ESP

Troubleshooting

Guide

Table Of Contents

abs ref

anybus 1

ehalt

external trip

motor blower off

motor rms ewarn

motor thermal switch

obsync data error

obsync receive

optomux timeout

overspeed trip

pos error ewarn

rotaflex stop

rtc takeover

ssi receive

sync data error

sync receive

thermal switch ewarn

unknown fbk module

These faults are not currently used in this application and should never occur. If one of them is displayed it means that there is something set incorrectly in the Setup Values, or the DSP Control Module has a problem.

Possible Causes	Remedies
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause these faults to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

AMB thermal switch

This fault indicates that the ambient temperature inside the drive enclosure has exceeded 73 deg C. This can be caused if the internal cabinet temperature is too high.

Possible Causes	**Remedies**
Enclosure Circulating Fan Failure (if used)	If the enclosure has circulating fans verify that they are operating properly.
Debris Or Contamination Restricting Airflow	Clean or replace any filters to ensure proper airflow.
Heat Exchanger Failure (if used)	If the enclosure has a heat exchanger verify that it is operating properly.
Possible Mechanical Problem	If the drive is using more current due to a mechanical drag this can produce more heat. Check the Dynacard and Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective Thermal Switch On DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

armature curr error

fbk circuit breaker

field current loss

These faults are for a DC motor. Since DC motors are almost never used in pumping these faults should never occur.

Possible Causes	Remedies
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.
Defective Drive	Replace the Drive.

auto flt reset event

The motor will automatically attempt to restart after most fault conditions provided the corresponding fault **restart delay** and **restart attempts** parameters are non-zero. The **fault restart delay** parameter on the Fault/Event Menu defines the dwell time between restart attempts. The **restart attempts** parameter on the Fault/Event Menu defines the number of times it will attempt to restart. Some specific faults have dedicated "attempt" and "restart delay" parameters. When this event occurs check the Fault History to see if there is a recurring fault that needs to be corrected.

bus charge bypass close

This event indicates that the bus charge bypass device has closed, due to the bus voltage being high enough for a long enough time. This will occur on power up and any time the Bus Voltage has dropped low enough to trigger the Bus Charge Bypass Open event.

bus charge bypass open

This event indicates that the bus charge bypass device has opened due to the bus falling to far for too long. Check the Fault History and address any issues with main power.

calendar event

If the Calendar Controller is enabled in the Features List Menu this event indicates that the Calendar Controller has either started or stopped the operation of the pumping unit to perform the requested operation. No operator intervention required.

dwell end event

Indicates that the pumping unit has resumed normal operation after the POC Controller had reduces speed to POC dwell spm. Set up the POC Controller in the Control Menu .

dwell event

Indicates that the pumping unit has been temporarily slowed by the POC Controller to POC dwell spm. Set up the POC Controller in the Control Menu .

fault latch event

This event indicates that a fault has occurred and the data has been latched. Check the fault history and address any recurring faults.

gauge event

gauge event 2

There is a gauging data-logger that latches every 24 hours at gauge time. This message tells you that it has happened. No operator intervention required.

level test event

This event shows that the drive is performing a Well ID and Fluid Level test. If these options have been enabled in the Setup Values the test will run automatically at preset times. No operator intervention required.

max fault event

This Event indicates that there are no more auto-restarts allowed. The allowable restart attempts have been used. Operator intervention required. Check the Fault History to see if there is a recurring fault that needs to be corrected.

password event

If drive is password protected this event detects password level entry. This Event is logged every time someone enters the password.

power up event

This Event indicates that drive has been powered up after a shutdown for any reason. Check the Fault History to see if there is a recurring problem with the input power to the unit.

power ridethru start

power ridethru end

If the Backspin Power Ride Thru control feature is enabled the drive uses the energy stored in the fluid column to maintain control of the pump during power loss. This event indicates that the drive performed this function. No operator intervention required unless this event is happening often. Check the fault history and correct the power problem if needed.

pstandby event

Indicates that the pumping unit has temporarily stopped by the POC Controller and will restart once POC off time has expired. Set up the POC Controller in the Control Menu .

pump off

This event indicates that there is fluid at the pump but the pump is not filling completely.

pump off event

This event indicates that a pump off state was detected but has recovered.

start event

This event indicates that the motor has started. Check the Fault History to see if there is a recurring fault that needs to be corrected.

stop event

This event indicates that the motor has stopped. Check the Fault History to see if there is a recurring fault that needs to be corrected.

well id event

Simple event logger indicating that a Well ID Test has been performed.

auto mode event

The HAND / OFF / AUTO switch has been moved to the auto position. If the operator changed the switch there is no problem. If not follow the list below.

