TOSHIBA

T300MVi

MEDIUM VOLTAGE 

ADJUSTABLE SPEED MOTOR DRIVE

Troubleshooting Manual

June, 2007

TOSHIBA INTERNATIONAL CORPORATION

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Contents

1 Usage Notes

This equipment includes high-voltage components. To prevent electric shock, burns, or other injuries when using this equipment, and to maintain its performance, be sure to read this manual before using this equipment. Also, observe all warning labels attached to the equipment.

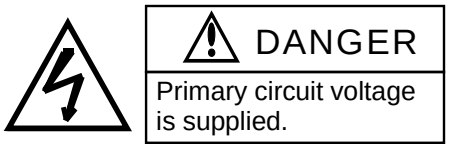
The ⚠ and ⚠ marks have the following meanings:

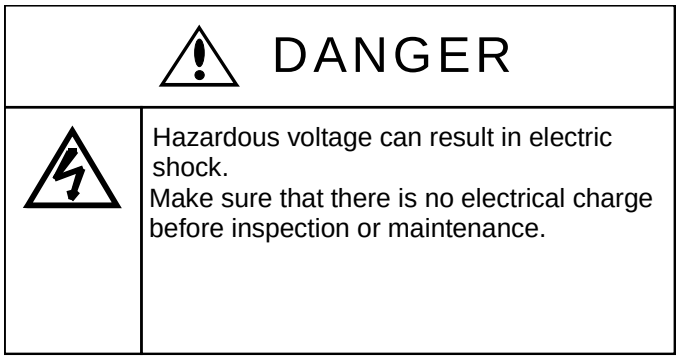
⚠: Electric shock warning	⚠: Warning for safe work

■ Danger (Red Label)

Failure to avoid locations or actions marked in this manner may lead to serious injury or death.

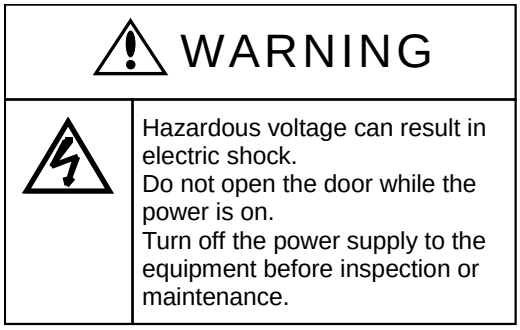
[Warning Label Examples]

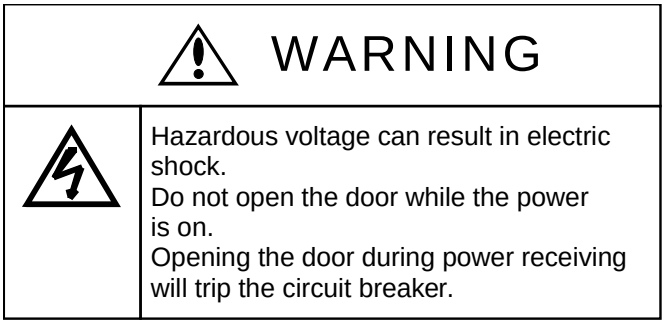




■ Warning (Orange Label)

Failure to avoid locations or actions marked in this manner may lead to injury, albeit of a somewhat lesser severity. Failure to follow these directions may also lead to property loss, such as damage to the equipment or components, or to fires.





■ Advice (Green Label)

These labels provide advice that can assure safe operation, can prevent errors and performance degradation in the equipment, and can be useful in preventing breakdowns.

[Warning Label Examples]

NOTICE
When operating or adjusting the equipment and during maintenance/ inspections, be sure to observe the precautions noted in the User's Manual.

■ Others (White Labels)

These labels present items related to maintaining the performance of the equipment.

2 Reading this manual

Content (cause):
They are the content of failure and the cause of presumed.

Action:
It is the action for restoring failure.

Parameters:
They are the parameters relevant to a failure detection.
Refer to "Parameter Setting Manual" about the details of a parameter.

3 Fault Signal Explanation

3.1 Fault Signal A~

AC_MCCB

AC input circuit breaker open
AC MCCB open
Content (cause):
The input AC circuit breaker of the equipment (AC_MCCB) is open. Turns off UVA signal and stops.
Action:
If no interface with the auxiliary contact of the input AC circuit breaker is provided for this signal, mask it.
Check the wiring of the answerback auxiliary contact of the input AC circuit breaker.
Check the input AC circuit breaker for any abnormality.
Parameters: MSK_UVA1, MSK_ACT1

ACSW_C

AC contactor close
AC SWitch is Closing
Content (cause):
The contactor on the load side is closed although it is not turned on.
Action:
Check the contactor (a point of contact and a conduction).
Parameters: MSK_SIL1, MSK_ACIL1

ACSW_F

AC contactor fault
AC SWitch Failure
Content (cause):
The contactor on the load side is open during operation. Turns off UV signal and stops.
Action:
Check the contactor on the load side for any abnormality (a point of contact and a conduction).
Parameters: MSK_UV1, MSK_HFD1

