3m.ANALYSING AND UNDERSTANDING OTHER COMPONENTS

3m.1 Inverter PowerFlex 40

The Allen-Bradley PowerFlex 40 AC drive is the smallest and most cost-effective member of the PowerFlex family of drives. The PowerFlex 40 is designed to be used for speed control in applications such as machine tools, fans, pumps and conveyors and material handling systems. The main features of the PowerFlex40 AC drive are:

- integral keypad for simple operation and programming,
- 4 digit display with 10 LED indicators for display of drive status,
- communication with PC using the RS-485 interface, Ethernet/IP (also DeviceNet, PROFIBUS DP, LonWorks and ControlNet interface are available),
- Autotune allows the user to take into account individual motor characteristics,
- Sensorless Vector Control provides exceptional speed regulation and very high levels of torque across the entire speed range of the drive,
- built-in PID controller
- Timer, Counter, Basic Logic and StepLogic functions
- built-in digital and analog I/O (2 analog inputs, 7 digital inputs (4 fully programmable), 1 analog output, 3 digital output)
- easy set-up over the network (RS NetWorx property)

3m.2 Configuration of the PowerFlex40

Configuration of the PowerFlex40 AC drive requires a correctly prepared RSLogix500 project. Adding the PowerFlex40 as a new module to an existing project is done in the following way:

- Open the I/O Configuration folder in the existing RSLogix500 project. Expand the folder tree and find the 1769-L35 Ethernet Port LocalENB item. Click the right mouse button on the Ethernet item to activate the context menu and select New Module....
- Select **PowerFlex 40-E** from the list and click the **OK** button. The **New Module** properties window will appear (Fig. 3m.1). The following parameters should be entered: Name: PF40E

IP Address: 192.168.1.5

Revision: 3.3

Type: Vendor: Parent:	Allen-Bradle LocalENB		40 Drive via 22-0	Address / Host Na	ame
Name:	PF40E		\geq	IP Address:	192 . 168 . 1 . 5
Description:	inwerter Po	oweFlex40 + CO	MM-E	C Host Name:	
Module Def Series: Revision:	inition	None 3.3	Change	J	
Electronic K Connection: Data Forma		Compatible M Datalinks 0 Datalinks	4odule		

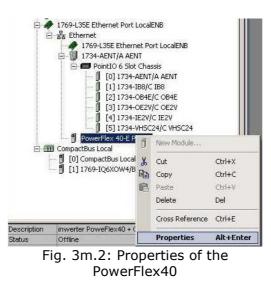
Fig.3m.1 The New Module properties window

- 3) Press the **OK** button to save the configuration.
- 4) The configuration can be downloaded to the CompactLogix controller. Select the Communication) Download item from the program menu. If the configuration download is successful the I/O OK indicator will be green.

3m.3 Detailed configuration of the PowerFlex40

 Open the I/O Configuration folder in the existing RSLogix500 project. Expand the folder tree and find PowerFlex 40-E. Click the right mouse button and select Properties (Fig. 3m.2)





2) Select the last tab – **Drive**, the window presented in Fig. 3m.3 will appear.



Fig. 3m.3: The 'Drive' tab of the Module Properities

3) Select **Parameter list** from the menu PowerFlex 40, the parameter window is presented in Fig. 3m.4.

