

AC Tech - Drives Product Guide

The Sub-Micro (SC & TC) Series

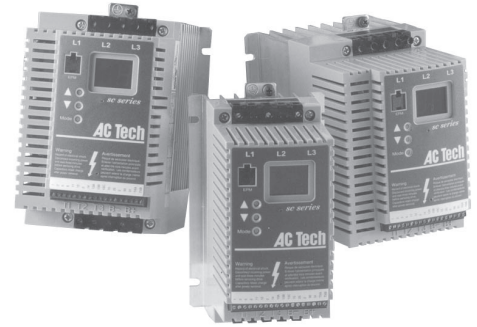
SC & TC Series drives are among the smallest and most functional sub-micro drives in the world. Designed for the global marketplace in IP20 enclosures, they are intended for panel mounting within a suitable enclosure. A "through-hole" mounting option allows for extending the anodized heatsink to the exterior of the enclosure.

The SCF Series offers a wide power range and input voltage capability. It's 18 control terminals provide many advanced functions including RS485 serial communications over Modbus RTU.

For lower power applications, the SCL Series (up to 3 Hp/2.2 kW) and SCM Series (up to 5 Hp/4 kW) offer 11 control terminals, including a programmable Form A relay for status indication. The SCL includes a built-in filter to meet the strict European CE standards.

The SCD Series is a full-featured drive that is also DeviceNet compatible. One of the many benefits of this drive is that it retains its LED display when using the DeviceNet interface.

The TCF Series includes Sensorless Vector control algorithms to that produces 100% Torque down to 1Hz output frequency to the motor. With all of the control flexibility of the SCF, the TCF provides improved speed regulation and over-torque capability.



The Micro (MC) Series

The MC Series micro-drives are compact, low cost drives available in steel enclosures rated from NEMA 1 to stainless NEMA 4X (IP21 to IP65). Featuring "plain English" displays and programming, the MC Series is the drive that speaks your language.

MC1000 and MC3000 Series drives are rated for constant torque applications. The MC1000 can be used for bi-directional applications, while the MC3000 is ready for applications that require set-point control using the built-in PID feature.

The MCH is a variable torque drive for HVAC applications and is available with options such as bypass, line reactor, and input disconnect or circuit breaker. The MCH also includes PID Setpoint Control as a standard feature.

The High HorsePower (QC) Series

QC Series drives are the workhorse for industrial and commercial applications. The QC Series incorporate a large 2-line backlit LCD display and are available for all standard power sources from 200V through 590V.

QC1000 and QC2000 Series drives are designed for general purpose constant torque applications, while the QC3000 is for variable torque loads such as HVAC and pumping applications. The QC Series is available with options such as bypass, line reactor, and disconnect.



STANDARD FEATURES ON ALL AC TECH DRIVES

Agency Approvals: UL, cUL, CSA

Electrical/Environmental Specs:

- Input Voltage Tolerance: +10/-15%
- Input Frequency Tolerance: 48 to 62 Hz
- Storage Temperature: -20 to 70 C
- Humidity (non-condensing): 95%
- Altitude (without derating): 1000m (3300 feet)
- Efficiency: 97% or better
- Power Factor (displacement): 0.96

Interface Features

- Front Mounted Keypad/Display
- Customer Terminal Strip
- TechLink Compatible

Parameters/Functions

- Independent Accel/Decel
- Coast or Ramp to Stop
- Automatic Restart
- V/Hz Adjustment
- DC Braking with Adjustable Voltage and Time
- Critical Frequency Lockout
- Current (Torque) Limit
- Carrier Frequency Adjustment
- Voltage Boost
- Jog
- Preset Speeds
- Min and Max Frequency limits

Protection Features:

- Input Phase Insensitive
- Over and Under voltage
- Line Surge/Transient
- Output Short Circuit
- Output Ground Fault
- Overtemperature
- Motor Overload
- External Fault input
- Password for Parameters
- Fault History/Diagnostics

