Facilities Monitoring System

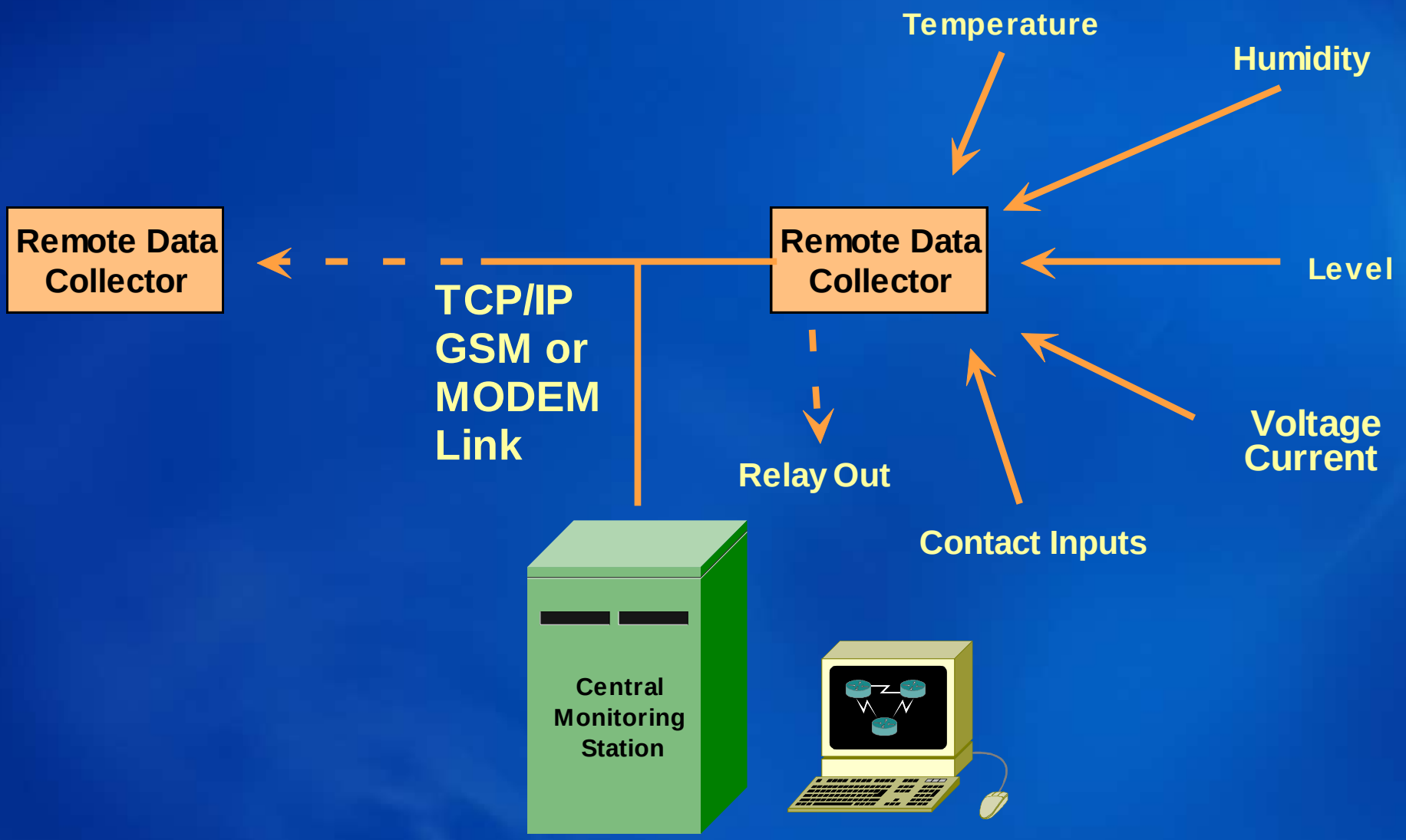
TLC ENGINEERING SOLUTIONS (Pty) Ltd

Agenda

- Introduction
- Outstation
- Central Monitor
- Applications

Introduction

- Monitoring of key equipment
- Multiple facilities at remote sites
- Out of limit notification (Alarms)
- Performance monitoring (Trends)
- Analysis of historic data


Temperature
Humidity
Remote Data Collector
Remote Data Collector
Level
TCP/IP GSM or MODEM Link
Relay Out
Voltage Current
Contact Inputs
Central Monitoring Station

Remote Station

- Monitors multiple inputs (analog / digital)
- Data accumulated and transmitted to central point
- Regular transmission (heartbeat)
- Check for out of limits (central vs remote)
- Strategy to minimize operational costs
- Optional outputs for local or remote control

