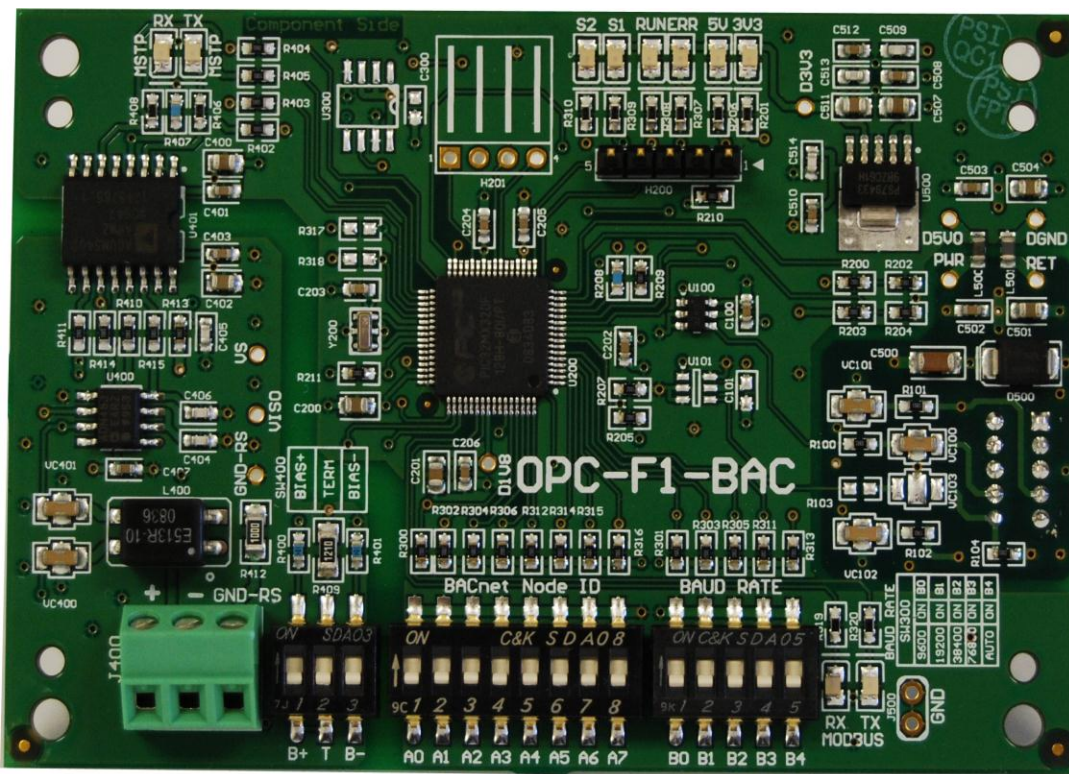# Fuji BACnet (OPC-F1-BAC) Start-Up Guide

For the

Fuji Electric FRENIC-Eco VFD

Description

Explains the Functioning and Set-up of the BACnet MSTP Communications Module as a supplement to the Fuji Electric Frenic-Eco VFD.

The instructions are effective as of July 2012

Related publications can be found on Fuji's website at www.americas.fujielectric.com

TABLE OF CONTENTS

1   EQUIPMENT SET-UP

1.1   Supplied equipment

- BACnet MSTP Communications Module, Part Number OPC-F1-BAC

1.2   Installing the Card

- Remove VFD cover and install OPC-F1-BAC BACnet MSTP com card into option port A of the VFD. This may require the removal of the OPC-F1-RS option card.

