Slan Logger System 020-174

The system

- Logger : Dicam Master unit
- Power Supply/Battery backup
- Modem
- Slan Modules (up to 29)
- Temperature sensors*

- Water meters*
- Auger/Mains detectors*
- Anemometer*
- Humidity sensor*

*Sensors according to specification

- Barn Report

Logger Master Unit

The Logger unit, power supply and modem are usually installed in the office next to the incoming telephone line.

- User Menu

The Logger provides the menu for the system for configuration and checking correct operation.

Refer to "Operation" for more information.

- Site sensors

Site sensors for wind speed, outside temperature and humidity (depending on options) are connected to the Logger (sensor for individual barns connect to Slan modules).

- Data gathering and storage

The logger gathers data from site sensors and slan modules and stores the data in memory for download.

- Modem interface

The connects between the Logger and the telephone line to allow data download by a remote server.

- Power Supply/Battery backup

The power supply is mains powered and provides low voltage operating current for the Logger and Slan modules, and continuously recharges a backup battery.

In the event of mains failure, power is drawn from the backup battery, providing 4 to 12 hours of operation.

- Network

The Logger connects to Slan data gathering modules by a shared 4 wire cable, carrying data and low voltage operating current.

Slan Modules

Slan modules are low voltage processor based data gathering modules installed in each room or barn.

- Sensors

Standard modules allow for up to 4 temperature sensors, 2 auger/mains detectors, 2 water/contactdetectors. Other configurations are available.

Sensor values, time elapsed and pulses counted are measured by the Slan modules and transmitted continuously to the master unit for logging and indication.

- Network

Slan modules connect to the master unit by a 4 wire twisted pair network cable carrying data and low voltage operating current.

The system uses a shared network - that is, it is usually wired as a single spur with junctions for individual modules.

- Address

Each slan module has a software "address" identifying its data from that of other modules on the network.

- Power supply

In typical installations, Slan modules are powered from the central (Logger) power supply/backup unit via the 4 wire network.

In larger installations, local Slan power supplies are installed, allowing greater communication distance and/or larger numbers of modules.

- Indicators

Modules are normally installed in "blind" juction boxes for minimum installed cost - readings are indicated on the central Logger unit. Internal indicators show operating current and communication status for servicing diagnostics.

- Software & Configuration

Slan modules are supplied preconfigured with standard software for typical operation. However, configuration adjustments can be made via the Logger master unit, and software is factory upgradeable for future software upgrades.

Sensors

In our system, the emphasis is on robust and, where possible, simple and low cost methods. (For example, feed use is typically measured by elapsed time for maximum reliability at low cost.)

Sensors operate at low voltage and are connected to the central Logger unit or local Slan modules, minimising wiring costs.

- Temperature

The system uses high grade thermistor sensors giving high accuracy combined with tolerance of long wiring runs, if that it should be required.

- Water

Water use is measured using the contact output from industry standard water meters. Meter revolutions are counted by the Slan module on an incremental basis, and the cumulativetotal is transmitted to the Logger.

Calibration from contact pulses into water volume is available in Barn Report to suit different models of meter.

Water inputs can alternatively be used for other types of contact such detecting when access doors are open and similar functions.

- Feed augers

Feed use is measured by a time elapsed method, using a mains detector connected to the auger motor terminals.

When mains is applied to the motor, time elapsed is measured in fractions of a second. The accumulated running time is counted by the module, and transmitted to the Logger.

Calibration from elapsed time into weight is available in Barn Report.

Feed inputs can alternatively be used for other mains/elapsed time functions such as heater use.

- Wind

Wind (optional) is measured by the Logger using an industry standard anemometer giving speed in mph and direction 0-360⁰.

- Humidity

Humidity measurement (optional) uses a high grade sensor with high resistance to poor ambient conditions.

- Other sensors

Other sensors are possible - such as rainfall, light levels and others.

Barn Report

Barn Report is Dicam's data service operating via your PC and the Internet.

Data is downloaded from the system on a regular basis - our data server calls the modem attached to the Logger and downloads the stored readings.

The data is processed and then stored on an Internet-connected server.

Individual users can then access and study this processed data with their PC using Dicam "Barn Report" software and a normal Internet account.

Operation

The system is intended for long term continuous unattended operation, so it requires little attention on a routine basis.

1 Keep it switched on

This is the most important!

The system must be kept switched on at all times, even if the buildings are empty or out of use.