ACSW_T

AC contactor open timer
AC SWitch open Timer
Content (cause):
The contactor on the load side is open. READY signal is not turned on.
Action:
It is a standard circuit that the contactor on the load side is turned on with the establishment of a UV signal.
If this signal is detected even if UV signal is turned on, check the contactor (a point of contact and a conduction).
Parameters: MSK_READY1

AIN_FAULT

General analog input signal lost fault
General Analog INput signal lost FAULT
Content (cause):
Current signal fell lower than 4mA when using 4-20mA current type general analog input. UV signal is not turned on.
Action:
Check the condition of signal cable and signal source.
Signal lost detection is not available when using voltage type general analog input. Thus set this fault bit to be not used.
Parameters: MSK_UV2, MSK_HFD2, MSK_LFD1

3.2 Fault Signal B~

B_HLTY

Break healthy detection
Break HeaLThY detection
Content (cause):
A brake healthy signal.
Action:
Check the brake circuit.
Parameters: MSK_UV2, MSK_HFD2

BLA

AC circuit breaker trip
BLocking signal - Auxiliary
Content (cause):
An external BLA off signal (AC circuit breaker off) is detected. It turns off UVA signal and then stops.
Action:
In the case of the inverter, mask it.
Check the external BLA signal.
Parameters: MSK_UVA3

BLR

Electrical critical fault
BLocking Relay
Content (cause):
This is a secondary display caused by the BLR condition being off.
Action:
Refer to the display of the primary cause of BLR being off.
Parameters: MSK_UVA1, MSK_ACT1

BLR_CPSF

Electrical critical fault except power supply failure
BLocking Relay except Control Power Supply Failure
Content (cause):
This is a secondary display caused by the BLR except power supply failure condition being off.
Action:
Refer to the display of the primary cause of BLR except power supply failure being off.
Parameters: MSK_UVA1, MSK_ACT1

BR_F

Electromagnetic brake energizing circuit fault
BRake Failure
Content (cause):
A brake operation circuit fault. This indicates a situation in which no answerback (operation confirmation signal) is returned although brake releasing command "BR" is output. Turns off READY signal and stops.
Action:
In the case of a built-in type brake, the contactor of the energizing circuit may be failing. Check the contactor.
In the case of an air brake, the microswitch of the air valve may be failing.
Check the operation of the electromagnetic valve and microswitch.
In the case of an electromagnetic brake, an error (current drop) may be detected in the energizing unit.
Check whether the LED "LF" of the energizing unit is on. If it is off, check the input voltage and output current.
Parameters: MSK_READY2, MSK_HFD2

3.3 Fault Signal C~

C_FN

Equipment ventilating fan stopped
Cooling FaN
Content (cause):
An equipment ventilating fan error has been detected.
This detection is made by an auxiliary contact of the fan MCCB.
If continued the operation further, “C_FN_T” activates and the breaker trips.
Action:
Check the fan MCCB status.
Check the rotation condition of the fan. (Abnormal sound, entrapping of foreign matter, burning of bearing, etc.)
Check the fan motor.
Parameters: MSK_STPRQ1, MSK_LFD1

C_FN_B

Equipment ventilating fan stopped B bank
Cooling FaN B bank
Content (cause):
An equipment ventilating fan alarm on bank B is detected.
This detection is made by an auxiliary contact of the fan MCCB.
If continued the operation further, “C_FN_B_T” activates and the breaker trips.
Action:
Check the fan MCCB status.
Check the rotation condition of the fan. (Abnormal sound, entrapping of foreign matter, burning of bearing, etc.)
Check the fan motor.
Systems: Twin drive
Parameters: MSK_STPRQ1, MSK_LFD1

C_FN_T

Equipment ventilating fan stop timer
Cooling FaN Timer
Content (cause):
Abnormal status of the equipment ventilating fan continued for the length of time set with the timer.
Turns off UVA signal and stops.
This detection is made by an auxiliary contact of the fan MCCB.
Action:
Check the fan MCCB status.
Check the rotation condition of the fan. Abnormal sound, entrapping of foreign matter, burning of bearing, etc.
Check the fan motor.
Parameters: MSK_UVA1, TIME_CFAN

C_FN_T_B

Equipment ventilating fan timer stop timer B bank
Cooling FaN Timer B bank
Content (cause):
Abnormal status of the equipment ventilating fan of bank B continued for the length of time set with the timer.
Turns off UVA signal and stops.
This detection is made by an auxiliary contact of the fan MCCB.
Action:
Check the fan MCCB status.
Check the rotation condition of the fan. Abnormal sound, entrapping of foreign matter, burning of bearing, etc.
Check the fan motor.
Systems: Twin drive
Parameters: MSK_UVA2, TIME_CFAN

C_IL

Closing interlock
Closing InterLock
Content (cause):
A secondary display caused by a UV starting interlock being off.
If this signal is not established, the UV signal cannot be turned on.
Action:
Refer to the display of the primary cause for the starting interlock (SIL) or UV starting interlock being off.
Parameters: MSK_UV1

