



PRODUCT OVERVIEW

IPT 9100 PUBLIC TELEPHONE

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Specification

IPT 9100 based coin/card phone Description

The Quortech Model IPT 9100 Series pay telephones are rugged, versatile, line-powered, intelligent pay telephones, designed to operate with coins, credit cards, and prepaid "chip" cards. The IPT 9100 Series is the Quortech US and International S5-XG pay telephone.

Internal call rating (tariff) tables give complete independence from the Exchange lines equipped with rating pulse generators. This enables the IPT 9100 Series to be installed in any location where a subscriber line with answer supervision in the form of loop polarity reversal or 12 or 16 kHz signal pulses, is available.

Remote control and diagnostics are provided by the Quortech POLLQUEST payphone network manager installed in the customers administration offices. POLLQUEST uses the telephone lines to link to each payphone by means of a standard Hayes compatible modem. This link allows payphones to report alarms, operational status, and cashbox information to POLLQUEST. POLLQUEST, in turn, can poll the payphones and download tariff tables and other operational parameters automatically or manually.

The IPT 9100 Series pay telephones are totally modularized, which makes them easy to install and maintain. All equipment failures can be isolated to specific modules that can then be replaced with known functional modules. Field repair and maintenance is limited to module changes and occasional cleaning.

The IPT 9100 Series pay telephones are line powered and operate with any standard Exchange line that provides reverse loop polarity, or 12 or 16 KHz charging pulses to indicate that the call was answered (answer supervision). The payphones can be configured to process free emergency numbers, information numbers (time or weather, for example), local, toll, and international calls. Figure 1 shows an IPT 9100 Pay Telephone.

Figure 1. IPT 9100 Pay Telephone



Key Operational Features .

- Equipped with a full set of tariff tables for local, national toll, special services and international calls, with three discount periods for evening, weekends, and holidays.
- Dialing towards the Exchange can be pulse or tone, software selectable.
- Uses audible voice and tone prompts to guide the user throughout the call.

Key Electrical Features

- Line powered.
- Loop polarity sensor to detect reverse polarity answer supervision signals
- Built-in frequency counter to detect 12 and 16 KHz signal pulses.
- Software counters for tracking coin totals (by denomination), type of calls, and statistics
- Built-in modem to communicate with POLLQUEST.
- Configuration options, registers, and tariff tables can be downloaded to the payphone by POLLQUEST.
- Alarms, call records, and tariffs can be uploaded from the payphone to POLLQUEST.
- On-site programming of the payphone, using voice telemetry and the keypad.

Key Mechanical Features

- Housing is reinforced steel construction, with a high-security lock.
- Plug-in modular construction of all sub-assemblies for easy maintenance.
- Hookswitch and keypad subassemblies are highly resistant to vandalism, one million operations MTBF.
- Handset made of Lexan⁽¹⁾ with flexible spiral stainless armored steel cord reinforced by steel rope.
- Optional Large coin version comes with 1.7 liter cashbox

⁽¹⁾ Or equivalent Polycarbonate material

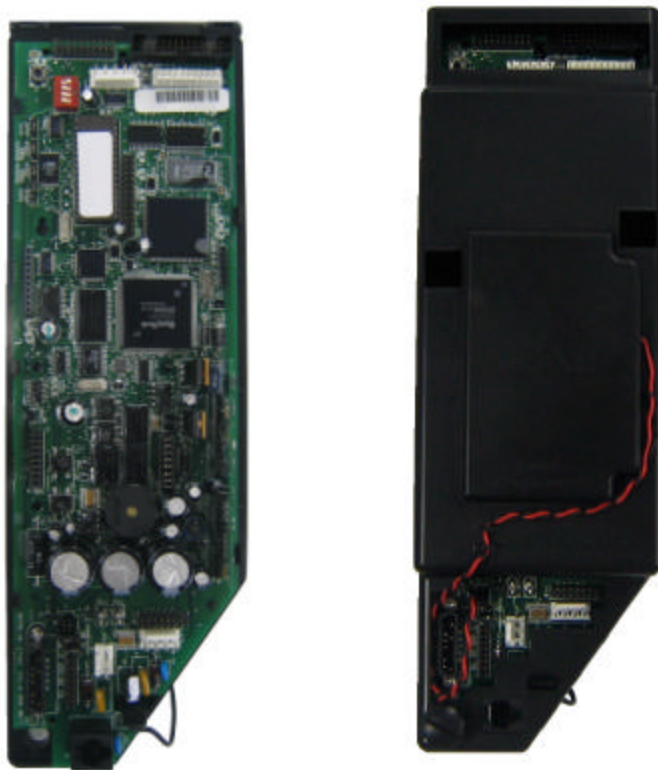
Payphone Control Module (PCM S5-XG)

