AC30V series
Fan Control Application

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

ENGINEERING YOUR SUCCESS.

Fan Control Application

HA502134U002 Issue 2

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Fan Control Application Manual

Description

The fan application provides speed control using a speed reference from either an analogue input terminal, a preset speed selected by digital terminals or, if a Real Time Clock (RTC) option is fitted, a preset speed selected by built-in time of day / day of week programmer.

Features

- Automatic belt breakage detection (abnormal load)
- Timed run function. Start/stop events can be programmed with different running speeds.*
- Skip frequencies to enable resonant points on the fan to be avoided
- Fire Mode. Run to destruction if commanded to do so.
- Preset speeds
- Power-up start
- Auto Start on non-zero setpoint
- Separate Manual Run and Auto Run digital inputs
- Catching a spinning load when fan is free-wheeling

* 7004-01-00 or 7004-03-00 option required

Requirements

To use the AC30V for fan control as described in this manual, the application RA502134U002 must be loaded into an AC30V series drive with firmware 1.3.2 or newer.

Application 6:
"Fan Control"
DEDICATED FAN CONTROL WITH SPECIFIC FAN
FUNCTIONALITY

SPEED SETPOINT — ANIN 01 *(X11/01)* → Scale Input

MANUAL

0680 App Reference

AUTO

2038 Setpoint Input Max
2039 Setpoint Input Min

1916 Preset Speed 0
1917 Preset Speed 1
1918 Preset Speed 2
1919 Preset Speed 3
1920 Preset Speed 4
1921 Preset Speed 5
1922 Preset Speed 6
1923 Preset Speed 7

0500 Ramp Speed Output → ANOUT 01 *(X11/03)*   SPEED DEMAND
0401 Motor Current Percent → ANOUT 02 *(X11/04)*   MOTOR CURRENT

Requires 7004-01-00 or 7004-03-00

TIME OF DAY TIMER

SELECT

2002-2017 Event Days 1-6
2013-2018 Event Time Of Day 1-6
2024-2029 Event Select 1-6

1924 Selected Preset

1959 Use Auto Timer

MANUAL RUN — DIGIN 01 *(X13/02)*
AUTO RUN — DIGIN 02 *(X13/03)*
PRESET SELECT 1 — DIGIN 03 *(X13/04)*
PRESET SELECT 2 — DIGIN 04 *(X12/01)*
PRESET SELECT 3 — DIGIN 05 *(X12/02)*
NOT COAST STOP — DIGIN 06 *(X12/03)*
NOT FIRE MODE ACTIVATE — DIGIN 07 *(X12/04)*

SETPOINT START   RUN

0680 App Reference

1959 Start On Setpoint

SEQUENCING LOGIC

ENABLE

NOT COAST STOP

1960 Power Up Start

RELAY 01 *(X14/01)* *(X14/02)*   RUNNING
RELAY 02 *(X14/03)* *(X14/04)*   NOT TRIPPED

0500 Ramp Speed Output
0399 Actual Torque

ABNORMAL LOAD DETECTION

RUNNING

1969 Startup Delay
1970 Fault Delay
1973 Low Warning Level
1974 Low Fault Level
1976-1979 Speed 1-4
1987-1990 Load 1-4

ACTIVATE

FIRE MODE

1962 Fire Mode Setpoint
1963 Fire Mode Level

Requires 7004-01-00

RELAY 11 *(X23/01)* *(X23/02)*   FIRE MODE ACTIVATED
RELAY 12 *(X23/03)* *(X23/04)*   FIRE MODE READY

DIGOUT 11 *(X20/01)*   LOAD WARNING
DIGOUT 12 *(X20/02)*   LOAD FAULT

Inputs

Terminal	Function	Comment
ANIN 01 (X11/01)	SPEED SETPOINT	Speed Reference used when MANUAL RUN
ANIN 02 (X11/02)		Not used
DIGIN 01 (X13/02)	MANUAL RUN*	Run command for using the Analog Input as Setpoint
DIGIN 02 (X13/03)	AUTO RUN*	Run command for using the selected Preset Speed as Setpoint
DIGIN 03 (X13/04)	PRESET SELECT 1	These 3 digital input select the active Preset Speed if the Time Of Day Timer feature is not being used
DIGIN 04 (X12/01)	PRESET SELECT 2	
DIGIN 05 (X12/02)	PRESET SELECT 3	
DIGIN 06 (X12/03)	NOT COAST STOP	When FALSE the Drive does not control Fan. The Fan will freewheel.
DIGIN 07 (X12/04)	NOT FIRE MODE	When FALSE activates Fire Mode

* If both Run inputs are TRUE, than MANUAL RUN has the highest priority.

Outputs

Terminal	Function	Comment
ANOUT 01 (X11/03)	FAN SPEED DEMAND	Speed demand as % of maximum Fan speed
ANOUT 02 (X11/04)	FAN LOAD	Calculated fan load as % of maximum fan load
RELAY 01 (X14/01 & X14/02)	RUNNING	When closed the Fan is being driven
RELAY 02 (X14/03 & X14/04)	NOT TRIPPED	When closed the Drive is not tripped
DIGOUT 01 (X12/01)		Terminal used as DIGIN 04
DIGOUT 02 (X12/02)		Terminal used as DIGIN 05
DIGOUT 03 (X12/03)		Terminal used as DIGIN 06
DIGOUT 04 (X12/04)		Terminal used as DIGIN 07

Terminal	Function	Comment
RELAY 11 (X23/01 & X23/02)	FIRE MODE ACTIVATED	When closed Fire Mode is currently Activated
RELAY 12 (X23/03 & X23/04)	FIRE MODE READY	When closed Fire Mode is Ready for Activation
DIGOUT 11 (X20/01)	LOAD WARNING	Abnormal load detection low warning (belt slipping)
DIGOUT 12 (X20/02)	LOAD FAULT	Abnormal load detection low fault (belt broken)
DIGOUT 13 (X20/03)		Not used
DIGOUT 14 (X20/03)		Not used

Graphical Keypad (GKP) Application Customisation

The fan application adds parameters and menus to the GKP. It also modifies behavior of the and set-up wizard.

