



# MAGNACOOL INSTALLATION & USER MANUAL



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USERSNAME:

PASSWORD:



#### 1. Purpose Of The Installation

#### 2. Control Panel



#### 2.1 Main Switch

This switch is used to provide the installation of tension. Switching the switch off will cut the power to the installation.

#### 2.2 Touch Screen

Is used to change settings, change / select recipes, select auto / manual, start / stop installation,  $\ldots$ 

#### 2.3 Emergency Stop Button

In the event that something unexpected or something wrong happens, the operator can operate an emergency.

#### 2.4 Blue Illuminated Pushbutton

When the emergency stop button has been activated or at the start-up of the installation, the light from this button will be "ON". Reactivate the emergency-stop button and press the blue button to reset the emergency relais in the cabinet.

#### 2.5. Combi Start-Stop Pushbuttons

The green start button is used when during the operation the operator enters a new trolley. Pushing the start-button will start the preset time for that trolley.

The red stop button is used to stop the horn. The horn will sound when a preset time for a trolley has been reached.

#### 3. Components On The Installation

#### 3.1 Sensors

#### 3.11 Pressure Switch

Sensor NC-contact, digital input. Checks the pressure at the input side of the air-flow.

#### 3.12 Hygro Sensor

Sensor 4-20mA, analog input. Detects the Hygro value at the output side of the air-flow.

#### 3.13 PT100, Inlet Fan

Temperature sensor, RTD input. Detects the temperature value at the input side of the air-flow.

#### 3.14 PT100, Outlet Fan

Temperature sensor, RTD input. Detects the temperature value at the output side of the air-flow.

#### 3.15 PT100, Mix

Temperature sensor, RTD input. Detects the temperature value at the middle side of the air-flow.

#### 3.2 Belimo Valves

There are 3 belimo valves on the installation.

- At the input side of the airflow (function "0"), 0V = closed and 10V = open
- At the output side of the airflow (function "0"), 0V = closed and 10V = open
- At the center of the airflow (function "1"), 0V = open and 10V = closed

These valves are operated with 1 analog output (0-10V). When the output signal rises, the first 2 controllers will open the in- and outlet and the third will close.



#### 3.3 Motors

There are 2 motors on the installation

#### 3.3.1 Motor4M3, Air Inlet Fan

The air inlet fan is controlled by a frequency drive (4G8). The speed is regulated by the PLC, by means off an analog output (0-10V). The same analog output is used also for the air outlet fan.

#### 3.3.2 Motor4M11, Air Outlet Fan

The air outlet fan is controlled by a frequency drive (4G16). The speed is regulated by the PLC, by means off an analog output (0-10V). The same analog output is used also for the air inlet fan.

#### 3.4 Towerlight

On top of the installation is an towerlight. There are 4 functions activated:

- Green light: Indicates that the installation is powered.
- Yellow light: Indicates that the installation has been started.
- Red light:
  - Indicates that a trolley has finished it's preset time.

#### 3.5 Touchscreen:

• Horn:

The touchscreen display is used to operate the installation, controls the settings, ...

#### 4 Touchscreen Displays.

Below is the description for each display that can be displayed on the screen. Some displays have password protection.

#### 4.1 About



This screen is displayed after power-up or when the screen-saver is active and the operator touches the screen. Pressing the arrow-key (1) will open the next screen: Main Screen – Circ 1



#### 4.2. Main Screen – Circ 1



This screen is the main operator screen for the installation.

- 1 = Button "Goto Screen Main Maintenance Screen"
- 2 = Button "Goto Screen Program Selection"
- 3 = Button "Goto Screen Trolley Timers"
- 4 = Button "Goto Screen Main Screen Circ 2" (only active when there's a second Unit)
- 5 = Button "Goto Previous Screen"
- 6 = Status display of Air Inlet Fan:
  - Red = Air inlet fan is not working/running Green = Air inlet fan is running
- 7 = Status display of Air Outlet Fan:
  - Red = Air outlet fan is not working/running Green = Air outlet fan is running
- 8 = Operating value of the Belimo Valves 9 = Hygro- value
- 10 = Displays the number of trolleys that are used. The value is pre programmed on the "Settings" screen
  - #1 = Trolley number
  - "0" = time that the trolley is in the tunnel.

Each time a trolley is manually inserted in the tunnel, the operator has to push the "START" pushbutton under the display to activate the time that trolley needs to be inside. Each time the button is pushed it will add a trolley (the time-value will change into yellow and will show the time that this trolley is inside). When the pre-programmed "Cool Time" has been reached, the horn will sound. Pressing the "STOP" pushbutton under the display will stop the horn sounding.

- 11 = Button "START" to start operating the installation
- 12 = Display of selected "Program"
  - P-Nr: ... = Number of selected program
  - Cool Time: ... = Pre programmed Cooling Time
  - Rest Time: ... = Shows the remaining time the installation runs automatically

#### 4.3 Main Maintenance Screen



This screen is the main maintenance screen for the installation.

- 1 = Button "Goto Previous Screen"
- 2 = Button "Goto Screen Manueel Circuit 1" 3 = Button "Goto Screen Settings"
- 4 = Button "Goto Screen Alarm List"
- 5 = Button "Goto Screen Date & Time" 6 = Button "LOGIN"
- 7 = Button "LOGOUT"
- 8 = Button "Goto Screen Password Users" 9 = Button "Goto Screen Settings Recipe"

The following "Goto Screen" buttons will ask for a username and password:

- SETTINGS
   Not accessible to clients
- LOGIN Accessible to all
- PASSWORD ADMIN Accessible to all
- SETTINGS RECIPE Accessible to all

When someone is logged in, the program will not ask for a username and password when a button (see above) is pressed. Do not forget to log back out after making changes. At power-up the user is automatically logged out.



#### 4.4. Program Selection



Kolom 1: Program number: 1 – 5, 6 – 10, 11 – 15, ... , 46 – 50

There are 5 different programs visible at any given time. To change the program number press button "4" or "5". Kolom 2: Program name

Kolom 3: Time (min)

- 1 = Button "SELECT": After selecting the required program, press this button to validate the program.
- 2 = Numeric Entry Display:
  - By pressing on this square, the operator will open an numeric keypad to select a program.
- 3 = Numeric Display: shows the selected program number.
- 4 = Previous programs (5 programs per shift)
- 5= Next programs (5 programs per shift)
- 6 = Button "Goto Previous Screen"

#### 4.5. Trolley Timers



This screen is used to display the time of the individual trolleys. Also the option to reset the timers.

- 1 = Button "Goto Screen Main Screen Circ 1"
- 2 = Button "Goto Screen Main Screen Circ 2" (only active when there's a second Unit)
- 3 = Button "Goto Previous Screen"
- 4 = Displays the number of trolleys that are used. The value is pre programmed on the "Settings" screen
  - #1 = Trolley number
    - "0" = time that the trolley is in the tunnel.
      - Each time a trolley is manually inserted in the tunnel, the operator has to push the "START" pushbutton under the display to activate the time that that trolley needs to be inside. Each time the button is pushed it will add a trolley (the time-value will change into yellow and will show the time that this trolley is inside). When the pre-programmed "Cool Time" has been reached, the horn will sound. Pressing the "STOP" pushbutton under the display will stop the horn sounding. The time display wil change to green.

There can be a max of 20 trolleys programmed to show onto the display.

#### 4.6. Manual Circuit 1



This screen is the main maintenance screen for the installation.

- 1 = Numeric display: Shows the "Auto setpoint %" for Belimo Valves
- 2 = Numeric entry: Pressing this area will open an numeric keypad. The operator can now set the desired setpoint for manual operation of the belimo valves
- 3 = Numeric display: Shows the current speed of the 2 fans
- 4 = Button "AUTO/MAN": Pressing this button will change the operation of the installation to "AUTO" or to "MAN" When in "MAN" (as seen above), the operator will be able to press the start buttons 5 and 6. The belimo valves will also open or close (as set in MAN SP)
- 5 = Button "START" Fan In: Only usable when "MANUAL MODE" is selected. Pressing this button will start the AIR INPUT FAN
- 6 = Button "START" Fan Out: Only usable when "MANUAL MODE" is selected. Pressing this button will start the AIR OUTPUT FAN
- 7 = Button "Goto Screen Manual Circuit 2" (only active when there's a second Unit)
- 8 = Button "Goto Previous Screen"



4.7. User Passwords



If user is already logged in, the name will be visible at the top. If not logged in press "LOGIN". To logout press the corresponding button.

To change the users password the user needs to be logged in. Pressing "Change Password" will open a pop-up screen. On this screen the user needs to enter 3 things:

- Old Password
- New Password
- Confirm Password

#### 4.8. Settings (only accessible by constructor)



- 1 = Button: If there is a second unit on the installation, this button will activate it. 2 = Button: Press this button to activate the use of the Hydrometer
- 3 = Numeric Entry: opens a numeric keypad to enter the number of trolleys that will be used. Preset is "6" 4 = Numeric Entry: opens a numeric keypad to enter the temperature for minimum mix. Preset is "16"
- 5 = Numeric Entry: opens a numeric keypad to enter the speed that the fans for circuit 1 will run at. Preset is "90"
- 6 = Numeric Entry: opens a numeric keypad to enter the speed that the fans for circuit 2 will run at. Preset is "0". NOT USED
- 7 = Button "GOTO CONFIG": this is only used for configuration of the panelview. Do not access and change. Otherwise this could cause the installation to stop operating.
- 8 = Button "Goto Previous Screen"



#### 4.9 Overview Programs



1 = Line 1:

- First kolom: The number of the program (1-50)
- Second kolom: The name of the program
- By pressing the desired program name, the user can change the name
- Third kolom: The time that the trolley needs to be inside for this program
  - By pressing the desired time, the user can change the time
- 2 = Button"Goto Screen Clear All Programs"
- 3 = Button: Pressing this button will show the previous 5 programs. Now the user can change them.
- 4 = Button: Pressing this button will show the next 5 programs. Now the user can change them.
- 5 = Button: SAVE: After the user has made changes to the program name or program time, pressing this button will save the changes.
- 6 = Button "Goto Previous Screen"

#### Default programs are:

- Nr 1 White Bread 500gr 30min
- Nr 2 Bread 700gr 60min
- Nr 3 Form White Bread 500gr 30min
- Nr 4 Form Bread 800gr 60min
- Nr 50 Continuous 999min

#### 4.10 Alarm list

Mag	<mark>gnaCool</mark> Alarm Lis	st	1:46:06 PM 10/14/2013
F	Alarm Message	Occ Time	Occ Date
ľ	Alarm Message	Occurrenc*	Occurrenc*
	CONFIRM ALL ALARMS	\$	-

List of alarms that occurred since last "confirm". With time and date stamp.

