RAM, VGA, I/O, AV Modules, Fixed Drives, Peripherals, Removable Drives, Communications, Installed Modules, Framegrabber, Comm Ports, USB, Network.
Activity (motion) Detection			
Activity Detection	<ul style="list-style-type: none"> <li>Activity detection on all cameras.</li> <li>Adjustable in sensitivity.</li> </ul>	Operator and System Logs	Printable Audit Trails of all Operator and System actions
Advanced Activity Detection	<ul style="list-style-type: none"> <li>Customisable Smart VMD and Vector Tracking algorithms</li> <li>Repetitive movements can be ignored</li> </ul>		
Optional catTracker Motion Tracking System software module			
Multiple Activity Detection zones per camera	<ul style="list-style-type: none"> <li>8 customisable activity detection zones within a single digital image.</li> <li>Custom sensitivity of zones</li> <li>Up to three dome cameras may be set to respond to each trigger/zone alarm.</li> </ul>	Interaction with Dome Cameras	<ul style="list-style-type: none"> <li>Dome camera/s will "track" a person moving through different zones.</li> <li>Local live camera displays are overlaid with a notification of zone activity.</li> <li>Domes have up to 32 customisable preset positions/names.</li> </ul>

**Warranty:** All units, items and systems manufactured by Cathexis include a twenty-four month limited warranty.

Recording and Playback General Specifications		Communications Optional	
General features	<ul style="list-style-type: none"> <li>Recording, playback, backup and transmission at the same time, from as many as 4 units.</li> <li>Optional integrated keyboard operation</li> <li>Flexible database management.</li> <li>catViewer Windows viewer and catPlayer archive player.</li> </ul>	General	<ul style="list-style-type: none"> <li>Remote unit monitoring and recording retrieval</li> <li>Complete remote unit diagnostics and maintenance</li> <li>Remote unit list management</li> </ul>
Playback Rate	Playback is not video card related; it depends on system processing speed at the time of playback (this varies). Full-frame playback (25 ips PAL, 30 ips NTSC) is normally possible.	Data export	<ul style="list-style-type: none"> <li>Selected recordings to floppy, USB key or CD-R</li> <li>Recordings can be saved across multiple disks</li> </ul>
Data Search	<ul style="list-style-type: none"> <li>Recorded data can be searched / filtered on event, timer, date/time, and camera number.</li> <li>Streaming text data can be filtered on fields and numerous other parameters.</li> <li>AND / OR logic can be applied to the filtering.</li> </ul>	Off-line review	Single image and motion clip replay with Windows Archive Player utility
Post Search	Image recordings can be searched in such a way that the system identifies when a prescribed area permanently changes – for example the point at which a parcel was placed or moved.	Archive from filtered data	Filtered data can be selected and archived.
Recording modes	<ul style="list-style-type: none"> <li>Recordings can be image sequence, motion clip, audio clip or index data.</li> <li>Event-controlled in combination with pre-event history</li> <li>Continuous recording using software timers.</li> <li>Manual recording of snapshot image, motion clip and audio clip via operator interface</li> <li>Events can be triggered manually from the DSS keyboard</li> </ul>	Backup	Databases can be manually or automatically backed up via local USB2 hard drive backup facility, for replay on Windows PC
Database	<ul style="list-style-type: none"> <li>Flexible and customisable database structure.</li> <li>No theoretical limit to size</li> </ul>	<b>System Configurations</b>	
Playback Modes	<ul style="list-style-type: none"> <li>Image sequence display with time/date and motion simulation.</li> <li>Motion clip replay with frame-by-frame selection and replay speed adjustment.</li> <li>Audio clip replay.</li> <li>Local playback or remote over LAN/WAN.</li> <li>Synchronised audio-video replay</li> </ul>	Export and Import	A system configuration can be exported or imported, enabling fast repeat set-ups across multiple units
Image Enhance	Replay images may be individually manipulated and enhanced with standard graphic filters for on-screen viewing only.	Load Default	The default system configuration can be reloaded.
		<b>Security</b>	
		Archiving with signatures	When an image is archived a unique identifier 20 bytes long is algorithmically hashed onto it. If the image is modified it loses this identifier, which is theoretically impossible to reproduce.
		Access rights	Users log on with username and password. Access rights can be customised for 10 user levels
		Timed access	The access time can be specified per user – on time up the user has to log in again.
		Remote access	Access levels can be specified for remote connectivity.
		Access to functions	Access levels can be specified for most system functions
		<b>Software modules and updates</b>	
		Modules	Optional software modules include catTracker motion tracking, catFiler SQL database, catCounter object counting, and remote diagnostics / maintenance.
		Updates	The CAT-5000 is an evolving system with regular updates. These can be either remotely or manually installed.

## Ordering Information

Product Code	Description
CAT-5000	catPro, Digital Surveillance System Professional Software. Note: All software is loaded via Installation Server.
<b>Upgrade options (see separate datasheets):</b>	
UPG-6000	Upgrade to catSite, Digital Surveillance System Enterprise-level Site Manager Software
CAT-6000	catSite, Digital Surveillance System Enterprise-level Site Manager Software (NetBSD version)
CAT-6100	catSite, Digital Surveillance System Enterprise-level Site Manager Software (Windows version)
<b>Other options (see separate datasheets):</b>	
MTS-1000 software	catTracker, Motion Tracking System software - motion tracking by dome cameras based on motion detection on fixed cameras.
SQL-1000 software	catFiler, MySQL database software, enabling local data basing of remote CAT-5000 content and shared site lists.
CNT-1000 software	catCounter, enabling counting, statistical analysis and reporting on objects such as pedestrians, vehicles or on a production line objects.
KBD-6000 hardware	DSS Keyboard integrated with catPro software, enabling operation with VGA or analogue monitor.
AVM-3000/3100 hardware	MPEG audio video module. AVM-3000 includes BNCs; AVM-3100 is for use with rear-panel connector unit.
AJA-1000 hardware	(For AVM) Audio Jack Assembly, to enable audio on the AVM-3000/3100
SPB-1000 hardware	(For AVM) Support for PCB Bracket, to optimise AVM-3000/3100 seating in the PRO-6000-B system processor
VOM-2000/2100 hardware	Wavelet Video Only Module. VOM-2000 includes BNCs; VOM-2100 is for use with rear panel connector units.
VOM-1400, VOM-1500	Video Capture and Scaling modules 1400 has 4 video channels, 1500 has 12. Must use rear panel connector unit.
VOM-1000 hardware	Wavelet Video Only Module, including an analogue video-out
Rear panel connector units	BNC-1500 patch panel. VMX-1000/1200 Cross Point Switch. VMX-1100 Active Loop Through
AOM-1000 hardware	Audio Only Module, for use with VOM-1000, 2000, 2100
PSP-1400 hardware	RS422, 485 Modules. A 4-port asynchronous, communications add-on module
PSP-1200 hardware	RS232 Module. A 4-port asynchronous, communications add-on module