Highlights of the ACH550 Parameters

Definitions	
Run/Stop *Parameter 1001 or 1002* The most common settings are: [1] DI1 [10] COMM	The command to start and stop the VFD when it is in AUTO MODE
Run Enable* *Parameter 1601* The settings are: [0] NOT SEL [±1] DI1 [±2] DI2 [±3] DI3 [±4] DI4 [±5] DI5 [±6] DI6 [7] COMM *(Negative values represent an inverted signal: the DI must be open for it to be active)*	An interlock that keeps the VFD from running in AUTO or HAND mode. In AUTO mode, it gives no alarm indication on the control panel except that the VFD won't start. In HAND mode, the VFD will stay in OFF mode. Used for functions like interlocking the VFD with a damper.
Start Enable (1 & 2)* *Parameters 1608 & 1609* The settings are: [0] NOT SEL [±1] DI1 [±2] DI2 [±3] DI3 [±4] DI4 [±5] DI5 [±6] DI6 [7] COMM	An interlock that keeps the VFD from running in AUTO or HAND mode. The control panel will show: ALARM 2021/2022 START ENABLE 1/2 Missing. Used for functions like safety interlocks.
External Fault *Parameters 3003 & 3004* The settings are: [0] NOT SEL [1 to 6] DI1–DI6, closed = fault [-1 to -6] DI1–DI6, open = fault	A programmable external interlock (generally via digital input) that can cause a fault trip.
Alarm	A problem with a VFD that does not necessarily cause it to stop.
Fault	A problem with a VFD that causes it to trip off. Group 31 determines how faults are reset.
EXT1 = REF1 => AI1 EXT stands for "e*xternal command set"*. Selection between EXT1 and EXT2 is made using *Parameter 1102*.	Mostly used when the VFD's speed is being controlled from an external speed command at AI1.
EXT2 = REF2 => AI2 EXT stands for "e*xternal command set"*. Selection between Selection between EXT1 and EXT2 is made using *Parameter 1102*.	Mostly used when the VFD's speed is being controlled by connecting a feedback signal to AI2 and having its internal PID controller control the motor's speed.

* Automatically resets

Menu Items	
Items	Comments
PARAMETERS	
ASSISTANTS	Conversational scripts that walk the user through the parameters used to set up a function.
CHANGED PAR	When viewing any parameter, press <UP> and <DOWN> together to see the default value. After seeing the default value, you can choose to SAVE the value or to CANCEL. (This can be done *anytime* a parameter value is being viewed.)
FAULT LOGGER	Useful for troubleshooting.
TIME & DATE	For setting the clock.
PAR BACKUP	Send a copy of the VFD's parameters after the drive is set up. UPLOAD means copying the parameters to the control panel. DOWNLOAD means copying parameters to the VFD.
I/O SETTINGS	Quick access to see how the I/O is programmed. This can be very useful for troubleshooting.

The following lists do not include all of the VFD's parameters; the User's Manual has such lists. These are just some commonly used parameters.

ACH550 Parameters		
Group 99	START-UP DATA This includes most of the data that characterizes the connected motor and its load.	
9902	APPLIC MACRO	[1] HVAC DEFAULT is commonly used for VFDs. [15] E-CLIPSE *must be used when an E-Clipse bypass is used with the VFD.*. [0] through [-3] are used to save or load user parameter sets.
9904	MOTOR CTRL MODE	Selects between Scalar and Vector mode.
9905 - 9909		Motor nameplate data *must* be set.
9910	ID RUN	When an item of motor nameplate data is changed, an ID run is performed on the next start. This defines the type of ID Run that will be performed.

Group 01	OPERATING DATA Provides easy access to most VFD operating data. This is most useful for troubleshooting. These values can also be programmed to display on the VFD's control panel.	
0118 & 0119	DI 1-3 & DI 4-6 STATUS	The status of the VFD's digital inputs.
0120 & 0121	AI 1 & AI 2 STATUS	The status of the VFD's analog inputs.
0122 & 0123	RO 1-3 & RO 4-6 STATUS	The status of the VFD's relay outputs.
0124 & 0125	AO1 & AO2	The values of the signals at the VFD's analog inputs.
0126 & 0127	PID1 & PID2 OUTPUTS	The output of the two PID controllers.
0128 & 0129	PID1 & PID2 SETPOINTS (in units)	The setpoints of the two PID controllers, scaled in units.
130 & 131	PID1 & PID 2 FEEDBACK (in units)	The feedbacks of the two PID controllers, scaled in units.
0140	RUN TIME	End users find this to be interesting.
0141	MWH COUNTER	End users find this to be interesting.