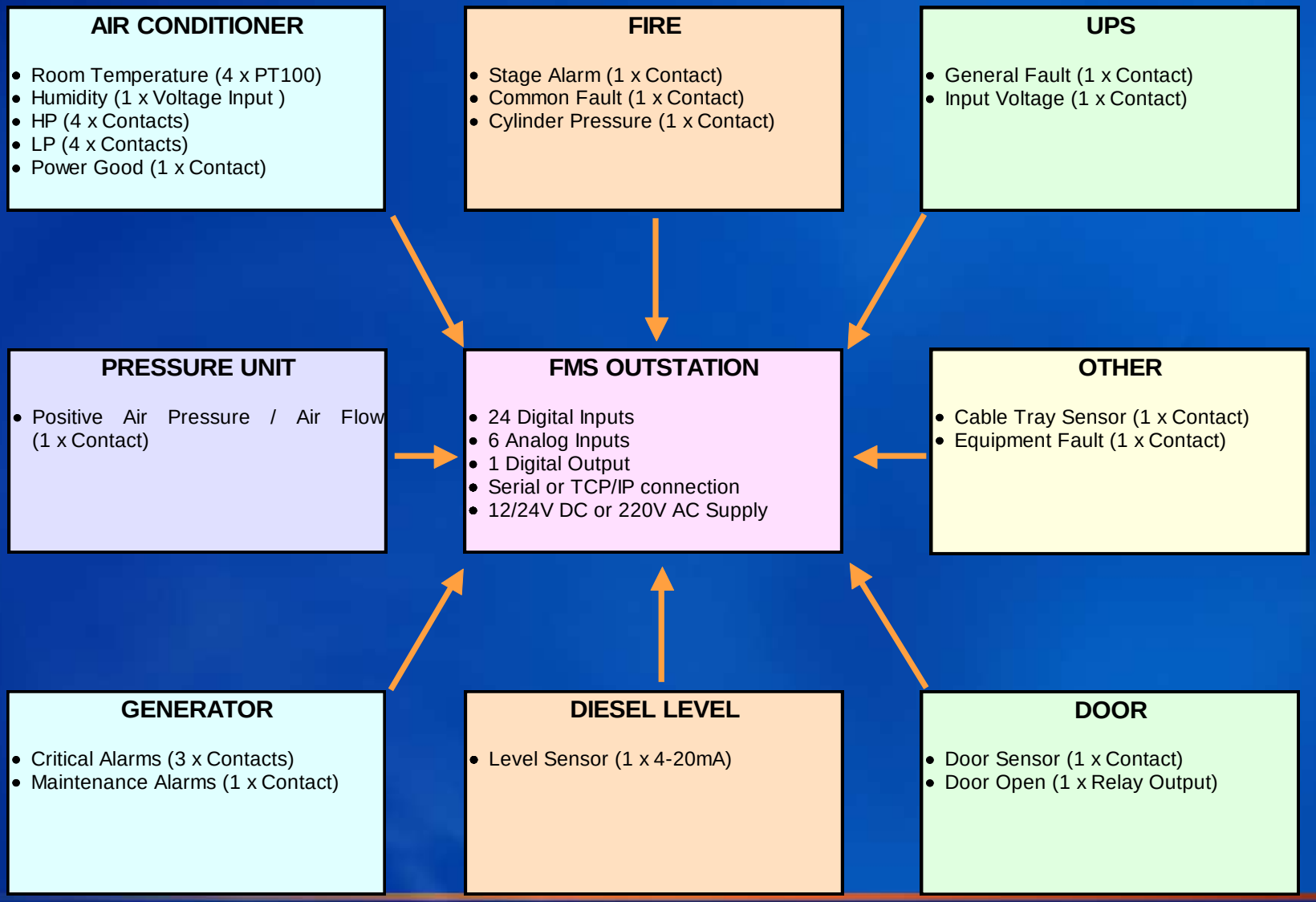
FMS Outstation Equipment

- Based on ultra reliable embedded technology
- Systems proven over 10 years in harsh industrial and mining applications
- Rapid configuration of new and existing systems from the central station
- Housed in Industry Standard 2U 19” Tray

FMS Hardware

- Up to 24 digital inputs (NPN / PNP or Dry Contact)
- Up to 4 Temperature probe inputs (PT100)
- Humidity sensor input (0-5V)
- Level sensor input (4-20mA)
- Door Lock Release (Relay Contact)
- Connection to central station using direct serial / GSM / GPRS / Modem or TCP/IP

