

**Instruction Manual
(Communication)**

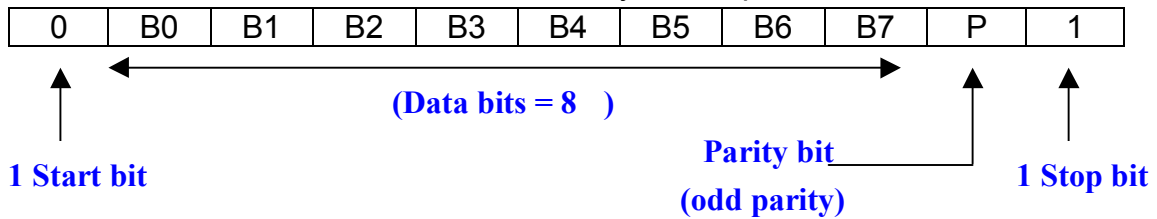
SPECIFICATION

- 1.INTERFACE EIA standard based on RS-232C
EIA standard based on RS-485
- 2. Connection method 3 wire system, Half-duplex multi-drop connection(RS232C)
2 wire system, Half-duplex multi-drop connection(RS485)
- 3.Coomunication distance RS232C : 15meters(max.)
RS485 : 1.2kilo-meters(max.)
- 4.Communication speed 110, 300, 1200, 2400, 4800, 9600 bps
※It is indicated in “BAUD” of the controller. Defalut=2400
- 5.Synchronous Start / Stop bit
- 6. Maximum connection RS232C : 1 point
RS485 : 30 sets including a host computer
- 7. Communication Code ASCII 7 bit

Communication DATA

1.DATA FRAME

1 Start bit, Data Bits = 8, ODD Parity, 1 Stop bit



2.DATA FORMAT

※You must send “HEX” code as below

NAME	DESCRIPTION	LENGTH
CMD	Command	1 BYTE
XIDNO	The ID No. of controller	1 BYTE
CHNO	Reservation, don't care	1 BYTE
XADDR	Address	1 BYTE
XDATA1	HIGH BYTE of DATA	1 BYTE
XDATA2	LOW BYTE of DATA	1 BYTE
CHKSUM	Checksum	1 BYTE

COMMUNICATION EXAMPLES

■ Modify SP to '123.4' (The ID of controller is '20')

- CMD MODIFY(M) : **4D H**
- XIDNO 20 (decimal) = **14H(Hex)**
- CHNO **00 H** (Don't care)
- XADDR **00 H** (The XADDR of SV)
- XDATA1 & XDATA2 1234(decimal) = **04D2H(hex)**
- CHKSUM 4DH + 14H + 00H +00H +04H +D2H = 01**37H**

The DATA are be send to the controller as HEX CODE '**4D14 0000 04D2 37**'

■ Write SP to '123.4' (The ID of controller is '20')

- CMD MODIFY(W) : **57 H**
- XIDNO 20 (decimal) = **14H(Hex)**
- CHNO **00 H** (Don't care)
- XADDR **00 H** (The XADDR of SV)
- XDATA1 & XDATA2 1234(decimal) = **04D2H(hex)**
- CHKSUM 57H + 14H + 00H +00H +04H +D2H = 01**41H**

The DATA are be send to the controller as HEX CODE '**5714 0000 04D2 41**'

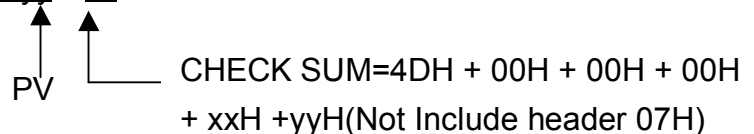
■ Read 'PV' from controller (The ID of controller is '1')

- CMD READ(R) : **52_H**
- XIDNO 1 (decimal) = **01H(hex)**
- CHNO **00H** (Don't care)
- XADDR **80 H** (The XADDR of PV)
- XDATA1 & XDATA2 = 0000H
- CHKSUM 52H + 01H + 00H +80H +00H +00H = 00**D3H**

The DATA are be send to the controller as HEX CODE '**5201 0080 0000 D3**'

(Wait about min. 100ms ...)