CHG_START

System change in progress
system CHanGing START
Content (cause):
Shows that the motor changeover control is in progress.
While the changeover control is in progress, READY signal is turned off and operating becomes impossible.
Under normal conditions, after the changeover operation is completed, the system will automatically return to the previous status.
Action:
Check the wiring of the motor changeover circuit (2S and 3S signals).
Parameters: MSK_READY2, FLG_CHGSYS

CL_T

Current limit timer
Current Limit Timer
Content (cause):
It has been detected that operation with a current limit has continued for the length of time set with the timer.
Turns off UVA signal and stops.
Action:
Check the operation status and load status.
Check whether there is a contributing factor to cause an overload on the machine side such as a machine locked.
Check the output kW of the drive.
Parameters: MSK_UVA1, TIME_CL

CL_TA

Current limit timer alarm
Current Limit Timer Alarm
Content (cause):
An operation under the current limited condition continued for up to 80% of the time set with the current limit timer (CL_T). Stop request (STPRQ) is output.
If continued the operation further, “CL_T” activates and the breaker trips.
Action:
Check the operation status.
Check whether there is any error causing stall on the machine side.
Parameters: MSK_STPRQ1, TIME_CL

CPSF

Control power source failure
Control Power Source Failure
Content (cause):
The control power supply voltage has dropped. Turns off BLR signal and stops
Action:
Check the voltage of the control power supply.
Check the fuse of the GDM board.
Check whether an instantaneous interruption accident, etc. occurred.
Parameters: MSK_BLR6, CP_PSF

CPT_FAIL

Capture failure
CaPTure FAIL
Content (cause):
Utility synchronization capture failed. Turns off the UVA signal and stops, or turns off the LFD signal and indicates ALARM.
Action:
Check that the line voltage detection circuit of the inverter output is connected correctly.
Check the parameter (LVL_IPLL_DLTQ) of the phase synchronization criteria value.
Check the utility power supply voltage for distortion or frequency variations.
Parameters: MSK_UVA3, MSK_LFD2, LVL_IPLL_DLTQ

CPU_A

Slave CPU A failure
CPU slave A failure
Content (cause):
The watchdog failure has occurred in the slave CPU-A of the CTR board.
Turns off BLR signal and stops
This error may also occur when the 5 V power supply is abnormal.
Action:
For restarting the CPU, carry out a power supply initialize (by turning off the control power supply and turning it on again).
If recovery is not possible even with the power supply initializing or this error recurs repeatedly, replace the CTR board.
Parameters: MSK_BLR1

CPU_M

Master CPU failure
CPU Master failure
Content (cause):
The watchdog failure has occurred in the main CPU of the CTR board.
Turns off BLR signal and stops
This error may also occur when the 5 V power supply is abnormal.
Action:
For restarting the CPU, carry out a power supply initialize (by turning off the control power supply and turning it on again).
If recovery is not possible even with the power supply initializing or this error recurs repeatedly, replace the CTR board.
Parameters: MSK_BLR1

CUR_DIFF

Current differential detection
CURrent DIFFerential detection
Content (cause):
The current unbalance between bank A and bank B reached 50% or more of the rating.
Action:
Check whether the main circuit DC bus and output contactor, etc. of either bank A or bank B are open.
Check the wiring and format of the current detector and wiring of the cables connected to the CTR.
Parameters: MSK_LFD1

CURU

Current failure of U-phase
CURrent failure of U-phase
Content (cause):
U-phase current could not be detected. Turns off BLR signal and stops
Action:
In the case of the single configuration, check the wiring of the U-phase current detector and wiring of the main circuit.
In the case of the twin configuration, check the wiring of the U-phase current detector of bank A and wiring of the main circuit.
Check the wiring of the cables connected to the CTR board.
Parameters: MSK_BLR1, CP_CURCHK

CURW

Current failure of W-phase
CURrent failure of W-phase
Content (cause):
W-phase current could not be detected. Turns off BLR signal and stops
Action:
In the case of the single configuration, check the wiring of the W-phase current detector and wiring of the main circuit.
In the case of the twin configuration, check the wiring of the W-phase current detector of bank A and wiring of the main circuit.
Check the wiring of the cables connected to the CTR board.
Parameters: MSK_BLR1, CP_CURCHK

3.4 Fault Signal D~

DS

Door open
Door Switch open
Content (cause):
The door switch on the front panel of the inverter shows “Door switch open” status.
Action:
Close the front door.
Check to make sure a micro switch on the upper side of the door is not damaged or something.
Parameters: MSK_ACT1

DS_T

Door open timer
Door Switch open Timer
Content (cause):
A door switch open condition continued for the length of time set with the timer.
Turns off BLR signal and stops.
Action:
Close the front door.
Check to make sure a micro switch on the upper side of the door is not damaged or something.
Parameters: MSK_BLR5, TIME_DS

3.5 Fault Signal E~

ENCODER_F

Speed Encoder Fail Detect
ENCODER Fail
Content (cause):
The abnormalities of a speed detection encoder have been detected. Turns off BLR signal and stops.
Action:
Check whether rolling material, etc. is caught inside.
Check the wiring and the coupling of the speed sensor for any abnormality.
Parameters: MSK_BLR3

3.6 Fault Signal F~

FUSE_XP, FUSE_XN (X : U, V, W)