Wizard

Under Quick Setup Application:

1960: Power Up Start
1958: Use Auto Timer
1959: Run When Non Zero SP
1962: Fire Mode Level
1961: Fire Mode Setpoint
2038: Setpoint Input Max
2039: Setpoint Input Min

Quick Setup

0486: Acceleration Time
0487: Deceleration Time
1916: Preset Speed 0
1917: Preset Speed 1
1918: Preset Speed 2
1919: Preset Speed 3
1920: Preset Speed 4
1921: Preset Speed 5
1922: Preset Speed 6
1923: Preset Speed 7
1958: Use Auto Timer
1959: Run When Non Zero SP
1006: Run Setup?
1141: View Level

Quick Monitor

    1997: Load Monitor State
    0682: Reference
    1924: Selected Preset
    0500: Ramp Speed Output
    0399: Actual Torque
    1964: Fire Mode Activated
    1965: Fire Mode Ready

Setup::Application and Monitor::Application

    Include all parameters listed in the table at the end of this manual.

Abnormal Load Detect

Setup::Application::Abnormal Load Detect
Monitor::Application::Abnormal Load Detect*

When used in the Fan Control Application this feature is used to detect low load indicating belt break or belt slip.

PNO	Parameter Descriptions
1968	**Enable Load Monitor**
	Set TRUE to enable this feature.
1969	**Startup Delay**
	This sets the duration from when the motor is started until the load monitoring is started. This allows for inaccurate speed/load characterisation and load estimation during start-up period.
1970	**Fault Delay**
	This sets the duration from when the load monitor detects a LOAD FAULT until the sequencers stops the motor. This allows for inaccurate speed/load characterisation and load estimation during start-up period.
1973	**Low Warning Level**
	This specifies the deviation of the actual load below the expected load which will cause a LOAD LOW WARNING to be reported.
1974	**Low Fault Level**
	This specifies the deviation of the actual load below the expected load which will cause a LOAD LOW FAULT to be reported.
1976	**Speed 1**
1977	**Speed 2**
1978	**Speed 3**
1979	**Speed 4**
	These 4 parameters specify together with the 4 Load parameters below are used to characterise the expected load 'curve' for the actual Speed.
1987	**Load 1**
1988	**Load 2**
1989	**Load 3**
1990	**Load 4**
	See above Speed parameters.

PNO	Parameter Descriptions

1997   **Load Monitor State***

This diagnostic reports whether the monitor is monitoring and, if so, if the Load is as expected. This is an enumerated value:

0	MONITORING DISABLED	Either **Enable Load Monitor** is FALSE or **Speed 1** = 0.0%.
1	MONITORING STOPPED	Motor not running, so not monitoring.
2	MONITORING STARTING	Motor started less than **Startup Delay** ago, so not monitoring yet.
3	LOAD NORMAL	The actual Load is within the expected range, so anomaly detected.
5	LOAD LOW WARNING	The actual Load is below the **Low Warning Level** but not lower than the **Low Fault Level**.
7	LOAD LOW FAULT	The actual Load is below the **Low Fault Level**

1998   **Expected Load***

This diagnostic is the calculated Load expected for the current Speed. This is determined from the load 'curve' specified by the **Speed n** and **Load n** parameters and is useful for checking that in the case of incorrect warning or fault reporting.

Functional Description

An estimate of the expected Load for any given Speed is specified using the **Speed n** and **Load n** parameters. Each pair provide a point on the expected Load line.

The Speed parameters must have increasing values. I.e. **Speed 1** < **Speed 2** < **Speed 3** < **Speed 4**.

If not all points are required, a Speed may be set to zero to terminate the sequence. If the actual speed is greater than the last specified point, the line is extrapolated from the previous 2 points.

