M₃ ORANGE

**Fully Rugged Industrial PDA with
The BEST Data Capture Technology - 1D, 2D, RFID (HF, UHF)**

Full Featured Functionality

M3 ORANGE boasts enhanced hardware and OS. The latest version of operating system, Windows Mobile 6.5, provides highly intuitive graphical user interface and new features.
Its design has also been evolved to give more refine and compact look by applying intenna and finished in sharp black. Furthermore, front panel scan button in both alpha-numeric and QWERTY keypads, and battery endurance for tough environment upgrades the work efficiency and satisfaction.

Key Features

Windows Mobile 6.5
Windows Mobile 6.5 operating system provides new today screen and faster speed of response time of touch screen. Also, its scrolling display is very finger-friendly to use work applications.

Marvell PXA-320 806 MHz
Powerful CPU speed with "High-Tier" guarantees faster graphic process and memory access.

Multi-mode Radio (HSDPA / Wi-Fi / Bluetooth)
Wireless data transmission through 3.5G, WLAN and Bluetooth make your business easier and more comfortable.

Powerful System and Core

Maximum Mobility

3.0M Pixels AF Camera
High resolution and auto focused functionality capture clear images of product and / or documentation.

Maximum Data Capture

Tough & Rugged

IP65 / IP67 Sealing, 1.5m Drop, MIL-STD-810G
M3 ORANGE is suitable to use in a tough environment; withstands drop from 1.5m and protects against dust and water. Also, MIL-STD-810G certification proves its strength.

1D / 2D / RFID (UHF/HF)
Superior scanner / RFID application provides real-time data capture and automatic data processing so that you can expect flexibility of work and cost-efficiency.

Smart Battery

User Comfort

Li-Ion 3.7V 3,300 mAh
M3 ORANGE's smart battery provides accurate remaining battery capacity so that the user can efficiently plan the usage of the PDA. Also, its large capacity is suitable for long time shifts.

Multi-function Keypads
Multi-functional keys of QWERTY, AZERTY keypads are designed for versatile performance. As hot keys, these are going to make the direct access be possible and increase users' working speed.

AlphaNumeric (31 keys)

QWERTY (50 keys)

AZERTY (50 keys)

M3 ORANGE Specification

PHYSICAL CHARACTERISTICS

Dimension
Standard	165.5 mm x 78.6 mm x 24.9 mm, 6.5" x 3.1" x 0.9"
HF RFID	165.5 mm x 78.6 mm x 40.2 mm
UHF RFID	165.5 mm x 78.6 mm x 38.9 mm

Standard M3 ORANGE
Weight: 332g (11.7oz.)

165.5mm (6.5")

78.6mm (3.1")   24.9mm (0.9")

Weight (incl. battery)
Standard	332 g, 11.7 oz.
HF RFID	362 g, 12.7 oz.
UHF RFID	389 g, 13.7 oz.
Display	3.5" QVGA TFT LCD, 240 x 320 pixels, or 3.5" VGA TFT LCD, 480 x 640 pixels
Touch Panel	Glass analog resistive touch
Battery	
Main Battery	Smart Battery, Li-ion 3.7 V, 3,300 mAh, or Smart Battery, Li-ion 3.7 V, 3,600 mAh
Backup Battery	Li-ion 3.7 V, 200 mAh (not user accessible)
Notification	Vibration and LEDs
Keypads	AlphaNumeric, QWERTY, AZERTY

PERFORMANCE CHARACTERISTICS

Multi-Processor
CPU	Marvell PXA-320 806 MHz
Radio	ARM 9 series
OS	Microsoft® Windows Mobile® 6.5
Memory	RAM: 256 MB, ROM: 1GB External SD: MicroSD with SDHC (up to 32 GB)
Interfaces	USB Host 1.1 / Client 1.1 Ethernet (via accessory) RS232 Serial (via accessory)

Battery Performance
Standby	240 hours
Talk time	7 hours

WIRELESS RADIO CHARACTERISTICS

WWAN
2G	GSM / GPRS / EDGE: Quad band (850 / 900 / 1800 / 1900 MHz)
3.5G	UMTS / HSDPA: Tri band (850 / 1900 / 2100 MHz)
Bluetooth	Class II, v2.0 with EDR (integrated antenna)

GPS CHARACTERISTICS

Assisted GPS
Accuracy[1]	Position	2.5 m CEP
	SBAS	2.0 m CEP
Acquisition[1]	Cold Start	29 seconds
	Warm Start	29 seconds
	Hot Start	< 1 second
Velocity limits:	515 m/s, 1000 knots	

