Keypad Operation and Quick-Start

Chapter 3

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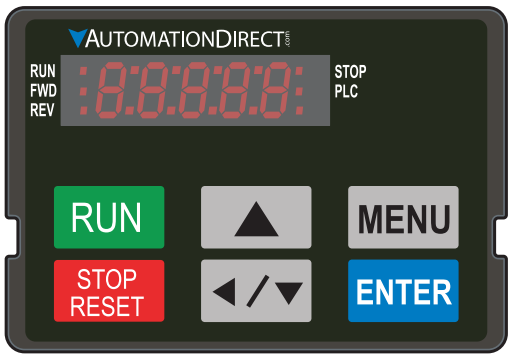
The DURAPULSE GS20 & GS20X Digital Keypad

The GS20 and GS20X drives come with a digital keypad equipped with six buttons. The GS20 series drives also have a potentiometer, while the GS20X drives do not. You can use the digital keypad to control the drive, set parameters, change drive modes, etc. For more detailed control options, you can use GSoft2 software by connecting to a computer via USB (see Chapter 7).

It is also possible to use the GS4-KPD with the GS20 for expanded keypad functionality. For more about using the GS4-KPD, please see “Optional Advanced Keypad” on page A–49.

GS20 Digital Keypad



GS20X Digital Keypad

Descriptions of Keypad Functions	
RUN	**RUN Key** • Valid only when the source of operation command is from the keypad. • RUN can be pressed even when drive is in process of stopping. • When in “LOCAL” mode, RUN is valid only when the source of operation command is from the keypad.
STOP RESET	**STOP/RESET Key** *This key has the highest processing priority in any situation.* • When the drive receives a STOP command, whether the drive is in operation or stop status, the drive will execute a "STOP" command. • The RESET key can be used to reset the drive after a fault occurs. For those faults that can't be reset by the RESET key, see the fault records after pressing MENU key for details. *NOTE: The ability to STOP the drive from the keypad is effective ONLY if the drive is configured to RUN and/or STOP from the keypad. Keypad STOP can be disabled by parameter 00.32, Digital Keypad STOP Function.*
ENTER	**ENTER Key** Press ENTER to go to the next menu level or accept parameter entry. If it is the last level, then press ENTER to execute the command.
MENU	**MENU Key** Press MENU to return to the Main Menu or cycle through the available menu options.
▲	**Direction: Up** Press to make the value set on the current menu/parameter higher.
◀/▼	**Direction: Left/Down** • Press to make the value set on the current menu/parameter lower. • In the menu/text selection mode, the arrows are used for item selection. Long press the MENU key to use the left direction function.
	Frequency Setting Dial (Potentiometer)(GS20 ONLY) The dial can be set as the main frequency input. Set Parameter 00-20 or 00-30 to equal ‘7-Digital Keypad Dial’.

Keypad Indicator LEDs

The left and right sides of the digital display contain a series of LEDs that light up to indicate certain drive functions.

Descriptions of LED Functions	
RUN	**Steady ON**: Drive is running. **Blinking**: Drive is stopping or in base block. **Steady OFF**: Drive is not running.
FWD	**Steady ON**: Drive is operating in Forward mode. **Blinking**: Drive is changing direction. **Steady OFF**: Drive is operating in Reverse mode.
REV	**Steady ON**: Drive is operating in Reverse mode. **Blinking**: Drive is changing direction. **Steady OFF**: Drive is operating in Forward mode.
STOP	**Steady ON**: Drive is stopped or in the process of stopping. **Blinking**: Drive is in standby (run but does not output). **Steady OFF**: Drive is not currently executing an operational (STOP) command. *NOTE: The ability to STOP the drive from the keypad is effective ONLY if the drive is configured to RUN and/or STOP from the keypad. Keypad STOP can be disabled by parameter 00.32, Digital Keypad STOP Function.*
PLC	**Steady ON**: PLC STOP (PLC 2) initiated. **Blinking**: PLC Run (PLC1) initiated. **Steady OFF**: No PLC functions implemented (PLC 0).

GS20(X) Keypad Operation

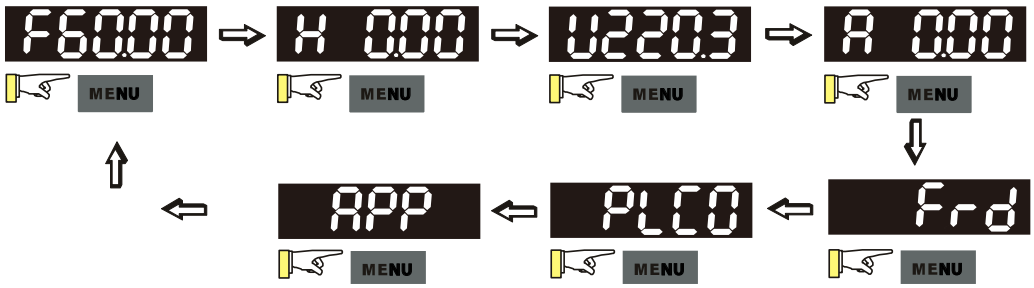
The following section details digital keypad operation for the GS20(X) series drives.

