



AQUAVAR[®]

Intelligent Pump Controller

START-UP GENIE PROGRAMMING MANUAL

TABLE OF CONTENTS

Introduction	3
Chapter 1: Motor	4
Chapter 2: Application	5
2.1. Single Pump	5
2.2. Constant Slave	6
2.3. Duplex Control	7
2.4. Speed Control.....	8
2.5. Test Run Mode	8
Chapter 3: Feedback	9
Chapter 4: Setpoint	10
Chapter 5: Flow Compensation	10
Chapter 6: Pump Protection	11
Chapter 7: Digital Input.....	15
Chapter 8: Relay and Analog Output Setup	16
Chapter 9: Communication	17
Chapter 10: Copy to LCP (Local Control Panel)	19
Chapter 11: Copy from LCP (Local Control Panel)	19

INTRODUCTION

The proprietary Start-Up Genie guides you through quick and easy commissioning. Take advantage of the complete Genie with 11 sections to configure applications with pump protections, I/O options, and communications. For the more straightforward applications set your motor information and operation mode and "Autoset" the rest of the parameters. With support for the most common control configurations, the Genie reduces set-up and configuration time to less than 15 minutes.

The Intelligent Pump Controller (IPC) Start-Up Genie allows the end-user to quickly and easily configure the controller for pump control applications including single pump, constant slave, duplex control, speed control, and test run mode. The Genie guides users through the 11 sections for controller configuration. The **Setup Selection** screen allows the user to configure the motor, application type, inputs, outputs, pump protection features, flow compensation, and communications.

Table 1: Setup Selection

SETUP SELECTION
1. Motor
2. Application
3. Feedback
Autoset*
4. Setpoint
5. Flow Compensation
6. Pump Protection Setup
7. Digital Input
8. Relay and Analog Output Setup
9. Communication
10. Copy to LCP
11. Copy from LCP

*At this point, the Autoset configuration window will give users the option to set the remaining parameters to the most common settings. See Table 2.

Convenience and Simplicity

The Start-Up Genie allows complete system programming in a guided step by step format, leading users to all of the necessary parameters for operation without manually scrolling through a complex parameter list. The simple menu and selection screens allow for easy access to the most important sections, utilizing the navigation arrows and the [OK] button. Several parameter sets are able to be automatically configured to the most common control configurations, further simplifying controller set up.

While above mentioned auto preset options provide effortless configuration, the Genie provides a single location for complete customization of parameters allowing users to tailor their controller to the specific application intended if the autoset configurations are not suitable.

CHAPTER 1: MOTOR

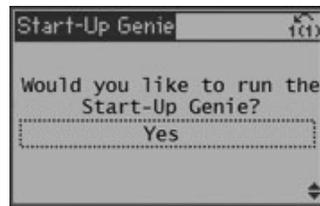
Allows configuration of the motor parameters; HP, Voltage, Nominal Frequency, Nominal Speed, Motor Current, Motor Service Factor, and Motor Type. The Motor information for these settings are found on the motor nameplate.

The Start-Up Genie will begin automatically after the initial power up (Screen 2) or it can be engaged by selecting Start-Up Genie under Quick Menus. First, select the language for programming (Screen 1), then you will be led to the Setup Selection screen. Select "Motor" in the Setup Selection screen (Screen 3) and the Genie will guide you through the following sequence of parameters. Press [OK] to select the parameter and enable editing. The highlighted area can be modified by using the up and down arrows. For numeric values with more than one digit, use the left and right keys to select the position within the number. Press [OK] to accept and save or [Cancel] to disregard the change.

SCREEN 1



SCREEN 2



SCREEN 3

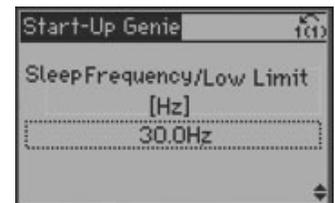
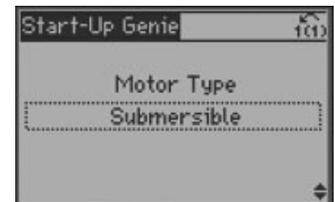
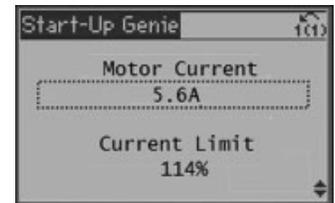


- **Motor HP:** Enter the rated motor power in HP from the motor nameplate data.*
- **Motor Voltage:** Set the rated motor voltage from the motor nameplate data.*
- **Motor Frequency:** Select the motor frequency from the motor nameplate data.*
- **Motor Nominal Speed:** Enter the rated motor speed from the motor nameplate data.*
- **Motor Current:** Enter the rated motor current value from the motor nameplate data.*
- **Current Limit:** Set the Current Limit equal to (Service Factor Amps/Full Load Amps). For example, if the Motor Current (FLA) indicated on the motor nameplate is 5.6A and the Motor Service Factor Current (SFA) is 6.4A, enter 114% for Current Limit (%). Be sure to properly set the Motor Current (FLA) and Current Limit. These parameters will configure the motor overload protection feature.
- **Motor Type:** Select Submersible for borehole application or Surface for above ground motors. Based on selection, the following parameters will be backfilled:

PARAMETER	SUBMERSIBLE	SURFACE
Motor Speed Low Limit [4-12]	30Hz	--
Compressor Start Max Speed [1-78]	29Hz	Default
Starting Ramp Up Time [3-82]	1s	3s
Function at Stop [1-80]	Coast	Coast
Min Speed for Function at Stop [1-82]	10Hz	10Hz

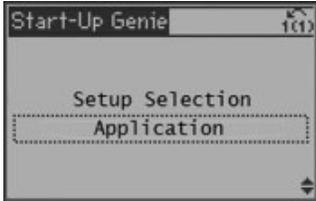
- **Sleep Frequency/Low Limit:** Enter the minimum limit for motor speed. The motor speed low limit can be set to correspond to the minimum output frequency of the motor shaft. The motor speed low limit must not exceed **Motor Frequency** listed above.