WIRELESS LAN CHARACTERISTICS

Bands	IEEE 802.11 a/b/g
Chipset	Atheros AR6002
Data Rate	802.11a (OFDM): 6, 9, 12, 18, 36, 48, 54 Mbps 802.11b (DSSS): 1, 2, 5.5, 11 Mbps 802.11g (OFDM): 6, 9, 12, 18, 24, 36, 48, 54 Mbps

Regulatory Domain
FCC	(Americas, Asia[2], Mid East[2])	MIC (TELEC)	(Japan)
ETSI	(Europe, Asia[2], Mid East[2], Africa)	KC (KCC)	(Korea)

2.4 GHz Frequency Bands
FCC	2.4 to 2.473 GHz,	ETSI	2.4 to 2.483 GHz
MIC	2.4 to 2.495 GHz,	KC	2.4 to 2.483 GHz

5 GHz Frequency Bands
FCC	5.15 to 5.35 GHz, 5.725 to 5.82 GHz
ETSI	5.15 to 5.35 GHz, 5.47 to 5.725 GHz
MIC	5.15 to 5.35 GHz
KC	5.15 to 5.25 GHz, 5.47 to 5.725 GHz, 5.725 to 5.82 GHz

2.4 GHz Operating Channels
FCC	11 (3 non overlapping)	ETSI	13 (3 non overlapping)
MIC	14 (4 non overlapping)	KC	13 (3 non overlapping)

5 GHz Operating Channels
FCC	23 non overlapping	ETSI	19 non overlapping
MIC	8 non overlapping	KC	8 non overlapping

Security
Standards	WEP, WPA, WPA2
Encryption	WEP, TKIP, AES

Encryption Key Provisioning:
Static (40 and 128 bit length)
Pre-shared (PSK)
Dynamic

802.1X Extensible Authentication Protocal Types:
EAP-FAST, EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, PEAP-TLS, LEAP

Certification
Wi-Fi Alliance	802.11 a / b / g, WPA Enterprise, WPA2 Enterprise
CCXv4	Cisco Compatible Extensions

USER ENVIRONMENT

Operating Temperature	-20 ºC ~ 50ºC, -4 ºF ~ 122 ºF
Storing Temperature	-30 ºC ~ 70ºC, -22 ºF ~ 158 ºF
Humidity	93% non-condensing
Drop Test	1.5 m , 5 ft. (2 drops for each side)
IP Rating	IP65 (upgradable to IP67)
Electrostatic Discharge	+/-8 kV air discharge
Clock	Integrated real time clock (backup battery keeps the time info. while replacing the main battery)

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[1] All SV @ -130 dBm.
[2] Part of the region.

M3 ORANGE Specification (contd.)

DATA CAPTURE CHARACTERISTICS

1D Scanner[3] Characteristics

Light Source	650 nm visible laser diode
Scan Rate	100 scans/sec
Decode Rate	100 decodes/sec
Reading Angle	54º, effective 44º
Pitch Angle	+/- 35º
Skew Angle	+8º ~ +50º, -8º ~ -50º
Tilt Angle	+/- 20º
Ambient fluorescent light rejection	4,000 lux max.
Ambient white light rejection	4,000 lux max.
Ambient direct sun light rejection	8,000 lux max.
Laser Safety Class	IEC825, Class I laser product
EMC	EN 55022, EN 55024

1D Scanner

2D Imager[3] Characteristics

Focal Point	17.8 cm, 7"
Image Sensor	752 x 480 CMOS seonsors
Motion Tolerance	10.2 cm, 4" per second
Rotational Sensitivity	360º
Viewing Angle	+/- 40º
Ambient Light	Total darkness to 100,000 lux (full sunlight)
Illumination LEDs	626 nm +/- 30 nm
Aiming	LEDs: 526 nm +/- 30 nm
	Laser: 650 nm +/- 10 nm

2D Imager

Camera Characteristics

Resolution	3 M pixel (2048 x 1536)
Flash	User controllable LED flash
Focus	Auto focus
Lens Size	1/4"
Lens Chief Ray Angle	25º non linear

High Frequency RFID (HF)

Frequency	13.56 MHz
Standards	ISO14443A, ISO14443B, ISO15693, I-CODE
Tag-ICs	Mifare® Standard, Mifare® 4k, Mifare® ProX, Mifare® Ultralight, Mifare® DESfire, Mifare® Mini, SLE66CLX320P, SLE55R04/08, Smart MX, Jewel, Topaz, SLE6666CL160S, SLIX4k, Sharp B, ASK GTML, ASK GTML2 ISO, TOSMART P0032/64, SR176, EM4135, ICode® SLI, LRI12, LRI64, LRI128, LRI2k, SRF55VxxP, SRF55VxxS, TempSense, Tag-ItTM HF-I Std, Tag-ItTM HF-I Pro, ICode®, ICode® EPC, ICode® UID

