Quick Startup Guide for SIMOVERT MASTERDRIVES 6SE70 VC

Vector Control

Section 1: Parameterization of Base Drive

Section 2: Parameterization of Rectifier

Section 3: Simovis Trace Setup Method

Section 4: When Should a Drive be re-Tuned

DROM-02069

We reserve the right to modify functions, technical data, standards, drawings and parameters.

We have checked the contents of this document to ensure that they coincide with the described hardware and software. However, deviations cannot be completely ruled-out, so we cannot guarantee complete conformance. However, the information in this document is regularly checked and the necessary corrections will be included in subsequent editions. We are thankful for any recommendations or suggestions.

e-mail: mailto:drives.support@sea.siemens.com

NOTE:

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please contact your local Siemens office.

Further, the contents of these instructions shall neither become a part of nor modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Siemens Energy & Automation. The warranty contained in the contract between the parties is the sole warranty of Siemens Energy & Automation. Any statements contained herein do not create new warranties nor modify the existing warranty.

Note:

This Quick Startup Guide is not an autonomous document, but is intended to direct users to the section in the **Operating Instructions** which are important for start-up. Thus, these brief instructions can only be completely valid when used in conjunction with the Operating Instructions. It is especially important to observe the warning and information regarding potential hazards in the Operating Instructions.

Warning:

- Electrical equipment has parts an components which are at hazardous voltage levels.
- If the warning information in the **detailed Operating Instructions** is not observed, this can result in severe bodily injury or material damage.
- Only appropriately qualified personnel may work with this equipment.
- These personnel must be knowledgeable with all of the warning information and service/maintenance measures of the **Operating Instruction.**

Perfect and safe operation of this equipment assumes professional transport, storage, erection and installation as well as careful operating control and service.

Section 1:

Parameterization of Base Unit

SIMOVERT MASTERDRIVES 6SE70 VC

Vector Control

1.1 Power Section Defintion

1.2 Factory Reset

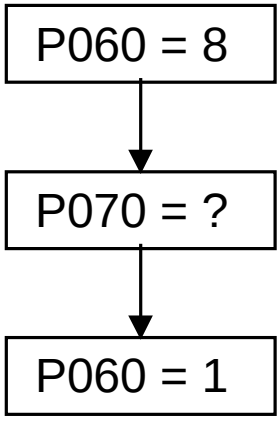
1.3 Basic Start-up
1.3.1 Volts/Hz without encoder feedback
1.3.2 Volts/Hz with encoder feedback
1.3.3 Vector Control without encoder feedback
1.3.4 Vector Control with encoder feedback
1.4 Drive Control Word

1.5 Communication Board Configuration

Note: Refer to Operating Instruction Manual for power and control connections.

1.1 Power Section Definition

Note: Power Section is pre-defined at the factory. Power Section Definition is required if a new board CUVC board is put into the drive or boards are switched between units with different ratings. Drive should be defaulted and re-parameterized after Power Section Definition.



Select “Power Section Definition” Menu

Input Code for unit (PWE) (Refer to Compendium section 6.3 or use the bookmark “PWE Listing” or check the following table)

Return to Parameter Menu

Unit List
P070: Parameter Value (PWE)
P072: Rated Output Current in Amps In[A]

Frequency Converter
AC-AC type
3 AC 200V to 230V

PWE	Order Number	In[A]*1
14	6SE7021-1CA60	10.6
21	6SE7021-3CA60	13.3
27	6SE7021-8CB60	17.7
32	6SE7022-3CB60	22.9
39	6SE7023-2CB60	32.2
48	6SE7024-4CC60	44.2
54	6SE7025-4CD60	54.0
64	6SE7027-0CD60	69.0
70	6SE7028-1CD60	81.0
13	6SE7031-0CE60	100.0
29	6SE7031-3CE60	131.0
41	6SE7031-6CE60	162.0
87	6SE7032-0CE60	202.0

Frequency Inverter
DC-AC type
DC 270V to 310V

PWE	Order Number	In[A]*1
15	6SE7021-1R60	10.6
22	6SE7021-3RA60	13.3
28	6SE7021-8RB60	17.7
33	6SE7022-3RB60	22.9
40	6SE7023-2RB60	32.2
49	6SE7024-4RC60	44.2
55	6SE7025-4RD60	54.0
65	6SE7027-0RD60	69.0
71	6SE7028-1RD60	81.0
20	6SE7031-0RE60	100.0
34	6SE7031-3RE60	131.0
86	6SE7031-6RE60	162.0
92	6SE7032-0RE60	202.0

Frequency Converter
AC-AC type
3 AC
380V to 460V

PWE Air Cooled	PWE Water Cooled	Order Number	In[A]*1
3		6SE7016-1EA61	6.1
9		6SE7018-0EA61	8.0
11		6SE7021-0EA61	10.2
18		6SE7021-3EB61	13.2
25		6SE7021-8EB61	17.5
35		6SE7022-6EC61	25.5
42		6SE7023-4EC61	34.0
46		6SE7023-8ED61	37.5
52		6SE7024-7ED61	47.0
56		6SE7026-0ED61	59.0
66		6SE7027-2ED61	72.0
74		6SE7031-0EE60	92.0
82		6SE7031-2EF60	124.0
90		6SE7031-5EF60	146.0
98		6SE7031-8EF60	186.0
102		6SE7032-1EG60	210.0
108		6SE7032-6EG60	260.0
112		6SE7033-2EG60	315.0
116		6SE7033-7EG60	370.0
147	233	6SE7035-1EK60	510.0
151	237	6SE7036-0EK60	590.0
164	168	6SE7037-0EK60	690.0

*1 Based on 3kHz carrier frequency setting, larger frames have maximum carrier frequency restrictions

Frequency Inverter
DC-AC type

DC
510V to 650V

PWE Air Cooled	PWE Water Cooled	Order Number	In[A][*1]
4		6SE7016-1TA61	6.1
10		6SE7018-0TA61	8.0
12		6SE7021-0TA61	10.2
19		6SE7021-3TB61	13.2
26		6SE7021-8TB61	17.5
36		6SE7022-6TC61	25.5
43		6SE7023-4TC61	34.0
47		6SE7023-8TD61	37.5
53		6SE7024-7TD61	47.0
57		6SE7026-0TD61	59.0
67		6SE7027-2TD61	72.0
75		6SE7031-0TE60	92.0
83		6SE7031-2TF60	124.0
91		6SE7031-5TF60	146.0
99		6SE7031-8TF60	186.0
103		6SE7032-1TG60	210.0
109		6SE7032-6TG60	260.0
113		6SE7033-2TG60	315.0
117		6SE7033-7TG60	370.0
120	206	6SE7035-1TJ60	510.0
123	209	6SE7036-0TJ60	590.0
126	212	6SE7037-0TK60	690.0
127	213	6SE7038-6TJ60	860.0
134		6SE7041-1TM60	1100.0
135	221	6SE7041-1TK60	1100.0
140	226	6SE7041-3TM60	1300.0
150	236	6SE7041-6TM60	1630.0
153	239	6SE7042-1TQ60	2090.0
154	199	6SE7041-3TL60	1300.0
163	167	6SE7037-0TJ60	690.0
181	247	6SE7038-6TS60	6450.0
185	250	6SE7041-1TS60	6270.0
194	244	6SE7042-5TN60	2470.0

Frequency Converter
AC-AC type

3 AC
500V to 575V

PWE Air Cooled	PWE Water Cooled	Order Number	In[A]*1
1		6SE7014-5FB61	4.5
5		6SE7016-2FB61	6.2
7		6SE7017-8FB61	7.8
16		6SE7021-1FB61	11.0
23		6SE7021-5FB61	15.1
30		6SE7022-2FC61	22.0
37		6SE7023-0FD61	29.0
44		6SE7023-4FD61	34.0
50		6SE7024-7FD61	46.5
60		6SE7026-1FE60	61.0
62		6SE7026-6FE60	66.0
68		6SE7028-0FF60	79.0
78		6SE7031-1FF60	108.0
84		6SE7031-3FG60	128.0
94		6SE7031-6FG60	156.0
100		6SE7032-0FG60	192.0
104		6SE7032-3FG60	225.0
136	222	6SE7033-0FK60	297.0
141	227	6SE7033-5FK60	354.0
143	229	6SE7034-5FK60	452.0

*1 Based on 3kHz carrier frequency setting, larger frames have maximum carrier frequency restrictions

Frequency Inverter
DC-AC type

DC
675V to 810V

PWE Air Cooled	PWE Water Cooled	Order Number	In[A][*1]
2		6SE7014-5UB61	4.5
6		6SE7016-2UB61	6.2
8		6SE7017-8UB61	7.8
17		6SE7021-1UB61	11.0
24		6SE7021-5UB61	15.1
31		6SE7022-2UC61	22.0
38		6SE7023-0UD61	29.0
45		6SE7023-4UD61	34.0
51		6SE7024-7UD61	46.5
61		6SE7026-1UE60	61.0
63		6SE7026-6UE60	66.0
69		6SE7028-0UF60	79.0
79		6SE7031-1UF60	108.0
85		6SE7031-3UG60	128.0
95		6SE7031-6UG60	156.0
101		6SE7032-0UG60	192.0
105		6SE7032-3UG60	225.0
110	200	6SE7033-0UJ60	297.0
114	202	6SE7033-5UJ60	354.0
118	204	6SE7034-5UJ60	452.0
121	207	6SE7035-7UK60	570.0
124	210	6SE7036-5UK60	650.0
128	214	6SE7038-6UK60	860.0
130	216	6SE7041-0UM60	990.0
132	218	6SE7041-1UM60	1080.0
138	224	6SE7041-2UM60	1230.0
144	230	6SE7041-4UM60 6SE7041-4UQ60	1400.0
148	234	6SE7042-1TQ60 6SE7041-6UQ60	1580.0
155	195	6SE7041-1UL60	1080.0
157		6SE7042-4ULJ60	2450.0
159	197	6SE7041-1UL60	1230.0