* Changing this parameter will affect settings of other parameters.



CHAPTER 2: APPLICATION

Allows the user to configure varying operating modes, units, and ramps. Changing operating modes will overwrite drive or motor size independent parameters.



OPERATING MODE:

2.1. Single Pump (default): 1 pump/1 controller for constant pressure, level control, or flow control applications

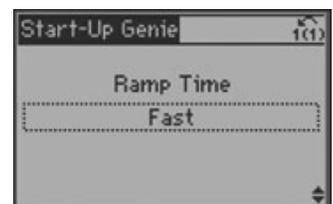
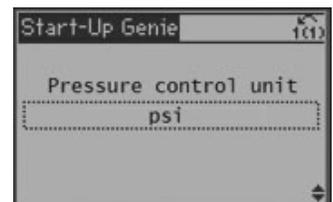
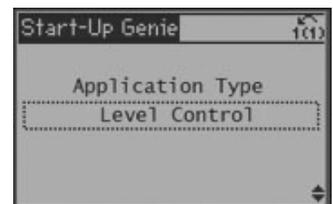
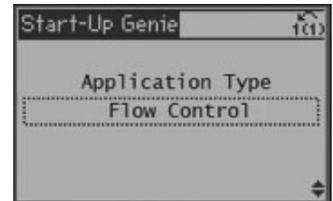
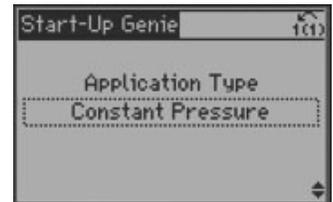
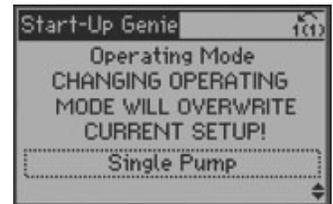
• APPLICATION TYPE:

- **Constant Pressure:** Pressure control using a pressure transducer or other external feedback device with analog signal
- **Flow Control:** Flow control using a flow meter or other external feedback device with analog signal
- **Level Control:** Level control using a level transducer or other external feedback device with analog signal

• **CONTROL UNITS:** Select the appropriate control units for the application (psi, GPM, ft., etc.).

• **RAMP TIME:** The Ramp Time is the time to transition from stop to full speed.

- Fast = 5s accelerate and 3s decelerate.



CHAPTER 2: APPLICATION *(continued)*

- Medium = 10s accelerate and 5s decelerate.
- Slow = 20s accelerate and 10s decelerate

2.2. Constant Slave: 1 variable speed pump with controller and up to 2 constant speed lag pumps (Lag pumps will need a separate starting device)

- **APPLICATION TYPE:**

- **Constant Pressure:** Pressure control using a pressure transducer or other external feedback device with analog signal
- **Flow Control:** Flow control using a flow meter or other external feedback device with analog signal
- **Level Control:** Level control using a level transducer or other external feedback device with analog signal

- **CONTROL UNITS:** Select the appropriate control units for the application (psi, GPM, ft., etc.).

- **RAMP TIME:** The Ramp Time is the time to transition from stop to full speed.
 - Fast = 5s accelerate and 3s decelerate.
 - Medium = 10s accelerate and 5s decelerate.
 - Slow = 20s accelerate and 10s decelerate.

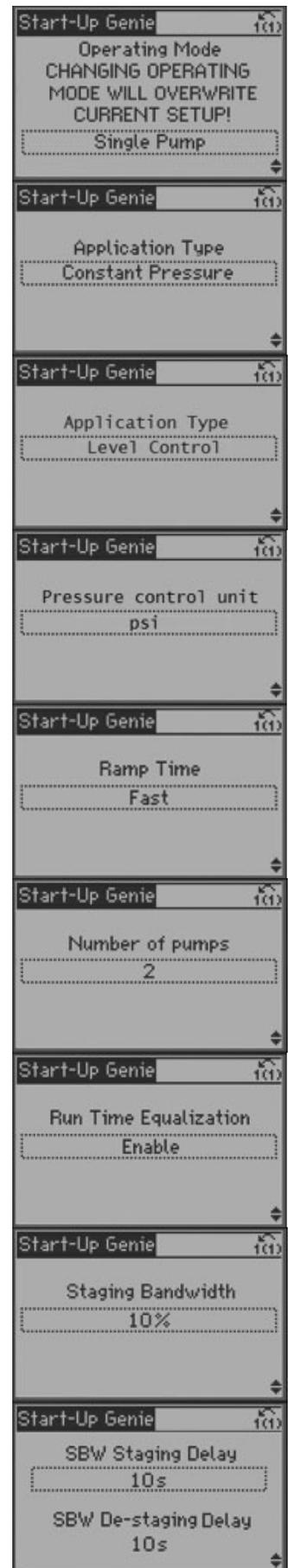
- **NUMBER OF PUMPS:** Set the total number of pumps including the variable speed pump.

- **RUN TIME EQUALIZATION:** Enabling this parameter will stage and destage the fixed speed pumps to provide equal run time for each fixed speed pump.

- **STAGING BANDWIDTH:** Set the SBW percentage to accommodate system pressure fluctuation.

