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# CCS-M

## Automatic Compressor Control Panels



## Product Description:

CCS-M Automatic Compressor Control Modules are designed for complete control of screw type or reciprocating type air compressors with excellent flexibility and safety.

The control module has an integrated 2.8" colour graphic high-resolution TFT display unit, where all system variables and operational information are displayed in both graphical and alpha-numeric format. The unit has extensive built-in menu pages where operational characteristics can be configured for any application.

CCS-M control panels have a unique built-in "Parallel Running" and "Equal Aging" algorithm, which can configure any number of compressor groups to be operated based on "POWER saving", "EQUAL Aging", "FAULT Backup" modes, as well as CAPACITY based priority schedules and DEMAND based backup algorithms. CAN Bus option is used to connect required number of control modules in parallel, without the need for a master controller.

Built-in USB port allows system configuration, using license-free PC-Tools S/W package. For SCADA network connection, optional RS485 port can be added with Mod Bus protocol. For more demanding applications, add-on communication modules can be used to further extend the performance.

CCS-M control module is designed for direct start with Star-Delta installation or to interface directly with an inverter. All required parameters are available in system menu and can be set easily. With on-board digital and analogue i/o ports, the unit can be wired for any application.

in the industry. The unit also measures 3-phase mains supply voltage together with motor current to calculate the instantaneous drive load and with built-in comprehensive power management algorithm, highly critical fleet management information is provided for optimum utilisation performance of the compressors.

CCS-M control panel is designed as a compact module with high resistance against mechanical impacts. A special sealing gasket is provided behind the frame to ensure IP65 protection class from the front side. The keypad is designed with silicon-rubber technology, resistant to UV rays, which provides good touch feeling on the buttons and has a very long life, compared to standard Lexan type membrane keypads. The enclosure back side has minimum depth to allow installation into very tight cabin space. All terminals have screw type plug-in sockets for easy servicing in the field. A clear terminal description schematic is also printed on the back cover surface.

All CCS series controllers comply with EN61000 EMC emissions and Immunity standards at Class-B level. Front panel ESD protection is provided at 8KV to ensure safe operation in static electric loaded environment. CCS-M is designed to operate in over a wide temperature and humidity range, making these modules ideal control devices for harsh environments.

Firmware can be updated from remote location, and all operational data can be reached and managed from OEM network, which also makes service management very easy.

### MAIN FEATURES:

- ✓ 2.8" Colour graphic display,
- ✓ Alphanumeric and graphical presentation of all variables and alarm warnings,
- ✓ Operating temperature: -25°C to +55°C and up to 98% RH
- ✓ Multiple language selection from menu, or from website,
- ✓ 8 configurable digital inputs,
- ✓ 6 configurable digital outputs,
- ✓ 2 x temperature sense inputs (NTC, KTY, Pt100, Pt1000)
- ✓ 2 x 4-20mA pressure sensor inputs
- ✓ 3-phase voltage measurement
- ✓ 2-phase main drive motor current sensor inputs
- ✓ 1-phase blower motor current sense input,
- ✓ Optional analogue output
- ✓ Built-in parallel running algorithm, with extensive features,
- ✓ USB com port for device config,
- ✓ RS485 com port for SCADA
- ✓ CAN bus port for parallel connection,
- ✓ Optional additional CAN bus and RS485 ports,
- ✓ Compliance with EN61000-6-2 EN61000-6-4 emissions and immunity
- ✓ Safety regulations compliant to UL508 and flammability to UL94

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Technical Specifications	Value	Description
Input supply voltage:	15Vac to 35Vac 20Vdc to 50Vdc	Unit can be supplied from AC or DC isolated power sources,
Input supply frequency:	45Hz to 75Hz	Suitable for 50Hz and 60Hz utility systems
Display:	2.8" LCD Colour graphic	TFT type with high resolution, high brightness,
Keypad:	Silicone rubber	IP65 protection from the front side (with gasket)
AC power input for main motor and Fan motor:	3-phase AC supply	Up to 540Vac ph-ph voltage measurement, TRUE rms voltage reading,
AC current measurement:	2-phase main motor 1-phase fan motor	Motor current reading with power calculation and monitoring
Phase sequence detector:	3-ph phase sequence	Built in algorithm for phase direction detection
Digital inputs:	8 configurable inputs	All inputs are configurable
Analogue inputs:	4 analogue inputs	2 Temperature (NTC, KTY, Pt100 and Pt1000) 2 Pressure (4-20mA)
Digital outputs:	6 digital outputs	All outputs are configurable dry contact 6Aac relay outputs, AC3 class,
Analogue outputs:	Add-on unit	Optional analog output module connection
Communication ports:	USB2.0 Type-B	Parameter configuration (standard hardware)
	RS485 Mod BUS	On-board SCADA port (optional) Add-on port, optional for systems integration
	CAN Bus (CAN open)	Optional port for parallel connection
Operating temperature:	-10°C to +60°C	UV resistant keypad and enclosure
Storage temperature:	-25°C to +85°C	
Operating humidity:	10%RH to 97%RH	Non-condensing
EMC compatibility:	EN61000-6-2 EN61000-6-4	Class-A EMC emissions and immunity compatibility
Safety:	CATIII, 300V	UL508, UL94 flammability
Vibration & shock:	MIL810G	Transportation
Protection class:	IP65 IP00	From front side (with gasket) From back side
Overall dimensions:	165 x 129 x 45	Measurements are in mm
Panel cutout:	151 x 113	
Mounting type:	Panel mounting	With screw type retention clamps
Weight:	180gr	Approximate weight