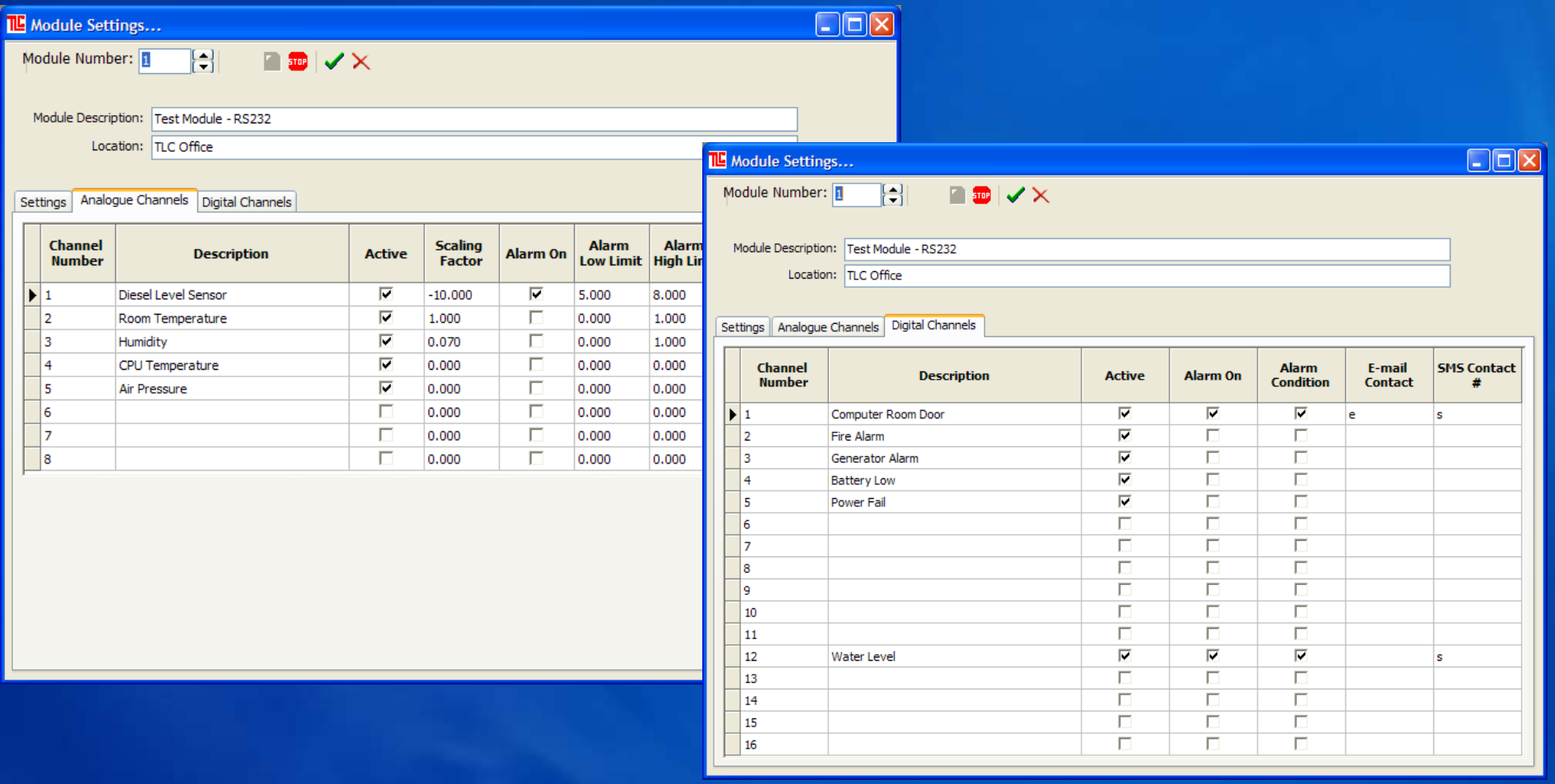
FMS OUTSTATION INPUTS



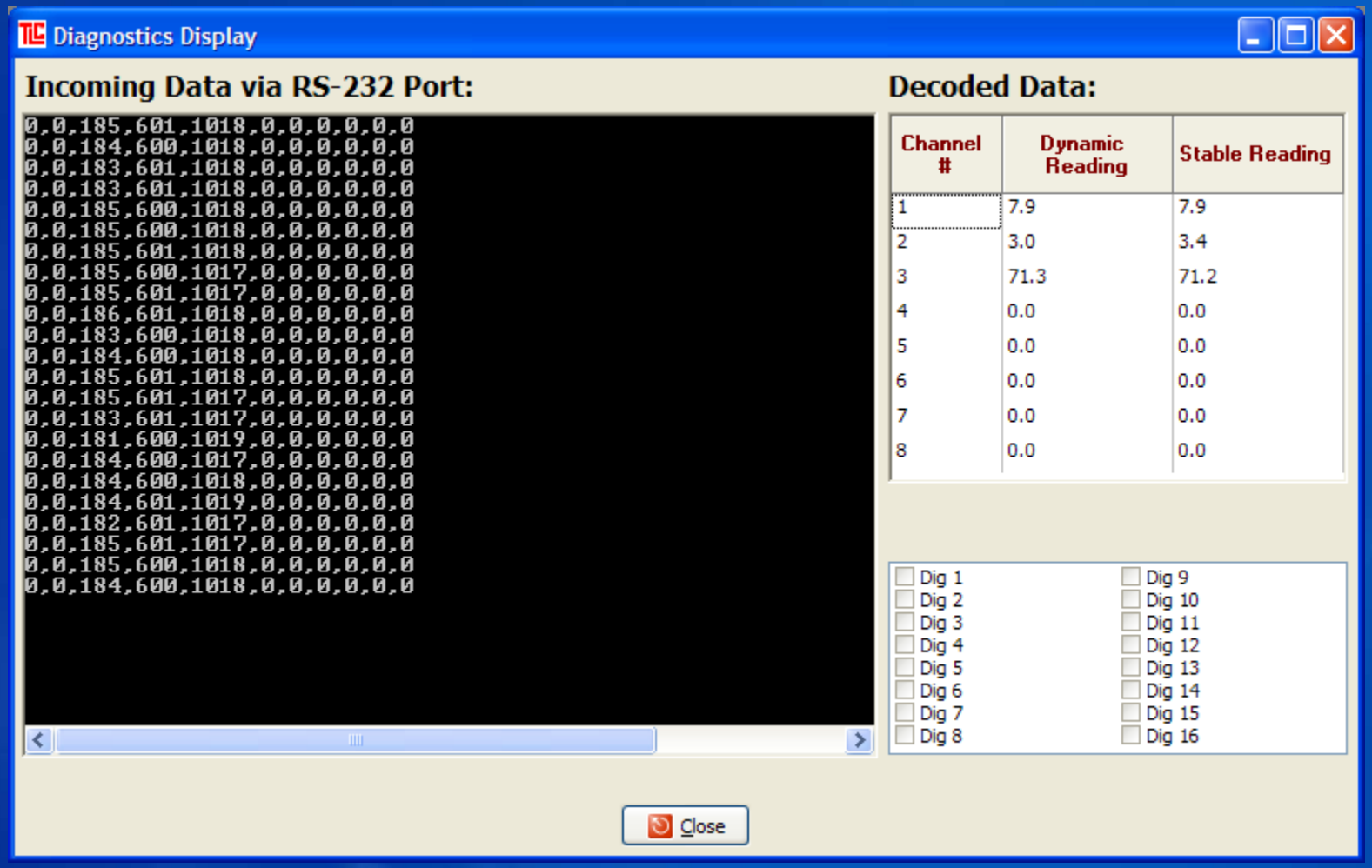
FMS Central Station

- Scans data from multiple remote units
- Displays data on real-time screen
- Checks for alarm states
- Data and alarms stored in a database
- Reports on facilities performance
- Alarms can be sent using SMS or e-mail
- Data can be viewed at multiple locations