IGBT fuse blown
FUSE
Content (cause):
Main circuit protection fuse is blown. Turns off BLR signal and stops.
The IGBT device may have been damaged.
Action:
Check the indicator of each fuse and replace the blown fuse.
Check the device and if the device is damaged, replace the damaged power module.
Parameters: MSK_BLR2

3.7 Fault Signal G~

GR_A

Ground detection alarm
GRound detection Alarm
Content (cause):
It has been detected that a ground current is upper than ground detection alarm level.
Action:
Check whether the main circuit cable etc. has Insulated degradation.
Parameters: MSK_LFD1, MSK_STPRQ1, CP_GDI_A

GR_T

Ground detection timer
GRound detection Timer
Content (cause):
Abnormal current is detected in the grounding circuit where the main circuit is grounded through a high value resistance.
And it has been detected for the length of time set with the timer.
Turns off UVA signal and stops.
Some IGBT devices may have been damaged.
Action:
Check whether the main circuit has a ground fault.
Check the devices and if some devices are damaged, replace the IGBT unit.
Parameters: MSK_UVA3, MSK_HFD2, MSK_LFD1, CP_GDI, TIME_GR

3.8 Fault Signal I~

IL

External interlock
InterLock
Content (cause):
An interlock signal from outside (trunk line) is in “operation prohibition” status.
Turns off UV signal and stops.
Action:
Check the condition on the master cubicle side.
Parameters: MSK_UV1

3.9 Fault Signal M~

M_FN

Motor cooling fan stopped
Motor FaN
Content (cause):
The motor cooling fan stopped. If continued the operation further, “M_FN_T” activates.
Action:
Start the motor cooling fan.
Parameters: MSK_SIL1, MSK_STPRQ1, MSK_LFD1

M_FN_T

Motor cooling fan stop timer
Motor FaN Timer
Content (cause):
The condition of motor cooling fan being stopped have continued for the length of time set with the timer.
Turns off READY signal and stops.
Action:
Start the motor cooling fan.
Parameters: MSK_READY2, MSK_HFD2, TIME_MFAN

M_OH

Motor overheat
Motor OverHeat
Content (cause):
The motor temperature detection circuit has detected an overheat.
Action:
Check the cooling situation of the motor.
Parameters: MSK_UV2, MSK_HFD2, MSK_STPRQ1, MSK_LFD1

M_OH_A

Motor overheat alarm
Motor OverHeat Alarm
Content (cause):
An overheat alarm is detected by the motor temperature detection circuit.
If the temperature further rises, "M_OH" is activated.
Action:
Check the cooling situation of the motor.
Parameters: MSK_STPRQ1, MSK_LFD1

MOT_V_IL

Motor voltage start interlock
MOTor Voltage start InterLock
Content (cause):
Motor residual voltage is remaining over protection level (CP_MOT_V_IL).
When the motor is running, drive doesn’t detect it.
Action:
Wait until motor residual voltage goes down under CP_MOT_V_IL.
Check the Voltage detection circuit (Cell board, wire and connection).
Parameters: CP_MOT_V_IL, MSK_READY1

MPSF

Main power source failure
Main Power Source Failure
Content (cause):
A main power supply loss has been detected during operation. Turns off BLR signal and stops.
Action:
Check the wiring of the main circuit and the current detector.
Parameters: MSK_BLR6

MPSF_MV

Main power source failure
Main Power Source Failure MV
Content (cause):
An AC main power supply loss has been detected during operation. Turns off BLR signal and stops.
Action:
Check the wiring of the main circuit, the input voltage detector and the fuse.
Parameters: MSK_BLR6

MTMP_S

Motor temperature detector fault
Motor TeMPerature Stop request
Content (cause):
An error is found in the motor temperature detector.
Action:
Check the motor temperature and motor temperature detector.
Parameters: MSK_STPRQ1, MSK_LFD1

3.10 Fault Signal N~

N. U.

Not used
Not Used
Action:
Mask the signal.
Parameters: MSK_BLF1~3, MSK_BLR2~6, MSK_UVA1~4, MSK_UV1, 2, MSK_SIL1, 2, MSK_READY1, 2, MSK_HFD1, 2, MSK_STPRQ1, MSK_LFD1, MSK_ACIL1, MSK_ACT1

N_IM

Number of IM motors error
Number of Induction Motors failure
Content (cause):
In a multiple sensor-less units driving system, the number of motors driven became the number equal to or less than the low limit level. Turns off UVA signal and stops.
Action:
Check the NFB installed in each motor.
Check the detection circuit to count the number of motor units.
Parameters: MSK_UVA4, CP_N_IM_LL

NO_LOAD

Output side open
output No LOAD detection
Content (cause):
An open load is detected. Turns off UVA signal and stops.
This signal is generated when the feedback current becomes one eighth or less of the excitation current.
The load circuit may be left open.
Action:
The IGBT circuit, gate circuit or the current detection circuit may have a problem.
Parameters: MSK_UVA3

3.11 Fault Signal O~

OCA

AC overcurrent
OverCurrent Ac
Content (cause):
The AC over current detection circuit (hardware) activated. Turns off BLR signal and stops
Action:
Check whether there is any current hunching during operation.
In the case of an inverter, check to see there are not ground of a motor line and disconnection of a speed sensor.
Parameters: MSK_BLR1