Controller reply : 07 4D 00 00 00 xxyy zz



APPENDIX A (XADDR)

1) LEVEL1 (for details, refer to OP-Manual)

OPTION	XADDR	Remark	OPTION	XADDR	Remark	OPTION	XADDR	Remark
PV	80H	PV	Program Model					
OUT%	A3H	Manual output	PTN	06H	PTN=1,2,0	SV_12	21H	PTN=2 set (1)SP (2)Time (3)Output
SV	00H	SP	SEG	07H	8(max.)	TM_12	22H	
OUTL	01H	Output	TIMR	08H	0~99.59	OUT12	23H	
AT	02H	Autotune	SV_1	09H	PTN=1 Set (1)SP (2)Time (3)Output	SV_22	24H	
AL1	03H	Alarm 1	TM_1	0AH		TM_22	25H	
AL2	04H	Alarm 2	OUT1	0BH		OUT22	26H	
AL3	05H	Alarm 3	SV_2	0CH		SV_32	27H	
			TM_2	0DH		TM_32	28H	
			OUT2	0EH		OUT32	29H	
			SV_3	0FH		SV_42	2AH	
			TM_3	10H		TM_42	2BH	
			OUT3	11H		OUT42	2CH	
			SV_4	12H		SV_52	2DH	
			TM_4	13H		TM_52	2EH	
			OUT4	14H		OUT52	2FH	
			SV_5	15H		SV_62	30H	
			TM_5	16H		TM_62	31H	
			OUT5	17H		OUT62	32H	
			SV_6	18H		SV_72	33H	
			TM_6	19H	TM_72	34H		
			OUT6	1AH	OUT72	35H		
			SV_7	1BH	SV_82	36H		
			TM_7	1CH	TM_82	37H		
			OUT7	1DH	OUT82	38H		
			SV_8	1EH				
			TM_8	1FH				
			OUT8	20H				

2) LEVEL 2 (for details, refer to OP-Manual)

OPTION	XADDR	Remark	OPTION	XADDR	Remark	OPTION	XADDR	Remark
P1	39H	Output 1	CYT1	3EH		CYT2	43H	
I1	3AH		HYS1	3FH		HYS2	44H	
D1	3BH		P2	40H	Output2	GAP1	45H	
DB1	3CH		I2	41H		GAP2	46H	
ATVL	3DH		D2	42H		LCK	47H	

3) LEVEL3 (for details, refer to OP-Manual)

OPTION	XADDR	Remark	OPTION	XADDR	Remark	OPTION	XADDR	Remark
INP1	48H	INPUT1	ALD3	54H	Alarm 3	IDNO	60H	Communi- cation
ANL1	49H	Analog INP1	ALT3	55H		BAUD	61H	
ANH1	4AH			HYSA	56H	Hysterisis	SVOS	62H
DP	4BH		CLO1	57H	Analog OUT1	PVOS	63H	
LSPL	4CH	Limit low	CHO1	58H		UNIT	64H	
USPL	4DH	Limit high	CLO2	59H	Analog OUT2	SOFT	65H	
ANL2	4EH	Analog INP2	CHO2	5AH		CASC	66H	
ANH2	4FH			CLO3	5BH	Calibrate TRS	LOUD	67H
ALD1	50H	Alarm 1	CHO3	5CH	OPAD		68H	Control
ALT1	51H			RUCY	5DH	HZ	69H	Set 50/60
ALD2	52H	Alarm 2	WAIT	5EH				
ALT2	53H			SETA	5FH			

4) LEVEL4 (for details, refer to OP-Manual)

OPTION	XADDR	Remark	OPTION	XADDR	Remark	OPTION	XADDR	Remark
SET1	6AH		SET5	6EH		SET9	72H	
SET2	6BH		SET6	6FH		SET0	73H	
SET3	6CH		SET7	70H		INP2	74H	
SET4	6DH		SET8	71H		OUTY	75H	

