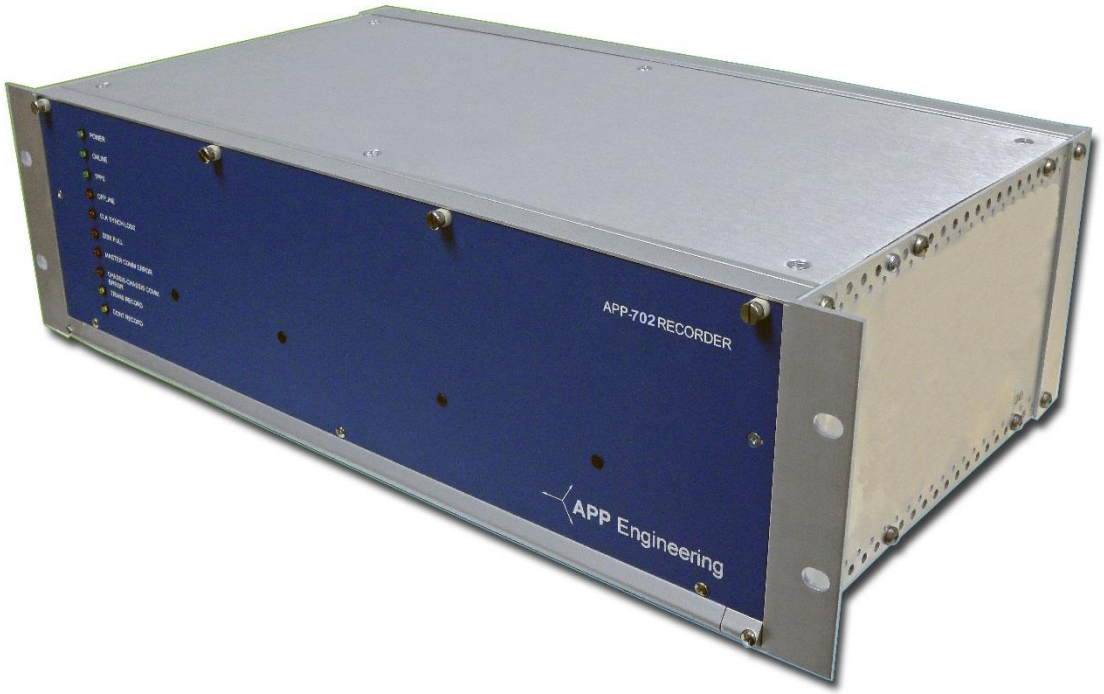
APP Engineering, Inc.

APP-702 Compact Recorder

Operating Manual



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Safety Notices

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to APP Engineering, Inc. for service and repair to ensure that safety features are maintained.

WARNING **A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like, that if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until you fully understand and are prepared to address the indicated conditions.**

CAUTION **A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until you fully understand and are prepared to address the indicated conditions.**

WARNING **(Personnel)**
Only qualified, service-trained personnel who are aware of the hazards involved should install, open any doors, remove any covers, or disconnect the instrument (APP-702 Compact Recorder). Disconnect power before attempting any service or maintenance.

WARNING **(Fuse)**
For continued protection against fire, replace the line fuse only with a fuse of the specified type and rating.

WARNING **(Live Circuits)**
Replacement of chassis, components, fuses and internal adjustments must be performed by qualified personnel. The system main power must always be disconnected before servicing. If the system utilizes voltage and/or current test switches make sure they are open and understand that the back of these switches are still live! If the system utilizes sliding link terminal blocks for the digital channels and alarm outputs, ensure that the sliding links are open and understand that one side of the sliding link terminal block is still live!

WARNING **(Operating Environment)**
This instrument should not be used in an explosive environment. It should not be used in the presence of flammable gases or liquids. This instrument should not be used in a damp or wet environment or an environment that is subject to condensation.

WARNING **(Grounding)**
All chassis, cabinets, panels, and rack mount equipment must be connected to an electrical earth ground. Grounding must be done to prevent shock hazard to people. Instruments provided with a power terminal block are provided with an appropriate means for connecting an electrical safety earth ground. Only qualified and trained personnel should connect power to this instrument. If the instrument includes a three prong AC power cord, ensure that your power receptacle is properly earth grounded.

