

IT&T SERVICE CATALOGUE

Fraport Greece

January 2022

PAGE INTENTIONALLY LEFT BLANK

Version Control

Version	Revision	Description of Revision (incl. list of changes)	Date
01	00	Initial release	31.01.2022

PAGE INTENTIONALLY LEFT BLANK

Table of Contents

Version Control	3
Table of Contents	5
List of Tables	8
List of Figures.....	8
List of Abbreviations.....	9
1. Local Area Network (LAN) Service	11
1.1. Technical Characteristics	11
1.2. Options Offered	11
1.3. Advantages	11
1.4. Billing Policy.....	12
1.5. Terms and Conditions.....	12
2. Wide Area Network (WAN) Service	13
2.1. Standard WAN	13
2.1.1. Options Offered.....	13
2.1.2. Advantages.....	13
2.1.3. Billing Policy.....	14
2.1.4. Terms and Conditions	14
2.2. Premium WAN (Leased Lines).....	14
2.2.1. Options Offered.....	14
2.2.2. Advantages.....	15
2.2.3. Billing Policy.....	15
2.2.4. Terms and Conditions	16
3. Telephony Service	17
3.1. Technical Characteristics	17
3.2. Options Offered	17
3.3. Advantages	17
3.4. Telephone Devices	17
3.5. Billing Policy.....	18
3.6. Terms and Conditions.....	18
4. Equipment Hosting Service	19
4.1. Technical Characteristics	19
4.2. Advantages	19
4.3. Billing Policy.....	19
4.4. Terms and Conditions.....	20
5. Private Radio Network (PRN) Service.....	21
5.1. Technical Characteristics	21

5.2. Options Offered	21
5.3. Advantages	21
5.4. Radio Devices	21
5.4.1. Handheld Radio Devices	22
5.4.2. Mobile Radio Devices	23
5.5. Billing Policy	23
5.6. Terms and Conditions.....	23
6. Flight Information Display System (FIDS) Service	25
6.1. Options Offered	25
6.2. Advantages	25
6.3. Displays	25
6.4. Billing Policy	26
6.5. Terms and Conditions.....	26
7. Dedicated Common Use Terminal Equipment (CUTE) Service.....	27
7.1. Advantages	27
7.2. CUTE Equipment	27
7.3. Billing Policy	29
7.4. Terms and Conditions.....	29
8. Cabling Service	31
8.1. Billing Policy	31
8.2. Terms and Conditions.....	31
9. Technical Support Services	32
9.1. Customer Support Request Registration and Technical Assistance Service ...	32
9.1.1. Terms and Conditions	32
9.2. Troubleshooting and Incident Resolution Service.....	33
9.2.1. Terms and Conditions	33
9.3. Hardware Repair and Replacement Service	33
9.3.1. Terms and Conditions for Telephone Devices	33
9.3.2. Terms and Conditions for Radio Devices	33
9.3.3. Terms and Conditions for Displays.....	34
9.3.4. Terms and Conditions for CUTE Equipment	34
10. Remote Hands Service	35
10.1. Advantages	35
10.2. Billing Policy	36
10.3. Terms and Conditions.....	36
Annex I Cisco IP Phone 7800 Series	37
Annex II Motorola DP4000e Series.....	46

Annex III	Motorola DM4000e Series	50
Annex IV	LG UH5F Series	54
Annex V	HP Elite Desk 800 G2 and HP V213a	64
Annex VI	IER 401	72
Annex VII	OKI ML3320eco	74
Annex VIII	Access IS BGR750	76
Annex IX	Access IS LSR130.....	78

List of Tables

Table 1: Premium WAN offerings characteristics	15
Table 2: Incident Prioritization	32

List of Figures

Figure 1: Cisco IP Phone 7800 Series	18
Figure 2: Motorola DP4401e	22
Figure 3: Motorola DP4601e	22
Figure 4: Motorola DM4601e.....	23
Figure 5: HP Elite Desk 800	27
Figure 6: HP V213a.....	27
Figure 7: IER 401	28
Figure 8: OKI ML3320eco	28
Figure 9: Access IS BGR750.....	29
Figure 10: Access IS LSR130	29

