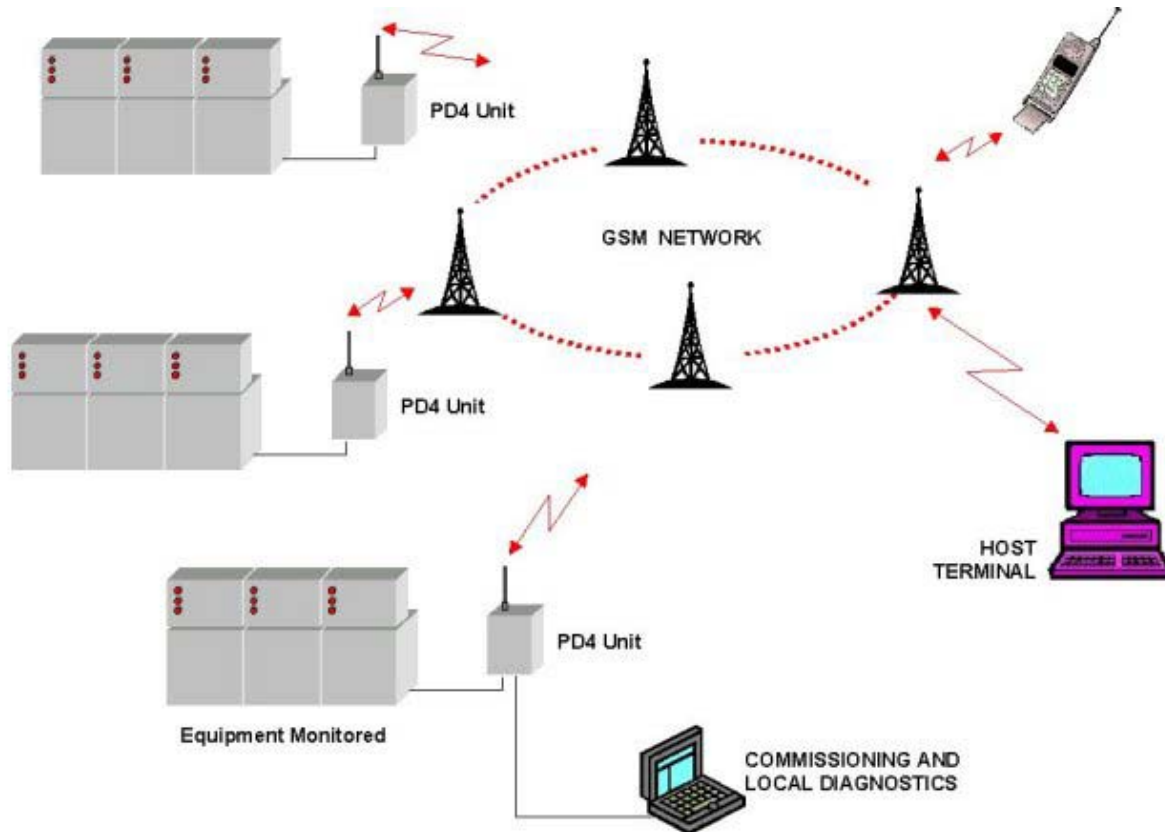


Concept

The "PD4 System" was designed specifically as an Entry Level SCADA System. Made up of any number of PD4 units (monitoring inputs from your production processes, plant, or simple status inputs) communicating over air using mobile phone type technology to a central PC used to display incoming alarms and status changes as well as for archiving and exporting data.

The schematic below shows how the elements of the PD4 System fit together. To read more information about the system elements use the navigation links on the left hand side of this page.



One of the core objectives in designing the PD4 System was to allow customers to install, commission and maintain their own entry level SCADA system without the need for expensive equipment, specialist knowledge or expensive training. A truly entry level system would need to be 'delivered in a box' with 'how to' documentation.



Host Terminal

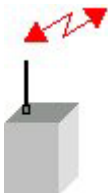
The PD4 Host Terminal is the focal point of the PD4 System. It is simple to install and use with a variety of useful features to enable quick response to alarm conditions detected at remote sites. The specification is as follows:

- Pentium PC running Windows 95/98/NT
- The PD4 Host Application software (from NHDS)
- GSM modem(s) and/or PSTN (telephone line) modem(s).

The Host Application is a bespoke software program written in C++ which provides the user friendly intuitive MMI for the PD4 System. The Host Application offers the following main facilities:

- Alarm Screen showing listing sites with current alarms
- Site Display showing the status of equipment monitored by individual PD4 units
- Archived alarms and event data with variety of on screen search criteria
- Answers incoming calls from PD4 units and updates displays and logs data
- Polls PD4 sites to request status
- Reprogram operational settings
- Can simultaneously communicate with up to 16 remote PD4 units
- Stores database records for PD4 site locations and operational settings
- Flexibility to customise the alarms screens and database fields
- Host Terminal Operational Status screen
- Export data to other file formats

We provide a "Training Version" of the Host Application to allow users to familiarise themselves with the system. You can simulate incoming alarms, create new remote sites, reprogram operational settings, export data - in short all the functions of a live system but in a dummy environment.



PD4 unit

The PD4 Remote Site Monitors is the "sharp end" of the system. Each PD4 unit monitors the status of equipment and "reports by exception" user defined alarm conditions to the Host Terminal via the GSM network. Output contacts in the PD4 unit allow remote control of plant from the Host Terminal. The built in sealed lead acid battery and charger allow continuous operation during power supply interruptions.