Speed 1 must be non-zero, otherwise the abnormal load detection feature is disabled.
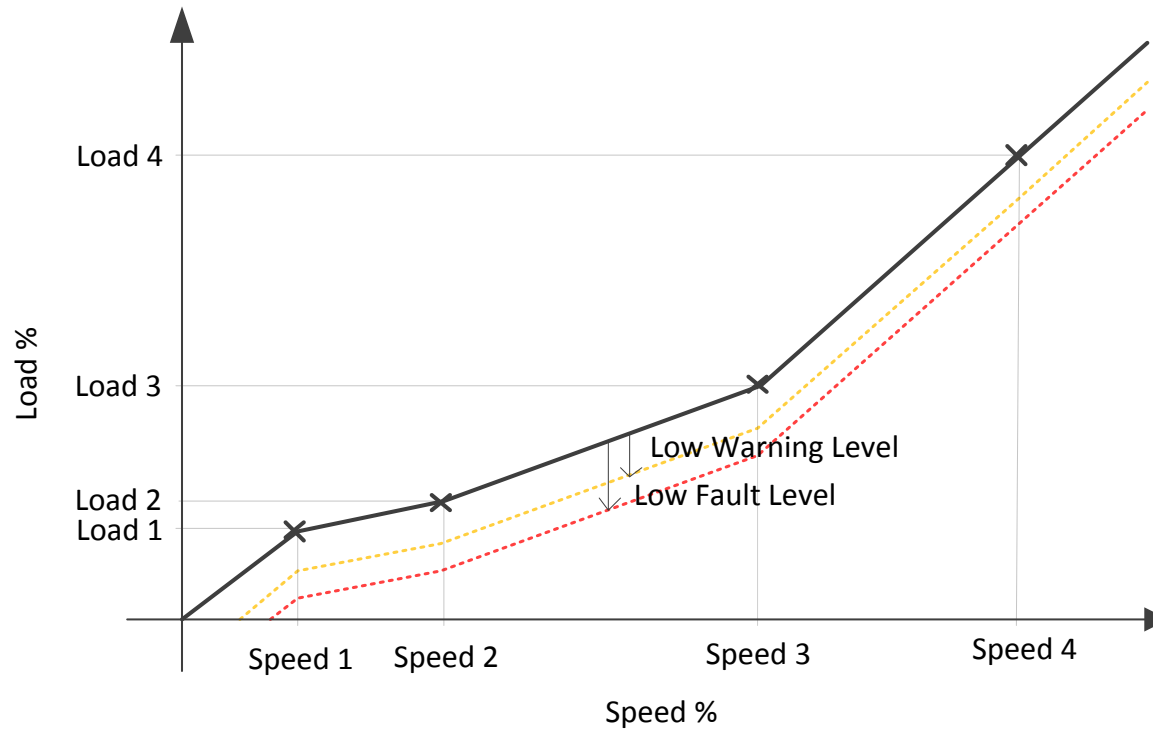
Offset from the expected Load line, 2 additional lines are calculated. These are the Warning and Fault detection thresholds. The deviation from normal behavior is determined by the **Low Warning Level** and **Low Fault Level** parameters.

When running, the **Load Monitor State** diagnostic will show if the actual Load is in the NORMAL, WARNING or FAULT region of the graph. Note – for this to report correctly, the **Low Fault Level** must be more negative than the **Low Warning Level**.

If the actual Load remains in the FAULT region for longer than the duration specified by **Fault Delay**, the Drive will stop running.

The **Start Delay** may be used to prevent incorrect warning or fault reported soon after the Run command is issued.

The **Load Monitor State** diagnostic is reset when the Run command is removed.

Fire Mode

Setup::Application::Fire Mode
*Monitor::Application::Fire Mode**

Fire mode is intended for use in critical situations where it is imperative for the motor to be kept running if at all possible. In such a situation it may be reasonable to override the Drives' normal protective functions. An example of a critical situation may be a ventilation fan in a stairwell, where continued operation in the event of a fire may assist the safe evacuation of personnel.

Caution   When Fire Mode is active the Drive and Motor protection trips are disabled. The use of Fire Mode itself increases the risk of causing a fire by overloading the drive or motor, so it must only be used after assessing the risks.

PNO	Parameter Descriptions
	Fire Mode Activate
	Set TRUE to activate the Fire Mode feature. This input may only be set by connection to a digital input as part of the application.
1961	**Fire Mode Setpoint**
	A reference value to be used when Fire Mode is active. Setting a negative setpoint will cause the drive to rotate in reverse direction.
1962	**Fire Mode Level**
	This parameter selects the mode of operation when Fire Mode is activated. It is an enumerated value as follows:

    0   DISABLED   Fire Mode feature is disabled. The **Activate** input going high will have no effect.

    1   PARTIAL   Fire Mode is enabled with "partial mode" trips listed below ignored.

    2   FULL   Fire Mode is enabled with "full mode" trips listed below ignored.

PNO	Parameter Descriptions
1963	**FM Restart Delay**
	This specifies the duration to wait before attempting to reset a trip.
1964	**Fire Mode Activated**
	When TRUE, this diagnostic, indicates that the Fire Mode is in operation. Trips are being ignored at either the PARTIAL or FULL level and the fire mode **Setpoint,** which is non-zero, is being followed.
1965	**Fire Mode Ready**
	This diagnostic, when TRUE, indicates that the Fire Mode will operate if the **Activate** input becomes TRUE. The diagnostic will be FALSE if the fire mode **Level** is set to DISABLED or the fire mode **Setpoint** is set to 0.0%.

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PNO	Parameter Descriptions
1966	**FM Last Activated**
	A Data and Time diagnostic that records the last time that the Fire Mode was activated. This may be used to validate that the fire mode has been tested. The value is preserved in non-volatile memory. A Real Time Clock (RTC) option must be fitted for the timestamp.
1967	**FM Activation Count**
	This diagnostic records the number of activations of the fire mode. This may be used to validate that the fire mode has been tested. The value is preserved in non-volatile memory.

Functional Description

When Fire Mode is activated, the Drive will attempt to run at the speed set by the Fire Mode **Setpoint** parameter even if the Drive was not running at the time. This is regardless of whether in Remote or Local sequencing mode.

Caution   If the Drive is powered-up with the Activate input TRUE, the Drive will run immediately without warning.

The only reasons that the drive will not run are:

- **Level** is set to DISABLED
- **Setpoint** is zero
- The Coast Stop input is activated.
- The STO circuit is activated.
- An enabled trip source becomes active.
- A hardware fault

Caution   Fire Mode does not override the standard Ramp features. Specifically **0497 Ramp Hold** can prevent the setpoint changing to the Fire Mode **Setpoint** value.