Possible Causes   **Remedies**

Loose Or Damaged Wiring   Verify that the wiring from the HAND / OFF / AUTO
                                                    switch is good.

Setup Values Changed Or Corrupted   Changing certain Setup Values can cause this fault to
                                                    be displayed. Load a valid Archive into the drive.

Defective DSP Control Module   Replace the DSP Control Module and load a valid
                                                    Archive into the drive.

auto off jog stop

If one of the digital inputs is set to AUTO OFF JOG SWITCH this fault indicates that the Input became TRUE. Set up logic polarity, fault detection delay and restart delay in the Digital I/O Menu.

Possible Causes	Remedies
Input Became TRUE	If this Input is being used check the wiring and the device sending this signal to the Drive to verify that it did send the Input.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

br phase loss fault

The drive detects excessive voltage fluctuations on the DC bus. This fault is often caused by a loss, imbalance or voltage sag on one or more phases of incoming power.

Possible Causes	Remedies
Loss Of Incoming Phase	Check incoming power for correct voltage, and balance between phases.
Grounding Problem	Verify the integrity of the systems ground connections.
Defective Power Board Or IPM Module	Check and / or replace the Power Board or IPM module.
Defective Drive	Replace the Drive.

bus over voltage

This fault indicates that the DC bus voltage has exceeded the maximum allowable limit. This can occur if the drive stops too quickly or the input power is too high. Bus overvoltage occurs at 800 VDC, in 460 volt drives, at 400 VDC in 230 volt drives, and at 1000 VDC in 600 volt drives.

Possible Causes	Remedies
Excessive Voltage On Input	Check the input voltage. If it is too high it may be necessary to add an isolation transformer to step it down.
DB Resistor Problem	Check for proper resistance, and wattage in the Dynamic Brake resistor assembly. Check that all connections are tight.
Possible Bus Capacitor Failure	Check for proper capacitance in the DC Bus.
Deceleration Time Too Short	Increase the "Decel time" in the Drive Menu to reduce the voltage regenerated into the DC Bus.

bus reg tol time

bus reg tol vel

These faults are only enforced when using the bus regulator. If the motor is not able to decelerate quickly enough the regulator will start to time until the bus reg tol time value is met, then execute a BUS REG TOL TIME fault.

If the feedback velocity exceeds the commanded speed by the bus reg tol vel value the BUS REG TOL VEL fault will be displayed. If there is another Bus fault shown troubleshoot that fault first. If not follow the list below.

Possible Causes   **Remedies**

Setup Values Changed Or Corrupted   Changing certain Setup Values can cause this fault to
                                                                    be displayed. Load a valid Archive into the drive.

Defective DSP Control Module   Replace the DSP Control Module and load a valid
                                                                    Archive into the drive.

bus undervoltage

This fault indicates that the DC bus voltage has exceeded the minimum allowable limit. For 480VAC drives this value is 360 DC volts and for 230VAC drives, this value is 160 DC volts.

Possible Causes	**Remedies**
Low Voltage On Input	Check the input voltage. If it is too low it may be necessary to add an isolation transformer to step it up.
Loose Sense Wire	Verify that the sense wire to the DC bus, or Gate Driver Module is secure.
Damaged Ribbon Cable	Replace the ribbon cable between the DSP Control Module and the Gate Driver Module.
Defective Gate Driver Module	Replace the Gate Driver Module.
Defective Or Damaged DSP Interface	Replace the DSP interface board (above 150HP)
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

casing prs

If an analog Casing Pressure sensor is used this fault indicates that the sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	Remedies
Flow Valve Closed	Verify proper valve positions.
Defective Casing Pressure Sensor	If this analog input is being used check the wiring and the Casing Pressure sensor to verify that it is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

casing temp

If an analog Casing Temperature sensor is used this fault indicates that the sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes   **Remedies**

Defective Casing Temperature Sensor   If a Casing Temperature sensor is being used check the wiring and verify that the sensor is operating properly.

Setup Values Changed Or Corrupted   Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

Defective DSP Control Module   Replace the DSP Control Module and load a valid Archive into the drive.

circuit breaker

This fault indicates that the torque command has been saturated at the torque limit for a time equal to 1.1 times the longer of the acceleration or deceleration times.

Possible Causes	**Remedies**
Possible Mechanical Problem	If the motor is not able to respond properly due to a mechanical drag it can trigger this fault. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

communication error

This fault indicates that dynlink master did not communicate with the drive for a time interval greater than the setup dynlink timeout.