Group 03:	FB ACTUAL SIGNALS These can be useful in seeing raw data communicate over the Field Bus (serial communications). It can be used to troubleshoot communications since it shows the commands the VFD is receiving and the responses it makes.

Group 04	FAULT HISTORY Provides useful troubleshooting information about the most recent fault and the name of the two previous faults.

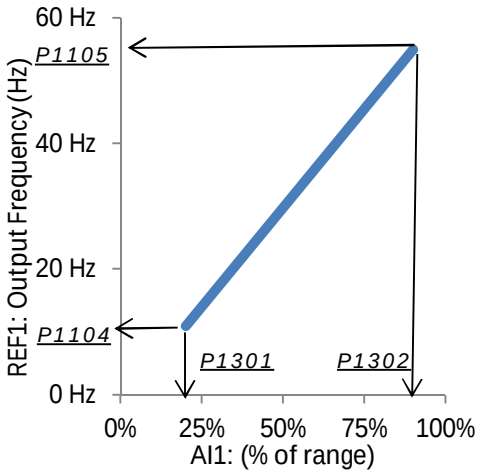
Group 10	START/STOP/DIR	
1001	EXT1 COMMANDS	Defines the Start/Stop and Reverse commands when the EXT1 command set is active (generally when the VFD is following an external speed command). Common values are [1] DI1 Run command at DI1. [2] DI1,2 Run command at DI1 & reversing at DI2. [10] COMM is used when the run command is by serial comms.
1002	EXT2 COMMANDS	Defines the Start/Stop and Reverse commands when the EXT2 command set is active. This is generally when the VFD is controlled by its PID controller. See *Parameter 1001*.
1003	DIRECTION	Changing direction is uncommon in most HVAC applications. The default value is [1] FORWARD. If one of the flying start (FLYST) settings is used in parameter 2101, START FUNCTION, *and* if it will be necessary to start a motor that is coasting backward, set this to [3] REQUEST. This allows a command to reverse the direction of the motor. Often used for de-icing a cooling tower.

Group 11	REFERENCE SELECT	
1101	KEYPAD REF SEL	Most commonly, the control panel is used to set the speed reference in HAND mode or speed control mode. This is generally at its default value: [1] REF1 (Hz/rpm)
1102	EXT1/EXT2	Defines how to select between EXT1 (speed control, generally) and EXT2 (PID control generally). This can be done manually in this parameter The default manually selects EXT1.
1103	REF1 SELECT	Defines the source of REF1. The default is [1] AI1 [8] COMM is used when the speed command is from serial comms.
1104	REF1 MIN	Most commonly, the output frequency that corresponds to the minimum AI1 signal, as defined by Parameter 1301.
1105	REF1 MAX	Most commonly, the output frequency that corresponds to the maximum AI1 signal, as defined by Parameter 1302.
1106 – 1108	REF2 SELECT, MIN, & MAX	Defines the source of REF2 (by default PID1 output) and its scaling.

Group 12	CONSTANT SPEEDS Used to define how to select among the drive's present speeds and also the speed that each represents.

Group 13	ANALOG INPUTS Scales the raw values (V or mA) of the analog inputs and allows a smoothing filter to be applied.	
1301	MINIMUM AI1	Defines, as a percent of the maximum capability of the analog input, the lowest analog input signal that will be used. (4 mA = 20%)
1302	MAXIMUM AI1	Defines, as a percent of the maximum capability of the analog input, the highest analog input signal that will be used.
1303	FILTER AI1	Defines a low-pass filter for the analog input.
1304, 1305 & 1306	MINIMUM, MAXIMUM & FILTER AI2	See the descriptions for the three parameters above.

Scaling AI1 to its Speed Reference



Group 14	RELAY OUTPUTS Defines the signal that controls each relay, determines if the relay is N.O. or N.C, and allows an ON delay and an OFF delay to be defined for each.

Group 15	ANALOG OUTPUTS Defines the signal that controls the analog outputs, sets the scaling of the output signal, and allows a smoothing filter to be applied.