The following table summarizes which trips are disabled in the two modes of operation. Also shown are those trips which are designed to protect the drive.

Caution   Disabling the Drive Protection trips will invalidate the drive's warranty.

Selecting PARTIAL mode leaves the drive protection features enabled. Selecting FULL mode disables some of the drive protection features.

Caution   Regardless of the setting of **Level**, activating Fire Mode may cause damage to the motor or attached equipment.

ID	Trip Name	Disabled in Partial mode	Disabled in Full mode	Drive Protection
1	OVER VOLTAGE			✓
2	UNDER VOLTAGE[(1)]	Note 1	Note 1	
3	OVER CURRENT			✓
4	STACK FAULT			✓
5	STACK OVER CURRENT			✓
6	CURRENT LIMIT	✓	✓	
7	MOTOR STALL	✓	✓	
8	INVERSE TIME		✓	✓
9	MOTOR I2T	✓	✓	
10	LOW SPEED I	✓	✓	
11	HEATSINK OVERTEMP		✓	✓
12	AMBIENT OVERTEMP		✓	✓
13	MOTOR OVERTEMP	✓	✓	
14	EXTERNAL TRIP	✓	✓	
15	BRAKE SHORT CCT		✓	✓
16	BRAKE RESISTOR	✓	✓	
17	BRAKE SWITCH		✓	✓
18	LOCAL CONTROL	✓	✓	
19	COMMS BREAK	✓	✓	
20	LINE CONTACTOR	✓	✓	
21	PHASE FAIL	✓	✓	
22	VDC RIPPLE		✓	✓
23	BASE MODBUS BREAK	✓	✓	
24	24V OVERLOAD	✓	✓	
25	PMAC SPEED ERROR	✓	✓	
26	OVERSPEED	✓	✓	
27	SAFE TORQUE OFF			

Note 1. The Under Voltage trip is enabled when Fire Mode is active, but the trip level is reduced by 50%.

If a trip source becomes active when the associated trip is disabled the drive will continue to run. This is also the normal behavior of the drive, (when Fire Mode is not active). If the associated trip is designed for drive protection, this will be recorded in non-volatile memory. The recorded values are available to view in the Drives' Trips History.

When Fire Mode is activated and a trip source becomes active and the associated trip is enabled, the Drive will trip, causing the motor to stop. This is similar to the normal behavior of the Drive, (when Fire Mode is not active). However, when Fire Mode is active the firmware within the Drive continues to monitor the trip source, once the trip source has become inactive the drive automatically resets the trip condition and restarts the drive.

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Preset Speeds

Setup::Application::Preset Speeds
Setup::Application::Preset Speeds*

The Fan Control Application allows this feature to be either used directly from digital inputs or in conjunction with the Time Of Day Timer.
The **Presets** function selects 1 of 8 values to be used as a reference.

PNO	Parameter Descriptions
1916	**Preset Speed 0**
	Preset Speed Output when **Selected Preset** equals 0
1917	**Preset Speed 1**
	Preset Speed Output when **Selected Preset** equals 1
1918	**Preset Speed 2**
	Preset Speed Output when **Selected Preset** equals 2
1919	**Preset Speed 3**
	Preset Speed Output when **Selected Preset** equals 3
1920	**Preset Speed 4**
	Preset Speed Output when **Selected Preset** equals 4
1921	**Preset Speed 5**
	Preset Speed Output when **Selected Preset** equals 5
1922	**Preset Speed 6**
	Preset Speed Output when **Selected Preset** equals 6
1923	**Preset Speed 7**
	Preset Speed Output when **Selected Preset** equals 7
1924	**Selected Preset***
	Diagnostic showing selected preset number
	Select 0
	This is connected to a Digital Input as part of the selected macro. It provides bit 0 of the Selected Preset number.

| PNO	Parameter Descriptions

Select 1

This is connected to a Digital Input as part of the selected macro. It provides bit 1 of the Selected Preset number.

Select 2

This is connected to a Digital Input as part of the selected macro. It provides bit 2 of the Selected Preset number.

Functional Description

Select 2	Select 1	Select 0	Selected Preset
FALSE	FALSE	FALSE	**Preset Speed 0**
FALSE	FALSE	TRUE	**Preset Speed 1**
FALSE	TRUE	FALSE	**Preset Speed 2**
FALSE	FALSE	FALSE	**Preset Speed 3**
TRUE	FALSE	TRUE	**Preset Speed 4**
TRUE	TRUE	FALSE	**Preset Speed 5**
TRUE	FALSE	FALSE	**Preset Speed 6**
TRUE	FALSE	FALSE	**Preset Speed 7**
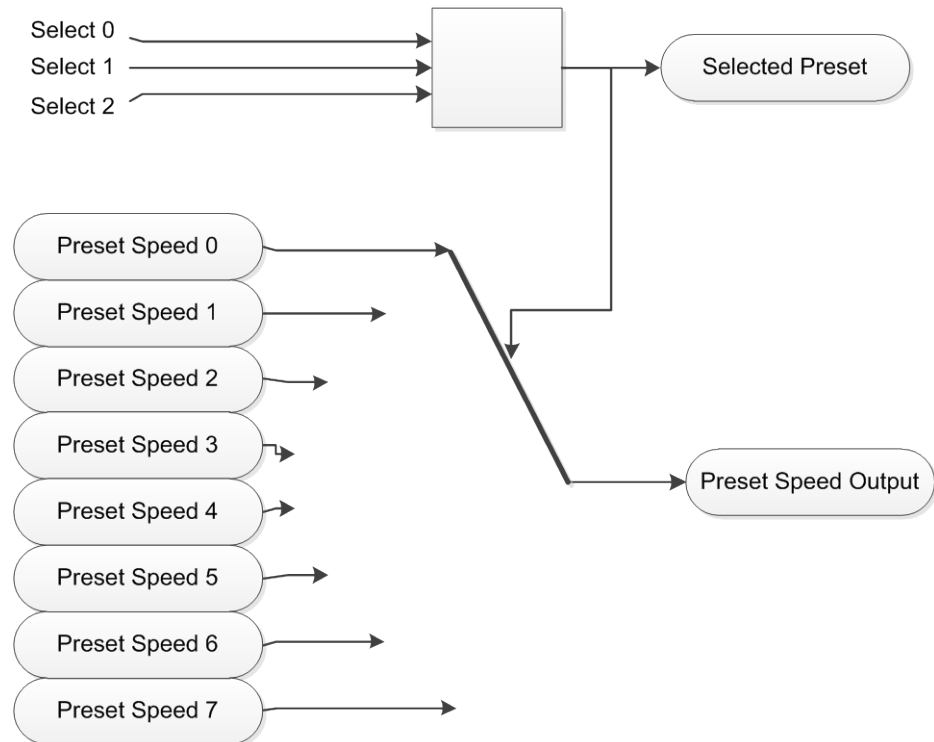
Reference

