

Alpha Numeric Display

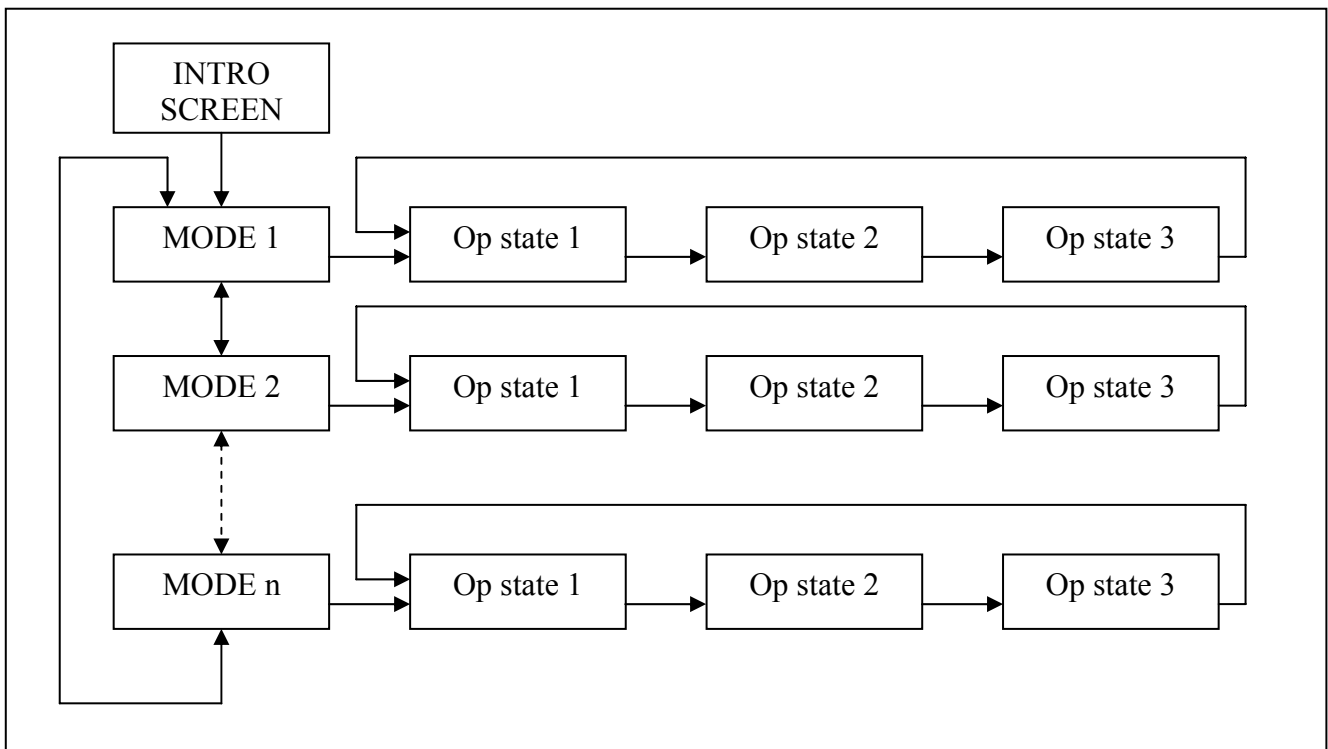


Introduction

The Alphanumeric Display (AND) is a diagnostic tool for use with all *Data_Link 2000* products, including *Nano_Link*, *GSM_Link* and *Micro_Link*. It plugs into the I²C bus and receives both power and data from the host device. It has three pushbuttons that the user can operate to navigate around menus.

When first connected, the host sends data to the AND identifying itself and its firmware version. It then displays an introduction screen similar to that illustrated on the page 1. The buttons are ineffective until the AND receives this, since its subsequent operation depends on the host device.

The menu structure can be envisaged as a two-dimensional array of operating modes. The user can sequence through modes using the up and down pushbuttons, and the display will show the mode description in upper case characters. If it remains in any given mode for two seconds it will migrate to the operational state of that mode. Some modes then sequence through operational states on a timed basis, others rely on the operator pressing the right button to sequence:

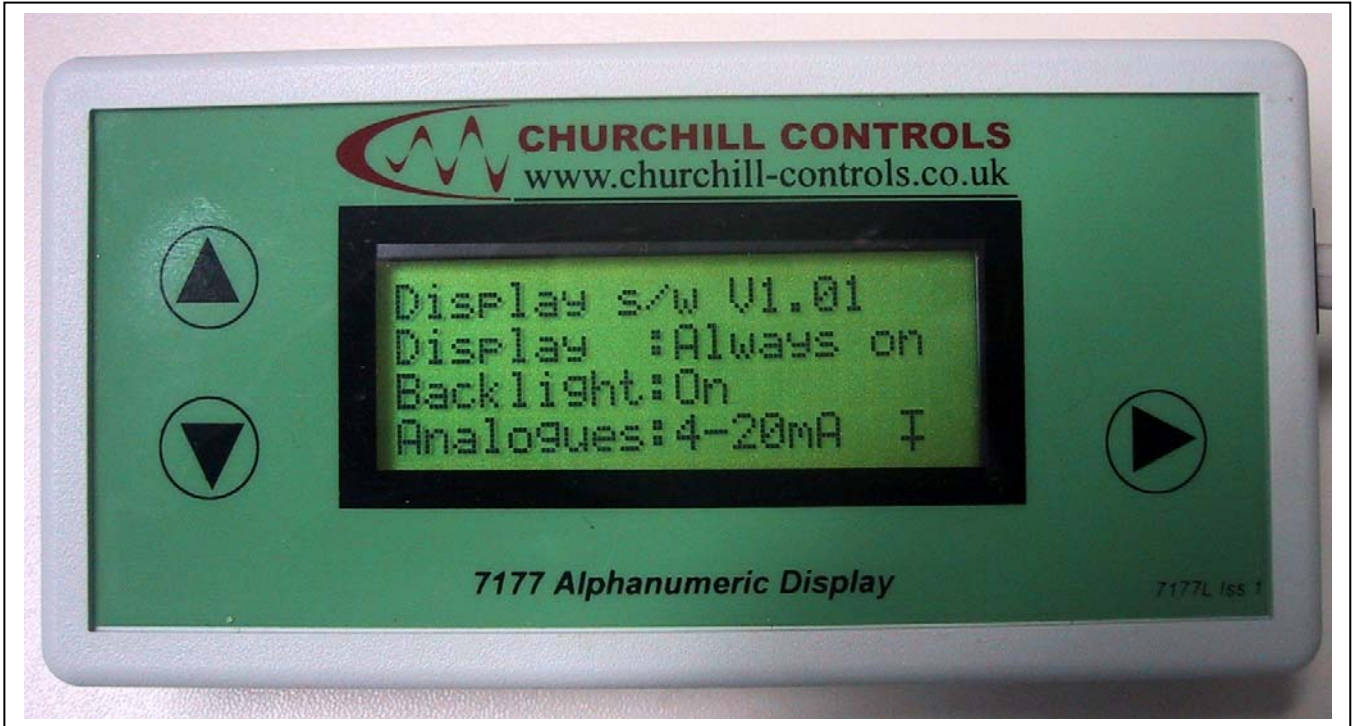


When in modes that sequence through states on a timed basis, pressing the right button will cause the display to lock onto the current state while still updating the values displayed. Pressing it again will revert to the timed sequencing. While locked a → character is displayed in the bottom right corner.

Some operational states give the user the opportunity to change parameters. In these states one character on the display will be inverted. Pressing the up or down buttons will sequence through the choices, and pressing the right button will accept the choice and progress to the next state.

Configuring the Display

The AND has some configurable characteristics which can be accessed by pressing and holding the Down button and the Right button for two seconds. The display will then enter configuration mode, where the screen will be as shown:



The user can change the configuration by pressing the Right button. The display will then change to:

```
Display s/w V1.01
Display :Always on
Backlight:On
Analogues:4-20mA #
```

Pressing the Up or Down button will change the Display mode to **Low Power**. In this mode, if the AND is connected to a battery-powered *Nano_Link* it will power down and the display will be de-activated. Pressing any button will cause the *Nano_Link* to wake up and activate the display. The user can thus monitor the state of the *Nano_Link* at will. If no button is pressed for 30 seconds the *Nano_Link* will revert to its normal operation, and the AND will be de-activated until the *Nano_Link* next wakes up.

Pressing the Right button again will change the display to:

```
Display s/w V1.01
Display :Always on
Backlight:On
Analogues:4-20mA #
```

Pressing the Up or Down button will change the Backlight to **Off**. This conserves power but makes the display difficult to read in low light conditions.

Pressing the Right button again will change the display to:

```
Display s/w V1.01
Display :Always on
Backlight:On
Analogues:4-20mA ‡
```

Analogues within the *Data_Link 2000* system are read to 12-bit resolution, so are calibrated to give numeric readings of 0...4000 for an input or output span of 0...100%. In most cases analogues are calibrated for a range of 0...20mA, but they may be 0...100mV or 0...5V. When set to 0...20mA they are commonly used in conjunction with 4...20mA transducers. The setting shown will thus cause the AND to display analogues as 0.0...100.0%, where 0.0% corresponds to 4mA and 100.0% corresponds to 20mA. Any reading less than 4mA will display as a negative value. To make it clear that there is a zero offset, the ‡ symbol is appended.

Pressing the Up or Down button will allow the analogues to be displayed as 0-20mA, 0-100mV, 0-100%, 0-5V or 1-5V.

Pressing the Right button will revert to the initial state where no characters are displayed inverted. The user can then use the Up or Down buttons to exit configuration mode.