If the system is switched off (no mains), batteries will go flat and components may deteriorate. If prolonged mains failure is unavoidable, backup batteries should be disconnected as deep discharge may cause damage.

Do not unplug or switch off the modem.

2 Check readings

The best way to do this is using Barn Report (see separate "Barn Report" information). We recommend you download your processed data every day (or according to your service contract interval).

Look for unusual or inappropriate values in Barn Report - for example, temperature sensors showing abnormally high or low readings, absent data or unusual feed or water use.

If abnormal readings are found, check operation of sensors using the menu system (see later).

If there is no recent data (check dates), check that data download is operating correctly, and check that the date is set correctly on the system (see menu system).

3 Protect from harm

Do not pressure wash any part of the system. Protect it from dust and water sprays. Carefully clean any part that becomes wet or dirty, but do not wash.

4 Service Regularly

Equipmentshould be serviced annually. Servicing is mainly concerned with replacing batteries and detecting marginal component deterioration before severe impairment of function.

Servicing must only be carried out by suitably trained and qualified personnel. Most parts of the system operate at safe low voltages.

However, mains power is connected to some circuits (for power supply and mains detection) so correct safety procedures must be folllowed.

Menu System

Normal operation of the Logger is entirely automatic, but it does contain a menu driven display to allow local checking and configuration.

The unit has a single push button and a rotary knob and it works in a similar way to the mouse on a PC.

Turn the knob to **scroll** through menus, view different readings, or **adjust** values.

Press the button to **select** a sub-menu, select an item, or **enter** a value.

Keypoint (default display)

The menu automatically returns to this display

```
        DATA LOGGER
    DATA LEVEL        3%
```

This shows the data storage level. The reading will drop every day or so when data is downloaded.

If the reading increases continually, there is a problem with download - for example the modem is switched off, or the telephone line is faulty.

 Check that the modem is connected, and call technical Support for further advice.

Press the button to see:

```
        DATA LOGGER
    2000-08-05-13:17
```

This shows the date and time used by data logging. If the time or date shown is wrong or if it is flashing, see "SET DATE/TIME" below.

(Flashing Date/Time means the Logger thinks it has lost the time.)

Press the button to see :

```
    NEXT DOWNLOAD
    69 DAYS, 21 HRS
```

This shows the remaining data storage capacity (estimated). If the time shown is short, it means data has not been downloaded and data may be lost.

Check that the modem is connected and switched on and and call Technical Support as soon as possible.

The program gives an indication of certain types of fault such as mains failure by a flashing exclamation mark in the corner of the screen :

```
 !      DATA LOGGER
    DATA LEVEL        3%
```

Or a flashing warning :

```
   !!      ALARMS      !!
        PRESS BUTTON
```

Press the button repeatedly to display and clear the alarm warning. Take action depending on the type of warning. For example, if the warning is Mains Failure, make sure you restore mains power as soon as possible.

To access other menus from the Keypoint display, turn the knob and press the button to select the menu.

LOGGER SENSORS

This menu allows checking of the present analogue sensor readings. Analogue sensors are such as temperature or humidity.

Press the button to enter the menu. To exit the menu turn counter clockwise to

```
    SENSOR      CH:
    RETURN
```

Press the button to exit the menu.

Tp view readings, turn the knob to scroll through.

The system may have as many as 160 analogue sensors, numbered in logging sequence. Refer to the table to see which sensor number has which reading.

```
    SENSOR      CH:2/3
    SENS11      74.6F
```

This shows that sensor number 5 is connected to input 3 on slan module 2 (probably the third sensor in barn 2 - refer to table) and the reading is 74.6^{0}F.

To check a particular reading, compare with another reading such as another sensor in the same barn. Alternatively, go and warm the individual sensor and check the reading increases.

If necessary, a useful way of checking calibration is to put the sensor in your arm pit. The reading is a little below core body temperature - 95 or 96F.

You may see :

```
    SENSOR      CH:2/3
    SENS11      ------F
```

This means no reading from the sensor. It may mean the sensor is not installed, or a wiring fault. If there are no readings from a particular unit (such as 2/1 and 2/2

and 2/3 and 2/4 all show [------] it indicates a fault with the slan module or its wiring.

SET DATE

```
SET:  YEAR-MM-DD
DATE 2000-08-05
```

It is most important to make sure that the date is correct, or else information will be shown wrongly in Barn Report.