Setup::Application::Reference

The Fan Control Application provides 2 parameters to scale and offset the Setpoint analog input.

PNO	Parameter Descriptions
2038	**Setpoint Input Max**
	Sets the full range value for the Setpoint analogue input (ANIN01). It corresponds to the maximum input value of either 10V or 20mA depending on the setting of **0001: Anin 01 Type**.
2039	**Setpoint Input Min**
	Sets the minimum value for the Setpoint analogue input (ANIN01). It corresponds to the minimum input value of either -10V, 0V, 0mA or 4mA depending on the setting of **0001: Anin 01 Type**.

Functional Description

setpoint = ((input / 100) x (**Setpoint Input Max** − **Setpoint Input Min**)) + **Setpoint Input Min**

Sequencing

Setup::Application::Sequencing

The Fan Control Application introduces 3 additional sequencing parameters.

PNO	Parameter Descriptions
1959	**Use Auto Timer**
	When TRUE, the AUTO RUN Preset Speed is selected by the Time Of Day Timer function. When FALSE (the default), the Preset Speed is selected by digital inputs.
1960	**Start On Setpoint**
	When TRUE and either AUTO RUN or MANUAL RUN is TRUE, the Drive will automatically run whenever the active Setpoint is non-zero.
1961	**Power Up Start**
	When TRUE the Drive will immediately run on power up if the AUTO RUN or MANUAL RUN digital input is TRUE. If this parameter is FALSE (the default) a FALSE to TRUE transition of the RUN input is required.

Functional Description

Use Auto Timer:
This allows Time Of Day Timer to override the digital inputs for the selection of the Preset Speed.

Start On Setpoint:
This feature removes the need of applying a run command. Whenever a non-zero (±0.5%) becomes active from either the Preset Speeds or Analog input, a run command is automatically issued.

Caution   The Drive may run without warning.

Power Up Start:
This feature removes the requirement of a transition from FALSE to TRUE on the run command. This allows an immediate start of the motor when power is applied to the Drive.

Caution   The Drive may run without warning.

Skip Frequencies

Setup::Application::Skip Frequencies

When used in the Fan Control Application a maximum of 2 skip frequencies are available for use.

This function is used to prevent the Drive operating at frequencies that cause mechanical resonance in the load.

| PNO	Parameter Descriptions
1908	**Skip Freq Band 1**
	The width of skip band 1 in Hz.
1909	**Skip Frequency 1**
	The centre frequency of skip band 1 in Hz.
1910	**Skip Freq Band 2**
	The width of skip band 2 in Hz.
1911	**Skip Frequency 2**
	The centre frequency of skip band 2 in Hz.

Functional Description

Skip frequencies are used to avoid resonances within the mechanical system. Enter the value of frequency that causes the resonance using a **Frequency** parameter and then program the width of the skip band using its **Band** parameter. The Drive will then avoid sustained operation within the forbidden band as shown in the diagram. The skip frequencies are symmetrical and thus work in forward and reverse.

