

4.5. Intelligent Communication Controllers



I-752N Series

Intelligent Communication Controller

Features

- Built-in "Addressable RS-485 to RS-232 Converter" firmware
- Programmable Intelligent Communication Controller
- Supports about 30 well-defined commands
- Supports Dual-Watchdog commands
- Supports power-up and safe value for DO
- Watchdog timer provides fault tolerance and recovery
- Low power consumption
- R.O.C. Invention Patent No. 086674, No.103060 and No. 132457
- Made from fire retardant materials (UL94-V0 Level)



Introduction

There are many RS-232 devices in industry applications. Nowadays it becomes important to link all those RS-232 devices together for automation and information. Usually those RS-232 devices are far away from the host-PC and widely distributed in the factory. So it is not a good idea to use multi-serial cards to connect all these RS-232 devices together. The I-752N series product can be used to link multiple RS-232 devices by a single RS-485 network. The RS-485 is famous for its easy maintenance, simple cabling, stable, reliable and low cost.

Onboard 1 KB Queue buffer

The I-752N series module is equipped with a 1 KB queue buffer for its local RS-232 device. All input data can be stored in the queue buffer until the Host PC has time to read it. This feature allows the Host PC to link to thousands of RS-232 devices without any loss of data.

3000V isolation on RS-485 side

COM2 of the I-752N modules is an isolated RS-485 port with 3000 V_{DC} isolation, which protects the local RS-232 devices from transient noises coming from the RS-485 network.

Self-Tuner ASIC inside

The built-in Self-Tuner ASIC on an RS-485 port can auto detect and control the send/receive direction of the RS-485 network. Thus, there is no need for application programs to be concerned about direction control of the RS-485 network.

Can be used as Addressable RS-485 to RS-232 Converter

Most RS-232 devices don't support device addressing. The ICP DAS I-752N module assigns a unique address for each RS-232 device installed. When Host PC sends a command with a device address to the RS-485 network, the destination I-752N module will remove the address field, and then pass the other commands to the specified local RS-232 device. The response from the local RS-232 devices will be returned to the Host PC via the I-752N.

Master-type Addressable RS-485 to RS-232 Converter

The ICP DAS I-752N product is unique. In that they are Master-type converters which use our R.O.C. Patent086674, while most other converters are Slave-type, which are helpless without a Host PC. In real industrial applications, many users are not satisfied with Slave-type converters as they cannot be adapted to individual requirement.

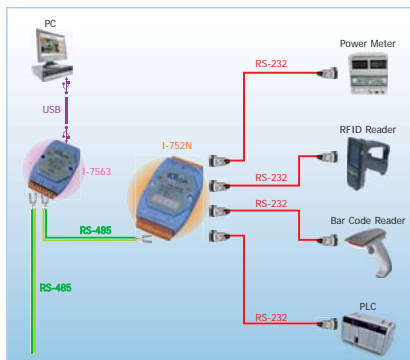
The powerful I-752N series analyzes the local RS-232 devices, DI and DO without the need for a Host PC. Refer to Applications 5 - 9 for more information in the manual.

Can be used as RS-232 to RS-485 Device Server

The Device Server is an appliance that networking any device with a serial communication port. The I-752N series Intelligent Communication Controller allows the RS-232 serial devices to connect to the RS-485 network. Also, there are PDS series products available from ICP DAS, which provide Ethernet connectivity for serial devices.

Applications

Factory, Building and Home Automation

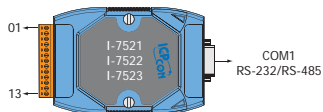


I/O Specifications

Models	I-7521(D)	I-7522(D)	I-7523(D)	I-7522A(D)	I-7524(D)	I-7527(D)
User-Defined I/O						
I/O Channel	3	-	-	-	-	-
Digital Output						
DI Channel	2	2	1	5	1	1
Input Type	Source (Dry Type), Common Ground, non-isolated					
Off Voltage	+1 V max.					
On Voltage	+3.5 V _{OC} ~ +30 V _{OC}					
Digital Output						
DO Channel	3	1	-	5	1	1
Output Type	Open Collector (Sink/NPN), non-isolated					
Load Voltage	+30 V _{OC} max.					
Load Current	100 mA max.					