OCD_XA1, OCD_XA4, OCD_XB1, OCD_XB4 (X : U, V, W)

Device short-circuit protection
OverCurrent Device
Content (cause):
The short-circuit protection circuit of the main circuit device activated. Turns off BLR signal and stops.
The subscript of “A” or “B” means side of power module (See instruction manual).
And number shows the position of damaged device. “1” means device #1 or #2 may have damaged, and “4” means device #3 or #4 may have damaged.
Action:
Check the main circuit device and if the device is damaged, replace the damaged power module.
Parameters: MSK_BLR4

OH

Equipment overheat
OverHeat
Content (cause):
An overheat condition of the inverter stack is detected. Outputs a stop request (STPRQ).
If continued the operation further, “OH_T” activates and the inverter trips.
Action:
Check the operation of the ventilating fan, the filter for any clogging and the temperature of the electric room.
Parameters: MSK_STPRQ1

OH_T_U, OH_T_V, OH_T_W

Equipment overheat timer
OverHeat Timer
Content (cause):
An overheat condition of the equipment continued for the length of time set with the timer.
Turns off BLR signal and stops.
Action:
Check the operation situation.
If there is no sign of overload, check the operation of the ventilating fan, the filter for any clogging and the temperature of the electric room.
Parameters: MSK_BLR1, TIME_OH

OH_TR

Overheat transformer
OverHeat TRansformer
Content (cause):
An overheat condition of the transformer occurred.
Turns off BLR signal and stops.
Action:
If there is no sign of overload, check the operation of the ventilating fan, the filter for any clogging and the temperature of the electric room.
Parameters: MSK_BLR2

OL_A

Equipment overload alarm
OverLoad Alarm
Content (cause):
The AC current RMS has exceeded the set value for 5 minutes. Outputs a stop request (STPRQ).
Action:
Check the load situation.
Parameters: MSK_STPRQ1, CP_RMS_A

OL20

Overload (20 minutes) RMS
OverLoad 20 minutes
Content (cause):
The output current RMS has exceeded the set value for 20 minutes. Turns off UVA signal and stops.
Action:
Check the load situation.
Parameters: MSK_UVA1, CP_RMS_20

OL5

Overload (5 minutes) RMS
OverLoad 5 minutes
Content (cause):
The AC current RMS has exceeded the set value for 5 minutes. Turns off UVA signal and stops.
Action:
Check the load situation.
Parameters: MSK_UVA1, CP_RMS_5

OSS

Overspeed
OverSpeed Software
Content (cause):
An overspeed of the motor has been detected. Turns off BLR signal and stops.
Action:
Check to see there is not disconnection of a speed sensor.
Check the amount of overshoot of speed control.
Check whether there is any influence of the machine connected, material, etc.
Parameters: MSK_BLR3, CP_OSP

OSS_FO

Output frequency exceeded
OverSpeed Software FO (FO: frequency)
Content (cause):
Excessive output frequency has been detected. Turns off BLR signal and stops.
Action:
Check the amount of overshoot of speed control.
Check whether there is any influence of the machine connected, material, etc.
Parameters: MSK_BLR3, CS_MOTOR_FREQ

OV_XP, OV_XN (X : U, V, W)

DC overvoltage
OverVoltage Dc
Content (cause):
Power module DC overvoltage detection is activated. Turns off BLR signal and stops.
The subscript of “P” or “N” means which side of DC bus on power module (See instruction manual). Action:
Check whether a voltage variation or a more sudden deceleration operation than normal was not made.
Parameters: MSK_BLR6, CP_OV

3.12 Fault Signal P~

P_SW

Panel interlock switch on
Panel SWitch
Content (cause):
The interlock switch on the cubicle is in “Operation prohibited” (lamp lit) status.
Turns off UV signal and stops
Action:
Press the switch to turn the interlock switch to “Operation permitted” (lamp unlit) status.
Parameters: MSK_UV1, MSK_HFD1

PARA_ERR

Set parameter check error
PARAmeter check ERRor
Content (cause):
This is a checksum error of parameter setting value. Turns off UVA signal.
Action:
Carry out a power supply initialize (by turning off the control power supply and turning it on again) to make sure the error.
Reload the adjustment record data.
Parameters: MSK_UVA3

PHASE_ERR

Phase rotation error
PHASE ERRor
Content (cause):
This is a PLL power supply phase sequence error. Turns off UVA signal and stops.
Action:
Check the PDM board for input fuse blowing.
Check whether the PLL input phase sequence matches the main circuit phase sequence.
Parameters: MSK_UVA3

PLD_ERR

PLD error
PLD ERRor
Content (cause):
The PLD(Programmable Logic Device) error of the CTR board has been detected.
Turns off BLR signal and stops.
Action:
Replace the CTR board.
Parameters: MSK_BLR5

PLL

Power supply synchronization PLL error
Phase Lock Loop error
Content (cause):
A power supply synchronization PLL error has been detected.
Turns off BLR signal and stops
Action:
Check the PDM board for input fuse blowing.
Check whether the PLL input phase sequence matches the main circuit phase sequence.
Check whether there is any PLL power failure.
Parameters: MSK_BLR6