Setting a **Frequency** to 0.0 disables the corresponding band. Setting a **Band** to 0.0 causes the value of **Band 1** to be used for this band.
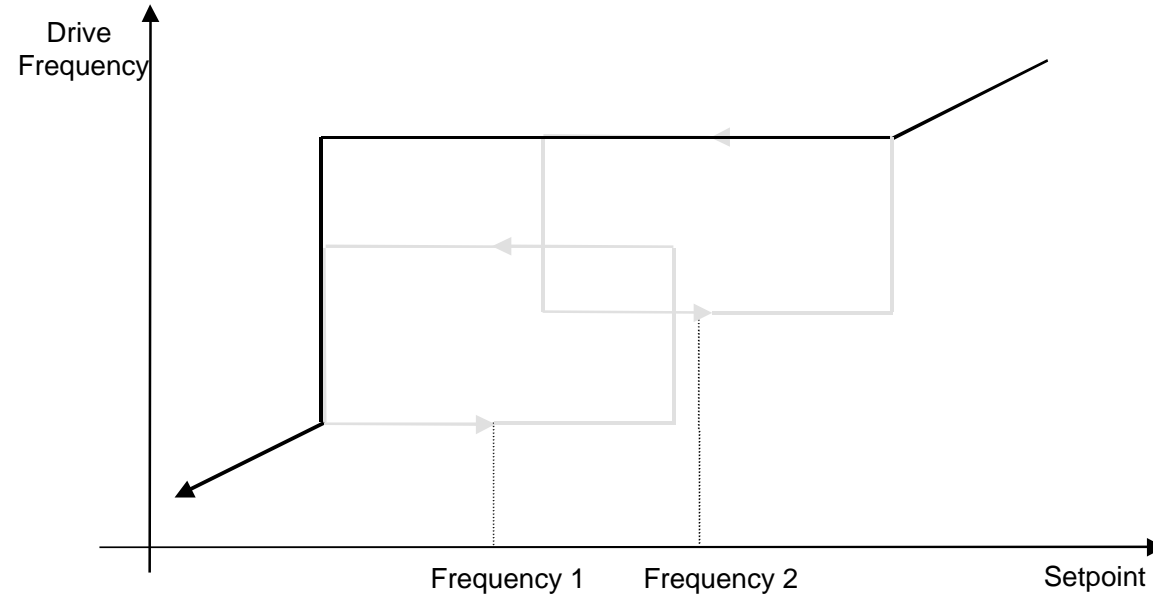
The behaviour of this function is illustrated below.
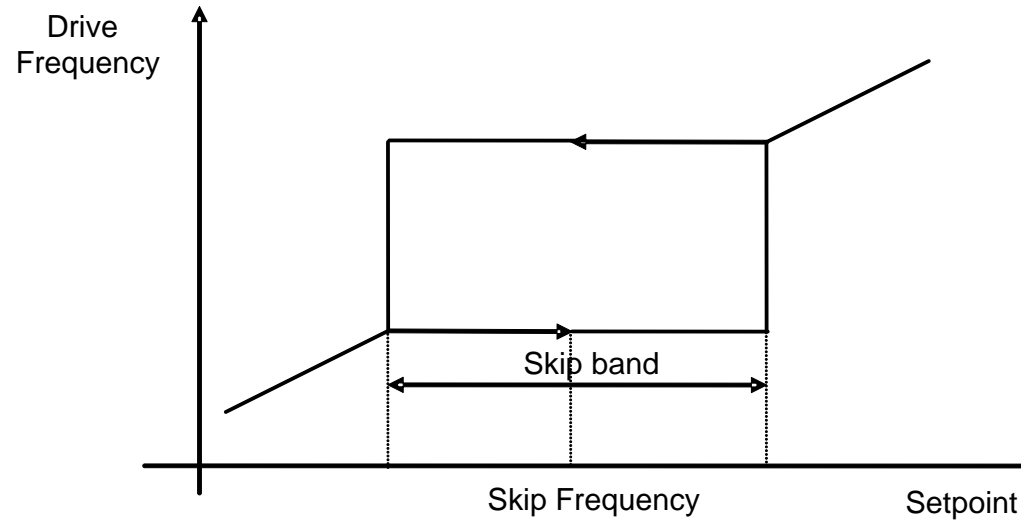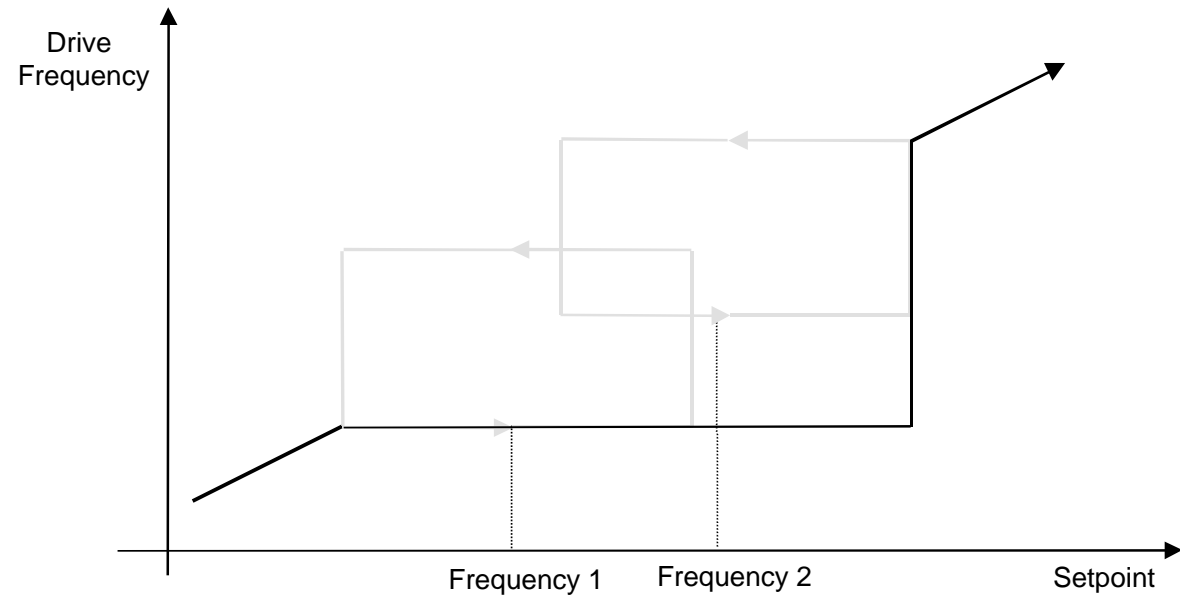
Time Of Day Timer

Setup::Application::Time Of Day Timer
Monitor::Application::Time Of Day Timer*

This feature allows preset speeds to be selected depending on the time of day and day of week. It requires a Real Time Clock (RTC) to operate, so an IO Option type 7004-01-00 or 7004-03-00 must be fitted.