Figure 1: CCS-M Front side view

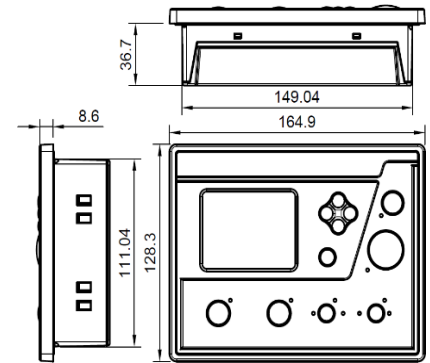
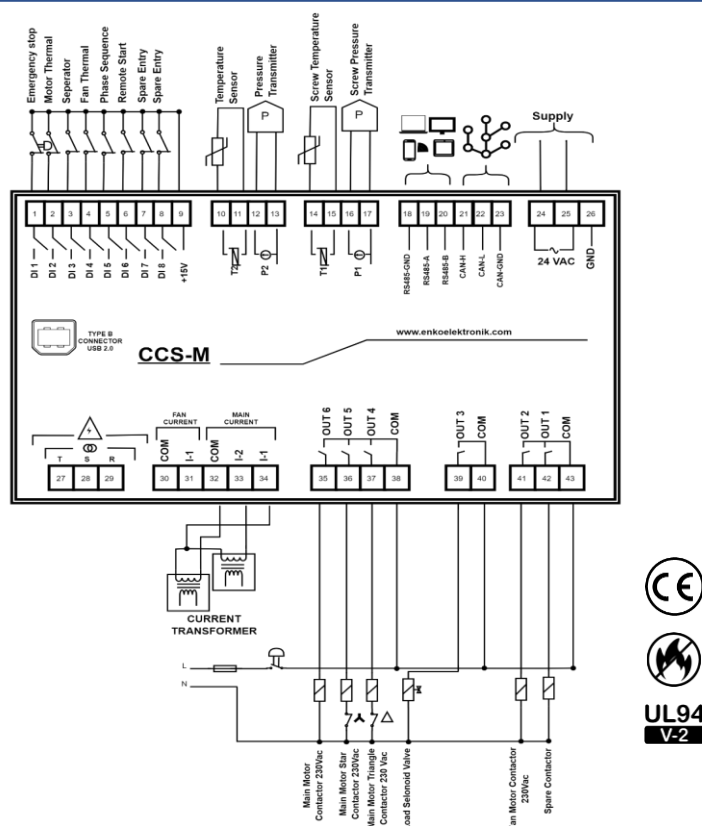


Figure 2: CCS-M Dimensions (mm)

#### Compliance:

CCS-M series compressor control panels are tested and compliant to CE regulations for emitted and conducted RFI interference, according to EN61000-6-4 class-A. Immunity is tested against EN61000-6-2. Vibration: EN60068-6-2 Dielectric strength: IEC255, Flammability: UL94, Safety: UL508

## Connection Diagram and System configuration:



#### INPUT CONFIGURATION:

- Emergency stop
- Phase sequence
- Blower thermal trip
- Motor thermal trip
- Air filter blocked,
- Separator filter blocked,
- Oil filter blocked,
- Oil pressure warning.
- Door open warning
- Remote start
- Remote loading
- Supply line switch.
- Compressor screw switch
- Low pressure warning (Booster application)

#### OUTPUT CONFIGURATION:

- Run
- Safety
- Blower
- Solenoid
- Alarm
- STAR relay
- DELTA relay
- Main input
- On-load
- No-load
- Running
- Idle
- Horn
- Dryer control
- Remote Start/Stop active,
- Dedicated optional alarm status.

All inputs and outputs can be configured, based on specific application requirements. The configuration can be set either by using the menu pages on the control panel or using PC-Tool software package, supplied as license-free accessory. Multiple language selection is possible either from the device menu or by downloading required language from ENKO web site. (www.enkoelektronik.com)