

CRISP Automation Systems Documentation

Manual Number: MAN-IDI-SPD-042

Subject: IDI V4.2 Software Product Description

Date Created: 08/12/2002 Revision 1.0 Date Revised: N/A

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Revision History

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1.0	08/12/2002	Original issue	S. Quayle	K .Wild

Reference Documents:

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Prepared By: Stanley Quayle Approved By: Kenneth Wild

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DESCRIPTION

The Intelligent Device Interface (IDI) is used in conjunction with the CRISP System to connect to virtually any configuration of programmable logic controllers, single loop controllers, bar code readers, etc. The user simply places a description of the desired configuration in a disk file using the IDI configuration rules. IDI will then automatically perform the data transfers between the devices and the CRISP System databases.

The IDI configuration rules are designed to make all devices appear the same to the CRISP application software.

IDI is also designed to allow for low-cost, custom, data interfaces to be easily implemented into a CRISP System. A list of devices currently available is provided.

FEATURES

Configuration Rules

IDI provides the user with several options in configuring the data transfers and communications topology of the CRISP System. The user can configure transfers from as many devices as can be physically connected to one or more serial interfaces or terminal servers. IDI will process all devices on a given port in order as specified by the configuration. Each port is processed in parallel. All communication parameters for the physical devices are supported.

Topology

The basic topology commands allow the user to connect one or more multi-drop devices to each serial interface, Ethernet or terminal server port. Multiple ports can be used to manage several device networks of the same or dissimilar device types. Virtually any device that can be made electrically compatible with the hardware can be interfaced to the CRISP System database using IDI.

Data Transfer

In the area of data transfer, IDI provides numerous transfer modes including:

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- **Data By Exception**
Transfer the data to or from the device only when it changes. This feature can be enabled or disabled on a per-data-transfer basis. Note that to read data by exception, a cooperating signal from the device is required.
- **Transfer on Event**
Transfer the data to or from the device when the CRISP variable specified becomes true or non-zero.
- **Transfer Continuous**
Always transfer the data to or from the device. The data block specified will be transferred every complete scan.
- **Transfer on Timer**
Transfer the data to or from the device dependent on a timer from the CRISP system.
- **Transfer on Startup Only**
Transfer the data to or from the device only once when the system is started. This feature can be used to initiate the device or the CRISP database when CRISP is started.

All data transfer blocks are specified as one or more data items to be read from or written to the specified device. All of the transfer modes described above can be applied to each data block individually.

Communication Status

IDI provides complete communication status information to the CRISP application program on a per-device basis.

- **Device Error Count**
This is the number of device communication errors that have occurred since the count was last cleared.
- **Primary Status**
This is the IDI status code identifying the most recent communication error.
- **Secondary Status**

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This is a device specific code that reflects the device manufacturer's error codes.

- **Number of Bytes Transmitted/Number of Bytes Received**
These counts allow the user to monitor the data transmission in both directions on a per-device basis.
- **Scan Time**
This time, as with all status information, is available on a per-device or per-highway basis. The time returned is the total time required to complete the associated communications. If used on a per-highway basis, it indicates the total time required for all communications, to all devices, in both directions for the last scan.
- **Effective Baud Rate**
This value is the calculated baud rate, based on scan time and bytes transmitted.
- **Active**
This Boolean value is usually returned per-device to indicate that basic communications have been established.
- **Slow Poll**
This Boolean value is usually returned per-device to indicate that the device has failed communications too many times. The device will only be checked periodically to see if it is ready to communicate.
- **Off Line**
This Boolean value is usually returned per-device to indicate that the device has been deliberately taken offline by the user. The device will never be polled again until it is enabled by the "Force Online" control.

Communication Control

Along with the many status features of IDI are complimentary control features. As with the status, the control features are available from the CRISP application program and can be used on a per-device or per-highway basis.

- **Force Offline/Force Online**
These features can be used to enable or disable individual devices as required.

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- **Baud Rate/Data Bits/Parity**
The CRISP application program has complete control over the basic communication parameters; baud rate, data bits, and parity.
- **Clear Errors**
The CRISP application program can optionally clear all error counts.
- **No Data by Exception**
The CRISP application program can optionally enable or disable the data by exception feature on a per data transfer basis.

HARDWARE REQUIREMENTS

- Any VAX processor that supports a connection to the device. In general, this includes all VAX's with serial ports either directly connected through Q-bus interface cards like the DHQ-11 or through terminal servers on the communications network.
- Any Alpha processors that supports a connection to the device. In general, this includes all Alphas with serial ports or through terminal servers on the communications network.

Memory requirements = 750 KB per port.

