

# SIEMENS



## LMV52... with MM440 Variable Speed Drive

### User Documentation



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# 1 Safety notes

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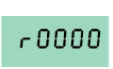








It is important to read the Siemens «Micromaster 440 Operating Instructions» (6SE6400-5AW00-0BP0) and ensure the MM440 is correctly installed complying with appropriate Regulatory Authorities before attempting to commission the MM440 Variable Speed Drive.

For more detailed information, refer to the relevant Data Sheet (N7550) and the Basic Documentation (P7550).

## 2 Parameters

### 2.1 The following MM440 parameters are required to be entered

The table below describes the functions of the key pad (BOP / AOP) on the front of the MM440 Variable Speed Drive to enable the parameters to be entered.

	<b>Indicates status</b>	The LCD displays the settings currently used by the Variable Speed Drive		<b>Start motor</b>	This button is disabled by default setting - see P0700
	<b>Change direction</b>	Press this button to change the direction of the motor		<b>Stop motor</b>	This button is disabled by default setting - see P0700
	<b>Jog motor</b>	The LCD displays the settings currently used by the Variable Speed Drive		<b>Increase value</b>	Pressing this button increases the displayed value
	<b>Access parameters</b>	Pressing this button allows access to the parameters		<b>Decrease value</b>	Pressing this button decreases the displayed value
	<b>Functions</b>	This button can be used to view additional information. Pressing this button for 2 seconds will return to operating screen. Quit: This button will reset a fault or alarm message on the BOP / AOP			

#### 2.1.1 Perform quick commissioning

Parameter	No.	Setting	Description
1 Start quick commissioning	P0010	1	Quick commissioning
<b>Note:</b> P0010 must always be set back to «0» before operating the motor. However, after commissioning if P3900 = 1, this is done automatically.			
2 Operation for Europe / US	P0100	0	Frequency default 50 Hz
3 Rated motor voltage	P0304	?	Nominal motor voltage (V) from rating plate
4 Rated motor current	P0305	?	Nominal motor current (A) from rating plate
5 Rated motor power	P0307	?	Nominal motor power (kW) from rating plate
6 Rated motor frequency	P0310	?	Nominal motor frequency (Hz) from rating plate
7 Rated motor speed	P0311	?	Nominal motor speed (rpm) from rating plate
8 Command source	P0700	2	Terminal / digital inputs
9 Frequency setpoint	P1000	2	Analog setpoint
10 Min. motor frequency	P1080	0	Sets the minimum motor frequency
11 Max. motor frequency	P1082	52.6	Sets the maximum motor frequency irrespective of setpoint
12 Ramp-up time	P1120	40	Time taken for motor to accelerate from standstill to maximum motor frequency - (must be less than LMV5...)
<b>Note:</b> The «Ramp-up time» must be the same value as the «Ramp-down time».			
13 Ramp-down time	P1121	40	Time taken for motor to decelerate from maximum motor frequency to standstill - (must be less than LMV5...)
<b>Note:</b> For setting the «Ramp-down time», it is important to set a time that will not cause the drive to fault with too high DC-link voltage (F0002 error). «This can be achieved by monitoring the DC-link voltage displayed on the BOP / AOP».			

Parameter	No.	Setting	Description
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14 End quick commissioning P3900 1 End quick commissioning with motor calculation and factory reset (recommended)

**Note:** It is recommended to set «P3900 = 1» for «End quick commissioning»

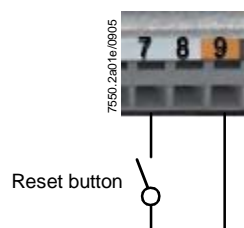
**After performing quick commissioning continue with entering the following MM440 parameters.**

15 Parameter level access P0003 3 Expert level 3  
 16 Display selection P0005 32 Act. motor power kW or «752» displays analog input  
 17 Variable Speed Drive application P0205 1 Variable torque (fan applications)  
 18 Line voltage P0210 400 V Supply voltage Europe  
 415 V Supply voltage Australia

19 Variable Speed Drive RE-SET:

Manual reset of the MM440 is performed via terminals «7 & 9» via an external reset button.

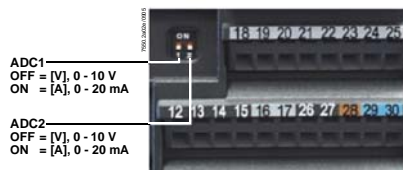
This is not mentioned in the LMV5... electrical connection diagram.



Function digital input 3 P0703 9 Fault acknowledge (default)

20 Scaling P0756 2 Unipolar current input (0...20 mA)  
 P0757 4 mA Minimum current input  
 P0758 0 % Minimum frequency  
 P0759 20 mA Maximum current input  
 P0760 100 % Maximum frequency  
 P0761 4 mA Dead band

21 Configure «Analog Input - 1» (ADC1) for current input: 0...20 mA via DIP switches described below:



22 Flying start P1200 4 Flying start always active, start in the direction of set-point

23 Motor current flying start P1202 140 Defines the search current used for flying start, default = 100

24 Automatic restart P1210 1 Trip reset after power on - (default)

25 Linear characteristics P1300 0 V / f with linear characteristics

26 Rev. output phase sequence P1820 0 Off (default), to change motor direction set value to = 1  
**Note:** If motor is running in the wrong direction as an alternative to changing wiring set «P1820 = 1»

