



## Informazioni

Diametro:

- 180 cm

Altezza:

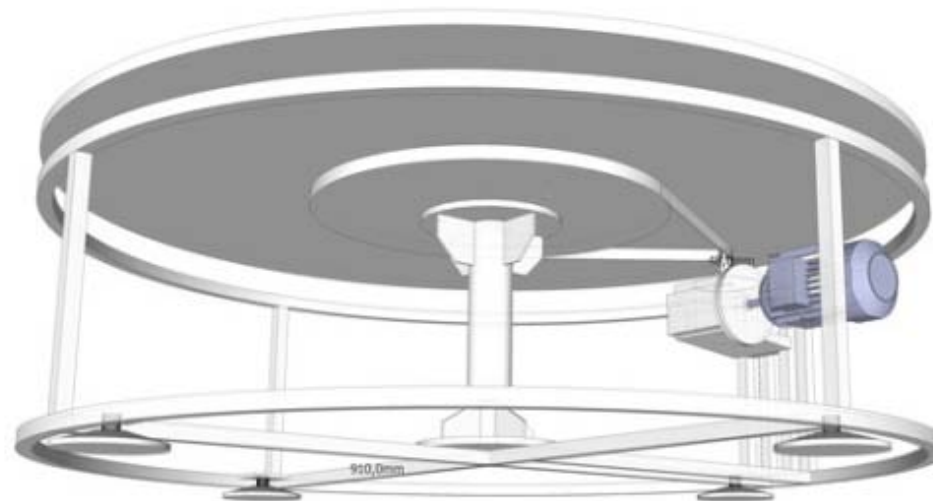
- 61 cm

Portata:

- 1.000 Kg

Peso:

- 300 Kg



COSTRUTTORE:	DOCTORSOUND di Gianluca Feliziani
ANNO:	2019
CODICE:	QEBM-INVCT-ROT180-01
TENSIONE NOMINALE:	230 Vac
CORRENTE NOMINALE MAX:	6 Amp
FATTORE DI POTENZA:	0,8
DIMENSIONI:	30 x 30 x 20 cm
PESO:	8 Kg
GRADO DI PROTEZIONE:	IP 55
SERIALE QUADRO:	QBINV - 0084
VARIATORE DI FREQUENZA:	<b><i>CONTROL TECHNIQUES</i></b> <b><i>COMMANDER SE11200025-075</i></b>

IL TITOLARE  
(Gianluca Feliziani)  
*Gian Feliziani*

**DOCTORSOUND** POWER MANAGEMENT 

### DATI DI TARGA

CODICE UNITA': **QEBM-INVCT-ROT180-01**  
SERIALE QUADRO: **QBINV - 0084**

Vers. 1.0  
Rev. 0.0  
10 - 2019

PAG. 001





Dolly di trasporto

## RELAZIONE TECNICA

Quadro elettrico a bordo macchina denominato **QEBM-INVCT-ROT180-01** per la gestione di un motore trifase asincrono tramite variatore di frequenza, realizzato all'interno di una cassetta compatta in metallo della Sarel modello NSYS3D3320P e bullonato alla struttura portante del modulo "PEDANA GIREVOLE 180".

Tutta la componentistica del quadro è ancorata ad una piastra in lamiera zincata posizionata sul fondo della cassetta, rimovibile per interventi di manutenzione. Sulla portella frontale invece ci sono i comandi di impostazione della rotazione ed i connettori di alimentazione principale.

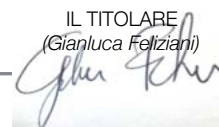
I corpi metallici sono collegati al conduttore di protezione equipotenziale principale e tutto il sistema si alimenta dalla rete attraverso un connettore da pannello Neutrik PowerCon™ e offre un rilancio di rete in derivazione da linea montante, anch'esso PowerCon™ da pannello, che ne semplifica l'installazione nel caso di sistemi con più moduli di controllo.

Ovviamente, in funzione del tipo di installazione, bisognerà calcolare l'assorbimento di ogni singola unità prima di procedere ad un montaggio che preveda il collegamento di più moduli in cascata.

In ogni caso, è **obbligatorio** che le suddette unità dipendano da un quadro di distribuzione generale, in grado di offrire protezioni contro i contatti diretti e indiretti sugli apparati e su tutta la linea d'alimentazione.

La gestione del motore è affidata ad un variatore di frequenza **Control Techniques** modello **COMMANDER SE11200025-075**. Sul pannello frontale sono riportati i controlli di senso di marcia e velocità, mentre sul comando remoto **RC-ROT-01** è ubicato l'azionamento bistabile della rotazione.

L'arresto di emergenza è azionabile attraverso dei pulsanti di sgancio (funghi) facilmente riconoscibili posti sia a bordo macchina che sul controllo remoto.