Frequency Inverter
DC-AC type
DC
675V to 810V

PWE Air Cooled	PWE Water Cooled	Order Number	In[A][*1]
161		6SE7043-3UR60	3270.0
165		6SE7044-1UR60	4090.0
169		6SE7044-8UR60	4900.0
173		6SE7045-7UR60	5720.0
177		6SE7046-5UR60	6540.0
179	245	6SE7036-5UR60	4940.0
182	248	6SE7038-6US60	6540.0
186	251	6SE7041-1US60	6160.0
188	253	6SE7041-2US60	5840.0
190	240	6SE7042-1UN60	2050.0
192	242	6SE7042-3UN60	2340.0

Frequency Converter
AC-AC type
3 AC
660V to 690V

PWE Air Cooled	PWE Water Cooled	Order Number	In[A][*1]
58		6SE7026-0HF60	55.0
72		6SE7028-2HF60	82.0
76		6SE7031-0HG60	97.0
80		6SE7031-2HF60	118.0
88		6SE7031-5HF60	145.0
96		6SE7031-7HG60	171.0
106		6SE7032-1HG60	208.0
137	223	6SE7033-0HK60	297.0
142	228	6SE7033-5HK60	354.0
146	232	6SE7034-5HK60	452.0

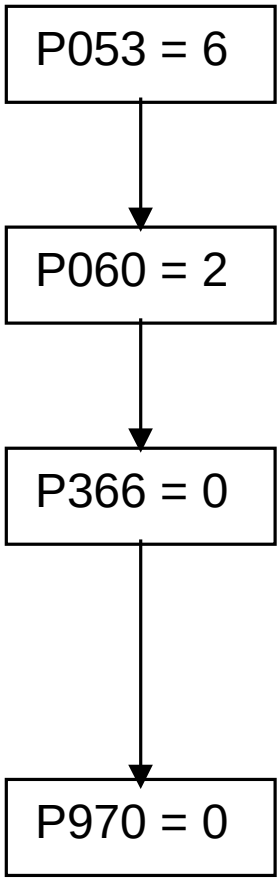
Frequency Inverter
DC-AC type
DC
890V to 930V

PWE Air Cooled	PWE Water Cooled	Order Number	In[A][*1]
59		6SE7026-0WF60	60.0
73		6SE7028-2WF60	82.0

DC
890V to 930V

PWE Air Cooled	PWE Water Cooled	Order Number	In[A][*1]
77		6SE7031-0WG60	97.0
81		6SE7031-2WF60	118.0
89		6SE7031-5WF60	145.0
97		6SE7031-7WG60	171.0
107		6SE7032-1WG60	208.0
111	201	6SE7033-0WJ60	297.0
115	203	6SE7033-5WJ60	354.0
119	205	6SE7034-5WJ60	452.0
122	208	6SE7035-7WK60	570.0
125	211	6SE7036-5WK60	650.0
129	215	6SE7038-6WK60	860.0
131	217	6SE7041-0WM60	990.0
133	219	6SE7041-1WM60	1080.0
139	225	6SE7041-2WM60	1230.0
145	231	6SE7041-4WM60 6SE70414WQ60	1400.0
149	235	6SE7041-6WM60 6SE7041-6WM60	1580.0
152	238	6SE7034-5WK60	452.0
156	196	6SE7041-1WL60	1080.0
158		6SE7042-4WR60	2450.0
160	198	6SE7041-2WL60	1230.0
162		6SE7043-3WR60	3270.0
166		6SE7044-1WR60	4090.0
170		6SE7044-8WR60	4900.0
174		6SE7045-7WR60	5720.0
178		6SE7046-5WR60	6540.0
180	246	6SE7036-5WS60	4940.0
183	249	6SE7038-6WS60	6540.0
187	252	6SE7041-1WS60	6160.0
189	254	6SE7041-2WS60	5840.0
191	241	6SE7042-1WN60	2050.0
193	243	6SE7042-3WN60	2340.0

1.2 Factory Reset



6: Parameter Changes permitted via PMU and Serial Interface (OP1 and PC)

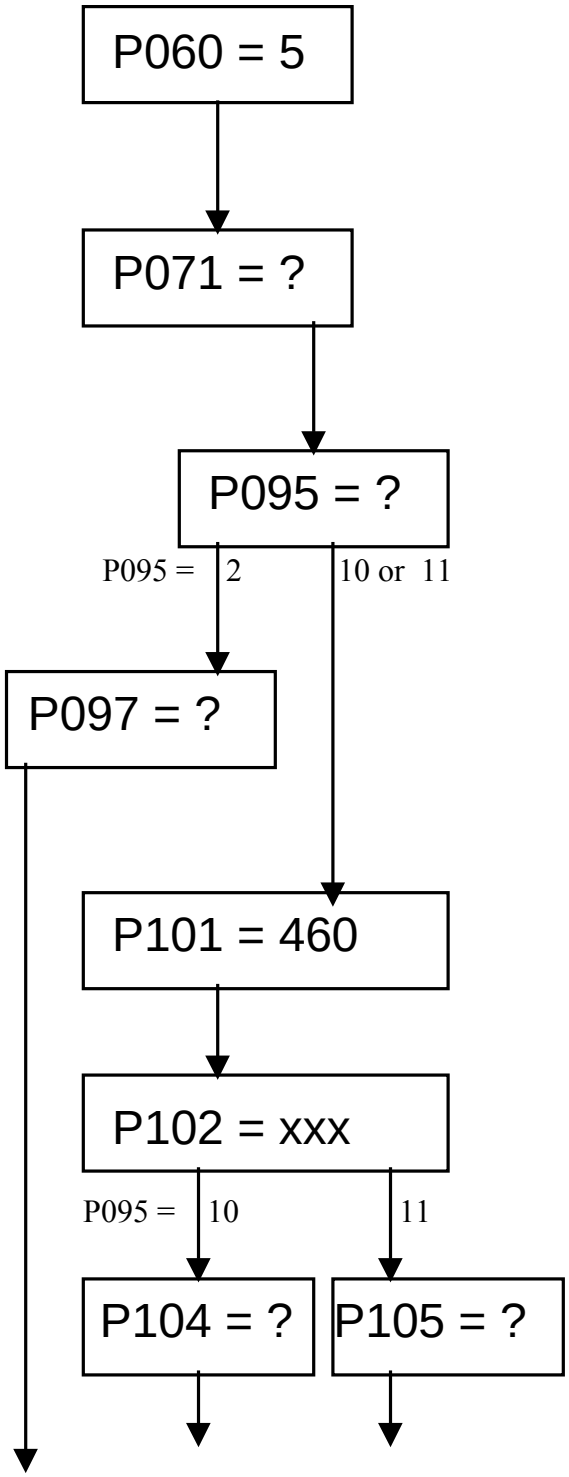
2: Menu Select = Fixed Settings

Select Factory Setting
0: Standard

Start Parameter Reset
0: Parameter Reset
1: No Parameter Change

1.3 Basic Start-up without Motor Connected to Load

1.3.1 Volts/Hz without Encoder



P060=5
Select “Drive Settings”

P071 = Input Line Voltage
AC-AC Converter=460Volt
DC-AC Inverter = 620Volt

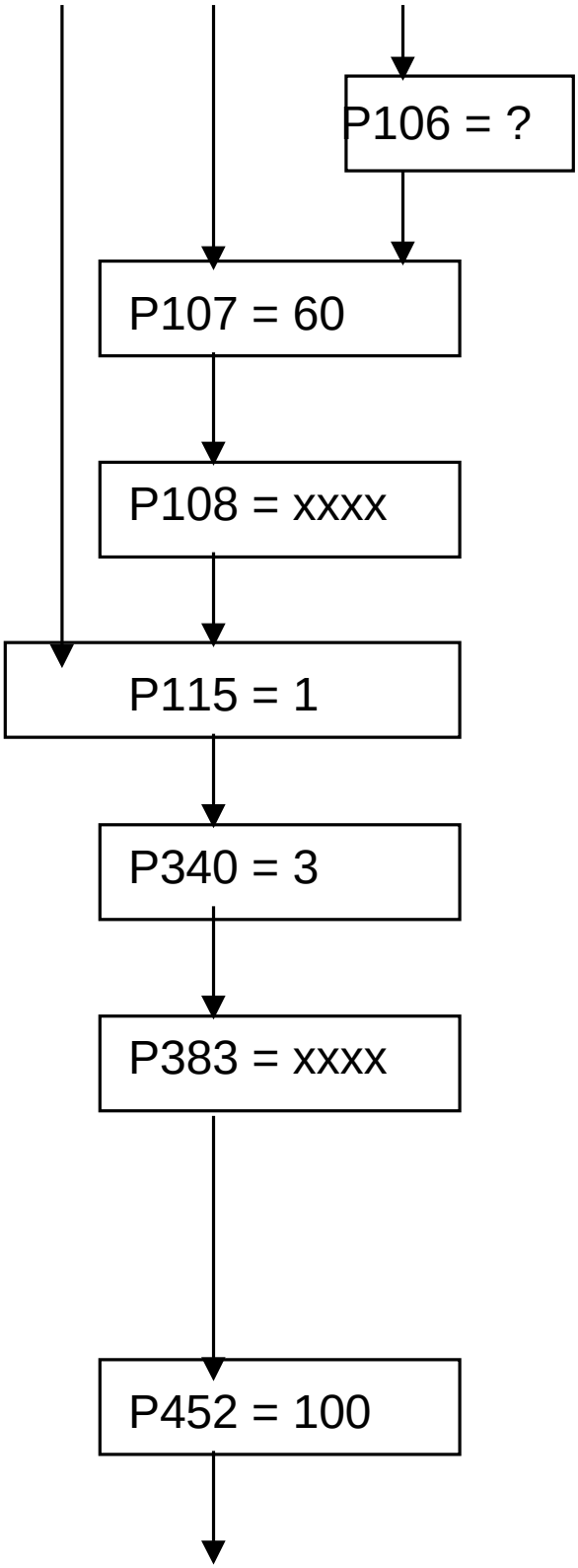
P095 = Select Motor Type
2: Asynchronous 1PH7 Motor
10: IEC Induction Motor
11: NEMA Induction Motor

P097 = Motor Code number for 1PH7 motor (See Appendix)

Motor Nameplate Information
P101= Motor Voltage (V)

P102 = Motor Rated Current (A)

P104 = Cos (phi) per nameplate
P105 = Rated Horsepower



P106 = NEMA Motor Nameplated efficiency (if unknown set =0.8)

P107 = Rated Motor Frequency

P108 = Nameplated Rotor RPM

P115 = 1
"Automatic Parameterization"