List of Abbreviations

ADSL	Asymmetric Digital Subscriber Line
AODB	Airport Operational Database
BCBP	BarCoded Boarding Pass
CUCM	Cisco Unified Communications Manager
CUTE	Common Use Terminal Equipment
D	Dimension
DMR	Digital Mobile Radio
DSLAM	Digital Subscriber Line Access Multiplexer
ETSI	European Telecommunications Standards Institute
FG	Fraport Greece
FIDS	Flight Information Display System
IATA	International Air Transport Association
IP	Internet Protocol
IP68	Ingress Protection 68
IT&T	Information Technology & Telecommunications
ITSM	Information Technology Service Management
ITT	IT & Telecoms Dept. of FG
LAN	Local Area Network
MAC	Media Access Control
MDF	Main Distribution Frame
MPLS	Multi-Protocol Label Switching
NTE	Network Termination Equipment
PDA	Personal Digital Assistance
PDF	Portable Data File
PRN	Private Radio Network
PTT	Push-To-Talk
QR	Quick Response
SFTP	Shielded Foiled Twisted Pair
SIP	Session Initiation Protocol
UPS	Uninterruptible Power Supply
VDSL	Very high bit rate Digital Subscriber Line
VLAN	Virtual Local Area Network
VPN	Virtual Private Network
WAN	Wide Area Network

PAGE INTENTIONALLY LEFT BLANK

1. Local Area Network (LAN) Service

Fraport Greece (FG) is able to provide a secure, reliable and flexible connection between all the computers and peripheral devices of the customer within the campus of each airport operated by FG. LAN Service gives the customer the ability to access data from any of its devices and to share resources like printers, scanners, file servers etc.

LAN Service can be fully combined with the “Telephony Service” (see §3) for telephone connection and with “Wide Area Network (WAN) Service” (see §2) for internet access provisioning.

1.1. Technical Characteristics

- FG’s LAN infrastructure fully supports the transport of voice, data and video.
- Use of layer 2 Virtual Local Area Networks (VLANs) which provide logical and secure segregation of customers.
- VLANs are also used for functions segregation of the same customer, in which case the customer may utilize more than one VLAN.
- Application and deployment of Quality of Service in the entire switching infrastructure.
- All FG airport campus networks are deployed with fiber optics with network backbone capacity and bandwidth up to 2x1Gbps (multiple in specific locations). Especially the Rodos, Thessaloniki and Kerkira airport campuses have backbone capacity and bandwidth up to 2x10Gbps (and more if required).
- All access ports have Bridge Protocol Data Unit guard enabled (connection of switches with spanning tree protocol enabled will disable the port).
- All ports have built in and configured the port security functionality.
- Maximum number of MAC addresses per port is 2.
- By design oversubscription is common with frame and packet switching.

1.2. Options Offered

LAN Service has three options to select depending the speed required for the data transfer between the customer’s devices:

- 10 Mbps data port
- 100 Mbps data port
- 1000 Mbps data port

For the 1000Mbps option the LAN Service depends on the existing backbone bandwidth per airport. In case multiple 1000 Mbps access ports speeds are utilized, then they may add up to more than the speed of the backbone network, in which case the access port speed is not guaranteed.

1.3. Advantages

- Robust infrastructure in terms of design, redundancy and security according to standards.
- Free of charge Technical Support Services as these described in Technical Support Services (see §9).
- 24x7x365 monitoring of Fraport Greece systems to ensure their uninterrupted operation.
- No need for the customer to purchase, maintain and support own equipment within airport campus.

1.4. Billing Policy

The billing policy for the LAN Service includes the below:

- i) a fixed one time activation fee for the Service, and
- ii) a monthly fee for the Service dependent to the option chosen.

For more information on the charges, please see the "IT&T Services Pricelist", send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

1.5. Terms and Conditions

- LAN Service is only offered to customers having a physical location within the airport campus.
- All the necessary works regarding installation, configuration, and operation of the equipment needed to provide the LAN Service are performed by FG designated personnel.
- Only end host devices are allowed to be connected with FG switching infrastructure.
- For security reasons switches are strictly prohibited to be connected with FG LAN infrastructure.
- The proper operation in terms of configuration and security of all customer equipment connected to FG network infrastructure is sole responsibility of the customer.
- In case a customer has more than one VLAN, then layer 3 networks and inter-VLAN routing is a sole responsibility of the customer.
- The estimated LAN Service delivery date is 3-5 working days.