GS20(X) Keypad Function Examples

Instruction	*Press Key*	*Display Will Show*	
First menu to display after power up.	n/a	Displays the present frequency setting of the drive	RUN FWD REV F60.00 STOP PLC
Press MENU once from startup.	MENU	Displays the actual output frequency of the drive	RUN FWD REV H50.00 STOP PLC
Press MENU twice from startup.	MENU	Displays user defined output	RUN FWD REV U 180 STOP PLC
Press MENU three times from startup.	MENU	Displays output current	RUN FWD REV A 5.00 STOP PLC
Press MENU four times from startup. Displays Frd if the drive is currently configured for Forward operation. Press the UP or DOWN key to change to Reverse. Press ENTER to confirm the change.	MENU, UP/ DOWN ENTER	Displays the Forward command if configured for Forward operation.	RUN FWD REV Frd STOP PLC
		Displays the Reverse command if configured for Reverse operation.	RUN FWD REV rEv STOP PLC
Press MENU five times from startup. Displays the current PLC setting. Press the UP or DOWN arrow keys to change the PLC setting, then press ENTER to confirm.	MENU, UP/ DOWN ENTER	Displays the current PLC setting.	RUN FWD REV PLC0 STOP PLC
Enable the counter by setting parameter 00.04 to 1. See the user manual for full instructions on using the counter.	MENU	Displays the counter value	RUN FWD REV c 20 STOP PLC
After selecting the desired menu option, press ENTER to bring up the parameter number (Format XX.YY). Use the UP and DOWN arrow keys to change the parameter number as needed, then press ENTER to adjust the parameter value.	ENTER, UP/ DOWN, ENTER	Displays the parameter number	RUN FWD REV 06.00 STOP PLC
From the parameter number screen, press ENTER to bring up the current value of the selected parameter. Use the UP and DOWN arrows to adjust the value. Press ENTER again to confirm the choice.	ENTER, UP/ DOWN	Displays the value of the selected parameter	RUN FWD REV 10 STOP PLC
Once a desired parameter value has been set using the UP and DOWN arrow keys, press ENTER to save the choice and display End message.	ENTER	End message. Displays when data has been accepted and stored	RUN FWD REV End STOP PLC
Displays when an external fault is detected.	n/a	External fault message	RUN FWD REV EF STOP PLC
Displays when data is not accepted or the value exceeded	n/a	Error message.	RUN FWD REV Err STOP PLC

Main Page

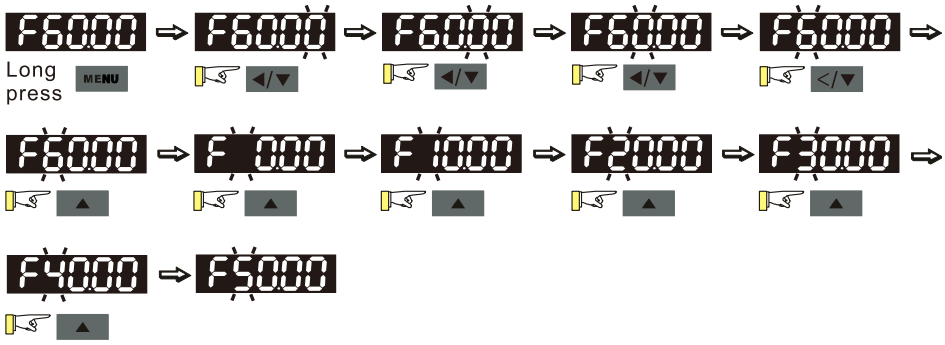
When the drive first starts up, it will display the present frequency setting of the drive. To access the other main pages of the keypad, press the MENU button to cycle through the options.



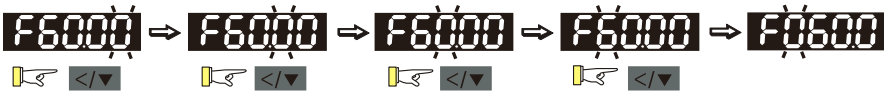
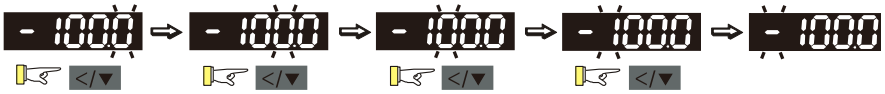
NOTE: In screen selection mode, press ENTER to set the parameters.

