

LMU-3640™ Technical Specifications

Cellular/Network

North American Variant I	
LTE Cat 1	1900 (B2)/AWS 1700 (B4)/850 (B5)/700 (B12) MHz
HSPA/UMTS	850 (V)/1900 (II) MHz
North American Variant II	
LTE Cat 1	AWS 1700 (B4)/700 (B13) MHz
Global Variant	
HSPA/UMTS	800 (VI)/850 (V)/900 (VIII)/1800 (III)/1900 (II) MHz
GSM/GPRS	850/900/1800/1900 MHz

Data Support

SMS, UDP Packet Data, TCP, CalAmp Telematics Cloud API
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Satellite Location (GNSS)

Constellation Support	Hybrid GPS, GLONASS, SBAS Engine (WAAS, EGNOS, MSAS)
Channels	55 Channel
Tracking Sensitivity	-162 dBm
Acquisition Sensitivity	-156 dBm (hot start) -148 dBm (cold start)
Location Accuracy	~2.0m CEP Open Sky (SBAS 24 hours static)
Location Update Rate	Up to 4 Hz
AGPS Location assistance capable	

Comprehensive I/O

Ignition Input	1 (fixed bias)
Digital Inputs	4 (high/low bias selectable 0-30 VDC)
Digital Outputs	3 (open collector relay 150mA)
Analog Inputs	2 external ADC inputs
Accelerometer	Built in, triple-axis (driver behavior, impact detection, motion sensing, tilt detection)
1-Wire® Interface	1 (driver ID/temperature sense)
Power Output	1 switched VIN
Status LEDs	4 (GPS, cellular, VBUS, LAN)
Serial Interface	2 TTL ports
Integrated Buzzer	Programmable audible alert
External ADC Inputs	2 (reference voltage - 3.3V)

Certifications

Industry Certifications	FCC, IC, PTCRB, RoHS
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Device Management

PULS™	Monitor, manage, upgrade firmware, configure and troubleshoot devices remotely
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Embedded Intelligence Engine

PEG™	Update device functionality or develop new on the edge applications
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Electrical

Operating Voltage	12/24 VDC Vehicle Systems 9-30 VDC (start-up, operating) 7-32 VDC (momentary)
Power Consumption	Typical 450uA @ 12V (deep sleep) Typical 15mA @ 12V (radio-active sleep) Typical 100mA @ 12V (active tracking w/GPS and cell enabled)

Battery Pack

Battery Capacity	Up to 1000 mAh
Battery Technology	Lithium-Ion
Charging Temperature	0° to +45° C

Environmental

Temperature	-30° to +60° C (connected to primary power) -10° to +60° C (operating on internal battery) -20° to +25° C ≤ 6 months (long term storage with battery)
Humidity	95% RH @ 50° C non-condensing
Shock and Vibration	U.S. Military Standards 202G, SAEJ1455
ESD	SAE J1113-13 (4 KV Limit)

Physical/Design

Dimensions	5.7 x 2.1 x 1.3" (145 x 53 x 33 mm)
Weight	5 oz. (142 g) (w/ 1000mAh battery)

Connectors/SIM Access


Vehicle BUS I/F	16-Pin 3mm Pitch
Power, I/O	24-Pin 3mm Pitch
SIM Access	Internal (2FF SIM)

Interface Standards

Bluetooth	Classic Bluetooth v2.1+EDR and BLE v4.0
Heavy Duty Truck Data	J1939, J1708
Light Duty Vehicle Data	J1850 PWM, J1850 VPW, SW-CAN ISO 9141-2, KWP 2000, ISO 15765 CAN

Product Options

RS-232 on Aux 2
I/O wiring harness
200mAh Lithium-Ion backup battery
Wi-Fi 802.11 a/g/b/n client mode

CALIFORNIA PROPOSITION 65	
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LMU-3030™ LTE Technical Specifications

Cellular/Network

North American Variant I LTE Cat 1	1900 (B2)/AWS 1700 (B4)/700 (B12) MHz
North American Variant II LTE Cat 1	AWS 1700 (B4)/700 (B13) MHz