Mount BACnet Card on the drive

BACnet Card

RS-485 Port

Dipswitches
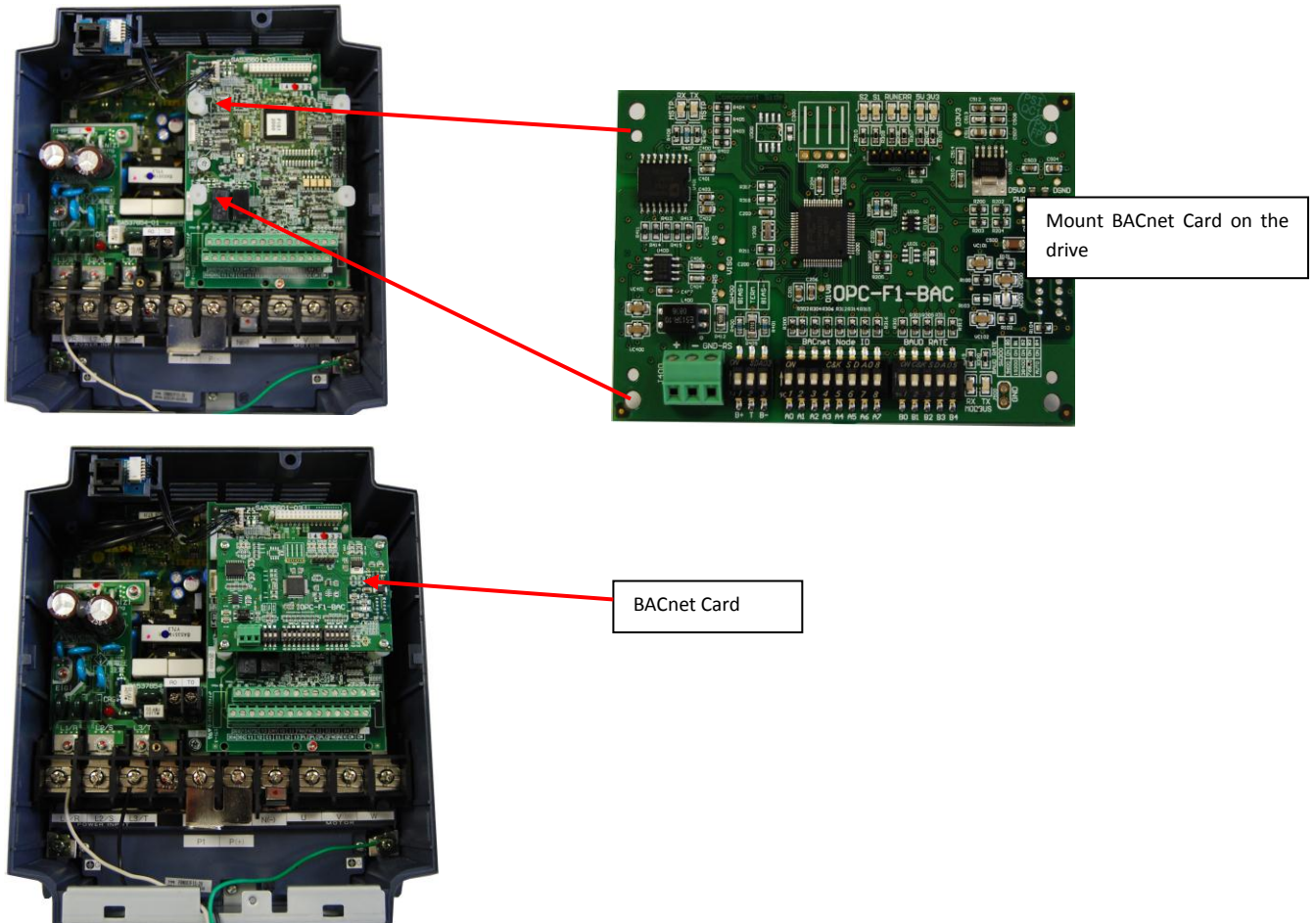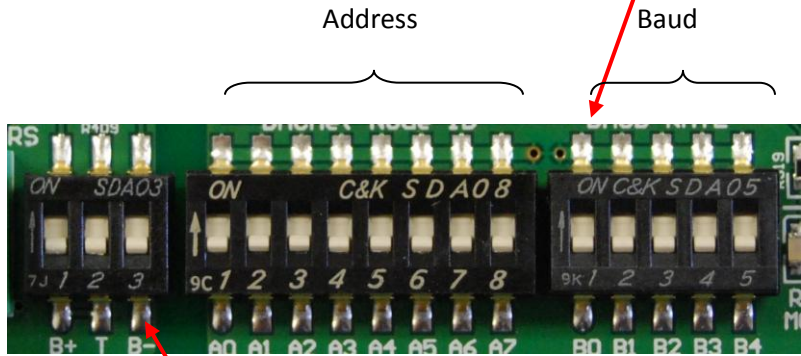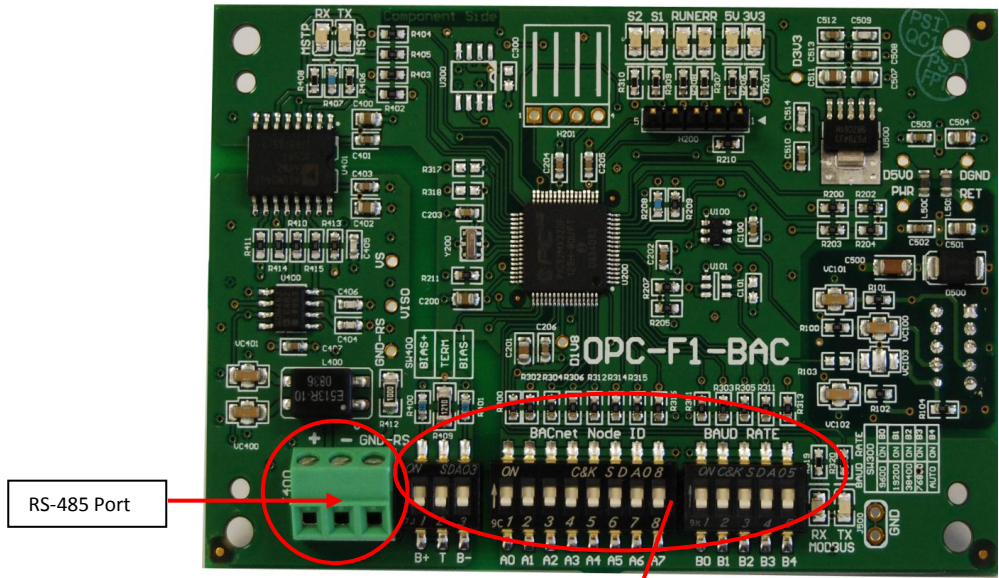
Address