WARNING **(Two Person Rule)**
Do not service or adjust equipment alone. Ensure that another person is present that knows emergency procedures and is capable of giving first aid.

Additional Document Notes

Throughout this manual, the APP-702 Recorder™ may be referred to as the "Recorder" or the APP-702 Compact Recorder.

Throughout this manual an event channel or event input may be referred to as a digital channel or digital input.

An APP-601 Recorder manual is also provided for reference. The recording functions are the same for the APP-701 and the APP-601. The major difference is the computer.

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1. Introduction

1.1 Overview

The APP-702 Compact Recorder is derived from the APP-601 Multifunction Recorder and contains all the DME recording features as the APP-601 Recorder (DFR, SER, DDR, and PMU.) The APP-702 uses the same major components as the APP-601 Recorder but integrates the system computer along with the analog circuit boards and/or event circuit boards, DSP circuit board, alarm output circuit board, and power circuit board into a standard 19" rack mount chassis. Additionally, the APP-702 Recorder uses the same APP Recorder Software and APP ClearView Software as the APP-601 Recorder.

The APP-702 is ideal for permanent or temporary installations requiring a small physical foot print or low analog and/or event channel count. It is intended for use in utility Transmission, Distribution, and Generation areas but also lends itself to industrial applications due to its wide voltage input range, current input range, status output capability, and various recording speeds. When coupled with APP ClearView™, a master station software package and COMTRADE viewer, it provides a powerful platform for data acquisition, analysis, and reporting.

The APP-702 is expandable. Additional analog and/or event channels can be added by simply adding an APP-601 data chassis to the configuration.

1.2 Features

Major features of the APP-702 recorder include the following:

- Integrated Recorder/Computer chassis
- Windows based software
- Centralized or distributed architecture
- Easy and intuitive setup
- Simultaneous recording functions
- DC coupling
- Data alignment within 1msec
- Auto diagnostics
- Remote power toggle
- Independent data acquisition channels
- Analog channels configurable as voltage or current
- Virtual Channel capability
- Multiple triggers per analog channel
- Automatic creation of COMTRADE files
- Auto calling, polling, emailing
- Network, DNP-3, FTP communications
- Digital channels configurable as DFR, SER, or both
- Display, USB, and Ethernet Ports for connections to keyboard, Monitor or laptop
- Superior analysis software (APP Clearview)
- AC or DC input power
- Designed and manufactured by APP Engineering

1.3 Functions

Major recording functions of the APP-702 Compact Recorder include the following:

- Transient Oscillography
- Extended Oscillography
- Extended RMS (Root Mean Square)
- Continuous Oscillography
- Continuous RMS
- Continuous Frequency
- Continuous Phasor
- Trending RMS & Frequency
- Sequence of Events
- PMU (Phasor Measurement Unit)
- Real Time Local Monitoring or remote monitoring via RDP (Remote Desktop Protocol)

1.4 Ordering Specifications

APP702-SMARC-(x)A-(x)E-(y)-1TBSSD

(x)A Analog Channels	(x)E Digital Channels	(y) Alarm Card Option
0A	56E	0 (Yes)
3A	48E	2 (No)
6A	40E	
9A	32E	
12A	24E	
15A	16E	
18A	8E	
	0E	

Example: APP702-SMARC-12A-24E-0-1TBSSD

2. Specifications

2.1 Analog Inputs

2.1.1 Voltage

Max channels per chassis (without expansion)	18
Usable Slots	1, 2 ,3 ,4 ,5 ,6 ,8 (6 boards Max out of 7 slots)
Max input voltage	440VACrms
True DC Coupling	Yes
Rin	Typical 1mΩ (Depends on full scale)
Accuracy (un-calibrated)	Typical 0.15% of Reading, Max 0.005% of range

2.1.2 Current

Internal shunt	2mΩ
Continuous current	15A RMS
Max amp-seconds (not to exceed)	140A RMS for 2 seconds, 250A RMS for 0.5 seconds
Max current (not to exceed)	250A
Accuracy (un-calibrated)	Typical 0.61% of Reading, + .005% of range

2.1.3 General

Ch to Ch phase angle error	≤ 0.004 degrees
Cut-off frequency	(-3db) 10KHz
Common mode rejection	80dB Min
Temperature Error	≤75ppm/ºC
Channel to channel isolation	≥ 3500VDC
Channel to ground isolation	≥ 3500VDC
Channels per card	3
Channel type	Each channel can be setup as voltage or current
Data alignment	With 1PPS rising edge
Data accuracy	1 µsec with unmodulated IRIG-B input
Connector type	#6 screw terminal double barrier
Max wire size	12AWG