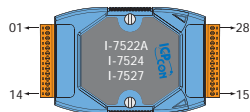
System Specifications

Models	I-7521(D)	I-7522(D)	I-7523(D)	I-7522A(D)	I-7524(D)	I-7527(D)
System						
CPU	80188, 20 MHz			80188, 40 MHz		
SRAM	128 KB			256 KB		
Flash	512 KB					
EEPROM	2 KB					
Real-Time Clock	-			Yes		
Watchdog Timer	Yes					
Operating System	MiniOS7					
Communication Interface						
COM1	5-wire RS-232 or 2-wire RS-485					
COM2	Isolated 2-wire RS-485					
COM3	-	5-wire RS-232	5-wire RS-232	4-wire RS-422	5-wire RS-232	3-wire RS-232
COM4	-	-	3-wire RS-232	-	5-wire RS-232	3-wire RS-232
COM5	-	-	-	-	5-wire RS-232	3-wire RS-232
COM6	-	-	-	-	-	3-wire RS-232
COM7	-	-	-	-	-	3-wire RS-232
COM8	-	-	-	-	-	3-wire RS-232
Baud Rate	300 ~ 115200 bps					
Data Bit	COM1 ~ COM2: 7 or 8 COM3 ~ COM8: 5, 6, 7 or 8					
Parity	COM1 ~ COM2: None, Even, Odd COM3 ~ COM8: None, Even, Odd, Mark, Space					
Stop Bit	COM1 ~ COM2: 1 or 2 (data bit must be 7) COM3 ~ COM8: 1 or 2					
Connector	Male DB-9 x 1 13-Pin screw terminal block x 1 (for 16 ~ 26 AWG wires; 3.81 mm pitch)			14-Pin screw terminal block x 2 (for 16 ~ 22 AWG wires; 3.5 mm pitch)		
LED Indicators						
LED Display	5-digit 7-segment LED display for D versions					
Power						
Protection	Power input reverse polarity protection					
Power Requirement	Unregulated +10 V _{OC} ~ 30 V _{OC}					
Power Consumption	2 W (without display), 3 W (with display)					
Mechanical						
Casing	Plastic					
Flammability	Fire Retardant Materials (UL94-V0 Level)					
Dimensions (W x H x D)	72 mm x 118 mm x 35 mm			72 mm x 120 mm x 35 mm		
Installation	DIN-Rail					
Environment						
Operating Temperature	-25 °C ~ +75 °C					
Storage Temperature	-40 °C ~ +80 °C					
Humidity	0 ~ 90% RH, non-condensing					
Note:						
3-wire RS-232: RxD, TxD, GND						
5-wire RS-232: RxD, TxD, CTS, RTS, GND						
2-wire RS-485: DATA+, DATA-, GND: Self-Tuner inside						
Isolated 2-wire RS-485: DATA+, DATA-: Self-tuner inside; 3000 V _{OC} Isolation						
4-wire RS-422: RxD+, RxD-, TxD+, TxD-, GND						

Pin Assignments

I-7521/I-7521D

Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
01	X3		05	GND
02	X2		04	N.C.
03	X1		03	RxD
04	DO3		02	TxD
DO	05 DO2		01	Data+
06	DO1		09	Data-
07	D13		08	RTS
D1	08 DI2		07	CTS
09	INIT*		06	N.C.
COM2	10 (Y)D2+			
11	(G)D2-			
Power Input	12 (R)+Vs			
13	(B)GND			

COM1: RS-232 Male DB-9 Connector


I-7522A/I-7522AD

Terminal No.	Pin Assignment	X507	
		Terminal No.	Pin Assignment
DO	01 DO	28	DO3
DI	02 DI	27	DO2
COM1	03 D1+	26	DO1
	04 D1-	25	DO0
	05 CTS1	24	DO.PWR
	06 RTS1	23	GND
	07 GND	22	D13
DI	08 TxD1	21	DI2
	09 RxD1	20	DI1
	10 INIT*	19	DI0
	11 (Y)D2+	18	RxD3-
COM2	12 (G)D2-	17	RxD3+
	13 (R)+Vs	16	TxD3-
Power Input	14 (B)GND	15	TxD3+

I-7522/I-7522D

Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
COM3	01 CTS3		05	GND
	02 RTS3		04	N.C.
	03 RxD3		03	RxD
	04 TxD3		02	TxD
	05 GND		01	Data+
DO	06 DO1		09	Data-
DI	07 DI3		08	RTS
08	DI2		07	CTS
09	INIT*		06	N.C.
COM2	10 (Y)D2+			
11	(G)D2-			
Power Input	12 (R)+Vs			
13	(B)GND			

COM1: RS-232 Male DB-9 Connector

I-7524/I-7524D

Terminal No.	Pin Assignment	X505	
		Terminal No.	Pin Assignment
DO	01 DO	28	RxD5
DI	02 DI	27	TxD5
COM1	03 D1+	26	RTS5
	04 D1-	25	CTS5
	05 CTS1	24	GND
	06 RTS1	23	RxD4
	07 GND	22	TxD4
DI	08 TxD1	21	RTS4
	09 RxD1	20	CTS4
	10 INIT*	19	GND
COM2	11 (Y)D2+	18	RxD3
	12 (G)D2-	17	TxD3
Power Input	13 (R)+Vs	16	RTS3
14	(B)GND	15	CTS3