The PCM **S5-XG** consists of a state-of-the-art circuit board enclosed in a ESD (Electro-Static Discharge) safe casing.

The circuit board contains a microprocessor, erasable programmable read-only memory (EPROM), electrically-erasable programmable read-only memory (EEPROM), battery-backed random access memory (RAM), and FLASH memory. These, together with other electronic circuitry, the operating system software that runs in the microprocessor, and the operational files downloaded from **Poll Quest** control the operation of the payphone.

The PCM is connected to all other assemblies in the payphone by means of keyed connectors, to facilitate installation and removal. The PCM complies with Part 68 and Part 15 of the US Federal Communications Commission regulations, and is in general compliance with all requirements described in applicable CCITT recommendations.

Figure 2. Payphone Control Module (S5-XG)



Modem

The PCM S5-XG is equipped with a low power modem to communicate with Quortech's POLLQUEST Payphone Network Manager .The payphone can be programmed to automatically call POLLQUEST in the event of an alarm condition (open door, stolen handset, damaged tariff tables, for example), or it can be forced to call POLLQUEST to deliver alarm status data.

POLLQUEST can call the payphone to download operating Options, Registers, Tariff tables, etc. POLLQUEST and the IPT 9100 Series use communications protocol and passwords to virtually eliminate all the possibilities of malicious access into the payphones by hackers. The unit has several software counters to allow proper monitoring and control of the payphone network. The content of these Registers can be monitored remotely or on-site by means of the keypad and the 32 character display.

Line Interface

The telephone line can be connected via screw terminals at connector J-1 of the PCM or to a terminal block mounted in the base of the enclosure. A cable from the terminal block is connected to the PCM S5-XG by means of a standard US RJ-11 phone connector (RJ-11). The telephone loop may be connected to the payphone without regard to polarity.

The PCM S5-XG operates normally with loop currents, ranging from 23 to 100 mA. The payphone may be software optioned to pulse or tone dial.

The PCM S5-XG controls access to the telephone line through a relay. When on-hook, the relay is open and presents a load of greater than 100 meg ohms across the line.

The PCM S5-XG has a built-in frequency counter and a loop current polarity sensor to determine when a call is answered. If the PCM S5-XG does not detect loop current when a customer goes off-hook (line cut or disconnected), it immediately turns all power off and returns to the on-hook condition. This ensures that the battery stays charged.

*The PCM S5-XG has been designed to compensate for 24V lines and is the only model in the series that has this capacity built in.

External DC Power Option

An optional external DC power supply can be connected to the PCM S5-XG. The power supply may be necessary if the telephone line cannot consistently supply at least 20mA loop current.

The power supply consists of a wall plug-in, 16 VDC, unregulated power supply. The power supply may be plugged into a standard 115 VAC outlet up to 1,000 feet (914m) away from the telephone and the auxiliary power delivered to the phone by means of standard telephone wires.

Transient Protection

The PCM S5-XG provides electrical surge protection on the board by means of solid state transient suppressor, and by fuses on the tip/ring leads. This design is not intended to be the sole protector of the payphone, but a complement to the external lightning protector supplied by the Telephone Company. In order for the on-board transient suppressor to work, the enclosure must be properly grounded, as described in the Installation and Maintenance manual for the IPT 9100 payphone.

Battery

The PCM S5-XG uses a sealed, rechargeable battery to power the Calendar/Clock, RAM, and other power supervision functions operational when the phone is on-hook. No routine maintenance is required under normal operational conditions. The battery is recharged from the line when the phone is off-hook.

External Alarm Input

The PCM S5-XG can be programmed to monitor one external alarm contact.