2.2 Event Inputs

Max channels per chassis	56
Channels per card	8
Channel type	DFR, SER or Both
Usable Slots	1, 2 ,3 ,4 ,5 ,6 ,8
Standard input voltage range	45-250VDC
Optional input voltage	24VDC or internally wet
Contact configuration	Programmable normally open/normally closed
Configuration	Isolated, Common Return, Internally Wetted
Channel to channel isolation	≥ 3500VDC
Channel to ground isolation	≥ 3500VDC
Connector type	Pluggable, 16 pole
Max wire size	14AWG

2.3 Traveling Wave Inputs

Max channels per chassis	7
Channels per card	1
Channel type	Traveling Wave
Standard input voltage range	30A at CT, 10 VDC at the BNC
Connector type	2 x BNC 1 Ethernet

2.4 Power Supply

AC Range	88-264Vac (50/60Hz)
DC Range	86VDC to 373VDC (48VDC Option)
Power draw @ 125VDC	34W
Input to ground isolation	≥ 3500VDC

2.5 Status Relays

Cards per system	1 standard (more optional)
Outputs per card	8
Contact ratings	12A Cont., Break is 0.5A @ 125VDC 12A Cont., Break is 0.35A @ 250VDC
Dielectric coil to contacts	5KVAC
Contact Configuration	Board jumper normally open/normally closed

Physical Alarm outputs	8
Alarms, (Mappable to any physical alarm output). An alarm can be assigned to multiple physical outputs. A physical output can have 1 or more alarms assigned to it.	▪ Power ▪ Online ▪ Offline ▪ Clock sync loss ▪ Disk Full ▪ Master Communication error ▪ Chassis Communication error ▪ Transient Record ▪ Disturbance Record ▪ SOE Record ▪ DSP Board Temperature ▪ Continuous Record ▪ PC Health ▪ Analog Channel Fail ▪ Cross Trigger ▪ TW Fail
Connector type	Pluggable, 16 pole
Max wire size	14AWG

2.6 Time Synchronization

Modulated IRIG-B Input	Yes
Unmodulated IRIB-B Input	Yes
Selection method	Board jumper & Software
Connector type	BNC
Chassis to chassis signal (If expanded with APP-601 Data Chassis)	1PPS – BNC connector, 100ns chassis to chassis latency if signal is daisy chained. 1PPS signal can be paralleled with a “T” connector.

2.7 Communications

Recorder to master station	Ethernet 10/100Mbit, TCP/IP (Fiber optional)
Chassis to chassis (If expanded)	Ethernet 100Mbit, UDP (Fiber optional)
DNP-3	Ethernet 10/100Mbit, TCP/IP (Fiber optional)
PMU	Ethernet 10/100Mbit, UDP

2.8 APP-702 Integrated Computer

Operating system	Windows 10
Processor	Atom x7 E3950 (Quad Core)
RAM	8GB DDR
eMMC	32GB
SSD	1TB
Ports	3x Ethernet (1 - DSP, 1 - LAN, 1 - Laptop connection) Intel I210
	3x USB 3.0
	1x HDMI
	2x RS232 COM
Display	Optional External (HDMI)
Keyboard	Optional External (USB)
Touchpad	Optional External (USB)
Power Button	None
Reset Button	None

2.9 Ethernet Switch (expansion configurations only)

Data rate	10Base-T/100Base-TX
Ports	5 (8, 16, 24 port optional, fiber optional)
Power	10-36VDC or 8-24VAC
Input frequency	47-63 Hz
Port connectors	RJ-45
LED indicators	Activity, Link, Data Rate, Power

2.10 Enclosures

APP-702 Compact Chassis	19” W x 5.25” H x 9.8” D (Rack Mount)

2.11 Environment

Operating temperature	-40 to 55°C
Operating relative humidity	10 to 95% non-condensing
Storage relative humidity	5 to 95% non-condensing
Operating altitude	10,000 ft maximum