IL TITOLARE  
(Gianluca Felziani)  


**DOCTORSOUND** POWER MANAGEMENT 

## RELAZIONE TECNICA

**CODICE UNITA': QEBM-INVCT-ROT180-01**

**SERIALE QUADRO: QBINV - 0084**

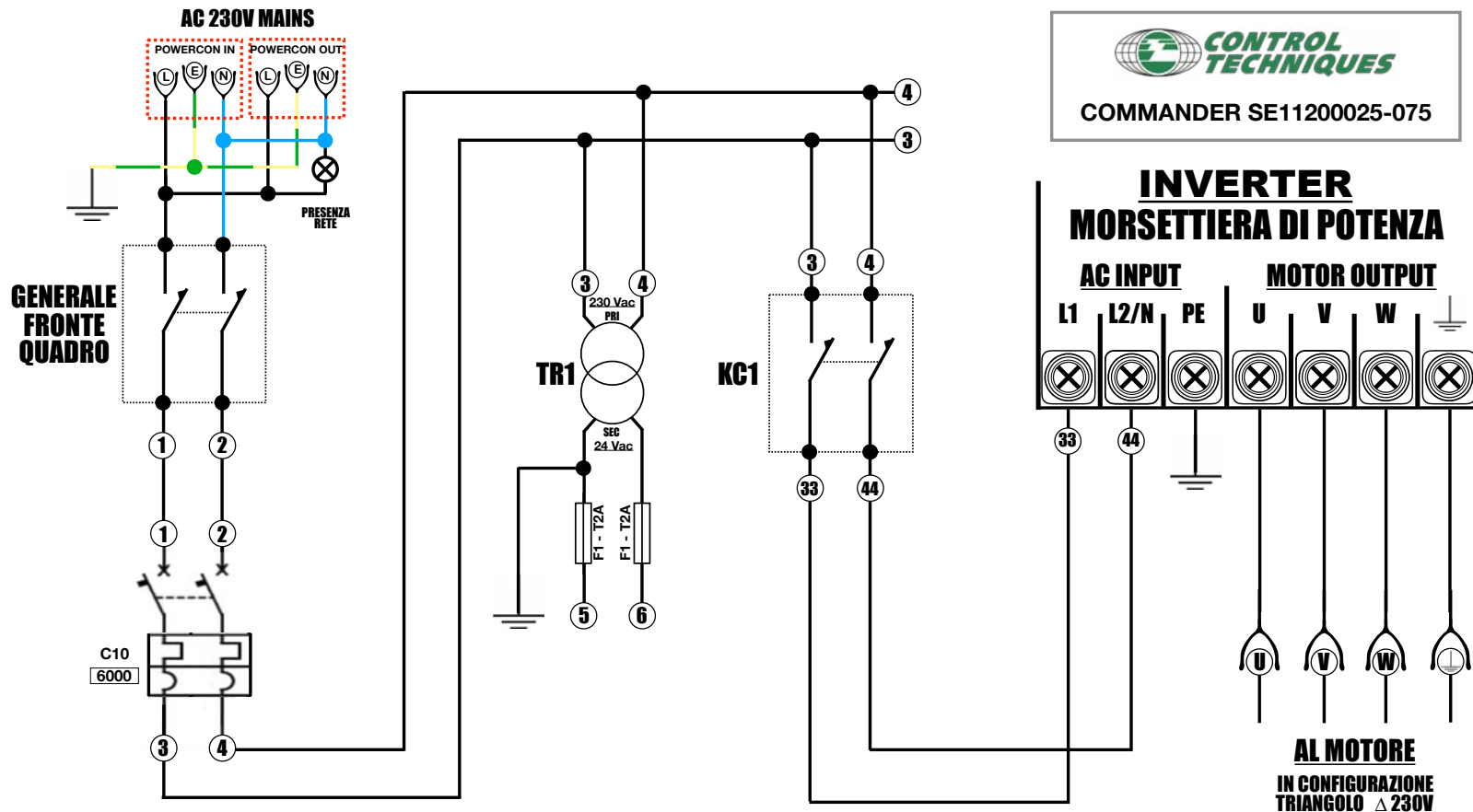
**Vers. 1.0**

**Rev. 0.0**

**10 - 2019**

**PAG. 002**





**DOCTORSOUND** POWER MANAGEMENT 

## SCHEMA UNIFILARE SEZIONE di POTENZA

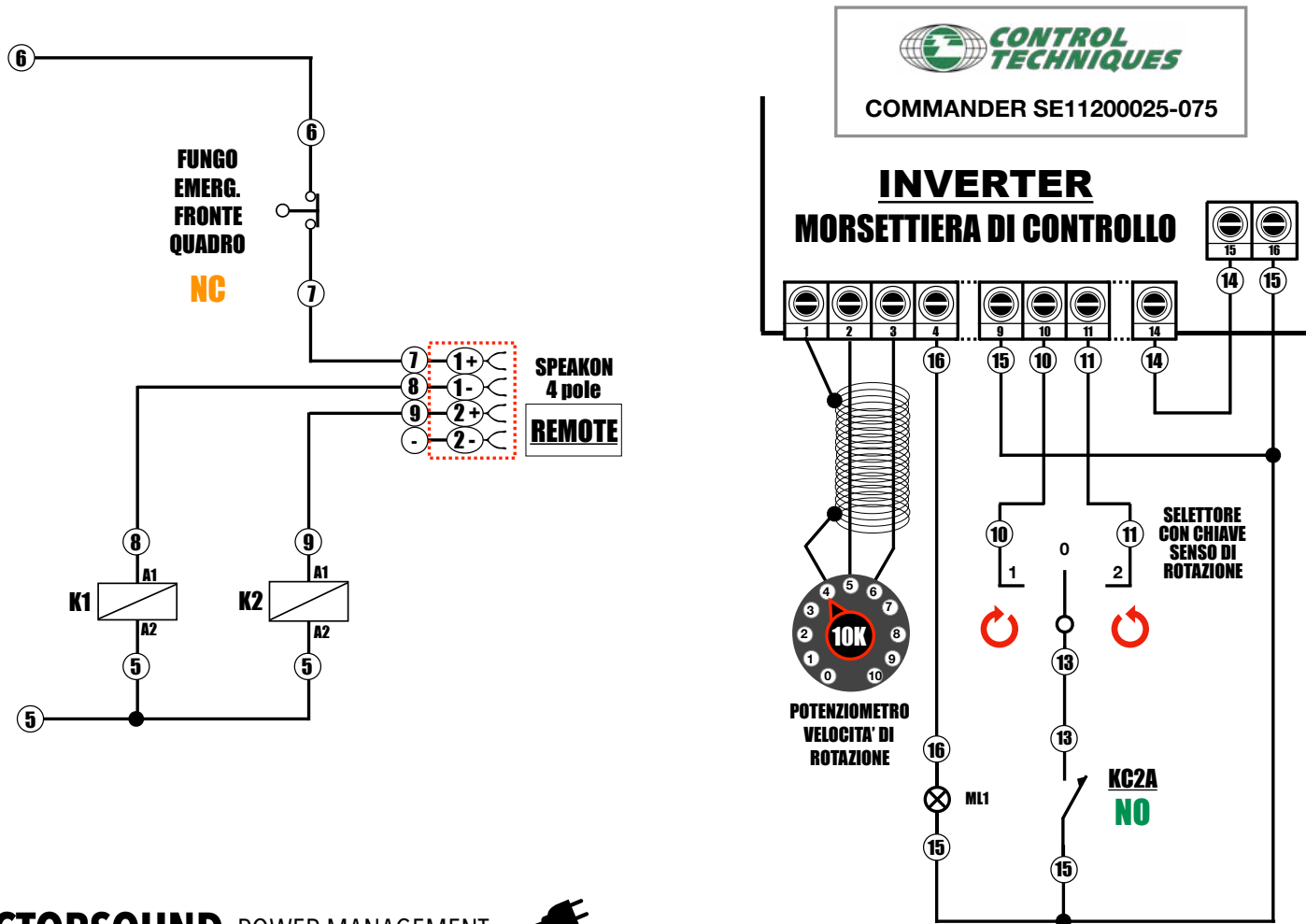
CODICE UNITA': **QEBM-INVCT-ROT180-01**

SERIALE QUADRO: **QBINV - 0084**

Vers. 1.0  
Rev. 0.0  
10 - 2019

**PAG. 004**





**DOCTORSOUND** POWER MANAGEMENT

## SCHEMA UNIFILARE CIRCUITI AUSILIARI

CODICE UNITA': **QEBM-INVCT-ROT180-01**