Baud

Terminating and bias resistor dip switches.

- Set the BACnet device instance and baud rate using the address dipswitches. (Refer to Appendix A1).

- If required, set the terminating resistor and bias resistor dipswitches on.

- Connect the RS-485 port of the com card to the BACnet MSTP network.

- Reinstall the VFD cover.

- Power up the VFD.

2 OPERATION

2.1 Steps to set up communication with the Driver.

- Press the "PRG" button.

- Scroll to "1. Data Set Press FUNC/DATA"

- Scroll till the screen says Y01

- Press FUNC key.

- To set a parameter, scroll to the desired parameter, press FUNC, scroll to the desired selection and press FUNC again. To cancel press PRG.

- The settings are as follows:

Y01	Y02	Y03	Y04	Y05	Y06	Y07	Y08	Y09	Y10
1	0	2	4	0	0	1	0	0.01	0

Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20	Y98	Y99
1	0	2	4	0	0	1	0	0.01	0	0	0

- Set H30 to appropriate Frequency and Run Command Sources. E.G. Setting H30=-8 allows Frequency and Run Command control over Bacnet.

- After setting these correctly, restart the drive.

- After the restart, the MODBUS RX and TX lights should be flashing.

3 USING BACNET/MSTP

This section describes the points that are available through the BACnet/MSTP interface.

3.1 Binary Points

BACnet Object_Name	BACnet Object Type	Object Instance	Active Text	Inactive Text	R/W
Forward_Command	BV	0	Forward	Inactive	R/W
Reverse_Command	BV	1	Reverse	Inactive	R/W
Alarm_Reset	BV	2	Reset	Inactive	R/W
Forward_Rotation	BV	3	Forward	Inactive	R
Reverse_Command	BV	4	Reverse	Inactive	R
DC_Braking/Pre_exiting	BV	5	Braking	Inactive	R
Inverter_Shut_Down	BV	6	Shutdown	Inactive	R
Braking	BV	7	Braking	Inactive	R
DC_Voltage_Est	BV	8	Established	Inactive	R
Voltage_Limiting	BV	9	Limiting	Inactive	R
Current_Limiting	BV	10	Limiting	Inactive	R
Acceleration	BV	11	Accelerating	Inactive	R
Deceleration	BV	12	Decelerating	Inactive	R
Alarm_Relay	BV	13	Alarm	Inactive	R
Communications_Act	BV	14	Effective	Inactive	R
Busy	BV	15	Busy	Inactive	R
X1_Communications	BV	16	Active	Inactive	R/W
X2_Communications	BV	17	Active	Inactive	R/W
X3_Communications	BV	18	Active	Inactive	R/W
X4_Communications	BV	19	Active	Inactive	R/W
X5_Communications	BV	20	Active	Inactive	R/W
XF_Communications	BV	21	Active	Inactive	R/W

BACnet Object_Name	BACnet Object Type	Object Instance	Active Text	Inactive Text	R/W
XR_Communications	BV	22	Active	Inactive	R/W
X1_Final	BI	0	Active	Inactive	R
X2_Final	BI	1	Active	Inactive	R
X3_Final	BI	2	Active	Inactive	R
X4_Final	BI	3	Active	Inactive	R
X5_Final	BI	4	Active	Inactive	R
XF_Final	BI	5	Active	Inactive	R
XR_Final	BI	6	Active	Inactive	R
Y1_Communications	BO	0	Active	Inactive	R/W
Y2_Communications	BO	1	Active	Inactive	R/W
Y3_Communications	BO	2	Active	Inactive	R/W
Y5_Communications	BO	3	Active	Inactive	R/W
30_Communications	BO	4	Active	Inactive	R/W

3.1.1 Notes applicable to the binary points:

- BV 16-22 is the state of the X1-XR in the communications register(S06) where BI 0-6 contains the state of X1-XR as sent to the drive. To change the value sent to the drive by communications, the new value must be written to the communications registers (BV 16-22).