Possible Causes	Remedies
Loose Or Defective Wiring	Check the communication wiring to the DSP Control Module. Verify that all connections are tight.
Defective Communication Device	Verify that the device communicating to the DSP Control Module is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

current leakage

If current leakage source is not DISABLED, fault indicator based on input value. Set up warning and fault detection ranges, fault detection delay and restart delay in the Signal In Menu.

Possible Causes	Remedies
Defective Current Leakage Sensor	If a Current Leakage sensor is being used check the wiring and verify that the sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

db thermal

This fault indicates that the Dynamic Brake thermal input has returned TRUE as defined in the Digital I/O Menu. It indicates that the Dynamic Brake Resistor has overheated.

Possible Causes	Remedies
Problem With DB Resistor	Check for proper resistance, and wattage in the Dynamic Brake resistor assembly. Check that all connections are tight.
Deceleration Time Too Short	Increase the Decel time parameter in the Drive Menu to reduce the voltage regenerated into the DC Bus. This will reduce the power dissipated by the Dynamic Brake Resistor.

discharge prs

If discharge prs source is not ESTIMATE, fault indicator based on input value. Set up warning and fault detection ranges, fault detection delay and restart delay in the Signal In Menu.

Possible Causes	Remedies
Defective Discharge Pressure Sensor	If a Discharge Pressure sensor is being used check the wiring and verify that the sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

dynamic brake limit

This fault indicates the dynamic braking has been active above the duty cycle limit.

Possible Causes	Remedies
Problem With DB Resistor	Check for proper resistance, and wattage in the Dynamic Brake resistor assembly. Check that all connections are tight.
Deceleration Time Too Short	Increase the "Decel time" in the Drive Menu to reduce the voltage regenerated into the DC Bus. This will reduce the power dissipated by the Dynamic Brake Resistor.
Power Limiting Or Regen Power Limit	Enable Power Limiting and / or decrease Regen Power Limit in the Power Menu**.**

dynamic brake

This fault is generated by the dynamic brake gate drive circuit if the IGBT turns on into a short circuit.

Possible Causes	Remedies
Problem With DB Resistor	Check for proper resistance in the Dynamic Brake resistor assembly. Check for shorts in the wiring.
Defective Drive	Replace the Drive.

emergency shutdown

This fault indicates that the Emergency Shut Down input has become TRUE as defined in the Digital I/O Menu.

Possible Causes	Remedies
Input Became TRUE	If this Input is being used check the wiring and the device sending this signal to the Drive to verify that it did send the Input.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

engine temp

On units operating with a Generator this fault indicates that the engine temperature sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes   **Remedies**

Engine Cooling Problem   Check the radiator and cooling hoses on the Generator for leaks. Verify coolant level in the radiator.

Loose Or Damaged Wiring   Verify that the wiring connections for the Engine Temperature sensor are tight.

Defective Sensor   Verify that the Engine Temperature sensor is operating properly.

Setup Values Changed Or Corrupted   Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

external stop

This fault indicates that the External Stop input has become TRUE as defined in the Digital I/O Menu.

Possible Causes	**Remedies**
Input Became TRUE	If this Input is being used check the wiring and the device sending this signal to the Drive to verify that it did send the Input.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

fast overcurrent

This fault indicates that the instantaneous current of the inverter has exceeded the maximum allowable limit. This can indicate that there is an output shorted.

Possible Causes	Remedies
Defective Motor Or Wiring	Check for shorts in the motor and the wiring out to the motor.
Shorted IGBT Transistor	Go through the Transistor Checking Procedure to verify that the IGBT's are not shorted. If one is found to be shorted replace the Drive.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective Drive	Replace the Drive.

firmware error

This fault indicates that the application program running in the drive cannot execute properly.

Possible Causes	Remedies
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Corrupted Application Program	Reload the Application Program and then load a valid Archive to the Drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.
Defective Drive	Replace the Drive.

flow variance

Flow variance fault detection. Flow variance is the difference between the estimated, and sensor flow value. The fault is set when the difference is greater than the flow variance alarm value, and must be greater for the flow variance time.