SERIALE QUADRO: **QBINV - 0084**

Vers. 1.0  
Rev. 0.0  
10 - 2019

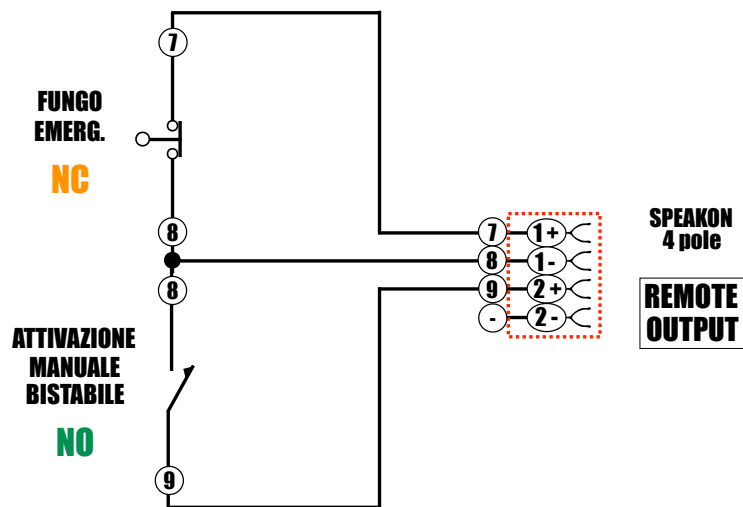
**PAG. 005**





# CONTROLLO REMOTO

Codice TekSet: RC-ROT-01



**DOCTORSOUND** POWER MANAGEMENT 

## SCHEMA UNIFILARE COMANDO REMOTO

**CODICE ARTICOLO: RC - ROT - 01**

Vers. 1.0

Rev. 0.0

10 - 2019

**PAG. 006**



# Commander SE



Simple & Easy AC drive

PDF pages best viewed "Continuous-Facing"  
From Adobe Acrobat menu select: View > Page Layout > Continuous - Facing, or  
from web tool bar (bottom) select:



Vers. 1.0  
Rev. 0.0  
10 - 2019  
**PAG. 007**

## MANUALE INVERTER

modello: **COMMANDER SE11200025-075**



# Commander SE

## Simple and Easy

### OVERVIEW

Control Techniques' Commander SE is an AC open loop vector powerhouse, combining unmatched flexibility with a small footprint. Best of all, the Commander SE is simple to use and easy to install.

The Commander SE's first 10 parameters meet the needs of nearly 90% of drive applications, making setup fast and effortless. Installation requires only a standard screwdriver, while the removable control terminal strip makes changeover quick and error free.

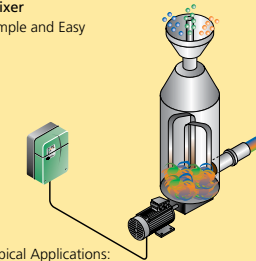
The rugged and robust design has been field tested in harsh environments and proven itself a dependable drive for a wide range of applications. The Commander SE, with its Intelligent Thermal Management (ITM) technology, was designed with reliability in mind. Rated at 50°C ambient temperature, the Commander SE withstands the most severe operating conditions.

- Digital AC Drive
- 0.33 to 3hp (0.25 to 2.2kW), 1Ø 200-240VAC
- 1 to 10hp (0.75 to 7.5kW), 3Ø 200-240VAC
- 1 to 50hp (0.75 to 37kW), 3Ø 380-480VAC
- IP21 (NEMA1) enclosure (Sizes 1 through 4)
- RS485 serial communications with Modbus RTU protocol
- Plug-in communications via Profibus-DP, DeviceNet, Interbus, and CANopen
- SESoft Windows based configuration tool for PC/Laptop
- QuickKey cloning module
- Advanced menus for ultimate control and flexibility



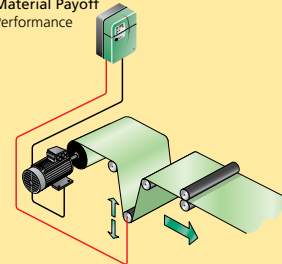
### TYPICAL APPLICATIONS

Mixer  
Simple and Easy



Typical Applications:  
Fans, Pumps, Blowers, Ovens, Chillers

Material Payoff  
Performance



Typical Applications: Material Handling, Elevators



Vers. 1.0  
Rev. 0.0  
10 - 2019  
**PAG. 008**

## MANUALE INVERTER

modello: **COMMANDER SE11200025-075**





**FEATURE**

**Performance Advantage**  
**Open loop vector control with true space vector modulation**  
 Precise control algorithm provides full torque down to 1 Hz for exceptional performance

**Access to multiple parameter levels**  
 Customizes the drive to meet each user's needs: simple (level 1), flexible (level 2) and advanced (level 3)

**QuickKey cloning module**  
 Provides fast and cost-effective drive-to-drive parameter transfer and storage with no PC required

**Terminal connection drawings and Level 1 parameters (10) listed on the drive's front cover**  
 On-the-spot easy reference for drive set-up and maintenance

**Static auto-tune**  
 Allows fast motor / drive optimization without motor shaft rotation

**Two sets of motor map parameters saved in the drive's memory**  
 Allows sequenced switching between two motors with different operating characteristics

**Configurable analog and digital I/O**  
 Customizes drive to the specific application

**S-ramp accel / decel profiling**  
 Provides smooth speed transitions, minimizing machine "jerk"

**Built-in independent PID control**  
 Eliminates the need for an external PID controller while providing "outer loop" control of a process variable

**Built-in Motorised Potentiometer**  
 Emulates the functionality of the traditional Motorized Potentiometer with increase / decrease pushbuttons

**8 Preset speeds with independent accel / decel ramps**  
 Allows predetermined speed sequencing via logic inputs

**Selectable Stopping modes including Ramp, Coast, DC Injection, and Dynamic Braking (except size 1)**  
 Added flexibility meets many application requirements

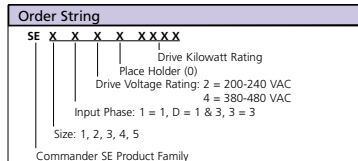
**Full EMC compliance with optional filter**  
 Meets global standards for worldwide use