- Typically either BV22 OR BI6 will be used, they won't both be used at the same time. BV14 will be used in case X1 needs to be controlled through communications or BI0 will be used to monitor the value of the terminal.

3.2   Analog points

BACnet Object Name	BACnet Object Type	Object Instance	Units	R/W
Frequency_Command_Setpt	AV	0	Hz	R/W
PID_cmd	AV	1	%	R/W
Frequency_Command	AV	2	Hz	R
Output_Torque	AV	3	%	R
Input_Power	AV	4	%	R
Output_Current	AV	5	%	R
Output_Voltage	AV	6	V	R
Latest_Alarm	AV	7		R
Operation_Time	AV	8	h	R
DC_Link_Voltage	AV	9	V	R
Inverter_Air_Temp	AV	10	°C	R
Inverter_Heat_Sink_Temp	AV	11	°C	R
PID_Feedback	AV	12		R
PID_Output	AV	13		R
S_Parameter_Select	AV	14	S_Parameter_Select	R/W
S_Parameter_Value	AV	15	S_Parameter_Value	R/W
M_Parameter_Select	AV	16	M_Parameter_Select	R/W
M_Parameter_Value	AV	17	M_Parameter_Value	R
F_Parameter_Select	AV	18	F_Parameter_Select	R/W
F_Parameter_Value	AV	19	F_Parameter_Value	R/W
E_Parameter_Select	AV	20	E_Parameter_Select	R/W
E_Parameter_Value	AV	21	E_Parameter_Value	R/W
C_Parameter_Select	AV	22	C_Parameter_Select	R/W
C_Parameter_Value	AV	23	C_Parameter_Value	R/W

BACnet Object Name	BACnet Object Type	Object Instance	Units	R/W
P_Parameter_Select	AV	24	P_Parameter_Select	R/W
P_Parameter_Value	AV	25	P_Parameter_Value	R/W
H_Parameter_Select	AV	26	H_Parameter_Select	R/W
H_Parameter_Value	AV	27	H_Parameter_Value	R/W
J_Parameter_Select	AV	28	J_Parameter_Select	R/W
J_Parameter_Value	AV	29	J_Parameter_Value	R/W
Output_Current_Real	AV	30	A	R
Y_Parameter_Select	AV	31	Y_Parameter_Select	R/W
Y_Parameter_Value	AV	32	Y_Parameter_Value	R/W
W_Parameter_Select	AV	33	W_Parameter_Select	R/W
W_Parameter_Value	AV	34	W_Parameter_Value	R/W
X_Parameter_Select	AV	35	X_Parameter_Select	R/W
X_Parameter_Value	AV	36	X_Parameter_Value	R/W
Z_Parameter_Select	AV	37	Z_Parameter_Select	R/W
Z_Parameter_Value	AV	38	Z_Parameter_Value	R/W
Capacitor_Life	AV	39	%	R
Cooling_Fan_Time	AV	40	h	R
Motor_Run_Time	AV	41	h	R
Energy_Usage	AV	42	Energy_Usage	R
Latest_Fault	AV	43	Latest_Fault	R
Second_Fault	AV	44	Second_Fault	R
Third_Fault	AV	45	Third_Fault	R
Universal_AO	AO	0		R/W

3.2.1   Notes applicable to the analog points:

- The Parameter_Select AV's are used to enter the number of the parameter required from the specific function group, ex. AV14 set to 5 to read S05.

- The Parameter_Value AV's are used to read/write the value of the parameter specified by the Parameter_Select AV, ex. if AV14 is set to 5, AV15 will contain the value of S05. Writing to AV15 will set a new value for S05.

- If a requested parameter is not supported by the Eco, ex AV14 is set to 4 to read S04, AV15's reliability will be set to fault and a value of zero will be returned.

Appendix A. REFERENCE

Appendix A.1. Address Dipswitch Settings

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On	On	On	On	Off	On	On	Off	37246
On	On	On	On	Off	On	On	On	37247

A7	A6	A5	A4	A3	A2	A1	A0	Address
On	On	On	On	On	Off	Off	Off	37248
On	On	On	On	On	Off	Off	On	37249
On	On	On	On	On	Off	On	Off	37250
On	On	On	On	On	Off	On	On	37251
On	On	On	On	On	On	Off	Off	37252
On	On	On	On	On	On	Off	On	37253
On	On	On	On	On	On	On	Off	37254
On	On	On	On	On	On	On	On	37255

Appendix A.2. Baud Rate Dipswitch Settings

B4	B3	B2	B1	B0	Baud
Off	Off	Off	Off	On	9600
Off	Off	Off	On	Off	19200
Off	Off	On	Off	Off	38400
Off	On	Off	Off	Off	76800
On	Off	Off	Off	Off	Auto