APPLICATIONS

The Default Application

The drive is supplied with 6 Applications, Application 0 to Application 5. Each Application recalls a pre-programmed structure of internal links when it is loaded.

DEFAULT

- Application 0 will not control a motor. Loading Application 0 removes all internal links.
- Application 1 is the factory default application, providing for basic speed control
- Application 2 supplies speed control using a manual or auto setpoint
- Application 3 supplies speed control using preset speeds
- Application 4 is a set-up providing speed control with Raise/Lower Trim
- Application 5 supplies speed control with Run Forward/Run Reverse

IMPORTANT: Refer to Chapter 5: The Keypad – Special Menu Features to reset the drive to factory default values which are suitable for most applications.

How to Load an Application

In the PAr menu, go to P1 and press the M key twice.

The Applications are stored in this menu.

Use the ▲ ▼ keys to select the appropriate Application by number.

Press the E key to load the Application.

Application Description

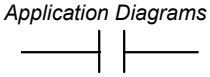
Control Wiring for Applications

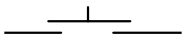
The large Application Diagrams on the following pages show the full wiring for push-button starting. The diagrams on the reverse show the full wiring for single wire starting.

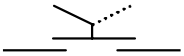
For the minimum connections to make the drive run refer to Chapter 3: "Installing the Drive" - Electrical Installation; the remaining connections can be made to suit your system.

When you load an Application, the input and output parameters shown in these diagrams default to the settings shown. For alternative user-settings refer to the Software Product Manual, Chapter 1 "Programming Your Application".

Key to Application Diagrams


normally open contact (relay)