#### 5 Frequency Controllers.

#### 5.1 Parameters Frequency Controller 4G8, Air Inlet Fan.

#### 5.11 Basic Program Group

Nr.	Parameter	Min/Max	Display/Opties	Default	INSTELLIN G
P101	Motor NP Volts Set to the motor nameplate rated voltage	20/Drive Rated Voltage	1 Vac		400V
P102	Motor NP Hertz Set to the motor nameplate rated frequency	10/400 Hz	1 Hz	60 Hz	50Hz
P103	Motor OL Current Set to the maximum allowable motor current	0,0/ (Drive Rated Amps x 2)	0,1 A		10.5A
P104	Minimum Freq Sets the lowest frequency the drive will output continuously	0,0/400,0 Hz	0,1 Hz	0,0 Hz	0Hz
P105	Maximum Freq Sets the highest frequency the drive will output	0,0/400,0 Hz	1 Hz	60 Hz	50Hz
P106	Start Source Sets the control scheme used to start the drive	0/5	0="Keypad" 1="3-Wire" 2="2-Wire" 3="2-W LvI Sens" 4="2-W Hi Speed" 5="Comm Port"	0	2
P107	Stop Mode Active stop mode for all stop sources	0/7	0="Ramp, CF" 1="Coast, CF" 2="DC Brake,CF" 3="DCBrkAuto, CF" 4="Ramp" 5="Coast" 6="DC Brake" 7=" DC BrakeAuto"	0	0
P108	Speed Reference Sets the source of the speed reference to the drive	0/5	0="Drive pot" 1="InternalFfreq" 2="0-10V Input" 3="4-20mA Input" 4="Preset Freq" 5="Comm Port"	0	2
P109	Accel Time 1 Sets the rate of acceleration for all speed increases	0,0/600,0 secs	0,1 secs	10,0 sec	10.0sec
P110	Decel Time 1 Sets the rate of deceleration for all speed decreases	0,1/600,0 secs	0,1 secs	10,0 sec	10.0sec
P111	Motor OL Ret Enables/disables the Motor Overload Retention function	0/1	0="Disabled" 1="Enabled"	0	1
P112	Reset To Defaults Resets all parameter values to factory default	0/1	0="Idle State" 1="Reset Defaults"	0	

#### 5.1.2. Communications Group

Nr.	Parameter	Min/Max	Display/Opties	Default
C301	Language	1 = "English" 2 = "Second Lang"	1/2	1
C302	Comm Data Rate	0 = "1200" 1 = "2400" 2 = "4800" 3 = "9600" 4 = "19.2K" 5 = "38.4K"	0/5	3
C303	Comm Node Addr	1/247	1	100
C304	Comm Loss Action	0 = "Fault" (Default) 1 = "Coast to Stop" 2 = "Stop" 3 = "Continu Last"		
C305	Comm Loss Time	0.1/60.0 Secs	0.1 Secs	5.0 Secs
C306	Comm Format	0 = "RTU 8-N-1" (Default) 1 = "RTU 8-E-1" 2 = "RTU 8-O-1" 3 = "RTU 8-N-2" 4 = "RTU 8-E-2" 5 = "RTU 8-O-2"		
C307	Comm Write Mode	0 = "Save" (Default) 1 = "RAM Only"		



#### 5.1.3. Terminal Block Group

Nr.	Parameter	Min/Max	Display/Opties	Default	
t201	Digital In1 Sel	0 = "Not Used"	0/15		
	I/O terminal 5	1 = "Acc 2 & Dec 2"			
		2 = "Jog"			
t202	Digital In2 Sel	3 = "Aux Fault"			
	I/O terminal 6	4 = "Preset Freq"			
		5 = "Local"			
		6 = "Comm Port"			
		7 = "Clear Fault"			
		8 = "RampStop,CF"			
		9 = "CoastStop,CF"			
		10 = "DCInjStop,CF"			
		11 = "Jog Forward"			
		12 = "Jog Reverse"			
		13 = "10V In Ctrl"			
		14 = "20mA In Ctrl"			
		15 = "Anlg Invert"			
		16-27 = Reserved			
t211	Anlg In 0-10V Lo	0.0/100.0%	0.1%	0.0%	
t212	Anlg In 0-10V Hi	0.0/100.0%	0.1%	0.0%	
10.10			0.10/	0.00/	
t213	Anig in 4-20mA Lo	0.0/100.0%	0.1%	0.0%	
+214	Apla In 4 20mA Hi	0.0/100.0%	0.10/	0.0%	
1214	Ang III 4-2011A HI	0.0/100.0%	0.1%	0.0%	
t221	Relay Out Sel	0 = "Ready/Fault"	0/22	0	
		1 = "At Frequency"	0	Ĵ	
		2 = "MotorRunning"			
		3 = "Reverse"			
		4 = "Motor Overld"			
		5 = "Ramp Reg"			
		6 = "Above Freg"			
		7 = "Above Cur"			
		8 = "Above DCVolt"			
		9 = "Retries Exst"			
		10 = "Above Anla V"			
		11 = "ParamControl"			
		12 = "NonRec Fault"			
		13 = "I/O Control"			
		14-22 = Reserved			
t222	Relay Out Level	t221 Setting t222 Min/Max	0.1	0.0	
		6 0/400Hz			
		7 0/180%			
		8 0/815 Volts			
		10 0/100%			
1		11 0/1			



#### 5.2. Parameters Frequency Controller 4G16, Air Outlet Fan

#### 5.2.1. Basic Program Group

Nr.	Parameter	Min/Max	Display/Opties	Default	INSTELLIN G
P101	Motor NP Volts Set to the motor nameplate rated voltage	20/Drive Rated Voltage	1 Vac		400V
P102	Motor NP Hertz Set to the motor nameplate rated frequency	10/400 Hz	1 Hz	60 Hz	50Hz
P103	Motor OL Current Set to the maximum allowable motor current	0,0/ (Drive Rated Amps x 2)	0,1 A		10.5A
P104	Minimum Freq Sets the lowest frequency the drive will output continuously	0,0/400,0 Hz	0,1 Hz	0,0 Hz	0Hz
P105	Maximum Freq Sets the highest frequency the drive will output	0,0/400,0 Hz	1 Hz	60 Hz	50Hz
P106	Start Source Sets the control scheme used to start the drive	0/5	0="Keypad" 1="3-Wire" 2="2-Wire" 3="2-W LvI Sens" 4="2-W Hi Speed" 5="Comm Port"	0	2
P107	Stop Mode Active stop mode for all stop sources	0/7	0="Ramp, CF" 1="Coast, CF" 2="DC Brake,CF" 3="DCBrkAuto, CF" 4="Ramp" 5="Coast" 6="DC Brake" 7=" DC BrakeAuto"	0	0
P108	Speed Reference Sets the source of the speed reference to the drive	0/5	0="Drive pot" 1="InternalFfreq" 2="0-10V Input" 3="4-20mA Input" 4="Preset Freq" 5="Comm Port"	0	2
P109	Accel Time 1 Sets the rate of acceleration for all speed increases	0,0/600,0 secs	0,1 secs	10,0 sec	10.0sec
P110	Decel Time 1 Sets the rate of deceleration for all speed decreases	0,1/600,0 secs	0,1 secs	10,0 sec	10.0sec
P111	Motor OL Ret Enables/disables the Motor Overload Retention function	0/1	0="Disabled" 1="Enabled"	0	1
P112	Reset To Defaults Resets all parameter values to factory default	0/1	0="Idle State" 1="Reset Defaults"	0	

#### 5.2.2. Communications Group

Nr.	Parameter	Min/Max	Display/Opties	Default	
C301	Language	1 = "English" 1/2 1		1	
		2 = "Second Lang"			
C302	Comm Data Rate	0 = "1200"	0/5	3	
		1 = "2400"			
		2 = "4800"			
		3 = "9600"			
		4 = "19.2K"			
		5 = "38.4K"			
C303	Comm Node Addr	1/247	1	100	
C304	Comm Loss Action	0 = "Fault" (Default)			
		1 = "Coast to Stop"			
		2 = "Stop"			
		3 = "Continu Last"			
C305	Comm Loss Time	0.1/60.0 Secs	0.1 Secs	5.0 Secs	
C306	Comm Format	0 = "RTU 8-N-1" (Default)			
		1 = "RTU 8-E-1"			
		2 = "RTU 8-O-1"			
		3 = "RTU 8-N-2"			
		4 = "RTU 8-E-2"			
		5 = "RTU 8-O-2"			
C307	Comm Write Mode	0 = "Save" (Default)			
		1 = "RAM Only"			



#### 5.2.3. Terminal Block Group

Nr.	Parameter	Min/Max	Display/Opties	Default
t201	Digital In1 Sel	0 = "Not Used"	0/15	
	I/O terminal 5	1 = "Acc 2 & Dec 2"		
		2 = "Jog"		
t202	Digital In2 Sel	3 = "Aux Fault"		
	I/O terminal 6	4 = "Preset Freq"		
		5 = "Local"		
		6 = "Comm Port"		
		7 = "Clear Fault"		
		8 = ``RampStop CF''		
		9 = "CoastStop CF"		
		10 = "DCIniStop CF"		
		11 = "log Forward"		
		12 = "log Reverse"		
		12 = 000  fteverse $13 = "10\/ ln Ctrl"$		
		$14 = "20mA \ln Ctrl"$		
		15 = "Anla Invert"		
		16-27 = Reserved		
		10-27 - Reserved		
t211		0.0/100.0%	0.1%	0.0%
		0.0/100.0/0	0.170	0.070
t212	Anla In 0-10V Hi	0.0/100.0%	0.1%	0.0%
	· · · · · · · · · · · · · · · · · · ·			
t213	Anlg In 4-20mA Lo	0.0/100.0%	0.1%	0.0%
t214	Anlg In 4-20mA Hi	0.0/100.0%	0.1%	0.0%
t221	Relay Out Sel	0 = "Ready/Fault"	0/22	0
		1 = "At Frequency"		
		2 = "MotorRunning"		
		3 = "Reverse"		
		4 = "Motor Overld"		
		5 = "Ramp Reg"		
		6 = "Above Freq"		
		7 = "Above Cur"		
		8 = "Above DCVolt"		
		9 = "Retries Exst"		
		10 = "Above Anlg V"		
		11 = "ParamControl"		
		12 = "NonRec Fault"		
		13 = "I/O Control"		
		14-22 = Reserved		
t222	Relay Out Level	t221 Setting t222 Min/Max	0.1	0.0
		6 0/400Hz		
		7 0/180%		
		8 0/815 Volts		
		10 0/100%		
1		11 0/1		



#### 5.3. Basic Display Group

Nr.	Parameter		Min/Max	Display/Opties	Default
d001	Output Freq		0.0/P105	0.1 Hz	Read Only
d002	Commanded Freq		0.0/P105	0.1 Hz	Read Only
d003	Output Current		0/Drive Rated Amps x 2)	0,01 A	Read Only
d004	Output Voltage		0/Drive Rated Volts	0,1 VAC	Read Only
d005	DC Bus Voltage		Base don Drive Rating	1 VDC	Read Only
d006	Drive Status Bit 0 = Running Bit 1 = Forward Bit 2 = Accelerating Bit 3 = Decelerating		0/1	1	Read Only
d007	Fault 1 Code		F2/F122	F1	Read Only
d008	Fault 2 Code		F2/F122	F1	Read Only
d009	Fault 3 Code		F2/F122	F1	Read Only
d010	Process Display		0.00/9999	0.01 – 1	Read Only
d012	Control Source		0/9	1	Read Only
	Digit 0 Start Command 0 = Keypad 1 = 3-Wire 2 = 2-Wire 3 = 2-Wire Level Sensitive 4 = 2-Wire High Speed 5 = RS485 (DSI) Port 9 = Jog	0 = Drive Potentiometer 1 = Internal Freq 2 = 0-10V Input/Remote Pot 3 = 4-20mA Input 4 = Preset Freq 5 = RS485 (DSI) Port 9 = Jog Freq			
d013	Contrl In Status     Bit 0 Start/Run FWD Input (Terminal 02)     Bit 1 Direction/Run REV Input (Terminal 03)     Bit 2 Stop Input (Terminal 01)     Bit 2 Dynamia Brake Transitor ON/Resourced		0/1	1	Read Only
d014	Dig In Status Bit 0 Digital In1 Sel Bit 1 Digital In2 Sel Bit 2 Reserved Bit 3 Reserved		0/1	1	Read Only
d015	5 Comm Status Bit 0 Receiving Data Bit 1 Transmitting Data Bit 2 RS485 (DSI) Based Option Connected Bit 3 Communication Error Occurred		0/1	1	Read Only
d016	Control SW Ver		1.00/99.99	0.01	Read Only
d017	Drive Type		1001/9999	1	Read Only
d018	Elapsed Run Time		0/9999 Hrs	1 (= 10Hrs)	Read Only
d019	Testpoint Data		0/FFFF	1 Hex	Read Only
d020	Analog In 0-10V		0.0/100.0%	0.1%	Read Only
d021	Analog In 4-20mA		0.0/100.0%	0.1%	Read Only
d022	Drive Temp		0/120 degC	1 degC	Read Only



#### 5.4. Drive Faults

Type1: Auto-Reset/Run. Type 2: Non-Resetable.