Possible Causes	Remedies
Pump Or Fluid Level Problem	Verify that the pump is operating properly and not plugged with paraffin or silt. Check fluid level in the well.
Loose Or Damaged Cable	Verify that the wiring for the Fluid Flow sensor is secure.
Defective Sensor	Verify that the Fluid Flow sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

fluid flow

If Fluid Flow Source is not ESTIMATE this fault indicates that the fluid flow sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	**Remedies**
Pump Or Fluid Level Problem	Verify that the pump is operating properly and not plugged with paraffin or silt. Check fluid level in the well.
Loose Or Damaged Cable	Verify that the wiring for the Fluid Flow sensor is secure.
Defective Sensor	Verify that the Fluid Flow sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

fluid temp

If fluid temp source is not ESTIMATE, fault indicator based on input value. Set up warning and fault detection ranges, fault detection delay and restart delay in the Signal In Menu.

Possible Causes	**Remedies**
Loose Or Damaged Cable	Verify that the wiring for the Fluid Temperature sensor is secure.
Defective Sensor	Verify that the Fluid Temperature sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

follow marker

follow pg loss a

follow pg loss b

follow pg loss m

load fbk loss

load marker

load pg loss a

load pg loss b

load pg loss m

load runaway

motor fbk loss

motor marker

motor pg loss a

motor pg loss b

motor pg loss m

These faults are monitoring feedback devices that are normally not used on pumping applications and should never occur.

Possible Causes	Remedies
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.
Defective Drive	Replace the Drive.

gas flow

If Gas Flow Source is not DISABLED this fault indicates that the fluid flow sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	**Remedies**
Loose Or Damaged Cable	Verify that the wiring for the Gas Flow sensor is secure.
Defective Sensor	Verify that the Gas Flow sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

gas leak

This fault indicates that the gas leak input has returned TRUE as defined in the Digital I/O Menu.

Possible Causes	Remedies
Input Became TRUE	If this Input is being used check the wiring and the device sending this signal to the Drive to verify that it did send the Input.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

gas srch done event

The SINGLE / DUAL / OPTIMIZE switch has been moved to the optimize position. If the operator changed the switch there is no problem. If not follow the list below.

Possible Causes	Remedies
Loose Or Damaged Wiring	Verify that the wiring from the SINGLE / DUAL / OPTIMIZE switch is good.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

gate driver dsat

This fault indicates that an excessive on-state voltage was detected across the associated power transistors within inverter. This fault could be caused by a short circuit or ground fault within the motor or associated connections.

Possible Causes	Remedies
Defective Motor Or Wiring	Check for shorts in the motor and the wiring out to the motor.
Shorted IGBT Transistor	Go through the Transistor Checking Procedure to verify that the IGBT's are not shorted. If one is found to be shorted replace the Drive.
Loose Or Damaged Cable	Check the cable connections to the Gate Driver Module and the DSP Control Module.
Defective Gate Driver Module	Replace the Gate Driver Module.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.
Defective Drive	Replace the Drive.

gate driver U-

gate driver U+

gate driver V-

gate driver V+

gate driver W-

gate driver W+

This fault indicates that an excessive on-state voltage was detected across the associated power transistors within the inverter. This fault can be caused by a short circuit or ground fault within the motor or associated connections.

Possible Causes	Remedies
Defective Motor Or Wiring	Check for shorts in the motor and the wiring out to the motor.
Shorted IGBT Transistor	Go through the Transistor Checking Procedure to verify that the IGBT's are not shorted. If one is found to be shorted Replace the Drive..
Loose Or Damaged Cable	Check the cable connections to the Gate Driver Module and the DSP Control Module.
Defective Gate Driver Module	Replace the Gate Driver Module.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.
Defective Drive	Replace the Drive.

generator

This fault indicates that the ECU is reporting an engine warning, engine fault or the engine did not start in the expected time.

Possible Causes	Remedies
Loose Or Damaged Cable	Check the wiring from the ECU on the engine to the DSP Control Module.
Engine Problem	Check engine operation, wiring, spark plugs, spark plug wires, gas, gas detector, gas pressure, oil level, starter, battery

ground fault

This fault indicates that ground fault has occurred on the drive.

Possible Causes	Remedies
Loose Or Damaged Wiring	Check all ground connections to the Drive. Check all connections to the Gate Driver Module and the DSP Control Module.
Defective Gate Driver Module	Replace the Gate Driver Module.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.
Defective Drive	Replace the Drive.

hand mode event

The HAND / OFF / AUTO switch has been moved to the hand position. If the operator changed the switch there is no problem. If not follow the list below.

Possible Causes	Remedies
Loose Or Damaged Wiring	Verify that the wiring from the STANDBY / RUN switch or the HAND / AUTO switch is good.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

high prs

This fault indicates that the High Pressure input has returned TRUE as defined in the Digital I/O Menu. If one of the digital inputs is set to HIGH PRS then this fault indicator is based on that input value.