normally open push-button


2-position switch

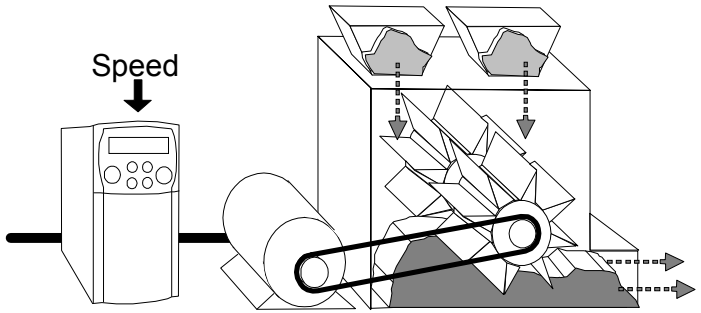
normally closed push-button

Application 1: Basic Speed Control

IDEAL FOR GENERAL PURPOSE APPLICATIONS, NORMAL DUTY AND HEAVY DUTY

P 1 = 1

Italic text indicates Default

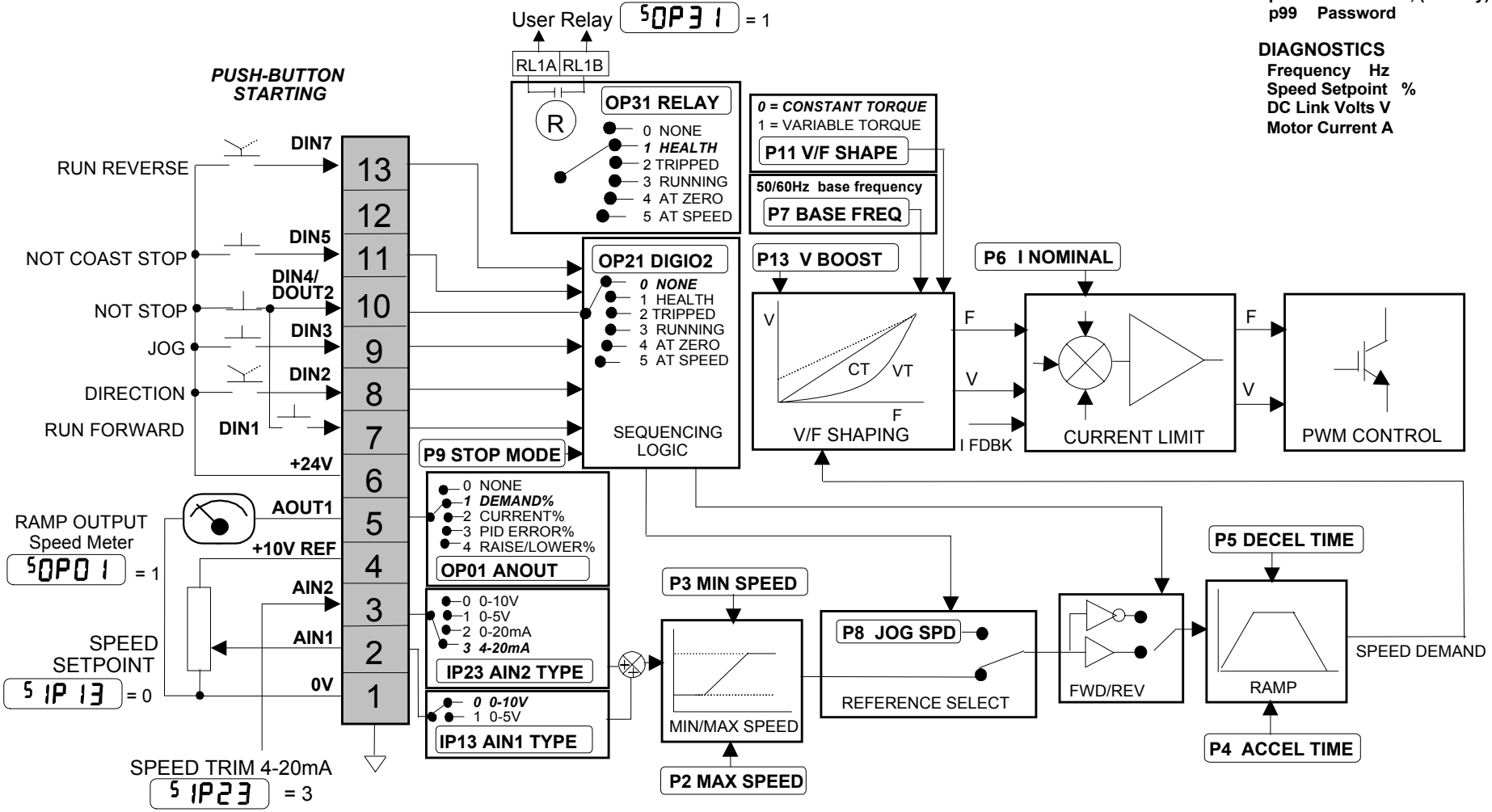


STANDARD PARAMETERS

p1	Application
p2	Max speed
p3	Min speed
p4	Accel time
p5	Decel time
p6	Motor current
p7	Base frequency
p8	Jog setpoint
p9	Run stop mode
p11	V/F shape
p12	Normal duty
p13	Fixed boost, (VF only)
p99	Password

DIAGNOSTICS

Frequency Hz
Speed Setpoint %
DC Link Volts V
Motor Current A

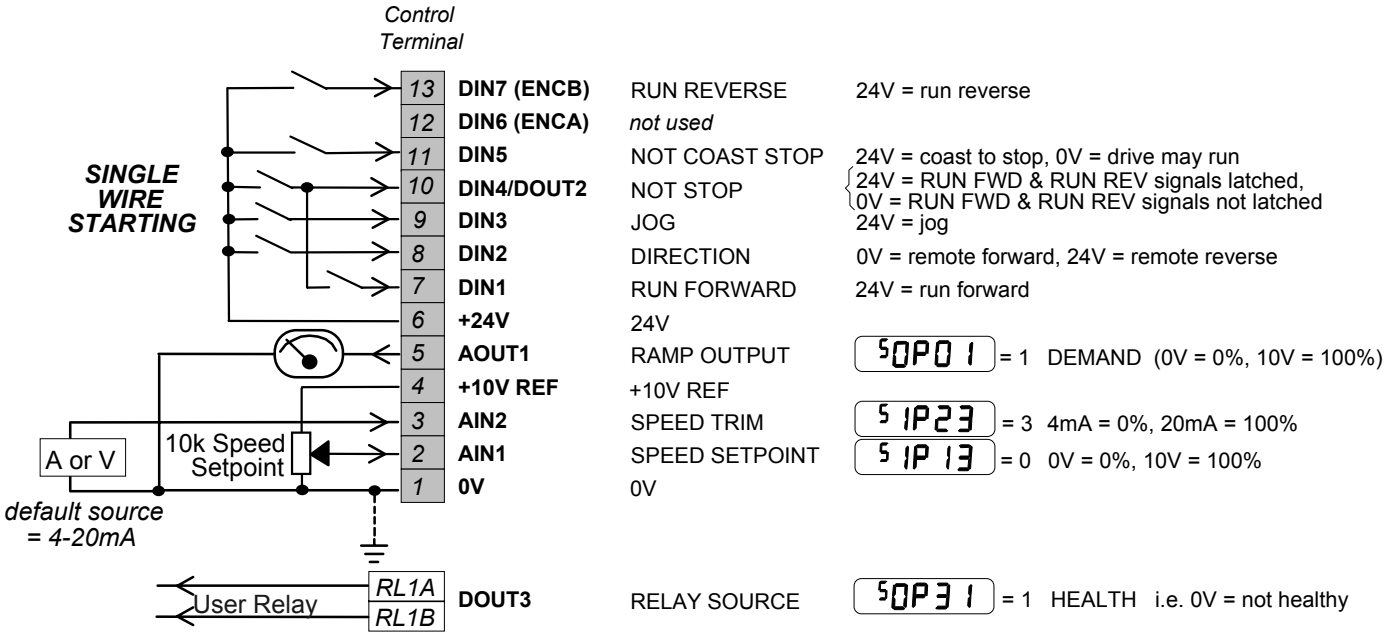


650V AC Drive

Application 1 : Basic Speed Control (default)

Application 1: Basic Speed Control (default)

This Application is ideal for general purpose applications. It provides push-button or switched start/stop control. The setpoint is the sum of the two analogue inputs AIN1 and AIN2, providing Speed Setpoint + Speed Trim capability.