SC AND TC SERIES PRODUCT FEATURE DIRECTORY

FEATURE DESCRIPTION	SCF	SCD	SCL / SCM	TCF
GENERAL DESIGN FEATURES				
RATINGS & SPECIFICATIONS				
INPUT VOLTAGE / HP RANGE	N/A	N/A	0.33 - 1.5 Hp (0.25 - 1.1 kW)*	N/A
120 Vac	0.25 - 20 Hp (0.18 - 15 kW)	0.25 - 20 Hp (0.18 - 15 kW)	0.33 - 5 Hp (0.25 - 4 kW)	0.5 - 20 Hp (0.37 - 15 kW)
208/240 Vac	0.5 - 25 Hp (0.37 - 18.5 kW)	0.5 - 25 Hp (0.37 - 18.5 kW)	0.5 - 5 Hp (0.37 - 4 kW)*	0.5 - 25 Hp (0.37 - 18.5 kW)
400/480 Vac	1 - 25 Hp (0.75 - 18.5 kW)	1 - 25 Hp (0.75 - 18.5 kW)	N/A	1 - 25 Hp (0.75 - 18.5 kW)
480/590 Vac				
OUTPUT FREQUENCY	0-240 Hz (1000 Hz option)	0 - 240 Hz	0 - 240 Hz	0 - 240 Hz
OVERLOAD CAPACITY (1 MINUTE)	150%	150%	150%	150%
TORQUE RATING	CONSTANT	CONSTANT	CONSTANT	CONSTANT
DRIVE TYPE	V/Hz	V/Hz	V/Hz	VECTOR (sensorless)
AMBIENT TEMPERATURE	0 to 50 C	0 to 50 C	0 to 40 C	0 to 40 C
ENCLOSURE TYPES				
IP20 (CHASSIS)	STANDARD	STANDARD	STANDARD	STANDARD
THRU-HOLE MOUNTING	OPTION	OPTION	OPTION	OPTION
PERFORMANCE FEATURES				
PI SETPOINT CONTROL	OPTION	N/A	N/A	N/A
SLIP COMPENSATION	STANDARD	STANDARD	STANDARD	STANDARD
REVERSE ROTATION	STANDARD	STANDARD	STANDARD	STANDARD
DYNAMIC BRAKING	OPTION	OPTION	OPTION	OPTION
2nd ADJUSTABLE ACCEL/DECEL	STANDARD	STANDARD	STANDARD	N/A
2nd STOP COMMAND (eg. FAST STOP)	STANDARD	STANDARD	STANDARD	N/A
RE-START INTO SPINNING MOTOR	STANDARD	STANDARD	STANDARD	STANDARD
EMI/RFI FILTER	OPTION (FOOTPRINT)	OPTION (FOOTPRINT)	SCL: STANDARD SCM: OPTION	OPTION (FOOTPRINT)
INPUT/OUTPUT INTERFACE FEATURES				
SPEED REFERENCE INPUTS				
KEYPAD	STANDARD	STANDARD	STANDARD	STANDARD
POTENTIOMETER	STANDARD	STANDARD	STANDARD	STANDARD
4-20 mA	STANDARD	STANDARD	STANDARD	STANDARD
0-10 VDC	STANDARD	STANDARD	STANDARD	STANDARD
MOTOR OPERATED POT (MOP)	STANDARD	STANDARD	STANDARD	STANDARD
PRESET SPEEDS	7	7	7	7
ANALOG OUTPUTS				
0-10 VDC: SPEED or LOAD	STANDARD	STANDARD	N/A	STANDARD
2-10 VDC: SPEED or LOAD*	STANDARD	STANDARD	N/A	STANDARD
DIGITAL OUTPUTS				
PROGRAMMABLE STATUS INDICATIONS (eg. RUN, FAULT, AT SPEED, etc)	STANDARD	STANDARD	STANDARD	STANDARD
FORM C RELAY OUTPUTS	N/A	N/A	1 (Form A)	N/A
OPEN-COLLECTOR OUTPUTS	2	2	1	2
12 VDC POWER SUPPLY FOR AUX. RELAY	STANDARD	STANDARD	STANDARD	STANDARD
KEYPAD & DISPLAY FUNCTIONS				
DISPLAY TYPE	3 DIGIT LED	3 DIGIT LED	3 DIGIT LED	3 DIGIT LED
FREQUENCY (SPEED) DISPLAY	STANDARD	STANDARD	STANDARD	STANDARD
MOTOR LOAD DISPLAY	STANDARD	STANDARD	STANDARD	STANDARD
MOTOR VOLTAGE DISPLAY	STANDARD	STANDARD	STANDARD	STANDARD
DC BUS VOLTAGE DISPLAY	STANDARD	STANDARD	STANDARD	STANDARD
SERIAL COMMUNICATIONS				
RS-232	N/A	N/A	N/A	N/A
RS-485	STANDARD	N/A	N/A	STANDARD
MODBUS PROTOCOL	STANDARD	N/A	N/A	STANDARD
METASYS PROTOCOL	N/A	N/A	N/A	N/A
DEVICENET PROTOCOL	N/A	STANDARD	N/A	N/A
REMOTE KEYPAD (NEMA 4X)	OPTION	N/A	OPTION	OPTION
EPM PROGRAMMER COMPATIBLE	STANDARD	STANDARD	STANDARD	STANDARD

* SCM Series Only

* 2-10 VDC signals can be converted to 4-20 mA by adding series resistance such that the total circuit resistance is 500 ohms.