F2         Ausiliary Input         1         Ausiliary input interlock is open         1. Check remote wring interlinant fault           F3         Power Loss         2         Excessive DC Bus voltage ripple         1. Monitor the incoming Loi Info for woltage on the inbalance           F4         Under Voltage         1         DC bus voltage (albelowe the minimum value         Monitor the incoming AC line for woltage on the power interruption           F5         Over Voltage         1         DC bus voltage exceed maximum value         Monitor the incoming AC line for woltage on the power interruption           F6         Motor Stalled         1         Drive is unable to accelerate motor         Increase ID9 and/or A420 or theored log and the output current does not exceed the current set by parameter 1A41.           F7         Motor Overload         1         Internal electronic overload trip         1. An excessive motor load excits. Reduce load so drive output current does not exceed the current set by parameter 1A93.           F8         Heatsink DvrTmp         1         Heatsink temperature exceeds a prodelined value         Check the motor and external wring the the interline institut in the case of the fault amolent temperature has not exceeded 40 C for 199/NEMA 1/10 kpp 1 bit and termal wring the the drive terminats or a grounded condition           F33         Auto Bstrt Tries         2         A current path to each protected an or programmed number of A451         Check the motora and external wring the drive at	No.	Fault	Туре	Description	Action
File         Power Loss         2         Excessive DC Bus voltage ripple         Intentional fault           F4         UnderVoltage         1         DC bus voltage fell belowe the minimum value         1. Monitor the incoming line for have loss or ine imbalance           F4         UnderVoltage         1         DC bus voltage fell belowe the minimum value         Check input line frue           F5         OverVoltage         1         DC bus voltage exceed maximum value         Monitor the incoming AC line for high line voltage or transient conditions. Nus overvoltage can abo or line output current loss not acceed the decal time or install dynamic broads points.           F6         Motor Cverload         1         Internal electronic overload trip         Linesses PLGB and/or AG02 or reduce load so drive output current loes not acceed the current set by parameter A441.           F7         Motor Cverload         1         Internal electronic overload trip         Lonek for blocked or driv, have any predefined value         Lonek for blocked or driv, have any current loss not acceed the current set by parameter A441.           F8         Heatsink DwrTmp         1         Heatsink temperature exceeds a predefined value         Check frag           F13         Ground Fault         2         The drive output current line indocance         Check frag           F33         Auto Rott Tries         2         Drive unacceccs fully and thave and minice output current inst	F2	Auxiliary Input	1	Auxiliary input interlock is open	1. Check remote wiring
F3         Power Loss         2         Excessive DC Bus voltage ripple         Intentional fault           F4         Under Voltage         1         DC bus voltage fell belove the minimum         Monitor the incoming AC line for woltage           F5         OverVoltage         1         DC bus voltage fell belove the minimum         Monitor the incoming AC line for woltage of nor woltage           F6         Motor Stalled         1         DC bus voltage exceed maximum value         Monitor the AC line for high incoming AC line for woltage of nor w					2. Verify communications programming for
F3         Power Loss         2         Excessive DC Bus voltage ripple         1. Montor the incoming line for phase loss or line imbalance           F4         UnderVoltage         1         D C bus voltage fell belowe the minimum value         Check input line for line voltage or transient conditions. Nus overvoltage can also or transient condition and or transient control data or transient contre canced the current set to pranseet f140. <tr< td=""><td></td><td></td><td></td><td></td><td>intentional fault</td></tr<>					intentional fault
F4         UnderVoltage         1         DC bus voltage fell belowe the minimum         Monitor the incoming AC line for low voltage           F5         OverVoltage         1         DC bus voltage fell belowe the minimum         Monitor the AC line for high low toltage or inle power interruption           F6         Motor Stalled         1         DC bus voltage exceed maximum value         Monitor the AC line for high low toltage or interset of the voltage or interset of the voltage or transient confiltons. Nas overvoltage can also be caused by motor regenerative loads of the voltage or transient confiltons. Nas overvoltage can also be caused by motor regenerative loads of three output current does not exceed the current set by parameter 7441.           F7         Motor Overload         1         Internal electronic overload trip         Internal electronic overload trip           F8         Heatsink tomperature exceeds a predefined value         Predefined value         2. Verify A433 setting.         Check for parameter 7441.           F12         HW OverCurrent         2         The drive output current has exceeded at one or more of 1930/NEMA1/UL type 1 installations or 50°C for 1930/NEMA1/UL yee 1 installatins temperature and referee on the dr	F3	Power Loss	2	Excessive DC Bus voltage ripple	1. Monitor the incoming line for phase loss or
House         Construction         Construction <thconstruction< th="">         Construction</thconstruction<>					line imbalance
F4         UnderVoltage         1         DC bus voltage fell below the minimum value         Montor the incoming AC line for interruption or line power interruption           F5         OverVoltage         1         DC bus voltage exceed maximum value         Monitor the AC line for high line voltage or transient conditions. Nus overvoltage can also be caused by motor regeneration. Extend the decet time or instal dynamic brake option           F6         Motor Stalled         1         Drive is unable to accelerate motor         Increase P109 and/or ACD or reduce load so drive output current does not exceed the current set by parameter P103           F7         Motor Overload         1         Internal electronic overload trip         Increase P109 and/or AAD2           F8         Heatsink OurTmp         1         Heatsink temperature exceeds a predefined value         I. An excessing the sink fins. Verify that ambient temperature has not exceeded ACT for IP30/NEMA 1/U rep a 1 installators or SO'C for IP30/NEMA 1/U rep a installators           F12         HW OverCurrent         2         The drive output current has exceeded the hardware current limit         Check the motor and external wring to the detected at neo or more of the drive output terminals           F33         Auto Rstrt Tries         2         Or we unscreasfull watempted to reset areaded at neo or more of the drive output terminals         Increase of the fault and manually clear           F41         Phase W to Gnd         2         A phase to groun fault has been det					2. Check input line fuse
F5         OverVoltage         1         OC bus voltage exceed maximum value         or line power interruption transient conditions. Nus voltage exceed maximum value           F6         Motor Stalled         1         OC bus voltage exceed maximum value         Monitor the AC line for high line voltage or transient conditions. Nus vorvoltage can also be caused by motor regeneration. Extend the decel time or instal dynamic brake option           F6         Motor Stalled         1         Drive is unable to accelerate motor         Increase F109 and/or A402 or reduce load so drive output current does not exceed the current sets by parameter A41           F7         Motor Overload         1         Internal electronic overload trip         1. A recessive motor load excists. Reduce load so drive output current does not voupt ucrrent does not exceeded 40°C for iP30/NEMA 1/UL Type 1 installations or 50°C for iP20/Deen type installations or 50°C for iP20/Deen type installations           F12         HW OverCurrent         2         The drive output current has exceeded drive terminals of regrounder and wrimg to the detected at one or more of the drive output terminals         Check the motor and exteend wrime tor advectise set too high or other causes of excess current faut and resume running for the output terminals           F33         Phase V to Gnd         2         Drive unaccessful y attempted to reset a faut and resume running for the output terminals         Check the motor and exteend wrime for a stored condition output terminals           F33         Phase V to Gnd         2         Drive er	F4	UnderVoltage	1	DC bus voltage fell belowe the minimum	Monitor the incoming AC line for low voltage
F5       OverVoltage       1       DC bus voltage exceed maximum value       Monitor the AC line for high line voltage or transient conditions. Nus overvoltage can also be caused by motor regeneration. Extend the decel time or install dynamic brake option         F6       Motor Stalled       1       Drive is unable to accelerate motor       Increase P109 and/or AAQ2 or reduce load so drive output current does not exceed the current set by parameter A44.         F7       Motor Overload       1       Internal electronic overload trip       1. A recessive motor load excits. Reduce load so drive output current does not exceed the current set by parameter P103         F8       Heatsink OvrTmp       1       Heatsink temperature exceeds a predefined value       1. Check for blocked or drity heat sint fins.         F12       HW OverCurrent       2       The drive output current has exceeded the drive and setting.       Check for blocked or drity heat sint fins.         F13       Ground Fault       2       A current path to earth ground has been detected at one or more of the drive output current has been detected at and resume running for the programmed number of A451       Check the motor and external wring to the drive and motor in this phase         F33       Phase U to Gnd       2       Orive unsuccesfully attempted to reset a line fault and manually clear       Check the motor and drive output terminal for a grounded condition         F44       Phase U to Gnd       2       A preset or ound fault has been detected       1.				value	or line power interruption
F6         Motor Stalled         1         Drive is unable to accelerate motor         Increase P109 and/or A020 or reduce load so drive output current does not exceed the current set by parameter A441           F7         Motor Overload         1         Internal electronic overload trip         1. A nexcessive motor load excists. Reduce load so drive output current does not exceed the current set by parameter P103           F8         Heatsink OvrTmp         1         Heatsink temperature exceeds a predefined value         2. Verify A433 setting           F12         HW OverCurrent         2         The drive output current has so created the hardware current limit         2. Verify A433 setting.           F13         Ground Fault         2         The drive output current has been detected at one or more of the drive output terminable programmed number of A451         Check the motor and external wring to the drive terminable to a grounded condition output terminable           F33         Auto Rstrt Tries         2         Drive unsuccessfull yttempted to reset a fault and resume running for the programmed number of A451         1. Check the woring between the drive and motor           F43         Phase U to Gnd         2         Drive unsuccessfull yttempted to reset a fault and resume running for the programmed number of A451         1. Check the woring between the drive and motor           F43         Phase U to Gnd         2         A phase to ground fault has been detected between the drive and motor i this phase <t< td=""><td>F5</td><td>OverVoltage</td><td>1</td><td>DC bus voltage exceed maximum value</td><td>Monitor the AC line for high line voltage or</td></t<>	F5	OverVoltage	1	DC bus voltage exceed maximum value	Monitor the AC line for high line voltage or
Field         Motor Stalled         1         Drive is unable to accelerate motor         Increase F109 and/or mixed option           F7         Motor Overload         1         Internal electronic overload trip         1. An excessive motor load excists. Reduce load so drive output current does not exceed the current set by parameter A41           F8         Heatsink OvrTmp         1         Heatsink temperature exceeds a predefined value         1. Check for blocked or diriv heat sink fins. Yourget the hardware current limit the hardware current limit the hardware current limit the hardware current limit the hardware direcurrent limit the hardware current limit the hardware direcurrent limit the hardware current limit the hardware direcurrent limit the motor and external wiring to the directed at one or more of the drive output terminals for the programmed number of A451           F33         Auto Rstrt Tries         2         A current path to earth ground has been detected to result the motor and external wiring to the dire output terminals for the programmed number of A451         Check the motor and external wiring to the dire output terminals for the programmed number of A451           F33         Phase U to Gnd         2         A current has been exceeded between the drive and motor in the programmed number of A451         1. Check the motor and external wiring to the dire output terminals for the programmed number of A451           F41         Phase U to Gnd         2         A phase to ground fault has been detected between the drive and motor in the programmed number of A451         1. Check the motor and drive output terminals					transient conditions. Nus overvoltage can also