Application 2: Auto/Manual

IDEAL FOR AUTOMATIC CONTROL APPLICATIONS WITH LIMIT SWITCHES OR PROXIMITY TRANSDUCERS

P 1 = 2

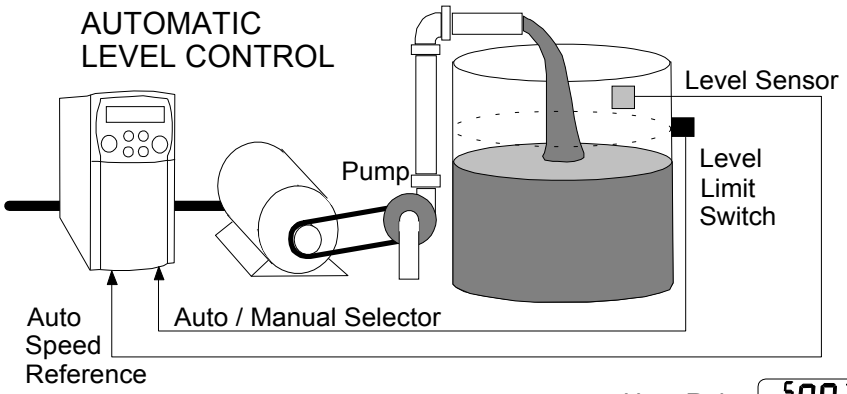
Italic text indicates Default

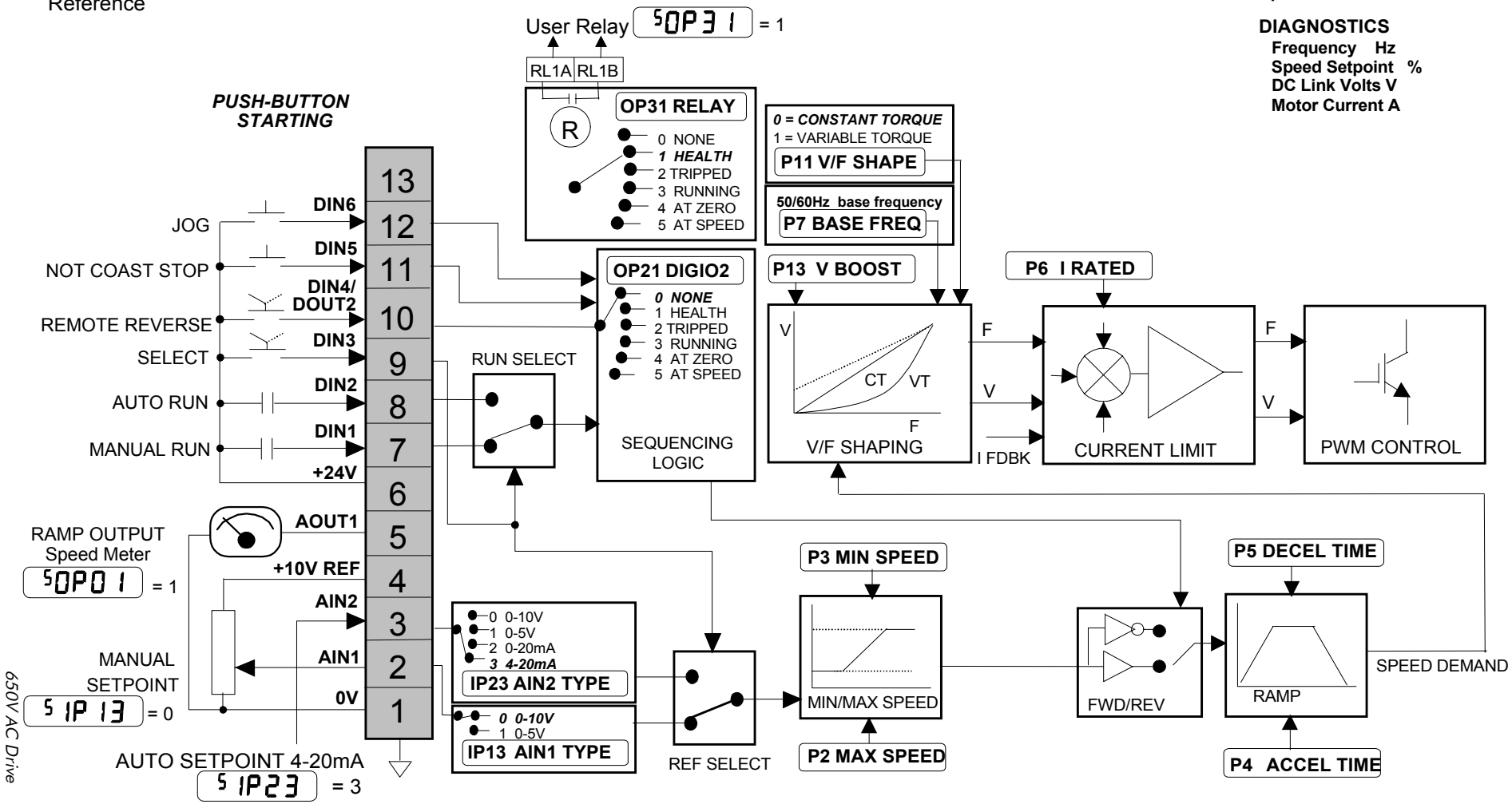
STANDARD PARAMETERS

p1	Application
p2	Max speed
p3	Min speed
p4	Accel time
p5	Decel time
p6	Motor current
p7	Base frequency
p8	Jog setpoint
p9	Run stop mode