Items in **BOLD** indicate key product differences.

MC SERIES PRODUCT FEATURE DIRECTORY

FEATURE DESCRIPTION	MC1000	MC3000	MCH
GENERAL DESIGN FEATURES			
RATINGS & SPECIFICATIONS INPUT VOLTAGE / HP RANGE 120/240 Vac 200/240 Vac 400/480 Vac 480/590 Vac OUTPUT FREQUENCY OVERLOAD CAPACITY (1 MINUTE) TORQUE RATING AMBIENT TEMPERATURE CHASSIS (IP00) NEMA 1 (IP21) NEMA 12/4/4X (IP54/65/65) ENCLOSURE TYPES CHASSIS (IP00) NEMA 1 (IP21) NEMA 12/4/4X (IP54/65/65) BYPASS (3 CONTACTOR)	0.25 - 1.5 Hp (0.18 - 1.1 Kw) 0.5 - 30 Hp (0.37 - 22 kW) 1 - 60 Hp (0.75 - 45 kW) 1 - 60 Hp (0.75 - 45 kW) 0-120 Hz (1000 Hz option) 150% CONSTANT -10 to 55 C -10 to 50 C -10 to 40 C OPTION STANDARD OPTION N/A	0.25 - 1.5 Hp (0.18 - 1.1 Kw) 0.5 - 30 Hp (0.37 - 22 kW) 1 - 60 Hp (0.75 - 45 kW) 1 - 60 Hp (0.75 - 45 kW) 0-120 Hz 150% CONSTANT -10 to 55 C -10 to 50 C -10 to 40 C OPTION STANDARD OPTION N/A	N/A 1 - 60 Hp (0.75 - 45 kW) 1 - 250 Hp (0.75 - 185 kW) 1 - 200 Hp (0.75 - 150 kW) 0-120 Hz 120% VARIABLE -10 to 45 C -10 to 40 C -10 to 40 C OPTION STANDARD OPTION OPTION
PERFORMANCE FEATURES			
PID SETPOINT CONTROL SLIP COMPENSATION REVERSE ROTATION DYNAMIC BRAKING RE-START INTO SPINNING MOTOR	N/A STANDARD STANDARD OPTION N/A	STANDARD N/A STANDARD OPTION STANDARD	STANDARD N/A STANDARD OPTION STANDARD
INPUT/OUTPUT INTERFACE FEATURES			
SPEED REFERENCE INPUTS KEYPAD 4-20 mA 0-10 VDC POTENTIOMETER MOTOR OPERATED POT (MOP) PRESET SPEEDS ANALOG OUTPUTS 0-10 VDC: SPEED or LOAD 2-10 VDC: SPEED or LOAD* DIGITAL OUTPUTS PROGRAMMABLE STATUS INDICATIONS (eg. RUN, FAULT, AT SPEED, etc) FORM C RELAY OUTPUTS 2nd FORM C RELAY OPEN-COLLECTOR OUTPUTS KEYPAD & DISPLAY FUNCTIONS DISPLAY TYPE FREQUENCY (SPEED) DISPLAY SPEED REFERENCE SOURCE DISPLAY MOTOR LOAD DISPLAY ROTATION DIRECTION DISPLAY MOTOR VOLTAGE DISPLAY ELAPSED TIME/RUN TIME METER KILOWATT-HOUR METER SERIAL COMMUNICATIONS RS-232 RS-485 MODBUS PROTOCOL METASYS PROTOCOL REMOTE KEYPAD	STANDARD STANDARD STANDARD STANDARD STANDARD 4 STANDARD STANDARD STANDARD 1 OPTION 2 16 CHAR. BACKLIT LCD STANDARD STANDARD STANDARD STANDARD STANDARD N/A N/A OPTION STANDARD STANDARD N/A	STANDARD STANDARD STANDARD STANDARD STANDARD 4 STANDARD STANDARD STANDARD 1 OPTION 2 16 CHAR. BACKLIT LCD STANDARD STANDARD STANDARD N/A STANDARD STANDARD N/A	STANDARD STANDARD STANDARD STANDARD STANDARD 4 STANDARD STANDARD STANDARD 1 OPTION (standard with Bypass) 2 (none with Bypass) 32 CHAR. BACKLIT LCD STANDARD STANDARD STANDARD N/A STANDARD STANDARD N/A

* 2-10 VDC signals can be converted to 4-20 mA by adding series resistance such that the total circuit resistance is 500 ohms.

