The StateCheck Driver

The StateCheck driver monitors digital states and counts the times the states change. It also records the length of time the states were active. Limits can be used to indicate out-of-bound counts and times for each period. Available for Commander and ObSys.

This document relates to StateCheck driver version 1.0

Please read the *Commander Manual* or *ObSys Manual* alongside this document, available from *www.northbt.com*

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Purpose of StateCheck Driver

The StateCheck driver contains up to 30 'checkers', which each hold a digital state and associated counts and times detailed below. These are monitored to calculate acceptable performances, which are then recorded.

The driver is used for monitoring, analysing, and recording changes of digital states (typically alarm states or events) to determine acceptable behaviour within time-periods.

Each checker contains a digital state (0 or 1 value) and counts the changes to this state over a pre-defined period. It also counts the seconds (time) that the state is 1 during the period.

The current period's count and time are available, and the checker also records the count and times for the previous 48 periods.

The period for each checker can be selected between hourly and yearly.

The engineer can specify acceptable lower and upper counts for a period, and lower and upper times for a period. The checker then records whether the counts and times for a period were acceptable.

Values

The digital states within the StateCheck driver are available, as well as totals, timings and acceptance for the current and previous periods.

Prerequisites

None.

Detailed Operation

The StateCheck driver contains 30 checker channels, each of which monitors, analyse and records a single digital state.

For each 'checker' channel, the engineer specifies a label, a period, and acceptable high and low levels for the counter and the timer.

Some other task (for example some ObVerse - North's programming language, a transfer, or a destination object of Zip) writes a digital state (0 or 1) into a channel. If the written state changes from 0 to 1, the checker increments the count for the current period. For each second the state is at 1, the checker increments its seconds timer.

When the period ends, the checker compares the period's count and time with the acceptable limits and determines whether the state changes within the period were acceptable. The checker than records the period's count, time, and acceptability in a 48-period history, zeros the new periods counts and times, and monitoring the new period data.

Using the Driver

On ObSys and Commander the StateCheck driver is pre-installed. Once started, you will need to set up the driver before periodic recording begins.

Starting the Interface

🖥 To start an interface using the StateCheck driver, follow these steps:

→ **Start Engineering** your North device using ObSys

→ Navigate to **Configuration, Interfaces,** and set an unused **Interface** to 'StateCheck' to start the particular interface

→ Navigate to the top-level of your North device and re-scan it

The driver setup object (M*c*), labelled **StateCheck Setup**, should now be available.

Setting up the Driver

🖥 To set up the driver, follow these steps:

→ Navigate to the **StateCheck Setup** object (M*c*). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'

→ For each required Checker, set the **Label** and **Record Rate**, and acceptable periodic limits if there are any.

→ Navigate to the **StateCheck Values**, then set or clear the **State** – this object is typically written to by another task within the system.

→ Check that as the **State** is changed, the **Count so far this period** and **Seconds so far this period** values change

Checking Communications

This device does not communicate at all, it just records values for other tasks.

Object Specifications

Once an interface is started, one or more extra objects become available within the top-level object of the device. As with all North objects, each of these extra objects may contain sub-objects, (and each of these may contain sub-objects, and so on) - the whole object structure being a multi-layer hierarchy. It is possible to navigate around the objects using the ObSys Engineering Software.

Each object is specified below, along with its sub-objects.

Device Top-Level Objects

When an interface is started using the StateCheck driver, the objects below become available within the top-level object of the device. For example, if interface 1 is started, then the object reference 'M1' becomes available.

Description	Reference	Type
StateCheck Setup Set up the StateCheck driver, started on interface c (c is the interface number)	Mc	Fixed Container: On the Commander platform this will be *[CDM v20\StateCheck v10]* On the ObSys platform this will be *[OSM v20\StateCheck v10]*
StateCheck Values	Sc	Fixed Container: *[StateCheck v10]*

StateCheck Setup

Object Type: [OSM v20\StateCheck v10]
Object Type: [CDM v20\StateCheck v10]

The StateCheck driver contains the following objects:

Description	Reference	Type
Device Label The label to report when the StateCheck system is scanned by other devices	DL	Obj\Text; Adjustable; Max chars: 20
Checker *x* Checker *x*, where *x* is in the range 1..30	C*x*	Fixed container: *[StateCheck v10\CheckSetup]*

Checker Setup

Object Type: [StateCheck v10\CheckSetup]

A StateCheck Setup object defines the operation of a StateCheck Checker and contains the following objects:

Description	Reference	Type
Label The label to for the Checker	L	Obj\Text; Adjustable; Max chars: 20
Check Period The period that the Checker operates over.	R	Obj\ENum; Adjustable; Range 0..4 where: 0=None, 1=Hour, 2=Day, 3-Month, 4=Year, 5=Minute
Counter: Low Limit Acceptable low limit for the count over the period	CL	Obj\Num; Adjustable; Range 0..1000000
Counter: High Limit Acceptable high limit for the count over the period	CL	Obj\Num; Adjustable; Range 0..1000000
Timer: Low Limit (s) Acceptable low limit for the timer over the period, in seconds	CL	Obj\Num; Adjustable; Range 0..1000000
Timer: High Limit Acceptable high limit for the timer over the period, in seconds	CL	Obj\Num; Adjustable; Range 0..1000000

StateCheck Values

Object Type: [StateCheck v10]

This object contains the operational values of the StateCheck driver. It contains the following objects:

Description	Reference	Type
Checker *x* Checker *x* information, where *x* is in the range 1..30	C*x*	Fixed container: *[StateCheck v10\Check]*

Checker Information

Object Type: [StateCheck v10\Check]

A Checker object contains the following objects:

Description	Reference	Type
Label The label to for the Checker	L	Obj\Text; Max chars: 20
Check Period The period that the Checker operates over.	R	Obj\ENum; Range 0..4 where: 0=None, 1=Hour, 2=Day, 3-Month, 4=Year, 5=Minute
Current State The current state of the checker. This object is written to by other tasks	S	Obj\NoYes; Adjustable
Count so far this period The current count of state changes so far this period	C	Obj\Num; Range 0..1000000
Period x Information about a previous Period, where x is in the range 1..48. Period 1 contains the latest period, Period 48 contains the oldest period.	Px	Fixed container: *[StateCheck v10\PeriodInfo]*

Period Info

Object Type: [StateCheck v10\PeriodInfo]

A Period Info object contains information about a previous period of operation, and contains the following objects:

Description	Reference	Type
Period The period that the Information relates to	P	Obj\Text; Max chars:20
Count in Period A Count of the 0-to-1 transitions that occurred within the period	C	Obj\Num; Range 0..100000;
Seconds in Period A Count of the seconds that the state was equal to 1 within the period	S	Obj\Num; Range 0..100000;
Minutes in Period A Count of the minutes that the state was equal to 1 within the period	M	Obj\Num; Range 0..100000;
Hours in Period A Count of the hours that the state was equal to 1 within the period	H	Obj\Num; Range 0..100000;
Days in Period A Count of the days that the state was equal to 1 within the period	D	Obj\Num; Range 0..100000;
Out-of-limits Whether the count or timer was out-of-limits for the period	A	Obj\NoYes

Driver Versions

Version	Build Date	Details
1.0	6/8/2018	Driver released

Next Steps…

If you require help, contact support on 01273 694422 or visit *www.northbt.com/support*

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