Data Support

SMS, UDP Packet Data, TCP, CalAmp Telematics Cloud API
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Satellite Location (GNSS)

Constellation Support	GPS, GLONASS, SBAS Engine (WAAS, EGNOS, MSAS, GAGAN)
Channels	55 Channel
Tracking Sensitivity	-167 dBm
Acquisition Sensitivity	-157 dBm (hot start) -148 dBm (cold start)
Location Accuracy	~2.0m CEP Open Sky (GPS SBAS 24 hours static)
Location Update Rate	Up to 4 Hz
AGPS Location assistance capable	

Comprehensive I/O

OBD-II Interface	J1850 PWM, J1850 VPW, ISO-9141-2, ISO-14230 (KWP 2000), SW-CAN, ISO-15765 CAN
Serial Port	2-wire TTL Serial Interface
Bluetooth	Bluetooth Low Energy (BLE)
Status LEDs	3 (OBD, GPS, cellular)
Integrated Buzzer	Programmable audible alert
Accelerometer	Built in, triple-axis (driver behavior, impact detection, motion sensing, tilt detection)

Certifications

Industry Certifications	FCC, IC, CE, PTCRB, RoHS
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Device Management

PULS™	Monitor, manage, upgrade firmware, configure and troubleshoot devices remotely
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Embedded Intelligence Engine

PEG™	Update device functionality or develop new on the edge applications
Geo-Fences	32 built-in
Buffered Messages	2000

Electrical

Operating Voltage	12/24 VDC Vehicle Systems 9-30 VDC (start-up, operating) 7-32 VDC (momentary)
Power Consumption	Typical 2mA @ 12 V (deep sleep) Typical 40mA @ 12 V (active tracking w/ GPS and cell enabled)

Battery Pack

Battery Capacity	180 mAh
Battery Technology	Lithium-Ion
Charging Temperature	0° to +45° C

Environmental

Temperature	-30° to +60° C (connected to primary power) -20° to +60° C (operating on battery) -20° to +25° C ≤ 6 months (long term storage with battery)
Humidity	95% RH @ 50° C non-condensing
Shock and Vibration	U.S. Military Standards 202G, 810F; SAEJ1455
ESD	IEC 61000-4-2 (4KV Test)

Physical/Design

Dimensions	1.8 x 2.6 x 1.1" (46 x 67 x 28 mm)
Weight	1.75 oz (50 g)

OBD Data Extraction

Detection	Automatic detection of vehicle interface services
Extraction	Transmission of standard OBD-II codes, plus manufacturer specific codes which are made available by the embedded OBD firmware stack
Scripts	Download of vehicle specific diagnostic scripts dependent on vehicle model variant

Connectors/SIM Access

GPS Antenna	Internal
Cellular Antenna	Internal
SIM Access	Internal (2FF SIM)

TTU-2830™ Technical Specifications

Cellular/Network

North American Variant I	
LTE Cat 1	1900 (B2)/AWS 1700 (B4)/850 (B5)/700 (B12) MHz
HSPA/UMTS	850 (V)/1900 (II) MHz
North American Variant II	
LTE Cat 1	AWS 1700 (B4)/700 (B13) MHz
Global Variant I	
HSPA/UMTS	800 (VI)/850 (V)/900 (VIII)/1800 (III)/1900 (II) MHz
GSM/GPRS	850/900/1800/1900 MHz
Global Variant II	
GSM/GPRS	850/900/1800/1900 MHz

Data Support

SMS, UDP Packet Data, TCP, CalAmp Telematics Cloud API
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Satellite Location (GNSS)

Constellation Support	Hybrid GPS, GLONASS, SBAS Engine (WAAS, EGNOS, MSAS)
Channels	55 Channel
Tracking Sensitivity	-167 dBm
Acquisition Sensitivity	-156 dBm (hot start) -148 dBm (cold start)
Location Accuracy	~2.0m CEP Open Sky (SBAS 24 hours static)
Location Update Rate	Up to 4 Hz
Anti-jamming	
AGPS Location assistance capable	