Suitable applications could be monitoring of any site where equipment status needs to be monitored, examples include:

- Circuit Breakers in HV/MV substations
- AC supplies to pumps, fans and motors
- Door or gate positions
- Pressure, temperature, humidity sensors
- Any other remote / unmanned equipment

PD4 Unit cont.

When fitted with output relay contacts the Host Terminal operator can send control commands to the PD4 to operate remote equipment such as pumps, fans, power supplies, lighting or circuit breakers etc..

PD4 Features:

- Wall mounting IP54 polycarbonate casing
- LCD display screen
- Test buttons

I/O:

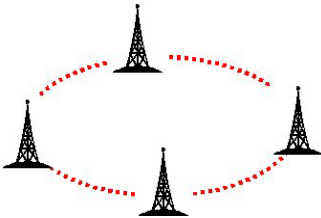
- 3 x 240Vac or 110Vac
- 8 digital inputs, software configurable as NO/NC and pulse/latching
- 4 analogue inputs, 8 bit resolution, configurable high and low alarm thresholds
- 3 relay outputs

Communications:

- Dual Band 900/1800 GSM modem with antenna
- Alternative option for PSTN (telephone land line)

Power Supply:

- Auxiliary AC supply charges 6V Cyclone lead acid battery - gives 8 hours standby
- Low battery volts alarm call function



Communications

The PD4 unit uses a GSM modem to communicate with the Host Terminal. The GSM network provides links to standard land line networks (just as you can make a voice call from your office to your cellphone and vice versa) the Host Terminal can have a standard PSTN land line modem and connection.

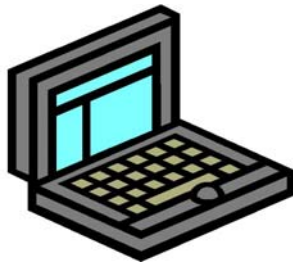
Conventional approaches to remote monitoring would typically use leased land lines, point-to-point radio or trunked radio solutions. GSM is far, far, easier to use and maintain as well as being much lower cost than any of these systems.

GSM Networks are already widely available across all continents and in most countries. Often there is a choice of GSM provider and with the competition for voice users the coverage and cost of use of GSM is making the technology more and more appealing. Conventional GSM data speeds of 9600baud mean that a Messenger transfers data to the Host Terminal or mobile phone in a matter of a few seconds.

In order for the PD4 to work correctly all you need to confirm is:

- Is there GSM coverage (there may be coverage from more than one GSM Network)
- Is "data" service available on the GSM Network
- If more than one possible network provider which offers the best signal strength/cost of use

To allow the PD4 access to the GSM Network the GSM modem in the PD4 must be fitted with a SIM card (a plastic chip about 2cm x 2cm). This SIM card is issued and then "activated" by the GSM Network provider. The SIM card is not supplied as part of the PD4 unit. In order to communicate with a Host Terminal the SIM card needs to have data service enabled and in order to send alarm messages to mobile phones as a text message the SIM card needs to have the SMS service enabled. These services are enabled by the GSM Network provider.



Local Diagnostics / Configuration Kit

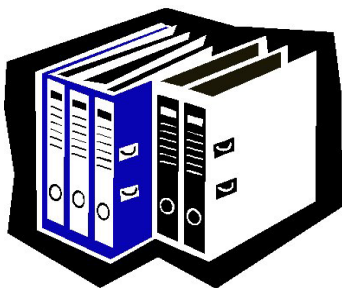
The "PD4 Configuration Kit" is a useful commissioning and diagnostics tool. It comprises the 'PD4 Configuration Utility' software application (provided by NHDS), on a PC with Windows 95/98/NT (provided by you) and a programming serial lead for connecting the PC to the PD4 (provided by NHDS).

The kit is used during the commissioning, maintenance and testing of PD4 units. The PD4 unit has a range of operational settings which provide flexibility allowing the unit to be used in a variety of different applications. These operational settings need to be programmed into a PD4 in order for it to operate correctly - this can be done either from the Host Terminal or locally using the kit. These settings include (but are not limited to):

- PD4 site name.
- Which inputs and outputs are enabled.
- The characteristics of each input.
- The equipment being monitored by each input.
- Which changes of input status constitute alarms.
- Where to send alarms.

The PD4 Configuration Utility program has the following main functionality:

- Allows operational settings to be 'configured' using simple forms in the program and then saved as a 'profile' on the PC.
- Save profiles to a hard-disk file for later use.
- Open saved profiles from file.
- Download (program) profiles into a PD4 unit via the programming lead.



Documentation

We have tried to make the PD4 System as much like a "Do It Yourself" monitoring system as possible. Each element of the system is fully documented, hence the following are available:

- PD4 Remote Site Monitor user manual
- PD4 Host Terminal user manual
- PD4 Configuration Utility user manual

The manuals are provided in Adobe Acrobat format (.pdf) and can be printed by users as required. In addition to this the Host Terminal and the Configuration Utility programs have full on screen Help Contents.



Training and Support

Training We can provide training for customers using or piloting our equipment, this can be tailored to suit individual project requirements but as standard we offer the following:

- PD4 Unit installation, commissioning and maintenance
- Host Terminal installation and maintenance
- Host Terminal operation

Each course includes practical examples and last for 1 day. We are happy to provide training either at NHDS or your office. To help familiarise new users with the functionality of the PD4 System and to help train Host Terminal operators there is a "Training Version" of the Host Application.

Support

As with any 'system' there is a degree of ongoing maintenance required in order to make sure everything runs smoothly. This maintenance should only be a few minutes a week for the PD4 System as the Host Terminal provides an alarm display for Host Terminal problems. We can train customer's own staff to perform this maintenance or alternatively we can provide support and advise as part of a Service Level Agreement.

Further Information

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