Group 16	SYSTEM CONTROLS	
1601	RUN ENABLE	Defines the source of the Run Enable input. The lack of a Run Enable will not generate an alarm or a trip or any other direct indication on the control panel.
1602	PARAMETER LOCK	To change the value of this parameter, the Pass Code must be entered into parameter 1603 *immediately before* editing this parameter. [0] LOCKED Locks parameters from being changed by the control panel. [1] OPEN Allows parameters to be changed by the control panel. [2] NOT SAVED Allows parameters to be changed by the control panel, but, changes are not stored in the permanent memory of the VFD.
1603	PASS CODE	Enter the Pass Code “358” here *just before* changing the value of parameter 1602.
1604	FAULT RESET	Defines the source of a manual fault reset command.
1605	USER PAR SET CHG	Defines the command that changes the controlling User Parameter Set. *The User set change only occurs when the VFD is stopped.*
1606	LOCAL LOCK	Defines the command that locks out the ability of the control panel to control the VFD.

1607	PARM SAVE	By default, parameter changed made from the VFD's control panel are automatically saved. This is used to save changes made via serial comms.
1608 & 1609	START ENABLE 1 & 2	Defines the source of each start enable. A missing start enable generates a message on the control panel.
1610	DISPLAY ALARMS	Allows certain alarms to be hidden from the control panel's display.
1612	FAN CONTROL	[0] AUTO Fan is controlled automatically. [1] ON The fan is always ON.
1613	FAULT RESET	[0] DAFAULT No reset command. [1] RESET NOW An external controller with access to the VFD's parameter can use this to remotely reset faults.

Group 17	OVERRIDE Allows the programming of the override mode, which causes the VFD to run while ignoring external commands and many faults. This is often used to allow a single digital input to activate a Firefighter's Override function.

Group 20	LIMITS	
2001 & 2002	MINIMUM & MAXIMUM SPEED (rpm)	Minimum and maximum speed limits for Vector Mode.
2003	MAX CURRENT	Sets the maximum steady-state current available from the VFD. This generally should be left at its maximum value, to allow handling acceleration and overloads. *This is sometimes called "current limit"*. ***Do not use this to set motor protection. Parameter 9906, MOTOR NOM CURR, provides this.***
2006	UNDERVOLT CTRL	If power is lost, this can allow the VFD to decelerate a driven fan to keep the VFD's control circuits powered. May not work well with generator switching.
2007 & 2008	MINIMUM & MAXIMUM FREQ.	Minimum and maximum frequency limits for Scalar Mode.

SUGGESTED MINIMUM FREQUENCIES (*P2007*)	
Application	Min. Frequency
Fan	6 Hz
Pump	18 Hz
Cooling Tower Fan with Gear Box	20 Hz

Group 21	START/STOP	
2101	START FUNCTION	Selects between various start modes. [1] AUTO For Vector Mode. [2] DC MAGN Before starting, applies DC to the motor for the time set in parameter 2103. Then starts from 0 Hz. [3] SCALAR FLYST For Scalar Mode fan applications where the motor may be coasting when a start command is given. The drive synchronizes its frequency with the speed of the coasting motor. *(Param. 1003, DIRECTION, must be set to [3] SELECT to allow the VFD to perform a flying start on a motor that is coasting backwards.)* [4] TORQ BOOST For Scalar Mode. Allows starting torque up to the value in parameter 2110 during a RAMP start. [5] FLY + BOOST For Scalar Mode. Combines [3] & [4]. [6] RAMP VFD starts from 0 Hz.
2102	STOP FUNCTION	[1] COAST Common for fan applications. [2] RAMP Common to reduce check valve noise in pumping applications.

2104	DC HOLD CTRL	Used to stop a motor more quickly than a normal ramp-down allows.
2106	DC CURR REF	Sets the current used for parameter 2104's actions.
2113	START DELAY	Sets a time delay between when the VFD receives a run command and when it starts.

SUGGESTED START AND STOP FUNCTIONS (*P2101 & P2102*)	
Application	Stop Function
Fan (Start)	[3] SCALAR FLYST
Pump (Start)	[8] RAMP
Fan (Stop)	[1] COAST
Pump (Stop)	[2] RAMP

Group 22	ACCEL/DECEL Provides control over two independent acceleration and deceleration ramps plus some specialized ramps.