P340 = Carrier Frequency
Low # = Cooler Motor and Drive
High # = Lower Motor Noise

P383 = Motor Thermal Time Constant. If constant unknown use general guidelines;

2 Pole Motor = 480 seconds
4 Pole Motor = 600 seconds
6 Pole Motor = 720 seconds

P452 = Maximum Forward Speed in Percentage (usually 100%)

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P453 = -100

P060 = 1

P128 = xxxx

P462 = xxxx

P464 = xxxx

P443i2= 11

P453 = Maximum Reverse Speed in Percentage (usually -100%)

P060 = Return to Parameter Menu

P128 = Maximum Motor Current
Options: P128 = P102
P128=1.1*P102
P128=1.5*P102

P462 = Acceleration Time in seconds

P464 = Deceleration Time in seconds

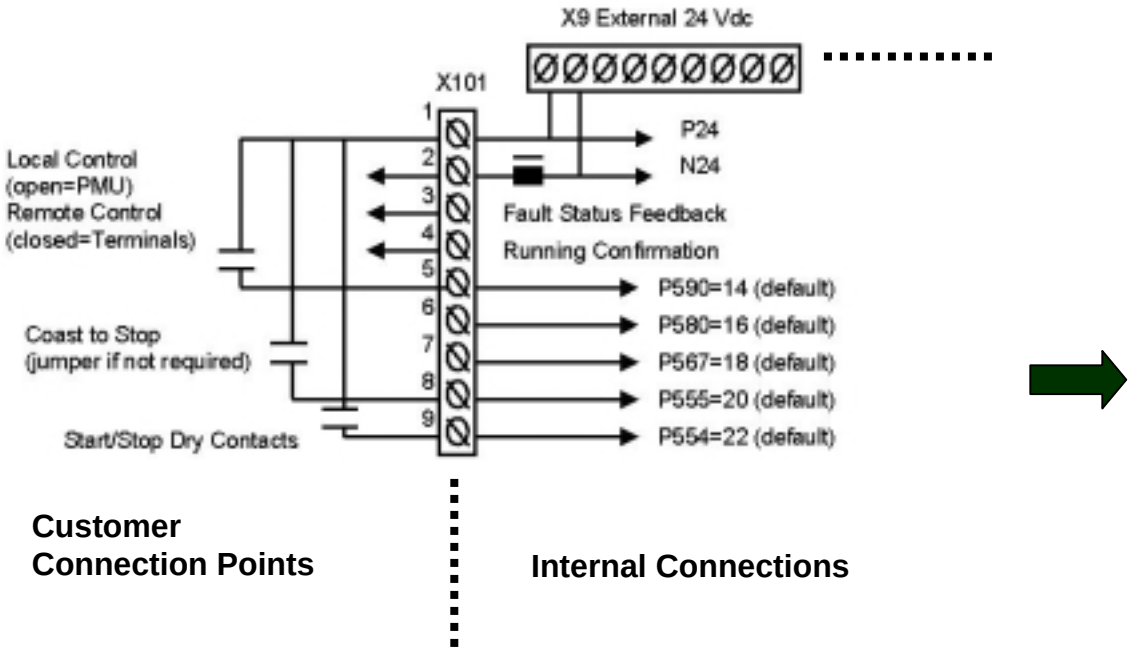
P443i2(Index2) = 11
Configures drive for analog input (0-10Vdc) to be active at terminals X101 pin#15 and pin#16

If 4-20mA is required closed CUVC board mounted jumper S3, position 1 and 2.

Start/Stop Control is located on the PMU (operator control panel mounted directly on the drive)

Speed Setpoint is controlled with the Up / Down arrows.

Connect External Wiring as connection diagram.



Step 1: Dry set of contacts between terminals X101, pin#1 and pin#5 for Local/Remote Mode Selection. Jumper if not required.

Step 2: Dry set of contacts between terminals X101, pin#1 and pin#8 for Coast to Stop Selection. Jumper if not required.

Step 3: Dry set of contacts between terminals X101, pin#1 and pin#9 for Source of Main Start/Stop Selection.

Step 4: Dry set of contacts between terminals X101, pin#1 and pin#7 for Source of Fault Reset. Leave open if not required. “P” button on PMU will be fault reset location if pin#7 is not used.

Step 5: Dry set of contacts between terminals X101, pin#1 and pin#6 for Fixed Speed or Preset Speed Selection. Leave open if not required.

Speed value is determined by P402. A selection of P402=100% will be a full speed reference setpoint.

Step 6: Fault Status is provided by a 24 Vdc signal at terminals X101 pin#3 with respect to pin#2. Leave open if not required.

Step 7: Drive Operating Status is provided by a 24 Vdc signal at terminals X101 pin#4 with respect to pin#2.

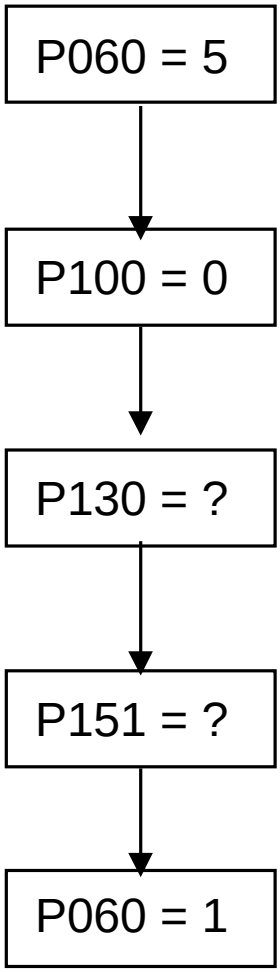
Step 8: Connect external speed reference 0-10Volt or 4-20 mA (CUVC board mounted jumper S3 pin 2 and 2 must be closed for mA input). Adjust over the full range and monitor P447. With a zero input r447 should read near 0.00, and with full value r447 should read near 100%.

Step 9: Connect the motor to the load, unless the plan is to install an encoder feedback or change to Vector Control.

Standard Commissioning for a Volts/Hz controlled motor without feedback is complete, after adjusting only 19 parameters.

1.3.2 Volts/Hz with Encoder

Note: Complete section 1.3.1 before operating the motor with encoder feedback.



P060=5
Select “Drive Settings”

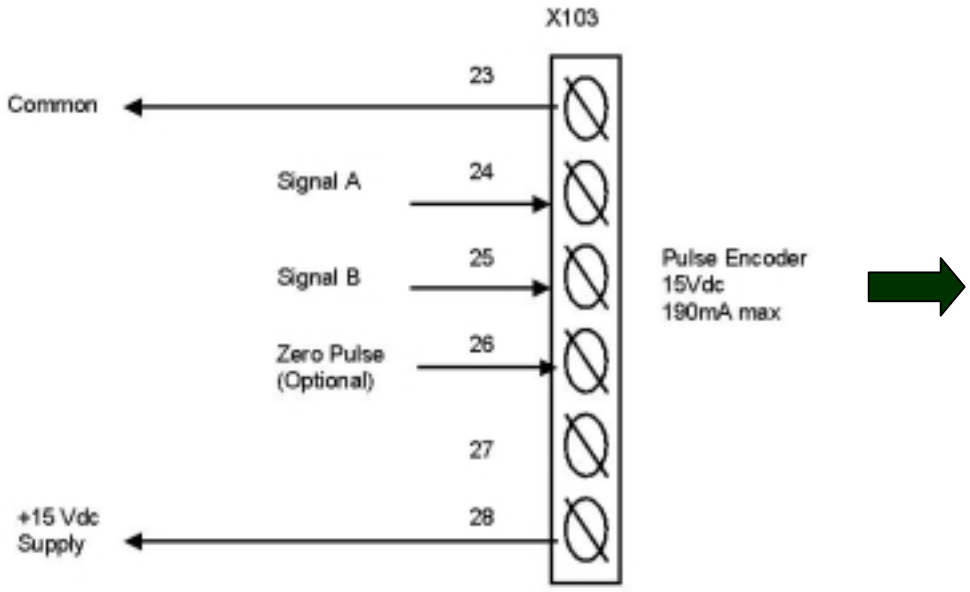
P100=0
Selects Volts/Hz
with Encoder Feedback

P130 = Select Type of Encoder
11: Pulse Encoder
15: Pulse Encoder with Zero Pulse

P151 = Pulse Per Revolution (PPR)

P060 = Return to Parameter Menu

Additional Connection for +15 Vdc Encoder.



Step 10: Set Speed Reference to 20%.

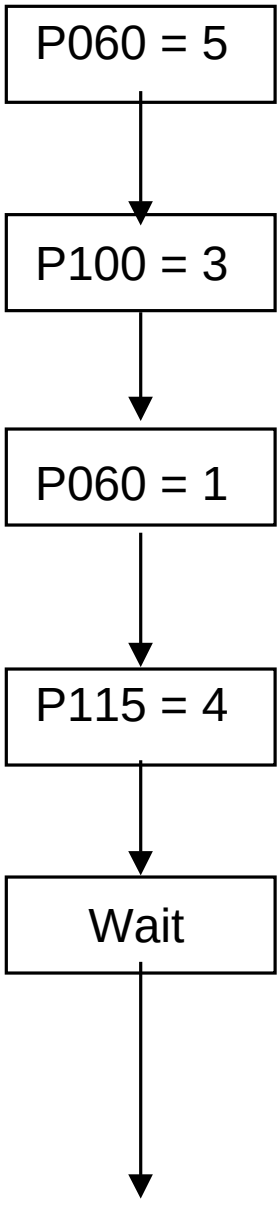
Step 11: Provide Start command. Note that if Signal A and Signal B are reversed, the motor will accelerate rapidly.

Step 12: Connect the motor to the load, unless the plan is to change to Vector Control.

Standard Commissioning for a Volts/Hz controlled motor with feedback is complete, after adjusting only 24 parameters.

1.3.3 Vector Control without Encoder Feedback

Note: Complete section 1.3.1 (Volts/Hz control without encoder feedback).



P060=5
Select “Drive Settings”

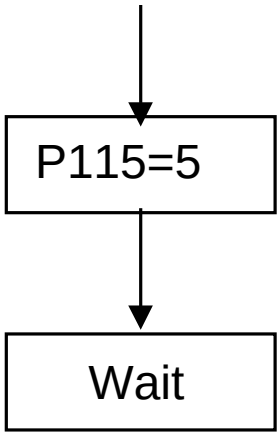
P100=3
Selects Vector Control
without Encoder Feedback

P060 = Return to Parameter Menu
If you plan to use an encoder, go to section1.3.4, otherwise continue.