APPENDIX B (INPUT1 SELECTION)

TYPE	CODE	RANGE	HEX
K	K1	0.0~200.0°C/0.0~392.0°F	00H
	K2	0.0~400.0°C/0.0~752.0°F	01H
	K3	0.0~600.0°C/0.0~1112.0°F	02H
	K4	0.0~800.0°C/0.0~1472.0°F	03H
	K5	0.0~1000.0°C/0.0~1832.0°F	04H
	K6	0.0~1200.0°C/0.0~2192.0°F	05H
J	J1	0.0~200.0°C/0.0~392.0°F	06H
	J2	0.0~400.0°C/0.0~752.0°F	07H
	J3	0.0~600.0°C/0.0~1112.0°F	08H
	J4	0.0~800.0°C/0.0~1472.0°F	09H
	J5	0.0~1000.0°C/0.0~1832.0°F	0AH
	J6	0.0~1200.0°C/0.0~2192.0°F	0BH
R	R1	0.0~1600.0°C/0.0~2912.0°F	0CH
	R2	0.0~1769.0°C/0.0~3216.0°F	0DH
S	S1	0.0~1600.0°C/0.0~2912.0°F	0EH
	S2	0.0~1769.0°C/0.0~3216.0°F	0FH
B	B1	0.0~1820.0°C/0.0~3308.0°F	10H
E	E1	0.0~800.0°C/0.0~1472.0°F	11H
	E2	0.0~1000.0°C/0.0~1832.0°F	12H
N	N1	0.0~1200.0°C/0.0~2192.0°F	13H
	N2	0.0~1300.0°C/0.0~2372.0°F	14H
T	T1	-199.9~400.0°C/-199.9~752.0°F	15H
	T2	-199.9~200.0°C/-199.9~392.0°F	16H
	T3	0.0~350.0°C/0.0~662.0°F	17H
W	W1	0.0~2000.0°C/0.0~3632.0°F	18H
	W2	0.0~2320.0°C/0.0~2372.0°F	19H
PLII	PL1	0.0~1300.0°C/0.0~2372.0°F	1AH
	PL2	0.0~1390.0°C/0.0~2534.0°F	1BH
U	U1	-199.9~600.0°C/-199.9~999.9°F	1CH
	U2	-199.9~200.0°C/-199.9~392.0°F	1DH
	U3	0.0~400.0°C/0.0~752.0°F	1EH
L	L1	0.0~400.0°C/0.0~752.0°F	1FH
	L2	0.0~800.0°C/0.0~1472.0°F	20H

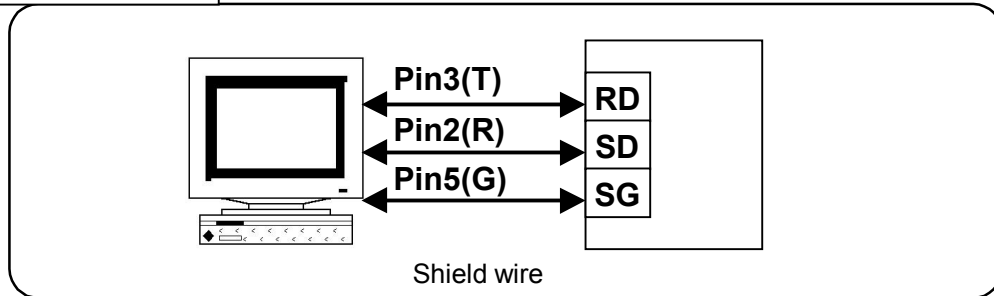
* The initial set in factory mode is K2 without any certain requirement.