F6         Motor Stalled         1         Drive is unable to accelerate motor         Increase TD9 and/or A02 or reduce load so drive output current does not exceed the current set by parameter A431           F7         Motor Overload         1         Internal electronic overload trip         1. An excessive motor load excists. Reduce leads of wire output current does not exceed the current set by parameter A431           F8         Heatsink OvrTmp         1         Heatsink temperature exceeds a predefined value         1. Check for blocked or dirty heat sink fins. Verify that ambient temperature has not exceed de 40°C for IP30/NEMA 1/UL Type 1 installations           F12         HW OverCurrent         2         The drive output current has exceeded the hardware current limit         2. Check fan           F13         Ground Fault         2         A current path to earth ground has been detected at one or more of the drive cause of excess current           F43         Phase V to Gnd         2         A phase to ground fault has been detected between the drive and motor in the phase         1. Check the wiring between the drive and motor in the phase W short           F43         Phase V to Gnd         2         A phase to ground fault has been detected between the drive and motor in the group and trans to a grounded condition           F43         Phase V to Gnd         2         Programmed A4B has been exceeded         1. Check the wiring between the drive and motor in the growe shore or the drive and motor in this phase					be caused by motor regeneration. Extend the
F6     Motor Stalled     1     Drive is unable to accelerate motor     Increase P109 and/or Ad2 or reduce load so drive output current does not exceed the current set by parameter A441       F7     Motor Overload     1     Internal electronic overload trip     1. An excessive motor load excists. Reduce load so drive output current does not exceed the current set by parameter A441       F8     Heatsink OvrTmp     1     Heatsink temperature exceeds a predefined value     1. Check for blocked or dirty heat sink fins. Verify that ambient temperature has not exceeded 40°C for IP20/OREM 1/UL Type 1 installations       F12     HW OverCurrent     2     The drive output current has exceeded the hardware current limit     Check for excess load, imporper A453 setting, DC brake volts set too high or other causes of excess current       F13     Ground Fault     2     A current path to earth ground has been detected a to ear more of the drive output terminals     Correct the cause of the fault and manually clear       F33     Phase U to Gnd     2     A phase to ground fault has been detected between the drive and this phase     Correct the cause of the fault and manually clear       F41     Phase UW Short     2     Excessive current has been detected to a shore domined manually drive any chrose with set the graameter of fault for 3 seconds has been exceeded     1. Check the wiring to the drive terminals       F43     Phase W bord     2     Excessive current has been detected     2. Oreck comotor for grounded phase 3. Replace drive if fault cannot be cleared <t< td=""><td></td><td></td><td></td><td></td><td>decel time or install dynamic brake option</td></t<>					decel time or install dynamic brake option
F7         Motor Overload         1         Internal electronic overload trip         1. An excessive motor load excists. Reduce loads of drive output current to ade so the exceed the current set by parameter P103           F8         Heatsink OvrTmp         1         Heatsink temperature exceeds a predefined value         1. Check for blocked of drive hast sink fins. Verify that ambient temperature has not exceeded 40°C for IP20/Open type installations or 50°C for IP20/Open type installations           F12         HW OverCurrent         2         The drive output current thas exceeded the hardware current limit         Check for blocked app. Of the excess load, improper Ad33 setting. Of the excess load, interproper Ad33 setting. Of the excess load, interproper Ad33 setting. Of the excess load, interproper Ad33 setting.           F33         Ground Fault         2         A current path to earth ground has been duit and resume running for the programmed number of Ad51.         Correct the cause of the fault and manually clear           F33         Phase U to Gnd         2         Aphase to ground fault has been duit is phase         Correct the cause of the fault and manually clear           F44         Phase W to Gnd         2         Excessive current has been detected between the drive and motor in this phase         I. Check the wiring between the drive and motor           F44         Phase W Short         1         Programmed AdB has been exceeded         I	F6	Motor Stalled	1	Drive is unable to accelerate motor	Increase P109 and/or A402 or reduce load so
F7       Motor Overload       1       Internal electronic overload trip       1. A recessive motor load excists. Reduce load so drive output current does not exceed the current set by parameter P103         F8       Heatsink OvrTmp       1       Heatsink temperature exceeds a predefined value       1. Check for blocked or dirty heat sink fins. Verify that ambite temperature has not exceeded 40°C for IP30/NEM AJ/UL Type 1 installations or 50°C for IP20/Open type installations         F12       HW OverCurrent       2       The drive output current has exceeded the current and introper A453 setting. DC brake volts set too high or other causes of excess load, import A53 setting. DC brake volts set too high or other cause of excess current         F13       Ground Fault       2       A current path to earth ground has been detected at one or more of the drive output terminals       Check the motor and external wiring to the drive terminals for a grounded condition output terminals         F33       Auto Rstrt Tries       2       A phase to ground fault has been detected between the drive and motor in this phase       Correct the cause of the drive and motor in this phase         F41       Phase UV Short       2       Excessive current has been detected between the drive and motor in this phase       1. Check the motor and drive output terminals         F42       Phase UW Short       2       Excessive current has been detected between the set to EPROM       1. Check the motor and drive output terminals         F43       Phase UW Short       2					drive output current does not exceed the
P7       Moder Overhald       1       Internal electronic overhald rip       1. All excessive long of vie output current does not exceed the current set by parameter P103         P8       Heatsink OvrTmp       1       Heatsink temperature exceeds a predefined value       1. Check for blocked or dirty heat sink fins. Verify A433 setting         F12       HW OverCurrent       2       The drive output current has exceeded the current set by parameter P103       1. Check for blocked or dirty heat sink fins. Verify fut a mbient temperature has not exceeded 40°C for IP30/NEMA 1/UL Type 1 installations or 50°C for IP30/NEMA 1/UL Type 1         F13       Ground Fault       2       The drive output current has exceeded the drive ordected at one or more of the drive output terminals       Check the motor and external wiring to the drive output terminals or the drive terminals for the drive argounded condition         F33       Auto Rstrt Tries       2       Drive unsuccessfully attempted to reset a faste by hases to ground fault has been detected at one or more of the drive and motor in this phase       1. Check the motor and external wiring to the drive ordec the drive and motor in this phase to ground fault has been detected at one or the reset is phase to ground fault has been detected at one or the sole between the drive and motor in this phase to ground fault has been detected the motor and drive output terminal wiring for a shorted condition         F40       Phase UV Short       2       Excessive current has been detected to inter drive and motor in this phase to ground etected to more of the drive and motor in this phase to ground etected to more detec	57	Mater Overland	1		current set by parameter A441
F8         Heatsink OvrTmp         1         Heatsink temperature exceeds a predefined value         1. Check for blocked or dirty heat sink fins. Verify Hat ambient temperature has not exceeded 40°C for IP30/NRM AJ/U. Type 1 installations 50°C for IP20/Open type installations           F12         HW OverCurrent         2         The drive output current has exceeded and the current and wring to the drive output current limit the hardware current has been detected at one or more of the drive output terminals for a grounded condition           F33         Auto Rstrt Tries         2         A phase to ground fault has been detected between the drive and motor in this phase         Correct the cuse of the fault and manually clear           F41         Phase UV Short         2         Excessive current has been detected between the drive and motor in this phase         1. Check the withing between the drive and motor in this phase           F44         Phase UV Short         2         Excessive current has been detected between the drive and motor in this phase         1. Check the worth and Cheared         1. Check the worthand the drive and motor in this	F7	Notor Overload	T	Internal electronic overload trip	1. An excessive motor load excists. Reduce
File         Heatsink OvrTmp         1         Heatsink temperature exceeds a predefined value         2. Verify A433 setting           F8         Heatsink OvrTmp         1         Heatsink temperature exceeds a predefined value         1. Check for blocked or dirty heat sink fins. Verify Hat ambient emperature has not exceeded 40° C for IP20/VEMA 1/U. Type 1 installations or 50° C for IP20/Open type installations or 50° C for IP20/Open type installat					the current set by parameter P102
F8       Heatsink OvrTmp       1       Heatsink temperature exceeds a predefined value       1. Check for blocked or dirty heat sink fins. Verify that aubient temperature has not exceeded 40° for iP30/RMA 1/UL Type 1 installations 2. Check fan         F12       HW OverCurrent       2       The drive output current has exceeded the hardware current limit       Check programmed number of A453 setting. DC brake volts set too high or other causes of excess current         F13       Ground Fault       2       A current path to earth ground has been detected at one or more of the drive output terminals       Check the motor and external wining to the drive current has exceeded the hardware current limit       Check the ause of the fault and manually clear         F33       Auto Rstrt Tries       2       Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of A451       Correct the cause of the fault and manually clear         F40       Phase U to Gnd       2       A phase to ground fault has been detected between the drive and motor in this phase       1. Check the motor and drive output terminal wing for a shorted condition         F42       Phase UV Short       2       Excessive current has been detected between the drive and motor in this phase betweeneded       1. Check the motor and drive output terminal wing for a shorted condition         F43       Phase UV Short       1       Programmed Au48 has been exceeded       1. Check the drive fault cannot be cleared         F64       Drive Overload					2 Verify A453 setting
10       Inclusion of minp       1       Inclusion control control concerning of the function of control contecontrol contector control contector control control co	E8	Heatsink OvrTmn	1	Heatsink temperature exceeds a	1 Check for blocked or dirty heat sink fins
File         File <th< td=""><td>10</td><td></td><td>-</td><td>nredefined value</td><td>Verify that ambient temperature has not</td></th<>	10		-	nredefined value	Verify that ambient temperature has not
File         HW OverCurrent         2         The drive output current has exceeded the hardware current limit         Check fan           F12         HW OverCurrent         2         The drive output current has exceeded the hardware current limit         Check for excess load, improper Ad3 setting, DC brake volts set too high or other causes of excess current           F13         Ground Fault         2         A current path to earth ground has been detected at one or more of the drive output terminals         Check the motor and external wiring to the drive terminals for a grounded condition           F33         Auto Rstrt Tries         2         Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of A451         Correct the cause of the fault and manually clear           F33         Phase U to Gnd         2         A phase to ground fault has been detected between the drive and motor in this phase         1. Check the wiring between the drive and motor           F40         Phase W to Gnd         2         Excessive current has been detected         1. Check the motor and drive output terminal wiring for a shorted condition           F43         Phase W Short         2         Excessive current has been detected         1. Check the motor and A448 setting           F64         Porive Overload         2         Drive varing of 150% for 1 minute or 200%         2. Replace drive if fault cannot be cleared           F70         Power Unit					exceeded 40°C for IP30/NEMA 1/LIL Type 1
F12       HW OverCurrent       2       The drive output current has exceeded the hardware current limit       Check from Stating, D. Check for improper AS3 setting, D. Check for High or other causes of excess current         F13       Ground Fault       2       A current path to earth ground has been detected at one or more of the drive output terminals       Check the motor and external wring to the drive terminals for a grounded condition         F33       Auto Rstrt Tries       2       Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of AS1       Correct the cause of the fault and manually clear         F33       Phase U to Gnd       2       A phase to ground fault has been detected between the drive and motor in this phase       1. Check the wiring between the drive and motor         F40       Phase W to Gnd       2       Excessive current has been detected between these two output terminals       1. Check the wiring between the drive and motor         F41       Phase UW Short       2       Excessive current has been detected between these two output terminals       1. Check the motor and drive output terminal wring for a shorted condition         F43       Params Defaulted       The drive was commanded to write default values to EEPROM       2. Replace drive if fault cannot be cleared         F64       Drive Ourlad       2       Priaure has been detected in the drive power section       1. Cycle power         F71       Net Loss       The					installations or 50°C for IP20/Open type