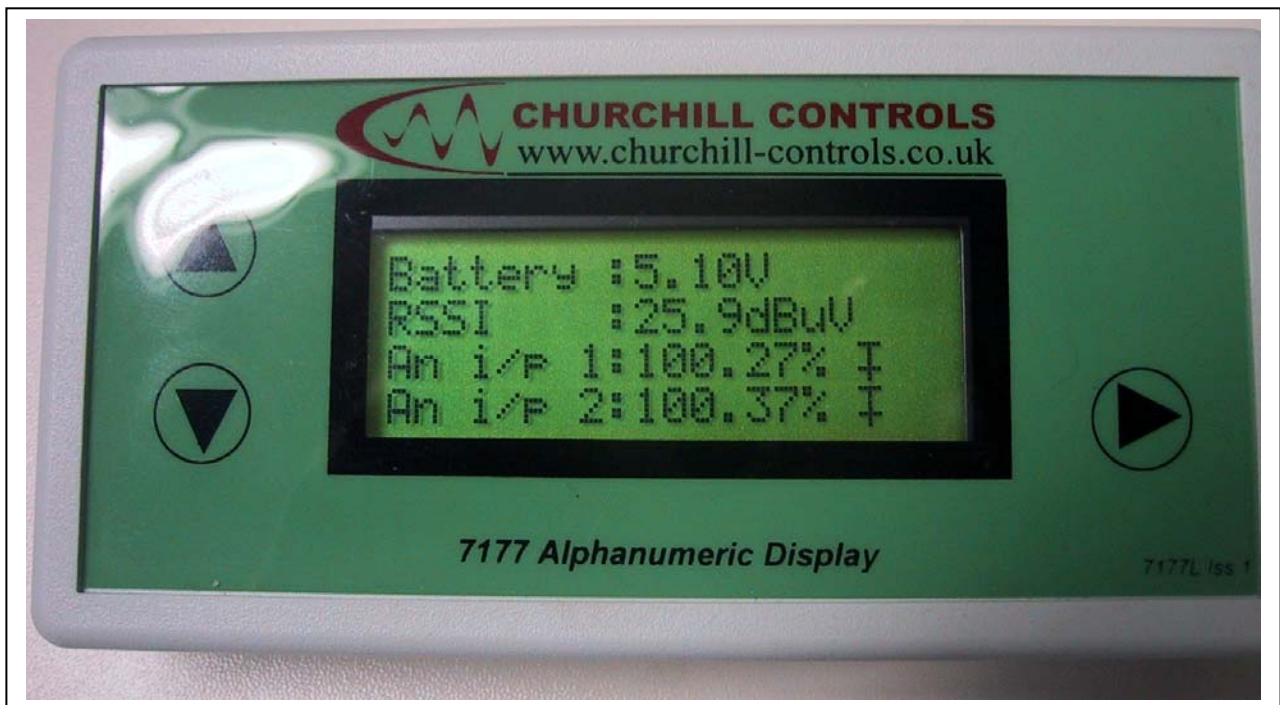
Use with *Nano_Link* or *Micro_Link*

If the AND is used with *Nano_Link* the user should be aware that the response time is relatively slow. When *Nano_Link* is awake it interrogates the display once per second. Thus if a button is pressed it could take up to one second before the display updates.

From the initial display screen the user can scroll through the following modes:

INPUT DATA: The display will sequence through input digitals, counts and analogues. When displaying digitals it also shows the alarm flags in the sequence CBHLM where C is the Comms Fail flag, B is the Battery Low flag, H is the Hardware Fail flag, L is the Bus_Link fail flag, F is the Complete Comms Fail flag and M is the Mains Fail flag. In each case an upper case character signifies the alarm state and a lower case character is the non-alarm state. The alarms are followed by the state of the on-board digital inputs. If a digital input expansion module is fitted the state of its 16 inputs are appended.

When displaying analogues it also shows the battery volts and the RSSI:



As stated above, the user can lock the display in any state by pressing the Right button. A → character is displayed in the bottom right corner. Pressing the Right button again unlocks it.

OUTPUT DATA: The display will sequence through the output digitals and the output analogues.

CONFIG SHAFT ENCODERS: This feature is only of significance with *Nano_Link*, and allows the user to configure one or two digital inputs as shaft encoders. Refer to the *Nano_Link* Technical Manual for details.

ZERO SHAFT ENCODER: Again, this feature is only of significance with *Nano_Link*. It allows the user to set the zero reference for each shaft encoder.

PATH TEST: This mode is intended for use with a *Nano_Link* base-station configured in path test mode. In this mode the base-station regularly polls a *Nano_Link* outstation and shows on the display the base-station digital inputs and output (which should sequence to prove that data is

being sent to and from the outstation), the RSSI at both ends of the link and the battery voltage of each unit.

CONFIGURE RADIO: This mode is intended for use with the path test mode, and allows the user to temporarily change the radio channel. It should be noted, however, that the radio channel reverts to the value set on the *Nano_Link*'s DIPswitches next time it resets.

Use with *GSM_Link*

Please refer to the `gsm_link` quick start manual for details