2.12 Approvals

Standard	ANSI/IEEE C37.90.1-2002
Standard	IEC 60255-22-1 Cat III (Osc)
Standard	IEC 60255-22-4 Cat IV (EFT)
Standard	ANSI/IEEE C37.111 (COMTRADE)
Standard	ANSI/IEEE C37.232-2007 (Com Names)

3. Installation Overview

3.1 Installation

The APP-702 Compact Recorder basic installation consists of the single Chassis with up to 18 Analog Channels or 56 Event Channels or a combination of the two. The available Channels can be expanded by adding APP-601 Data Chassis. This section will describe the hardware installation for Basic and Expanded applications. The installation steps discussed below do not include software setup steps. You will need configure the Point Assignment Record, satellite clock information, event input information, and setup the hardware jumpers. Software settings and Windows are discussed in the APP-601 Recorder and APP Clearview Manuals included in the binder provided with the APP-702.

WARNING **Only qualified, service-trained personnel who are aware of the hazards involved should install, open any doors, remove any covers, or disconnect the instrument (APP-702 Recorder). Disconnect power before attempting any installation, service or maintenance.**

See *Safety Notices* on page v for more very important, must read, safety information.

Please call APP Engineering, Inc. at 317-536-5300 with any installation or service questions. Installation service is available by APP Engineering, Inc. Please call the number above for additional information.

The APP-702 consists of one chassis in the Basic Configuration.

Figure 1: APP-702 Compact Recorder Front View (Fanless)

3.2 Initial steps for both Basic and Expanded Installations

1. Inspect the shipping cartons to see if any obvious shipping damage has occurred. If the items have been damaged, contact the carrier immediately and file a damage claim. Take pictures of the damaged cartons.
2. Unpack the instruments and keep the cartons. If you filed a claim with the freight company, their inspector may want to see the boxes. Inspect the instruments and associated peripherals. If damaged, take pictures and file a claim with the freight company if you feel they are at fault. Contact APP Engineering, Inc. if any kind of damage has occurred.
3. Remove any power from the panels that you will be installing equipment into or working in.
4. Install the APP 702 rack mount chassis into your desired panel. The chassis should be installed with (4) fasteners. Since panels utilize various size screws for rack mount instruments, fasteners have not been provided (unless special arrangements have been made).

5. Ensure that all circuit board cards are seated properly, and the holding screws are tight. Open the front panel doors and ensure that internal power supplies and connectors are in proper position and secured in place. Ensure that no foreign objects are lying in the chassis.

6. Open the rear panel door and pull out the drawer to inspect the computer.

7. Ground the chassis to your panel grounding bars. The distance from any chassis to a panel grounding bar(s) should not exceed 16". Grounding braid has been provided. Ensure that your panel ground bars are properly earth grounded.

WARNING **Proper grounding procedures must be followed to prevent serious injury or death to people who may come in contact with this recording equipment.**

8. Wire the recorder analog channels. The analog channels will accept a maximum wire size of 12AWG. The terminal block screws are #6. The maximum input to a voltage channel is 440VAC. The maximum continuous current thru a current channel is 15Amps.

9. Wire the recorder event (digital) channels. The event channels utilize a pluggable 16 position connector. The maximum wire size for this connector is 14AWG. The standard input voltage range is 45-250VDC. Event Boards setup for 24VDC are available as an option. Reference the print set for any notes designating event channels that require 24VDC or event boards that are **Internally Wetted** as opposed to our typical board that needs external wetting.

WARNING **All #6 ring terminals connecting to the power circuit board should be insulated ring terminals.**

CAUTION **APP Engineering manufactures an event circuit board that is internally wetted and is setup for dry contact connection only. Do not connect an external voltage to this internally wetted event circuit board!**

The board will have labeling indicating that it is for Dry Input. Again, reference the print set for electrical drawings and important notes.

10. Wire the recorder alarm outputs. The alarm outputs utilize a pluggable 16 position connector. The maximum wire size for this connector is 14AWG. The alarm output contact is dry. The contacts can break 0.5Amps @ 125VDC or 0.35A @ 250VDC.