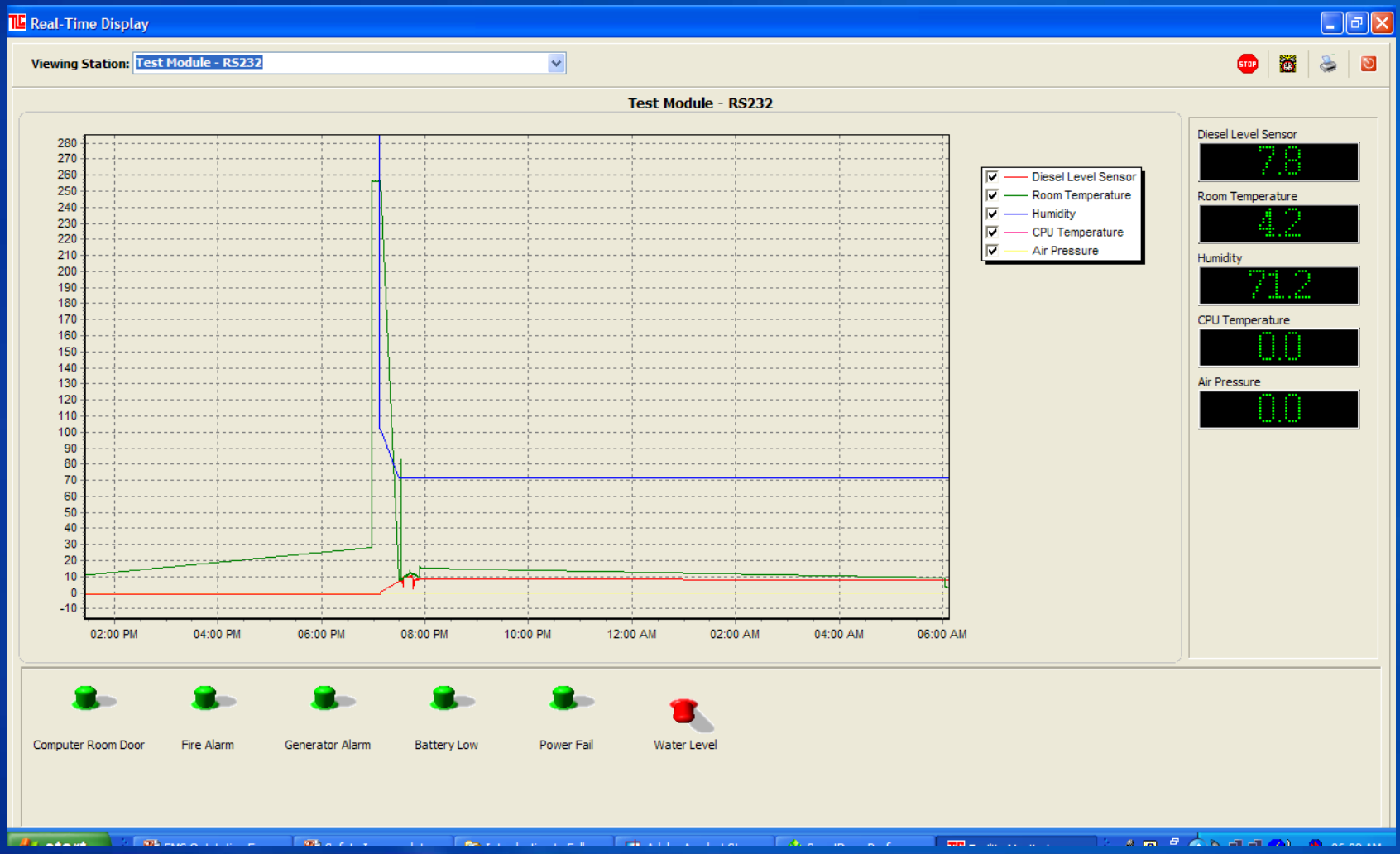
Outstation Setup



Diagnostics

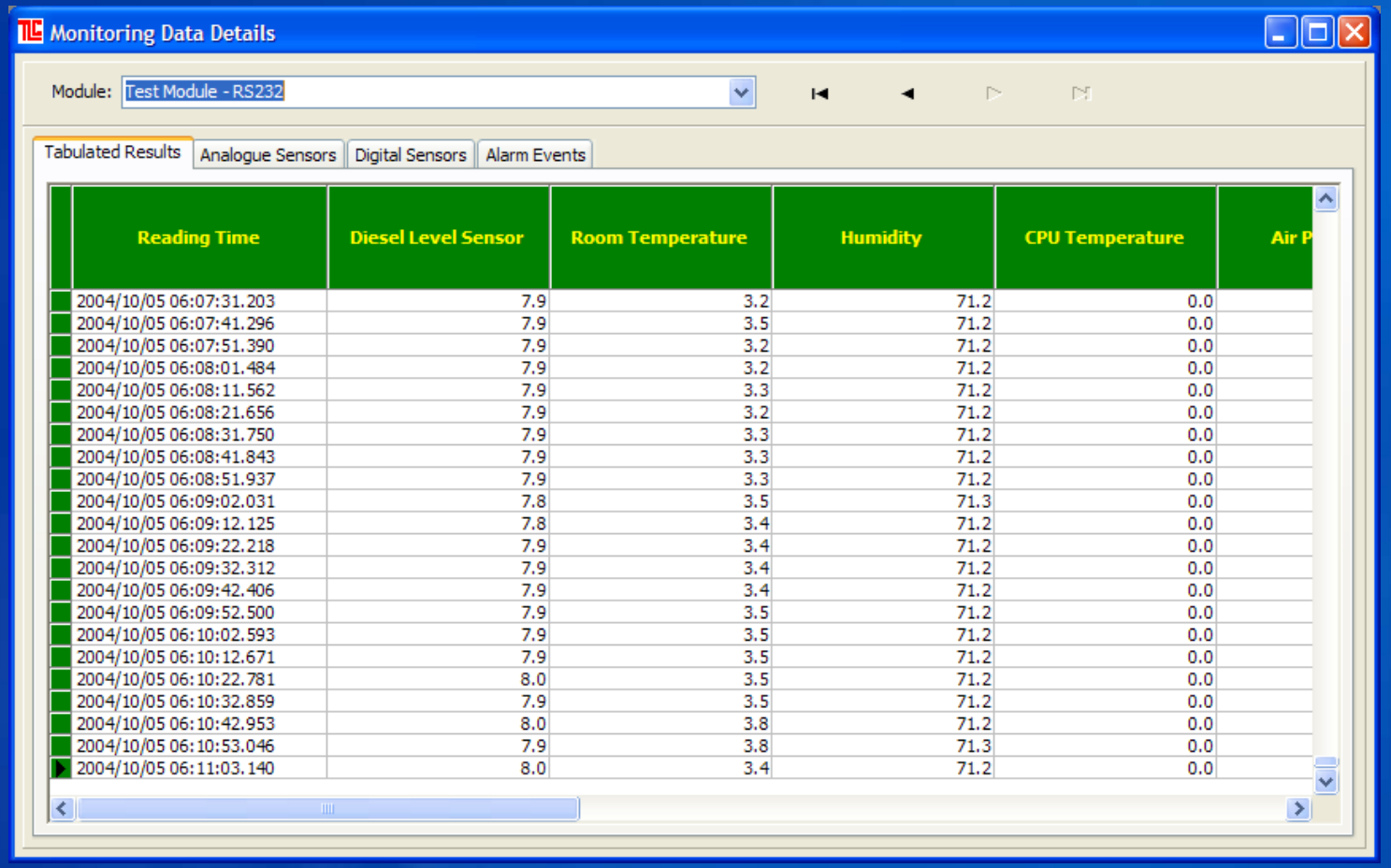


Real Time Display



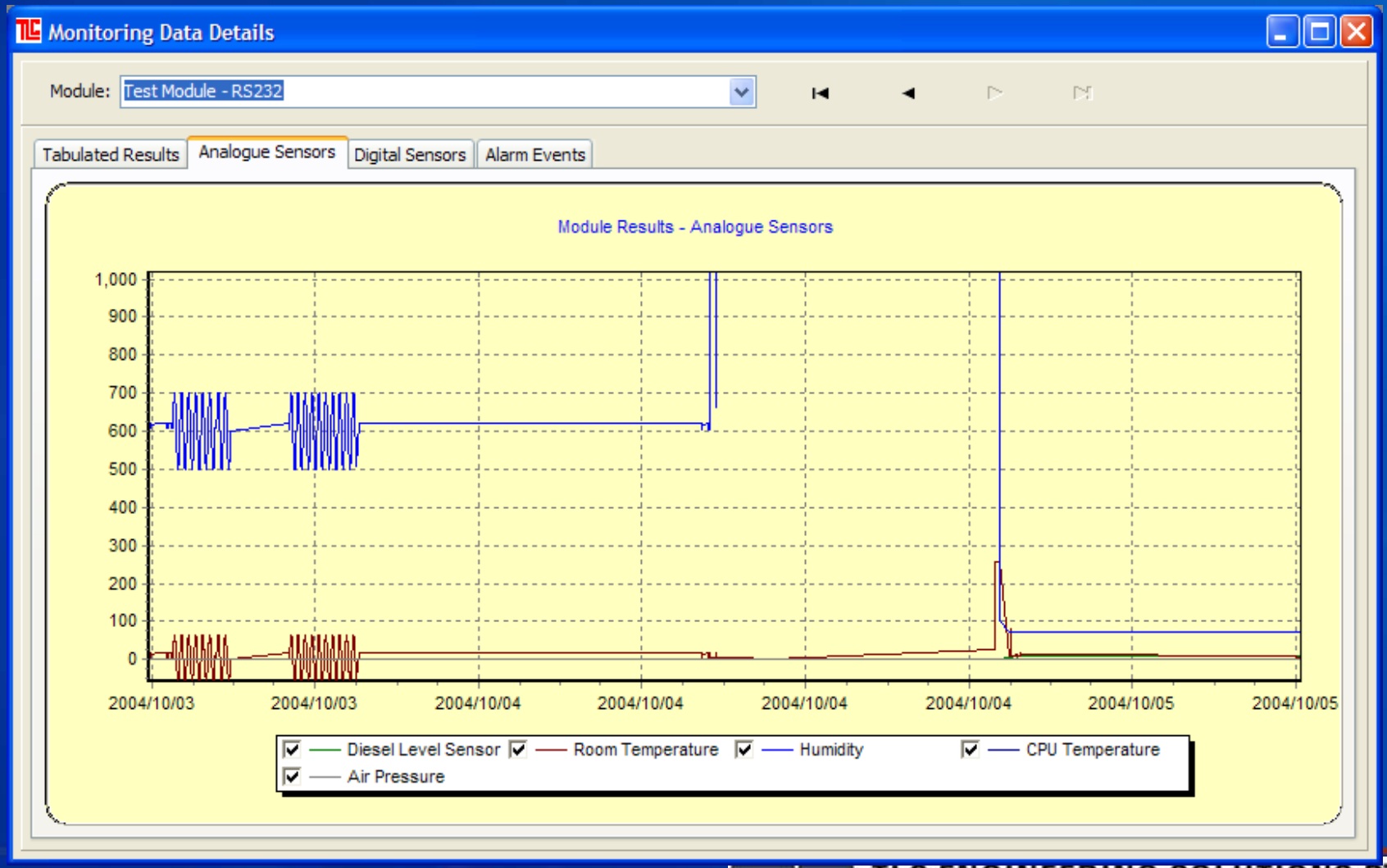
Pop Up Alarms

Database Records

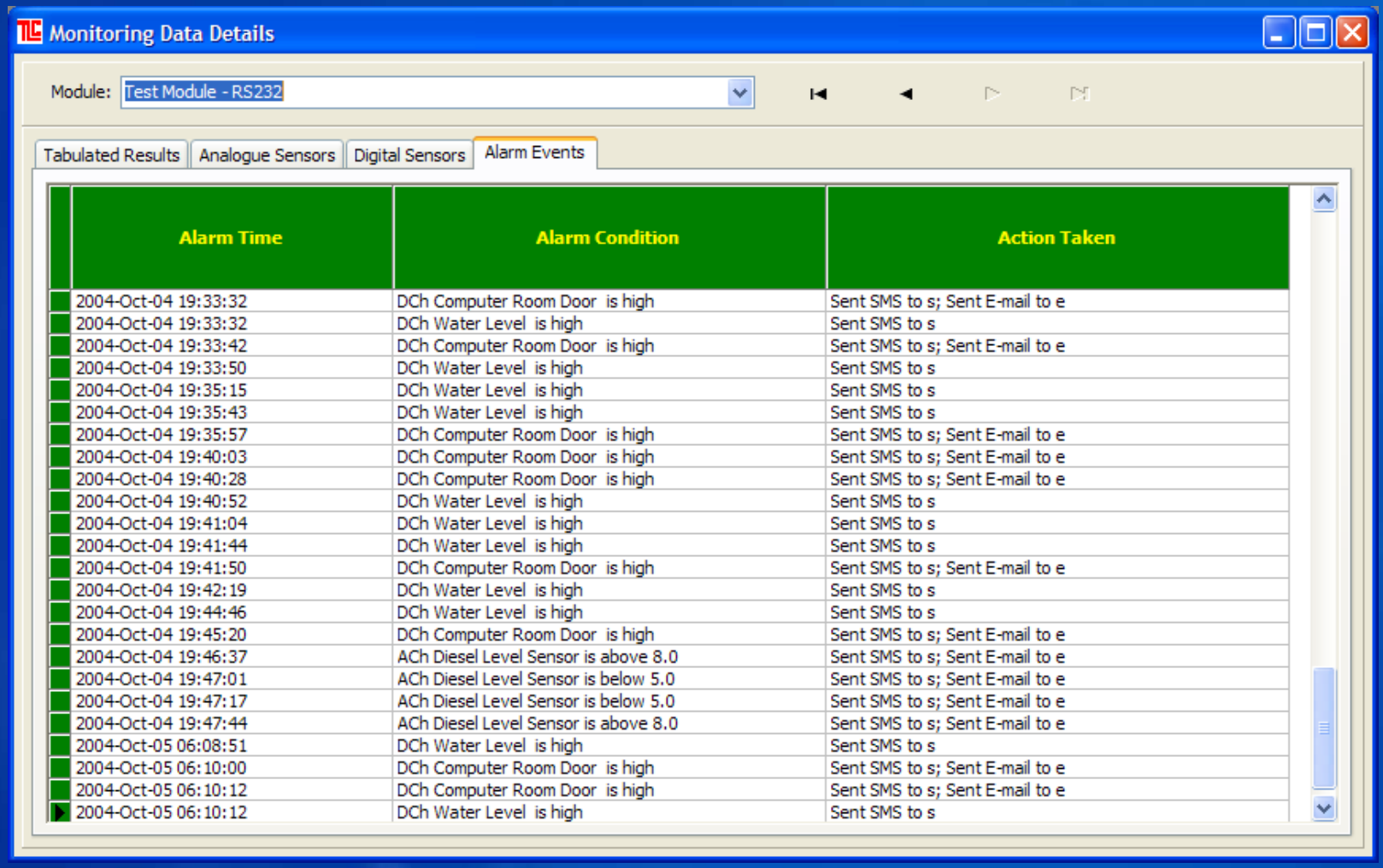


Reading Time	Diesel Level Sensor	Room Temperature	Humidity	CPU Temperature	Air P
2004/10/05 06:07:31.203	7.9	3.2	71.2	0.0	
2004/10/05 06:07:41.296	7.9	3.5	71.2	0.0	
2004/10/05 06:07:51.390	7.9	3.2	71.2	0.0	
2004/10/05 06:08:01.484	7.9	3.2	71.2	0.0	
2004/10/05 06:08:11.562	7.9	3.3	71.2	0.0	
2004/10/05 06:08:21.656	7.9	3.2	71.2	0.0	
2004/10/05 06:08:31.750	7.9	3.3	71.2	0.0	
2004/10/05 06:08:41.843	7.9	3.3	71.2	0.0	
2004/10/05 06:08:51.937	7.9	3.3	71.2	0.0	
2004/10/05 06:09:02.031	7.8	3.5	71.3	0.0	
2004/10/05 06:09:12.125	7.8	3.4	71.2	0.0	
2004/10/05 06:09:22.218	7.9	3.4	71.2	0.0	
2004/10/05 06:09:32.312	7.9	3.4	71.2	0.0	