A vault door alarm sensor may be optionally connected to the external alarm input through J-3 on the main board of the PCM. When the vault door is opened, the optional Vault Door Alarm is triggered, and if programmed to do so, the PCM S5-XG calls POLLQUEST and reports the event.

Operational Status

The PCM S5-XG collects and retains in memory:

- Station Message Detail Records (SMDR), also called Call Detail Records (CDR).
- The number of calls by type (local, inter-urban, long distance).
- The amount and denomination of coins in the cashbox..
- Alarm status.

The unit reports these transactions to POLLQUEST during a poll or when the phone calls home as a result of a preprogrammed alarm condition.

On-Site Maintenance

The payphone can be programmed on site by technicians using the local maintenance access mode. This mode is entered to determine the contents or status of the options, registers, alarms and counters. In addition, the technician can generate maintenance function commands and check and set the internal clock and calendar.

Internal Tariff Tables

The phone is equipped with tariff tables to enable it to determine the cost of a call without the need for Exchange generated charging pulses. The IPT 9100 Series is equipped with a "real time" clock/calendar, and is capable of giving time of day and day of the week, as well as holiday discounts.

The tariff table in each payphone is unique to the rate-center associated with the exchange in which the payphone is located.

These tariff tables are created using the POLLQUEST Payphone Network Manager . POLLQUEST can download the tariff tables to the payphones as needed. The payphone, in turn, can "burn" the tariff tables into permanent EEPROM memory so that, in the event of a line transient or a long loop disconnect condition, the phone still has the correct tariff table in place. The tariff tables can only be modified by POLLQUEST. The payphone does not allow tariff table number changes through the keypad by the maintenance technician.

Digital voice prompts

Digitized voice responses are stored in the memory of the payphone and are activated during a call to guide the user through the call completion process. The PCM S5-XG will put these terms together to: quote the tariff for the number dialed, warn the user of a mis-dialed number, countdown the amount to deposit to initiate a call, prompt for coins or to dial number. In addition to this the voice prompts are used to guide field technicians when they are changing options of registers via the key pad, initiating maintenance commands, or checking alarm status. NOTE: Firmware is bilingual including the **Spanish, English or French language** for audible prompts.

NOTE: IPT models without display use voice prompts exclusively to guide the user when making the calls.

Payphone Operation

Off-Hook

When a customer removes the handset, the IPT 9100 Series allows the customer to hear dial tone originating in the Central Office and prompts "DIAL NUMBER PLEASE" via display and digital voice message.



If the telephone line is disabled or is not connected to the phone, the IPT 9100 Series senses the absence of current, displays the “OUT OF SERVICE” message, and powers down to conserve the battery.

Post Pay Operation (Dialing the Number First)

The customer can hear the DTMF digits generated by the keypad as the number is dialed. The IPT 9100 Series optionally buffers the digits and redials them into the telephone line one digit every four seconds to hold the line and prevent an incoming call from interfering. After the number is dialed, the IPT 9100 Series analyzes the number, rates the call, and prompts the customer for payment.

Special Numbers

The IPT 9100 Series can be programmed to allow the customer to dial emergency numbers free of charge. Refer to the *POLLQUEST Operation Manual*.

Valid Numbers

If the number is "valid" (matches a number pattern in the internal tariff tables), the IPT 9100 Series prompts the customer to deposit coins or insert a card and completes the call as dialed after appropriate payment is made.

Invalid Numbers

If the number dialed does not conform to a number pattern in the tariff tables, the IPT 9100 Series prompts "INVALID NUMBER" , hangs-up toward the Exchange for one second, goes off-hook again and returns dial tone with the prompt "DIAL NUMBER PLEASE".

Prepay Operation (Paying for the Call First)

If the customer is familiar with the operation of the payphone, and knows the amount necessary to make a call, the customer may deposit coins before dialing the number. If the coins are accepted by the coin mechanism, the phone gives the OK tone, the payphone gives the “Thank You” voice prompt if the deposited amount was sufficient.

The IPT 9100 Model is designed to count overdeposit. This means that the phone can deduct the necessary amount for the call and initiate a “follow on credit” should there be an over deposit. NOTE: follow on credit can only be used to place a second call, NO CHANGE RETURNS FOR COMPLETED CALLS.