SUGGESTED ACCEL/DECEL TIMES (*P2202*, *P2205* / *P2203*, *P2206*)	
Application	Accel/Decel Time
Fan	60 s
Pump	10 s
Cooling Tower Fan with Gear Box	60 s

Group 23	SPEED CONTROL Generally not used in HVAC applications. This is used for applying a PID controller to *speed* control applications. HVAC applications use a PID *process* controller.

Group 25	CRITICAL SPEEDS Used to keep the VFD from running the load for an extended time at a speed with a mechanical resonance. Up to three critical speeds can be avoided.

Group 26	MOTOR CONTROL	
2601	FLUX OPT ENABLE	Allows the VFD to actively control the magnetic flux in the motor based on its load. Improves system efficiency and reduces audible motor noise. May not be appropriate for applications with rapid load changes.
2602	FLUX BRAKING	When operating in Vector Mode, may allow the load to be decelerated more quickly.
2605	U/F RATIO	When *Parm 2601* disables Flux Optimization, selects a fixed linear or parabolic V/Hz profile.
2606	SWITCHING FREQUENCY	Allows the PWM switching frequency of the VFD to be adjusted. Switching frequencies above 4 kHz require a derate of the VFD's output current.
2607	SWITCH FREQ CTRL	Allows the VFD to automatically reduce its switching frequency if its internal temperature is too high.
2609	NOISE SMOOTHING	Reduces motor audible noise by randomizing the PWM switching frequency.
2619	DC STABILIZER	Can help reduce oscillations in the VFD's DC bus. Such oscillations may be reported by the VFD as SUPPLY PHASE, OVERCURRENT, DC OVERVOLT or DC UNDERVOLT.
2625	OVER-MODULATION	Allows the VFD to produce a higher *rms* output voltage. May be helpful for low line voltage or extended frequency operation.

Group 29	MAINTENANCE TRIG Defines trigger values that will launch a maintenance reminder from the VFD.	

Group 30	FAULT FUNCTIONS Defines specific situations that will trigger a fault trip or other action.	
3001	AI<MIN FUNCTION	Defines the VFD's action if an analog input drops below a set value.
3002	PANEL COMM ERR	Defines the action to take if the control panel is no longer communicating with the VFD.
3003 & 3004	EXTERNAL FAULT 1 & 2	Defines the inputs that trigger these fault trips.
3017	EARTH FAULT	This can disable Earth Fault protection when the VFD is running. *Contact ABB before disabling thie protection!*
3018 & 3019	COMM FAULT FUNC & TIME	Define what is considered to be a serial communication fault and the action that should be taken.
3021 & 3022	AI1 & AI2 FAULT LIMIT	Defines the low value at which it is assumed that the corresponding analog input is considered to have been lost. See also parameters 3001 & 3002.
3023	WIRING FAULT	Frame sizes through R4 can detect if power is applied to its output. Keeps the VFD from starting and being damaged.
3024	CB TEMP FAULT	Enables the VFD to trip if its control board overheats.
3028	EARTH FAULT LVL	Selects the earth fault current level [1] LOW Most sensitive [2] MEDIUM [3] HIGH Least sensitive

Group 31	AUTOMATIC RESET The first three parameters of this group determine how automatic trip resets are handled. The remaining parameters in this group determine what faults will be able to be automatically reset.	
3103	DELAY TIME	Sets the time delay between each fault reset attempt.
3101	NUMBER OF TRIALS	Sets the number of automatic times that a fault reset will be attempted before the VFD stops attempting automatic resets.
3102	TRIAL TIME	During the Trial Time, if the number of trials has been reached without being able to reset the fault, the VFD will stop making automatic reset attempts. However, if the Trial Time expires before the number of automatic reset attempts has occurred, the number of trials will be reset and automatic reset attempts will continue.
	Expressed mathematically: If P3103 x P3101 $\geq$ P3102, automatic restart attempts will continue infinitely. If P3103 x P3101 < P3102, the VFD will make up to the number of restart attempts set in parameter 3101 and then stop making restart attempts. Further attempts to clear the fault trip will need to be made manually.	
3104 - 3108	These parameters determine which of the listed faults will be able to be reset automatically.	

Group 32	SUPERVISION Allows monitoring of up to three values from Group 01. If a value goes out of the programmed range, a relay can be activated. Independent HI and LO limits provide hysteresis.

Group 33	INFORMATION Provides information about the VFD, including its firmware version and its rating.