When used in the Fan Control Application a maximum of 8 speed select events are available for use.

PNO	Parameter Descriptions
2002	**Event Days 1**
2003	**Event Days 2**
2004	**Event Days 3**
2005	**Event Days 4**
2006	**Event Days 5**
2007	**Event Days 6**
2008	**Event Days 7**
2009	**Event Days 8**

These 8 parameters specify which day, or days, the event 1-6 applies. Each day is represented as a bit, so that when set indicates that the event is valid on that day. More than one bit may be set to indicate the event is valid on more than one day.

Bit	Hexadecimal	Decimal	Day Of Week
0	01	1	SUNDAY
1	02	2	MONDAY
2	04	4	TUESDAY
3	08	8	WEDNESDAY
4	10	16	THURSDAY
5	20	32	FRIDAY
6	40	64	SATURDAY

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PNO	Parameter Descriptions

Example multiple day events:

Bits	Hexadecimal	Decimal	Days Of Week
0,6	41	65	SATURDAY, SUNDAY
1,2,3,4,5	3E	62	MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY
0-7	7F	127	Every Day

A value of 0 disables the event.

2013	**Event Time Of Day 1**
2014	**Event Time Of Day 2**
2015	**Event Time Of Day 3**
2016	**Event Time Of Day 4**
2017	**Event Time Of Day 5**
2018	**Event Time Of Day 6**
2019	**Event Time Of Day 7**
2020	**Event Time Of Day 8**

These 8 parameters specify the time of day the event 1-6 occurs.

2024	**Event Select 1**
2025	**Event Select 2**
2026	**Event Select 3**
2027	**Event Select 4**
2028	**Event Select 5**
2029	**Event Select 6**
2030	**Event Select 7**
2031	**Event Select 8**

These 8 parameters specify the **Selected** value when the event 1-6 occurs. This value is maintained until the next timed event occurs. It can be set to any value between 0 and 7 which then is used to select the Preset Speed to be used when the event is active.

2034	**Selected***

This diagnostic is the **Event Select** value for the **Active Event**. If there are no programmed events this will be set to 0.

2035	**Day Of Week Now***

This diagnostic is the day of the week today as determined by the Real Time Clock (RTC). This is an enumerated value:

0   SUNDAY

PNO	Parameter Descriptions
	1 MONDAY
	2 TUESDAY
	3 WEDNESDAY
	4 THURSDAY
	5 FRIDAY
	6 SATURDAY
2037	**Active Event***
	This diagnostic indicates which of the speed change events last occurred (and is still active). If there are no programmed events this will be set to 0.

Functional Description

A maximum of 6 events may be programmed. Each event is for a time of day on one or more days of the week. A value to be selected is then chosen to be output when the time of day is reached on one of the days that have been specified.

So, each event is programmed with 3 parameters. These are **Event Days**, **Event Time Of Day and Event Select**. Unused events must have their **Event Days** set to 0 (default). Events do not need to be declared in chronological order and unused events do no need to be last (i.e. gaps are allowed).

Example Program:

n	Event Days n	Event Time Of Day n	Event Select n
1	3E (Mon, Tues, Wed, Thurs, Fri)	7:00	1
2	40 (Sat)	8:30	1
3	7F (Sun, Mon, Tues, Wed, Thurs, Fri, Sat)	11:00	2
4	7E (Mon, Tues, Wed, Thurs, Fri, Sat)	14:00	3
5	01 (Sun)	14:00	0
6	7E (Mon, Tues, Wed, Thurs, Fri, Sat)	18:00	0

This then has the following behavior:
- Monday to Friday the Preset Speed 1 is selected at 7:00. This remains selected until 11:00 when the Preset Speed 2 is selected. At 14:00 it is changed to Preset Speed 3. Finally, at 18:00 Preset Speed 0 is selected.
- Saturday is the same as Monday to Friday except that the selecting of Preset Speed 1 occurs later at 8:30.
- On Sunday the program just selects Preset Speed 2 at 11:00 and then Preset Speed 0 at 14:00

At power-up, the Time Of Day Timer searches backwards in time (and day) to find the Event that would be active if the power had been on continuously. It then makes this Event active. In the example above, if power-up was 10:00 on SATURDAY then Event 2 would be active, but if at 10:00 on a SUNDAY then Event 6 would be active.