PLLPSF

PLL power supply failure
Phase Lock Loop Power Source Failure
Content (cause):
A power supply synchronization PLL power loss has been detected. Turns off BLR signal and stops
Action:
Check the PDM board for input fuse blowing.
Check whether there is any open phase or other trouble in the PLL power source.
Check whether there is any PLL power failure.
Parameters: MSK_BLR6

PP7_CODE_ERR

SRAM for CPU_A(PP7) check sum error
PP7 CODE_ERRor
Content (cause):
A check sum error of SRAM, that is for CPU_A (PP7) code memory, has been detected. Turns off UV signal and stops, or indicates alarm without stop.
Action:
For restarting the CPU, carry out a power supply initialize (by turning off the control power supply and turning it on again).
If recovery is not possible even with the power supply initializing or this error recurs repeatedly, replace the CTR board.
Parameters: MSK_UV2, MSK_HFD2, MSK_LFD2, TIME_CODE_ERR

PRE_CTT

Pre-charge contactor open
PRE-charge CTT open
Content (cause):
The contactor of the pre-charge circuit is open. In case of UVS off or no DC power, it would not be close.
Turns off UV or HFD signal and stops
Action:
Check the UVS switch status.
Check the main power supply and main contactor status.
Parameters: MSK_UV2, MSK_HFD2

PRE_CTT_F

Pre-charge contactor failure
PRE-charge CTT Failure
Content (cause):
An error is detected in the contactor of the pre-charge circuit.
Action:
Check the fuse and contactor of the reserved charging circuit.
Check the power supply voltage of the reserved charging circuit.
There is a possibility of DC voltage detection circuit error. Check the GDM board.
Parameters: MSK_STPRQ1, MSK_LFD1

3.13 Fault Signal R~

REC_F

Rectifier failure
RECtifier Failure
Content (cause):
It detected that it doesn't establish the DC voltage in case of the main AC input is on.
Action:
Check the rectifier and input AC fuse.
Check the wiring the AC input for equipment.
Parameters: MSK_BLR4

RETRY

In retry operation
RETRY operation
Content (cause):
Operation is in retry mode due to some fault set in RETRY_MSK.
Drive will retry after interval time for attempt times.
When drive success to run for 5 minutes or start command off or fault reset, this alarm will be off.
Action:
Wait until drive restart.
Start command off or fault reset will clear the retry operation.
Parameters: MSK_LFD2, RTRY_INTVL, RTRY_MSK, RTRY_MAX

REV_ROT_F

Reverse rotate failure
REVerse ROTate Failure
Content (cause):
It detected that the motor was rotating to an opposite direction to the speed reference.
Action:
Check the wiring of the motor.
Check the wiring and the coupling of the speed sensor for any abnormality.
Parameters: MSK_BLR3, CP_REV_ROT

ROT~~ATE~~_F~~AIL~~

Motor rotate failure
motor ~~ROTATE FAILure~~ROTate Failure
Content (cause):
The motor stall has been detected.
Action:
Check whether rolling material, etc. is caught inside.
Check the wiring and the coupling of the speed sensor for any abnormality.
Parameters: MSK_BLR3, CP_ROT_F_DIFF, CP_ROT_F_EN, TIME_ROT_F

3.14 Fault Signal S~

SL_CHG

Automatic sensorless mode change
automatic SensorLess mode CHanGe
Content (cause):
In case of using automatic sensorless mode change function, a failure of speed sensor has been detected and then the inverter has been changed to sensorless mode automatically.
Action:
Check the speed sensor and then cycle the control power supply.
Turn off the automatic sensorless mode change function to trip the equipment after the failure of speed sensor is detected.
Parameters: MSK_LFD2, FLG_DIFF_PG, FLG_SP_ERR_SL, TIME_SP_ERR_SL

SOFT_STL

Soft stall
SOFT STaLl
Content (cause):
Operation is in soft stall mode due to overload or high temperature.
(Soft stall mode decelerates the moor speed to protect the equipment against overload)
Action:
Check the load and whether circumference temperature is not over 40 degrees C.
Parameters: MSK_LFD1

SP_ERR

Speed detection error
SPeed sensor ERRor
Content (cause):
A speed feedback error has been detected. Turns off BLR signal and stops
Action:
Check whether rolling material, etc. is caught inside.
Check the wiring and the coupling of the speed sensor for any abnormality.
Parameters: MSK_BLR3

SP_ERR2

Speed detection error 2
SPeed sensor ERRor 2
Content (cause):
A speed feedback error has been detected. Turns off BLR signal and stops
Action:
Check whether rolling material, etc. is caught inside.
Check the wiring and the coupling of the speed sensor for any abnormality.
Parameters: MSK_BLR3

SP_LOST

Speed reference lost
SPeed reference LOST
Content (cause):
Detects the speed reference lost.
According to a mask setting, it becomes one of the following of operation.
(1) Turns off UV signal and free run stop
(2) Turns off HFD signal and free run stop
(3) Turns off READY signal and slowdown stop
Action:
Check the connection and level of speed reference signal.
Parameters: MSK_UV1, MSK_HFD1, MSK_READY1