HF RFID

Ultra High Frequency RFID (UHF)

Frequency	902 ~ 928 MHz (FCC part 15)
	865.600 ~ 867.600 MHz (ETSI EN 302 208)
Frequency Tolerance	+/- 10 ppm over the entire temperature range
Number of Channels:	
	4 channels (compliant to ETSI EN 302 208 v1.2.1)
	50 hopping channels (compliant to FCC part 15.247)
	All subsets of 902~928MHz band are supported.
Standard	EPC C1G2 [RD3]

UHF RFID

Certifications and Partners

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[3]   Characteristics are based on the default option.

M3 ORANGE Specification (contd.)

DATACAPTURE CHARACTERISTICS (contd.)

High Frequency RFID (HF) Supported Tag Details

Tag	Manufacturer	Serial Number	Read/Write operation	Transfer command	Comments
ISO 14443 A					
MIFARE® Standard	NXP	✓	✓	✓	
MIFARE® 4k	NXP	✓	✓	✓	
MIFARE® Ultralight	NXP	✓	✓	✓	
MIFARE® ProX	NXP	✓	✓	✓	
MIFARE® DESFire	NXP	✓	-	✓	
MIFARE® Mini	NXP	✓	✓	✓	
SLE66CLX320P	Infineon	✓	-	✓	Encryption not included
SLE 55R04 / 08	Infineon	✓	-	✓	Encryption included
Smart MX	NXP	✓	-	✓	
Jewel	Innovision	✓	✓	✓	
Topaz	Innovision	✓	✓	✓	
ISO 14443 B					
SLE6666CL 160S	Infineon	✓	-	✓	
SR176	STM	✓	✓	✓	
SLIX 4K	STM	✓	✓	✓	
ASK GTML2 ISO	ASK	✓	-	✓	
ASK GTML	ASK	✓	-	✓	Extended setup needed
Sharp B	Sharp	✓	-	✓	
TOSMART P0032/64	Toshiba	✓	-	✓	
Dual Interface					
ISO 14443 A compliant	Various	✓	-	✓	
ISO 14443 B compliant	Various	✓	-	✓	
ISO 15693					
EM 4135	EM	✓	✓	✓	
ICode® SLI	NXP	✓	✓	✓	
LRI12	STM	✓	✓	✓	
LRI64	STM	✓	✓	✓	With 10% modulation index
LRI128	STM	✓	✓	✓	
LRI2k	STM	✓	✓	✓	Better performance with 10% modulation index
SRF55VxxP	Infineon	✓	✓	✓	
SRF55VxxS	Infineon	✓	✓	✓	Encryption included
Tag-it™ HF-I Std	TI	✓	✓	✓	
Tag-it™ HF-I Pro	TI	-	-	✓	Only in addressed mode
TempSense	KSW	✓	-	✓	Temperature logging
ICode					
ICode®	NXP	✓	✓	✓	
ICode® EPC	NXP	✓	✓	✓	
ICode® UID	NXP	✓	✓	✓	

Accessories

M3 ORANGE provides extra accessories in addition to the standard accessories enhance the PDA's functionality and broaden its applicable area. Its wide range of extra accessories will make M3 ORANGE to be suitable virtually in any environment.

Cradles

M3 ORANGE has various types of cradle for charging and DataSync. Besides the basic Single Slot Cradle, Single Slot Ethernet Cradle can be used for Ethernet and Vehicle Cradle is for charging M3 ORANGE device in the car. And GPS function can also be used while charging the device through the optional GPS.

<Single Slot Ethernet Cradle>   <Vehicle Cradle>

Pistol Grip

Optional pistol grip is for scan-intensive environments. This handy equipment will improve your ergonomics and increase your satisfaction.

Snap-on

Snap-on provides almost the same functions of cradle but is optimized for using field environment.

There are other accessories;
Charging Holster and Leather Case for M3 ORANGE.
Charging holster is a portable battery charger which is best solution for field service area.
To be handy for carrying and protect M3 ORANGE from any circumstances, a leather case will be a good solution. Users can choose belt type or strap type with this optional accessory.

Other Useful Accessories

<Charging Holster>   <Leather Case>

* Each extra accessory's manual can be downloaded at M3 Mobile technical support webpage. http://support.m3mobile.co.kr