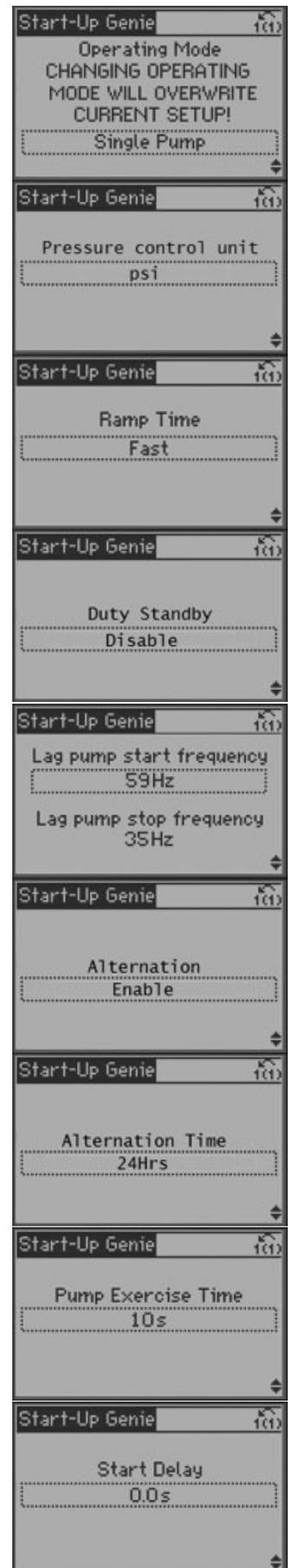
- **SBW STAGING DELAY:** Staging a pump on is delayed by the length of time programmed.

- **SBW DESTAGING DELAY:** Destaging a pump is delayed by the length of time programmed.



CHAPTER 2: APPLICATION *(continued)***2.3. Duplex Control:** 2 variable speed pumps each with its own controller

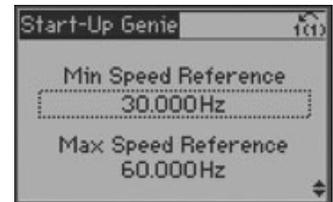
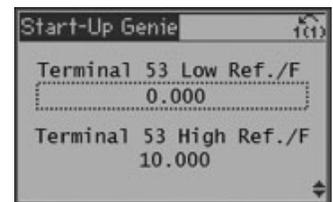
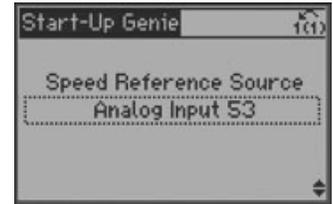
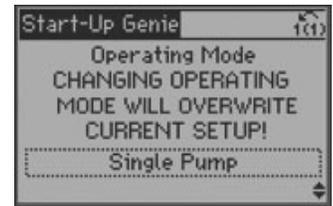
- **PRESSURE CONTROL UNITS:** Select the appropriate control units for the application (psi, bar, etc.)
- **RAMP TIME:** The Ramp Time is the time to transition from stop to full speed.
 - Fast = 5s accelerate and 3s decelerate.
 - Medium = 10s accelerate and 5s decelerate.
 - Slow = 20s accelerate and 10s decelerate.
- **DUTY STANDBY:** Duty Standby, if enabled, prevents both pumps from running at the same time. (The second pump acts as back-up.)
- **LAG PUMP START FREQUENCY:** This parameter defines the speed which the lead pump needs to achieve before the lag pump will be started. Setting Start and Stop frequencies too close together will cause frequent starts and stops of the lag pump.
- **LAG PUMP STOP FREQUENCY:** This parameter defines the speed to which system needs to drop before stopping the lag pump. Setting Start and Stop frequencies too close together will cause frequent starts and stops of the lag pump.
- **ALTERNATION:** When enabled, this parameter will alternate the lead pump after the elapsed time specified in Alternate Time.
- **ALTERNATION TIME:** Time setting for the amount of elapsed time (not run time) between lead pump alternations.
- **PUMP EXERCISE TIME:** If enabled, and there is no demand at alternation, Pump Exercise will force lead pump to run at the minimum speed for the time defined by this parameter. (0=Off/Disabled Pump Exercise.)
- **START DELAY:** This parameter enables a delay of the starting time. Set the start delay time until acceleration is to begin.



CHAPTER 2: APPLICATION *(continued)*

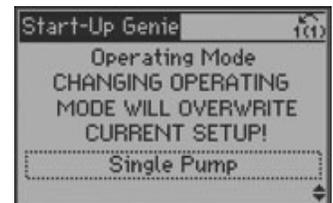
2.4. Speed Control: Receives a speed command from an external source.

- **SPEED REFERENCE SOURCE:** Set the source for the speed command. For analog inputs 53 and 54. Be sure to properly set the configuration switches A53 and A54 behind the keypad. Switch set to "I" for mA transducer; switch set to "U" for voltage transducer"
- **TERMINAL 53 LOW REFERENCE:** Enter the reference of feedback value that corresponds to the voltage or current set in par. 6-10/6-12
- **TERMINAL 53 HIGH REFERENCE:** Enter the reference of feedback value that corresponds to the voltage or current set in par. 6-11/6-13
- **MINIMUM SPEED REFERENCE:** Set the minimum speed that can be commanded by the Speed Reference Source.
- **MAXIMUM SPEED REFERENCE:** Set the maximum speed that can be commanded by the Speed Reference Source.



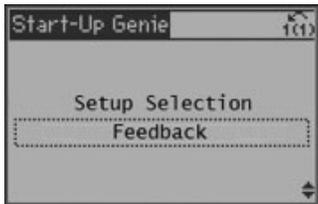
2.5. Test Run Mode: Ramps the motor to a specific speed.

- **TEST RUN SPEED:** Set the Test Run Speed as the speed the pump will run when test mode is enabled.
- **TEST RUN RAMP TIME:** Set the Test Run Ramp Time as the time ramp used when starting and stopping the pump in Test Run Mode.

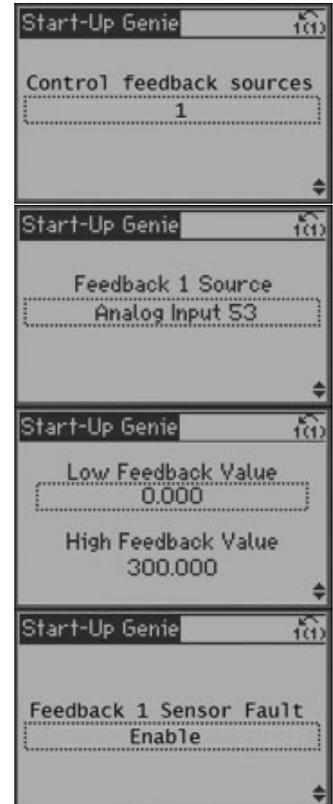


CHAPTER 3: FEEDBACK

Feedback Setup allows the configuration of analog inputs (sensors) and other feedback sources.