InterpretationInterpretationInterpretationInterpretationInterpretationF13Ground Fault2The drive output current limitCheck programming. Check for excess load, improper A453 setting, DC brake wolts set too high or other causes of excess currentF33Ground Fault2A current path to earth ground has been detected at one or more of the drive output terminalsCheck the motor and external wring to the drive terminals for a grounded conditionF33Auto Rstrt Tries2Drive unsuccessfully attempted to reseta fault and resume running for the programmed number of A451Correct the cause of the fault and manually clearF33Phase U to Gnd4A phase to ground fault has been detected between the drive and motor in this phase1. Check the witring between the drive and motor in this phaseF40Phase U to Snot2Excessive current has been detected between the drive and motor in the phase Wishort1. Check the motor and drive output terminalsF43Phase UW Short2Excessive current has been detected between the drive and motor in the drive and motor in the drive as commanded to write in the drive and motor in the drive parameters as needed1. Check the motor and drive output terminals in the drive output terminal writing for a shorted condition in the drive arameters as needed in the drive and requirements and A448 settingF44Phase UW Short1Programmed A448 has been exceeded in the drive arameters as needed for if as a second has been exceeded in the drive fault cannot be cleared in the drive parameters as needed in the drive parameters as needed in the drive arameters as needed in the drive if as a second in the communication network has faulted in					installations
F12         HW OverCurrent         2         The drive output current has exceeded the hardware current limit         Check programming. Check for excess load, improper A43 setting. DC brake volts set too high or other causes of excess current           F13         Ground Fault         2         A current path to earth ground has been detected at one or more of the drive output terminals         Check the motor and external wring to the drive terminals for a grounded condition           F33         Auto Rstrt Tries         2         Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of A451         Check the wiring between the drive and motor           F39         Phase V to Gnd         2         A phase to ground fault has been detected between the drive and motor in this phase         1. Check the wiring between the drive and motor           F41         Phase UV Short         2         Excessive current has been detected between these two output terminals         1. Check the motor and drive output terminal wring for a shorted condition           F43         Phase UW Short         2         Excessive current has been detected between these two output terminals         1. Check the motor and drive output terminals           F63         SW OverCurrent         1         Programmed number of 200% for 3 seconds has been exceeded         1. Check head or extend Accel time for 3 seconds has been exceeded           F70         Power Unit         2         Failure has been detected in the drive power s					2. Check fan
Image: series of the series	F12	HW OverCurrent	2	The drive output current has exceeded	Check programming. Check for excess load,
Image: series of excess currenthigh or other causes of excess currentF13Ground Fault2A current path to earth ground has been detected at one or more of the drive output terminalsCheck the motor and external wiring to the drive terminals for a grounded conditionF33Auto Rstrt Tries2Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of A451Correct the cause of the fault and manually clearF33Phase U to Gnd2A phase to ground fault has been detected between the drive and motor in this phase1. Check the wiring between the drive and motorF40Phase U Sond2Excessive current has been detected between these two output terminals1. Check the motor and drive output terminal wiring for a shorted conditionF43Phase VW Short2Excessive current has been detected between these two output terminals1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be clearedF44Phase VW Short1Programmed A448 has been exceeded for 3 seconds has been exceededCheck load requirements and A448 settingF63SW OverCurrent1Programmed A448 has been exceeded for 3 seconds has been exceeded1. Cycle powerF70Power Unit2Failure has been detected in the drive power section1. Cycle powerF71Net Loss2The communication network has faulted power section1. Cycle powerF81Comm Loss2RS485 (DSI) port stopped communicating not match the checksum calculated<				the hardware current limit	improper A453 setting, DC brake volts set too
F13       Ground Fault       2       A current path to earth ground has been detected at one or more of the drive output terminals       Check the motor and external wiring to the drive terminals for a grounded condition         F33       Auto Rstrt Tries       2       Orrew unsuccessfully attempted to reset a fault and resume running for the programmed number of A451       Correct the cause of the fault and manually clear         F33       Phase U to Gnd       2       Aphase to ground fault has been detected between the drive and motor in this phase       Check the wiring between the drive and motor         F40       Phase UV Short       2       Excessive current has been detected between thes two output terminals       1. Check the motor and drive output terminal wiring for a shorted condition         F43       Phase UW Short       2       Excessive current has been detected between thes two output terminals       1. Check the motor and drive output terminal wiring for a shorted condition         F43       Phase UW Short       1       The drive was commanded to write default values to EEPROM       1. Clear the fault cannot be cleared         F64       Drive Overload       1       Programmed A48 has been exceeded       Check load requirements and A448 setting         F64       Drive Overload       2       Failure has been detected in the drive power section       1. Cycle power         F71       Net Loss       The communication network has faulte disconnected, check wiring to					high or other causes of excess current
Image: section of the section of the section of the section output terminalsdrive terminals for a grounded condition output terminalsF33Auto Rstrt Tries2Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of A451Correct the cause of the fault and manually clearF33Phase U to Gnd4A phase to ground fault has been detected between the drive and motor i this phase1. Check the wiring between the drive and motorF41Phase UV Short2Excessive current has been detected between these two output terminals1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be clearedF43Phase UW Short1The drive was commanded to write default values to EEPROM1. Chear the fault or cycle power to the drive 2. Program the drive parameters as neededF64Drive OverCourrent1Programmed A448 has been exceeded1. Cycle power 2. Replace drive if fault cannot be clearedF70Power Unit2Failure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net LossTThe communication network has faulted 2. Check communication scabling 3. Check context ing to the port. Replace write, power section1. Green munication scabling 3. Check context ing to the port. Replace write, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was not intentionally disconnected, check wiring to the port. Replace write, port expander, adapters or complete drive as required 2. Check connection 3. An adapter	F13	Ground Fault	2	A current path to earth ground has been	Check the motor and external wiring to the
F33Auto Rstrt Tries2Output terminalsCorrect the cause of the fault and manually clearF38Phase U to Gnd2A phase to ground fault has been detected between the drive and motor in this phase1. Check the wiring between the drive and motorF40Phase V to Gnd2A phase to ground fault has been detected between the drive and motor in this phase1. Check the wiring between the drive and motorF41Phase V to Gnd2Excessive current has been detected between these two output terminals1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be clearedF43Phase UW Short2Excessive current has been detected between these two output terminals1. Check the motor and drive output terminals wiring for a shorted condition 2. Replace drive if fault cannot be clearedF48Params Defaulted1Programmed A448 has been exceeded for 3 seconds has been detected in the drive power section1. Clear the fault or cycle power to the drive 2. Program the drive parameters as needed for 3 seconds has been detected in the drive power section1. Cycle powerF70Power Unit2Failure has been detected in the drive power section1. Cycle powerF71Net Loss2The communication network has faulted 4. Check central network status1. Grapter was not intentionally disconnected, check wiring to the port. Replace drive if fault cannot be clearedF81Comm Loss2The checksum read from the board does not match the checksum calculated1. Cycle powerF7				detected at one or more of the drive	drive terminals for a grounded condition
F33       Auto Rstrt Tries       2       Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of A451       Correct the cause of the fault and manually clear         F38       Phase U to Gnd       2       A phase to ground fault has been detected between the drive and motor in this phase       1. Check the wiring between the drive and motor in this phase         F40       Phase UV Sond       2       A cossive current has been detected between the drive and motor in this phase       1. Check the wiring between the drive output terminal wiring for a shorted condition         F42       Phase UW Short       2       Excessive current has been detected between the drive and motor in the drive and motor       1. Check the motor and drive output terminal wiring for a shorted condition         F43       Phase VW Short       1       Programmed Au48 has been exceeded       2. Program the drive parameters an eaded?         F64       Drive Overload       2       Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceeded       1. Cycle power         F70       Power Unit       2       Failure has been detected in the drive are ontimication network has faulted       1. Cycle power         F71       Net Loss       2       Failure has been detected in the drive are ontimication and free ortempter as needed?         F71       Net Loss       2       Re				output terminals	
F38Phase U to Gnd2 programmed number of A451ClearF39Phase V to GndA phase to ground fault has been detected between the drive and motor in this phase1. Check the wiring between the drive and motorF40Phase W to Gnd2 Phase VW ShortA phase to ground fault has been detected between the drive and motor in this phase1. Check the wiring between the drive and motorF41Phase UV Short2 Phase VW ShortExcessive current has been detected between these two output terminals default values to EEPROM1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be clearedF48Params Defaulted1Programmed A448 has been exceeded default values to EEPROMCheck load requirements and A448 settingF64Drive Overload2 Program the drive parameters as needed for 3 seconds has been exceededCheck load requirements and A448 settingF70Power Unit2 Power UnitFailure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net Loss2 Pailure has been detected in the drive power section1. Cycle power 2. Check communications cabling 3. Check network adapter setting 4. Check was not intentionally disconnected, check wiring to the port. Replace drive if fault cannot be clearedF81Comm Loss2 Parameter ChecksumRS485 (DSI) port stopped communicating 1. If adapter was not intentionally disconnected, check wiring to the port. Replace drive if fault cannot be port. Replace wiring, port expander, adapters or comple	F33	Auto Rstrt Tries	2	Drive unsuccessfully attempted to reset a	Correct the cause of the fault and manually
F38Phase U to Gnd2A phase to ground fault has been detected between the drive and motor in this phase1. Check the wiring between the drive and motorF40Phase V to Gnd2Excessive current has been detected between these two output terminals this was commanded to write default values to EEPROM1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be clearedF43Phase UW Short2Excessive current has been detected between these two output terminals of a shorted condition 2. Replace drive if fault cannot be clearedF44Phase VW Short1Programmed A448 has been exceeded default values to EEPROM1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be clearedF63SW OverCurrent1Programmed A448 has been exceeded for 3 seconds has been exceededCheck load requirements and A448 settingF64Drive Overload2Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceededReduce load or extend Accel timeF70Power Unit2Failure has been detected in the drive power section1. Cycle power 2. Check communications cabling 3. Check network adapter setting 4. Check external network statusF81Comm Loss2RS485 (DSI) port stopped communicating 1. If adapter was not intentionally disconnected, check wiring to the port. Replace drive if net communications 3. An adapter was intentionally disconnected 4. Turn off using G304F100Parameter Checksum2The checksum read from the board does not match t				fault and resume running for the	clear
F38Phase Ut Gond2 Phase V to GndA phase to ground fault has been detected between the drive and motor in this phase1. Check the wiring between the drive and motorF40Phase W to Gnd2 Phase W Short2 Excessive current has been detected between these two output terminals ming for a shorted condition 2. Replace drive if fault cannot be cleared3. Replace drive if fault cannot be cleared uring for a shorted condition 2. Replace drive if fault cannot be clearedF43Phase WW Short2 Program the drive output terminals default values to EEPROM1. Clear the fault or cycle power to the drive 2. Program the drive parameters as neededF64Prarms Defaulted1Programmed A448 has been exceeded for 3 seconds has been exceededCheck load or extend Accel timeF64Drive Overload2Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceededReduce load or extend Accel timeF70Power Unit2 Power UnitFailure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net Loss2 Prive Nument Second				programmed number of A451	
F39Phase V to Gnddetected between the drive and motor in this phasemotor 2. Check motor for grounded phase 3. Replace drive if fault cannot be clearedF41Phase UV Short2Excessive current has been detected between these two output terminals wiring for a shorted condition 2. Replace drive if fault cannot be clearedF43Phase UW Short1Excessive current has been detected between these two output terminals between these two output terminals wiring for a shorted condition 2. Replace drive if fault cannot be clearedF48Params Defaulted1Programmed A448 has been exceeded for 3 seconds has been exceededCheck load requirements and A448 settingF64Drive Overload2Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceededReduce load or extend Accel time for 3 seconds has been exceededF70Power Unit2Failure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net Loss2Res485 (DSI) port stopped communicating disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was not intentionally disconnected, check wiring to the port. Replace drive if fault contol be port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was not intentionally disconnected 4. Turn off using C304F100Parameter Checksum2The checksum read from the board does not match the checksum calculatedSet P112 to option 1 "Reset Defaults"F100Param	F38	Phase U to Gnd	2	A phase to ground fault has been	1. Check the wiring between the drive and