11. As an option, to access APP Recorder or APP Clearview programs, connect an external display to the HDMI port and keyboard to a USB Port. Or you can connect a laptop to the LAN Ethernet Port, then communicate via Windows Remote Desktop or APP Clearview. The LAN Ethernet Port setting has been preset to:

    IP address: (DHCP)
    Subnet:

    A USB to Ethernet Adapter has been included so the user can use it in conjunction with a laptop computer to communicate with the APP-702 via APP ClearView or Windows Remote Desktop. The internal network adapter for this converter has been set to:

    IP address: 198.168.3.25
    Subnet: 255.255.255.0

    Set your laptop to:

    IP address: 198.168.3.26
    Subnet: 255.255.255.0

3.2.1 To Complete a Basic Installation

1. Connect your IRIG-B signal to the back of the DSP/IRIG circuit board. The IRIG-B connector is labeled and is a standard BNC type connector. This board can accept a modulated or un-modulated IRIG-B signal. However, a board jumper must be set to reflect the input type and software setting in the Point Assignment record must be made. Unless a satellite-controlled clock was purchased with the system, an IRIG-B coax cable is not provided.

2. Each chassis has one Ethernet RJ45 connector. On the Data Chassis, this connector is located on the DSP/IRIG circuit boards. On the APP-702 computer it is simply located on the back and labeled DSP ENET. Connect the Crossover Ethernet cable between ENET port on the DSP board and the DSP port on the Computer Board.

3. Ensure the chassis power switch is in the OFF position.

WARNING **Ensure that your power source wires are not live (turned off or disconnected). Follow OSHA power safety lock out procedures. Ensure that your source can provide sufficient current to the recording system. Ensure that your power source is fused and properly earth grounded.**

4. Connect power from your source to the chassis power supply board (terminals 1&2). **Use insulated #6 ring terminals**

WARNING **All #6 ring terminals connecting to the power circuit board should be <u>insulated</u> ring terminals.**

WARNING **Reference the drawings provided with the system.**

5. Carefully and with great prior inspection and thought, turn on your power source.

6. Carefully turn on the power switch of the APP-702 Recorder.

7. If a proper turn on occurs, you should see the following:

   - Computer startup
   - APP Recorder program begins
   - The front panel POWER LED illuminate green, the ONLINE LED will illuminate green, the 1PPS LED illuminate green, and only if the continuous recording is enabled the CONT RECORD LED illuminate amber (yellow).

8. If the system has not powered up correctly, please recheck your wiring and review the wiring prints that shipped with the recorder. To further assist with trouble shooting, connect a monitor and keyboard so you can view Windows and APP-702 Recorder activity.

9. Please call the factory for any required assistance (317) 536-5300.

3.2.2 Completing an Expanded Installation

1. Install the din rail mount Ethernet switch. It is preferred that the switch be mounted in the same panel as the APP-601 Data Chassis because it will be powered from a 12V output from the Data Chassis (TB13-3 and TB13-4). A small piece of din rail has been provided. At the request of the customer, APP Engineering can mount the Ethernet switch to the back of a 3U rack mount panel.

CAUTION **APP Engineering manufactures an event circuit board that is internally wetted and is setup for dry contact connection only. Do not connect an external voltage to this internally wetted event circuit board!**

The board will have labeling indicating that it is for dry input. Again, reference the print set for electrical drawings and important notes.

2. Connect your IRIG-B or 1PPS signal to the back of each DSP/IRIG circuit board (one board per chassis) according to Point Assignment Record. The IRIG-B or 1PPS-IN/OUT connectors are labeled and are standard BNC type connectors. This board can accept a modulated or un-modulated IRIG-B signal, or 1PPS-IN signal. It also can output 1PPS signal. However, a board jumper and software setting in the Point Assignment record must be set to reflect the input type. Unless a satellite-controlled clock was purchased with the system, an IRIG-B coax cable is not provided.

Note: The Chassis to chassis 1PPS signal can also be paralleled by using a BNC "T" to reduce latency.

3. Each chassis has one Ethernet RJ45 connector. On the Data Chassis, this connector is located on the DSP/IRIG circuit boards. On the APP-702 chassis it is simply located on the back panel and labeled DSP Enet. A shielded straight cable should be connected to each chassis and routed back to the system Ethernet switch. The Ethernet cable should not exceed a length of 100 meters.

4. Connect power cables to the Ethernet switch. A power cable has been provided. It should be connected from Data chassis power supply circuit board (terminals 3&4) to the input terminal block of the switch. The voltage is 12VDC.

CAUTION **It is possible that a specially requested Ethernet switch was used, and it may connect directly to 125VDC.**

Reference the print set for electrical drawings and important notes.

