



MX³ Control Quickstart Reference Guide For The LCD Display

For more information consult the
RediStart MX³ User Manual
(RB3,RC3 & RX3E Models)

December 2006
Motor Starter Card Set: BIPC-400100-01-03
MX3 Card 1: 810023-02-01
MX3 Card 2: 810024-01-01

USA Headquarters: (412) 487-8235
USA West: (480) 905-0601
Canada: (519) 291-5112
Website: <http://www.benshaw.com>
Email: support@benshaw.com



Parameter	Description	Default	Units
LCD			
CFN 24	Slow Speed Current Level	100	%FLA
CFN 25	Slow Speed Time Limit	10	Seconds
CFN 26	Slow Speed Kick Level	Off	%FLA
CFN 27	Slow Speed Kick Time	1.0	Seconds
PFN 01	Over Current Trip Level	Off	%FLA
PFN 02	Over Current Trip Delay Time	0.1	Seconds
PFN 03	Under Current Trip Level	Off	%FLA
PFN 04	Under Current Trip Delay Time	0.1	Seconds
PFN 05	Current Imbalance Trip Level	15	%
PFN 06	Current Imbalance Trip Delay Time	10	Seconds
PFN 07	Residual Ground Fault Trip Level	Off	%FLA
PFN 08	Zero Sequence Ground Fault Trip Level	Off	Amps
PFN 09	Ground Fault Trip Time	3.0	Seconds
PFN 10	Over Voltage Trip Level	Off	%
PFN 11	Under Voltage Trip Level	Off	%
PFN 12	Over/Under Voltage Trip Time	0.1	Seconds
PFN 13	Phase Loss Time	0.2	Seconds
PFN 14	Over Frequency Trip	72	Hz
PFN 15	Under Frequency Trip	23	Hz
PFN 16	Frequency Trip Time	0.1	Seconds
PFN 17	PF Lead Trip Time	Off	
PFN 18	PF Lag Trip Level	Off	
PFN 19	PF Trip Time	10.0	Seconds
PFN 20	Backspin Timer	Off	Minutes
PFN 21	Time Between Starts	Off	Minutes
PFN 22	Starts per Hour	Off	
PFN 23	Auto Fault Reset Time	Off	Seconds
PFN 24	Auto Fault Reset Count Limit	Off	
PFN 25	Controlled Fault Stop Enable	On	
PFN 26	Speed Switch Trip Time	Off	Seconds
PFN 27	Motor PTC Trip Time	Off	Seconds
PFN 28	Independent Starting/Running Overload	Off	
PFN 29	Motor Starting Overload Class	10	
PFN 30	Motor Running Overload Class	10	
PFN 31	Motor Overload Hot/Cold Ratio	60	%
PFN 32	Motor Overload Cooling Time	30.0	Minutes
PFN 33	Motor OL Alarm Level	90	%
PFN 34	Motor OL Lockout Level	15	%
PFN 35	Motor OL Auto Lockout Level	Off	%
I/O 01	DI 1 Configuration	Stop	
I/O 02	DI 2 Configuration	Off	
I/O 03	DI 3 Configuration	Off	
I/O 04	DI 4 Configuration	Off	
I/O 05	DI 5 Configuration	Off	
I/O 06	DI 6 Configuration	Off	
I/O 07	DI 7 Configuration	Off	
I/O 08	DI 8 Configuration	Off	
I/O 09	Digital Fault Input Trip Time	0.1	Seconds
I/O 10	R1 Configuration	Fault FS	
I/O 11	R2 Configuration	Off	
I/O 12	R3 Configuration	Off	
I/O 13	R4 Configuration	Off	
I/O 14	R5 Configuration	Off	
I/O 15	R6 Configuration	Off	
I/O 16	Analog Input Trip Type	Off	
I/O 17	Analog Input Trip Level	50	%
I/O 18	Analog Input Trip Delay Time	0.1	Seconds
I/O 19	Analog Input Span	100	%
I/O 20	Analog Input Offset	0	%
I/O 21	Analog Output Function	Off	
I/O 22	Analog Output Span	100	%
I/O 23	Analog Output Offset	0	%