SP_LST_A

Speed reference lost alarm
SPeed reference LoST Alarm
Content (cause):
Detects the speed reference lost.
Action:
Check the connection and level of speed reference signal.
If detecting this signal is not required, mask the signal.
Parameters: MSK_LFD1, MSK_STPRQ1

SP_SIL

Zero speed starting interlock
SPeed Start InterLock
Content (cause):
Because the motor is running, a startup interlock condition cannot be made.
Action:
Check whether the motor has stopped and operate the equipment again.
Starting the motor while it is still running is required, mask the signal.
Parameters: MSK_SIL1, MA_ZERO_SP

SPA1

Spare 1
SPAre 1
Content (cause):
A spare signal (spare 1) has been detected.
Action:
Check the spare signal and mask data.
Parameters: MSK_BLR5, MSK_UVA4, MSK_UV2, MSK_READY2, MSK_HFD2, MSK_SIL1, MSK_STPRQ1, MSK_LFD2

SPA1_T

Spare 1 timer
SPAre 1 Timer
Content (cause):
A spare signal (spare 1) error continued for the length of time set with the timer.
Action:
Check the spare signal and mask data.
Parameters: MSK_BLR5, MSK_UVA4, MSK_LFD2, TIME_SPA1

SPA2

Spare 2
SPAre 2
Content (cause):
A spare signal (spare 2) has been detected.
Action:
Check the spare signal and mask data.
Parameters: MSK_BLR5, MSK_UVA4, MSK_UV2, MSK_READY2, MSK_HFD2, MSK_SIL1, MSK_LFD2

SPA2_T

Spare 2 timer
SPAre 2 Timer
Content (cause):
A spare signal (spare 1) error continued for the length of time set with the timer.
Action:
Check the spare signal and mask data.
Parameters: MSK_BLR5, MSK_UVA4, MSK_LFD2, TIME_SPA2

SPA3

Spare 3
SPAre 3
Content (cause):
A spare signal (spare 3) has been detected.
Action:
Check the spare signal and mask data.
Parameters: MSK_BLR5, MSK_UVA4, MSK_LFD2

SPA3_T

Spare 3 timer
SPAre 3 Timer
Content (cause):
A spare signal (spare 3) error continued for the length of time set with the timer.
Action:
Check the spare signal and mask data.
Parameters: MSK_BLR5, MSK_UVA4, MSK_LFD2, TIME_SPA3

SPA4

Spare 4
SPAre 4
Content (cause):
A spare signal (spare 4) has been detected.
Action:
Check the spare signal and mask data.
Parameters: MSK_BLR5, MSK_UVA4, MSK_LFD2

SPA4_T

Spare 4 timer
SPAre 4 Timer
Content (cause):
A spare signal (spare 4) error continued for the length of time set with the timer.
Action:
Check the spare signal and mask data.
Parameters: MSK_BLR5, MSK_UVA4, MSK_LFD2, TIME_SPA4

STALL

Low frequency overload
STALL detection
Content (cause):
A large load was charged when the output frequency of the inverter was small.
Turns off UVA signal and stops.
Action:
Check the load status.
Parameters: MSK_UVA3

STCMD

Driving signal starting interlock
STart CoMmanD
Content (cause):
The start command is entered before the UV signal is satisfied.
The starting interlock condition is not satisfied.
Action:
Turn off the driving signal on the master side.
Parameters: MSK_SIL1

STPRQ

Intermediate fault (stop request)
SToP ReQuest
Content (cause):
The secondary display of the line stop request (STPRQ) sequence processing. Turns off LFD signal.
Action:
See the primary factor of STPRQ signal off.
Parameters: MSK_LFD1

SYS_ERR

System configuration error
SYStem ERRor
Content (cause):
A system configuration setting error has been detected. Turns off UVA signal.
The DIP switch of the CTR board and the setup of a system configuration (SYSTEM) are not correct.
Action:
Check whether the adjustment record data of other devices is loaded or not such as by mistaking the output voltage type (4kV, 2kV).
Parameters: MSK_UVA3, SYSTEM

3.15 Fault Signal T~

TL_F1

Transmission failure 1 – Own station failure
TosLine Failure 1
Content (cause):
The watchdog failure has occurred in the CPU of the transmission board.
Depending on the sequence mask setting, this signal interlocks on UVA signal or READY signal.
Carry out a power supply initialize (by turning off the control power supply and turning it on again) to make sure the failure.
Replace the transmission board.
Parameters: MSK_UVA4, MSK_READY1, MSK_HFD2, MSK_LFD2

TL_F2

Transmission failure 2 – Initialization and Online failures
TosLine Failure 2
Content (cause):
Serial transmission in the own station is off line.
The condition is not established during initializing.
An error has occurred on the transmitting side of the optical fiber cable during operation.
Depending on the sequence mask setting, this signal interlocks on UVA signal or READY signal.
Check the optical fiber cable.
Replace the transmission board.
Parameters: MSK_UVA4, MSK_READY1, MSK_HFD2, MSK_LFD2