5. Each additional Data chassis receives its own power input from your power source (station battery or AC Input). Input voltage can be 86-373 VDC or 88-264 VAC. Other voltage input options are available.

WARNING **All #6 ring terminals connecting to the power circuit board should be <u>insulated</u> ring terminals.**

6. Ensure that the power switches, located on the back of each chassis, are in the OFF position.

WARNING **Ensure that your power source wires are not live (turned off or disconnected). Follow OSHA power safety lock out procedures. Ensure that your source can provide sufficient current to each Data chassis. Ensure that your power source is fused and properly earth grounded.**

7. Connect power from your source to all the Data chassis power supply boards (terminals 1&2).
8. Carefully and with great prior inspection and thought, turn on power to all chassis.
9. If a proper turn on occurs, you should see the following:
   - Computer startup
   - APP Recorder service program begin
   - On each Data chassis, the front panel POWER LED illuminate green, the ON LINE LED illuminate green, the 1PPS LED illuminate green, and only if the continuous recording is enabled the CONT RECORD LED illuminate amber (yellow).
10. If the system has not powered up correctly, please recheck your wiring and reference the wiring prints that came with the recorder.
11. Please call the factory for any required assistance (317) 536-5300.

3.3 Basic Connection Diagram

IMPORTANT **The following diagrams are intended to give you a general picture of chassis interconnections. They are NOT to be used for wiring and installation purposes. You must use the detailed print set provided with each system for wiring and installation.**