Module 5

2 3 3 4 5 5 6 6 7 7 8 8 9 9 9 10 12 13 13 14 15 5 16 19 9 20 21 17 16 18 22 23 32 24 22 5 26 28 28 29 31 33 33 33 33 34 34 34 34 34 33 33 34 34	Culcult Freq Commanded Freq Output Current Output Vakage Drive Status Fault 3 Code Fault 3 Code	00000000000000000000000000000000000000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.0 0.0 0.00 0.00 0.000000 0.0000000 0.000000	9999 9999 9999 255 00000 00000 99,99 7000 9999	
2 3 3 4 5 5 6 6 7 7 8 8 9 9 9 10 12 13 13 14 15 5 16 19 9 20 21 17 16 18 22 23 32 24 22 5 26 28 28 29 31 33 33 33 33 34 34 34 34 34 33 33 34 34	Commonder Freq Culput Current Output Vorkage DC Bus Vorkage DC Bus Vorkage Drive Status Fault 1 Code Fault 3 Code Process Display Control Source Control Source Analog In 0-107 Analog In 0-208 Analog In 0-208 Analog In 0-208 Analog In 0-208 Analog In 0-208 Analog In 0-208 Analog In 0-208 Courter Status Timer Status Stip Logic Status	0 00000000000000 0000000000000 00000000	00 A 0 V 0 V 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.000 00000000 00000000 00000000 000000	4.60 999.9 1200 00000 9999 9999 255 00000 00000 00000 99.99 9999 11111 9999.9	
3 3 4 5 5 6 6 7 7 8 8 9 9 10 12 2 13 3 14 14 15 5 16 6 17 7 17 18 18 19 20 2 12 2 2 3 3 2 4 2 5 2 6 2 8 2 8 2 8 2 8 2 8 3 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 3 3 3 3 4 1 3 2 2 5 5 2 6 5 2 8 1 1 3 2 2 5 5 2 6 5 2 8 1 1 3 2 2 5 5 2 6 5 2 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Output Verkage Octiput Verkage Drive Skatus Fault 1 Code Fault 2 Code Fault 2 Code Fault 2 Code Fault 3 Code Process Deplay Control Source Control Source Cource Status Control Source Cource Status Control Source Cource Status Stg Logis Source Status	00000000000000000000000000000000000000	.0 V 8 V 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.0 00000000 0 00000000 00000000 000000	999.9 1200 0000 9999 9999 9999 255 00000 00000 00000 99.99 7000 9999 11111 999.9	
4 4 5 5 6 7 7 8 8 9 9 10 0 12 12 13 13 14 4 15 5 16 16 117 17 18 8 19 20 20 21 22 22 23 23 24 25 26 8 29 31 32 24 35 26 8 33 33 34 1	Output Verkage Drive Skatus Fault 1 Code Fault 2 Code Fault 2 Code Fault 3 Code Process Deploy Control Source Control Inn Status Comm Skatus Comm Skatus Courper Skatus Tempo Rever Courper Skatus Temer Skatus Terceue Current	00000000000000000000000000000000000000	.0 V 8 V 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.0 00000000 0 00000000 00000000 000000	999.9 1200 0000 9999 9999 9999 255 00000 00000 00000 99.99 7000 9999 11111 999.9	
5 5 6 6 7 7 7 8 8 9 9 9 10 0 12 13 13 14 15 5 15 17 17 18 15 6 15 7 7 7 18 22 2 2 2 3 3 2 4 2 5 5 2 6 6 2 8 2 8 2 8 2 9 2 9 3 1 3 2 4 3 3 3 3 3 4 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	DC Bus Vokage Drive Status Fault 3 Code Fault 3 Code Fault 3 Code Process Deplay Control Source Control Source Testport Colo Analog In -0107 Analog In -0107 Analog In -0107 Analog In -0107 Analog In -0107 Courter Status Status Status Status Status	00000000000000000000000000000000000000	0 V 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0 00000000 0 0 00000000 00000000 000000	1200 0000 9999 9999 255 00000 00000 00000 99,99 7000 9999 11111 999.9	
6 7 8 9 9 10 12 13 14 15 16 16 17 16 19 20 21 22 23 24 25 26 23 24 25 26 23 31 24 25 33 33 33 33 34	Drive Schus Fault 3 Code Fault 3 Code Fault 3 Code Fault 3 Code Process Display Control Source Control Iswitz Drive Type Elapsed Run Time Testpork Doka Analog In 4-20mA Output Power Output Power Courter Status Timer Status Timer Status Timer Status	00000000000000 00000000000000 00000000	00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		00000000 0 0 0 0 00000000 00000000	00000 9999 9999 9999 255 00000 00000 999.99 7000 999.99 11111	