Coin Acceptance

The IPT 9100 Series is designed to work with up to six different types of coins. The payphone monitors the number and types of coins that are accepted into the cashbox and calculates how full the cashbox is.

Cashbox Trigger

If the calculated cashbox contents reaches the value set in Register 311, and Alarm 706 is enabled (ON), the payphone calls POLLQUEST and reports the alarm. The payphone continues to operate normally.

Cashbox Full

If the calculated cashbox content reaches the factory-specified “full” value, and Alarm 707 is enabled (ON), the payphone calls POLLQUEST and reports the alarm. The payphone continues to operate. However, if Option 102 is “ON”, the payphone does not charge for local calls. If a long distance call is dialed, no coins are accepted, but the “INSERT CARD” message is displayed (IPT 9100 only).

Number dialed first

Payphone Management Systems

Windows based systems:

Quortech has two distinct platforms for managing our payphone products based on the size and business structures of our customers. The first of these products is POLLQUEST, our Windows 95/ACCESS based management system software intended for medium sized carrier or enterprise networks of 1-10,000 units.

Product Description – POLLQUEST

POLLQUEST is a Windows 95-based desktop software system for pay telephone network management. It is designed to work with Quortech, Inc. international “smart” payphones. POLLQUEST communicates with the telephones through modems and telephone company lines. This communication is called polling. POLLQUEST can poll a large number of payphones through multi-port single system configurations. In a dispersed network of regional management centers with individual databases, POLLQUEST can poll over 10,000 active payphones with excellent performance and reliability.

POLLQUEST provides the ability to:

- Create and maintain configuration settings and tariff tables for the payphones
- Download those configuration settings and tariff tables to the payphones
- Create and maintain lists of payphones to be polled for information
- Control when and how the payphones are polled for the information
- Upload the information such as Station Message Detail Records (SMDR) from the payphones
- Generate and print reports based on the information from the payphones
- Monitor the operating condition of the payphones.

POLLQUEST stores data in Microsoft Access 2.0 format so the data can be analyzed by custom functions or easily converted to other formats.

Figure one illustrates Management of the payphones via modem through the PSTN, .Each management center has it's own database and full reporting capabilities for the payphones assigned to it's region.

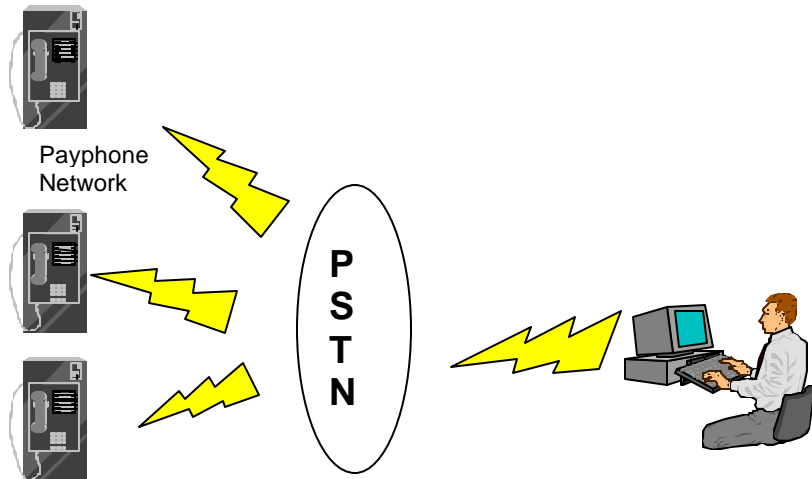


Figure 1

Single system functions

Each PQ center will have a single Poll manager/Database system for managing communication with the payphones and storing statistical data uploaded from the Network. The same system will be used for creating payphone parameter configurations, entering new site data, and generating regional reports. The user station will also allow for the creation and management of network Polling lists.

POLLQUEST offers the new or medium network size operator with an easy to use, full featured, and flexible system for developing their Payphone business and networks. This product has been developed over 13 years with private payphone network operators in the US and eleven other countries.

Model Options

IPT 9000, US type

The following model option is also coin only and utilizes the same S5-XG technology, electronic coin detection, voice prompts, and management systems as the other models in a package intended to offer the highest value at the lowest price. Please note that this model has a maximum capacity for coin diameters of 27mm and a US standard cashbox size of 1.25 liters.

