Emerson SM-APPLICATIONS

Installation & Commissioning Guide

01 Define the host and preserve the application

Identify the original module

Confirm SM-Applications on the complete module label and compare the installed option position. The original module identification value is 301. Plus, Lite and Lite V2 have separate identities; their programming resources and physical interfaces must not be assumed to match this module.

Secure the engineering record

Save the SyPTPro application, drive parameters, firmware versions and network settings before starting work. Record the existing option slot and cable destinations. Retain a known working project so the replacement can be evaluated against the actual machine application.

Establish a safe work condition

Stop the process under the site maintenance procedure and isolate the drive supply. The module takes power from the drive internal supply. Observe the drive discharge instructions and verify the safe condition before accessing the option slot or terminals.

Plan the application interfaces

Identify the required CTNet network, RS485 devices and digital I/O before fitting the module. Keep the application program, host drive and field wiring as separate items in the work plan. The module is an applications processor and does not replace the drive safety functions.

Field reference

Host connection	Supported Control Techniques drive option slot
Power source	Internal drive supply
Development environment	SyPTPro application project
Identity check	Original SM-Applications; parameter value 301

System relationship

Host drive	SM-APPLICATIONS	Controlled system
Internal supply and option-slot connection	Dedicated processor and approved application	Drive parameters, networks and digital I/O

02 Identify the terminals and wire the local I/O

Fit the module under isolation

Use the host drive option-module fitting procedure. Engage the module correctly in the option slot and preserve its planned slot assignment. Do not insert or remove the module with the drive energized; restore covers and barriers before returning the system to operation.

Separate the communication interfaces

The RS485 terminal group is independent of the CTNet terminal group. Follow the port names and polarity shown in the manufacturer drawing. Do not select wiring from connector appearance alone or combine the CTNet shield terminal with a signal conductor.

Check the positive-logic outputs

DIGIN0 and DIGIN1 are read by the program; DIGOUT0 and DIGOUT1 are controlled by the program. An active output supplies nominal 24 V at up to 20 mA. An inactive output is effectively floating, and an overload deactivates both outputs.

Maintain the insulation system

The digital I/O connects to the drive control circuits. The manufacturer requires suitable supplementary insulation for external control circuits and protective separation for connected communication circuits. Preserve the required barriers, grounding and cable routing.

Field reference

1 / 2 / 3	RS485 0 V / negative receive / positive receive
4 / 5	RS485 negative transmit / positive transmit
6 / 7 / 8	CTNet A / shield / CTNet B
9 / 10 / 11	Digital 0 V / DI0 / DI1
12 / 13	DO0 / DO1

Digital output states

Output active	Output inactive	Output overload
Positive logic: nominal 24 V, up to 20 mA	Effectively floating; plan the load circuit	Both outputs deactivate; inspect the connected load

03 Build and check the network configuration

Design CTNet as a complete network

CTNet supports rates up to 5 Mbit/s and a maximum of 255 nodes across an appropriately designed network. Segment length and repeater requirements depend on rate and loading. Use approved Control Techniques CTNet cable and the CTNet engineering rules.

Terminate the recommended CTNet cable

For the recommended green cable, fit an 82 ohm, 0.25 W resistor across the data pair at each end of the cable run. Join cable shields into a short connection at the shield terminal and earth the shield at one point as specified. Extra terminations load the network.

Select the serial mode deliberately

Choose two-wire or four-wire RS485 to match the installed devices and controller. The port supports CT-ANSI slave and Modbus RTU or ASCII master/slave at up to 115200 bit/s. Master operation requires the corresponding DPL program and network control.

Check topology and line loading

For Control Techniques devices, each transmitter and receiver presents two unit loads. The manual permits seven such devices in a two-wire group with the stated repeater allowance, or fifteen in four-wire mode. Apply the actual device load and repeater data when designing mixed networks.

Field reference

CTNet physical layer	Approved cable; end termination and shield continuity
Serial protocol	CT-ANSI slave or selected Modbus mode
Serial connection	Two-wire or four-wire; matching transceiver control
Commissioning record	Topology, addresses, rates, cable and termination

CTNet segment concept

CTNet end	Network segment	CTNet end
Approved cable and one 82 ohm end termination	Connected nodes; shield continuity retained	One 82 ohm end termination; no extra loading

04 Configure, commission and prove the application

Verify the slot and firmware identity

The drive exposes option settings through menu 15, 16 or 17 according to the slot. Within the module program, menu 81 aliases the current slot. Check identification parameter 81.01 and record the firmware information before transferring an application.

Use the correct development tools

Open the approved SyPTPro project. The environment supports native DPL plus ladder and function block programming, watch windows, breakpoints and single stepping. Treat debugging operations as controlled commissioning activities because they can affect task execution.

Prove communication in both directions

First verify the physical wiring and selected network settings. Then confirm that the intended application values are received and transmitted correctly. Check each required CTNet or RS485 exchange against a known operating case before enabling normal machine operation.

Test the local I/O and failure response

Use menu 86 and the application program to verify each input and output. Check output loads against the 20 mA limit and confirm the intended response to a communication loss or unavailable process value. Restore the normal program state after controlled tests.

Field reference

Identity acceptance	Correct original module, slot and firmware record
Program acceptance	Approved project loaded and execution verified
Network acceptance	Expected values exchanged with intended nodes
I/O acceptance	Both inputs and both outputs prove their intended function

Commissioning sequence

Identify	Prove	Release
Verify original module, slot and project	Test network values and both I/O channels	Restore the approved application and retain results

05 Handover and future replacement review

Keep a reproducible service package

Retain the final SyPTPro project, drive parameter record, module identity, terminal schedule and network configuration. Include the tests used to verify communication, local I/O and process behavior so the next service action can reproduce the acceptance check.

Review support for the exact installed assembly

Request current lifecycle and replacement guidance using the original SM-Applications label, host drive, firmware and application project. The module family user guide provides technical and migration context; it does not declare a current manufacturing phase for this exact item.

Replacement evidence package

Module record	Host record	Application record
Complete original label and firmware	Drive type, slot and saved parameters	SyPTPro project, wiring and acceptance results

Explore other Emerson references

Portfolio navigation only; no compatibility or substitution is implied.

Emerson KJ3224X1-EA1 12P4367X022	View product
Emerson EN-204 EN-204-00-000	View product
Emerson KJ2201X1-BA1	View product
Emerson KC4011X1-BW1	View product

Discuss the complete offered reference

Emerson SM-APPLICATIONS | New, original product

sales13@apterpower.com | +86 18030235313

Technical reference

Control Techniques SM-Applications Modules and Motion Processors User Guide, 0471-0062-04, Issue 4

Apter Power application summary. Follow the complete module and host drive instructions for installation and commissioning.