7 8 9 9 10 12 13 14 15 16 17 17 18 19 20 21 22 23 24 25 23 24 25 23 24 25 23 33 33 33 33 34	Fault 3 Code Fault 3 Code Fault 3 Code Process Display Control Source Control Source Control Swaus Comm Status Comm Status Comm Status Comm Status Comm Status Control Swaus Tostpont Doka Analog In - 100 Analog In - 100 Courter Status Stip Logic Status Stip Logic Status	00000000000000 00000000000000 00000000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00000000 00000000 00000000 000000	9999 9999 9999 255 0000 00000 99,99 7000 99999 11111 999.9	
8 99 100 122 13 14 15 16 17 17 18 19 20 21 21 22 23 24 25 26 28 29 31 32 33 33 33 34	Fault 3 Code Pault 3 Code Pault 3 Code Process Dipplay Control Source Control Ins Robus Comm Stabus Comm Stabus Control Sty Ver Drive Type Elapsed Rum Time Testporte Data Analog In 0-100 Analog In 0-100 Stabus Timer Stabus Timer Stabus	00000000000000000000000000000000000000	0 0 0 00 00 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00000000 00000000 00000000 0.00 0 000000	9999 9999 255 00000 00000 99,99 7000 9999 11111 999.9	
9 10 12 13 14 15 16 17 18 20 21 23 24 25 26 28 29 31 2 33 34	Fault 3 code Process Display Control Source Control Source Control Source Control Switus Comm Status Comm Status Comm Status Control Switus Porter Type Elapsed Ruin Time Testport Cole Analog In - 100 Analog In - 100 Courter Status Stip Logic Status Stip Logic Status	00000000000000000000000000000000000000	0 0 00 00 00 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00000000 00000000 00000000 000000	9999 255 00000 00000 99.99 7000 9999 11111 999.9	
10 12 13 14 15 16 17 17 18 19 20 21 17 22 23 23 24 25 26 28 29 29 31 32 23 33 33 33 34	Process Deploy Control Source Control In Status Org In Status Control Status Control SW Ver Drive Type Elapsed Rum Time Testport Doka Analog In 0-10W Analog I	00000000000000000000000000000000000000	0 00 00 00 00 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00000000 00000000 0.000 0 000000	9999 255 00000 00000 99.99 7000 9999 11111 999.9	
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 28 29 31 22 24 25 26 28 29 31 32 33 33 34	Control Source Control In Status Control In Status Comm Status Comm Status Control Status Drive Type Elapssel Aum Time Testport Doke Handag In A-100M Analog In A-100M Analog In A-100M Analog In A-100M Analog In A-100M Analog In A-100M Analog In A-200M Output Power Output Power Output Power Courter Status Timer Status Timer Status	00000000000000000000000000000000000000	00 00 00 0 ×10h 00 .0 % .0 % 00 kW .0 kW	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000000 000000000 000000000 0.00 0 0 000000	00000 00000 99,99 7000 9999 11111 999.9	
13 14 15 16 17 18 20 21 22 23 24 25 26 28 29 31 32 33 34	Contril In Status Dig In Status Comm Status Control SW Ver Drive Type Elapsed Run Time Testponk Data Analog In 0-10W Analog In	00000000000000000000000000000000000000	00 00 0 ×10h 0 ×10h 00 .0 % .0 % 00 kW .0 deg	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000000 000000000 0 0 000000000	00000 99,99 7000 9999 11111 999.9	
14 15 16 17 18 19 20 21 22 23 24 25 26 28 29 31 32 33 33 34	Dig In Status Commi Status Control SW Ver Drive Type Elapsied kun Time Testporit Doka Analog In 0-100/ Analog In 0-200A Output Power Courbut Power Foth Drive Testp Courbut Status Timer Status Stp Logic Status Torque Current	00000000000000000000000000000000000000	00 00 0 ×10h 0 ×10h 00 .0 % .0 % 00 kW .0 deg	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000000 000000000 0 0 000000000	00000 99,99 7000 9999 11111 999.9	
15 16 17 18 19 20 21 22 23 24 25 26 28 29 31 32 33 34	Comm Status Control SW Ver Drive Type Elapsed Run Time Testpoint Date Analog In 0-10V Analog In 0-10V Analog In 0-10V Analog In 0-10V Analog In 0-20M Cutput Power Output Power Output Power Cutput Return Timer Status Stp Logic Status Torque Current	00000000000000000000000000000000000000	00 00 0 x10h 00 .0 % .0 % 00 kW .0 deg	0 0 0 0 0 0 0 0 0 0 0	000000000 0.00 0 000000000 0.0 0.0	00000 99.99 7000 9999 11111 999.9	