P115 = 4 No-Load Measurement
Uncoupled motor will ROTATE.
Alarm message “A080” will appear, and a start command must be issued within 20 seconds to perform the test, otherwise P115 will unset.

This test will adjust the following parameters
P103, P120

Wait for display to change back to °009.



P115=5 Controller Optimization
Alarm message “A080” will appear, and a start command must be issued within 20 seconds to perform the test, otherwise P115 will unset.

This test is best performed on a coupled motor under actual conditions; however, if the load is cyclic (0-100% load variation), manual tuning may be preferred.

This test will adjust the following parameters

P116, P223, P235, P236, P240, P471

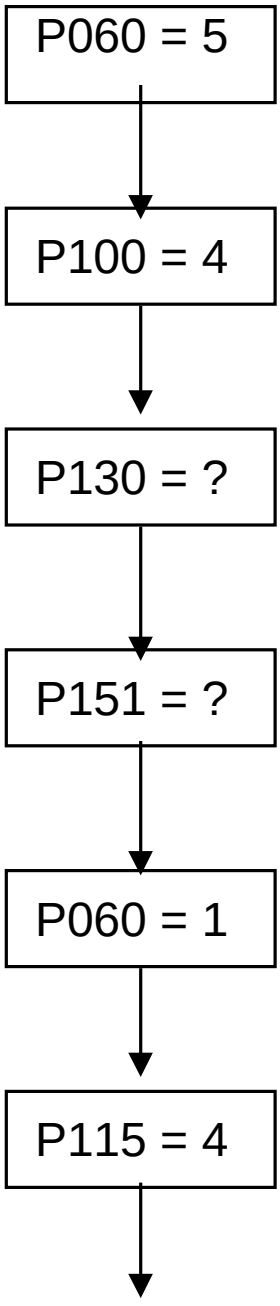
Step 10: Set Speed Reference to 20%, and monitor speed feedback r000, current feedback r004, and actual DC BUS r006. If stable increase speed in increments and continue to monitor feedbacks.

Standard Commissioning for a Vector Controlled motor without feedback is complete, after adjusting only 24 parameters, and utilizing two of the self-tuning options.

1.3.4 Vector Control with Encoder Feedback

Note: Complete section 1.3.1 (Volts/Hz control without encoder feedback), and section 1.3.3 (Vector control without encoder feedback)

Step 10: Operate the uncoupled motor if sections 1.3.1 and 1.3.3 are complete and verify operation of the motor without faults.



P060=5
Select “Drive Settings”

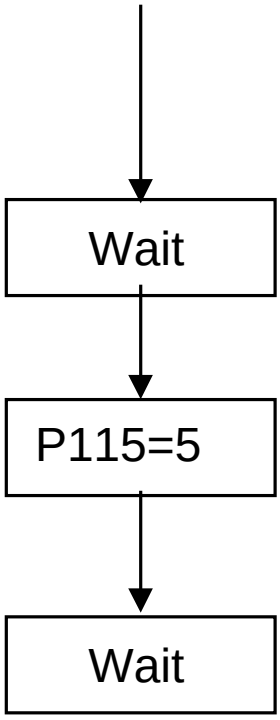
P100=4
Selects Vector Control with Encoder Feedback
Connect encoder as per diagram

P130 = Select Type of Encoder
11: Pulse Encoder
15: Pulse Encoder with Zero Pulse

P151 = Pulse Per Revolution (PPR)

P060 = Return to Parameter Menu

P115 = 4 No-Load Measurement
Uncoupled motor will ROTATE.
Alarm message “A080” will appear, and a start command must be issued within 20 seconds to perform the test, otherwise P115 will unset.



This test will adjust the following parameters

P103, P120

Wait for display to change back to °009.

P115=5 Controller Optimization Alarm message “A080” will appear, and a start command must be issued within 20 seconds to perform the test, otherwise P115 will unset.

This test is best performed on a coupled motor under actual conditions; however, if the load is cyclic (0-100% load variation), manual tuning may be preferred.

This test will adjust the following parameters

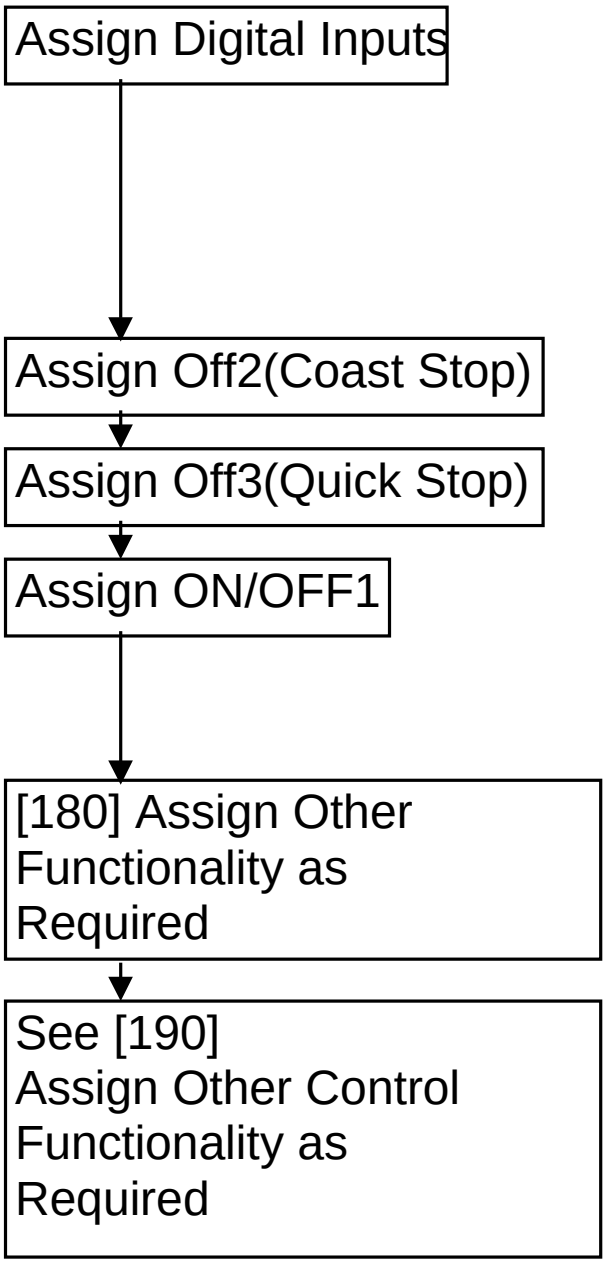
P116, P223, P235, P236, P240, P471

Step 11: Set Speed Reference to 20%, and monitor speed feedback r000, current feedback r004, and actual DC BUS r006. If stable increase speed in increments and continue to monitor feedbacks.

Standard Commissioning for a Vector Controlled motor with feedback is complete, after adjusting only 31 parameters, and utilizing two of the self-tuning options.

1.4 Drive Control Word

Function Diagrams will be referred to in brackets with their number. Please refer to function diagrams in the compendium. Example [Diagram Number]



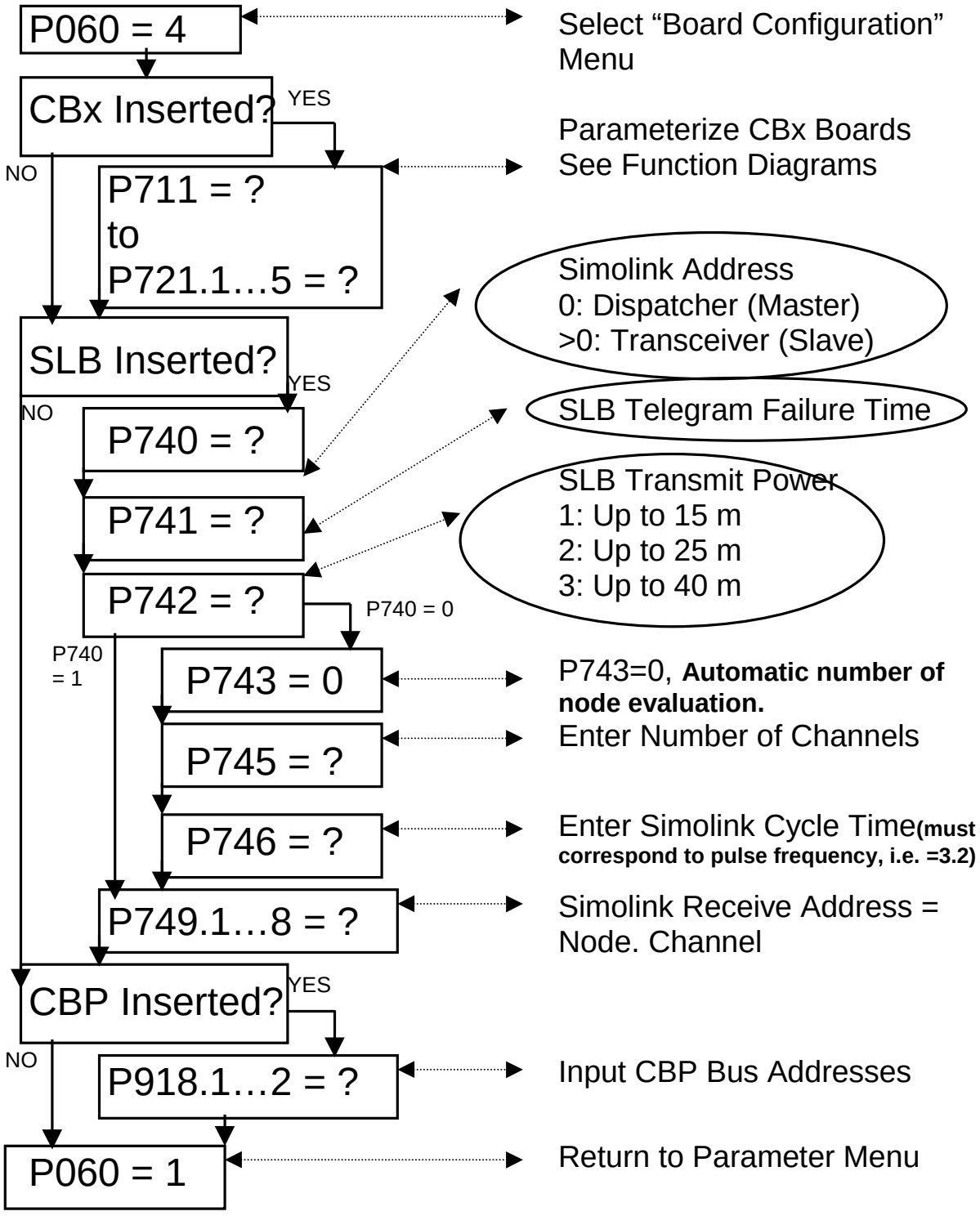
Digital Inputs/Outputs: Binector Assignments for Control may be made from Digital Inputs