Possible Causes	**Remedies**
Input Became TRUE	If this Input is being used check the wiring and the device sending this signal to the Drive to verify that it did send the Input.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

high speed

If high speed masks is not set to NONE this fault is based on motor speed. Set up detection level, fault detection delay and restart delay in the Fault/Event Menu.

Possible Causes   **Remedies**

Setup Values Changed Or Corrupted   Changing certain Setup Values can cause this fault to
                                                                   be displayed. Load a valid Archive into the drive.

Defective DSP Control Module   Replace the DSP Control Module and load a valid
                                                                   Archive into the drive.

high torque

If high torq mask is not set to NONE this fault is based on crank torque. Set up detection level, fault detection delay and restart delay in the Fault/Event Menu. This fault is also disabled during the Well ID and Valve Check Test.

Possible Causes	**Remedies**
Possible Mechanical Problem	Mechanical drag or a stuck pump can trigger this fault. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

HS thermal switch

This fault indicates that a thermal switch on the inverter heat sink has opened due to elevated temperature. This is normally the result of excessive ambient air temperature or restricted air flow through the heat sink. The detector switch has a non-adjustable set point of 85C.

Possible Causes	Remedies
Debris Or Contamination Restricting Airflow	Verify that the fans are running, if used, and check for proper airflow through the heatsink.
Loose Or Damaged Cable	Verify that the cable for the Thermal Switch is properly attached at the top right corner of the DSP Control Module.
Possible Mechanical Problem	If the drive is using more current due to a mechanical drag this can produce more heat. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective Thermal Switch	Replace the Drive.

identification error

This fault indicates that the controller has read a different ID (horsepower rating) since the pervious power up. It might imply the controller has been moved to a different drive or the cable that reads the ID is not connected. This fault can only be reset if the controller reads the original corresponding ID or the non-volatile memory is defaulted or the Reset ID utility is used from the Archive Menu.

Possible Causes   **Remedies**

DSP Control Module Replaced   If the DSP Control Module has been replaced go to the Setup Menu and to the Archive Menu and select the Reset ID option.

Loose Or Damaged Wiring   Verify that all wiring connections in the drive are secure.

Defective Gate Driver Module   Replace the Gate Driver Module.

Defective Or Damaged DSP Interface   Replace the DSP interface board (above 150HP)

Defective DSP Control Module   Replace the DSP Control Module and load a valid Archive into the drive.

intake prs

If intake prs source is not ESTIMATE, fault indicator based on input value. Set up warning and fault detection ranges, fault detection delay and restart delay in the Signal In Menu.

Possible Causes	Remedies
Loose Or Damaged Cable	Verify that the wiring for the Intake Pressure sensor is secure.
Defective Sensor	Verify that the Intake Pressure sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

inverter rms

This fault indicates that the RMS output current has exceeded the level specified by the maximum current parameter.

Possible Causes	**Remedies**
Possible Mechanical Problem	If the drive is using more current due to a mechanical drag it can trigger this fault. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

ireg shutoff

This fault indicates that the current regulator gate array stopped functioning and the DSP did not detect a fault signal. This may be caused by the gate array detecting faults that were not latched. These faults most likely are caused by noise on signals to the current regulator gate array. This may be corrected by re-wiring the grounding of the drive or by replacing the module with the current regulator gate array.

Possible Causes	Remedies
Power Supply Problem	Verify all Power Supply voltages on the DSP Control Module.
Loose Or Damaged Cable	Verify that all cable and wiring connections to the Gate Driver, Power Board and DSP Control Module are secure.
Damaged Ribbon Cable	Replace the ribbon cable between the DSP Control Module and the Gate Driver Module.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

load defaults

This event indicates that default setups were loaded. This is usually a result of a problem with the Smart RAM chip on the module but can also be caused by a noise spike. Subsequent fault may indicate a defective Smart RAM Chip or DSP Control Module. Storing data parameter values to flash memory in the Archive Menu, choosing no to Default and yes to Recall provides automatic recovery from this event.

Possible Causes	Remedies
Loose Or Damaged Wiring	Check all ground connections to the Drive. Check all connections to the Gate Driver Module and the DSP Control Module.
Setup Values Changed Or Corrupted	If the Archive functions were set correctly a valid Archive should have been loaded as the default. If you are not sure then load a valid Archive into the drive.
Defective Smart RAM Chip	Replace the Smart RAM Chip on the DSP Control Module.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

low prs flow

This fault indicates that the low pressure flow input has returned TRUE as defined in the Digital I/O Menu. If one of the digital inputs is set to LOW PRS FLOW this fault is based on that input. Set up logic polarity, fault detection delay and restart delay in the Digital I/O Menu.