NOTE: APP only displays when parameter 13.00 does not equal 0.

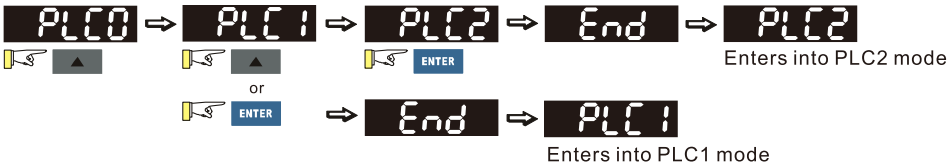
Frequency Command Settings

Frequency Command Instructions	
Change Frequency Setting	The default maximum frequency setting (parameter 01.00) is 60.00 Hz. The command frequency on the drive can not be set higher than the maximum frequency value. To set the command frequency value, follow the instructions below: 1) Press the MENU key until F60.00 is displayed (see "Parameter Settings" on page 3–6.). 2) Hold down MENU until the final digit of the value begins to blink. 3) Press the LEFT/DOWN button to select the digits you wish to change. Press the UP button to cycle through the values available. 4) Press and hold MENU until no digits are blinking.  Note: To change the value to something greater than 99.99, follow the steps above but press the LEFT/DOWN button until the left-most digit (normally blank) switches to a blinking 0. Then use the UP button to change to the desired value. The maximum frequency value is 599.00. If a higher value is chosen, the parameter screen will display Err, followed by 599.00 (the maximum possible), then revert to the previous good value.

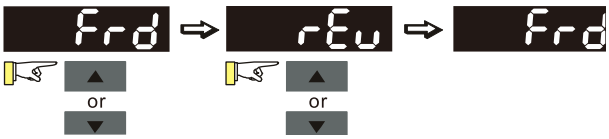
Parameter Settings

Parameter Setting Instructions	
Setting Parameters	1) Press MENU until the parameter screen appears (typically H 0.00). 2) Press ENTER to switch to the parameter group, then press the UP button to select the desired group number. 3) Press ENTER to switch to the parameter number, then press the UP button to select the desired number. 4) Press ENTER to switch to the parameter value, then press the UP or LEFT/DOWN button to cycle through the available options. 5) Press ENTER. If END displays, the parameter was successfully updated. If Err displays, the chosen configuration is not viable.
Unsigned Parameter Settings	To set an unsigned parameter value, follow the steps for "Setting Parameters" above, until you reach the parameter value. Then: 1) Press and hold the MENU button until the last digit of the parameter value begins to blink. 2) Change the value by pressing the UP button. 3) Press the LEFT/DOWN button to move to the next digit, and change its value using the UP button. Repeat the process until all digits have been configured as desired. 4) Press and hold the MENU button to disable the left shift function of the LEFT/DOWN button. 
Setting a negative parameter value	Follow the normal steps for setting a parameter as above. To set the parameter value to negative: 1) Press and hold the MENU button while on the parameter value until the final digit begins to blink. 2) Use the LEFT/DOWN button to navigate all the way to the left of the screen. 3) Use the UP button to cycle through the available digits. For parameters cable of being set to negative, the value will cycle from 0 to - instead of 0 to 9.  For parameter values with three digits and two decimal places and a positive/negative setting, the keypad only displays four digits (-100.0, not -100.00).

PLC Settings

PLC Setting Instructions	
Setting the PLC Mode	The GS20(X) drive can be set to three PLC modes - PLC0 (Disable), PLC1 (Run), and PLC2 (Stop). To set the PLC mode, follow the steps below: 1) From the startup screen, press MENU until the keypad displays PLCx (where x=0, 1, or 2, depending on your current setting). 2) Press the UP button to select the desired PLC mode, then press ENTER. The screen will display End, and the chosen PLC mode is set. 

Setting Direction

Setting Direction Instructions	
Setting to Forward or Reverse Mode	The GS20(X) drive can be configured to run in forward (Frd) or reverse (rEu) mode. To set the drive direction: 1) From the startup screen, press the MENU button until Frd or rEu appears. 2) Press the UP or LEFT/DOWN button to cycle through the options. The option is selected as soon as it displays. 3) Press MENU to return to the other screens. 

Application Settings

The APP setting can be used to provide a shortcut to application specific parameters for easier access through the keypad. The application selection page does not display unless parameter 13.00 is set to a value other than zero. By default, parameter 13.00 is set to 0.