**RATINGS:**  
 .33 TO 10 HP (208-230 VAC)  
 1 TO 50 HP (380-460)

200 / 240 VAC ±10%					
Motor HP (1) kW	Input Phase	Contin. Output Current (A)	Overload Current (2) (A)	Size	Order Code
0.33 / 0.25	1	1.5	2.25	1	SE11200025
0.50 / 0.37	1	2.3	3.45	1	SE11200037
0.75 / 0.5	1	3.1	4.65	1	SE11200055
1 / 0.75	1	4.3	6.45	1	SE11200075
1 / 0.75	1 or 3	4.3	6.45	2	SE2D200075
2 / 1.5	1 or 3	7.5	11.3	2	SE2D200150
3 / 2.2	1 or 3	10	15	2	SE2D200220
5 / 4.0	3	17	25	2	SE23200400
7.5 / 5.5	3	25	37.5	3	SE33200550
10 / 7.5	3	28.5	42.8	3	SE33200750

380 / 480 VAC ±10%					
Motor HP (1) kW	Input Phase	Contin. Output Current (A)	Overload Current (2) (A)	Size	Order Code
1 / 0.75	3	2.1	3.15	2	SE23400075
2 / 1.5	3	4.2	6.3	2	SE23400150
3 / 2.2	3	5.8	8.7	2	SE23400220
5 / 4.0	3	9.5	14.3	2	SE23400400
7.5 / 5.5	3	13	19.5	3	SE33400550
10 / 7.5	3	16.5	24.8	3	SE33400750
15 / 11.0	3	24.5	36.8	4	SE43401100
20 / 15	3	30.5	45.8	4	SE43401500
25 / 18.5	3	37	55.4	4	SE43401850
30 / 22.0	3	46	69.0	5	SE53402200
40 / 30	3	60	90.0	5	SE53403000
50 / 37	3	70	105.0	5	SE53403700

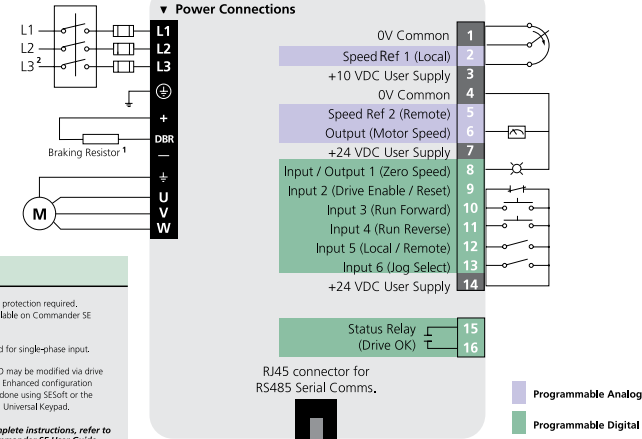
① Use new Commander SK, see page 13.  
 ① Motor horsepower based on typical 230 / 460 VAC four-pole motor ratings. Select model based on actual motor current rating.  
 ② Overload: 150% for one minute



Vers. 1.0  
 Rev. 0.0  
 10 - 2019  
**PAG. 009**

**MANUALE INVERTER**  
 modello: COMMANDER SE11200025-075

**TERMINAL DIAGRAM**



**NOTE**  
 1 Thermal protection required. Not available on Commander SE Size 1.  
 2 Not used for single-phase input.  
 3 Some I/O may be modified via drive keypad. Enhanced configuration may be done using SSoft or the optional Universal Keypad.  
 For complete instructions, refer to the Commander SE User Guide available from local supplier or [www.controltechniques.com/download.htm](http://www.controltechniques.com/download.htm)

**TERMINAL DESCRIPTION**

Pin <sup>1</sup>	Function (1)	Type/Description	Notes
1	0V Common	Common for External Analog Signals	
2	Analog Input 1 (Local Frequency / Speed Reference), 10 bit	Single-ended Analog Input	0 to +10 VDC, 100k Ohms, Sample Time 6ms
3	+10 VDC User Supply	Reference Supply	5 mA max Short Circuit Protected
4	0V Common	Common for External Digital Signals	
5	Analog Input 2 (Remote Frequency / Speed Reference), 10 bit	Single-ended Analog Input	4-20 mA(2) input, 200 Ohms, Sample Time 6ms
6	Analog Output 1 (Frequency / Speed), 10 bit	Single-ended Analog Output, Unipolar	0 to +10 VDC @ 5 mA max Update Time 22ms
7	+24 VDC User Supply	User Supply	100 mA max Short Circuit Protected
8	Digital I/O 1 (Zero Speed Output)	Digital Input / Output	0 to 24 VDC, 7.5k Ohms input or 0 to 24 VDC, 50 mA max output Update Time 1.5ms
9	Digital Input (Enable)	Digital Input	0 to 24 VDC, 7.5k Ohms Update Time 1.5ms
10	Digital Input (Run Forward)	Digital Input	0 to 24 VDC, 7.5k Ohms Update Time 1.5ms
11	Digital Input (Run Reverse)	Digital Input	0 to 24 VDC, 7.5k Ohms Update Time 1.5ms
12	Digital Input (Local/Remote Select)	Digital Input	0 to 24 VDC, 7.5k Ohms Update Time 1.5ms
13	Digital Input (Jog Select)	Digital Input	0 to 24 VDC, 7.5k Ohms Update Time 1.5ms
14	+24 VDC User Supply	User Supply	100 mA max Short Circuit Protected
15	Status Relay (Drive Healthy)	Normally Open	240 VAC, 6A resistive
16	Status Relay (Drive Healthy)	Normally Open	240 VAC, 6A resistive

① Values in parenthesis designate default functions.  
 ② 0-20, 20-0, and 20-4 mA are also available. See Commander SE Manual.



