MOSCAD-M
SCADA Remote Terminal Unit

intelligence **M** everywhere™

The smallest MOSCAD RTU, yet Powerful and Affordable

The MOSCAD-M RTU satisfies a wide range of remote monitoring, control, and data transfer applications. It is especially suitable for radio communication-based SCADA systems where low power consumption, i.e. solar power, is essential.

MOSCAD-M is Programmable

MOSCAD-M is an intelligent RTU. While monitoring and controlling the remote site, it makes decisions based on local conditions, data imported from other sites and upon commands from the control center. Typical MOSCAD-M applications include remote monitoring and control of valves and pumps; monitoring of tank levels, pipeline cathodic protection, rain and flood, environmental pollution, chemical spill, radioactive radiation; more.

▶ *Application programs are specifically tailored to satisfy application requirements. The programs are written in standard 'C' language and are supported by the MOSCAD 'C' Programming Toolkit which simplifies the program implementation.*

MOSCAD-M is Compact

MOSCAD-M is the smallest RTU in the MOSCAD product family. MOSCAD-M is designed for indoor installation "as-is" or for outdoor installation within a suitable cabinet as required by the application.

▶ *MOSCAD-M may be easily mounted on a wall or in a cabinet using keyholes or standard DIN rail.*

MOSCAD-M is Versatile

MOSCAD-M is offered in basic I/O and expanded I/O configurations. Each MOSCAD- M model includes two serial ports and may include a two-way radio. An external wire-line modem or radio may be connected to the RTU.

▶ *Smart sensors and Intelligent Electronic Devices may be interfaced using the RS232 or RS485 ports*

▶ *Operating power is available to a variety of external radios or modems. To achieve low power consumption the application program controls this output.*

MOSCAD-M Power Management

Low power consumption is achieved by utilizing Power Save mode. In this mode, power is provided only to the circuits and elements activated by the application program. The RTU is switched to sleep mode when all circuits are idle and awakens when any predefined event occurs.

▶ *This unique capability is essential for battery and/or solar panel-powered remote sites.*

MOSCAD-M Intelligent Communications

MOSCAD-M utilizes the MDLC protocol that is based on the OSI/ISO protocol suite. It supports versatile communication modes including polling, event driven reporting, report by exception, etc. The MDLC networking capabilities enable all the RTUs in a MOSCAD system to communicate in a point-to-multipoint configuration with the control center, in a peer-to-peer configuration with each other and in a hierarchical network structure.

▶ *Each RTU in the MOSCAD family may act as a network node, allowing seamless integration of different communication media into the system*

▶ *A superior cost effective feature of MOSCAD family RTUs is the ability of each RTU to act also as a Store and Forward (S&F) repeater, extending the geographical coverage of a system in minimal costs.*

▶ *The MDLC communications protocol maximize the airtime efficiency and assures high reliability of data communication in noisy environments*

▶ *The communications versatility of MOSCAD systems allows integration of solutions in which the MOSCAD-M may serve as an intelligent remote I/O or as an intelligent data concentrator.*

▶ *Motorola offers a cost effective and versatile system solution where any site in a system may utilize MOSCAD, MOSCAD-L or MOSCAD-M to satisfy specific I/O requirements.*

MOTOROLA

MOSCAD-M SCADA Remote Terminal Unit

SPECIFICATIONS

CPU

Processor	Motorola 68VZ328 (16/32 bit) CMOS; 33 MHz clock
Memory	1Mb Flash for operating system and application, 512 kB RAM
Real-Time Clock	Year, month, date, day, hour, minute, and second

I/Os	MOSCAD-M Basic	MOSCAD-M Plus	
Digital Inputs	12	15	30 Vdc max.; Two inputs are fast counters (up to 10 kHz)
Analog Inputs	0	4	Configurable to 4-20 mA or 0-5 V, 12 bit ± 1 LSB resolution
Relay Outputs	4	4	Form A, max. 2A @ 30 Vdc or 250 Vac, 60 Watt, 125 VA
FET Output	4	4	Open Collector configuration, max. 500 mA, 30 Vdc
Analog Output	0	1	Configurable to 4-20 mA or 0-5 V, 8 bit ± 1 LSB resolution

Communications

Data Ports	Port 1: RS-485 two-wire multidrop or RS-232; up to 57.6 kbps
	Port 2: RS-232; up to 57.6 kbps
	Port 3: communications to internal or external two-way radio
Internal Data Radio	4W, 403-433 MHz or 438-470 MHz, conventional only. 9600 bps duobinary or 1200 bps DPSK. 12.5 kHz bandwidth
External Radio	1200 bps DPSK, two-way conventional (only) radio. Select from Motorola HT750, GP140, GP328, or PRO5150 in both VHF and UHF bands
Radio Modem	Supports most types of Multiple Address System (MAS) and Spread Spectrum radios via RS-232
Wireline Modem	Supports external leased line and dial-up modems via RS-232 port
Ethernet Interface	Supports MOSCAD 10baseT Ethernet Interface via RS-232 port

General

Power Requirements	9-30 Vdc; 150 mA @ 14 Vdc without radio; 2.5A max. @ 14 Vdc with int. or ext. radio
Power Management	5mA max. in sleep mode; wake up upon either of 3 DIs or real-time clock or data received at Ports; controlled power output to external radio; controlled DI wetting voltage
Battery Backup	For RAM and Real Time Clock retention
Power to Radio	Selectable 6 / 7.5 / 8 / 9 / 9.6 Vdc @ 2.5A max., controlled output
Physical Size (cm)	21.3 W x 19.4 H x 8.3 D (8.5″ x 7.75″ x 3.3″), Add 3.8 cm (1.5″) to height for antenna connector
Environmental	Operating temperature range: –30 to +60°C (–22°F to 140°F)
	Relative Humidity: up to 90% RH @ +50°C without condensation

MOSCAD-M MODELS

MODEL	DESCRIPTION
F4570	MOSCAD-M less radio
F4571	MOSCAD-M with internal data radio, 4W, 403-433 MHz
F4572	MOSCAD-M with internal data radio, 4W, 438-470 MHz
F4573	MOSCAD-M with external radio, 5W, 136-174 MHz, HT750 / GP140 / GP328 / PRO5150
F4574	MOSCAD-M with external radio, 4W, 403-470 MHz, HT750 / GP140 / GP328 / PRO5150
F4575	MOSCAD-M with external radio, 4W, 470-512 MHz, HT750 / PRO5150
F4580	MOSCAD-M Plus less radio
F4581	MOSCAD-M Plus with internal data radio, 4W, 403-433 MHz
F4582	MOSCAD-M Plus with internal data radio, 4W, 438-470 MHz
F4583	MOSCAD-M Plus with external radio, 5W, 136-174 MHz, HT750 / GP140 / GP328 / PRO5150
F4584	MOSCAD-M Plus with external radio, 4W, 403-470 MHz, HT750 / GP140 / GP328 / PRO5150
F4585	MOSCAD-M Plus with external radio, 4W, 470-512 MHz, HT750 / PRO5150

MOTOROLA

intelligence **(M)** *everywhere*™