PNO	Name	Path(s)	Type	Default	Range	Units	WQ	View	Notes	MBus
1901	Selected Application	Setup::Application::App Selection	USINT (enum)	0	0: FAN CONTROL		CONFIG			04329
1908	Skip Band 1	Setup::Application::Skip Frequencies	REAL	0.0	0.0 to 1000.0	Hz	ALWAYS			04343
1909	Skip Frequency 1	Setup::Application::Skip Frequencies	REAL	0.0	0.0 to 1000.0	Hz	ALWAYS			04345
1910	Skip Band 2	Setup::Application::Skip Frequencies	REAL	0.0	0.0 to 1000.0	Hz	ALWAYS			04347
1911	Skip Frequency 2	Setup::Application::Skip Frequencies	REAL	0.0	0.0 to 1000.0	Hz	ALWAYS			04349
1916	Preset Speed 0	Setup::Application::Preset Speeds	REAL	0.0	-100.0 to 100.0	%	ALWAYS			04359
1917	Preset Speed 1									04361
1918	Preset Speed 2									04363
1919	Preset Speed 3									04365
1920	Preset Speed 4									04367
1921	Preset Speed 5									04369
1922	Preset Speed 6									04371
1923	Preset Speed 7									04373
1924	Selected Preset	Monitor::Application::Preset Speeds	USINT	0	0 to 7		NEVER			04475
1958	Use Auto Timer	Setup::Application::Sequencing	BOOL	FALSE			ALWAYS			04445
1959	Start On Setpoint	Setup::Application::Sequencing	BOOL	FALSE			ALWAYS			04447
1960	Power Up Start	Setup::Application::Sequencing	BOOL	FALSE			ALWAYS			04449
1961	Fire Mode Setpoint	Setup::Application::Fire Mode	REAL	0.0	-100.0 to 100.0	%	ALWAYS			04451
1962	Fire Mode Level	Setup::Application::Fire Mode	USINT (enum)	0	0:DISABLED 1:PARTIAL 2:FULL		ALWAYS			04453

PNO	Name	Path(s)	Type	Default	Range	Units	WQ	View	Notes	MBus
1963	FM Restart Delay	Setup::Application::Fire Mode	TIME	2	0 to 600	s	ALWAYS			04455
1964	Fire Mode Activated	Monitor::Application::Fire Mode	BOOL	FALSE			NEVER			04455
1965	Fire Mode Ready	Monitor::Application::Fire Mode	BOOL	FALSE			NEVER			04457
1966	FM Last Activated	Monitor::Application::Fire Mode	DATE_AND_TIME				NEVER			04459
1967	FM Activation Count	Monitor::Application::Fire Mode	UINT	0	0 to 65535		NEVER			04459
1968	Enable Load Monitor	Setup::Application::Abnormal Load Detect	BOOL	0			NEVER			04463
1969	Startup Delay	Setup::Application::Abnormal Load Detect	TIME	10		s	ALWAYS			04465
1970	Fault Delay	Setup::Application::Abnormal Load Detect	TIME	1		s	ALWAYS			04467
1973	Low Warning Level	Setup::Application::Abnormal Load Detect	REAL	-100.0	-100.0 to 0.0	%	ALWAYS			04473
1974	Low Fault Level	Setup::Application::Abnormal Load Detect	REAL	-100.0	-100.0 to 0.0	%	ALWAYS			04475
1976	Speed 1	Setup::Application::Abnormal Load Detect	REAL	0.0	0.0 to 100.0	%	ALWAYS			04479
1977	Speed 2									04481
1978	Speed 3									04483
1979	Speed 4									04485
1987	Load 1	Setup::Application::Abnormal Load Detect	REAL	0.0	0.0 to 100.0	%	ALWAYS			04501
1988	Load 2									04503
1989	Load 3									04505
1990	Load 4									04507

PNO	Name	Path(s)	Type	Default	Range	Units	WQ	View	Notes	MBus
1997	Load Monitoring State	Monitor::Application::Abnormal Load Detect	USINT (enum)	0	0:MONITORING DISABLED 1:MONITORING STOPPED 2:MONITORING STARTING 3:LOAD NORMAL 5:LOAD LOW WARNING 7:LOAD LOW FAULT		ALWAYS			04521
1998	Expected Load	Monitor::Application::Abnormal Load Detect	REAL	0.0	0.0 to 100.0	%	NEVER			04523
2002	Event Days 1	Setup::Application::Time Of Day Timer	BYTE (bitfield)	00	0:Sunday 1:Monday 2:Tuesday 3:Wednesday 4:Thursday 5:Friday 6:Saturday		ALWAYS			04531
2003	Event Days 2									04533
2004	Event Days 3									04535
2005	Event Days 4									04537
2006	Event Days 5									04539
2007	Event Days 6									04541
2008	Event Days 7									04543
2009	Event Days 8									04545
2013	Event Time Of Day 1	Setup::Application::Time Of Day Timer	TIME_OF_DAY	0:00:00	0:00:00 to 23:59:59		ALWAYS			04553
2014	Event Time Of Day 2									04555
2015	Event Time Of Day 3									04557
2016	Event Time Of Day 4									04559

PNO	Name	Path(s)	Type	Default	Range	Units	WQ	View	Notes	MBus
2017	Event Time Of Day 5									04561
2018	Event Time Of Day 6									04563
2019	Event Time Of Day 7									04565
2020	Event Time Of Day 8									04567
2024	Event Select 1									04575
2025	Event Select 2									04577
2026	Event Select 3									04579
2027	Event Select 4	Setup::Application::Time Of Day Timer	USINT	0	0 to 7		ALWAYS			04581
2028	Event Select 5									04583
2029	Event Select 6									04585
2030	Event Select 7									04587
2031	Event Select 8									04589
2034	Selected	Monitor::Application::Time Of Day Timer	USINT				NEVER			04595
2035	Day Of Week Now	Monitor::Application::Time Of Day Timer	USINT (enum)	0	0:SUNDAY 1:MONDAY 2:TUESDAY 3:WEDNESDAY 4:THURSDAY 5:FRIDAY 6:SATURDAY		NEVER			04597
2037	Active Event	Monitor::Application::Time Of Day Timer	USINT	0	0 to 6		NEVER			04601
2038	Setpoint Input Max	Setup::Application::Reference	REAL	100.00	-200.00 to 200.00		ALWAYS			04417
2039	Setpoint Input Min	Setup::Application::Reference	REAL	0.00	-200.00 to 200.00		ALWAYS			04419

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