Possible Causes	Remedies
Input Became TRUE	If this Input is being used check the wiring and the device sending this signal to the Drive to verify that it did send the Input.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

low speed

If low speed mask is not set to NONE this fault is based on motor speed. Set up detection level, fault detection delay and restart delay in the Fault/Event Menu. This fault is also disabled during the Well ID and Valve Check Test.

Possible Causes	**Remedies**
Drive Problem	If there is another Drive fault shown with this one correct that issue first.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

low torque

If low torq mask is not set to NONE, indicator based on rod load monitor. Set up detection level, fault detection delay and restart delay in the Fault/Event Menu. This fault is also disabled during the Well ID and level test.

Possible Causes	**Remedies**
Drive Problem	If there is another Drive fault shown with this one correct that issue first.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

low voltage supply

This fault indicates that an unacceptable voltage level was detected on either the +15 or -15 DC power supplies within the inverter. Check the operating DC power supply levels. Often associated with a power up event and was latched as the power was lost. Voltages may be measured on test points located on the DSP board. Ensure that the power supply voltages are correct on the DSP.

Possible Causes	Remedies
External issue	Accessories, such as external transducers get their power off of the +24VDC unregulated circuit. A short in those circuits can adversely affect the + and -15 VDC power supplies.
Power Supply Problem	Verify all Power Supply voltages on the DSP Control Module.
Loose Or Damaged Cable	Verify that all cable and wiring connections to the Gate Driver, Power Board and DSP Control Module are secure.
Damaged Ribbon Cable	Replace the ribbon cable between the DSP Control Module and the Gate Driver Module.
Defective module	Disconnect power from each module, one at a time, to determine which module is loading down the supply.

modbus comm error

The Modbus communication has a problem.

Possible Causes	Remedies
Loose Or Defective Wiring	Check the communication wiring to the DSP Control Module. Verify that all connections are tight.
Defective Communication Device	Verify that the device communicating to the DSP Control Module is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

motor rms limit

This fault indicates that the RMS output current has exceeded the level specified by the *motor rms limit* parameter.

Possible Causes	**Remedies**
Possible Mechanical Problem	If the drive is using more current due to a mechanical drag it can trigger this fault. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

motor runaway

This fault indicates that after command velocity has been set to zero, the motor feedback velocity has either not stopped rotating within one second or has continued to rotate a distance of one revolution. A runaway fault is almost always caused by a loss of feedback.

Possible Causes	**Remedies**
Loose Or Damaged Wiring	Check all connections to the Gate Driver Module and the DSP Control Module.
Defective Gate Driver Module	Replace the Gate Driver Module.
Defective Or Damaged DSP Interface	Replace the DSP interface board (above 150HP)
Damaged Ribbon Cable	Replace the ribbon cable between the DSP Control Module and the Gate Driver Module.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

motor temp

If an analog Motor Temperature sensor is used this fault indicates that the sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	Remedies
Defective Motor Temperature Sensor	If this analog input is being used check the wiring and the Motor Temperature sensor to verify that it is operating properly.
Possible Mechanical Problem	If the drive is using more current due to a mechanical drag it can trigger this fault. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

mtr ovld

mtr ovld latched

Indicator based on mtr current monitor. Set up detection level, fault detection delay and restart delay in the Fault/Event Menu. This fault is also disabled during the Well ID and level test.

Possible Causes	Remedies
Possible Mechanical Problem	If the motor is not able to respond properly due to a mechanical drag it can trigger this fault. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

mtr uld

mtr uld latched

Indicator based on mtr current monitor. Set up detection level, fault detection delay and restart delay in the Fault/Event Menu. This fault is also disabled during the Well ID and level test.

Possible Causes	Remedies
Broken Rod String	Verify that the Rod String is good.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

negative torque

If negative torq mask is not set to NONE this fault is based on motor torque. Set up detection level, fault detection delay and restart delay in the Fault/Event Menu.

Possible Causes   **Remedies**

Parted Rod   Verify that the Rod String is good.

Setup Values Changed Or Corrupted   Changing certain Setup Values can cause this fault to
                                               be displayed. Load a valid Archive into the drive.