- Control Feedback Sources:** Select the number of feedbacks that are used to controlling the process variable. The feedbacks referred to are for control, not for monitoring.
- Feedback 1 Source:** The effective feedback signal is made up of up to three different signals. Select which drive input should be treated as the source of the first of these signals. **Be sure to properly set the configuration switches A53 and A54 behind the keypad. Switch set to "I" for mA transducer; switch set to "U" for voltage transducer.**
- Terminal 53 Low Reference**
- Low Feedback 1 Value:** Enter the minimum feedback value (in psi, GPM, feet etc.).
- High Feedback 1 Value:** Enter the maximum feedback value (in psi, GPM, feet etc.).
- Feedback 1 Sensor Fault:** If enabled, Sensor Fault will display a fault when sensor voltage or current drops to less than 50% of the minimum value programmed for that input.



AUTOSET

For basic applications, users are able to set motor information, operation mode and "Autoset" the rest of the parameters. With support for the most common control configurations, the Genie reduces setup and configuration time to less than 15 minutes. Autoset parameters vary with application type.

Single Pump Autoset Configuration

Autoset Configuration	Constant Pressure	Level Control	Flow Control
Transducer Max Feedback	300 [unit]	300 [unit]	300 [unit]
Transducer Type	4-20mA	4-20mA	4-20mA
Feedback 1 Source	AI 33	AI 53	AI 53
PID Performance	Normal	Fill (Normal)	Normal
Sleep Mode	Enabled	Enabled	Disabled
Sleep Frequency	30 Hz	30 Hz	N/A
Restart Difference	5 [unit]	5 [unit]	N/A
No Water / Loss of Prime Fault	Enabled	Enabled	Enabled
No Water / Loss of Prime Restart Time	10 min.	10 min.	10 min.

Duplex Autoset Configuration

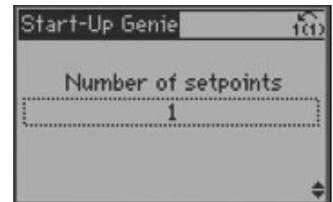
Transducer Max Feedback	300 [unit]
Transducer Type	4-20mA
Feedback 1 Source	AI 53
Sleep Frequency	30 Hz
Restart Difference	5 [unit]
No Water / Loss of Prime Fault	Enabled
Duty Standby	Disabled
Lag Start Frequency	59 Hz
Lag Stop Frequency	35 Hz
Alternation	Enabled
Alternation Time	24 hours
Pump Exercise Time	0 s (Disabled)

CHAPTER 4: SETPOINT

This setup allows configuration of up to 2 setpoints.

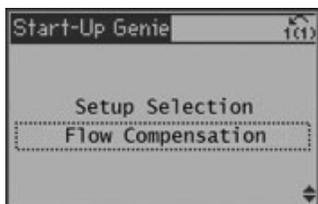


- **Number of set points:** Select the number of setpoints used in the application. If multiple setpoints are used, the setpoint can be selected by the state of DI 33.
- **Setpoint 1:** This is the target value for the control loop. If multiple setpoints are enabled, active when DI 33 = open.
- **Setpoint 2:** This is the target value for the control loop. If multiple setpoints are enabled, active when DI 33 = closed.

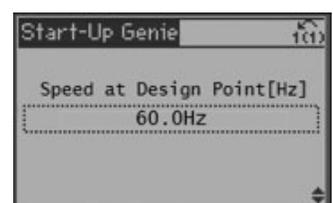
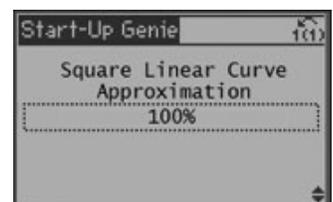
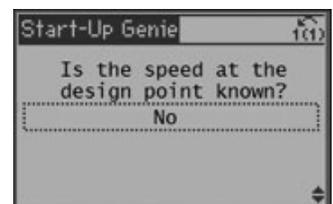
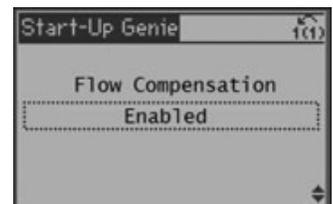


CHAPTER 5: FLOW COMPENSATION

This setup allows configuration of up to 2 setpoints.

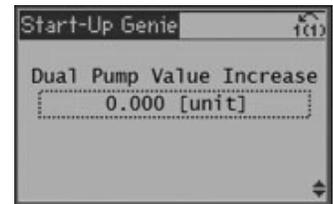
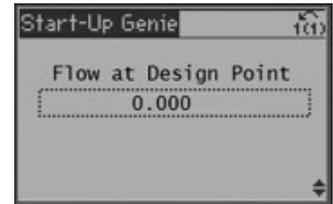
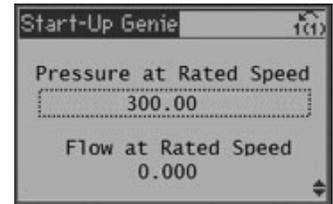
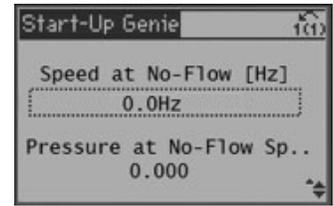


- **Flow Compensation:** Adjusts the setpoint based on speed/flow to compensate for system head loss.
- **Is the speed at the design point known?:** Enable the Work Point Calculation if the speed at the design point is known. This information is most commonly known in closed loop circulating systems
- **Square Linear Curve Approximation:** Adjusts shape of control curve. 0% = straight line. 100% = maximum parabola.
- **Speed at Design Point:** Set the motor speed in Hz at which System Design Working Point is achieved.
- **Speed at No Flow:** Set the motor speed in Hz at which flow is zero and minimum pressure is achieved.