2004/10/05 06:09:42.406	7.9	3.4	71.2	0.0	
2004/10/05 06:09:52.500	7.9	3.5	71.2	0.0	
2004/10/05 06:10:02.593	7.9	3.5	71.2	0.0	
2004/10/05 06:10:12.671	7.9	3.5	71.2	0.0	
2004/10/05 06:10:22.781	8.0	3.5	71.2	0.0	
2004/10/05 06:10:32.859	7.9	3.5	71.2	0.0	
2004/10/05 06:10:42.953	8.0	3.8	71.2	0.0	
2004/10/05 06:10:53.046	7.9	3.8	71.3	0.0	
2004/10/05 06:11:03.140	8.0	3.4	71.2	0.0	

Historic Performance Graphs



Alarm Logs



Alarm Time	Alarm Condition	Action Taken
2004-Oct-04 19:33:32	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:33:32	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:33:42	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:33:50	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:35:15	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:35:43	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:35:57	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:40:03	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:40:28	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:40:52	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:41:04	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:41:44	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:41:50	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:42:19	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:44:46	DCh Water Level is high	Sent SMS to s
2004-Oct-04 19:45:20	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:46:37	ACh Diesel Level Sensor is above 8.0	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:47:01	ACh Diesel Level Sensor is below 5.0	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:47:17	ACh Diesel Level Sensor is below 5.0	Sent SMS to s; Sent E-mail to e
2004-Oct-04 19:47:44	ACh Diesel Level Sensor is above 8.0	Sent SMS to s; Sent E-mail to e
2004-Oct-05 06:08:51	DCh Water Level is high	Sent SMS to s
2004-Oct-05 06:10:00	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-05 06:10:12	DCh Computer Room Door is high	Sent SMS to s; Sent E-mail to e
2004-Oct-05 06:10:12	DCh Water Level is high	Sent SMS to s

Applications

- Server Rooms
- Computer Centres
- Equipment Rooms
- Substations
- ….

Summary

- Remote logging of facilities equipment
- Modular outstation units
- Interconnection via a variety of communication systems
- Central display and storage of data

TLC ENGINEERING SOLUTIONS

- Based in Johannesburg, South Africa
- Founded 1988
- Specializes in providing practical engineering solutions (technology)
- Multi discipline / multi industry
- South African development and support
- ISO9001:2000 Registered

Contact Details

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