16 17 18 19 20 21 22 23 24 25 26 28 29 31 32 33 33 34	Control SW Ver Drive Type Elapsed Run Time Testpoint Data Analog In 9-10V Analog In 9-10V Analog In 9-10V Cutput Power Cutput Power Cutput Power Cutput Power Counter Status Timer Status Stp Logic Status Torque Current	0.000000000000000000000000000000000000	00 0 ×10h 00 .0 % .0 % 00 kW .0 deg	000000000000000000000000000000000000000	0.00 0 0 00000000 0.0 0.0	99.99 7000 9999 11111 999.9	
17 18 19 20 21 22 23 24 25 26 28 29 31 32 33 33 34	Drive Type Elapsed Run Time Testpont Date Analog in 0-10V Analog in 0-10V Analog in 1-20MA Output Power Output Power Fotr Drive Temp Counter Status Status Status Status Status	00000000000000000000000000000000000000	0 x10h 0 x10h 00 % .0 % .0 % 00 kW .0 deg	000000000000000000000000000000000000000	0 0 00000000 0.0 0.0	7000 9999 11111 999.9	
18 19 20 21 22 23 24 25 26 28 29 31 32 33 33 34	Elapsed Run Time Testpork Doka Analog In 0-10V Analog In 4-20MA Output Power Output Power Foth Drive Temp Counter Status Timer Status Stip Logic Status Torque Current	C C 0,	0 ×10h 00 % .0 % .0 % 00 kW .0 deg	000000000000000000000000000000000000000	0 000000000 0.0 0.0	9999 11111 999.9	
19 20 21 22 23 24 25 26 29 31 32 33 33 34	Testpont Data Analog in 0-10V Analog in 4-20mA Output Power Cutput Power Counter Status Timer Status Timer Status Torque Carrent	C C 0,	00 1.0 % 1.0 % 00 KW 1.0 deg	000000000000000000000000000000000000000	00000000 0.0 0.0	11111 999.9	
20 21 22 23 24 25 26 28 29 31 32 33 33 34	Analog In 0-10V Analog In 4-20MA Output Power Output Power Foth Drive Temp Counter Status Timer Status Stp Logic Status Torque Current	C C 0,	.0 % .0 % 00 kw .0 deg	0	0.0 0.0	999.9	
21 22 23 24 25 26 28 29 31 29 31 32 33 33 34	Analog In 4-20mA Output Power Output Powr Fotr Drive Temp Counter Status Timer Status Stp Logic Status Torque Current	C 0,	.0 % 00 kw .0 deg	0	0.0		
22 23 24 25 26 28 29 31 32 33 33 34	Output Power Output Powr Fotr Drive Temp Counter Status Timer Status Stp Logic Status Torque Current	0.	00 kW .0 deg	0			
23 24 25 26 28 29 31 32 33 33 34	Output Powr Fetr Drive Temp Counter Status Timer Status Stp Logic Status Torque Current		.0 deg	0	0.00	99.99	
24 25 26 29 31 32 33 34	Drive Temp Counter Status Timer Status Stp Logic Status Torque Current				0.0	999.9	
25 26 29 31 32 33 34	Counter Status Timer Status Stp Logic Status Torque Current		0 C	0	0	120	
26 28 29 31 32 33 34	Timer Status Stp Logic Status Torque Current		0	0	0	9999	
28 29 31 32 33 34	Stp Logic Status Torque Current	10	0 Sec	0	0	9999	
29 31 32 33 34	Torque Current		0	0	0	8	
32 33 34		0.	00 A	0	0.00	4.60	
32 33 34	Motor NP Volts		30 V	230	34	230	
34	Motor NP Hertz		60 Hz	60	10	400	
	Motor OL Current	2	.3 A	23	0.0	4.6	
	Minimum Freq	0	.0 Hz	0	0.0	400.0	
35	Maximum Freq		60 Hz	60	0	400	
36	Start Source	Key	ad	0	Keypad	Mont	
37	Stop Mode	Ramp,	OF	0	Ramp, CF	Ramp	
38	Speed Reference	Drive	Pot	0	Drive Pot	Anig I	
- 39	Accel Time 1	10	.0 Sec	100	0.0	600.0	
40	Decel Time 1	10	.0 Sec	100	0.1	600.0	
41	Reset To Defaits	Ready/J	de	0	Ready/Idle	Facto	
43	Motor OL Ret	Disab		0	Disabled	Enabled	
	Digital Int Sel	Preset P		4	Not Used		
	Digital In2 Sel	Preset R		4	Not Used		
	Digital In3 Sel		cal	5	Not Used		
	Digital In4 Sel	Dog Forw		11	Not Used		
	Relay Out Sel	Ready/Fr		0			
	Relay Out Level		0	0	0		
	Opto Out I Sel	MotorRunn		2	Ready/Fault		
	Opto Out i Level	Non-	0	0	0		
	Opto Out2 Sel	At Frequer		1	Ready/Fault		
	Opto Out2 Level		0	0	0		
	Opto Out Logic	1-NO/2-			1-NO / 2		
					OutFreq 0-10		
	Analog Out Sel	OutFreq 0		100	0	800	
	Analog Out Sel Analog Out High Accel Time 2	OutFreq 0	00 % .0 Sec	200		600.0	