F40Phase W to Gndthis phase2. Check motor for grounded phase 3. Replace drive if fault cannot be clearedF41Phase UV Short2Excessive current has been detected between these two output terminals1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be clearedF43Phase VW Short1. Check motor for grounded phase 3. Replace drive if fault cannot be clearedF44Params DefaultedThe drive was commanded to write default values to EEPROM for 3 seconds has been exceeded1. Clear the fault or cycle power to the drive 2. Program the drive parameters as needed for 3 seconds has been exceededF64Drive Overload2Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceededReduce load or extend Accel timeF70Power Unit2Failure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net LossThe communication network has faulted accent secting 4. Check external network status1. Cycle power 2. Check communications cabling 3. Check network adapter setting 4. Check wiring to the port. Replace drive as required 2. Check connection 3. An adapter was net intentionally disconnected, check wiring to the port. Replace drive as required 2. Check connectionF100Parameter Checksum2The checksum read from the board does not match the checksum calculatedSet P112 to option 1 "Reset Defaults"F102I/O Board Fail2Failure has been detected in the drive accented and the checksum calculatedSet P112 to option 1 "Reset De	F39	Phase V to Gnd		detected between the drive and motor in	motor
F41Phase UV Short2Excessive current has been detected between these two output terminals1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be clearedF43Phase VW Short.The drive was commanded to write default values to EEPROM1. Check the motor and drive output terminals wiring for a shorted condition 2. Replace drive if fault cannot be clearedF63SW OverCurrent1Programmed A448 has been exceededCheck load requirements and A448 settingF64Drive Overload2Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceededReduce load or extend Accel timeF70Power Unit2Failure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net LossThe communication network has faulted1. Cycle power 2. Check communications cabling 3. Check network adapter setting 4. Check external network statusF81Comm Loss2RS485 (DSI) port stopped communicating 1. I fadapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304F100Parameter Checksum2The checksum read from the board does not match the checksum calculatedSet P112 to option 1 "Reset Defaults"F102I/O Board Fail2Failure has been detected in the drive control and I/O section1. Cycle powerF100Parameter Checksum2Failure has been	F40	Phase W to Gnd		this phase	2. Check motor for grounded phase
F41       Phase UV short       2       Excessive current has been detected between these two output terminals       1. Check the motor and only output terminals         F42       Phase UW Short       2       between these two output terminals       wiring for a shorted condition         F43       Phase VW Short       2       The drive was commanded to write default values to EEPROM       1. Clear the fault or cycle power to the drive 2. Program the drive parameters as needed         F63       SW OverCurrent       1       Programmed A448 has been exceeded       Check load requirements and A448 setting         F64       Drive Overload       2       Drive rating of 150% for 1 minute or 200%       Reduce load or extend Accel time         F70       Power Unit       2       Failure has been detected in the drive power section       1. Clear the fault cannot be cleared         F71       Net Loss       The communication network has faulted       1. Cycle power       2. Replace drive if fault cannot be cleared         F81       Comm Loss       2       RS485 (DSI) port stopped communicating a. Check communication go the port. Replace writing got the port.	<b>5</b> 44	Dharas LIV (Chara)	2	The second second second second second	3. Replace drive if fault cannot be cleared
F42       Phase UW Short       Detween these two output terminals       wining for a shorted conduction         F43       Phase VW Short       2. Replace drive if fault cannot be cleared         F48       Params Defaulted       The drive was commanded to write       1. Clear the fault or cycle power to the drive         F63       SW OverCurrent       1       Programmed A448 has been exceeded       Check load requirements and A448 setting         F64       Drive Overload       2       Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceeded       Reduce load or extend Accel time         F70       Power Unit       2       Failure has been detected in the drive prower       2. Replace drive if fault cannot be cleared         F71       Net Loss       The communication network has faulted       1. Cycle power         F81       Comm Loss       2       RS485 (DSI) port stopped communicating a communicating a required rive as requ	F41	Phase UV Short	2	Excessive current has been detected	1. Check the motor and drive output terminal
F43       Phase VW Short       Image: Constrained of the co	F42	Phase UW Short		between these two output terminals	2 Replace drive if fault cannot be cleared
F48Params DefaultedThe drive was commanded to write default values to EEPROM1. Clear the fault or cycle power to the drive 2. Program the drive parameters as neededF63SW OverCurrent1Programmed A448 has been exceededCheck load requirements and A448 settingF64Drive Overload2Drive rating of 150% for 1 minute or 2006Reduce load or extend Accel timeF70Power Unit2Failure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net LossThe communication network has faulted a communication network has faulted1. Cycle power 2. Check communications cabling 3. Check network adapter setting 4. Check external network statusF81Comm Loss2RS485 (DSI) port stopped communication a complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304F100Parameter Checksum2The checksum read from the board does not match the checksum calculatedSet P112 to option 1 "Reset Defaults"F122I/O Board Fail2Failure has been detected in the drive control and I/O section2. Cycle power2. Replace drive if fault cannot be cleared	F43	Phase VW Short			
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F63       SW OverCurrent       1       Programmed A448 has been exceeded       Check load requirements and A448 setting         F64       Drive Overload       2       Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceeded       Reduce load or extend Accel time         F70       Power Unit       2       Failure has been detected in the drive power section       1. Cycle power         F71       Net Loss       The communication network has faulted       1. Cycle power         F81       Comm Loss       Z       RS485 (DSI) port stopped communicationg commed action network has faulted       1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required         F81       Comm Loss       Z       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F102       I/O Board Fail       Z       Failure has been detected in the drive control and I/O section       1. Cycle power				default values to EEPROM	2. Program the drive parameters as needed
F64Drive Overload2Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceededReduce load or extend Accel timeF70Power Unit2Failure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net LossThe communication network has faulted and the communication network has faulted1. Cycle power 2. Check communications cabling 3. Check network adapter setting 4. Check external network statusF81Comm Loss2RS485 (DSI) port stopped communicating and the check sum calculated1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304F100Parameter Checksum2The checksum read from the board does not match the checksum calculatedSet P112 to option 1 "Reset Defaults"F122I/O Board Fail2Failure has been detected in the drive control and I/O section1. Cycle power	F63	SW OverCurrent	1	Programmed A448 has been exceeded	Check load requirements and A448 setting
F70Power Unit2Failure has been detected in the drive power section1. Cycle power 2. Replace drive if fault cannot be clearedF71Net LossImage: Communication network has faulted normanication network has faulted1. Cycle power 2. Replace drive if fault cannot be clearedF71Net LossImage: Communication network has faulted normanication network has faulted1. Cycle power 2. Check communications cabling 3. Check network adapter setting 4. Check external network statusF81Comm Loss2RS485 (DSI) port stopped communication a network status1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304F100Parameter Checksum2The checksum read from the board does not match the checksum calculatedSet P112 to option 1 "Reset Defaults"F122I/O Board Fail2Failure has been detected in the drive control and I/O section1. Cycle power	F64	Drive Overload	2	Drive rating of 150% for 1 minute or 200%	Reduce load or extend Accel time
F/0       Power Unit       2       Failure has been detected in the drive power section       1. Cycle power         F71       Net Loss       The communication network has faulted       1. Cycle power         F71       Net Loss       The communication network has faulted       1. Cycle power         F81       Comm Loss       Parameter Checksum       2       RS485 (DSI) port stopped communication       1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required         F100       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power			-	tor 3 seconds has been exceeded	
F71Net LossThe communication network has faulted1. Cycle powerF71Net LossThe communication network has faulted1. Cycle power2. Check communications cabling 3. Check network adapter setting 4. Check external network status2. Check communications cabling 3. Check network adapter setting 4. Check external network statusF81Comm Loss2RS485 (DSI) port stopped communicating and the port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304F100Parameter Checksum2The checksum read from the board does not match the checksum calculatedSet P112 to option 1 "Reset Defaults"F122I/O Board Fail2Failure has been detected in the drive control and I/O section1. Cycle power2. Replace drive if fault cannot be cleared	F70	Power Unit	2	Failure has been detected in the drive	1. Cycle power
F/1       Net Loss       Ine communication network has faulted       1. Cycle power         2. Check communications cabling       3. Check network adapter setting         4. Check external network status       4. Check external network status         F81       Comm Loss       2       RS485 (DSI) port stopped communication       1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required         F81       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power		Notification		power section	2. Replace drive if fault cannot be cleared
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F81Comm Loss2RS485 (DSI) port stopped communicating A1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304F100Parameter Checksum2The checksum read from the board does not match the checksum calculatedSet P112 to option 1 "Reset Defaults"F122I/O Board Fail2Failure has been detected in the drive control and I/O section1. Cycle power 2. Replace drive if fault cannot be cleared					2. Check communications cabling
F81       Comm Loss       2       RS485 (DSI) port stopped communicating       1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required         F81       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       5. Check connection         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power         2       Release of the control and I/O section       2. Check connection       3. An adapter was intentionally disconnected         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power					4. Check external network status
Find       2       Forest (por stopped control adding bort stopped control adding disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304         F100       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power	F81	Comm Loss	2	RS485 (DSI) port stopped communicating	1 If adapter was not intentionally
F100       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power         2. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304	101	COMIN 2033	1	his ios (Boi) por stopped communicating	disconnected, check wiring to the port
F100       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power         2. Check connection       3. An adapter was intentionally disconnected 4. Turn off using C304					Replace wiring, port expander, adapters or
F100       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power         2. Check connection       3. An adapter was intentionally disconnected 4. Turn off using C304         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power         2. Replace drive if fault cannot be cleared       2. Replace drive if fault cannot be cleared					complete drive as required
F100       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power         2. Replace drive if fault cannot be cleared					2. Check connection
F100     Parameter Checksum     2     The checksum read from the board does not match the checksum calculated     4. Turn off using C304       F122     I/O Board Fail     2     The checksum read from the board does not match the checksum calculated     Set P112 to option 1 "Reset Defaults"       F122     I/O Board Fail     2     Failure has been detected in the drive control and I/O section     1. Cycle power       2     Replace drive if fault cannot be cleared     2. Replace drive if fault cannot be cleared					3. An adapter was intentionally disconnected
F100       Parameter Checksum       2       The checksum read from the board does not match the checksum calculated       Set P112 to option 1 "Reset Defaults"         F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power         2. Replace drive if fault cannot be cleared					4. Turn off using C304
F122     I/O Board Fail     2     Failure has been detected in the drive control and I/O section     1. Cycle power       2. Replace drive if fault cannot be cleared	F100	Parameter Checksum	2	The checksum read from the board does	Set P112 to option 1 "Reset Defaults"
F122       I/O Board Fail       2       Failure has been detected in the drive control and I/O section       1. Cycle power         2. Replace drive if fault cannot be cleared				not match the checksum calculated	
control and I/O section 2. Replace drive if fault cannot be cleared	F122	I/O Board Fail	2	Failure has been detected in the drive	1. Cycle power
				control and I/O section	2. Replace drive if fault cannot be cleared