Items in **BOLD** indicate key product differences.

QC SERIES PRODUCT FEATURE DIRECTORY

FEATURE DESCRIPTION	QC1000	QC2000	QC3000
GENERAL DESIGN FEATURES			
RATINGS & SPECIFICATIONS INPUT VOLTAGE / HP RANGE 200/240 Vac 400/480 Vac 480/590 Vac OUTPUT FREQUENCY OVERLOAD CAPACITY (1 MINUTE) TORQUE RATING AMBIENT TEMPERATURE NEMA 1/CHASSIS (IP21/00) NEMA 12/4/4X (IP54/65/65) ENCLOSURE TYPES CHASSIS (IP00) NEMA 1 (IP21) NEMA 12/4/4X (IP54/65/65) THRU-HOLE MOUNTING BYPASS (3 CONTACTOR)	1 - 60 Hp (0.75 - 45 kW) 1 - 150 Hp (0.75 - 110 kW) 1 - 150 Hp (0.75 - 110 kW) 0-120 Hz (650 Hz option) 150% CONSTANT -10 to 50 C N/A OPTION STANDARD N/A STANDARD (3 Hp and above) OPTION	1 - 60 Hp (0.75 - 45 kW) 1 - 125 Hp (0.75 - 90 kW) 1 - 125 Hp (0.75 - 90 kW) 0-120 Hz (650 Hz option) 150% CONSTANT -10 to 50 C -10 to 40 C N/A N/A STANDARD N/A OPTION (NEMA 12/IP54 ONLY)	2 - 75 Hp (1.5 - 55 kW) 2 - 250 Hp (1.5 - 185 kW) 2 - 200 Hp (1.5 - 150 kW) 0-120 Hz 120% VARIABLE -10 to 40 C N/A OPTION STANDARD N/A STANDARD (3 Hp and above) OPTION
PERFORMANCE FEATURES			
PID SETPOINT CONTROL SLIP COMPENSATION REVERSE ROTATION DYNAMIC BRAKING RE-START INTO SPINNING MOTOR	OPTION STANDARD STANDARD OPTION STANDARD	OPTION STANDARD STANDARD OPTION STANDARD	OPTION STANDARD STANDARD N/A STANDARD
INPUT/OUTPUT INTERFACE FEATURES			
SPEED REFERENCE INPUTS KEYPAD 4-20 mA 0-10 VDC POTENTIOMETER MOTOR OPERATED POT (MOP) PRESET SPEEDS ACCEL/DECEL FOR EACH PRESET SPEED ANALOG OUTPUTS 0-10 VDC: SPEED or LOAD 2-10 VDC: SPEED or LOAD* 4-20 mA: SPEED or LOAD DIGITAL OUTPUTS PROGRAMMABLE STATUS INDICATIONS (eg. RUN, FAULT, AT SPEED, etc) FORM C RELAY OUTPUTS OPEN-COLLECTOR OUTPUTS KEYPAD & DISPLAY FUNCTIONS DISPLAY TYPE FREQUENCY (SPEED) DISPLAY SPEED REFERENCE SOURCE DISPLAY MOTOR LOAD/AMPS DISPLAY ROTATION DIRECTION DISPLAY MOTOR VOLTAGE DISPLAY ELAPSED TIME/RUN TIME METER KILOWATT-HOUR METER SERIAL COMMUNICATIONS RS-232 RS-485 MODBUS PROTOCOL METASYS PROTOCOL REMOTE KEYPAD	STANDARD STANDARD STANDARD STANDARD N/A 7 STANDARD STANDARD STANDARD STANDARD STANDARD 2 1 32 CHAR. BACKLIT LCD STANDARD STANDARD STANDARD STANDARD N/A STANDARD STANDARD STANDARD OPTION STANDARD OPTION OPTION	STANDARD STANDARD STANDARD STANDARD N/A 7 STANDARD STANDARD STANDARD STANDARD STANDARD 2 1 32 CHAR. BACKLIT LCD STANDARD STANDARD STANDARD STANDARD N/A STANDARD STANDARD STANDARD OPTION STANDARD OPTION OPTION	STANDARD STANDARD STANDARD STANDARD N/A 7 STANDARD STANDARD STANDARD STANDARD STANDARD 2 1 32 CHAR. BACKLIT LCD STANDARD STANDARD STANDARD STANDARD N/A STANDARD STANDARD STANDARD OPTION STANDARD OPTION OPTION

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