CHAPTER 5: FLOW COMPENSATION *(continued)*

- **At No Flow Speed:** Set the pressure value corresponding to speed at no flow.
- **Pressure at Rated Speed:** Set the pressure value corresponding to pressure at rated speed.
- **Flow at Rated Speed:** Set the flow value corresponding to flow at rated speed.
- **Flow at Design Point:** Set the flow value corresponding to flow at design point
- **Dual Pump Value Increase:** Defines the increase in setpoint when a lag pump starts. This value is entered as a % of the Maximum Reference

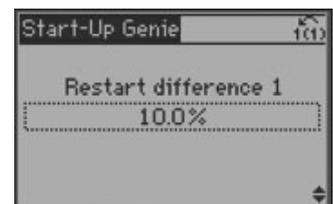
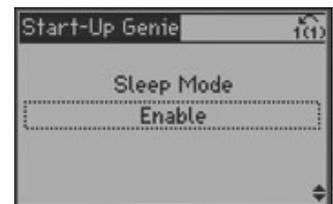


CHAPTER 6: PUMP PROTECTION

This setup configures Sleep Mode, Flow Check, No Water/Loss of Prime and Pump Protect functions.

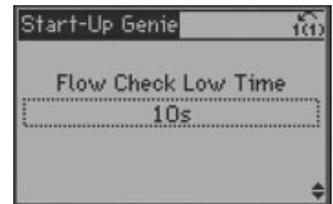


- **Sleep Mode:** Sleep Mode allows the pump to stop when a no flow condition is detected. A no flow condition means that the setpoint has been satisfied and the pump is running at the sleep frequency.
- **Minimum/Sleep Frequency:** Enter the minimum limit for the motor speed. The motor speed low limit can be set to correspond with the minimum output frequency of the motor shaft. The Motor Speed Low Limit must not exceed the Motor Frequency.
- **Sleep Delay:** The sleep delay time is the time the pump must stay at the sleep frequency before going to sleep.
- **Restart Difference 1:** Set the difference between setpoint #1 and actual at which the system must exit sleep mode. Value is set as a % of setpoint #1.
- **Restart Difference 2:** Set the difference between setpoint #2 and actual at which the system must exit sleep mode. Value is set as a % of setpoint #2.



CHAPTER 6: PUMP PROTECTION (continued)

- **Minimum Run Time:** Set the minimum time the motor must have been running before entering sleep mode.
- **Minimum Sleep Time:** Set the minimum time the motor must stay in sleep mode.
- **Flow Check Window:** Flow check window is the amount of pressure increase used in the flow check function.
- **Flow Check Low Time:** Flow check low time defines how long the controller will run at the setpoint during the flow check function.
- **Flow Check High Time:** Flow check high time defines how long the controller will run at Flow Check Window + setpoint during the flow check function.

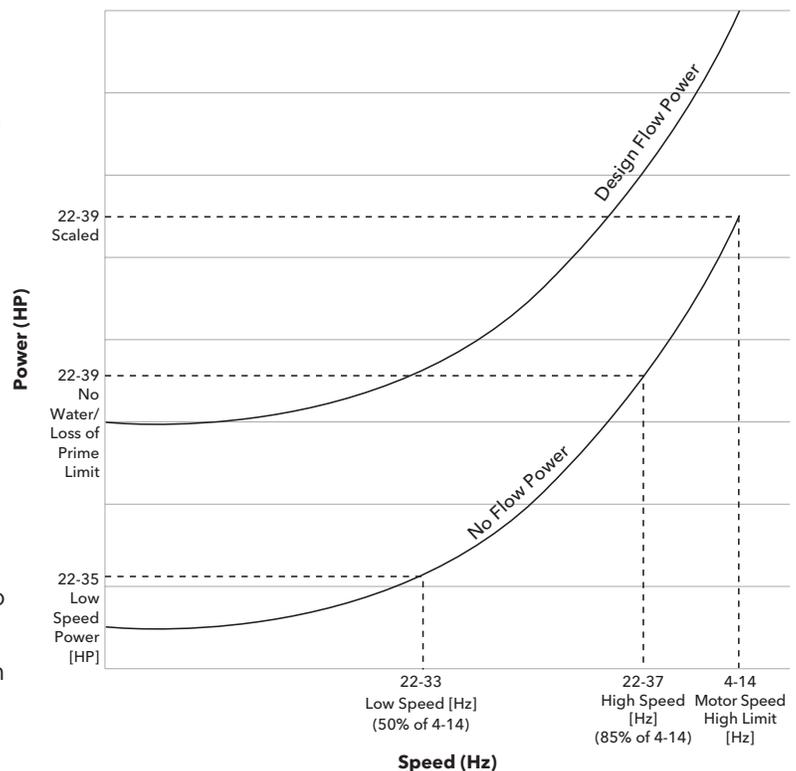


- **Run the No Flow Power Calibration Setup:** Start of auto setup of power data for No-Flow Power tuning.

NO FLOW POWER CALIBRATION

A no flow condition can be detected by monitoring the power consumption of the pump. Typically a pump's power consumption will drop when the pump is run at no flow. The graph shown below illustrates a typical pump power curve at the pump design flow and at no flow.