p11	V/F shape
p12	Normal duty
p13	Fixed boost, (VF only)
p99	Password

DIAGNOSTICS

Frequency Hz
Speed Setpoint %
DC Link Volts V
Motor Current A



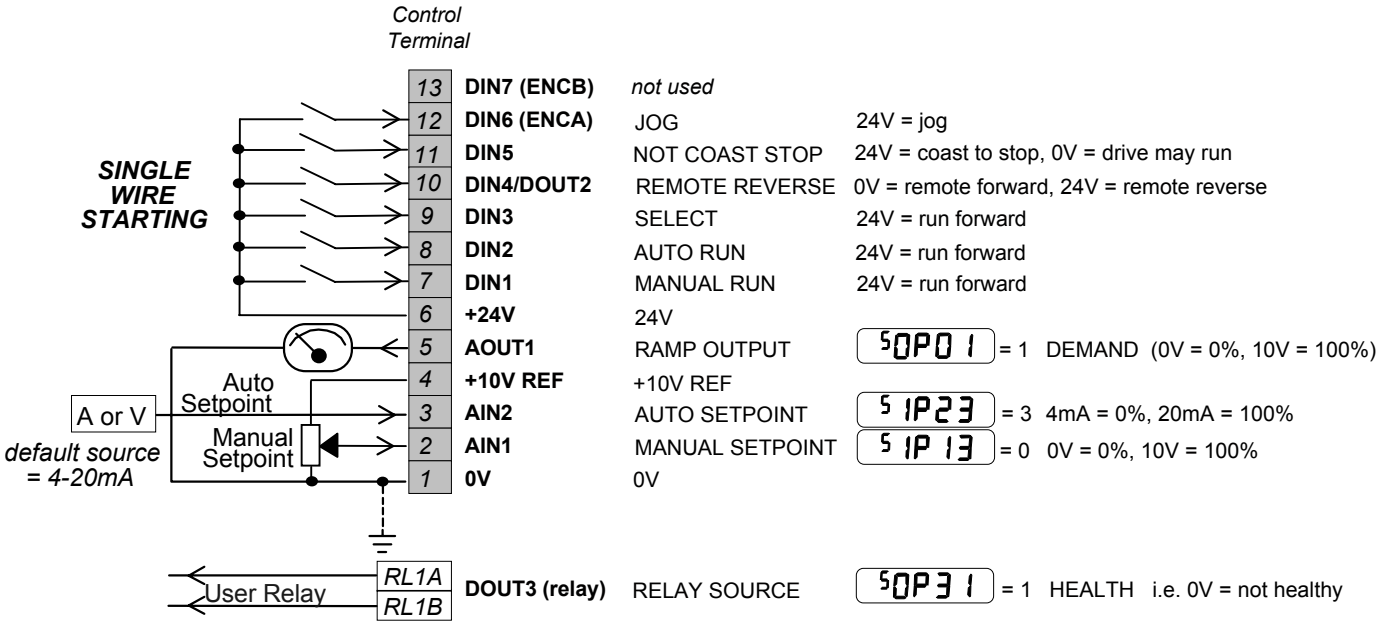


650V AC Drive

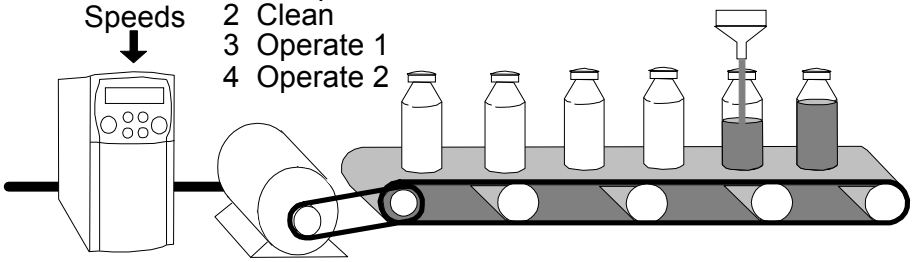
Application 2: Auto/Manual Control

Two Run inputs and two Setpoint inputs are provided. The Auto/Manual switch selects which pair of inputs is active.