Defective DSP Control Module   Replace the DSP Control Module and load a valid
                                               Archive into the drive.

non volatile mem

A circular redundancy check (CRC) is done on all setup parameters and other data stored in non volatile memory during the power-up sequence. This fault indicates that check has detected corrupted data the drive's default setup parameters were loaded. It is possible for this fault to occur the first time that power is applied to the drive after upgrading the program to a newer version. Subsequent fault may indicate a defective Smart RAM Chip or DSP Control Module. Storing data parameter values to flash memory in the Archive Menu, choosing no to Default and yes to Recall provides automatic recovery from this event.

Possible Causes	Remedies
Defective Smart RAM Chip	Replace the Smart RAM Chip on the DSP Control Module and load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

operator reset event

This event indicates that one of several things has happened.

The STANDBY/RUN switch has been switched to a new position.
The controller has issued a fault-reset request.
TB1-21--Hand Mode Enable has changed state.
TB1-22--Auto Mode Enable has changed state.
TB1-23--Run Enable has changed state.

If the operator performed one of these operations there is no problem. If not follow the list below.

Possible Causes	**Remedies**
Loose Or Damaged Wiring	Verify that the wiring from the STANDBY / RUN switch or the HAND / AUTO switch is good.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

output phase loss

This fault detects phase imbalance in the output to the motor.

Possible Causes	**Remedies**
Loose Or Defective Wiring	Check the wiring out to the motor.
Defective IGBT Transistor	Go through the Transistor Checking Procedure to verify that the IGBT's are good. If one is found to be defective replace the Drive.
Defective Drive	Replace the Drive.
Defective Motor	Replace the motor.

Overrun

This fault indicates the dsp microprocessor did not complete all the time critical tasks in their allotted time.

Possible Causes	Remedies
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

pos error

This fault indicates that position error has exceeded 1.25 times the maximum expected value. The maximum expected position error is automatically calculated as a function of the maximum velocity limit and drive tuning parameters. If there are other faults present correct those first.

Possible Causes	Remedies
Possible Mechanical Problem	If the drive is unable to respond properly due to a mechanical drag it can trigger this fault. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.
Defective Drive	Replace the Drive.

pump diffl prs

This fault occurs if pump differential pressure exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	**Remedies**
Loose Or Damaged Wiring	Verify that the wiring from the Intake Pressure and Discharge Pressure Sensors are good.
Defective Intake Pressure Sensor	Verify that the Intake Pressure sensor is operating properly.
Defective Discharge Pressure Sensor	Verify that the Discharge Pressure sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

remote event

The remote run enable parameter has changed states. If the motor is on, as soon as the remote run enable parameter is ENABLE, the drive will start if both motor on-- Digital Input 11 in TB1-23 and run enable—Digital Input 10 in TB1-22 are asserted (STANDBY/RUN switch is in the RUN position. If the motor is on and remote run enable is disabled, drive will STOP and running status will display REMOTE STOP. Not a part of the auto-restart function.

Possible Causes	Remedies
Input Turned Off	If this Input is being used check the wiring and the device sending this signal to the Drive to verify that it is working properly.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

reservoir low flow

This fault indicates that the Reservoir Flow sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	Remedies
Loose Or Damaged Wiring	Verify that the wiring from the Reservoir Flow Sensor is good.
Defective Reservoir Flow Sensor	Verify that the Reservoir Flow sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

rtu master error

This fault indicates that the RTU Master Protocol has reported an error in communication with the slave device.

Possible Causes	Remedies
Loose Or Damaged Cable	Verify that the communication cable from the Master device to the Slave device is secure and undamaged..
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

rtu slave error

This fault indicates that the RTU Master Protocol slave device has reported an error in communication and/or operation.

Possible Causes	Remedies
Loose Or Damaged Cable	Verify that the communication cable from the Master device to the Slave device is secure and undamaged.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

security breach

This fault indicates that the security breach input has returned TRUE as defined in the Digital I/O Menu.

Possible Causes	Remedies
Input Became TRUE	If this Input is being used check the wiring and the device sending this signal to the Drive to verify that it did send the Input.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

step-down xfmr

This fault indicates that a thermal switch on the Step-Down Transformer has opened due to elevated temperature.

Possible Causes

Remedies

Loose Or Damaged Cable

Verify that the cable for the Thermal Switch is properly attached at the top right corner of the DSP Control Module.

Possible Mechanical Problem

If the drive is using more current due to a mechanical drag this can produce more heat. Check the Torque charts to look for a mechanical problem.

Setup Values Changed Or Corrupted

Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.

Defective Thermal Switch

Replace the Drive.

Defective Motor

Replace the motor.

step-up xfmr

This fault indicates that a thermal switch on the Step-Up Transformer has opened due to elevated temperature.