#### 5.5. Common Symptoms and Corrective Actions

#### Motor does not start

Cause(s)	Indication	Corrective action
No output voltage to the motor	None	Check the power circuit
		<ul> <li>Check the supply voltage</li> </ul>
		<ul> <li>Check all fuses and disconnects</li> </ul>
		Check the motor
		<ul> <li>Verify that the motor is connected properly</li> </ul>
		Check the control input signals
		<ul> <li>Verify that a start signal is present. If 2-Wire</li> </ul>
		control is used, verify that either the Run
		Forward or Run Reverse signal is active, but not
		both
		<ul> <li>Verify that I/O terminal 01 is active</li> </ul>
		<ul> <li>Verify that P106 matches your configuration</li> </ul>
		<ul> <li>Verify that A434 is not prohibiting movement</li> </ul>
Improper boost setting at initial start-up	None	Set A453 to option 2 "35.0, VT"
Drive is faulted	Flashing red status light	Clear fault
		- Press Stop
		- Cycle power
		<ul> <li>Set A450 to option 1 "Clear Faults"</li> </ul>
		- Cycle digital input if t201 – t202 is set to option 7
		"Clear Fault"

#### Drive does not start from integral keypad

Cause(s)	Indication	Corrective action
Integral keypad is not enabled	Green LED above Start key is not illuminated	<ul> <li>Set parameter P106 to option 0 "Keypad"</li> <li>Set parameter t201 – t202 to option 5 "Local" and activate the input</li> </ul>
I/O terminal 01 "Stop" input is not present	None	Wire inputs correctly and/or install jumper

#### Drive does not start from start or run inputs wired to the terminal block

Cause(s)	Indication	Corrective action
Drive is faulted	Flashing red status light	Clear fault <ul> <li>Press stop</li> <li>Cycle power</li> <li>Set A450 to option 1 "Clear Faults"</li> <li>Cycle digital input if t201 – t202 is set to option 7 "Clear Fault"</li> </ul>
Incorrect programming - P106 is set to option 0 "Keypad" or option 5 "RS485 (DSI) Port" - t201 – t202 is set to option 5 "Local" and the input is active	None	Check parameter settings
Incorrect input wiring - 2 wire control requires Run Forward, Run Reverse or Jog input - 3 wire control requires Start and Stop inputs - Stop input is always required	None	Wire inputs correctly and/or install jumper
Incorrect Sink/Source DIP switch setting	None	Set switch to match wiring scheme

#### Drive does not respond to changes in speed command

Cause(s)	Indication	Corrective action
No value is coming from the source of the	The drive "Run" indicator is	<ul> <li>Check d012 for correct source</li> </ul>
command	lit and output is OHz	<ul> <li>If the source is an analog input, check wiring and use a meter to check for presence of signal</li> <li>Check d002 to verify correct command</li> </ul>
Incorrect reference source is being selected via remote devicxe or digital inputs	None	<ul> <li>Check d012 for correct source</li> <li>Check d014 to see if inputs are selecting an alternative source. Verify settings for t201 – t202</li> <li>Check P108 for the source of the speed reference. Reprogram as necessary</li> <li>Review the Speed Reference Control Chart</li> </ul>



#### Motor and/or drive will not accelerate to commanded speed

Cause(s)	Indication	Corrective action
Acceleration time is exceeded	None	Reprogram P109 or A401
Excess load or short acceleration times	None	Compare d003 with A441
force the drive into current limit, slowing or		Remove excess load or reprogram P109 or A401
stopping acceleration		Check for improper A453 setting
Speed command source or value is not as	None	Verify d002
expected		Check d012 for the proper Speed Command
Programming is preventing the drive	None	Check P105 to insure that speed is not limited by
output from exceeding limiting values		programming

#### Motor operation is unstable

Cause(s)	Indication	Corrective action
Motor data was incorrectly entered	None	<ol> <li>Correctly enter motor nameplate data into P101, P102 and P103</li> <li>Enable A436</li> <li>Use A453 to reduce boost level</li> </ol>

#### Drive will not reverse motor direction

Cause(s)	Indication	Corrective action
Digital input is not selected for reversing	None	Check [Digital Inx Sel]
control		Choose correct input and program for reversing mode
Digital input is incorrectly wired	None	Check input wiring
Motor wiring is improperly phased for	None	Switch two motor loads
reverse		
Reverse is disabled	None	Check A434

#### Drive will not reverse motor direction

Cause(s)	Indication	Corrective action
No input power to drive	None	Check the power circuit
		<ul> <li>Check the supply voltage</li> </ul>
		<ul> <li>Check all fuses and disconnects</li> </ul>
Jumper between I/O terminals P2 and P1 not installed and/or DC Bus Inductor not connected	None	Install jumper or connect DC Bus Inductor

# **AEROPLEAT METAL FILTER**

### MORE EFFECTIVE PRODUCTS BROUGHT TO YOU BY





### **ADVANTAGES**

- Low pressure drop media resulting in low energy costs
- Rigid frame for demanding applications. Fire classified M1
- Robust construction for reliable operation

Application: Pre filter for comfort air conditioning applications

Type: Pleated Panel

Frame: Metal

Media: Cotton/Synthetic

Dimensions: Filter front dimensions according EN 15805

Rec. final pressure drop acc. EN 13053: 150 Pa

Maximum airflow: 1,1 x nominal flow

Temperature max: 70°C

**RH. max:** 100%

Mounting/Frames: Front and side access housings and frames are available

Туре	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (mm)	Weight (kg)
Metal	G4	Coarse 65 %	592x592x50	3400/55	1,1	2,2
Metal	G4	Coarse 65 %	287x592x50	1650/55	0,5	1,7
Metal	G4	Coarse 65 %	610x610x50	3600/55	1,2	2,3
Metal	G4	Coarse 65 %	305x610x50	1800/55	0,6	1,7
Metal	G4	Coarse 65 %	500x500x50	2400/55	0,8	1,7
Metal	G4	Coarse 65 %	400x500x50	1900/55	0,6	1,5
Metal	G4	Coarse 65 %	500x625x50	3000/55	1,0	2,3
Other dimensions are	available op re	auast - All dimonsions are	nominal			



Gibson Booth, 12 Victoria Road, Barnsley, South Yorkshire, S70 2BB, United Kingdom.

# HI-FLO M, P, TM BAG FILTER

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### **ADVANTAGES**

- Innovative pocket design for optimum air distribution
- Conical pockets
- Certified perfo

- Large surface area
- Save energy optimised design (LCC)
- Comprehensive range of standard sizes

Application: Air conditioning applications

Type: Bag Filter

Frame: Galvanised steel

Media: Glass fiber

Dimensions: Filter front dimensions according EN 15805

Rec. final pressure drop acc. EN 13053: M6-F7: 200 Pa, F9: 300 Pa

Maximum airflow: 1,25 x nominal flow

Temperature max: 70°C

**RH. max:** 100%

Mounting/Frames: Front and side access housings and frames are available

Туре	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/h/Pa)	Bags	Media area (m²)	Weight (kg)	Energy consumption	Energy class	ePM1	ePM1min	ePM2,5	ePM2,5min	ePM10
ML6	M6	ePM2,5 50%	592x892x640	5000/55	12	13,7	3,9		А					
M6	M6	ePM2,5 50%	592x592x640	3400/55	12	9,1	3,3	748	А	40	40	54	54	80
M6-65	M6	ePM2,5 50%	592x490x640	2800/55	12	7,6	3		А					
M6-63	M6	ePM2,5 50%	592x287x640	1700/55	12	4,6	2		А					
NL6	M6	ePM2,5 50%	490x892x640	4100/55	10	11,4	3,2		А					
N6	M6	ePM2,5 50%	490x592x640	2800/55	10	7,6	3		А					
OL6	M6	ePM2,5 50%	287x892x640	2500/55	6	6,8	2,2		А					
06	M6	ePM2,5 50%	287x592x640	1700/55	6	4,6	2		А					
06-33	M6	ePM2,5 50%	287x287x640	800/55	6	2,3	1,5		А					
PL6	M6	ePM2,5 50%	592x892x520	5000/60	10	9,7	4,4		С					
P6	M6	ePM2,5 50%	592x592x520	3400/60	10	6,2	2,9	986	С	40	40	54	54	80
P6-65	M6	ePM2,5 50%	592x490x520	2800/60	10	5,1	2,4		С					
P6-63	M6	ePM2,5 50%	592x287x520	1700/60	10	3,1	1,5		С					
QL6	M6	ePM2,5 50%	490x892x520	4100/60	8	7,8	4,0		С					
Q6	M6	ePM2,5 50%	490x592x520	2800/60	8	5,1	2,4		С					
RL6	M6	ePM2,5 50%	287x892x520	2500/60	5	4,8	2,6		С					
R6	M6	ePM2,5 50%	287x592x520	1700/60	5	3,1	1,5		С					
R6-33	M6	ePM2,5 50%	287x287x520	800/60	5	1,6	1,1		С					
TML6	M6	ePM2,5 50%	592x892x370	5000/70	12	8,1	2,9		С					
TM6	M6	ePM2,5 50%	592x592x370	3400/70	12	5,5	2,55	1280	С	40	40	54	54	80
TM6-65	M6	ePM2,5 50%	592x490x370	2800/70	12	4,5	2,15		С					