2. Wide Area Network (WAN) Service

Fraport Greece is able to provide internet access to all devices located within the campus of the airports operated by FG through its upgraded network infrastructure (WAN edge), which is capable to fully support and satisfy the present and future operational needs of its customers. WAN Service gives the customer the flexibility to select between having a permanent connection with one or more locations (ends) or not, as well as having asymmetric or symmetric communication with the internet.

Asymmetric communication with the internet means that the transmission speeds for uploading and downloading are different, specifically greater towards the customer premises (downloading) than the reverse (uploading), while symmetric communication with the internet means that the transmission speeds for both directions are the same.

Symmetric communication can only be provided by a permanent WAN connection between two or more locations.

The WAN circuits are provided by OTE, which is the biggest telecommunications provider in Greece.

2.1. Standard WAN

2.1.1. Options Offered

Standard WAN Service provides asymmetric communication with the internet and has several options to select depending the speed required for the data transfer from and to the Internet and the need to have a static-IP or not to the modem/router.

In relation to the speed, the below options exists:

- ADSL connection (up to 24 Mbps:1 Mbps)
- VDSL connection (up to 50 Mbps:5 Mbps)
- 100 Mbps connection (up to 100Mbps:10 Mbps)

A router non-static IP, dynamic IP, is offered only for an ADSL connection, while for all the rest connection types a router static-IP is given by default.

A router static-IP is required only in the case the customer requires to enable remote users or systems located outside the airport campus (i.e. Headquarters, regional offices) to be connected to the customer's Virtual Local Area Network (VLAN) located within the airport campus via a secure remote connection.

In case the customer requires to provide its own gateway router, it is possible; however it must be hosted to FG facilities. In such case, please refer to the "Equipment Hosting Service" (see §4).

In case the customer requires to transfer an already existing telephone number to be used for internet access within airport campus, it is possible with an one time charge for the transference.

2.1.2. Advantages

- DSLAMs are installed within airport's Main Distribution Frame (MDF) rooms for eliminating the distance from the WAN modems/routers and thus gaining maximum upload and download speeds.
- Free of charge Technical Support Services as these described in Technical Support Services (see §9).
- 24x7x365 monitoring of FG systems to ensure their uninterrupted operation.

2.1.3. Billing Policy

The billing policy for the Standard WAN Service include the below:

- i) a fixed one time activation fee for the Service, and
- ii) a monthly fee for the Service dependent to the option chosen.

For more information on the charges, please see the “IT&T Services Pricelist”, send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

2.1.4. Terms and Conditions

- Standard WAN Service is only offered to customers having a physical location within the airport campus.
- All the necessary works regarding installation, configuration, and operation of the equipment needed to provide the Standard WAN Service are performed by FG designated personnel.
- The proper operation in terms of configuration and security of all customer equipment connected to FG network infrastructure is sole responsibility of the customer.
- Each internet access connection utilizes a telephone number as a circuit identifier.
- The Standard WAN Service “ADSL connection” and “VDSL connection” options are offered with an obligatory minimum period of provided service of 12 months. In case the customer terminates the Service earlier than 12 months, then an early termination fee is charged.
- The Standard WAN Service “100Mbps connection” option is offered without an obligatory minimum period of provided service.
- The estimated Standard WAN Service delivery date is 5-8 working days.

2.2. Premium WAN (Leased Lines)

Premium WAN Service or a leased line is a premium, internet connectivity product between two or more designated locations that is permanently connected all the times. Premium WAN Service provides privacy to the users and the maximum security since they do not carry third party communications. Premium WAN Service is ideal for customers that need to connect geographically distant offices one of which must be located within airport campus.

2.2.1. Options Offered

Premium WAN Service has several options to select depending the characteristics of the line required. The first characteristic to consider is the internet provider of the end not located at the airport campus, while the rest factors are the speed required for the data transfer, the type of communication with the internet and the number of locations required to connect.