Parameter	Description	Default	Units
LCD			
I/O 24	Inline Configuration	3.0	Seconds
I/O 25	Bypass / 2M Confirm	2.0	Seconds
I/O 26	Keypad Stop Disable	Enabled	
I/O 27	Power On Start Selection	Disabled	
RTD 01	RTD Module #1 Address	Off	
RTD 02	RTD Module #2 Address		
RTD 03	RTD1 Group		
RTD 04	RTD2 Group		
RTD 05	RTD3 Group		
RTD 06	RTD4 Group		
RTD 07	RTD5 Group		
RTD 08	RTD6 Group		
RTD 09	RTD7 Group		
RTD 10	RTD8 Group	Off	
RTD 11	RTD9 Group		
RTD 12	RTD10 Group		
RTD 13	RTD11 Group		
RTD 14	RTD12 Group		
RTD 15	RTD13 Group		
RTD 16	RTD14 Group		
RTD 17	RTD15 Group		
RTD 18	RTD16 Group		
RTD 19	Stator Alarm Level		
RTD 20	Bearing Alarm Level		
RTD 21	Other Alarm Level	200	°C
RTD 22	Stator Trip Level		
RTD 23	Bearing Trip Level		
RTD 24	Other Trip Level		
RTD 25	RTD Voting	Off	
RTD 26	RTD Motor OL Biasing	Off	
RTD 27	RTD Bias Minimum Level	40	°C
RTD 28	RTD Bias Mid Point Level	130	°C
RTD 29	RTD Maximum Level	155	°C
FUN 01	Meter 1	Ave Current	
FUN 02	Meter 2	Ave Volts	
FUN 03	CT Ratio	288:1	
FUN 04	Phase Order	Insensitive	
FUN 05	Rated Voltage	480	RMS Volt
FUN 06	Motor Rated Power Factor	-0.92	
FUN 07	Starter Type	Normal	
FUN 08	Heater Level	Off	%FLA
FUN 09	Energy Saver	Off	
FUN 10	PORT Fault Time	Off	Seconds
FUN 11	PORT Bypass Hold Time	Off	Seconds
FUN 12	PORT Recovery Method	Fast Recover	
FUN 13	Tachmeter Full Speed Voltage	5.00	Volts
FUN 14	Tachometer Loss Time	1.5	Seconds
FUN 15	Tachometer Loss Action	Fault	
FUN 16	Communication Address	1	
FUN 17	Communication Baud Rate	19200	bps
FUN 18	Communication Timeout	Off	Seconds
FUN 19	Communication Byte Framing	Even, 1 Stop	
FUN 20	Software 1 MX3 Card 1	810023-02-01	
FUN 21	Software 2 MX3 Card 2	810024-01-01	
FUN 22	Miscellaneous Commands	None	
FUN 23	Time and Date Format	mm/dd/yy 12hr	
FUN 24	Time	Present Time	
FUN 25	Date	Present Date	
FUN 26	Passcode	Off	
FL1-9	Fault Log		
E01-99	Event Log		

*NOTE: See MX³ User Manual for the complete parameter descriptions.
*NOTE: Parameters in bold print are the most commonly used in initial start up.

Operate Screen

The operate screen is the main screen. The Operate screen is used to indicate the status of the starter, if it is running, what state it is in, and display the values of Meter 1 (FUN01) and Meter 2 (FUN02), which are selectable.

The Operate Screen is divided into five sections.

- Sections A and B display status information
- Sections C and D display the meters selected by the Meter 1 and 2 parameters, see FUN 01, 02.
- Section S displays the source for the start command. (QST 04 / QST 05)

Stop/Reset Pushbutton

- Stops the starter.
- Resets a fault.

Start Pushbutton

- Starts the starter.

Up/Down/Left Pushbuttons

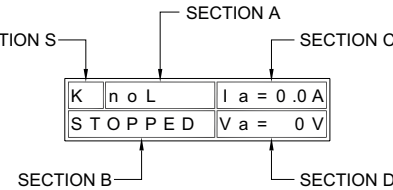
- The arrow keys allow you to move through the parameters.
- Change the value of a parameter.
- Moves through the list of faults.
- Pressing [UP],[DOWN] allows you to change which group of meter values is monitored.

Enter Pushbutton

- Allows user to change a parameter.
- Stores the change of a parameter.
- When in Fault or Event Log, [ENTER] key scrolls through information logged when a fault or event occurred.
- When an alarm condition exists, [ENTER] scrolls through all active alarms.