P555, P556 & P557 can be used to assign Coast to Stop

P558, P559 & P560 can be used to assign Quick Stop

P554 MUST be assigned to activate drive. Note: Acceleration and Deceleration will be based on ramp generator [320]

1.5 Communication Board Configuration



SIEMENS

Section 2:
Parameterization of a Rectifer Unit

SIMOVERT MASTERDRIVES 6SE70 VC

Vector Control

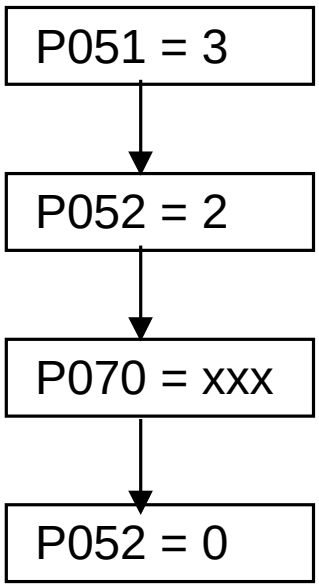
2.0 Power Section Defintion

2.1 Factory Reset

Basic Start-up
2.2 Rectifier or Regen without auto-transformer
2.3 Regen with auto-transformer

2.0 Power Section Definition

Note: Power Section is pre-defined at the factory. Power Section Definition is required if a new board CUR board is put into the drive or boards are switched between units with different ratings. CUR cards will exist Regen Rectifiers and Large Common Rectifiers. The smaller Common Rectifier will not have parameters. Drive should be defaulted and re-parameterized after Power Section Definition.



P51=3 : Export Mode

P52=2: Function select “Initialization”

Input Code for unit (PWE)
(Refer to the following table)

Return to Parameter Menu

Unit List
P070: Parameter Value (PWE)
P075: Rated DC Output Current in Amps In[A]

Large Common Rectifier
AC-DC type

3 AC 380V to 460V

PWE	Order Number	In[A
103	6SE7038-2EH85-0AA0	821.0
105	6SE7041-0EH85-0AA0	1023.0
109	6SE7041-3EK85-0AA0	1333.0
118	6SE7041-8EK85-0AA0	1780.0

3 AC 500V to 575V

101	6SE7037-7FH85-0AA0	774.0
104	6SE7041-0FH85-0AA0	1023.0
107	6SE7041-3FK85-0AA0	1285.0
111	6SE7041-5FK85-0AA0	1464.0
120	6SE7041-8FK85-0AA0	1880.0

3 AC 660V to 690V

102	6SE7037-7HH85-0AA0	774.0
106	6SE7041-0HH85-0AA0	1023.0
108	6SE7041-3HK85-0AA0	1285.0
110	6SE7041-5HK85-0AA0	1464.0
119	6SE7041-8HK85-0AA0	1880.0

Regenerative Rectifier
AC-DC type

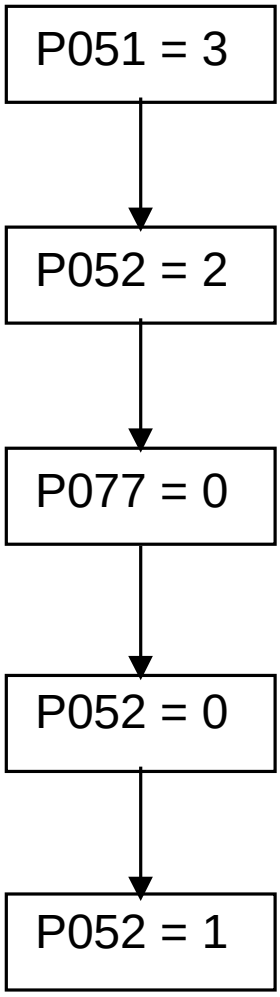
	PWE Air Cool	PWE Water Cool	Order Number	In[A]
3 AC 380V to 460V	14		6SE7022-1EC85-1AA0	21.0
	20		6SE7024-1EC85-1AA0	41.0
	31		6SE7028-6EC85-1AA0	86.0
	39		6SE7031-7EE85-1AA0	173.0
	42		6SE7032-2EE85-1AA0	222.0
	48		6SE7033-1EE85-1AA0	310.0
	51		6SE7033-8EE85-1AA0	375.0
	54		6SE7034-6EE85-1AA0	463.0
	57		6SE7036-1EE85-1AA0	605.0
	63		6SE7038-2EH85-1AA0	821.0
	66		6SE7041-0EH85-1AA0	1023.0
	73		6SE7041-3EK85-1AA0	1333.0
	79		6SE7041-8EK85-1AA0	1780.0
3 AC 500V to 575V	15		6SE7022-7FC85-1AA0	27.0
	21		6SE7024-1FC85-1AA0	41.0
	28		6SE7027-2FC85-1AA0	72.0
	32		6SE7028-8FC85-1AA0	94.0
	38		6SE7031-5FE85-1AA0	151.0
	44		6SE7032-4FE85-1AA0	235.0
	46		6SE7032-7FE85-1AA0	270.0
	49		6SE7033-5FE85-1AA0	354.0
	52		6SE7034-2FE85-1AA0	420.0
	55		6SE7035-4FE85-1AA0	536.0
	61		6SE7037-7FH85-1AA0	774.0
	67		6SE7041-0FH85-1AA0	1023.0
	71		6SE7041-3FK85-1AA0	1285.0
	74		6SE7041-5FK85-1AA0	1464.0
	80		6SE7041-8FK85-1AA0	1880.0

Regenerative Rectifier
AC-DC type

3 AC
660V to 690V

PWE Air Cool	PWE Water Cool	Order Number	In[A]
36		6SE7031-4HE85-1AA0	140.0
43		6SE7032-2HE85-1AA0	222.0
47		6SE7032-7HE85-1AA0	270.0
53		6SE7034-2HE85-1AA0	420.0
56		6SE7035-3HE85-1AA0	536.0
62		6SE7037-7HH85-1AA0	774.0
68		6SE7041-0HH85-1AA0	1023.0
72		6SE7041-3HK85-1AA0	1285.0
75		6SE7041-5HK85-1AA0	1464.0
81		6SE7041-8HK85-1AA0	1880.0

2.1 Factory Reset



P51=3 : Export Mode

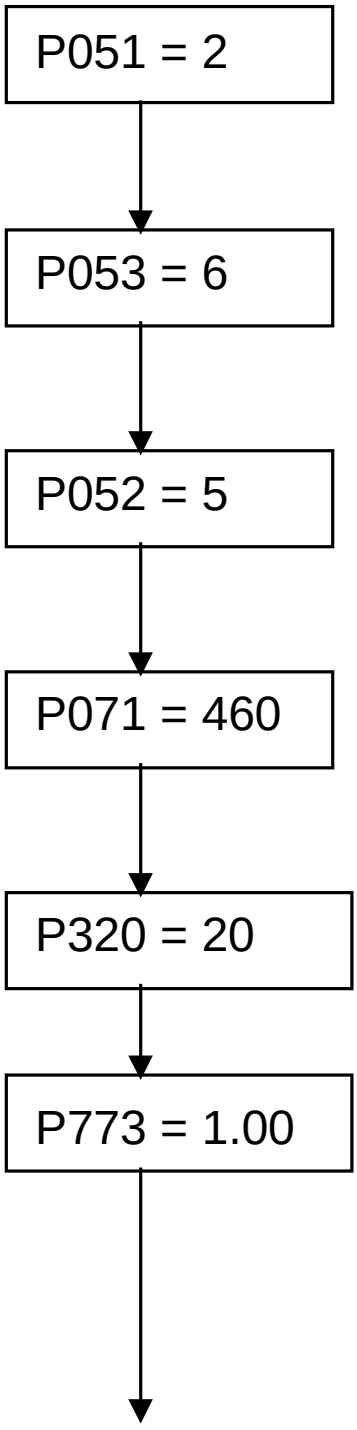
P52=2: Function select “Initialization”

P077=0 for standard default

P052=0 Return to Parameter Menu

P052=1 Perform Factory Reset

2.2 Basic Start-up (Regenerative Rectifier without Autotransformer)



P051=2
Select “Basic Mode Settings”

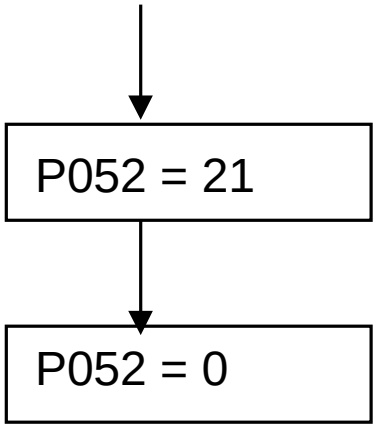
P053 =6 Access Parameter

P052 = 5
Drive Settings

P071 = Input Rectifier Voltage
Generally = 460 Volt

P320 = 20
Smooth Load Amps, to prevent input line sags from effecting the DC BUS regulator

P773= 1.00
Deadband Converter, to prevent “toggling” between Regen and Rectifier bridges.



