

## **MACCON SWM7 – Motor Controller – next generation of**

**High performance, high power, high reliability Servo Controllers for 12 to 600V operation and up to 30kW continuous power**



*SWM7S/048-50-CT/ET*



*SWM7 Version with extra I/O*



*SWM7S/600-40-AC+SWM7G/MB*

The **SWM7** (Sine-Wave commutated servo Module family) represents the culmination of 20 years of development and application experience in industrial, military and vehicle servo systems. The SWM7 motor controller offers all the benefits of modern digital and power electronics technology. Special features of this advanced motor controller are:

- power stage for DC-brush, 2, 3-phase brushless DC and AC-induction motors
- wide voltage supply ranges (12-60V, 12-350V, 24-650V), 24V aux. supply
- commercial (-CT), extended (-ET) temperature and MIL-types (-MT) available
- field-oriented motor control with field weakening capability
- fully adjustable PID-control with feed-forward
- high-efficiency PWM (adjustable 15, 20, 25, 40, 50kHz) with parallel modulation
- extremely fast control loop update rate, synchronous to PWM  
(e.g. 40 kHz PWM: current loop 80 kHz, velocity loop 40 kHz, position loop 10 kHz)
- current/voltage/feedback sensor resolution 16bit, velocity 32bit float, position 48bit
- +/-10V analog interface (2x) for U/V-current, torque or speed control, logic interlocks
- Ethernet and CANbus-interface, also for positioning purposes (optional)
- RS232, CAN, USB communication ports
- Customized CAN communication profiles available
- sine-wave or block commutation using Hall-effect, resolver or encoder f/b, sensorless
- velocity feedback via DC-tachometer, resolver, encoder or Hall-effect devices
- simultaneous usage of up to 3 feedback devices
- 100% digital set-up of drive parameters including current loops
- multiple digital and analog I/O's
- connector panel adaptable to special connectivity requirements - SWM7 version
- shorter housing version available (only 65mm high) – SWM7S
- contact cooling through base plate; high power versions air (-AC) or water (-WC) cooled
- parameter monitoring and configuration via the USB/RS232-interface
- PC set-up software under MS-Windows
- accordant to CE, MIL-STD-810, -461/462, -1275B (48V versions) etc.
- high reliability, 20,000hrs to MIL-HDBK- 217F (NS-naval sheltered)

## LWM7S

A drive version with a linear (non-switching) power stage is available in the same housing and with the same motor and control interface configurations as the SWM7. The **LWM7S** has excellent linearity around zero current, unsurpassed EMC-characteristics and no PWM-jitter.

It is ideal for critical applications in science and medicine as well as in semiconductor and magnetically sensitive environments, e.g. for positioning with sub-nanometer resolutions.

### Models of the SWM Controller Family (-CT, commercial temp. range)

LWM7S/048-05      12-60V/5 Arms      0 to 45°C      *no LWM7, no -ET version*

SWM7(S)/048-12.5-CT    12-60V/12.5 Arms    0 to 45°C

SWM7(S)/048-25-CT    12-60V/25 Arms      0 to 45°C

SWM7(S)/048-50-CT    12-60V/50 Arms      0 to 45°C

SWM7(S)/150-05-CT    12-330V/5 Arms      0 to 45°C

SWM7(S)/150-12.5-CT   12-330V/12.5 Arms   0 to 45°C

SWM7(S)/150-25-CT    12-330V/25 Arms     0 to 45°C

SWM7(S)/048-100-CT   12-60V/100 Arms     0 to 45°C

SWM7(S)/300-05-CT    24-475V/5 Arms      0 to 45°C

SWM7(S)/300-12.5-CT   24-475V/12.5 Arms   0 to 45°C

SWM7(S)/300-25-CT    24-475V/25 Arms     0 to 45°C

SWM(7S)/600-05-CT    24-660V/5 Arms      0 to 45°C

SWM(7S)/600-12.5-CT   24-660V/12.5 Arms   0 to 45°C

SWM(7S)/600-25-CT    24-660V/25 Arms     0 to 45°C

SWM(7S)/600-50-CT    24-660V/50 Arms     0 to 45°C      *70Arms version (peak=cont.)*

SWM7/ versions      with additional I/O connections; height +25mm

Option ...-ET      extended temperature range      -40 to +65°C

Option ...-MT      as -ET, with conformal coating etc.      -40 to +65°C

Option... -AC      Forced air cooling (water cooling option for 300/600V controllers, -WC)

SWM7/TB      SWM7 Test box with cable      *under development*

SWM7/FBM      Front base mounting plate (width +30mm, height +6mm)

SWM/PSU-xxx- ET      Power supply unit (xxx= nominal bus voltage)      -40 to +65°C

PSU-600-45-R-ET      Power supply unit (with regeneration protection)      -40 to +65°C

SWM7G/MB, SWM7/MB      Mounting brackets, large and small (for -AC option only)

*The current values given are continuous or RMS phase current ratings. A peak current of two-times continuous is available for 2 secs.*

*All drives have I<sup>2</sup>t-protection*

### Mechanical Data

The SWM/LWM modules are mounted on a base plate and are completely sealed. Main connections are made via military-style Sub-D or screw connectors. Dimensions are:

	<b>LWM7S</b>	<b>SWM7S/048-xx</b> <b>SWM7S/150-xx</b>	<b>SWM7S/048-100 &amp; 150</b>	<b>SWM7S/x00-12.5, 25 &amp; 50</b>
Length	188mm	188mm	188mm	217mm
Width	164mm	164mm	189mm	216mm
Height /-AC	65mm/105mm	65mm/105mm	91mm/131mm	122mm/152mm
Weight /-AC	1.5kg/3.2kg	1.65kg/3,35kg	2.3kg/4,25kg	3.25kg/5.40kg

*The controller is physically mounted by screwing the base plate to a bulkhead, from the rear. This ensures mechanical stability and optimum conduction cooling, without an additional heatsink.*

### SWM7 – „SetUp Tool“

This PC software (MS Windows compatible) has been developed for the direct configuration and monitoring of operational parameters and settings from a PC. All operating parameters are held in flash memory.

The tool is supplied free of charge.