Group 34	PANEL DISPLAY Allows the three lines of the VFD's display to be programmed to show the desired operating data. The first parameter for each display line is identified by the parameter number of the data being displayed. The display can be scaled as desired and the number of decimal points shown, and the units shown can be selected.	
3401 - 3407 3408 - 3414 3415 - 3421	OUTPUT1 OUTPUT2 OUTPUT3	Selects the value from Group 01 which will be displayed on each line of the Control Panel. Allows custom formatting and units to be displayed.
3404, 3411 & 3418	OUTPUT1, OUTPUT2 & OUTPUT 3 DISP FORM	[9] DIRECT Overrides all other display formatting and shows the value as formatted in the selected Group 01 param.

Group 35	MOTOR TEMP MEAS This parameter group deals with measuring the motor's temperature using a temperature sensor imbedded in the motor's windings. *This is seldom done in HVAC applications in the US.*

Group 36	TIMED FUNCTIONS Allows the defining of a range of time periods and corresponding VFD actions. The Timed Functions Assistant can be used to help set up the desired functions.

Group 37	USER LOAD CURVE The parameters in this group can be used to define an "allowed operating" Torque/Frequency region. Operating outside of this region for a defined period of time can generate a Fault Trip or an Alarm. This can be used for simple broken belt detection or for more complex monitoring.

Group 40	PROCESS PID SET 1 By default, this group is used to set up and tune the VFD's process PID controller, which controls the speed of the VFD. The Sleep Function for this PID controller can also be set up here.

Group 41	PROCESS PID SET 2 This group has the same function as Group 40. It is used when the controlled system requires different PID controller settings on occasion. *Parameter 4027* determines which set of PID parameters is used at any time.

Group 42	EXT / TRIM PID This group is used for the VFD's second PID controller. This is commonly used to control external equipment, although it can be used with the Process PID Controller to reset (or trim) the setpoint.

Group 45	ENERGY SAVING Used to estimate savings gained by using the VFD. These can be calculated in energy units, monetary units or in CO_2.

Group 51	EXT COMM MODULE This group is used to set up communications with a Field Bus Adapter. For HVAC applications this is often the LonWorks adapter. Further information is provided in the documentation with the adapter.

Group 52	PANEL COMM The VFD comes pre-programmed for its control panel. There should be no need to adjust these parameters.

Group 53	EFB PROTOCOL This group is used for the Embedded Field Bus (serial communication protocol). See the ACH550 User's Manual for details on specific protocols. *Cycle power to the VFD after changing any of these values.*	
5301	EFB PROTOCOL ID	*Read Only* A hexadecimal number that shows the protocol that is active and its revision. *Parameter 9802 is used to select the embedded serial communication protocol.*
5302	EFB STATION ID	The address of the VFD on the serial bus.
5303	EFB BAUD RAT	The baud rate of the communications on the network, as set by the network controller.
5304	EFB PARITY	The parity of the communications on the network, as set by the network controller.
5306 - 5309	EFB OK MESSAGES, EFB CRC ERRORS, EFB UART ERRORS, EFB STATUS	Useful parameters for troubleshooting the embedded serial communications. See the Diagnostics – EFB section of the *User's Manual.*

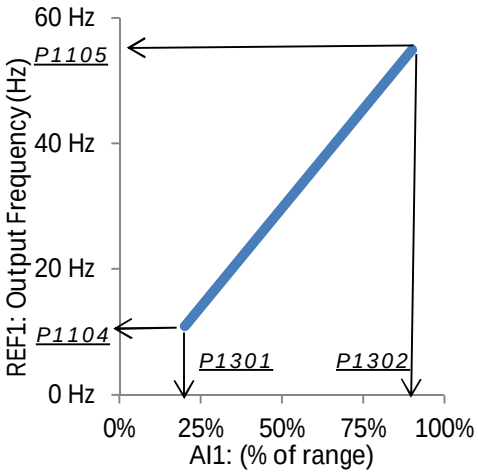
Group 64	LOAD ANALYZER Analysis tools which may be used for troubleshooting by logging selected analog values from Group 01. This provides a bin analysis for motor current and one selected value. It also can capture operating data when a selected value reaches its peak.

Group 81	PFA CONTROL *(Pump-Fan Alternation Control)* This group is used to stage one VFD-driven motor with one or two motors that are controlled by conventional motor starters.