Vers. 1.0  
 Rev. 0.0  
 10 - 2019  
**PAG. 010**

**MANUALE INVERTER**  
 modello: COMMANDER SE11200025-075



# Commander SE Options

## OVERVIEW

This simple and easy drive also provides flexibility with easy to install options. Drive set-up is quick and convenient using our remote keypad or SEsoft, the Windows-based configuration tool. The SE QuickKey allows parameter cloning for fast parameter storage and transfer, making it easy to add or replace drives within your system. The Commander SE easily connects into your network with a wide range of fieldbus protocols and operator interface options.



Option	Description	Order Code
Drive Configuration & Programming	Configuration Tool	SESoft
	RS232/485 Cable	CTComms Cable
	QuickKey Cloning Tool	SE55
Operator Interfaces	Operator Interface HMI	Refer to Accessories Section
Power Accessories	Cable Shield Clamps	SE11 to SE14
	EMC Filters	To fit drive
Input/Output	Braking Resistors	To fit drive
	Bi-Polar Analog Input Card	SE51
Communications	RS485/Modbus RTU	Standard
	PROFIBUS-DP	SE73
	INTERBUS	SE74
	DeviceNet	SE77DN
	CANopen	SE77CO

# Drive Configuration and Programming

## DRIVE CONFIGURATION TOOL

SEsoft is a complimentary Windows-based drive configuration tool designed to enable the complete control and display of all parameters within a Commander SE. The set-up wizard guides the user in entering motor and application data. Motor data may be supplied from the motor nameplate, or the user may select a motor from the database supplied in the wizard. A monitoring screen displays real-time drive values such as current, voltage and DC bus level. SEsoft communicates via the computer's serial port and the Commander SE's RJ45 port using the CT Comms Cable.



Vers. 1.0  
Rev. 0.0  
10 - 2019  
PAG. 012

**MANUALE INVERTER**  
modello: COMMANDER SE11200025-075



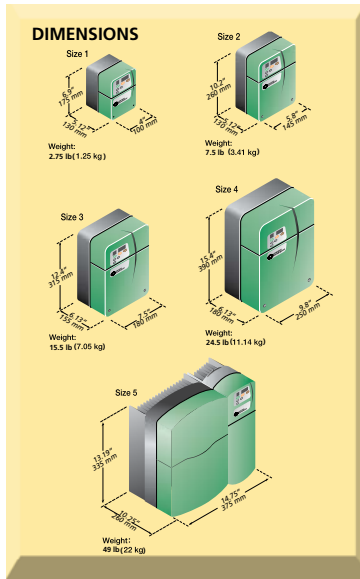
Vers. 1.0  
Rev. 0.0  
10 - 2019  
PAG. 011

## SPECIFICATIONS

- Environment**  
Ambient Operating Temperature: -10°C to 40°C (14°F to 104°F) @ 6kHz carrier freq. For SE Size 4-25HP and all SE Size 5's. -10°C to 40°C (14°F to 104°F) @ 3kHz carrier freq.  
Cooling method: Convection and forced convection, model dependent  
Humidity: 95% maximum non-condensing at 40°C (104°F)  
Storage Temperature: -40°C to 60°C (-40°F to 140°F) - 12 months Max.  
Altitude: Derate the continuous output current by 1% for every 100m (328 ft) above 1000m (3280 ft) to a maximum of 4000m (13,000 ft).  
Vibration: Tested in accordance with IEC 68-2-34 and IEC 68-2-36  
Mechanical Shock: Tested in accordance with IEC 68-2-29  
Enclosure: NEMA 1 (IP 21) All but Size 5  
Electromagnetic Immunity: In compliance with EN61800-3 and EN50082-2  
Electromagnetic Emissions: In compliance with EN61800-3 second environment, without RFI filter. EN50081-1\*, EN50082-2 and EN50081-3 first environment with optional RFI filter. \*Size 7 only
- AC Supply Requirements**  
Voltage: 200V model: 200 to 240 VAC ±10%  
400V model: 380 to 480 VAC ±10%  
Phase: 1Ø and 3Ø (Model Dependent)  
Maximum Supply Imbalance: 2% negative phase sequence (3% voltage imbalance between phases)  
Frequency: 48 to 62 Hz  
Input Displacement Power Factor: 0.97
- Control**  
Carrier Frequency: 3, 6 and 12 kHz (Default Value Model Dependent)  
Output Frequency: Up to 1000 Hz  
Frequency Accuracy: ±0.01% of full scale  
Frequency Resolution: 0.1 Hz  
Analog Input Resolution: 10 Bit + sign (Qty 2)  
Serial Communications: ANSI 2-wire EIA485 via RJ45 connector. Baud rate is 4800, 9600 or 19,200  
Braking: DC injection braking standard. Dynamic braking transistor standard (not available on Size 1).
- Protection**  
DC Bus Undervoltage Trip: 200V model: 180 VDC (approximately 127 VAC line voltage)  
400V model: 400 VDC (approximately 282 VAC line voltage)  
DC Bus Overvoltage Trip: 200V model: 420 VDC (approximately 299 VAC line voltage)  
400V model: 830 VDC (approximately 587 VAC line voltage)  
MOV Voltage Transient Protection: 160 Joules, 1400 VDC clamping (Line to line and line to ground)

