ADAM I/O Modules

Application Note

This document describes how to configure a Red Lion Controls operator interface terminal to allow communications with Adam I/O Modules. The communications protocol supports access to pertinent parameters. Please read this document carefully before attempting to configure communications with these devices.

Introduction

The EDICT-97 configuration software has been designed to allow the user to enter commands in a manner that should be familiar to the user of Adam I/O Modules. This driver supports model numbers 4017, 4018, 4050, 4051, and 4060.

Communications Mode

The default configuration for Edict97 is:
Port 3 - RS485
9600 baud
8 bits
No Parity
1 Stop Bit
Checksum Disabled

The Checksum is disabled by default. If the panel attempts three times to establish communications with a module, and gets no response, it will try using the checksum for two tries. If successful, it will continue with sending the checksum. Every few subsequent tries will enable or disable the checksum until communications are established. There is no such recovery possible for baud rate errors, or missing modules.

Accessing Data

Note: It is recommended that items to be configured via write operations, such as ChanStat (Enable/Disable Channels) be programmed ahead of the read operations, such as Ch0-Ch7. Disabling a channel, and then trying to read it, will slow communications. Using Comms Blocks, put the write operations in Comms Blocks ahead of the reads. Then if a channel is inadvertently disabled, it can be re-enabled in less time.

The Configuration Dialog Box displays the selectable items in four sections, as follows:

**** All Models ****
Config, Constat, Version, Name

**** 4017-4018 ****
Span, Offset, ChanStat, Ch0, Ch1, Ch2, Ch3, Ch4, Ch5, Ch6, Ch7

**** 4050-4051-4060 ****
DigIn, SyncSampling, ReadSync, ResetStatus

**** 4050-4060 *****
DigOut

The definitions of the shortened command forms shown above are:
All Units:
Config = Configuration
ConStat = Configuration Status
Version = Firmware Version Code
Name = Module Name

VERY IMPORTANT - Do NOT allow the operator to change the baud rate setting when using Config.

4017-4018 Only:
Span = Span Calibration - Calibrate for Gain Errors
Offset = Offset Calibration - Calibrate for Offset Errors
ChanStat (Read) = Read Channel Status
ChanStat (Write) = Enable/Disable Channels for Multiplexing
Ch0 - Ch7 = Read Analog Input from Channel

4050-4051-4060 Only:
DigIn = Digital Data In
SyncSampling = Synchronized Sampling
ReadSync = Read Synchronized Data
ResetStatus = Reset Status

4050-4060 Only:
DigOut = Digital Data Out

The programmer selects the desired function for the type of module assigned to the address defined in Communication Devices. The following short cuts can be used to speed entry
C = Config
Const = ConStat
V = Version
N = Name

S = Span
O = Offset
Ch = ChanStat
No shortcut for Ch0-Ch7

D = DigIn
Sy = SyncSampling
R = ReadSync
Res = ResetStatus
Digo = DigOut

The shortcut is often the first letter of the selection. If more than one item starts with the same letter, typing just the first letter selects the one higher on the list. Otherwise, the minimum number of letters is that which uniquely defines the selection.

IMPORTANT: Do not select commands from different model types in one device. This will cause a significant slowdown in communications.

Interpreting Data Values

All data is transferred as a 32 Signed Integer. Certain commands transfer multiple items. It is the responsibility of the programmer to construct the correct 32 bit word from the individual items. The last parameter is always in the least significant digits.
Example - Read Synchronized Data in a Model 4050 - data response (RspData) is hex 1055100.
The last two hex digits (8 bits) are always 0, and can be ignored. The next 2 higher digits, Data Inputs, = 51, and can be displayed by themselves as (RspData >> 8) & 0xFF. The next are Data Output, = 05, and can be displayed by themselves as (RspData >>16) & 0xFF. The next single digit is the Status, = 1, and can be displayed as (RspData >>24) & 0xF. The database configuration allows display in any number base.

Knowledge of Unit Operation Is Assumed

In all cases, the simple principle of 'pass-through' is maintained: there is no attempt to validate a value in terms of the end use of the unit: both familiarity with the Module's functions and knowledge of system operation are assumed.

RS485 Connection

HMI RS485 Port	ADAM RS485 Port
Terminals 6 and 8	Data+ (Y)
Terminals 7 and 9	Data- (G)
Terminal 10	0V/Gnd (B)

In addition, connect a 1K resistor between 9 and 10 of the HMI.