The Application is sometimes referred to as Local/Remote.



Application 3: Preset Speeds



IDEAL FOR APPLICATIONS REQUIRING MULTIPLE DISCRETE SPEED LEVELS

P 1 = 3

STANDARD PARAMETERS

p1	Application
p2	Max speed
p3	Min speed
p4	Accel time
p5	Decel time
p6	Motor current
p7	Base frequency
p8	Jog setpoint
p9	Run stop mode
p11	V/F shape
p12	Normal duty
p13	Fixed boost, (VF only)
p99	Password

DIAGNOSTICS

Frequency Hz
Speed Setpoint %
DC Link Volts V
Motor Current A

Italic text indicates Default

OP31 RELAY: 0 NONE; *1 HEALTH*; 2 TRIPPED; 3 RUNNING; 4 AT ZERO; 5 AT SPEED

0 = CONSTANT TORQUE; 1 = VARIABLE TORQUE — P11 V/F SHAPE

50/60Hz base frequency — P7 BASE FREQ

User Relay: 5OP31 = 1 (RL1A, RL1B)

PUSH-BUTTON STARTING

P9 STOP MODE

SEQUENCING LOGIC

DIN4/ DOUT2	DIN3	DIN2	PRESET
0V	0V	0V	0
0V	0V	24V	1
0V	24V	0V	2
0V	24V	24V	3
24V	0V	0V	4
24V	0V	24V	5
24V	24V	0V	6
24V	24V	24V	7

RUN REVERSE	DIN7	13
JOG	DIN6	12
NOT COAST STOP	DIN5	11
PRESET SELECT 3	DIN4/ DOUT2	10
PRESET SELECT 2	DIN3	9
PRESET SELECT 1	DIN2	8
RUN FORWARD	DIN1	7
	+24V	6
RAMP OUTPUT Speed Meter 5OP01 = 1	AOUT1	5
	+10V REF	4
	AIN2	3
SPEED SETPOINT 5 IP 13 = 0	AIN1	2
	0V	1

SPEED TRIM 4-20mA 5 IP23 = 3

(SCALABLE)

P301 PRESET 0
P302 PRESET 1
P303 PRESET 2
P304 PRESET 3
P305 PRESET 4
P306 PRESET 5
P307 PRESET 6
P308 PRESET 7

P13 V BOOST — V/F SHAPING (V, F, CT, VT)

P6 I NOMINAL — CURRENT LIMIT (I FDBK)

PWM CONTROL

P3 MIN SPEED — MIN/MAX SPEED — P2 MAX SPEED

FWD/REV

P5 DECEL TIME — RAMP — P4 ACCEL TIME

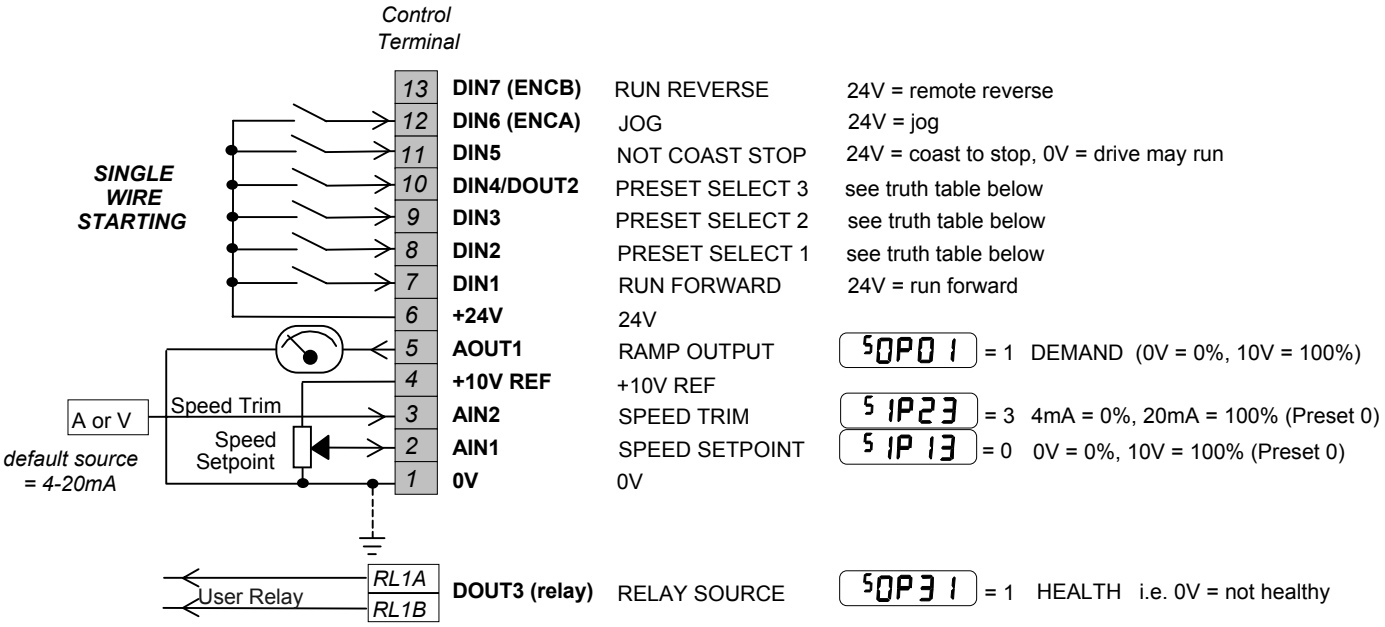
SPEED DEMAND

Application 3: Preset Speeds

This is ideal for applications requiring multiple discrete speed levels.