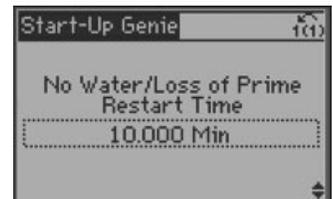
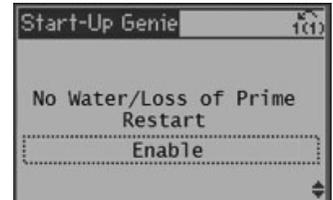
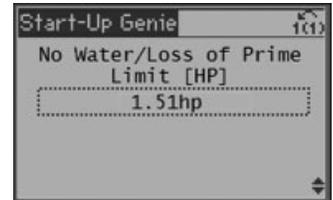
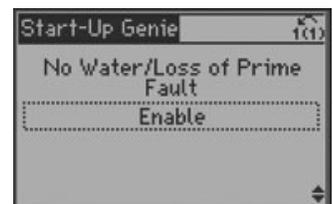
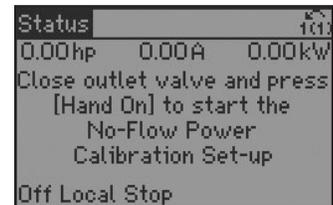
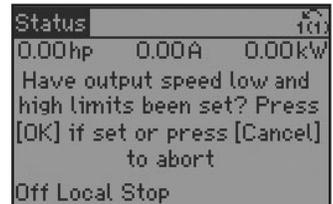
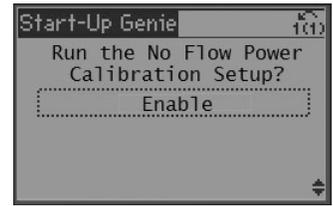
When the pump is operated at no flow, the power consumption will follow the no flow power curve for that specific pump. The controller monitors the power consumption of the pump. If the pump's power consumption falls to the no flow power curve, a no flow condition can be detected by the controller. In order to detect a no flow condition for various pumps, the no flow power curve needs to be programmed into the drive. The No Flow Power Calibration Setup provides the method to program the no flow power curve into the controller.



CHAPTER 6: PUMP PROTECTION *(continued)*

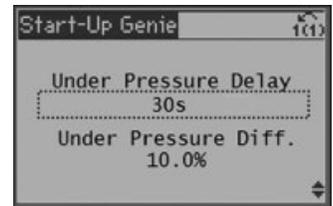
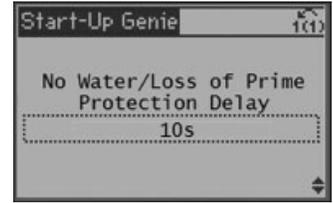
NO FLOW POWER CALIBRATION INSTRUCTIONS

- Select Enable to begin the No Flow Power Calibration Setup
- The first screen prompts to ensure the **Sleep Frequency/Low Limit** and **Motor Frequency** have been set. If these points are not set the No Flow Power Calibration will not operate properly.
- The next screen prompts to close all discharge valves and to press [Hand On] to begin the No Flow Power Calibration process. Doing this ensures the pump will operate at no flow/shutoff. If the pump does not operate at no flow during the setup, the calibration data will be invalid.
- The controller will now begin running the pump while monitoring the power. In the first two steps the pump is operated at 85% of maximum speed defined at Motor Speed High Limit [Hz] and the power to the pump is monitored and saved. The pump then operates at 50% of maximum speed and the power is monitored and saved. The no flow power curve is then constructed within the controller based on these 2 points using the affinity laws. The No Flow Power Calibration Set-up is now complete. The power data can be saved by **pressing [OK] and then the down arrow**. If any issues were encountered during the calibration process discard the data by pressing [Cancel] and repeat the calibration process.
- **No Water/Loss of Prime Fault:** No water/loss of prime fault protects the pump by turning off the pump when a high speed and low power condition is detected.
- **No Water/Loss of Prime Limit:** This is the no flow power corresponding to High Speed. Controller scales this value based on the affinity laws to determine the no flow power at full speed. Set this value using the No Flow Power Calibration Setup (previous page).
- **No Water/Loss of Prime Restart:** No Water/Loss of Prime Restart function allows the controller to restart after a No Water/Loss of Prime fault is detected. If No is selected and a No Water/Loss of Prime fault is detected, the drive will require a manual reset to clear the fault.
- **No Water/Loss of Prime Restart Time:** The No Water/Loss of Prime Restart Function allows the controller to restart after a No Water/Loss of Prime fault is detected. The Restart time is set by the parameter 13-12.3



CHAPTER 6: PUMP PROTECTION *(continued)*

- No Water/Loss of Prime Protection Delay:** The No Water/Loss of Prime Delay time sets the time delay between detection of a No Water/Loss of Prime condition and when the fault is issued. The pump must be running at maximum speed while the HP is less than the No Water/Loss of Prime Limit to start the delay timer.
- Under Pressure Function:** The Under Pressure alarm/warning is issued when the system pressure falls below the Under Pressure Limit for longer than the Under Pressure Delay Time.
- Under Pressure Delay:** Under Pressure Delay Time sets the delay before the action set occurs when an Under Pressure condition is detected.
- Under Pressure Difference:** Under Pressure Difference is the difference between the setpoint and the actual pressure that will trigger the Under Pressure Function. This value is set as a % of Maximum Reference/Feedback.



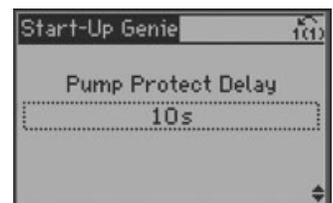
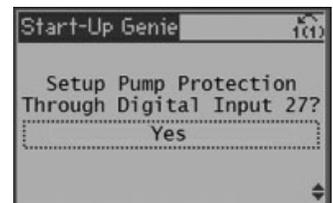
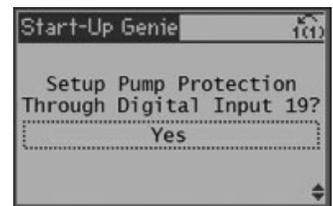
Under Pressure Difference Example

Given:

- Under Pressure Delay = 10 seconds
- Under Pressure Difference = 10%
- Setpoint = 50 psi
- High Feedback 1 Value = 300 psi.

When the system pressure falls below **20 psi (50 psi - (10% * 300 psi))** for more than 10 seconds, the controller will issue an Under Pressure Alarm or Warning.