Comprehensive I/O

Ignition Inputs	1 fixed bias
Digital Inputs	2 (high/low bias selectable 0-30 VDC)
Digital Outputs	3 (open collector relay 150mA)
Analog Inputs	1 external ADC input
Accelerometer	Built in, triple-axis (driver behavior, impact detection, motion sensing, tilt detection)
Serial Interface	1 TTL port
1-Wire® Interface	1 (driver ID/temperature sense)
Status LEDs	2 (GPS and cellular)

Certifications

Industry Certifications	FCC, IC, PTCRB, RoHS
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Electrical

Operating Voltage	12/24 VDC Vehicle Systems 9-30 VDC (start-up, operating) 7-32 VDC (momentary)
Power Consumption	Typical 400uA @ 12V (deep sleep) Typical 15mA @ 12V (radio-active sleep) Typical 60mA @ 12V (active tracking w/GPS and cell enabled)

Battery Pack

Battery Capacity	Up to 5200 mAh
Battery Technology	Lithium-Ion
Charging Temperature	0° to +45° C

Environmental

Temperature	-30° to +60° C (connected to primary power) -20° to +60° C (operating on internal battery) -20° to +25° C (storage > 3 months)
Humidity	95% RH @ 50° C non-condensing
Shock and Vibration	U.S. Military Standards 202G, SAEJ1455
ESD	SAE J1113-13 (4 KV Limit)
Ingress Protection Rating	IP66

Physical/Design

Dimensions	4.5 x 3.2 x 1.6" (114 x 80 x 39mm)
Weight	8.11 oz. (230g)

Connectors/SIM Access

Power, I/O	12 wire captive harness
SIM Access	Internal (2FF SIM)


Device Management

PULS™	Monitor, manage, upgrade firmware, configure and troubleshoot devices remotely
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Embedded Intelligence Engine

PEG™	Update device functionality or develop new on the edge applications
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CALIFORNIA PROPOSITION 65



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LMU-5531™ Technical Specifications

Cellular/Network

North American Variant I	
LTE Cat 3	1900 (B2)/AWS 1700 (B4)/850 (B5)/700 (B12) MHz
HSPA/UMTS	850 (V)/AWS 1700 (IV)/1900 (II) MHz
GSM/GPRS	850/900/1800/1900 MHz
North American Variant II	
LTE Cat 1	AWS 1700 (B4)/700 (B13) MHz
Global Variant	
HSPA/UMTS	800 (VI)/850 (V)/900 (VIII)/1900 (II)/2100 (I) MHz
GSM/GPRS	850/900/1800/1900 MHz

Data Support

TCP/IP, UDP/IP, DHCP, HTTP, IP Router, PPP, HTTP web server, Telnet DHCP server, DDNS, DDNS Client, NAT, NMEA, TAIP, TSIP, TFTP, IP port forwarding, CalAmp Telematics Cloud API
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Satellite Location (GNSS)

Constellation Support	Hybrid GPS, GLONASS, SBAS Engine (WAAS, EGNOS, MSAS)
Channels	56 Channel
Tracking Sensitivity	-162 dBm
Acquisition Sensitivity	-156 dBm (hot start) -148 dBm (cold start)
Location Accuracy	~2.0m CEP Open Sky (GPS SBAS 24 hours static)
Location Update Rate	Up to 4 Hz
AGPS Location assistance capable	

Comprehensive I/O

Digital Inputs	7 (high/low selectable 0-30 VDC)
Digital Outputs	5 relay driver outputs (200mA) 2 low current LED outputs (20mA)
Analog Inputs	5 general purpose A/D (0-30 VDC)
Accelerometer	Built in, triple-axis (driver behavior, impact detection, motion sensing, tilt detection)
1-Wire® Interface	2 (driver ID, temperature sense)
Status LEDs	4 (Pwr, COMM, GPS, Wi-Fi, BT)
Serial Interface	1 DB-9 (RS232/RS485), 1 5-Pin TTL level switch power