Fig. 3m.4. The Parameter List window.

Only the parameters on a white background can be changed. The selected parameters are shown in Table.3m.1. Detailed descriptions of all parameters are included in [1].

Table 3m.1:	Tab	le	3m.	1:
-------------	-----	----	-----	----

ID	Name of parameter	Description
31	31 Motor NP Volts	Set to the motor nameplate rated volts.
32	32 Motor NP Hertz	Set to the motor nameplate rated frequency.
33	33 Motor OL Current	Set to the maximum allowable motor current.
34	34 Minimum Freq	Sets the lowest frequency the drive will output continuously.
35	35 Maximum Freq	Sets the highest frequency the drive will output.
36	36 Start Source	Sets the control scheme used to start the drive.
37	37 Stop Mode	Active stop mode for all stop sources

|--|

38	38 Speed reference	Sets the source of the speed reference to the drive.			
39	39 Accel Time 1	Sets the rate of acceleration for all speed increases.			
40	40 Decel Time 1	Sets the rate of deceleration for all speed decreases.			
41	Reset To Defalts	Resets all parameter values to factory defaults.			
43	Motor OL Ret	Enables/disables the Motor Overload Retention function.			
51	Digital In1 Sel (I/O Terminal 05)	Selects the function for the digital inputs.			
52	Digital In2 Sel (I/O Terminal 06)	Selects the function for the digital inputs.			
53	Digital In3 Sel (I/O Terminal 07)	Selects the function for the digital inputs.			
54	Digital In4 Sel (I/O Terminal 08)	Selects the function for the digital inputs.			
55	Relay Out Sel	Sets the condition that changes the state of the output relay contacts.			
56	Relay Out Level	Sets the trip point for the digital output relay if the value of 55 [Relay Out Sel] is 6, 7, 8, 10, 16, 17, 18 or 20.			
58	Opto Out1 Sel	Determines the operation of the programmable opto outputs.			
61	Opto Out2 Sel				
59	Opto Out1 Level	Determines the on/off point for the opto outputs when 58 or 61			
62	Opto Out2 Level	[Opto Outx Sel] is set to option 6, 7, 8, 10, 16, 17, 18 or 20.			
64	Opto Out Logic	Determines the logic (Normally Open/NO or Normally Closed/NC) of the opto outputs.			
65	Analog Out Sel	Sets the analog output signal mode (0-10V, 0-20mA, or 4-20mA).			
66	Analog Out High	Scales the Maximum Output Value for the 65 [Analog Out Sel] source setting.			
67	Accel Time 2	When active, sets the rate of acceleration for all speed increases except jog.			
68	Decel Time 2	When active, sets the rate of deceleration for all speed decreases except jog.			
69	Internal Freq	Provides the frequency command to the drive when 38 [Speed Reference] is set to 1 "Internal			
		Freq".			

70	Preset Freq 0	Provides a fixed frequency command value when 51-53 [Digital
71	Preset Freq 1	Inx Sel] is set to 4 "Preset
72	Preset Freq 2	Frequencies".
73	Preset Freq 3	
74	Preset Freq 4	
75	Preset Freq 5	
76	Preset Freq 6	
77	Preset Freq 7	
78	Jog Frequency	Sets the output frequency when a jog command is issued.
79	Jog Accel/Decel	Sets the acceleration and deceleration time when a jog command is issued.
80	DC Brake Time	Sets the length of time that DC brake current is "injected" into the motor.
81	DC Brake Level	Defines the maximum DC brake current, in amps, applied to the motor when 37 [Stop Mode] is set
		to either "Ramp" or "DC Brake".
82	DB Resistor Sel	Enables/disables external dynamic braking.
83	S Curve %	Sets the percentage of acceleration or deceleration time that is applied to the ramp as S Curve.
84	Boost Select	Sets the boost voltage (% of 31 [Motor NP Volts]) and redefines the Volts per Hz curve.
126	Motor NP FLA	Set to the motor nameplate rated full load amps.
127	Autotune	Provides an automatic method for setting 128 [IR Voltage Drop] and 129 [Flux Current Ref], which affect sensorless vector performance.
128	IR Voltage Drop	Value of volts dropped across the resistance of the motor stator.
129	Flux Current Ref	Value of amps for full motor flux.
132	PID Ref Sel	Enables/disables PID mode and selects the source of the PID reference.
133	PID Feedback Sel	Selects the source of the PID feedback.