- Setup Pump Protection through Digital Input 19:** A pump or system protection function can be implemented using digital input DI 19 and an external switch. Pump Protect Alarm is active when this input is 'O' or Open.
- Setup Pump Protection through Digital Input 27:** A pump or system protection function can be implemented using digital input DI 27 and an external switch. Pump Protect Alarm is active when this input is 'O' or Open.
- Pump Protect Delay:** Pump Protect Delay sets the time between detection of a Pump Protect Alarm condition and the issue of the Pump Protect Alarm.

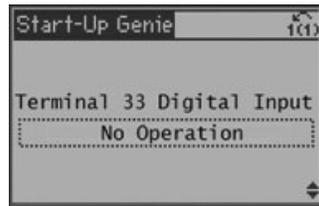
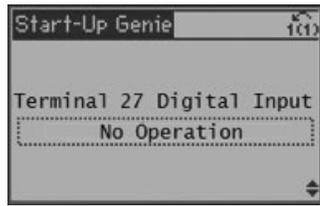
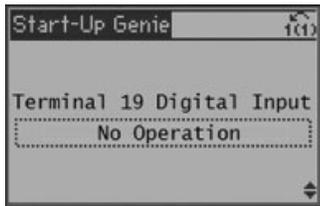


CHAPTER 7: DIGITAL INPUT

This setup allows configuration of the digital inputs.



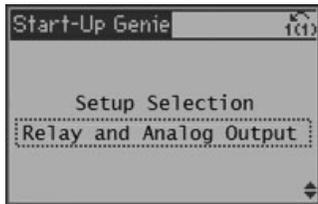
- **Terminal 19, 27, and 33 Digital Input:** If not already set for Pump Protection or Dual Setpoint, select the function from the available digital input range.



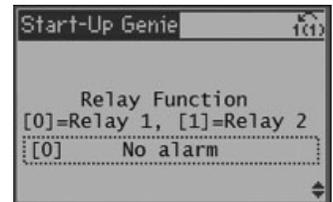
Option	Function	Option	Function
	Select the function of Terminal 42 as an analog current output. A motor current of 20 mA corresponds to I_{max}*	[131]	Reference 4-20mA Minimum Reference - Maximum Reference
[0]	No operation	[132]	Feedback 4-20mA -200% to +200% of 20-14 Maximum C14Reference/Feedb.
[100]	Output Freq. 0-100 0 - 100 Hz, (0-20 mA)	[133]	Motor Current 4-20mA 0 - Inverter Max. Current (16-37 Inv. Max. Current)
[101]	Reference Min-Max Minimum Reference - Maximum Reference, (0-20 mA)	[134]	Torque 0-lim 4-20mA 0 - Torque Limit (4-16 Torque Limit Motor Mode)
[102]	Feedback +/- 200% -200% to +200% of 20-14 Maximum Reference/Feedb., (0-20 mA)	[135]	Torque 0-nom 4-20mA 0 - Motor rated torque
[103]	Motor Current 0-I _{max} 0 - Inverter Max. Current (16-37 Inv. Max. Current), (0-20 mA)	[136]	Power 4-20mA 0 - Motor rated power
[104]	Torque 0-Tlim 0 - Torque Limit (4-16 Torque Limit Motor Mode), (0-20 mA)	[137]	Speed 4-20mA 0 - Speed High Limit (4-13 and 4-14)
[105]	Torque 0-Tnom 0 - Motor rated torque, (0-20 mA)	[139]	Bus ctrl. 0 - 100%, (0-20 mA)
[106]	Power 0-Phom 0 - Motor rated power, (0-20 mA)	[140]	Bus ctrl. 4-20mA 0 - 100%
[107]	Speed 0-HighLim 0 - Speed High Limit (4-13 Motor Speed High Limit [RPM] and 4-14 Motor Speed High Limit [Hz]), (0-20 mA)	[141]	Bus ctrl. t.o. 0 - 100%, (0-20 mA)
[113]	Ext. Closed Loop 1 0 - 100%, (0-20 mA)	[142]	Bus ctrl. t.o. 4-20mA 0 - 100%
[114]	Ext. Closed Loop 2 0 - 100%, (0-20 mA)	[143]	Ext. CL 1 4-20 mA 0 - 100%
[115]	Ext. Closed Loop 3 0 - 100%, (0-20 mA)	[144]	Ext. CL 2 4-20 mA 0 - 100%
[130]	Out frq 0-100 4-20mA 0 - 100 Hz	[145]	Ext. CL 3 4-20 mA 0 - 100%

CHAPTER 8: RELAY AND ANALOG OUTPUT SETUP

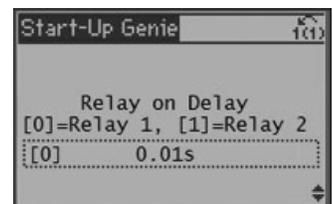
This setup allows configuration of the relay and analog outputs.



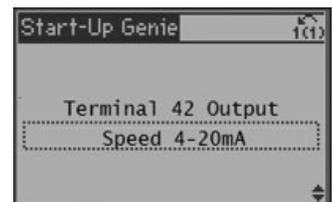
- Relay Function:** To modify the relay function, first press OK and use the up and down arrows to select the correct index. Selecting [0] allows modification of Relay 1, [1] allows modification of Relay 2. Press OK to save the index and allow editing of the relay function. Press OK to save the Relay Function setting. The default setting for Relay 1 is to activate on No Alarm which can be used to detect alarms, including loss of power. The default setting for Relay 2 is to activate on Run.



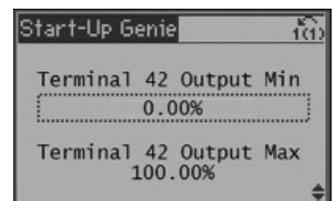
- Relay on Delay:** This is the delay time from when the relay function is triggered to when the relay transitions its state. To modify the relay delay time first press OK and use the up and down to select the correct index. Selecting [0] allows modification of Relay 1, [1] allows modification of Relay 2. Press OK to save the index and allow editing of the delay time. Press OK to save the Relay on Delay setting.