SOFTWARE REQUIREMENTS

- OpenVMS Operating System 5.5-2 or later (VAX); 7.2 or later (Alpha)
- CRISP System Software 3.1 or later

INTELLIGENT DEVICE INTERFACES CURRENTLY AVAILABLE

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Status	Manufacturer	Model
Tested	ABB	Accuray 7000 MicroPlus
Tested		Accuray 7000/7500
Tested	AccuRate	Loss In Weight Controller
Tested	Acrison	MD-II Data Link Option Module
Tested		Modbus ASCII (subset)
Tested	Adv. System HCI-H Data	Highway
Tested	Allen-Bradley	Data Highway
Tested		I774
Tested		INTERCHANGE
Tested		PLC 2
Tested		PLC 3
Tested		PLC 5
Tested		PLC 5/250
Incomplete	Pyramid Integrator QBUS Scanner	PLC
CL	Applied Automation	OPTICUBOM

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Ok	Data Measurement Corp	Camtron	PLC
Incomplete	Daytronic	9635	
Ok	DEC	DECtalk DTC01	Automated Voice Synthesis and Response System
Ok	Eaton Scale	IQ700 Continuous	Weigh Scale
Ok		IQ700 Demand	Weigh Scale
Ok	Emerson	DCM	Motor Controller
Ok	Eurotherm	818	Single Loop Controller
Ok		842	Temperature Monitor
Ok	Excom	7650	Communications System
Ok	Fenwal	Fenwal 5700	Single Loop Controller
Incomplete	Fife	MPC Betagage	Gaging System
Incomplete	Filtrona		
Ok	Fisher	DPR900	Single Loop Controller
Incomplete	Foxboro	761	
Ok	General Electric	CCM2	PLC

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Ok	HR2400	Model 4081	Hybrid Recorder
Ok	HR2400	Model 4082	Hybrid Recorder
Ok	HR2500	Model 3880	Hybrid Recorder
Incomplete	Intellution	DMACS	
Ok	Intermec	3000A	Bar Code Printer
Ok		8646	Bar Code Printer
Ok		9444	Bar Code Reader
Ok		9550	Transaction Manager
Ok		9560	Transaction Manager
Ok	Klockner Moeller	EBE294	PLC Communication Card
Ok		PS316	PLC
Ok	Landis and Gyr Powers	System 600 Gateway	Ethernet Gateway to LGP Devices
Ok	Lasermike	5000	Micrometer
Ok	Leeds-Northrup	Electromax 5	Single Loop Controller
Ok	Marpos	E42 for KXT	Single Loop Controller
Ok		E50 for KXT	Gaging System (KXT)
Ok	Masstron Scale	5000	Weigh Scale

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Ok	Modicon	484	PLC
Ok		584	PLC
Ok		984	PLC
Ok		Micro 884	PLC
Ok		Modbus ASCII	Proprietary Network Protocol
Ok		Modbus Plus	Proprietary Network Protocol
Ok		Modbus RTU	Proprietary Network Protocol
Ok	MSA	7000	Freon Gas Analyzer
Ok	MSC	8000	Infrared Moisture Analyzer
Ok	Omron	Omron C-series	PLC
Ok	Partlow/ Molytek	Molytek 2700 family	Data Recorders
Ok	Reliance Electric	Automate 30	PLC
Ok		Automate 40	PLC
Ok	RTP	RTP2000	Gelcom
Ok	Sartorius	A200S Analytic Balance	Weigh Scale
Ok	Schleuniger	6D	Hardness Tester

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Ok		Model 650	PLC, Enet Compatible
Ok		PowerLogic	Energy Management Power Controller
Ok		RNIM Remote Network Interface	PLC, Remote Network Protocol
Ok		SY/MAX	Proprietary Network Protocol
Ok	Symbol Technologies	Link 700	Bar Code Reader
Incomplete	Telemecanique	TSX family via ETHWAY	PLC
Ok	Texas Instruments	5TI	PLC
Ok		TI 520	PLC
Ok		TI 530	PLC
Ok		TI 545	PLC
Ok		TI 550	PLC
Ok		TI 565	PLC
Ok		TIWAY via Host Adaptor II	Proprietary Network Protocol
Ok	Thermal Engineering	Thermo-Mizer 2	Single Loop Controller (Energy Management)
Ok	Toledo Scale	2138	Weigh Scale

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Ok	Uhlmann	PACMATION	Pharmaceutical packaging
Incomplete	Webart	9000	Thickness Gauge
Untested	Yokogawa	UP-30	Single Loop Controller
Ok		UP-40	Single Loop Controller
Untested		UT-30	Single Loop Controller
Untested		UT-40	Single Loop Controller

SOFTWARE LICENSING

This software product is furnished under the licensing provisions and Terms and Conditions of Sale of the Automation Software Products business of the CRISP Automation. The software can be licensed for a single CPU or for multiple CPU's.

SOFTWARE WARRANTY

Warranty for this software product is twelve (12) months from the time of shipment and is provided by CRISP Automation with the purchase of a license for the product. The software is warranted to conform to this Software Product Description.

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SOFTWARE SUPPORT AGREEMENT

This software product comes with a six (6) month software support agreement that includes new software releases, interim updates, remote diagnostic support and telephone consultation. The agreement can be renewed on an annual basis by the customer for a minimal fee.

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