I-7523/I-7523D

Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
COM3	01 CTS3		05	GND
	02 RTS3		04	N.C.
	03 RxD3		03	RxD
	04 TxD3		02	TxD
	05 GND		01	Data+
COM4	06 TxD4		09	Data-
DI	07 RxD4		08	RTS
08	DI2		07	CTS
09	INIT*		06	N.C.
COM2	10 (Y)D2+			
11	(G)D2-			
Power Input	12 (R)+Vs			
13	(B)GND			

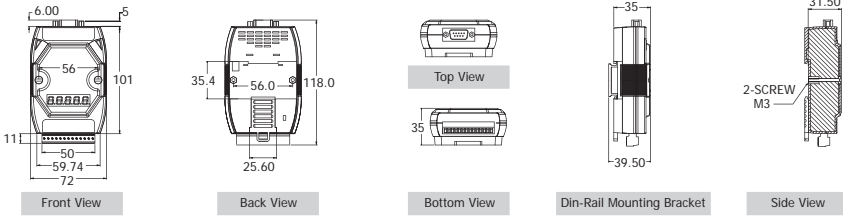
COM1: RS-232 Male DB-9 Connector

I-7527A/I-7527AD

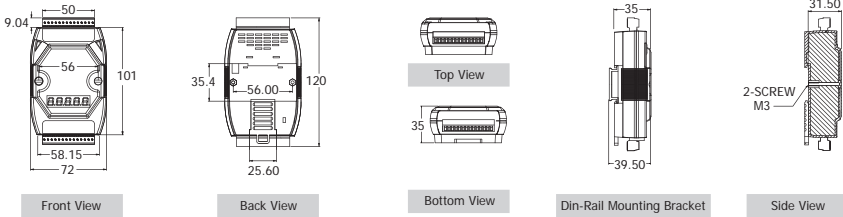
Terminal No.	Pin Assignment	X506	
		Terminal No.	Pin Assignment
DO	01 DO	28	TxD8
DI	02 DI	27	RxD8
COM1	03 D1+	26	TxD7
	04 D1-	25	RxD7
	05 CTS1	24	GND
	06 RTS1	23	TxD6
	07 GND	22	RxD6
DI	08 TxD1	21	TxD5
	09 RxD1	20	RxD5
	10 INIT*	19	GND
COM2	11 (Y)D2+	18	TxD4
	12 (G)D2-	17	RxD4
Power Input	13 (R)+Vs	16	TxD3
14	(B)GND	15	RxD3

Dimensions (Unit: mm)

I-7521(D)/I-7522(D)/I-7523(D)

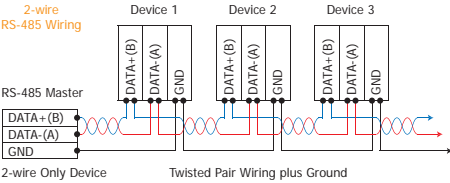


I-7522A(D)/I-7524(D)/I-7527(D)

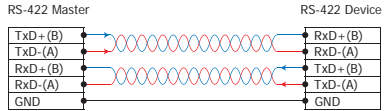


Wiring

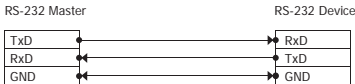
2-wire RS-485 Wiring



4-wire RS-422 Wiring



3-wire RS-232 Wiring



Input Type	DI Value as 0	DI Value as 1
Relay Contact	Relay ON 	Relay Off
	Logic: Level Low Logic: GND	Logic: Level High Logic: GND
Open Collector	Open Collector On 	Open Collector Off
	DO.PWR DOx DO.GND	DO.PWR DOx DO.GND
Output Type	DO Command as 1	DO Command as 0
Drive Relay	Relay ON 	Relay Off
	DO.PWR DOx DO.GND	DO.PWR DOx DO.GND
Resistance Load		
	DO.PWR DOx DO.GND	DO.PWR DOx DO.GND

Ordering Information

I-7521 CR	Intelligent Communication Controller (RoHS)
I-7521D CR	I-7521 with Display
I-7522 CR	Intelligent Communication Controller (RoHS)
I-7522D CR	I-7522 with Display
I-7522A CR	Intelligent Communication Controller (RoHS)
I-7522AD CR	I-7522A with Display
I-7523 CR	Intelligent Communication Controller (RoHS)
I-7523D CR	I-7523 with Display
I-7524 CR	Intelligent Communication Controller (RoHS)
I-7524D CR	I-7524 with Display
I-7527 CR	Intelligent Communication Controller (RoHS)
I-7527D CR	I-7527 with Display

Accessories

GPSU06U-6	24 Vdc/0.25 A, 6 W Power Supply
MDR-20-24	24 Vdc/1 A, 24 W Power Supply with DIN-Rail Mounting
KA-52F	24 Vdc/1.04 A, 25 W Power Supply
DIN-KA52F	24 Vdc/1.04 A, 25 W Power Supply with Din-Rail Mounting