Group 98	OPTIONS	
9802	COMM PROT SEL	Selects the serial communications protocol used. *Cycle power to the VFD after changing any of these values.*

Parameter Quick Reference

Scaling AI1 to its Speed Reference



SUGGESTED MINIMUM FREQUENCIES (*P2007*)	
Application	Min. Frequency
Fan	6 Hz
Pump	18 Hz
Cooling Tower Fan with Gear Box	20 Hz

SUGGESTED START AND STOP FUNCTIONS (*P2101 & P2102*)	
Application	Stop Function
Fan (Start)	[3] SCALAR FLYST
Pump (Start)	[8] RAMP
Fan (Stop)	[1] COAST
Pump (Stop)	[2] RAMP

SUGGESTED ACCEL/DECEL TIMES (*P2202*, *P2205* / *P2203*, *P2206*)	
Application	Accel/Decel Time
Fan	60 s
Pump	10 s
Cooling Tower Fan with Gear Box	60 s

Highlights of the E-Clipse Parameters

Definitions	
Note: Whenever appropriate, parameter numbers for the E-Clipse Bypass closely follow corresponding parameter numbers for the ACH550. *Note: Motor nameplate data that is entered into the ACH550 is read by the E-Clipse Bypass to set its motor overload.* *Note: Unlike the ACH550, the E-Clipse Bypass reserves specific digital inputs for each function.*	
START/STOP *Parameter 1601* [0] NOT SEL [1] DI1 [2] COMM	Defines the location of the Start/Stop command for the VFD/E-Clipse Bypass system.
Run Enable *Parameter 1602* [0] NOT SEL [1] DI2 [2] COMM	An interlock that keeps the VFD from running in AUTO or HAND mode. In AUTO mode, it gives no alarm indication on the control panel except that the VFD won't start. In HAND mode, the VFD will stay in OFF mode. This is used for functions like interlocking the VFD's operation with a damper.
Start Enable (1-4) *Parameters 1603-1606* [0] NOT SEL [1] DI2 - DI5 [2] COMM	An interlock that keeps the VFD from running in AUTO or HAND mode. The control panel will show: ALARM 202# Start enable # missing (where the # represents the number of the start enable input). This is used for functions like safety interlocks.
RESET SCR *Parameter 1603-1606* [0] NOT SEL [1] DI4 [2] COMM	Allows and external fault reset to be used in addition to the OFF/RESET button on the bypass's control panel.

Menu Items	
Items	Comments
STARTUP PARMS	An abbreviated list of parameters. There are so few parameters in the E-Clipse that this isn't very useful.
PARAMETER LIST	A listing of all of the parameters for the E-Clipse Bypass.
CHANGED PARAMS	When viewing any parameter either here or in the parameter list, press <UP> and <DOWN> together to see the default value. After seeing the default value, you can choose to ENTER the value or to ESCape and leave the parameter value unchanged.
BYPASS STATUS	The status of the bypass in words. Pressing the <UP> or <DOWN> key scrolls through the information.

Notes	
Motor Data	Motor nameplate data is entered in Group 99 of the ACH550.
Analog Inputs	Analog inputs are wired and programmed at the ACH550.
Digital Inputs	Digital inputs are wired to the E-Clipse Bypass.
Serial Communications	Serial comms for the VFD/Bypass system is through the E-Clipse Bypass. Each must be given its own address.
Setting up the ACH550 In order to allow the ACH550 to communicate with the E-Clipse bypass, these parameters should be set. *Then power to the VFD should be cycled.*	9802 COMM PROT SEL [1] STD MODBUS 9902 APPLICATION MACRO [15] E-CLIPSE

Highlights of the E-Clipse Parameters

The following lists do not include all of the E-Clipse's parameters, the User's Manual has such lists. These are just some commonly used ones.

E-Clipse Parameters		
Group 01	ACTUAL DATA	
0101	MOTOR CURR	Motor current
0102	INPUT VOLT	Average of the input line voltages
0103	DI STATUS	The status of the 6 digital inputs on the E-Clipse.
0104	RO STATUS	The status of the relay outputs.
0105	PCB TEMP	The temperature of the E-Clipse board.
0106	KW HOURS	Energy consumption in bypass mode (resettable).
0108	RUN TIME	Run time in bypass mode, in hours (resettable).
0109	ON TIME 1	Time that the bypass was powered-up, in days (resettable).
0110	ON TIME 2	Time that the bypass was powered-up, in hours, minutes and seconds (resettable).
0111, 0112, 0113	A-B, B-C, C-A	Phase-to-phase input voltages.
0114 - 0118		Savings of VFD over bypass in energy, monetary, and CO_2 units.