- Drive Overload Trip: Current overload value is exceeded. Programmable to allow up to 150% of drive current for one minute.  
Instantaneous Overcurrent Trip: 215% of drive rated current  
Phase Loss Trip: DC bus ripple threshold exceeded  
Overtemperature Trip: Drive heatsink temperature exceeds 95°C (203°F)  
Short Circuit Trip: Protects against output phase to phase fault  
Ground Fault Trip: Protects against output phase to ground fault  
Motor Thermal Trip: Electronically protects the motor from overheating due to loading conditions

- Approvals & Listings**  
UL, cUL: UL File #E171230  
IEC: Meets IEC Vibration, Mechanical Shock and Electromagnetic Immunity Standards  
CE: Designed for marking  
NEMA: NEMA 1 enclosure type - All but Size 5  
ISO 9002: Certified Manufacturing Facility



**MANUALE INVERTER**  
modello: COMMANDER SE11200025-075



**COMMUNICATION CABLE**

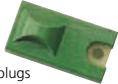
Using a special RS232 to RS485 converter you can connect the PC to the RJ45 serial port on the front of the drive. A special pre-made cable is available from Control Techniques for this purpose – this CT comm cable is used with other Control Techniques products that use a RJ45 connector – such as the Commander SK and the Unidrive SP.



Description	Order Code
PC-to-drive Comms Cable	CT Comms Cable

**QUICKKEY/CLONING MODULE**

The QuickKey is a small, encapsulated memory module that stores the entire set of the Commander SE parameter values. It plugs onto the drive near the control terminals. The Commander SE may be programmed to download/upload a set of parameters to/from the QuickKey or to operate with or without the module installed. Once the information is stored in the QuickKey, it may be removed from the drive for future use such as cloning other drives or programming a replacement drive.



Description	Order Code
QuickKey Cloning MOD	SE55

**Operator Interfaces**

**OPERATOR INTERFACE UNIT**

These operator interface units complement the Control Techniques product line by offering an impressive way of accessing parameters and adding more programming power to your application. The following features make these screens a simple and impressive solution for you... and your customers:

- Graphical full color and 4-tone monochrome touchscreen
- Menus, submenus, alarms, fault conditions,
- Realtime trends and graphs
- Scheduling and background programs
- Modbus RTU and Modbus TCP/IP
- import pictures and graphics
- Advanced Recipe capabilities

For more information, refer to the Accessories Section.



Vers. 1.0  
Rev. 0.0  
10 - 2019  
**PAG. 013**

**MANUALE INVERTER**

modello: **COMMANDER SE11200025-075**



**Power Accessories**

**CABLE SHIELD CLAMPS**

The cable shield clamps are used with the Commander SE to stabilise wire/cable connections when mounting a drive inside an enclosure. The clamps attach to the bottom of the Commander SE drive and provide a convenient shielded earth connection.



Cable Shield Clamps	Order Code
SE Size 1	SE11
SE Size 2	SE12
SE Size 3	SE13
SE Size 4	SE14

Drive Type	EMC Filter Order Code	Filter Type	Mounting Style	Current (A)
<b>200-240 VAC</b>				
SE11200025-075	4200-6102	Standard	Footprint/Bookend	12
	4200-6101	Light Duty	Panel Mount	12
	4200-6103	Low Leaking	Footprint/Bookend	12
4200-6201	4200-6201	Standard	Footprint/Bookend	26
	4200-6204	Light Duty	Panel Mount	26
SE2D200075-220 Single Phase	4200-6205	Low Leaking	Footprint/Bookend	26
	4200-6202	Standard	Footprint/Bookend	16
SE2D200075-220 Three Phase	4200-6304	Light Duty	Panel Mount	16
	4200-6207	Low Leaking	Footprint/Bookend	16
	4200-6203	Standard	Footprint/Bookend	26
SE23200400	4200-6303	Light Duty	Panel Mount	26
	4200-6209	Low Leaking	Footprint/Bookend	26
SE33200550-750	4200-6302	Standard	Footprint/Bookend	30
	4200-6303	Light Duty	Panel Mount	30
<b>380-480 VAC</b>				
SE23400075-400	4200-6202	Standard	Footprint/Bookend	16
	4200-6304	Light Duty	Panel Mount	16
	4200-6207	Low Leaking	Footprint/Bookend	16
SE33200550-750	4200-6301	Standard	Footprint/Bookend	18
	4200-6304	Light Duty	Panel Mount	18
SE43401100-1500	4200-6401	Standard	Footprint/Bookend	33
	4200-6402	Light Duty	Panel Mount	33
SE43401850	4200-6403	Standard	Footprint/Bookend	37
	4200-6404	Light Duty	Panel Mount	37
SE53402200	4200-6116	Standard	Bookend	50
SE53403000	4200-6117	Standard	Bookend	63
SE53403700	4200-6106	Standard	Bookend	100