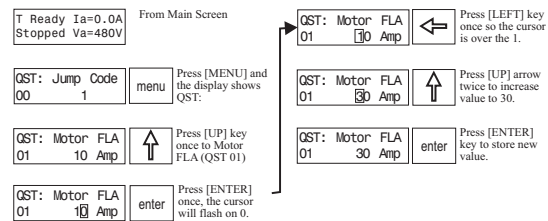
Menu Pushbutton

- Scrolls between the operate screen and the available parameter groups.
- When viewing a parameter, pressing [MENU] jumps to the top of the menu.
- When a parameter is being edited and [MENU] is pressed, the change is aborted and the parameter's old value is displayed.



Procedure of Setting Data:

To change Motor FLA from 10 Amps to 30 Amps:



Press [UP] arrow to change another parameter in QST.
Press [MENU] to change another parameter in another group.
Press [LEFT] arrow to go back to the main screen.

Emergency Overload Reset

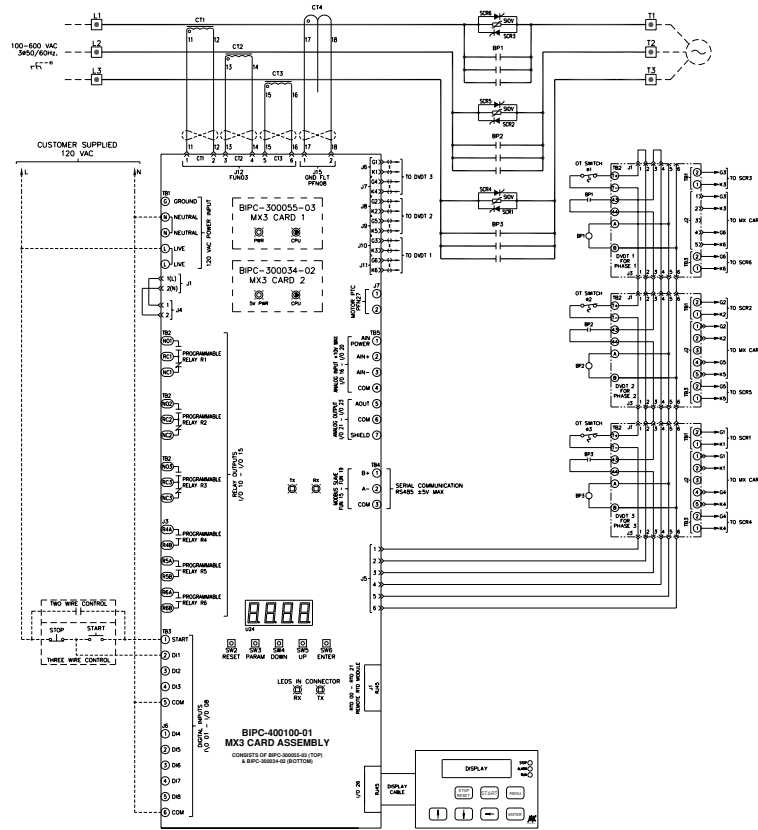
To perform an emergency overload reset, press [RESET] and [DOWN]. This sets the motor thermal overload content to 0.

Resetting a Fault

To reset from a fault condition, press [RESET].

Restoring Factory Parameter Settings

To restore ALL parameters to the factory default settings, go to Miscellaneous commands FUN22 and press [ENTER]. Press [UP] until you read "Factory Rst" and press [ENTER].



Digital Input "DI 1 - 8" Configuration

I/O	Configuration	Function
I/O 01	DI 1 Configuration	Off, Stop, Fault High, Fault Low, Fault Reset, Disconnect, Inline Cnfrm, Bypass Cnfrm, E OL Reset, Local/Remote
I/O 08	DI 8 Configuration	Heat Disable, Heat Disable Ramp Select, Slow Spd Fwd, Slow Spd Rev, Brake Disabl, Brake Enable, Speed Sw NO, Speed Sw NC

