FAQ information

MICROMASTER 4 & SINAMICS G120

Definition of the terms CT / VT and HO / LO
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1 Description

The terms CT & VT and HO & LO are used in relation to drive inverter overload capability in Siemens documents such as Catalogues or Operating Instructions. The use and significance of these abbreviations is explained below. They are not standard and may be used differently by other manufacturers.

1.1 What does CT and VT mean?

The VT and CT terms are used for the MICROMASTER series.

VT stands for Variable Torque.

CT stands for Constant Torque.

1.2 What does HO and LO mean?

The LO and HO terms are used for the SINAMICS series.

LO stands for Low Overload.

HO stands for High Overload.

Low overload capability or variable torque

Typically, drive inverters with a LO or VT characteristic, have an overload capability of 1.1 * rated output current for 60s, in a cycle time of 300s, or of 1.4 * rated output current for 3s in a cycle time of 300s.

Applications

Drives with a load characteristic M ~ n², e.g. blowers and pumps, only require the full torque at the rated speed, generally f_{max}. Increased starting torques and higher load surges are not expected for these types of loads. This is why the drive inverter does not require a high overload capability.

Selection criteria and notes

The load of a fan increases proportionally to the square of the speed. This is why the motor and drive inverter should be dimensioned so that at the rated operating point, the motor current at full torque corresponds to the continuous drive inverter output current.
A simplified fan characteristic is shown in the diagram.

**High overload capability or constant torque**

Typically, drive inverters with a HO or CT characteristic, have an overload capability of 1.5 * rated output current for 60s, in a cycle time of 300s, or of 2 * rated output current for 3s in a cycle time of 300s.

**Applications**

Drives with a load characteristic M = constant, require the full torque over the complete speed bandwidth. Increased starting torques and load surges are also expected for these types of applications. This is why the drive inverter must have a higher overload capability.

**Selection criteria and notes**

For drives with load characteristic M = constant, motors and drive inverters are selected so that the motor current at the full torque, corresponds to the continuous drive inverter output current, over the complete speed bandwidth.
2 Overload capability of several drive inverters

Additional data is provided in the appropriate documentation.

Drive inverters with variable torque (VT)

MICROMASTER 430
Overload capability of the MM430:

- 7.5 kW to 90 kW, 1.1 * rated output current for 60s, in a cycle time of 300s, or of 1.4 * rated output current for 3s in a cycle time of 300s.
- 110 kW to 250 kW, 1.1 * rated output current for 60s, in a cycle time of 300s, or of 1.5 * rated output current for 3s in a cycle time of 300s.

MICROMASTER 440
The overload capability of the MM440, according to VT conditions, is for units from:

- 7.5 kW to 90 kW, 1.1 * rated output current for 60s, in a cycle time of 300s, or of 1.4 * rated output current for 3s in a cycle time of 300s.
- 110 kW to 250 kW, 1.1 * rated output current for 60s, in a cycle time of 300s, or of 1.5 * rated output current for 3s in a cycle time of 300s.

SINAMICS G120
The overload capability of the G120 with Power Module 240 (PM240), according to VT conditions, is for units from:

- 7.5 kW to 90 kW, 1.1 * rated output current for 60s, in a cycle time of 300s, or of 1.4 * rated output current for 3s in a cycle time of 300s.

Drive inverters with low overload capability (LO)

SINAMICS G110
The overload capability of the G110 is 1.5 * rated output current for 60s, followed by a reduction to 0.85 * rated output current for 240s, in a cycle time of 300s.
Overload capability of several drive inverters

Definition of the terms CT / VT and HO / LO

MICROMASTER 4 & SINAMICS G120

MICROMASTER 420
The overload capability of the MM420 is 1.5 * rated output current for 60s, in a cycle time of 300s.

Drive inverters with high overload capability (HO) or constant torque (CT)

SINAMICS ET200S FC
The overload capability of the ET200S FC with ICU or ICU-F is 1.5 * rated output current for 60s in a cycle time of 300s; or 2 * rated output current for 3s in a cycle of 300s.

MICROMASTER 440
The overload capability of the MM440, according to CT conditions is, for units from:
- 7.5 kW to 75 kW, 1.5 * rated output current for 60s in a cycle time of 300s; or 2 * rated output current for 3s in a cycle time of 300s.
- 90 kW to 200 kW, 1.36 * rated output current for 60s in a cycle time of 300s; or 1.6 * rated output current for 1s in a cycle time of 300s.

SINAMICS G120
The overload capability of the G120 with Power Module 240 (PM240), according to CT conditions, is for units from:
- 7.5 kW to 75 kW, 1.5 * rated output current for 60s in a cycle time of 300s; or 2 * rated output current for 3s in a cycle time of 300s.