### MORE EFFECTIVE PRODUCTS BROUGHT TO YOU BY



Туре	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/h/Pa)	Bags	Media area (m²)	Weight (kg)	Energy consumption	Energy class	ePM1	ePM1min	ePM2,5	ePM2,5min	ePM10
TM6-63	M6	ePM2,5 50%	592x287x370	1700/70	12	2,7	1,4		С					
TNL6	M6	ePM2,5 50%	490x892x370	4100/70	10	6,8	2,6		С					
TN6	M6	ePM2,5 50%	490x592x370	2800/70	10	4,5	2,15		С					
TOL6	M6	ePM2,5 50%	287x892x370	2500/70	6	4	1,4		С					
TO6	M6	ePM2,5 50%	287x592x370	1700/70	6	2,7	1,4		С					
TO6-33	M6	ePM2,5 50%	287x287x370	800/70	6	1,3	0,8		С					
ML7	F7	ePM1 70%	592x892x640	5000/85	12	13,7	3		А					
ML7 ES	F7	ePM1 60%	592x892x640	5000/60	12	13,7	3		A+					
M7	F7	ePM1 70%	592x592x640	3400/85	12	9,1	3,3	1099	А	71	71	80	80	94
M7 ES	F7	ePM1 60%	592x592x640	3400/60	12	9,1	3,3	838	A+	62	62	71	71	90
M7-65	F7	ePM1 70%	592x490x640	2800/85	12	7,6	3		А					
M7-65	F7	ePM1 60%	592x490x640	2800/60	12	7,6	3		A+					
M7-63	F7	ePM1 70%	592x287x640	1700/85	12	4,6	2		А					
M7-63	F7	ePM1 60 %	592x287x640	1700/60	12	4,6	2		A+					
NL7	F7	ePM1 70%	490x892x640	4100/85	10	11,4	2,7		A					
NL7 ES	F7	ePM1 60 %	490x892x640	4100/60	10	11,4	2,7		A+					
N7	F7	ePM1 70%	490x592x640	2800/85	10	7,6	3		A					
N/ES	F/	ePM1 60 %	490x592x640	2800/60	10	/,6	3		A+					_
	F/	ePM1 70%	287x892x640	2500/85	6	6,8	1,8		A					
OL/ES	F/	ePM1 60 %	287x892x640	2500/60	6	6,8	1,8		A+					_
07 55	F/	ePM170%	287x592x640	1700/65	0	4,0	2		A .					
07 E3	F7	oPM1 70 %	287x287x6/.0	800/85	6	4,0	2		A+ Δ					
07-33	F7	ePM1 60 %	287x287x6/0	800/60	6	2,5	1,5		Δ <sub>+</sub>					
DI 7	F7	ePM1 70 %	592x892x520	5000/105	10	9.7	3.8		C C					
PL7 FS	F7	ePM1 60 %	592x892x520	5000/75	10	9.7	3.8		A					
P7	F7	ePM1 70%	592x592x520	3400/105	10	6.2	2.6	1348	С	71	71	80	80	94
P7 ES	F7	ePM1 60 %	592x592x520	3400/75	10	6.2	2.6	895	A	62	62	71	71	90
P7-65	F7	ePM1 70%	592x490x520	2800/105	10	5,1	2,4		C					
P7-65	F7	ePM1 60%	592x490x520	2800/75	10	5,1	2,4		A					
P7-63	F7	ePM1 70%	592x287x520	1700/105	10	3,1	1,5		С					
P7-63	F7	ePM1 60%	592x287x520	1700/75	10	3,1	1,5		А					
QL7	F7	ePM1 70%	490x892x520	4100/105	8	7,8	3,6		С					
QL7 ES	F7	ePM1 60%	490x892x520	4100/75	8	7,8	3,6		А					
Q7	F7	ePM1 70%	490x592x520	2800/105	8	5,1	2,3		С					
Q7 ES	F7	ePM1 60%	490x592x520	2800/75	8	5,1	2,3		А					
RL7	F7	ePM1 70%	287x892x520	2500/105	5	4,8	2,2		С					
RL7 ES	F7	ePM1 60%	287x892x520	2500/75	5	4,8	2,2		А					
R7	F7	ePM1 70%	287x592x520	1700/105	5	3,1	1,6		С					
R7 ES	F7	ePM1 60%	287x592x520	1700/75	5	3,1	1,6		A					
R7-33	F7	ePM1 70%	287x287x520	800/105	5	1,6	1,1		С					
R7-33	F7	ePM1 60%	287x287x520	800/75	5	1,6	1,1		A					
TML7	F7	ePM1 70%	592x892x370	5000/130	12	8,1	2,5		D					
TML7	F7	ePM1 60 %	592x892x370	5000/95	12	8,1	2,5		C					
TM7	F7	ePM1 70%	592x592x370	3400/130	12	5,2	2,3	1960	D	71	71	80	80	94
IM/ES	F/	ePM1 60%	592x592x370	3400/95	12	5,2	2,3	1427	0	62	62	/1	/1	90
IM/-65	F/	ePM1 /0%	592x490x370	2800/130	12	4,3	2,15		D					
TM7-65	F/	ePM1 60 %	592x490x370	2800/95	12	4,3	2,15							_
TM7 63	F/	oPM1 60 %	592X287X370	1700/150	12	2,0	1,4		C					
TNI 7	F7	ePM1 70 %	490x892x370	4100/130	10	6.8	2.2		D					
TNI 7 FS	F7	ePM1 60 %	490x892x370	4100/95	10	6.8	2,2		C					
TN7	F7	ePM1 70 %	490x592x370	2800/130	10	43	2.05		D					
TN7 FS	F7	ePM1 60 %	490x592x370	2800/95	10	4.3	2.05		C					
TOL7	F7	ePM1 70 %	287x892x370	2500/130	6	4	1,5		D					
TOL7 ES	F7	ePM1 60 %	287x892x370	2500/95	6	4	1,5		С					
T07	F7	ePM1 70%	287x592x370	1700/130	6	2,6	1,35		D					
TO7 ES	F7	ePM1 60%	287x592x370	1700/95	6	2,6	1,35		С					
T07-33	F7	ePM1 70%	287x287x370	800/130	6	1,3	0,8		D					

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Туре	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/h/Pa)	Bags	Media area (m²)	Weight (kg)	Energy consumption	Energy class	ePM1	ePM1min	ePM2,5	ePM2,5min	ePM10
T07-33	F7	ePM1 60%	287x287x370	800/95	6	1,3	0,8		С					
ML9	F9	ePM1 85%	592x892x640	5000/130	12	13,7	3		С					
M9	F9	ePM1 85%	592x592x640	3400/130	12	9,1	3,3	1722	С	87	87	91	91	98
M9-65	F9	ePM1 85%	592x490x640	2800/130	12	7,6	3		С					
M9-63	F9	ePM1 85%	592x287x640	1700/130	12	4,6	2		С					
NL9	F9	ePM1 85%	490x892x640	4100/130	10	11,4	2,7		С					
N9	F9	ePM1 85%	490x592x640	2800/130	10	7,6	3		С					
OL9	F9	ePM1 85%	287x892x640	2500/130	6	6,8	1,8		С					
09	F9	ePM1 85 %	287x592x640	1700/130	6	4,6	2		С					
09-33	F9	ePM1 85%	287x287x640	800/130	6	2,3	1,5		С					
PL9	F9	ePM1 85 %	592x892x520	5000/160	10	9,7	4,1		D					
P9	F9	ePM1 85%	592x592x520	3400/160	10	6,2	2,5	2016	D	87	87	91	91	98
P9-65	F9	ePM1 85 %	592x490x520	2800/160	10	5,1	2,4		D					
P9-63	F9	ePM1 85%	592x287x520	1700/160	10	3,1	1,5		D					
QL9	F9	ePM1 85 %	490x892x520	4100/160	8	7,8	3,6		D					
Q9	F9	ePM1 85%	490x592x520	2800/160	8	5,1	2,4		D					
RL9	F9	ePM1 85 %	287x892x520	2500/160	5	4,8	2,5		D					
R9	F9	ePM1 85 %	287x592x520	1700/160	5	3,1	1,5		D					
R9-33	F9	ePM1 85 %	287x287x520	800/160	5	1,6	1,1		D					
TML9	F9	ePM1 85 %	592x892x370	5000/230	12	8,1	2,5		E					
TM9	F9	ePM1 85 %	592x592x370	3400/230	12	5,5	2,25		E	87	87	91	91	98
TM9-65	F9	ePM1 85%	592x490x370	2800/230	12	4,5	2,15		E					
TM9-63	F9	ePM1 85 %	592x287x370	1700/230	12	2,7	1,4		E					
TNL9	F9	ePM1 85%	490x892x370	4100/230	10	6,8	2,2		E					
TN9	F9	ePM1 85 %	490x592x370	2800/230	10	4,5	2		E					
TOL9	F9	ePM1 85%	287x892x370	2500/230	6	4	1,5		E					
TO9	F9	ePM1 85 %	287x592x370	1700/230	6	2,7	1,35		E					
TO9-33	F9	ePM1 85 %	287x287x370	800/230	6	1,3	0,8		E					





### PERSPEX CAST ACRYLIC SHEET FOOD CONTACT GRADES: CLEAR & COLOURS

February 2015

#### COMPLIANCE WITH EUROPEAN FOOD CONTACT REGULATIONS

### Declaration of Compliance for Perspex Cast Acrylic Sheet intended to be used in the manufacture of food contact materials and articles.

The information included in this document is valid from stated version date until this document is superseded.

Lucite International UK Ltd can confirm that the Perspex Cast Acrylic Sheet Food Contact Grades: Clears and Colours which are suitable to be used in the manufacture of materials and articles intended to come into contact with food comply with the relevant requirements as laid down in:

Framework Regulation (EC) 1935/2004 (dated 27-10-2004), articles 3 and 17.

EU Commission Regulation (EU) 10/2011 relating to plastic materials and subsequent amendments up to 1282/2011.

Fabricated test specimens have been tested according to EU Regulations.

Perspex Cast Acrylic Sheet has been manufactured in accordance with the relevant requirements of Commission Regulation (EC) No. 2023/2006 articles 4, 5, 6 and 7.

The polymers contain monomers and additives which are regulated with a specific migration limit (SML).

Substance	Monomers	CAS	FCM/REF	LIMIT mg/kg
1	methacrylic acid, methyl ester	80-62-6	156	6 (T)
2	octadecyl 3-( 3, 5-di-tert-butyl-4- hydroxyphenyl)proplonate	2082-79-3	433	6
3	2-(2'-hydroxy-5'-methylphenyl) benzotriazole	2440-22-4	444	30(T)
4	sulphosuccinic acid alkyl (C 4 -C 20 ) or cyclohexyl diesters, salts	Not applicable	813	5

#### Table 1

The specific migration limit (SML) in the case of substances in the table above:

Substance 1: Total number of FCM substances: 156 must not exceed 6 mg/kg expressed as the sum of the substances. Substance 3: Total number of FCM substances: 444 must not exceed 30mg/kg expressed as the sum of the substances.





Migration tests on a variety of Perspex Cast Acrylic Sheet samples have been performed according to Regulation 10/2011 as amended on specially fabricated test specimens by an independent laboratory and showed that under the following conditions the overall migration limits and specific migration limits were not exceeded.

#### Table 2

Simulant	Time(s)/ Temperature(s)
10% v/v aqueous ethanol	10 davs 40°C
3% w/v aqueous acetic acid	10 davs 40°C
Fat simulant	10 davs 40°C

The colourants used in the manufacture of Perspex Cast Acrylic Sheet Food Contact grades are also compliant to (10) and Article 6, 2. in EU Commission Regulation (EU) 10/2011.

Compliance with the overall and specific migration limits as described must be measured from the final application intended to come into contact with food by using real food or appropriate food simulants at the intended and foreseeable conditions. It is the responsibility of the converter or food packer to verify that the final application complies with the requirements as set out by the applicable legislation.

Information contained in this publication (and otherwise supplied to users) is based on our general experience and is given in good faith, but we are unable to guarantee its accuracy or to accept responsibility in respect of factors outside our knowledge or control.