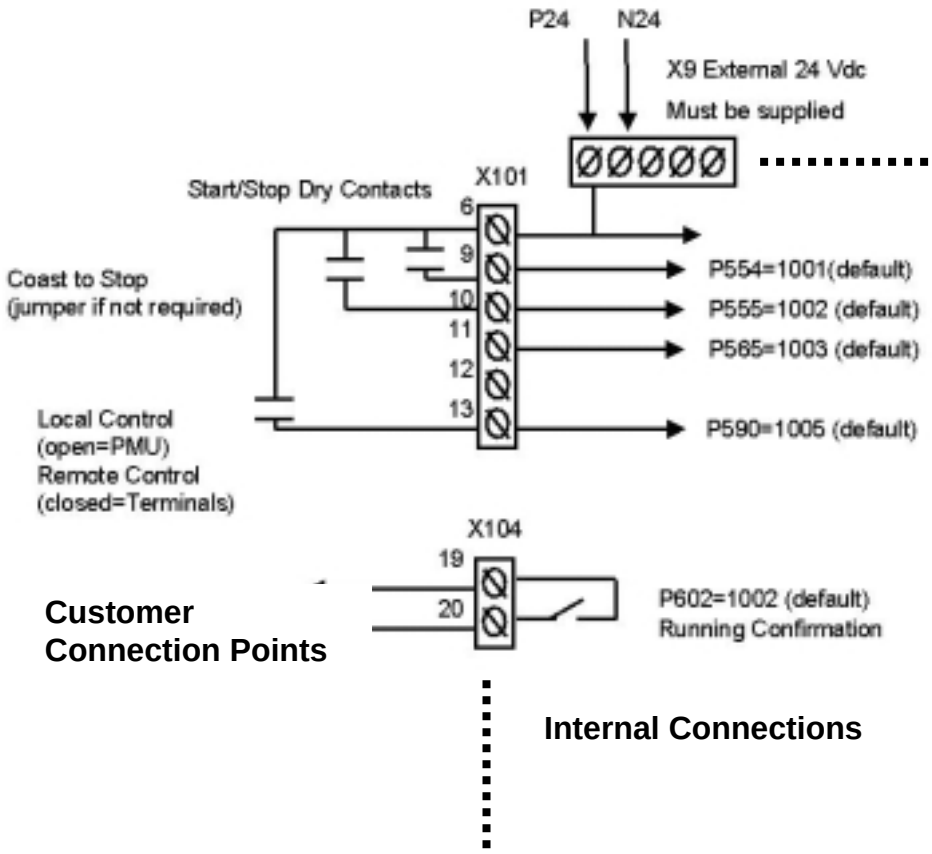
With DC BUS connected to the COMMON DC BUS of the system, set P52=21 and provide a start command at terminal X101, pin #9

The circuit identification test will take about 10 seconds.

P052=0 Drive back to ready mode.

Standard Commissioning for a Common Rectifier or a Regenerative Rectifier without Autotransformer is complete, after adjusting only 8 parameters.

Connect External Wiring as connection diagram.



Step 1: Dry set of contacts between terminals X101, pin#6 and pin#13 for Local/Remote Mode Selection. Jumper if not required.

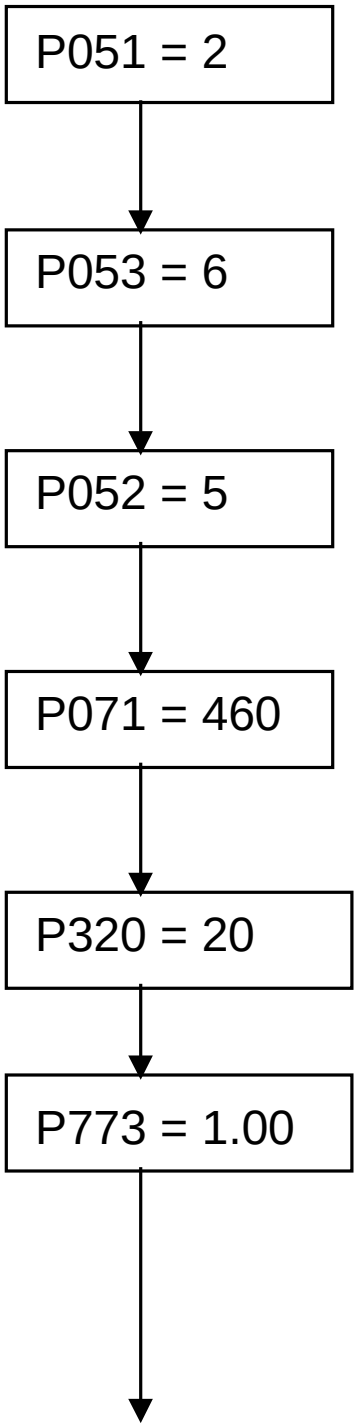
Step 2: Dry set of contacts between terminals X101, pin#6 and pin#10 for Coast to Stop Selection. Jumper if not required.

Step 3: Dry set of contacts between terminals X101, pin#6 and pin#9 for Source of Main Start/Stop Selection.

Step 4: Dry set of contacts between terminals X101, pin#6 and pin#11 for Source of Fault Reset. Leave open if not required. “P” button on PMU will be fault reset location if pin#11 is not used.

Step 5: Drive Operating Status is provided by a 24 Vdc signal at terminals X104 pin#19 with respect to pin#20.

2.3 Basic Start-up (Regenerative Rectifier with Autotransformer)



P051=2
Select “Basic Mode Settings”

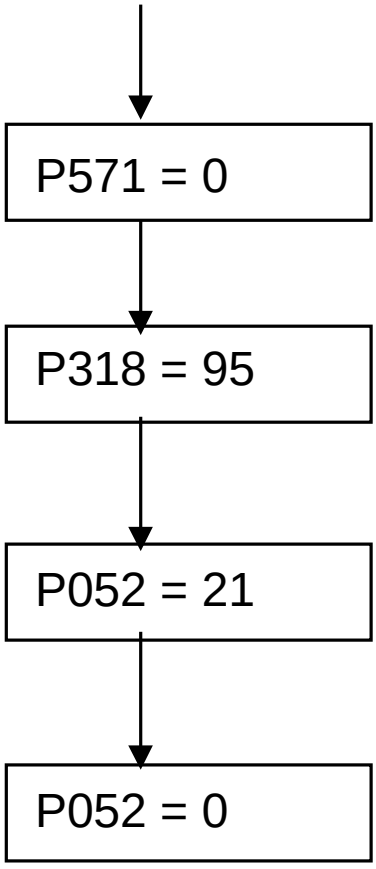
P053 =6 Access Parameter

P052 = 5
Drive Settings

P071 = Input Rectifier Voltage
Generally = 460 Volt

P320 = 20
Smooth Load Amps, to prevent input line sags from effecting the DC BUS regulator

P773= 1.00
Deadband Converter, to prevent “toggling” between Regen and Rectifier bridges.



P571=0 Selects Autotransformer

P318 = 95%

Selects percentage of nominal DC BUS voltage. In cases where the input line voltage is dependable a setting of 100% is permissible.

With DC BUS connected to the COMMON DC BUS of the system, set P52=21 and provide a start command at terminal X101, pin #9

The circuit identification test will take about 10 seconds.

P052=0 Drive back to ready mode.

Standard Commissioning for a Regenerative Rectifier with Autotransformer is complete, after adjusting only 10 parameters.

SIEMENS

Section 3:
Simovis Trace Setup Method

SIMOVERT MASTERDRIVES
6SE70 VC

Vector Control

3.0 Simovis Trace

Load Simovis from Vector Control Documentation CD

Launch Simovis from Desktop Icon

Add a Drive in Simovis Bus Configuration

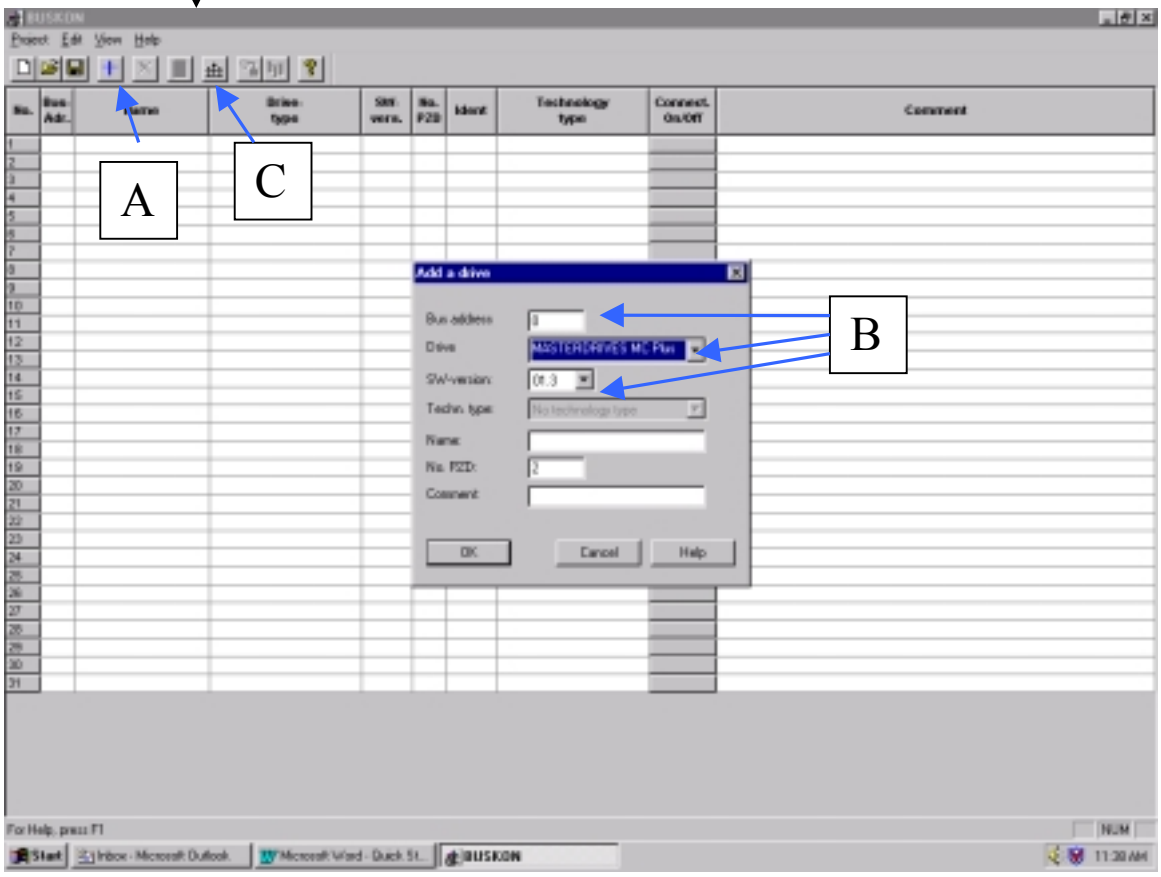
A

Option: To speed up your communication link set the drive P701 = 38,400 with the PMU and configure Simovis for 38,400 communication.