For Premium WAN Service the router for layer 3 connectivity is provided by the customer and is hosted adjacent to the Network Termination Equipment (NTE) or DSLAM equipment within airport’s MDF rooms.

Metro Ethernet E-Line

Metro Ethernet E-Line is a Point-to-Point offering providing an exclusive end-to-end circuit meeting the requirement for guaranteed and symmetric data transfer speeds from 1Mbps to 10Mbps. Moreover, each end is given the ability to create and manage their own sub-networks, which may vary according to their own operational requirements.

Metro Ethernet E-line option is provided via a dedicated OTE NTE (LAN switch) which is installed within airport’s MDF rooms offering fiber feed connectivity.

IP VPN Fixed

IP VPN Fixed is a Point-to-Multi Point offering providing connection of customer’s airport campus location to OTE IP MPLS network at guaranteed and symmetric data transfer speeds from 1Mbps to 10Mbps.

IP VPN Fixed option is provided via a dedicated OTE NTE (LAN switch) or via dedicated DSLAM equipment which is installed within airport’s MDF rooms.

IP VPN Broadband

IP VPN Broadband is a Point-to-Multi Point offering providing connection of different customer’s airport campus locations to OTE IP MPLS network at not-guaranteed and asymmetric data transfer speeds of 24Mbps or 50 Mbps (download). The existence of IP VPN Fixed point is not required.

IP VPN Broadband option is provided via dedicated DSLAM equipment that is installed within airport’s MDF rooms for eliminating the distance from the WAN modems/routers and thus gaining maximum upload and download speeds.

The below table depicts the different offerings with their characteristics.

Table 1: Premium WAN offerings characteristics

Characteristic	Metro Ethernet	IP VPN Fixed	IP VPN Broadband
Other end than the airport’s	Any provider, OTE	OTE	OTE
Type of communication with the internet	Symmetrical	Symmetrical	Asymmetrical
Number of ends	Point-to-Point	Point-to-Multi Point	Point-to-Multi Point
Data transfer speeds	1, 2, 4, 6, 8, 10 Mbps	1, 2, 4, 6, 8, 10 Mbps	24, 50 Mbps
Speed warranted	Yes	Yes	No

2.2.2. Advantages

- On demand large bandwidth and speed.
- A leased line is an always active connection.
- Better quality, as the connection does not carry third party communications.
- Free of charge Technical Support Services as these described in Technical Support Services (see §9).

Metro Ethernet E-Line

- Combines safety, quality and ease of interconnection between two points.

IP VPN Fixed

- The service is provided via the nationwide OTE IP MPLS network with quality and security features same as those of a closed private network.

IP VPN Broadband

- More affordable solution in relation to IP VPN Fixed.

2.2.3. Billing Policy

The billing policy for the Premium WAN Service includes the below:

- i) a fixed one time activation fee for the Service dependent to the option chosen,
- ii) a monthly fee for the Service dependent to the option chosen.

For Metro Ethernet offering the fixed one time activation fee and the monthly fee is charged per end, for the airport's and for customer's ends. In addition, as another factor affecting the recurring fees apart from the speed required for the data transfer is the distance between ends, there is an additional fee applied to the end not located at the airport's campus. These ends are distinguished to those that are near the airport "urban" and the distant ones, "long distance".

For more information on the charges, please see the "IT&T Services Pricelist", send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

2.2.4. Terms and Conditions

- Premium WAN Service is only offered to customers having a physical location within the airport campus.
- Premium WAN Service is only offered to customers purchasing the LAN Service as well.
- All the necessary works regarding installation, configuration, and operation of the equipment needed to provide the Premium WAN Service are performed by FG designated personnel.
- Relevant to Premium WAN Service, the router for layer 3 connectivity is provided by the customer.
- The proper operation in terms of configuration and security of all customer equipment connected to FG network infrastructure is sole responsibility of the customer.
- The Premium WAN Service "Metro Ethernet E-Line" and "IP VPN Fixed" options are offered with an obligatory minimum period of provided service of 12 months. In case the customer terminates the Service earlier than 12 months, then an early termination fee is charged.
- The Premium WAN Service "IP VPN Broadband" option is offered with an obligatory minimum period of provided service of 2 months. In case the customer terminates the Service earlier than 2 months, then an early termination fee is charged.
- The estimated Premium WAN Service delivery date is 30-40 working days.