TL_F3

Transmission failure 3 – Trunk line failure
TosLine Failure 3
Content (cause):
A serial transmission error in the master station.
Depending on the sequence mask setting, this signal interlocks on UVA signal or READY signal.
Check the transmission board on the master station.
Check the optical fiber cable.
Also check the situation of other inverters connected to the same master station.
Replace the transmission board.
Parameters: MSK_UV2, MSK_READY1, MSK_HFD2, MSK_LFD2

TL_F4

Transmission failure 4 – Drive-to-drive failure
TosLine Failure 4
Content (cause):
An error of data transmission between drives. This is detected when the other party is not online.
Depending on the sequence mask setting, this signal interlocks on UVA signal or READY signal.
Check the error massage of inverter on the other party.
Check the optical fiber cable.
Replace the transmission board.
Parameters: MSK_UV2, MSK_READY1, MSK_HFD2

TUNE_IL

Auto-tuning interlock
automatic TUNE IneterLock
Content (cause):
The interruption or cancel switch was turned on during an auto-tuning operation.
Turns off UV signal and stops
Action:
Returns to normal when the auto-tuning operation is ended.
Parameters: MSK_UV2, MSK_HFD2

3.16 Fault Signal U~

UL_A

Low current detection alarm
Under Load detection alarm
Content (cause):
The load current is below the protection level. Indicates alarm.
Action:
Check the load condition.
Parameters: CP_UL_H, CP_UL_L, TIME_UL, MSK_LFD2

UL_T

Low current detection timer
Under Load detection timer
Content (cause):
The load current is below the protection level. Turns off UVA signal and stops.
Action:
Check the load condition. After check, it needs fault reset.
Parameters: CP_UL_H, CP_UL_L, TIME_UL, MSK_UVA1

UV

Electrical condition
Under Voltage
Content (cause):
The secondary display of sequence processing. Turns off ACIL signal.
Action:
Refer to the primary cause of UV off.
Parameters: MSK_ACIL1

UV_MPSF

Electrical condition
Under Voltage Main Power Source Failure
Content (cause):
An AC main power supply loss has been detected during operation.
Action:
Check the wiring of the main circuit, the input voltage detector and the fuse.
Parameters: MSK_UV1

UV_READY

External electrical ready condition
Under Voltage READY
Content (cause):
The secondary display of sequence processing. Turns off READY signal.
Action:
Refer to the primary cause of UV off.
Parameters: MSK_READY1

UV_SIL

DC voltage drop starting interlock
Under Voltage Start InterLock
Content (cause):
DC main power supply is equal to or less than the setting level.
Startup interlock condition cannot be made.
Action:
Check the AC input voltage and circuit.
Parameters: MSK_SIL1, CP_UV_SIL

UVA

Electrical condition ready condition
Under Voltage Auxiliary
Content (cause):
A secondary display of sequence processing.
Action:
Refer to the primary cause of UVA off.
Parameters: MSK_UV1, MSK_HFD1

UVA_EX

External equipment electrical condition ready condition
Under Voltage Auxiliary EXternal interlock
Content (cause):
An external electrical condition signal. Turns off UV signal and stops
Action:
Refer to the primary cause of UVA off of the inverter of the opposite station.
Parameters: MSK_UV1, MSK_HFD1

UVA_SIL

AC main voltage drop
Under Voltage Auxiliary Starting InterLock
Content (cause):
An AC main power supply loss has been detected. Turns off UVA signal and stops.
Action:
Check whether the operation procedure is correct or not.
Check the input AC circuit breaker for any abnormality.
Parameters: MSK_SIL1

UVD

DC voltage drop
Under Voltage of Dc
Content (cause):
Power supply voltage drop is detected in the DC main circuit. Turns off UVA signal and stops.
Action:
Check the AC input voltage and circuit.
Parameters: MSK_UVA1, CP_UVD

UVS

External safety switch
Under Voltage Safety interlock
Content (cause):
The operation interlock switch input from outside (the master cubicle) is off. Turns off UV signal and stops.
Action:
Check the condition on the master cubicle side.
Parameters: MSK_UV1

3.17 Fault Signal V~

VAC_PH_LOSS

Input voltage phase loss detection
Voltage AC PHase LOSS
Content (cause):
Input AC voltage phase loss has detected. Turns off UVA signal and stop.
Action:
Check whether power-supply voltage balances.
Parameters: MSK_UVA2

VINV_PH_LOSS

Output Current phase loss detection
Voltage INVerter PHase LOSS
Content (cause):
Output AC current phase loss has detected. Turns off UVA signal and stop.
Action:
Check whether the load current balances.
Check the current detector for any abnormality.
Parameters: MSK_UVA2

3.18 Fault Signal X~

XFR_FAIL

Transfer failure
transFeR Fail
Content (cause):
Utility synchronization transfer failed.
Action:
Check that the power supply voltage detection circuit is connected correctly.
Check the parameter (LVL_XFR_DLTQ) of the phase synchronization criteria value.
Check for any factor that causes excessive speed ripples in the load side.
Parameters: MSK_BLR5, MSK_LFD1, LVL_XFR_DLTQ