Note that the flashing cursor is next to Date. To correct the date shown, press the button once.

The cursor flashes next to the Year e.g. 2000. If incorrect, turn the knob to correct it. Press the button when year is correct.

The cursor flashes next to the Month e.g. 08 (August). If incorrect, turn the knob to correct it. Press the button when month is correct.

The cursor flashes next to the Day e.g. 05 (the fifth of the month). If incorrect, turn the knob to correct it. Press the button when the day is correct.

Cursor returns to Date. Turn the knob to move elsewhere in the menu.

SET TIME

```
SET:          HH:MM
TIME          13:33
```

It is most important to make sure that the time is correct, or else information will be shown wrongly in Barn Report.

Note that the flashing cursor is next to Time. To correct the time shown, press the button once.

The cursor flashes next to the hour e.g. 13: (It uses a 24 hour clock, so e.g. 13 = 1 pm). If incorrect, turn the knob to correct it. Press the button when hour is correct.

The cursor flashes next to the minute e.g. :33 . If incorrect, turn the knob to correct it. Press the button when minute is correct.

Cursor returns to Time. Turn the knob to move elsewhere in the menu.

TEST

The Test menu gives access to test and information features, and digital sensors.

Press the button to enter the menu. To exit the menu, turn the knob counterclockwise to

```
TEST
RETURN
```

Press the button.

TEST OUTPUTS

This program has only one (optional) output "Beacon". A flashing beacon or audible warning device can be installed to indicate problems such as mains failure.

To test the warning device (if installed), turn the knob to Beacon. Press the button to select it. Adjust to 100% and press the button. Warning device now operates.

To return to normal operation, exit the menu.

TEST SENSORS

This menu gives readings from sensors on the Logger master unit.

LOGGED DIGITAL

This menu gives readings from digital inputs such as feed augers and water meters.

Press the button to enter the menu. To exit the menu, turn the knob counterclockwise to

```
DEVICE        CH:
RETURN
```

Press the button.

To see readings, turn the knob :

```
DEVICE        CH:   1/1
METER1              123
```

This shows that the current reading from meter 1 is 123, and it is connected to the first digital input on slan module 1. Refer to table of input devices.

To check that a particular input device is functioning correctly, note the reading and then trigger the particular device - for example, run some water or trigger the feed system and check the reading has changed.

You may see :

```
DEVICE        CH:   1/1
METER1              -----
```

This indicates there is no reading from the slan module. It may mean the module is not installed (refer to input list), or a fault with the slan module or its wiring.

TEST ASMS

Not used in this program version.

TEST INFORMATION

This menu gives service information and diagnostics for battery and modem.

```
PROG 020-174-91
SLANLGR
```

Shows the program version installed. If it shows other than 020-174, the program features may be different from those described in this manual.

| PROGRAM OPTIONS |
| LOGGING |

Press the button to other options such as "weather".

| PROCESSOR: | 12345 |
| ROM ID: | 54321 |

Make a note of these as they are the serial numbers of your Logger unit and program. If you need to call technical support, make sure you give these numbers.

| NETWORK   (TYPE3) |
| ADDRESS 30 |

Shows comunication protocol and the Logger software address on the network. Press the button to check network communication :

| THRPUT | TRANSMIT |
| 85.32 | 42.66/s |

These figures show the number of messages being sent and received per second (typical values as shown). If the figures show low values, it indicates a fault such as a network cable fault. Press the button to see :

| COLLSN | TIMEOUTS |
| 0 | 0 |

These figures indicate communication problems and should be low or zero. Higher figures indicate cable or slan module faults.

Turn the knob to see :

| BATTERY LEVEL |
| CHARGING |

This is the normal display when the unit is operating on mains. It is not possible to check battery function with the mains on. To do this, turn the mains supply off and see such as :

| BATTERY LEVEL |
| OK-9 |

This indicates a healthy fully charged battery with around 9/10ths capacity remaining. If mains remains off, battery level may fall slowly. If the level falls quickly, the battery is faulty and must be replaced as soon as possible.

The display may show :

| BATTERY LEVEL |
| DEAD |

This indicates deep discharge (or a problem with the level detection system).

Note : the Logger will detect a "Battery Low" ;larm condition when this level is reached.