134	PID Prop Gain	Sets the value for the PID proportional component when the PID mode is enabled by 132 [PID Ref Sel].
135	PID Integ Time	Sets the value for the PID integral component when the PID mode is enabled by 132 [PID Ref Sel].
136	PIDDiff Rate	Sets the value for the PID differential component when the PID mode is enabled by 132 [PID Ref Sel].
137	PID Setpoint	Provides an internal fixed value for process setpoint when the PID mode is enabled by 132 [PID Ref Sel].
138	PID Deadband	Sets the lower limit of the PID output.
139	PID Preload	Sets the value used to preload the integral component on start or enable.

The parameters can be uploaded from the inverter and downloaded to the inverter. Click the appropriate icon in the Module Properties window (Fig. 3m.5) and select **PowerFlex40** from the list. Next, select the type of parameters – parameters of inverter and parameters of COMM-E card are available. Click the Download/Upload button to proceed.

×	Module Properties: LocalENB (PowerFlex 40-E 3.3)	
	General Connection Module Info Port Configuration Drive	1
	Priverflex 40 Parameter List Powerflex 40 122-COMM-E Powerflex	
	Status: Offline OK Cancel Apply	Help

Fig.3m.5. Description of the icon function

Another way to configure the PowerFlex40 inverter is Velocity StepLogic Setup Wizard. To activate the Wizard click the appropriate icon in the Module Properties window (Fig.

3m.5). The window of the Wizard will appear (Fig. 3m.6). The Wizard goes through seven steps to configure the parameters of the inverter.

Manager and a second	ity StepLogic Setup Wizard - (1 of 11)	×
Wizard Step	Welcome to the PowerFlex 40/40P Velocity StepLogic Setup Wizard	
YE Step 3 E Step 4 E Step 5 YE Step 6 E Step 7 T Step 7 Pending Changes	 This wizard provides the capability to program Velocity StepLogic Functions for PowerFlex 40 and PowerFlex 40P drives. The graphs used in this wizard are for configuration purposes only. Actual performance may vary and will depend on application conditions, such as load. Tip: Hovering the cursor over an icon 9 e or text box on a wizard page will display additional information as a tip message. 	
	Wizard Revision 1.3.19	
	Cancel Cancel Next> Finish	»

Fig. 3m.6. The Velocity StepLogic Setup Wizard window

3m.4 HMI (Human Machine Interface) PanelView Plus 600

The PanelView Plus 600 is an operator interface. It is equipped with a 5.5 inch display with touch screen. It works from Windows CE. The panel offers many possibilities for presenting data such as animations, trends and data collection. Visualization can be implemented using the RSView Studio environment. Communication with the panel is through the Ethernet interface. Data exchange between Ethernet/IP devices and PanelView uses the OPC client/server mechanism.

The existing PanelView Plus600 has the Ethernet/IP parameters correctly configured. To check the configuration, close the active project and find the key **Go To Configure**. The main window of the operating system will appear (Fig. 3m.7).

Module 5

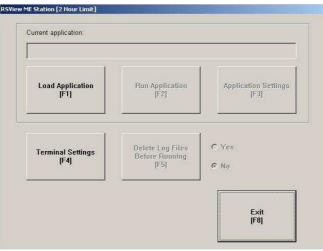


Fig. 3m.7. The Panel View configuration window

Next, click the **Terminal Settings** [F4] button and check the **Network and Communications**) **Network Connections**) **Network Adapters**) **Built-in Ethernet Controller** menu. The valid parameters are:

IP Address: 192.168.1.3

Subnet Mask: 255.255.255.0

Gateway: 0.0.0.0

Menu **Terminal Settings** allows the user to check or change other parameters:

- Alarms alarm parameters
- **Diagnostic Setup** the choice of diagnostic messages to be displayed
- **Display** display parameters (brightness, contrast, temperature, cursor, etc)
- File Management manage the files in the memory panel (load, copy, delete, etc)
- Font Linking font settings
- **Input Devices** settings of the USB devices (keyboard, mouse, etc)
- Print Setup settings of the printing method
- Startup Options startup method: running application or parameter window
- **System Event Log** list of the system logged messages
- System Information firmware version, working time, etc
- Time/Date/Regional Settings actual date and time

To prepare your own HMI interface you can use **RSView Studio** software.

