

Protocol MANUAL

2009. June

Forte I-302

APPENDIX

A.Serial Communication Protocol Manual

1. General concept

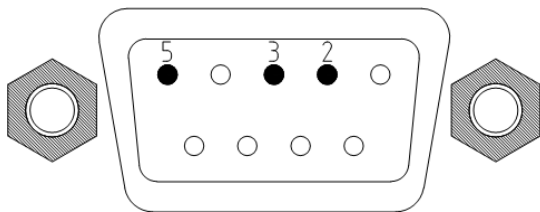
1)At upper grade equipment, the Power Supply can be controlled and monitored by RS-232 communication, and monitor power supply operation status.

2)Baud rate applies 9600bps, stop bit applies 1bit, No parity, 8 bit for data bit, and asynchronous communication, we recommend over 100ms as the communication cycle.

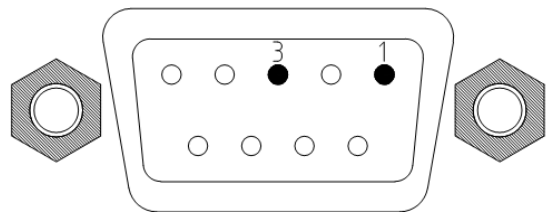
3) Pin-Map of a communication port is as follows.

4) This manual is for Protocol Type 3 of Menu 5.Communication set.

RS-232



RS-485



Pin	Name	Description
2	RXD.D	RS-232 receive data
3	TXD.D	RS-232 transmit data
5	COM.D	Data common

Fote I-302 does not support the RS-485

2. Frame composition

1) 0x60 ~ 0x8F (Writing Command Frame)

Header	Hex Data	Hex Data	ETX
Command	-	-	0x03

- ※ It is composed of Header, Hex Data, ETX, and 2byte for Hex Data.
- ※ Return Frame of 0x60 ~ 0x8F replies Echo information of 1byte.
- ※ 0x06 : ACK (Communication success), 0x04: ERR (Communication failure)

2) 0x90 ~ 0xBF (Reading Command Frame)

Header	ETX
Command	0x03

- ※ It is composed of 2byte transmit Data of Header and ETX.

3. Command structure and contents

1) Command type

The following table shows protocol commands type and its operation of RS-232 communication, and it is composed to get control parameter and data for output status.

Command (1byte)	Format		Description	Return data
	Cmd	Data		
0x80	1byte	2byte	Output On/Off control 0 ~ 1 (On, Off) - On : 0x80000103 - Off : 0x80000203	1byte - 0x06 : ACK - 0x04 : ERR
0x81	1byte	2byte	Control mode (Regulation) setting up - Voltage : 0x81000103 - Current : 0x81000203 - Power : 0x81000303	
0x82	1byte	2byte	Setting up output value in control mode (Output level) - Voltage : 0 ~ 800 0x8301f403 (500V) - Current : 0 ~ 500 0x83019003 (40.0A) - Power : 0 ~ 200 0x83006403 (10.0kW)	
0x83	1byte	2byte	Delay time setting up (0 ~ 10 [us]) -0(0us) : 0x83000003 -10(10us) : 0x83000A03	
0x84	1byte	2byte	Pause time Setting up (40 ~ 90 [us]) -40 (40us) : 0x84002803 - 90 (90us) : 0x84005A03	
0x85	1byte	2byte	ARC voltage Setting up (50 ~ 400 [V]) -50 (50V) : 0x85003203 -400 (400V) : 0x85019003	
0x86	1byte	2byte	ARC Current Setting up (3000~6000 [mA]) -300 (3000mA) : 0x86012C03 -600 (6000mA) : 0x86025803	
0x87	1byte	2byte	Soft ARC level Setting up (10 ~ 90 [%]) -10 (10%) : 0x87000A03 -90 (90%) : 0x87005A03	
0x88	1byte	2byte	Shutdown delay time Setting up(0.1~1.0 [ms]) -1 (0.1ms) : 0x88000103 -10 (1.0ms) : 0x88000A03	
0x89	1byte	2byte	Arc Shutdown Time Setting up (0.1~20.0 [ms]) -1 (0.1ms) : 0x89000103 -100 (10.0ms) : 0x89006403	

Command (1byte)	Format		Description	Return data
	Cmd	Data		
0x8A	1byte	2byte	Max power limit Setting up (0 ~ 6000 [W]) -100 (1000W) : 0x8A006403 -600 (6000W) : 0x8A025803	1byte - 0x06 : ACK - 0x04 : ERR
0x8B	1byte	2byte	Max current limit Setting up (1 ~ 2000 [mA]) - 20 (20mA) : 0x8B001403 -2000 (200mA) : 0x8B00C803	
0x8C	1byte	2byte	Max voltage limit Setting up (500 ~ 3001 [V]) -1000 (1000V) : 0x8C03E803 -1500 (1500V) : 0x8C05DC03	
0x8D	1byte	2byte	Ramp time Setting up (10 ~ 2000 [ms]) -200 (200ms) : 0x8D00C803 -300 (300ms) : 0x8D012C03	

Command (1byte)	Format		Description	Return data
	Cmd	Data		
0x90	1byte	1byte	Request Operation mode status – On/ Off state – Regulation mode – Setpoint Send data : 0x9003 Return data : 0x90ab03	1byte a (4bit) : Setpoint(1) ex) b : 0x2 = 0b0010 (b = D3 D2 D1 D0) D3 (1bit) : Power D2 (1bit) : Current D1 (1bit) : Voltage D0 (1bit) : On(1) , Off(0)
0x91	1byte	8byte	Request Output Data value Send data : 0x9103 Return data : 0x91aabbccdd03 – aa : Reference value (2byte) – bb : Output power (2byte) – cc : Output current (2byte) – dd : Output voltage (2byte)	8byte Reference value(0 ~ 3001) Output power (0 ~ 600) Output current (0 ~ 2000) Output voltage (0 ~ 3001)
0x92	1byte	14byte	Request Arc Processing Data set value Send data: 0x9203 Return data : 0x92aabbccddeeffgg03 – aa : Delay time(2byte) – bb : Pause time (2byte) – cc : Arc voltage trip level (2byte) – dd : Arc Current trip level (2byte) – ee : Soft Arc Level (2byte) – ff : Shutdown delay Time (2byte) – gg : Arc Shutdown time (2byte)	14byte Delay time (0 ~ 10) Pause time (40 ~ 90) Arc voltage level (50 ~ 400) Arc current level (300 ~ 600) Soft Arc level (10 ~ 90) Shutdown delay time (0.1 ~ 1.0) Arc Shutdown time (0.1 ~ 10.0)
0x93	1byte	10byte	Request Limit/ Process Data set value Send data Return data – aa : Max Power limit (2byte) – bb : Max Current limit (2byte) – cc : Max Voltage limit (2byte) – dd : Ramp time (2byte)	10byte Max Power limit (1 ~ 600) Max Current limit (1 ~ 2000) Max Voltage limit (500 ~3001) Ramp time (20 ~ 2000)