If the battery shows this reading, only a few minutes of operation remain. Correct the mains failure imediately. If it cannot be corrected, the battery should be disconnected to avoid further discharge.

| TEST INFO : |
| INPUT CHANS |

This menu offers a service check on input channels (direct ADC reading).

| CONFIG STATUS |
| H:0 | C:0 |

Shows configuration changes and hours elapsed since last config change.

| PC-LINK Ver 1.01 |
| INIT/RINGS   3/01 |

This shows modem connection parameters. To check the connection to the modem, press the button once :

| TX123456 | RX23001 |
| AT&F0S0=01rrrrOK |

This shows comunication between the Logger and the modem. When a call (from the download server) is in progress, the TX and RX figures change, and a changing display on the bottom line.

Since communication is binary, you can't normally understand the bottom line. However, the string shown in this example shows the "initialisation message" from the Logger, and the "OK" indicates communication with the modem is working ok. (If you don't see the Ok after that message, there is a problem.)

| STA 00 ADDR 51A1 |
| CHR 00 TIMER 067 |

Diagnostics - Technical suppport might ask for the readings.

Press the button again to see :

| RESET MODEM NOW |
| SURE? | NO |

This is an important facility. It sends a message to the modem - so you can check if Logger and modem are communicating. It also sets the modem for immediate answer.

To reset the modem, turn the knob to YES and press the button. The press the button to get to the TX/RX window and look for an "OK".

| TEST RESTART |

DO NOT USE this feature unless directed to do so by Technical Support. It may cause loss of data.

Configuration menu

The configuration menu is a separate menu for use by service personnel to configure the system.

Incorrect or inappropriate use may cause incorrect operation or malfunction.

The following information is given for the information service personnel only.

Users may be directed to use it under instructions from Technical Support. In this case, make sure to follow the directions exactly as given at the time.

To enter the config menu, go to Test : Restart. Press the button once, followed by 3 clicks counterclockwise, and press the button again. Turn to Configure Sure = Y and press the button.

I/O Config

Sets input/output configuration for Logger unit. Use only under direction of technical support.

Logger Config

Allows manual configuration of logged sensors and digital inputs, but most paremeters are set remotely by the download server.

Only the following should be changed if necessary :

```
LOGGER :
DOWNLOADS        43
```

If installing a new or updated program chip or processor, set this number to higher than the previous value (call technical support to check the setting if unsure).

MODULE CONFIG

This menu allows remote interrogation and configuration of slan modules, for example to change a module address or change input parameters.

Modules are supplied preconfigured for intended use, and changes should only be carried out as directed by technical support :

```
SELECT MODULE :
MODULE01
```

Select the module which you need to adjust.

Note : Modules are supplied set to a range of module addresses. Only one module must be set to a particular address.

If you have two modules with the same address, connect only one, and change its address before you connect the second module. It's a good idea to do this with a short lead between Logger and module, with the main network cable disconnected.

Turn the knob to check/adjust parameters :

```
MODULE01         1.000
LANADDR             1
```

If you can see this display, communication with this unit is functioning. If you select a module address which is not communicating, you will see e.g.

```
MODULE01         0.000
DATA000           ---
```

To change a module address

1 Make sure the existing address of the module and the new address are not in use by other modules.

If necessary, disconnect all other modules.

2 Select the module's current address using module config.

3 Select LANADDR, change to the required new address and enter value.

4 Exit Module Config menu and Restart Logger.

Note : Once you change the address, the module is not recognised by the Logger, so you must restart the Logger before making any other changes.

Setting	Default	Changes Allowed?
LANADDR	1	Reset Logger
WRITELOCK	42	NO
LANBAUD	2	NO
TIMEOUT	0	
RESETS	xxx	
OCMASKLO	0	NO
OCMASKHI	0	NO
ADCMASKLO	255	NO
ADCMASKHI	0	NO
PULSEMASKLO	0	NO
PULSEMASKHI	204	
TIMEDMASKLO	255	NO
TIMEDMASKHI	51	
INVERTMASKL	0	
INVERTMASKH	0	
OCDEFAULTLO	0	NO
OCDEFAULTHI	0	NO
OCINVERTLO	0	NO
OCINVERTHI	0	NO
PULLUP	13	NO
OLDOCMAP	0	

Input Configurations									
1	2	3	4	5	6	7	8	Pulse mask hi	Timed mask hi
T	T	P	P					12	3
T	T	P	P	T	T	P	P	204	51
T	T	T	T	P	P	P	P	240	15