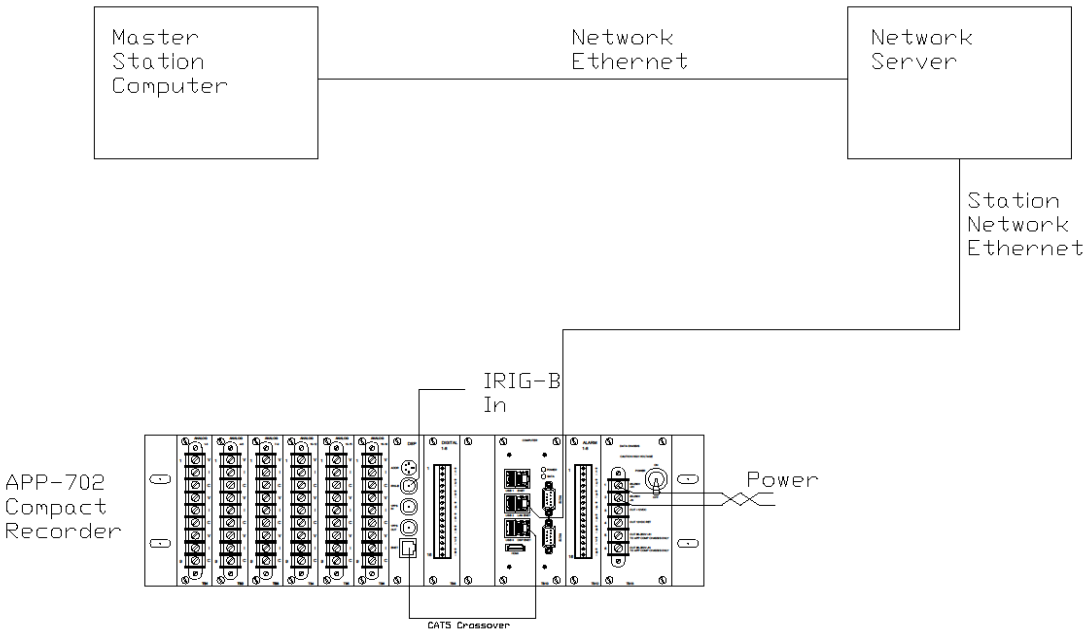

Figure 2: APP-702 Basic Installation Connections Diagram

3.4 Expanded Connection Diagram

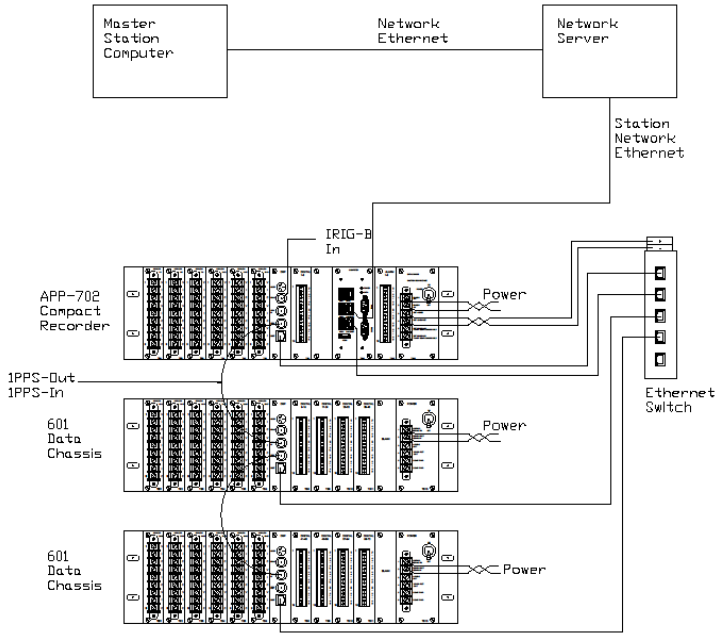

Figure 3: APP-702 Expanded Installation Connections Diagram

4.Hardware

4.1 Overview

This section describes the hardware components of the APP-702 Compact Recorder. Unlike other APP recorders, the APP-702 does not have separate Data and Computer Chassis but rather are integrated into one chassis for easy installation, removal, and portability for temporary installations.

4.2 Major Duties of the Integrated Computer

Communicate with the DSP circuit board carrying out functions such as; collecting data, downloading settings, and downloading new software.

Receive, organize, and store raw data.

Convert raw data into COMTRADE C37.111-2013 format.

Calculate continuous frequency, RMS, and phase data.

Communicate with the APP Clearview master station software via external modem, network, or directory.

Output data in DNP-3 format via Ethernet to a remote terminal unit or similar.

Output PMU data.

Provide a means for a local user to look at settings, change settings, view real-time oscillograms, look at stored records, communicate with someone at a master station, or even call another recorder and download records for review and analysis.

4.3 APP-702 Integrated Computer

The APP-702 Compact Recorder chassis is constructed in a 3U 19” rack mount chassis. The chassis depth is approximately 9.8”. Housed inside the chassis is an industrial single board fanless computer, 32GB eMMC, 2.5” 1TB SSD, 5V 100Watt power supply, 12V 100Watt power supply, and rear slide in power supply circuit board.

The single board computer with eMMC Flash storage, 2.5” SSD, and a connector circuit board are all mounted on a slide out shelf. The chassis rear panel is attached to the shelf and can slide out of the chassis by loosening the rear panel thumb screws and carefully pulling on the rear panel.

The 5V and 12V power supplies, both 100 Watts, are mounted to the chassis front panel. This allows for maintenance access and heat sinking.

WARNING **Always turn OFF chassis power before opening the chassis front panel. The input sides of the power supplies have 125VDC or 250VDC or 120VAC wired to them. This voltage can be deadly! Only trained experienced electrical personnel should open the chassis front panel and only with the power OFF.**

The rear slide in power supply circuit board contains a 2A fuse, components for surge protection, a power switch, and a 6-position terminal block. Power is connected to terminals 1 & 2 and passes thru the board via connector X3 to the 5V and 12V power supplies discussed above.

WARNING **Only trained experienced electrical personnel should service this power supply circuit board and only after the unit has been turned off and power has been carefully removed from terminals 1 and 2. Ensure power has been removed from terminals 1 & 2 by measuring the voltage across terminals 1 & 2 (it should read zero volts).**

The APP-702 single board computer is designed to support applications where high reliability and long-term availability are required. The single board computer features the Intel Atom E3950 (Quad) fanless processor, which offers 1.91GHz/ 2 GHz Burst (Quad Core) equivalent performance while typically drawing 6 watts of power. The computer is powered from the 12V 100 Watt power supply.

The board features a general software embedded BIOS with OEM enhancements. The BIOS supports custom defaults and the addition of firmware applications for security processes, remote booting, and other pre-OS software functions.

The computer configuration is setup with one 32GB eMMC and one 2.5" 1TB SSD. The eMMC is setup as the "C-Drive" and holds the Windows operating system and the APP Recorder Program. The SSD is setup as the "D-Drive" and holds the *Setup* folder and *Data* folders.