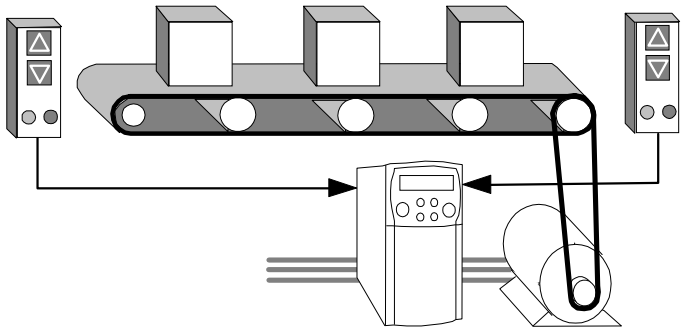
The setpoint is selected from either the sum of the analogue inputs, (as in Application 1 and known here as PRESET 0), or as one of up to seven other pre-defined speed levels. These are selected using DIN2, DIN3 and DIN4, refer to the Truth Table below.

Edit parameters P302 to P308 on the keypad to re-define the speed levels of PRESET 1 to PRESET 7. Reverse direction is achieved by entering a negative speed setpoint.



Preset Speed Truth Table

DIN4/DOUT2	DIN3	DIN2	Preset
0V	0V	0V	**0**
0V	0V	24V	**1**
0V	24V	0V	**2**
0V	24V	24V	**3**
24V	0V	0V	**4**
24V	0V	24V	**5**
24V	24V	0V	**6**
24V	24V	24V	**7**