Creating the new project:

- 1. click File -> New application, the window (Fig. 3m.8) will appear
- 2. fill in *Application Name* in the **New** tab, select language, prepare the short description (optional) and click **Create**.

RSView Studio - Machine Edition [Demo Mode]	
File View Application Tools Window Help	
Deporer	New/Open Machine Edition Application
	Clear Clear

Fig. 3m.8. Creating of the new PanelView project

3. The empty project is created. Click the **Project Settings** – the window will appear (Fig.3m.9). Set the **Project window size** parameter to 320x240. It is maximum resolution of the PanelView

Project Settings - /	scada1/	
General Runtime		
Project window size :	320x240	
Wjdth :	320	
Height:	240	
	,	
	OK Cancel	<u>H</u> elp

Fig. 3m.9. Project Settings window

4. Prepare correct configuration of Communication. First check available devices. For this purpose click the **Communications** tab (Fig. 3m.10).

Module 5



Fig. 3m.10. Communications tab

5. Define the **Local** and **Target** communication path: **Local** is a data source device for testing HMI applications, **Target** is a data source device for the final application. In particular, the Local and Target path can be the same. To define the communication path find *RSLinx Enterprise Communication Setup* bookmark in the project tree (Fig. 3m.11).

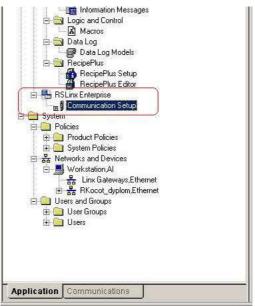


Fig. 3m.11. Communication setup

 Select Create a new configuration, and click the Finish button – the window Communication Setup will appear (Fig. 3m.12). Select Local tab and create new Device Shortcuts – Add button. As a local source device select the *CompactLogix System.* Target configuration we can copy from Local setting by using the Copy button. Module 5

Add a device shortcut that specifies two communication Setup - RNA://\$Local/side/side/side/side/side/side/side/side	
Add <u>R</u> emove Apply	

Fig. 3m.12. The Communicaton Setup window

7. To apply the configuration push the **OK** button.

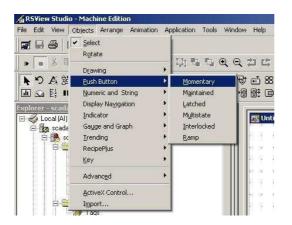
Now we are ready for developing visualization of our process. First prepare a virtual display. *ALARM, DIAGNOSTICS* and *INFORMATION* displays are created automatically in the section *Graphics->Displays*. The new displays will be added there. To do this, right-click *Displays* – from the context menu and select *New* (Fig. 3m.13).



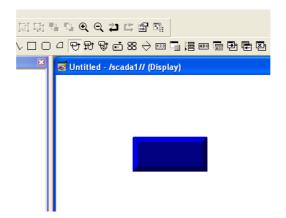
A new empty window with edited display will be opened. We can add several graphic elements to visualize our process. You can find detailed descriptions of the available elements in [2] and [3]

As an example we can create a momentary pushbutton. For this purpose:

1. Select the *Object Push Button Momentary* item from the menu.



2. Left-click and drag the mouse pointer up to create a rectangle.



3. Double-click on the rectangle to open the **Properties** window. Set the appropriate parameters such as: appearance, button settings, caption, etc.



	够吓够心思啊猫圈都四哥四哥必然适量♀₨♀♀★★★★★
	:d - /scada1// (Display)
Vlaściwości: Momentary Push Button	Właściwości: Momentary Push Button
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 Define the corresponding tag. Click the **Connections** tab and browse the data by using **Tag Browser**. Refresh the actual folder – all available network tags will be displayed.

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Select the appropriate tag – now the pushbutton will be connected with the tag value.

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Bibliography

[1] Allen-Bradley. Adjustable Frequency AC Drive FRN 1.xx – 4.xx User Manual. Rockwell Automation, January 2007

[2] Rockwell Software. RS View Machine Edition. User's Guide vol.1, Rockwell Automation, July 2005

[3] Rockwell Software. RS View Machine Edition. User's Guide vol.2, Rockwell Automation, July 2005