- Terminal 42 Output:** Select the function of terminal 42 as an analog current output.



- Terminal 42 Output Min:** Scale the minimum output of the selected analog signal at terminal 42, as a percentage of the maximum signal value. E.g. if 0mA of (0 Hz) is desired at 25% of the maximum output value, then program 25%.



- Terminal 42 Output Max:** Scale the maximum output of the selected analog signal at terminal 42.

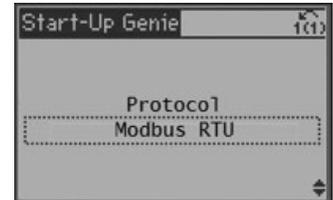
CHAPTER 9: COMMUNICATION

This setup configures the on board fieldbus communications.



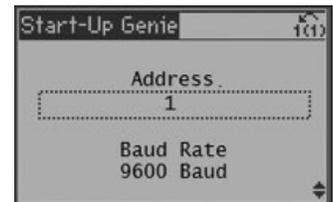
• **Protocol:** Select the protocol for the FC port. (Terminals 61,68,69)

- BACnet
- Modbus RTU
- FLN
- FC MC
- Metasys N2
- FC



• **Address:** Enter the address for the FC port. The valid range depends on the protocol.

• **Baud Rate:** Select the Baud rate for the FC Port.



• **Parity/Stop Bits:** Parity and stop bits selection for the FC ports.



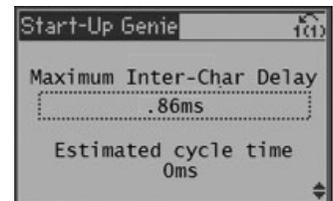
• **Minimum Response Delay:** Specify the minimum delay time between receiving a request and transmitting a response. This is used for overcoming modem turnaround delays.

• **Maximum Response Delay:** Specify the maximum permissible delay time between transmitting a request and receiving a response. Exceeding this delay time will cause control time-out.

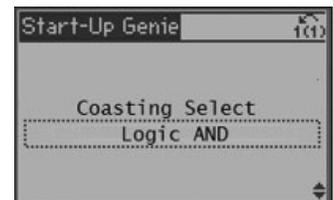


• **Maximum Inter-Char Delay:** Specify the maximum permissible time interval between the receipts of two bytes. This parameter activates time-out if transmission is interrupted. This parameter is not active when Protocol is set to FC [0] protocol.

• **Estimated Cycle Time**

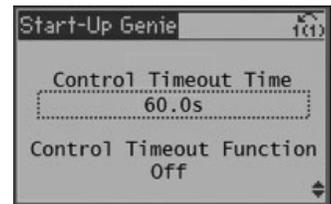
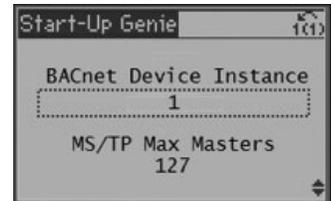
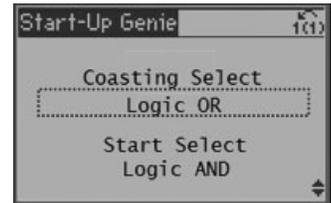


• **Coasting Select:** Select control of the coasting function via the terminals and/or via the bus.



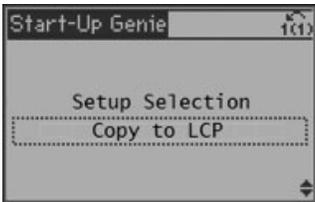
CHAPTER 9: COMMUNICATION *(continued)*

- **Start Select:** Select control of the drive via the terminals and/or via the fieldbus.
- **BACnet Device Instance:** Enter a unique ID number for the BACnet device.
- **MS/TP Max Masters:** Define the address of the master which holds the highest address in this network. Decreasing this value optimizes polling for the token.
- **Control Timeout Time:** enter the maximum time expected to pass between the receptions of two consecutive telegrams. If this time is exceeded, it indicates that the serial communication has stopped and the function selected will then be carried out.
- **Control Timeout Function:** Select the time-out function. The time-out function activates when the control word and reference fails to be updated within the time period specified.

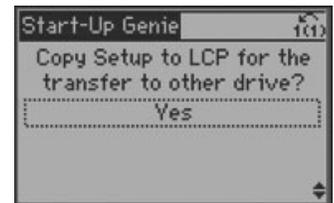


CHAPTER 10: COPY TO LCP (LOCAL CONTROL PANEL)

Allows all of the controlled parameters to be copied to the LCP. This is helpful for saving the drive state, reverting the drive to a previous state, or quickly configuring another controller with the same settings.

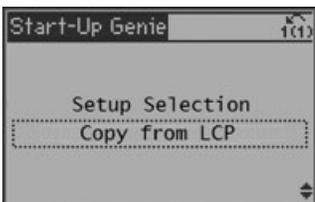


- **Copy Setup to LCP for the transfer to other drive:** To easily copy setup to another drive, select "Yes" to copy setup to LCP then transfer LCP to another drive and select "Copy from LCP" in the Start-Up Genie.

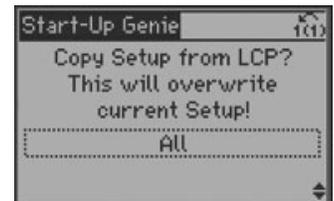


CHAPTER 11: COPY FROM LCP (LOCAL CONTROL PANEL)

Allows all of the controlled parameters to be copied from the LCP. This is helpful for saving the drive state, reverting the drive to a previous state, or quickly configuring another controller with the same settings.



- **Copy Setup from LCP:** Select "All" to copy all parameters in all set-ups from the LCP to the drive. Select "Application Only" to copy all parameters in all set-ups except for size dependent parameters.



Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're 12,500 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to www.xylem.com



Xylem Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (800) 453-6777
Fax: (888) 322-5877
www.centripro.com