TYPE	CODE	RANGE	HEX
JIS Pt100	JP1	-199.9~600.0°C/-199.9~999.9°F	21H
	JP2	-199.9~400.0°C/-199.9~752.0°F	22H
	JP3	-199.9~200.0°C/-199.9~392.0°F	23H
	JP4	0.0~200.0°C/0.0~392.0°F	24H
	JP5	0.0~400.0°C/0.0~752.0°F	25H
	JP6	0.0~600.0°C/0.0~1112.0°F	26H
DIN Pt100	dP1	-199.9~600.0°C/-199.9~999.9°F	27H
	dP2	-199.9~400.0°C/-199.9~752.0°F	28H
	dP3	-199.9~200.0°C/-199.9~392.0°F	29H
	dP4	0.0~200.0°C/0.0~392.0°F	2AH
	dP5	0.0~400.0°C/0.0~752.0°F	2BH
	dP6	0.0~600.0°C/0.0~1112.0°F	2CH
JIS Pt50	JP1	-199.9~600.0°C/-199.9~999.9°F	2DH
	JP2	-199.9~400.0°C/-199.9~752.0°F	2EH
	JP3	-199.9~200.0°C/-199.9~392.0°F	2FH
	JP4	0.0~200.0°C/0.0~392.0°F	30H
	JP5	0.0~400.0°C/0.0~752.0°F	31H
	JP6	0.0~600.0°C/0.0~1112.0°F	32H
AN1	An1	-10~10mV/-1999~9999	33H
AN2	An2	0~10mV/-1999~9999	34H
AN3	An3	0~20mV/-1999~9999	35H
AN4	An4	0~50mV/-1999~9999	36H
AN5	An5	10~50mV/-1999~9999	37H

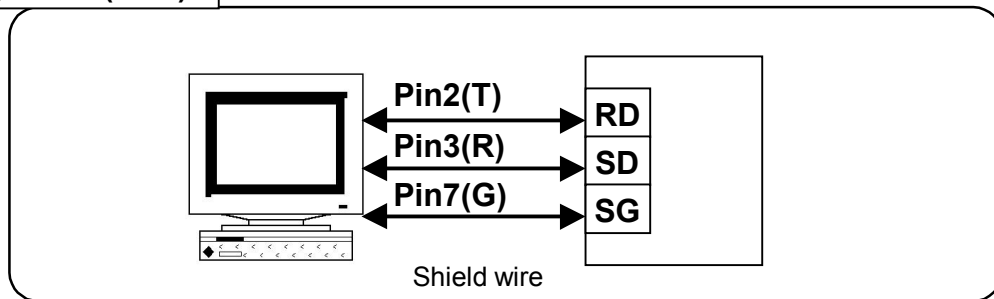
APPENDIX C. Wiring Diagram

1. RS232C

(1) 9PIN(DTE)

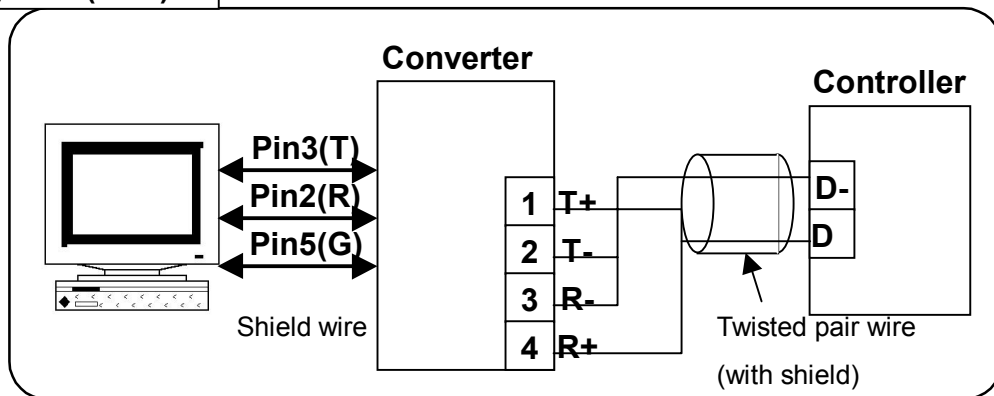


(2) 25PIN(DTE)