C

B

Select USS Bus Address, Drive and SW Version.
Note: Proper Simovis Cable must be used. (RS 232)

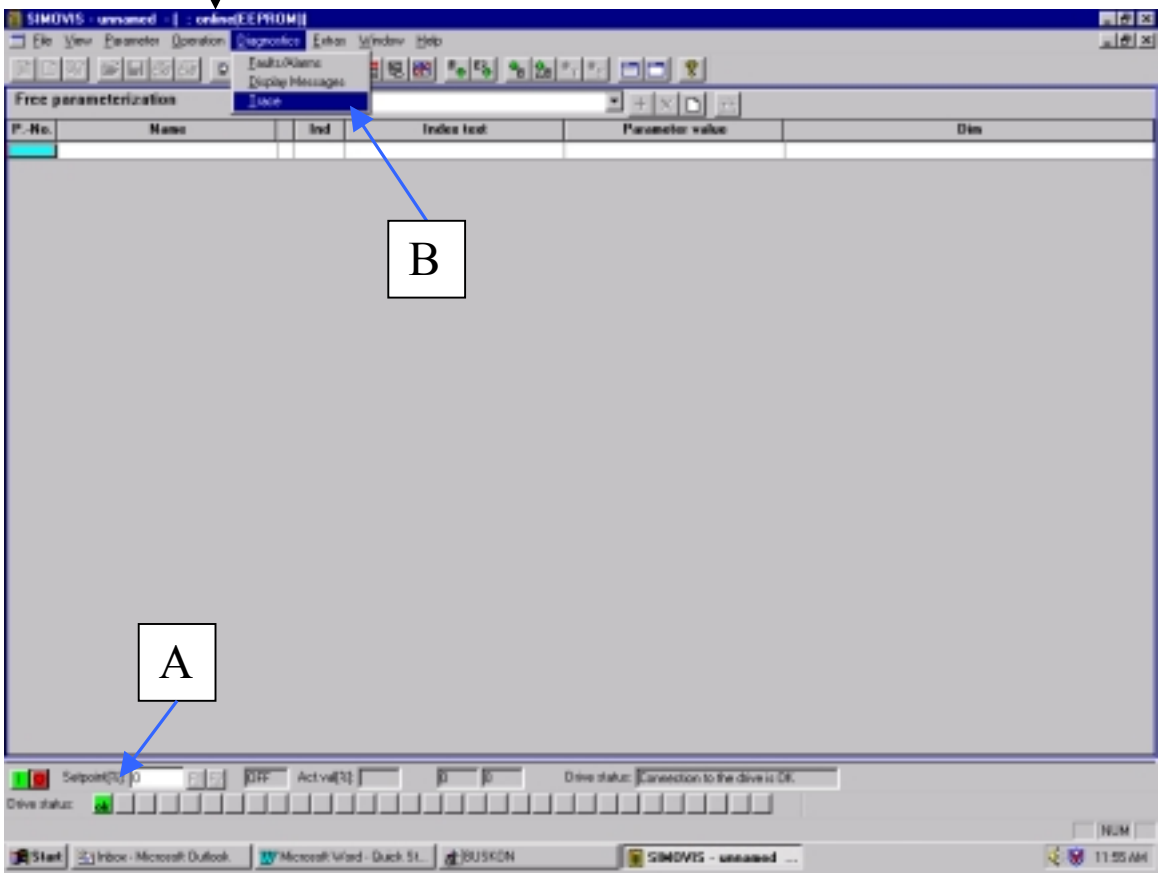


Double Click Selected Drive to start Simovis Window

Verify Drive Connection A

Green Box should be lit up in the lower left corner

Select Trace from Diagnostics Menu Bar B



Select Record Settings in the Lower Left Corner **A**

↓

Select Desired Channels to Record **B**

↓

Set the Record Interval and Pre-trigger **C**

↓

Select Trigger Channel **D**

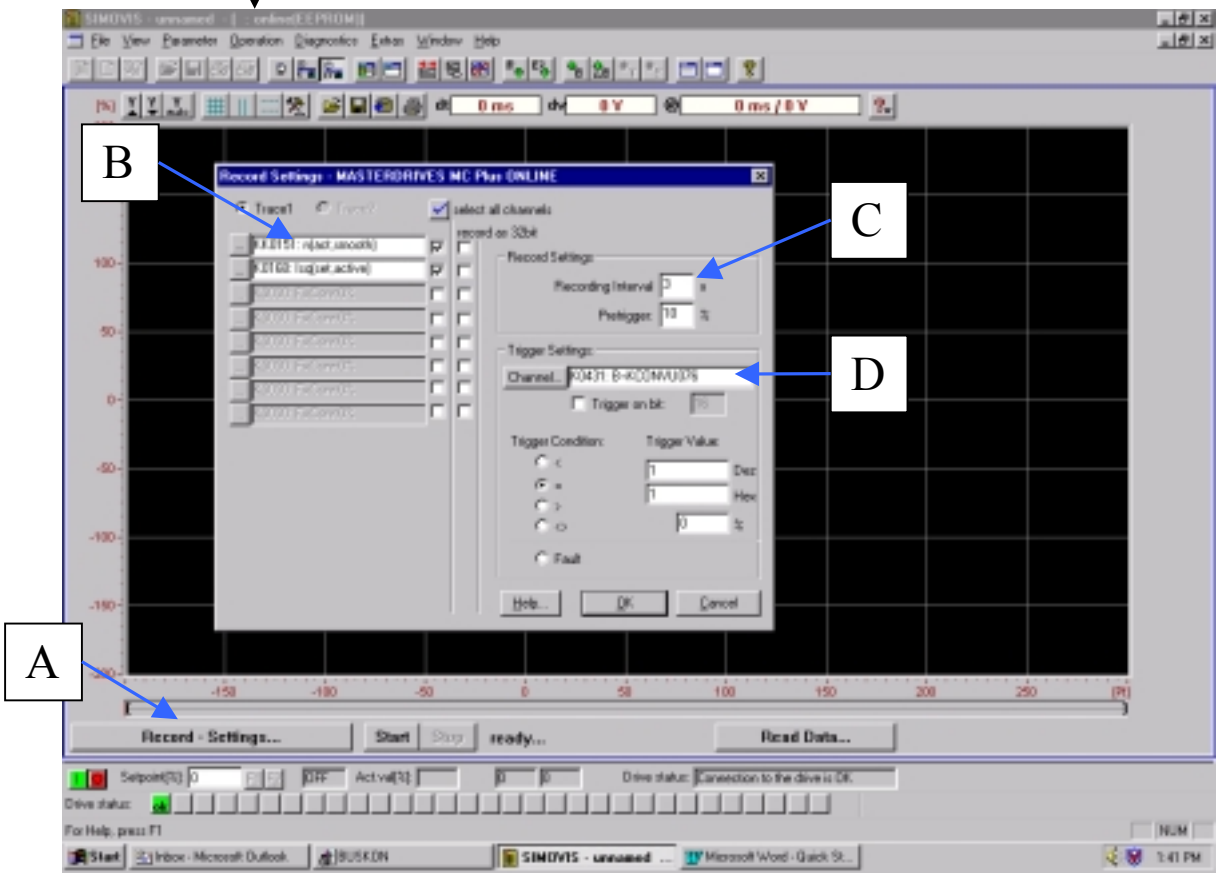
↓

Each Interval = (4.0 / P340) seconds.
Pre-trigger is in Percentage (%).

To Trigger With a Binector, Select:
Trigger Channel = K431
Trigger Condition "=" "1 Hex"

K431 is the output of a Binector to Connector Converter that will be configured on the following page.

Function Diagram [720]