27 Reference frequency P2000 52.6 Reference frequency for analog «input 1»

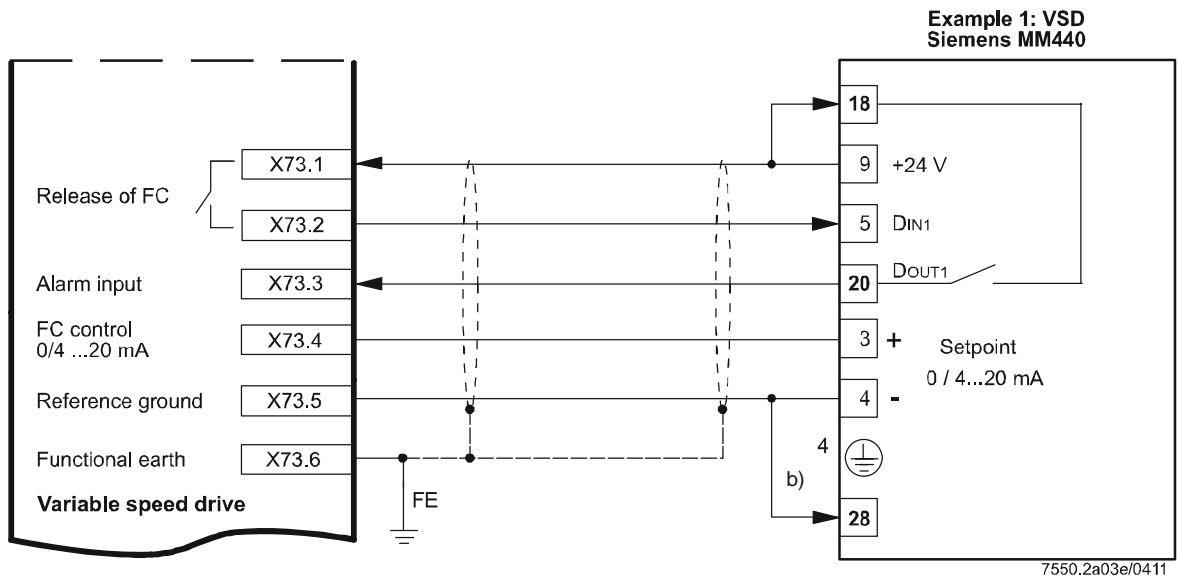
**Note:** The following parameters are only necessary if the motor «thermistors» are connecting to the Variable Speed Drive via MM440 terminals «14 & 15» - PTC sensor.

Parameter	No.	Setting	Description	
28	Motor temp. sensor	P0601	1	PTC thermistor (check motor sensor for compatibility)
29	Motor temp. reaction	P0610	2	Warning, no reaction, trip F0011 (default)
30	Activate «AOP» to automatically display run screen			
	Upon powering up the Variable Speed Drive with AOP, perform the following:			
	*	Simultaneously press <Fn> & <P> key to enter main menu		
	*	Enter on «SETUP»		
	*	Enter on «Start Help»		
	*	Change to «OFF» and store parameter		

**It is NOT necessary to change the remaining MM440 default parameter settings unless for reasons particular to the motor / fan combination or site conditions!**

### 3 LMV5... section

#### 3.1 Electrical connection between LMV5... and Siemens MM440 Variable Speed Drive



**Note:** Ensure the speed feedback sensor «AGG5.310» has been installed correctly on the motor according to Mounting Instructions «M7550» and the LMV5... Basic Documentation (P7550en).



## 3.2 The following LMV52... parameters must be entered

1. Menu level 1 - enter on «Params & Display»
2. Enter on «Access OEM» the password **START** - then press «Enter» again to access OEM parameters

### **Activating Variable Speed Drive (VSD)**

1. Menu level 2 - enter on «RatioControl»
2. Menu level 3 - enter on «GasSettings» or «OilSettings»  
**Note:** The settings below have to be adjusted for all fuels which are actually used
3. Menu level 4 - enter on:
  - \* VSD = (set - «air influence»)

### **Special positions**

1. Menu level 2 - enter on «RatioControl»
2. Menu level 3 - enter on «GasSettings» or «OilSettings»  
**Note:** The settings below have to be adjusted for all fuels which are actually used
3. Menu level 4 - enter on «Special Positions»
4. Menu level 4 - enter on:
  - \* Home pos. (set - «HomePosVSD» = 0 %)
  - \* Prepurge pos. (set - «PrepurgePosVSD» = 100 %)
  - \* Ignition pos. (set - «IgnitionPosVSD» = 50 %)
  - \* Postpurge pos. (set - «PostpurgePosVSD» = 75 %)

### **VSD module**

1. Menu level 1 - enter on «Params & Display»
2. Menu level 2 - enter on «VSD Module»
3. Menu level 3 - enter on «Configuration»
4. Menu level 4 - enter on «Speed»
5. Menu level 5 - enter on:
  - \* Num pulse per R = 3 - *default*
  - \* Setpoint output = 4...20 mA - *default (must match analog input setting in VSD)*
  - \* Standardization = activated

**Note:** During «Standardization», the LMV5... will first drive the air damper fully open and then drive the VSD to full frequency to obtain maximum motor SPEED, which is stored under parameter «Standardized Speed».

**Note:** During «Standardization», the LMV5... you can check the correct mounting of the feedback sensor.

1. Back to menu level 4 – ESC
2. Back to menu level 3 – ESC
3. Menu level 3 - enter to «Process Data»
4. Menu level 4 - enter to «Absolute Speed»
5. The maximum speed should not vary more than 5 rpm during 10 seconds

**Note:** It is important to set the MM440 «ramp-up & ramp-down» times less than the times set in the LMV5... parameters «OperatRampMod» & «TimeNoFlam». (i.e. LMV5... times = 50 seconds - VSD ramp times = 40 seconds)

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