Typically, the *Setup* folder contains the all-important Point Assignment Record, trace files, and calibration file. The *Data* folder contains the triggered transient records, triggered extended records, and various continuous recording folders such as continuous RMS, continuous frequency, continuous phase, and continuous oscillography.

4.3.2 APP-702 Computer Circuit Board

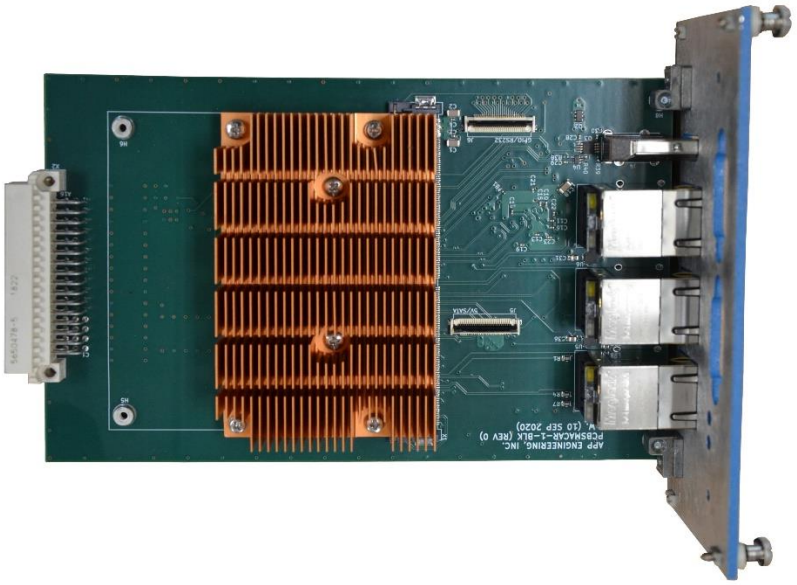

Figure 4 APP 702 Computer Circuit Board

Figure 5 APP 702 Computer Circuit Board with SSD

4.3.3 APP-702 Compact Recorder Computer Specifications

Table 1: APP-702 Compact Recorder Computer Specifications

Item	Description
Operating system	Windows 10
Processor	Atom E3950 (Quad Core)
RAM	8GB 2400 MT Quad Channel
eMMC	32GB
Hard Drive	1TB SSD
Ports	1 – HDMI
Ports	3-Ethernet 10/100 (1 for DSP, 1 for LAN, 1 for computer connection)
Ports	3-USB 3.0
Display	Optional External (HDMI)
Keyboard	Optional External (USB)
Touchpad	Optional External (USB)
Temperature	-40 to 70° C with Standard SSD (see overall temp system rating)
Modem	No

Figure 6: APP-702 Compact Recorder Front View

Figure 7: APP-702 Compact Recorder Rear View

4.4 APP-702 Compact Recorder Chassis

The Data input and output components (i.e., the Analog and Events boards, Alarms, and DSP board) are the same as found in the APP-601 Data Chassis. To find more detail on these components please see APP-601 Recorder Manual Data Chassis Hardware Section 4 included in the binder with the APP-702. You will also find information on networking and Ethernet switch specifications useful when implementing an APP-702 with expansion APP-601 Data Chassis.

5. Installing and Using the Recorder Software

5.1 Software Installation and setup and Using the APP-702 Recorder

As discussed in Section 1, the APP-702 Compact Recorder runs APP Recorder and APP Clearview Programs and is configured similarly to the APP-601 Multifunction Recorder. So, instead of replicating the software setup and use instructions here, we are referring users to the APP-601 Recorder Manual and APP Clearview Manual which were included in the binder that was provided with the APP-702. Please see APP-601 Recorder Manual starting with Section 5 for setup and use.

Note: Follow APP-601 instructions for setup.

Note: When configuring the Point Assignment Record, keep in mind the APP-702 can only include 6 Analog and/or 7 Event boards, the numbering of the slots relative to the Recorder program Point Assignment Record is described below.

Table 2: APP-702 Physical board layout for Point Assignment Record

Slot	Slot	Slot	Slot	Slot	Slot	Slot	Slot	Slot	Slot	Slot	Slot	Slot
1	2	3	4	5	6	7	8	9	10	11	12	13
AVE	AVE	AVE	AVE	AVE	AVE	DSP	AVE	No physical boards in slots 9-11			Alarm	Power