Relay Output "R1 - 6" Configuration

I/O	Configuration	Function
I/O 10 I/O 11	R1-R2 Configuration SPDT form C (resistive) NO NC 5A 3A @ 250VAC 5A 3A @ 125VAC 5A 3A @ 30VDC 1250VA 750VA	Off, Fault FS (fail safe), Fault NFS (non fail safe), Running, UTS (up to speed), Alarm, Ready
I/O 12	R3 Configuration 10A at 250VAC 10A at 125VAC 10A at 30VDC 2500VA	Shunt NFS (non fail safe trip), Ground Fault, Energy Saver, Heating, Slow Spd (slow speed), Slow Spd Fwd (speed forward), Slow Spd Rev (speed reverse), Braking, Cool Fan Ctl (cooling fan control), PORT, Tach Loss
I/O 13 I/O 14 I/O 15	R4-R6 Configuration SPST-NO form A (res) 5A at 250VAC 5A at 125VAC 5A at 30VDC 1250VA	Locked Out, Overcurrent, Undercurrent, OL Alarm, Shunt FS (fail safe trip)

Operate Screen (see user manual for additional descriptions)

Display	Description
No Line	Line Power missing
Stopped	Starter is stopped and no Faults
Ready	All conditions are good for a start command
Overload Alarm	The motor overload alarm level is above PFN33
Overload Fault	The motor overload level has reached 100%
Overload Lockout	A start is not allowed until the motor overload level cools below PFN34
Ctl Pwr Lockout	A start is not allowed because control power is too low
Time Btw Starts	The time until the next start is allowed. See PFN21
Starts per Hour	Displays the time until the next start is allowed. See PFN22
Mtr PTC Lockout	Displays when the motor thermistor is overheated or defective
RTD Lockout	Displays the hottest RTD that has tripped the starter
Fault	Starter tripped on a Fault
Heater	Starter is on and heating motor
Kick	Starter is applying kick current to the motor
Accel	Starter is accelerating the load
Kick 2	Starter is applying kick current to the motor in Ramp 2
Accel 2	Starter is accelerating the load in Ramp 2
Run	Starter is in Run mode and Ramp Time has expired
UTS	Starter is Up To Speed
Control	Phase Control or Current Follower mode
Decel	Starter is decelerating the load
Wye	In Wye-delta control indicates motor is accelerating in Wye mode
Slow Spd Fwd	Preset slow speed forward
Slow Spd Rev	Preset slow speed reverse
Braking	DC Injection Braking
PORT	Power Outage Ride Through

Operating Parameters (see user manual for additional descriptions)

Parameter	Description	Default	Units
LCD			
QST 01	Motor Full Load Amps	10	RMS Amps
QST 02	Motor Service Factor	1.15	
QST 03	Motor Running Overload Class	10	
QST 04	Local Source	Terminal	
QST 05	Remote Source		
QST 06	Initial Motor Current 1	100	%FLA
QST 07	Maximum Motor Current 1	600	%FLA
QST 08	Ramp Time 1	15	Seconds
QST 09	Up To Speed Time	20	Seconds
CFN 01	Start Mode	Current Ramp	
CFN 02	Ramp Time 1	15	Seconds
CFN 03	Initial Motor Current 1	100	%FLA
CFN 04	Maximum Motor Current 1	600	%FLA
CFN 05	Ramp Time 2	15	Seconds
CFN 06	Initial Motor Current 2	100	%FLA
CFN 07	Maximum Motor Current 2	600	%FLA
CFN 08	Initial Voltage/Torque/Power	25	%
CFN 09	Maximum Torque/Power	105	%
CFN 10	Acceleration Ramp Profile	Linear	
CFN 11	Kick Level 1	Off	%FLA
CFN 12	Kick Time 1	1.0	Seconds
CFN 13	Kick Level 2	Off	%FLA
CFN 14	Kick Time 2	1.0	Seconds
CFN 15	Stop Mode	Coast	
CFN 16	Decel Begin Level	40	%
CFN 17	Decel End Level	20	%
CFN 18	Decel Time	15	Seconds
CFN 19	Deceleration Ramp Profile	Linear	
CFN 20	DC Brake Level	25	%
CFN 21	DC Brake Time	5	Seconds
CFN 22	DC Brake Delay	0.2	Seconds
CFN 23	Slow Speed	Off	%

*NOTE: Parameters in bold print are the most commonly used in initial start up.