3. Telephony Service

Fraport Greece is able to provide telephone connections within the campus of the airports operated by FG through its IP telephony voice network, which is connected to the Public Telecommunication Network having national and international access. Telephony Service is implemented through Cisco Unified Communications Manager (CUCM) infrastructure, which supports a wide range of dial up protocols with digital interconnection capability or analogue telephony, ensuring security and reliability in all services provided.

3.1. Technical Characteristics

- Use of FG's Local Area Network infrastructure.
- Telephone sets can be managed, configured, and supported through the LAN without any end user involvement.
- The extension numbers and calling restrictions can be set up remotely without any end user involvement.

3.2. Options Offered

Telephony Service has two options to select depending the customer's end device to be connected.

- **Basic Telephony**, which is based on the analogue technology and is preferred for certain devices, like fax machines and modems. Basic Telephony is always used in case that only ordinary telephone wiring (copper cabling) is in place.
- **Standard Telephony**, which is based on the IP technology and is preferred for telephone sets with advanced features for the user i.e. call diversion, call history, directory etc.

In both Basic and Standard Telephony Services the Caller ID capability is included, which enables the recipient to know who the caller is before the call is answered, as far as the telephone set used supports this feature.

3.3. Advantages

- Free of charge Technical Support Services as these described in Technical Support Services (see §9).
- 24x7x365 monitoring of FG systems to ensure their uninterrupted operation.
- Cisco Unified Communications Manager advanced features like call back, call pick up, immediate divert etc.
- Inter-airport communication with internal numbers.

3.4. Telephone Devices

The customer's telephone device is obligatory to be purchased by FG due to the following reasons:

- Ensure no compatibility issues exist with the call manager for the provided features.
- Ensure preventive and corrective actions for security issues are performed effectively to the entire airport campus.
- Provisioning of the Technical Support Services.

FG has selected Cisco Systems, which is a major provider of IP phone devices, and specifically the IP phones of 7800 Series which can meet the needs of any business. The available options are those of 7811, 7821 and 7841 IP phones.



Figure 1: Cisco IP Phone 7800 Series

- The **Cisco IP Phone 7811** is a cost-effective, entry-level IP phone that addresses the need for basic voice communications. It supports caller ID, call history and phone information to enhance its user experience.
- The **Cisco IP Phone 7821 and 7841** belong to the 7800 Series, are audio-performing IP phones and are the ideal cost-effective solution for small-to-large companies offering
 - high-fidelity audio through speaker handset and headset,
 - one-touch access, with fixed function keys, to common telephony features such as service, messaging, directory, hold/resume, transfer and conference,
 - clear multi-party conferences for flexible, productive collaboration through a full-duplex speakerphone.

The difference between 7821 and 7841 models is that the first supports two lines, while the second supports four lines.

For more details on Cisco IP Phone 7800 Series please see the relevant data sheet “Cisco IP Phone 7800 Series” (see [Annex I](#)).

In order to connect a telephone device to the CUCM infrastructure, a Cisco license is required dependent to the type of the telephone device. This license is included in the purchase of the telephone set and is installed at the CUCM infrastructure, from where it cannot be revoked.

3.5. Billing Policy

The billing policy for the Telephony Service include the below:

- i) a fixed one time activation fee for the Service,
- ii) a monthly fee for the Service dependent to the option chosen,
- iii) a monthly fee depending the use of the line (voice use charge).

For more information on the charges, please see the “IT&T Services Pricelist”, send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

3.6. Terms and Conditions

- Telephony Service is only offered to customers having a physical location within the airport campus.
- All the necessary works regarding installation, configuration, and operation of the equipment needed to provide the Telephony Service are performed by FG designated personnel.
- The end user device operation is responsibility of the customer.
- The estimated Telephony Service delivery date is 5-8 working days, if there is available telephone device. In case there is no available telephone device, then the estimated delivery date is 45 working days.