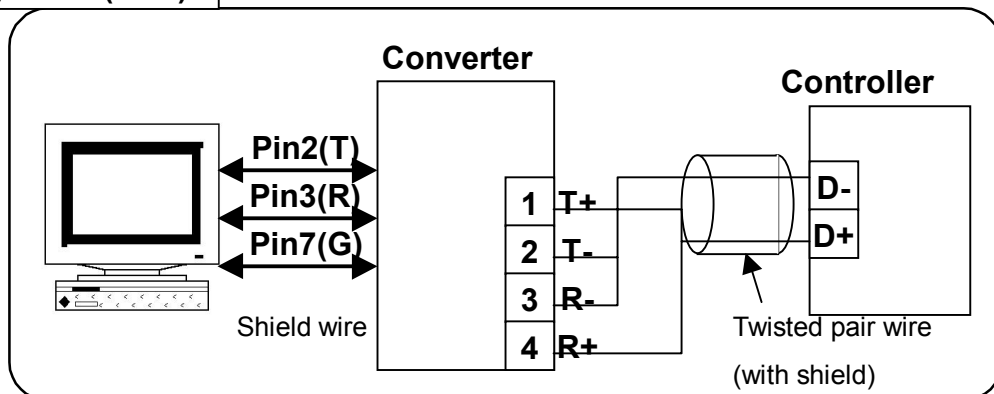


2. RS485

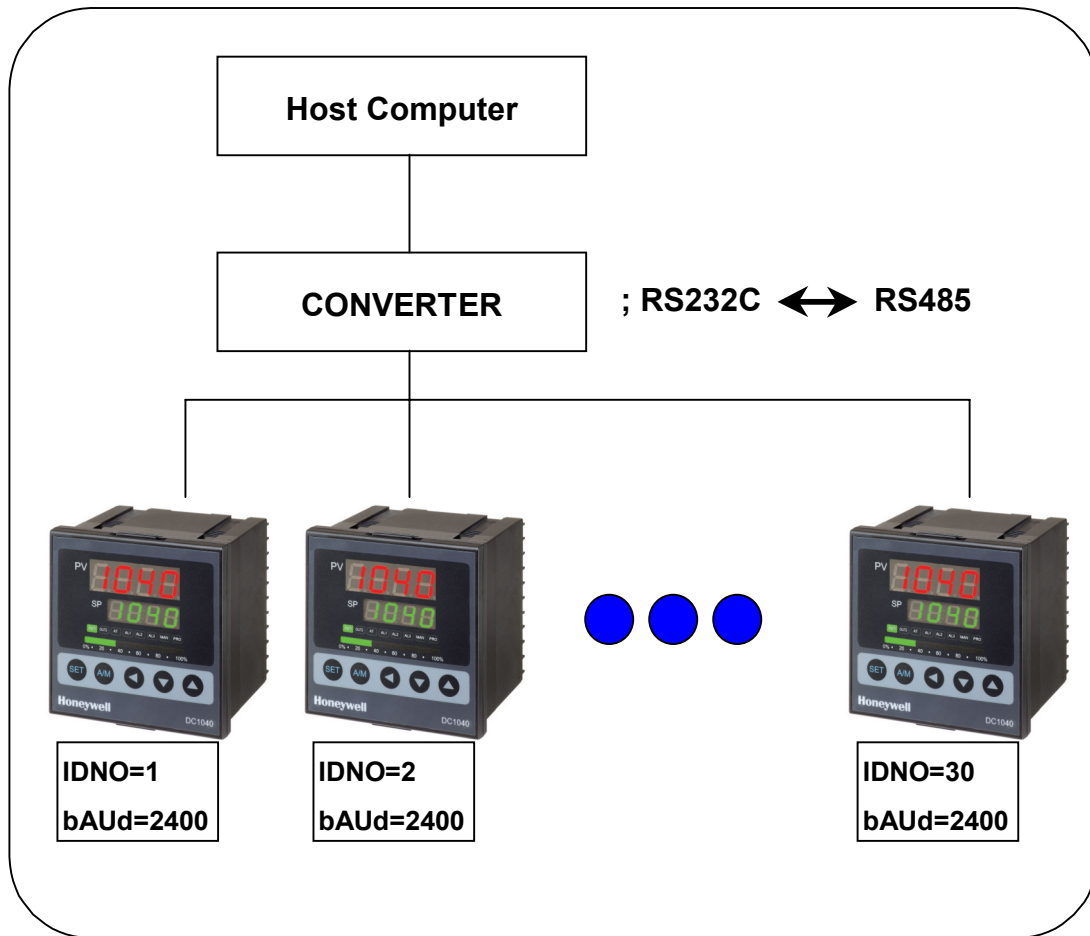
(1) 9PIN(DTE)