Certifications

Industry Certifications	FCC, CE, IC, PTCRB, RoHS
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Device Management

PULS™	Monitor, manage, upgrade firmware, configure and troubleshoot devices remotely
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Embedded Intelligence Engine

PEG™	Update device functionality or develop new on the edge applications
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CALIFORNIA PROPOSITION 65

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Electrical

Operating Voltage	12/24 VDC Vehicle Systems 9-30 VDC (start-up, operating) 8-32 VDC (momentary)
Power Consumption	<2mA @ 12V (deep sleep) 160mA @ 12V (idle on network) 270mA @ 12V (active tracking)

Battery Pack

Battery Capacity	Up to 1000 mAh
Battery Technology	Lithium-Ion
Charging Temperature	0° to +45° C

Environmental

Temperature	-30° to +70° C (connected to primary power) -40° to +85° C (storage)
Humidity	95% RH @ 50° C non-condensing
Shock and Vibration	U.S. Military Standards 202G, 810F, SAE J1455
ESD	SAE J1113 (4 KV Limit)

Physical/Design

Dimensions	5.8 x 4.0 x 1.2" (146 x 102 x 40 mm)
Weight	8.0 oz. (227g)

Connectors/SIM Access

Power, Ignition, ADC	4-Pin Connector
I/O	22-Pin Connector
GPS Antenna	External
SIM Access	External
Ethernet	2x 10/100 Base-T RJ45
USB	On-the-go (mini), Host Type A

Interface Standards

Bluetooth	4.0 Dual-Mode Classic, BLE
Wi-Fi	802.11 b/g/n Supports access point and/or client operations Supports internal/external antenna

Product Options

All necessary antennas (GPS, cellular, combined GPS/cellular)
Serial adapter cable RS-232 8-wire (PPP, AT commands, NMEA GPS output)
Internal/External/Optional jPOD™ truck ECU interface
Connectorized I/O wiring harnesses

TTU-730™ Technical Specifications

Cellular/Network

North American Variant I	
LTE Cat 1	1900 (B2)/AWS 1700 (B4)/850 (B5)/700 (B17) MHz
HSPA/UMTS	850 (V)/1900 (II) MHz
North American Variant II	
LTE Cat 1	AWS 1700 (B4)/700 (B13) MHz

Data Support

SMS, UDP Packet Data

Satellite Location (GNSS)

Constellation Support	GPS, GLONASS, SBAS Engine (WAAS, EGNOS, MSAS, GAGAN)
Channels	55 Channel
Tracking Sensitivity	-167 dBm
Acquisition Sensitivity	-157 dBm (hot start) -148 dBm (cold start)
Location Accuracy	~2.0m CEP Open Sky (SBAS 24 hours static)
Location Update Rate	1 Hz
AGPS Location assistance capable	

Certifications

Industry Certifications	FCC, IC, PTCRB, RoHS
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Device Management

PULS™	Monitor, manage, upgrade firmware, configure and troubleshoot devices remotely
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Embedded Intelligence Engine

PEG™	Behavioral scripting (8-bit support)
Accelerometer	Built-in, triple-axis (motion sensing, tilt detection)
Geo-fences	10 built-in
Buffered Messages	2000

Electrical

Operating Voltage	3.6V internal battery
Power Consumption	Typical 30uA @ 3.6V (hibernate)
	Typical 50uA @ 3.6V (deep sleep)
	Typical 50mA @ 3.6V (active GPS tracking only) Typical 80mA @ 3.6V (cellular idle only)

Battery Pack

Battery Capacity	Up to 57 Ah
Battery Voltage	3.6V
Battery Technology	Lithium Primary

Environmental

Temperature	-30° to +65° C (operating and storage)
Humidity	95% RH @ 50° C non-condensing
Shock and Vibration	U.S. Military Standards 202G, 810F, SAE J1455
ESD	IEC 61000-4-2 (4KV test)
Ingress Protection Rating	IP67