Group 03	STATUS Various fault and alarm words. See the E-Clipse User's Manual for details.

Group 04	FAULT LOG Details of the two most recent faults and detailed information about the three previous faults.

Group 05	EVENT LOG Details of the four most recent events. See the E-Clipse User's Manual for details.

Group 14	RELAY OUTPUT Defines the signal that controls each relay and allows an ON delay and an OFF delay to be defined for each.

Group 16	SYSTEM CONTROL	
1601	START/STOP	Selects the source of Start/Stop command.
1602	RUN ENABLE	Selects the source of the Run Enable command.
1603, 1604, 1605, & 1606	START EN1 - START EN4	Selects the source of the four available Start Enable commands.
1607	RESET SRC	Selects the source for the Fault Reset commands: none, DI2 or COMM.
1608	AUTO XFR	Enables automatic transfer to bypass on a VFD fault.
1609 – 1612	OC, OV, UV, AI	Enables selected faults to automatically transfer to bypass if 1608 is enabled.
1613	BP DISABLE	Allows the bypass to be disabled.
1614	BP RUN DLY	Bypass run delay.
1615	SAVE PARAM	Saves the E-Clipse's parameters. .
1616	DISP ALRMS	Determines if specific alarms are displayed.
1617	DRIVE TEST	Opens the VFD's output contactor and allows it to be tested into an open circuit.
1618	PASS CODE	Allows editing of parameter 1619, PAR LOCK. See the E-Clipse User's Manual.
1619	PAR LOCK	Prevents parameter values from being changed from the control panel.
1620	RUN EN TXT	Selects text to display for Run Enable interlock.
1621 – 1624	ST EN# TXT	Selects text to display for Start Enable interlocks 1, 2, 3 & 4.

Group 16	SYSTEM CONTROL, continued	
1625	COMM CTRL	Determines if serial communications controls the VFD only or the VFD and the bypass.
1626	MODE LOCK	Allows a restriction to be placed on switching between HAND and AUTO and back.
1627 - 1629		Parameters to be used for setting up energy savings calculations.
1630	START REV	Used to allow the VFD to start in reveres. *Check with Application Engineering for recommendations.*

Group 17	OVERRIDE 2
	Sets up the Override 2 function to run the bypass in fire, smoke, and other life-safety situations.

Group 30	FAULT FUNCTION	
3001 - 3003	UL	Sets up the function of the Under Load (broken belt) function.
3004 – 3005	COMM LOSS and TIME	Sets up the action of the system is serial communication is lost.
3006	PHASE LOSS	Enable or disable power line phase loss protection.
3007	PHASE SEQ	Enable or disable phase sequence detection, which is used to ensure that the bypass and the VFD run the motor in the same direction.

Group 32	SUPERVISORY CONTROL
	Allows the bypass to be activated by the status of the signal at the VFD's AI2.

Group 33	INFORMATION Provides information about the bypass, including its firmware revision level.

Group 50	BYPASS EFB Settings that set up the embedded serial communications in the E-Clipse bypass *to allow communication with the E-Clipse Bypass*. See the EFB Fieldbus section of the E-Clipse User's Manual for details. *Cycle power to the VFD after changing any of these values.*

Group 51	EXTERNAL COMM MODE This group is used to set up communications with a Field Bus Adapter. For HVAC applications this is often the LonWorks adapter. Further information is provided in the documentation with the adapter.

Group 53	DRIVE EFB Settings that set up the embedded serial communications in the E-Clipse bypass *to allow communication with the ACH550 VFD*. See the EFB Fieldbus section of the User's Manual for details. *Cycle power to the VFD after changing any of these values.* *For control, it will be necessary to program the desired control functions to COMM.*

Group 55	FBA DATA OUT Support for Field Bus adapters. See the Fieldbus Adapters section of the User's Manual for details.

Group 98	OPTIONS	
9802	COM PROT	Selects the serial communications protocol used by the VFD/Bypass system *to communicate with the external serial communications bus. Cycle power to the VFD after changing this.*

Group 99	STARTUP DATA The only data entered here relates to the bypass macro used. All motor nameplate data is entered in the VFD.	
9902	B.P. MACRO	Selects the bypass macro. The default is [1] HVAC DEFAULT.