(2) 25PIN(DTE)



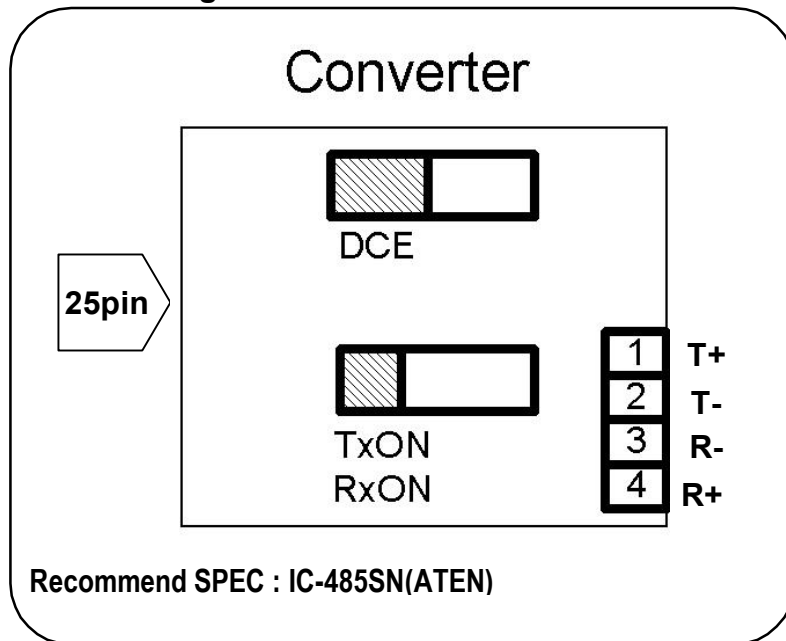
3. Connection Example



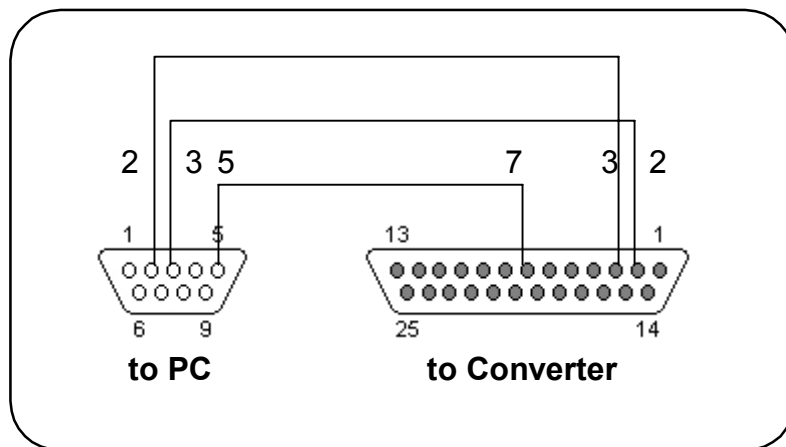
4. Terminal No.

TYPE	RS232			RS485		Availability
	RD	SD	SG	DX-	DX+	
DC1010	11	12	13	11	12	OUT1=1,2,3,7,A,B,C,D
DC1030	15	16	17	15	16	
DC1020	14	15	16	14	15	
DC1040	14	15	16	14	15	OUT1=all kinds of out1
DC1040-XXX-X□X	31	32	33	31	32	If the 2 nd input is selected. OUT1=1,2,3,7,A,B,C,D

5. Converter Setting



Connector 9 to 25 pin Convert



6. Procedures for communication

