

Input Channels Menu

Applies to : All programs 011/012-145 and greater
Defines the operating mode of input channels. Replaces Inputs Networked menu.

Note : In most applications, no adjustment is required in this menu.

Explanation

Dicam units have 8 sensor inputs (to 8).
The operating system measures these in two ways :
- as analogue (voltage) levels from 0 to 5vdc
- as digital values (0 or 1) - further processed into either number of pulses or amount of time high/low.

(Previous programs measured only analogue levels.)
The reading from any particular input may be used only by the program running in this controller, or may be networked - transmitted automatically over the network for use by other controllers.

Input Channel Configuration

Input Channels only need to be configured if either :
A) The input channel reading needs to be transmitted over the network for use by other Dicam units or :
B) The input needs to be used as a digital input (e.g. for water or feed meters).
By default, channels are used as analogue inputs, and are not networked. (The same as all previous programs.)

Input Type

Input Type determines which type of measurement is made.
NORM (normal default) - operates as an analogue (voltage) input, giving a relative voltage reading.
PULSE - operates as a digital input, counting the number of pulses received (high/low transitions), with a rollover counter.
TIMED - operates as a digital input, counting time in 1/10th seconds with a rollover counter.

Input Net

Input Net determines whether the reading is networked - transmitted over the network or not.
NO (normal default) - the reading is not transmitted over the network. Use this setting if the reading is not needed by any other unit.
YES - the reading is transmitted regularly over the network. Use this setting for inputs which are "shared" - such as outside temperature sensors - or used by other Dicam units, such as mains detector trips.

Earlier Programs

Earlier programs do not have an Input Channels menu - all input channels operate as analogue (NORM) channels.
In earlier programs, digital functions such as water and feed monitoring were performed using analogue voltage values. Current and future programs now allow counting/timing at the channel level, giving higher resolution and permitting faster pulses.
Earlier programs with network option have an Inputs Networked menu - this is replaced by the Input Net Yes/No option in the Input Channels menu.

Checking Inputs

Generally, the easiest way to check a sensor channel is reading correctly is in Test : Sensors.
However, if the sensor reading is not used locally (i.e. If there is no "Device" using the reading in the Dicam unit

it is connected to) then it's not possible to read it in the Test : Sensors menu.
In this case, use the Test : Information : Input Chans menu. This displays the reading from each input channel on the Dicam unit, regardless of type.

Voltages

Inputs accept voltages from 0 to +5vdc (relative to Sensor Gnd).

UNDER NO CIRCUMSTANCES must voltages outside this range.

Normally, inputs operate from the Dicam unit's internal 5V supply and no external sensor power supply is needed. If connecting any sensor with its own power supply source, make sure you follow the relevant Dicam data sheet and/or contact Technical Support.

Each sensor input has an internal pull-up resistor, so that the input is pulled up to 5V if no external connection is made.

(For connecting some types of sensor it is necessary to remove or change the value of this resistor.)

Analogue (NORM)

Temperature sensors and similar devices have a variable resistance. Balanced against the internal pull up resistor, this gives a variable voltage on the input pin.

Input Voltage	ADC value
0 - 5Vdc	0 - 1023

ADC value (Analogue to Digital Conversion) is passed on to application program which converts the reading to temperature, humidity, value, etc.

Some applications use analogue levels even if they are being used in a digital manner - e.g. Trip functions (mains present/absent).

Digital (PULSE or TIMED)

Digital inputs generally operate by pulling input down to 0V (against the internal pull up resistor). Hence, the "active" value is generally 0V.

Voltage	Status
Input <0.8V	Lo (Active)
Input >2.0V	Hi (Inactive)

From 0.8 - 2.0V, status is indeterminate. Digital status may be high or low, device dependent. For assured performance, input must make clean transition from <0.8 to >2.0.

Filters/Capacitors

Since analogue inputs have fine resolution (5mV), it is often necessary to install additional input filter capacitors when used in electrically noisy environments. (E.g. as supplied with TS4 sensors).

Additional filter capacitors are generally necessary, nor recommended when used as digital inputs, as this may cause loss of data if fast pulses are expected.¹