Physical/Design

Dimensions	9.90 x 2.35 x 2.45" (251 x 60 x 62 mm)
Weight	23.2 oz. (658 g)

Connectors/SIM Access

GPS Antenna	Internal
Cellular Antenna	Internal
SIM Access	Internal (2FF SIM)

Product Options

CalAmp Telematics Cloud API

TTU-2840XTreme™ Technical Specifications

Cellular/Network

North American Variant I	
LTE Cat 1	1900 (B2)/AWS 1700 (B4)/850 (B5)/700 (B12) MHz
HSPA/UMTS	850 (V)/1900 (II) MHz
North American Variant II	
LTE Cat 1	AWS 1700 (B4)/700 (B13) MHz

Data Support

SMS, UDP Packet Data, TCP, CalAmp Telematics Cloud API
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Satellite Location (GNSS)

Constellation Support	Hybrid GPS, GLONASS, SBAS Engine (WAAS, EGNOS, MSAS)
Channels	55 Channel
Tracking Sensitivity	-167 dBm
Acquisition Sensitivity	-156 dBm (hot start) -148 dBm (cold start)
Location Accuracy	~2.0m CEP Open Sky (SBAS 24 hours static)
Location Update Rate	Up to 4 Hz
Anti-jamming	
AGPS Location assistance capable	

Comprehensive I/O

Ignition Inputs	1 fixed bias
Digital Inputs	2 (high/low bias selectable 0-30 VDC)
Digital Outputs	3 (open collector relay 150mA)
Analog Inputs	1 external ADC input
Accelerometer	Built in, triple-axis (driver behavior, impact detection, motion sensing, tilt detection)
Serial Interface	1 TTL port
1-Wire® Interface	1 (driver ID/temperature sense)
Status LEDs	2 (GPS and cellular)

Certifications

Industry Certifications	FCC, IC, PTCRB, RoHS
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Device Management

PULS™	Monitor, manage, upgrade firmware, configure and troubleshoot devices remotely
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Embedded Intelligence Engine

PEG™	Update device functionality or develop new on the edge applications
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Electrical

Operating Voltage	12/24 VDC Vehicle Systems 9-32 VDC (start-up, operating) 7-32 VDC (momentary)
Power Consumption	Typical 400uA @ 12V (deep sleep) Typical 15mA @ 12V (radio-active sleep) Typical 60mA @ 12V (active tracking w/GPS and cell enabled)

Battery Pack

Battery Capacity	Up to 5300 mAh
Battery Technology	Lithium-Ion
Charging Temperature	-15° to +55° C (extended temperature range)

Environmental

Temperature	-30° to +60° C (connected to primary power) -20° to +60° C (operating on internal battery) -20° to +35° C (storage > 3 months)
Humidity	95% RH @ 50° C non-condensing
Shock and Vibration	U.S. Military Standards 202G, SAEJ1455
ESD	SAE J1113-13 (4 KV Limit)
Ingress Protection Rating	IP67


Physical/Design

Dimensions	5.4 x 3.1 x 2.0" (137 x 80 x 52mm)
Weight	12.06 oz. (342g)

Connectors/SIM Access

Power, I/O	12 wire connector with detachable harness
SIM Access	Internal (2FF SIM)

CALIFORNIA PROPOSITION 65

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Custom Garmin Driver Interface

- Garmin FMI Integrated
- Touchscreen
- Customized Canned Two-Way Messaging
- Driver Login
- Turn by Turn Navigation



General

Physical dimensions	5.5"W x 3.3"H x .7"D (14.0 x 8.4 x 1.8 cm)
Display size	4.4"W x 2.5"H (11.1 x 6.3 cm); 5.0" diag (12.7 cm)
Display resolution	480 x 272 pixels
Display type	WQVGA color TFT with white backlight, glass capacitive touch
Dual-orientation display	✓
Weight	6.1 oz (173.7 g)
Battery	rechargeable lithium-ion
Battery life	up to 1 hour