Application 4: Raise/Lower Trim

IDEAL FOR APPLICATIONS REQUIRING SPEED CONTROL FROM MULTIPLE LOCATIONS

P 1 = 4

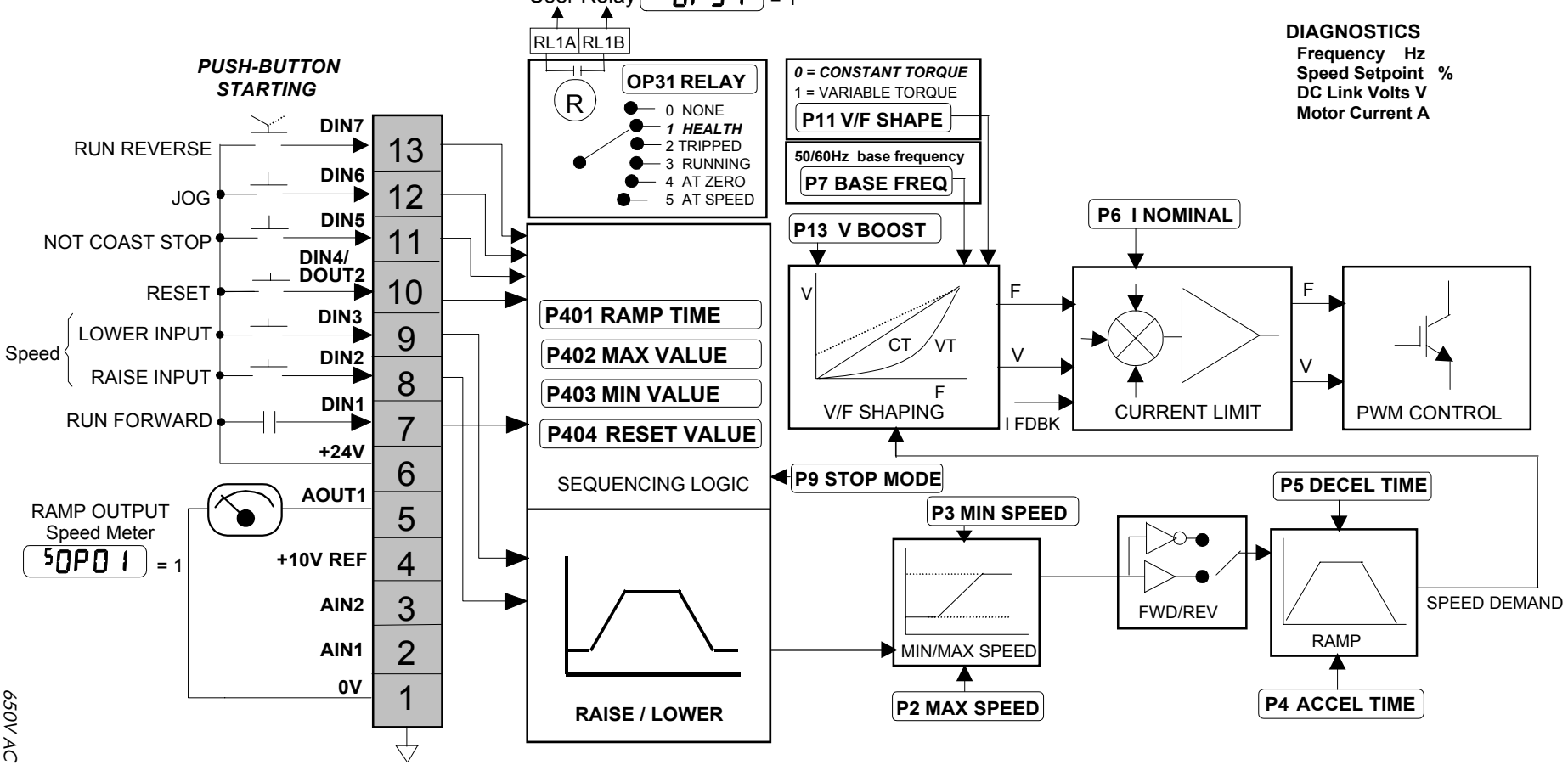
Italic text indicates Default

STANDARD PARAMETERS

p1	Application
p2	Max speed
p3	Min speed
p4	Accel time
p5	Decel time
p6	Motor current
p7	Base frequency
p8	Jog setpoint
p9	Run stop mode
p11	V/F shape
p12	Normal duty
p13	Fixed boost, (VF only)
p99	Password

DIAGNOSTICS

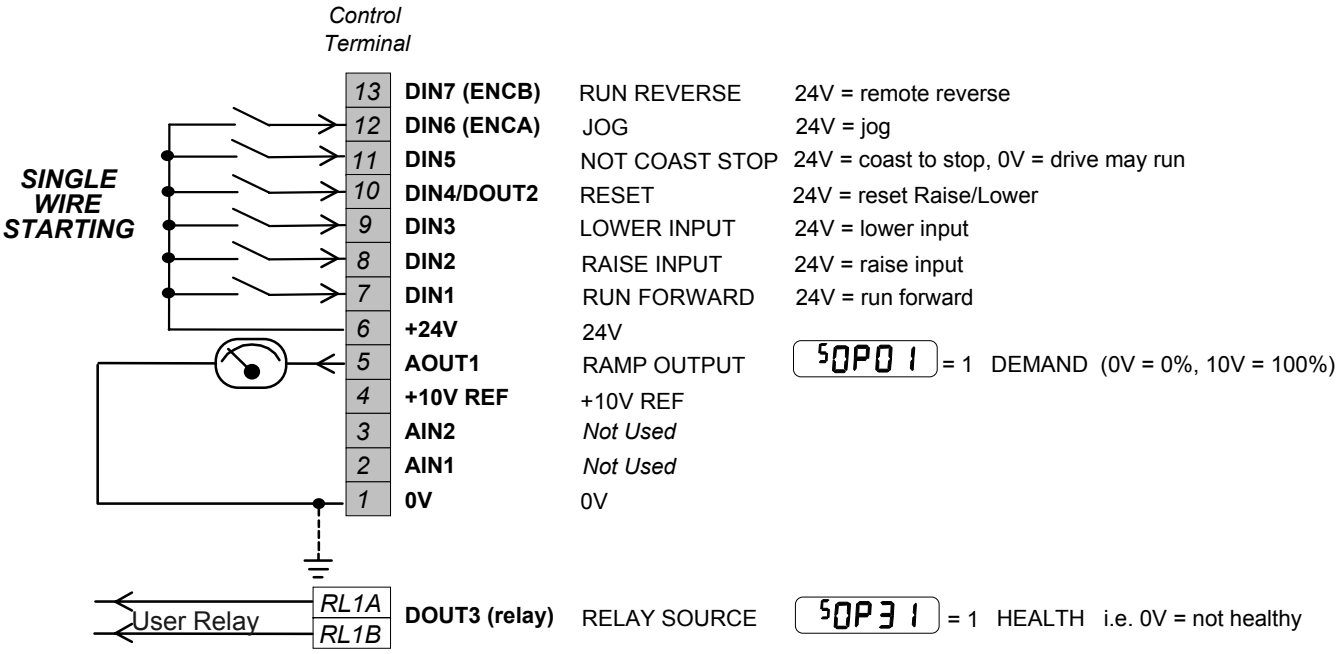
Frequency Hz
Speed Setpoint %
DC Link Volts V
Motor Current A



Application 4: Raise/Lower Trim

This Application mimics the operation of a motorised potentiometer. Digital inputs allow the setpoint to be increased and decreased between limits. The limits and ramp rate can be set using the keypad.

The Application is sometimes referred to as Motorised Potentiometer.