Select "Function Block Grafics" from the Parameter Menu Bar — A

↓

Select Function Number 289

↓

Zoom X 2
(with right Mouse click) — B

↓

Set Trigger Binector in U076.01 (i.e. U076.01 = 18 Din5) — C

↓

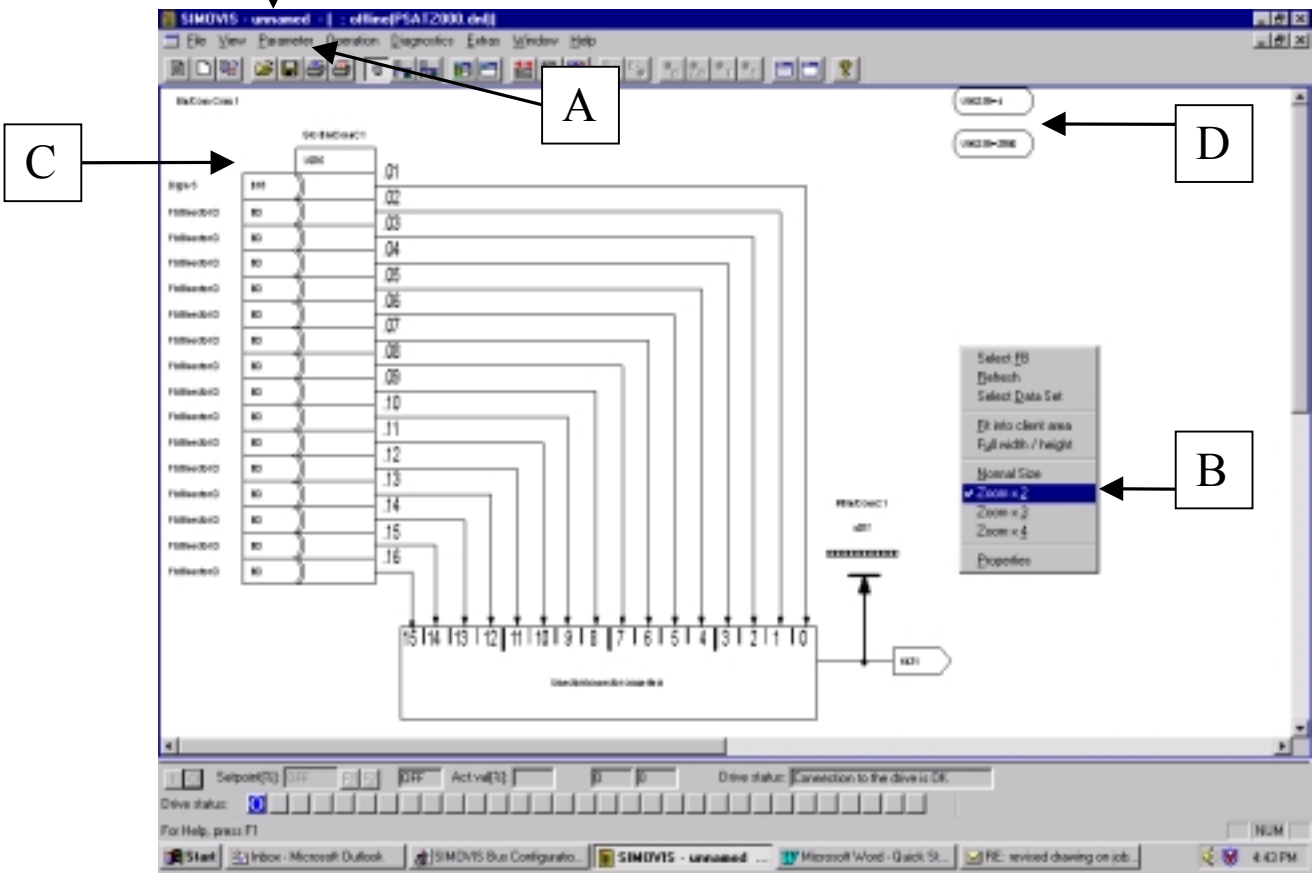
Activate Block U952.89 = 4 — D

To Configure the Trace to Trigger with a Binector follow instructions on this page.

The block activated by Parameter U95***2.89*** is selected with 289.

K431 can now be used to trigger the Trace function when Binector (i.e. DIN 5) is asserted high.

Function Diagram [720]



Go to the Trace Window
(Diagnostics Menu – Trace) A

↓

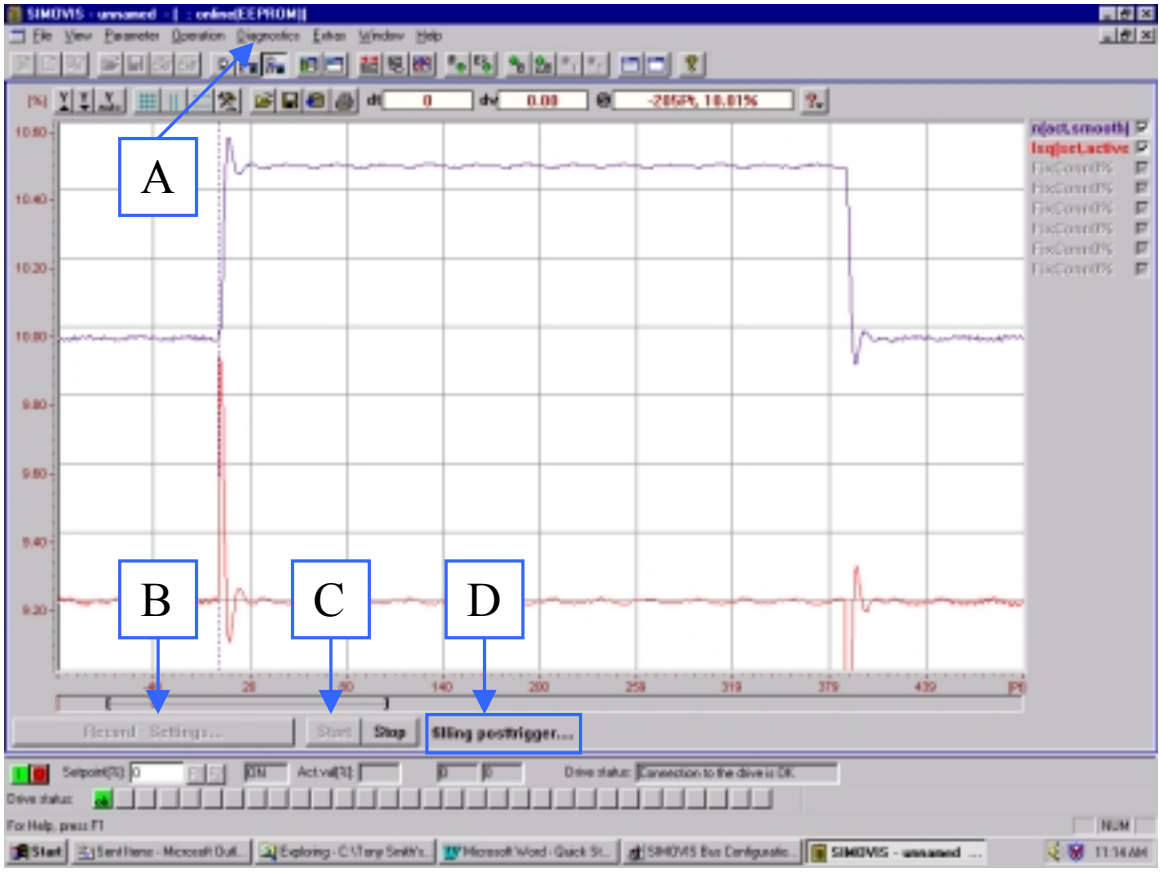
Verify Record Settings B

↓

Start Trace C

↓

Trigger Trace
Observe Status Message D



Select Data Trace	A
Scale Vertical Axis	B
Scale Horizontal Axis	C

Click Data Set to make it Active

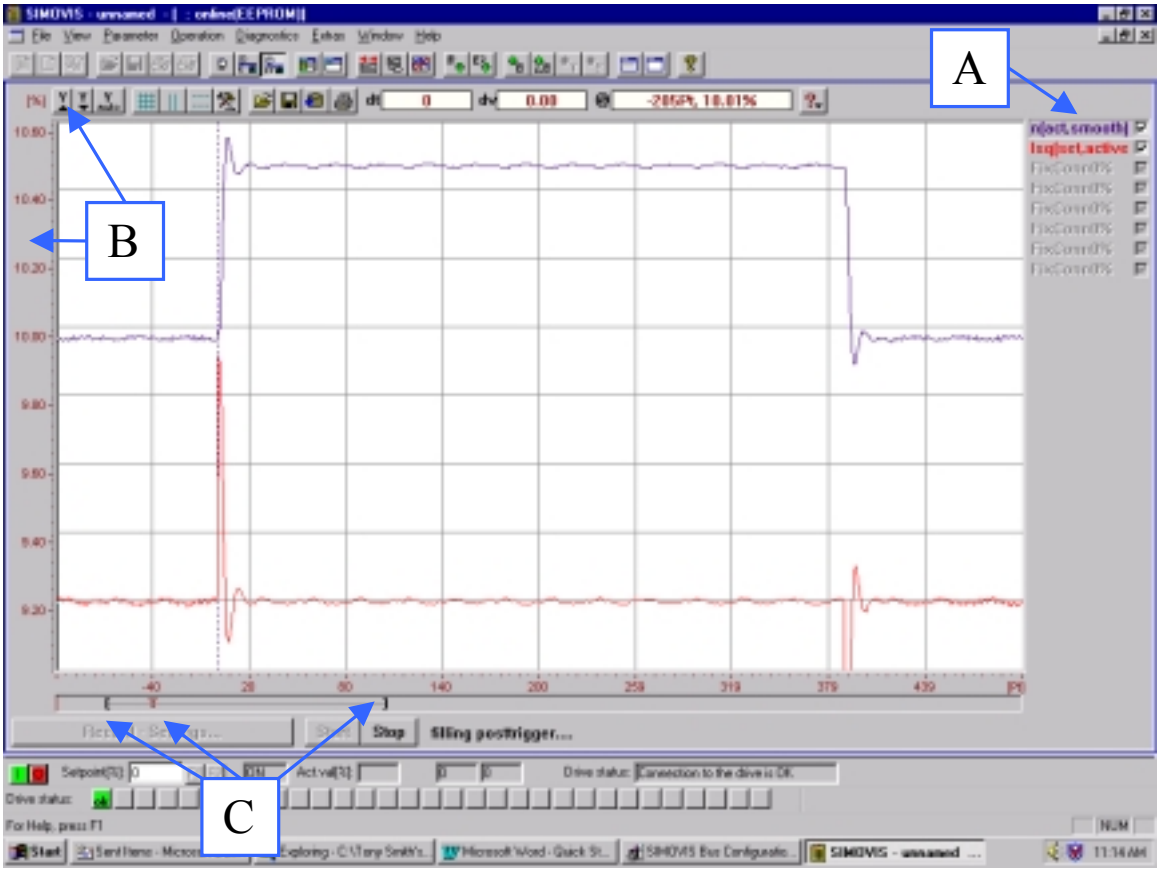
Click and Drag scale to shift it up and down.

Y▲& Y ▼ to change Scale

Click and drag "T" marker to shift Horizontal Scale.

Move "[ ]" to change scale

Note: Background can be changed with right mouse click.
Traces can be saved for reference.



SIEMENS

Section 4:
When to Re-Tune the Drive

SIMOVERT MASTERDRIVES
6SE70 VC

Vector Control

4.0 Conditions that would merit re-tuning the drive

Hardware additions made to the drive, such as an output reactor or a dv/dt filter.

Physical changes to the process, such as the motor being changed (even if the it is an identical motor, bearing changes and coupling changes can have an influence on performance), gearbox changes, length of motor cables changed.

Process changes, such as motor loading, and speed range changes to name a few. Note that since the type of change described is wide-ranging manual tuning may be a better alternative. Review the parameters effected for P115=5.

Software changes, P068, P095, P097, P100(this includes any changes in P101 through P109), P339, P340, P357.
Exceptions:

- If the carrier frequency of P340 is adjusted in multiples that re-tuning is not required (ie: 2.5 kHz to 5.0 kHz)
- If P100 is changed from a value of 4 to 5.

Repair or Maintenance, such as replacing either the motor or the CUVC logic card.
Exceptions:

- If tuning parameters P103, P116, P120, P223, P235, P236, P240 and P471 had been recorded prior to the CUVC card being replaced.