Application Settings Instructions

Enabling the APP keypad screen

To enable the APP keypad screen, set parameter 13.00 to a value other than 0. Use the instructions under "Parameter Settings" on page 3–6 to navigate to parameter 13.00 and set a value.

The following options are available:

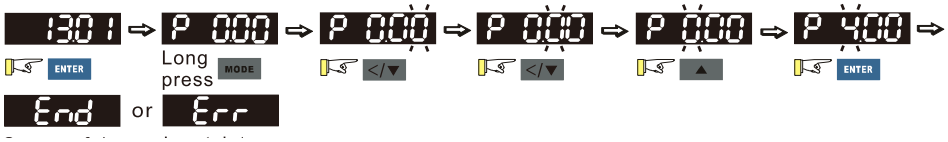
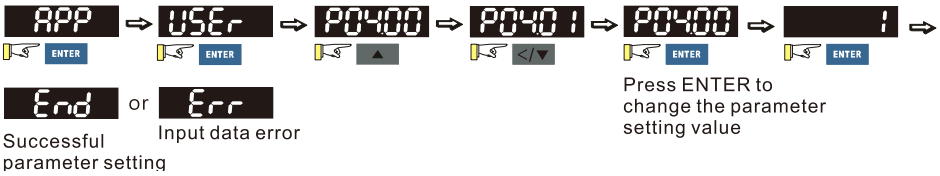
Value	Keypad Display	Description
0	n/a	APP is off and does not display.
1	USEr	User-defined application.
2	CoPr	Compressor application
3	FAn	Fan application
4	PUNP	Pump application
5	CnYr	Conveyer application
6	CnC	Machine tool application
7	PAC	Packing application
8	tiLE	Textile application

Using the APP setting

To verify the current APP setting of the drive, press the MENU button until APP appears, then press ENTER to display the current APP setting. If APP does not appear, parameter 13.00 is set to 0 and APP is disabled.

If APP is enabled, press ENTER again to access a list of application appropriate parameters. Use the UP and LEFT/DOWN keys to view parameter numbers. Press the ENTER key to select a parameter, then modify per the standard parameter setting instructions.

For example, if parameter 13.00 is set to 2:

Application Settings Instructions	
Configuring the User-defined Parameter Set	The user-defined APP setting (USEr) allows you to configure your own list of parameters for quick access. Up to 50 parameters can be set by configuring parameters 13.01–13.50. 1) Navigate to the parameter settings and select parameter 13.01 2) Press and hold the MENU button until the last digit of the value (default will be 0.00) blinks, then use the UP and LEFT/DOWN buttons to set the parameter number you wish to reference. 3) Press ENTER to accept. 4) Repeat as needed using parameters 13.02 and up until all desired parameters are referenced. For example, if the first user-defined parameter you wish to appear is 04.00:  User-defined parameters must use parameter 13.xx in sequence or an Err will occur. The first user-defined parameter must be under 13.01, the second under 13.02, etc. If you wish to remove user-defined parameters, they must also be removed in order, starting with the highest 13.xx configured and working down.
Modifying User-defined Parameter Set Values	The APP page can be used to modify the values of parameters in the user-defined parameter set rather than needing to go to the parameter page. To modify the value of a parameter in the user-defined set, follow the steps below: 1) Press MENU until APP appears, then press ENTER. 2) When USEr displays, press ENTER to bring up the list of user-defined parameters. 3) Use the UP and LEFT/DOWN buttons to select the desired parameter, then press ENTER. 4) Use the UP and LEFT/DOWN buttons to select the desired parameter value, then press ENTER. 5) If the value is valid, End will display. If it is not valid, Err will display. Press MENU to return to the main page. 

Reference Table for Digital LED Character Display

The table below shows how characters display on the LED screen with the number or letter represented above it. This can helpful for characters such as “V” that do not display normally on the LED.

Number	0	1	2	3	4	5	6	7	8	9
Display	0	1	2	3	4	5	6	7	8	9
Number	A	a	B	b	C	c	D	d	E	e
Display	A	-	-	b	C	c	-	d	E	-
Number	F	f	G	g	H	h	I	i	J	j
Display	F	-	G	-	H	h	-	i	J	j
Number	K	k	L	l	M	m	N	n	O	o
Display	K	-	L	-	-	-	-	n	-	o
Number	P	p	Q	q	R	r	S	s	T	t
Display	P	-	-	q	-	r	S	-	-	t
Number	U	u	V	v	W	w	X	x	Y	y
Display	U	u	-	v	-	-	-	-	Y	-
Number	Z	z								
Display	Z	-								

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PAGE