Application 5: PI Control

EASY TUNING FOR SETPOINT/FEEDBACK CONTROL APPLICATIONS REGULATING VOLUME OR PRESSURE, SUCH AS AIR HANDLING OR PUMPING

P 1 = 5

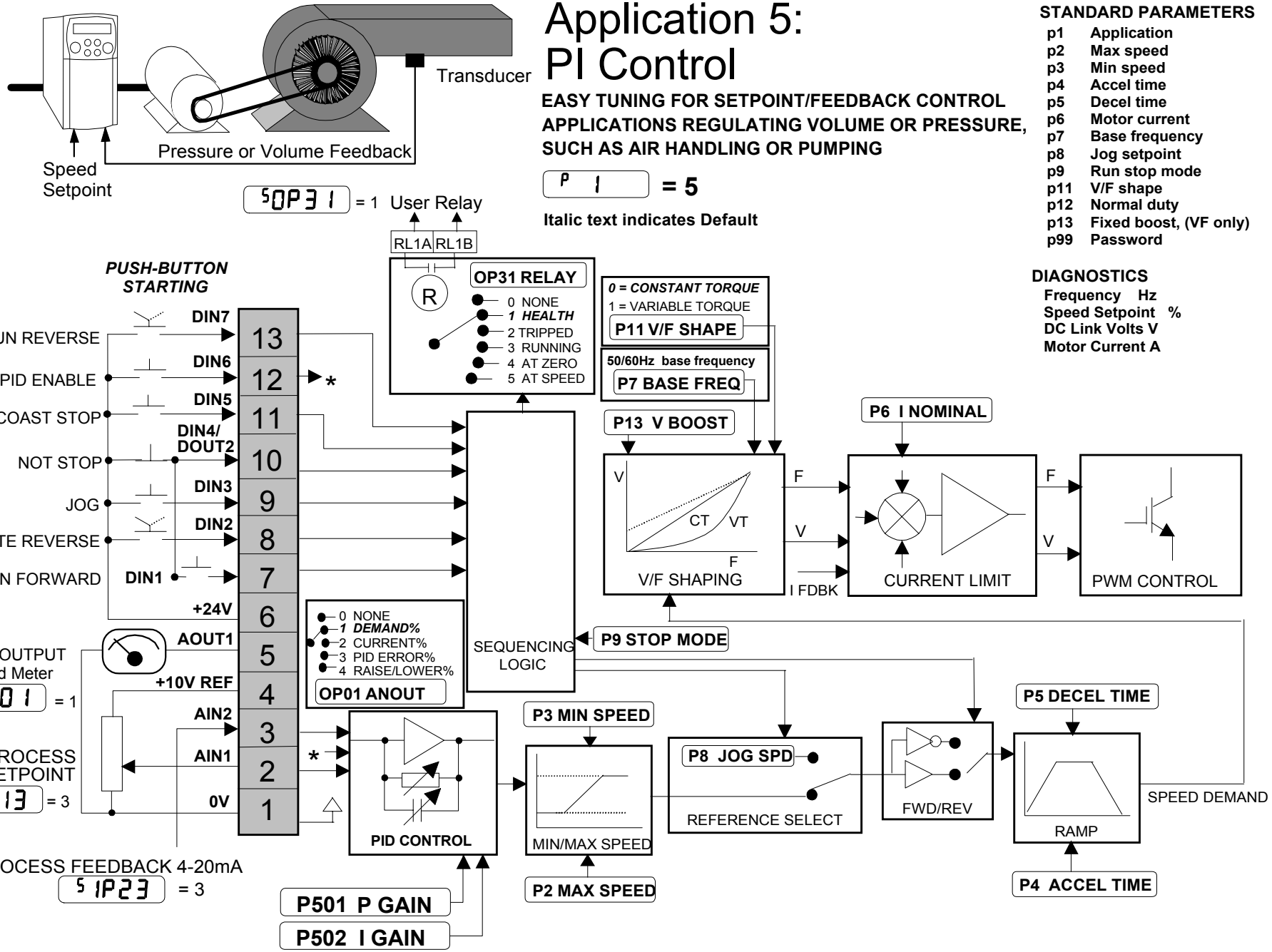
Italic text indicates Default

STANDARD PARAMETERS

p1	Application
p2	Max speed
p3	Min speed
p4	Accel time
p5	Decel time
p6	Motor current
p7	Base frequency
p8	Jog setpoint
p9	Run stop mode
p11	V/F shape
p12	Normal duty
p13	Fixed boost, (VF only)
p99	Password

DIAGNOSTICS

Frequency Hz
Speed Setpoint %
DC Link Volts V
Motor Current A



Application 5: PID

A simple application using a Proportional-Integral-Derivative 3-term controller. The setpoint is taken from AIN1, with feedback signal from the process on AIN2. The scale and offset features of the analogue input blocks may be used to correctly scale these signals. The difference between these two signals is taken as the PID error. The output of the PID block is then used as the drive setpoint.