Possible Causes	Remedies
Loose Or Damaged Cable	Verify that the cable for the Thermal Switch is properly attached at the top right corner of the DSP Control Module.
Possible Mechanical Problem	If the drive is using more current due to a mechanical drag this can produce more heat. Check the Torque charts to look for a mechanical problem.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective Thermal Switch	Replace the Drive.
Defective Motor	Replace the motor.

tank level

This fault indicates that the tank level sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	**Remedies**
Loose Or Damaged Wiring	Verify that the wiring from the Tank Level Sensor is good.
Defective Tank Level Sensor	Verify that the Tank Level sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

tank lvl input

This fault indicates that the tank level input has returned TRUE as defined in the Digital I/O Menu.

Possible Causes	Remedies
Loose Or Damaged Wiring	Verify that the wiring from the device sending the Tank Level input is good.
Defective Tank Level Sensor	Verify that the Tank Level sensor is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

torque reg error

Torque regulator error. This fault indicates that the torque regulator output torque has exceeded the torque regulator error limit. This fault may not be used if setups for the fault do not exist.

Possible Causes	Remedies
Loose Or Damaged Cable	Verify that all cable and wiring connections to the Gate Driver, Power Board and DSP Control Module are secure.
Damaged Ribbon Cable	Replace the ribbon cable between the DSP Control Module and the Gate Driver Module.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

tubing prs

This fault indicates that the tubing pressure sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	Remedies
Loose Or Damaged Wiring	Verify that the wiring from the device sending the tubing pressure signal is good.
Defective Pressure Sensor	Verify operation of the pressure sensor and replace if needed.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

tubing temp

This fault indicates that the tubing temp sensor reading has exceeded the fault or warning limits set in the Signals In menu.

Possible Causes	**Remedies**
Loose Or Damaged Wiring	Verify that the wiring from the device sending the tubing termerature signal is good.
Defective Pressure Sensor	Verify operation of the temperature sensor and replace if needed.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

UEDIT® Fault

This fault means that the Uedit Project in the software has stopped functioning.

Possible Causes	Remedies
Software Corrupted	Reload the Application Program and a valid archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

user 1

user 2

user 3

This fault indicates that the user 1, 2 or 3 input has returned TRUE as defined in the Digital I/O Menu. If one of the digital inputs is set to USER FLT 1, 2 or 3 this fault indicator is based on that input value. Set up logic polarity, fault detection delay and restart delay in the Digital I/O Menu. User 1, 2 and 3 are used to set-up special inputs that may not be defined in the default dictionary.

Possible Causes	Remedies
Loose Or Damaged Wiring	Verify that the wiring from the device sending this input is good and the device is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

user A
user B

If user A or B source is not ESTIMATE this fault indicator is based on an analog input value. Set up warning and fault detection ranges, fault detection delay and restart delay in the Signal In Menu. User A and B are used to set-up special analog inputs that may not be defined in the default dictionary.

Possible Causes	**Remedies**
Loose Or Damaged Wiring	Verify that the wiring from the device sending this signal is good and the device is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

user event 1

user event 2

This fault indicates that user event 1 or 2 input has returned TRUE as defined in the Digital I/O Menu. If one of the digital inputs is set to USER EVENT 1 or 2 this fault indicator is based on that input value. Set up logic polarity, fault detection delay and restart delay in the Digital I/O Menu. User event 1 and 2 are used to set-up special inputs that may not be defined in the default dictionary.

Possible Causes	Remedies
Loose Or Damaged Wiring	Verify that the wiring from the device sending this input is good and the device is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

vibrtn x

vibrtn y

If vibrtn y source is not DISABLED, fault indicator based on input value. Set up warning and fault detection ranges, fault detection delay and restart delay in the Signal In Menu.

Possible Causes	**Remedies**
Loose Or Damaged Wiring	Verify that the wiring from the device sending this signal is good and the device is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

watchdog timer

This fault indicates that the software did not execute the proper instruction sequence. A defective inverter control module is a possible cause of repeated watchdog timer faults.

Possible Causes	Remedies
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.

water cut

This fault indicates that the analog input from the water cut sensor reading has exceeded the fault or warning limits set in the Signals In Menu.

Possible Causes	**Remedies**
Loose Or Damaged Wiring	Verify that the wiring from the device sending this input is good and the device is operating properly.
Setup Values Changed Or Corrupted	Changing certain Setup Values can cause this fault to be displayed. Load a valid Archive into the drive.
Defective DSP Control Module	Replace the DSP Control Module and load a valid Archive into the drive.