Vers. 1.0  
Rev. 0.0  
10 - 2019  
**PAG. 014**

**MANUALE INVERTER**

modello: **COMMANDER SE11200025-075**

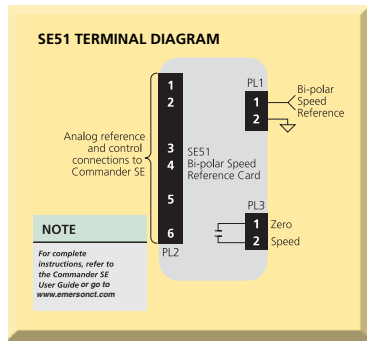


Input/Output

BI-POLAR ANALOG INPUT CARD (SE51)

The bi-polar speed reference input card (SE51) allows the direction of a motor to be controlled via a speed potentiometer or external bi-polar speed reference rather than the forward/reverse terminal selector.

The +10V potentiometer reference can be supplied from the drive (term. #3) or from an external power supply. The -10V potentiometer reference must be supplied from an external supply. The SE51 also has a relay that is controlled by the digital output (default "zero speed") of the drive.



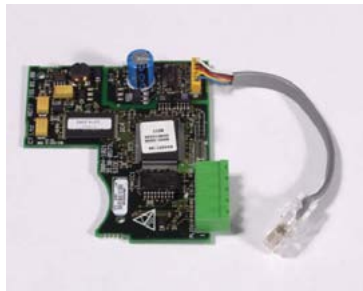
SE51 TERMINAL DESCRIPTION

Singular Connector	Pin #	Function
PL1	1	Bi-polar Analog Input (± 10 VDC, 22k Ohms)
	2	0V Common
PL2 (Interface connections to Commander SE)	1	0V Common
	2	0 to +10 VDC Analog Output
	3	+24 VDC Supply for option card
	4	Digital Input (+24 VDC) to control relay
	5	Run Forward Output (+24 VDC)*
	6	Run Reverse or Run Forward / Reverse Output (+24 VDC)
PL3	1	Relay Contact Common (48 VAC / DC, 2A resistive)
	2	Relay Contact (Normally Open)

\* Directional control of Commander SE

Communication

COMMUNICATION CARDS



Each fieldbus interface for the Commander SE is a single option card that fits within the drive. Parameter data is transferred to and from the Commander SE using a 2-wire RS485 link into the serial communications port on the drive.

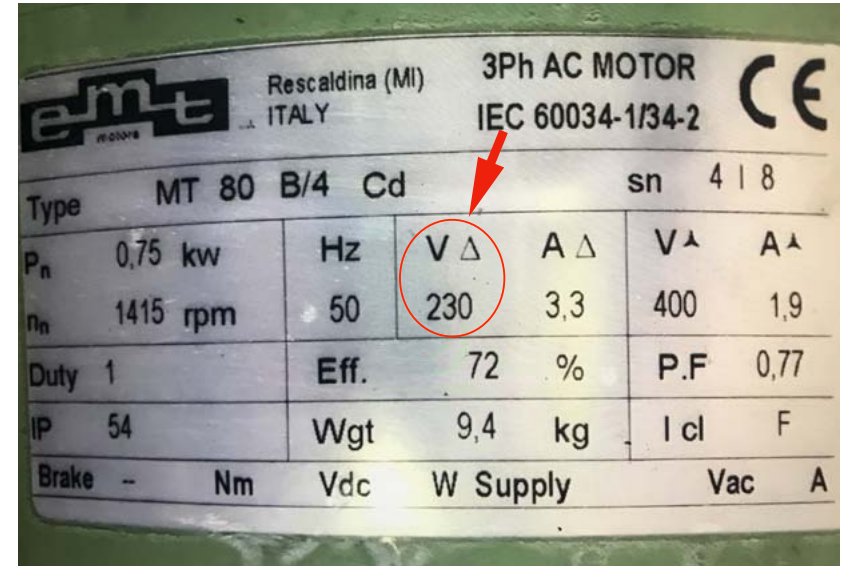
Communication Protocol*	Order Code
RS485 / Modbus RTU	as standard
PROFIBUS-DP	SE73
INTERBUS	SE74
DeviceNet	SE77DN
CANopen	SE77CO

\* Maximum communication rate through RJ45 port is 19.2 kbaud. Commander SE operates as slave node only



Vers. 1.0  
Rev. 0.0  
10 - 2019  
PAG. 015

MANUALE INVERTER  
modello: COMMANDER SE11200025-075



DATI di TARGA MOTORE

Vers. 1.0  
Rev. 0.0  
10 - 2019

PAG. 016