Maps & Memory

Preloaded street maps	✓
Includes map updates	✓
Data cards	microSD™ card (not included)

Camera Features

Backup camera compatible	yes (BC™ 30 or BC™ 40)
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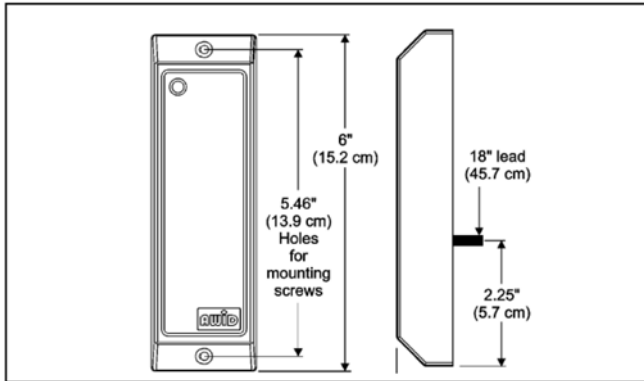
Navigation Features

Garmin Real Directions™ landmark guidance	✓
Millions of Foursquare® points of interest	✓
TripAdvisor® ratings for points of interest	✓
Route shaping through preferred cities/streets	✓
Voice-activated navigation (operate device with spoken commands)	✓
Includes traffic	✓
Lane assist with junction view (displays junction signs)	✓
Bluetooth® calling	✓
Speed limit indicator (displays speed limit for most major roads in the U.S. and Europe)	✓
Driver alerts for sharp curves, school zones, red light and speed camera warnings and more	✓

Specifications and model subject to change.



Driver ID – Dash-Mounted RFID Reader



FEATURES

Compact size...

Fits on a mullion or door frame

Clean, slim design...

Matches good architecture at site

Ready for rough usage...

Rugged, strong construction

Ready for adverse weather...

One-part enclosure with potting

Easy mounting...

2 screws (supplied) for fastening

Special read range in a small unit...

Up to 8 inches with cards

Visual and audible indicators...

3-color LED and beeper inside reader

Controllable functions in reader...

LED, beeper, hold can be wired to panel

OPERATING CHARACTERISTICS

Reading Distance:

With cards – Up to 8 inches (varies with mounting method, voltage applied to reader, and credential type)

Excitation Frequency:

Transmit and Receive - 125 kHz

Antenna Output:

Omni-directional low-frequency RF field

Indicators (Control by Reader and Panel):

LED – 3 colors, red-amber-green

Beeper – piezo-electric, 4 kHz tone

Power Supply:

+5 volts to +12 volts DC, linear, regulated

Current rating: 120 mA at 5 V, 200 mA at 12 V

Communication Protocols:

Wiegand electrical interface

RS-232 serial interface

Code Formats:

Determined by AWID's credentials programmed with 26 bits to 50 bits

Cable (for Wiegand Interface):

4 to 7 conductors (not twisted pairs), stranded, 22 gauge, color-coded, overall 100% shielded, plastic jacket; up to 500 ft

PHYSICAL CHARACTERISTICS

Dimensions:

6.0 x 1.75 x 1.0 inches (15.24 x 4.45 x 2.54 cm)

Weight:

6 ounces (170 g)

Material:

ABS 1-part enclosure, dark gray color

Epoxy resin potting at rear surface

Cable (Integrated with Reader):

10 conductors, 22 gauge, 18 inches long.

Overall shielded, gray plastic jacket

Mounting:

Door frame, window mullion, wall, cabinet

ENVIRONMENT

Operating Temperature:

-31°F to 150°F (-35°C to 65°C)

Operating Humidity:

0% to 95% non-condensing

Protection from Environment:

Use Lexan housing when reader must be removed from view or protected from damage.

Avoiding Interference:

Optimize reader performance by spacing or shielding reader from neighboring readers, including reader on other side of wall at door.

CERTIFICATION

ISO-9001:2000; FCC Part 15; IC; UL listed

Specifications subject to change.