4. Equipment Hosting Service

Fraport Greece is able to provide dedicated rackspace for customer's network equipment, such as routers, servers, storage devices within airport's telecommunication rooms, which are newly constructed with the highest standards for power and cooling conditions. In case the customer wants to offer dedicated services to its end host devices, such as interVLAN connectivity, Wide Area Network service, VPN remote access etc., Equipment Hosting Service gives the customer the ability to install its equipment in a secured environment and not to worry about its wellbeing.

4.1. Technical Characteristics

- 42U Rittal racks.
- Metallic baskets are used for cabling patching between racks.
- Use of 16A fuse per rack, which is also connected to the UPS.
- Full 4G mobile coverage to all FG telecommunication rooms.
- UPS existence having also redundancy.
- Power generator existence.
- Air conditioning existence having also redundancy.
- Bulging earthing existence.
- Use of FM 200 firefighting system type.
- Fire block out per cabling cable tray, so in case of fire it is restricted within the room.
- Use of star type fiber and copper cabling.

4.2. Advantages

- Controlled access to the telecommunication rooms – access is allowed only to accredited FG personnel, while customer's authorized personnel are permitted only accompanied by FG personnel.
- Customer's time and resources saving in case of relocation or refurbishments of the customer's physical location within the airport.
- 24x7x365 monitoring of the telecommunication rooms and equipment to ensure proper environmental conditions for all the equipment hosted.
- Reduction of customer's costs to maintain own equipment within airport campus.

4.3. Billing Policy

The billing policy for the Equipment Hosting Service includes a monthly fee for the Service dependent to the U height required within the rack. The monthly fee includes power, light, cooling and fire protection costs. The monthly fee also includes free of charge accompanying of customer's authorized personnel to FG telecommunication rooms up to half an hour per month within airport's IT&T field engineer working hours, upon arrangement.

In case of more than half an hour per month is required by the customer to access FG telecommunication rooms, then there is a charge related to the actual time FG personnel accompanied customer, which varies based on the hour of the day. The minimum charge for accompanying customer's personnel to FG telecommunication rooms, above the initial half an hour, is 30 minutes.

In the event that additional equipment to the router is hosted, requiring connectivity with the airport's LAN, then connectivity will be provided through LAN Service.

In the event that the customer prefers FG personnel to perform the installation of its equipment, then necessary works will be provided through Remote Hands Service.

For more information on the charges, please see the "IT&T Services Pricelist", send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

4.4. Terms and Conditions

- Equipment Hosting Service is only offered to customers having one or more physical locations within the airport campus and want to offer dedicated services to their end host devices.
- Customer's equipment can only be hosted to the FG Main Distribution Frame (MDF) rooms.
- Switches and access points customer equipment are not allowed to be hosted.
- All the necessary works regarding installation, configuration, operation and security of the customer's hosted equipment is sole responsibility of the customer.
- Customer's authorized personnel can have access to FG telecommunication rooms only accompanied by accredited FG personnel.
- The accompanying of customer's authorized personnel to FG telecommunication rooms is mutually arranged between the parties.

5. Private Radio Network (PRN) Service

Fraport Greece is a licensed provider for radio communications by Hellenic Telecommunications and Post Commission for specific radio frequencies. In this framework, FG is able to provide ground-to-ground bidirectional voice communication between users of the same or different talk groups within the campus of the airports operated by FG through its upgraded Private Radio Network infrastructure, which provides coverage through the entire airport campus. PRN Service gives the customer's personnel the ability to be in continuous private voice communication with each other in a quick, safe and efficient manner.

A voice channel is a frequency range that has been designated for use by a single signal at a time in Fraport Greece's Private Radio Network.

A talk group is a way for grouping users to enable them share a voice channel at different times without being heard by other users on the same voice channel.

PRN Service provides different talk groups based on customer's operational needs.

5.1. Technical Characteristics

- Fraport Greece's PRN infrastructure is based on a digital, half-duplex Digital Mobile Radio system with fail safe mechanisms.
- Use of voice channels and talk groups, which provide logical and secure segregation of customers.
- Use of radio programming, only by authorized personnel, for the creation and monitoring of the talk groups.
- All voice communications are encrypted.
- Radio devices can be managed, configured and supported without any end user involvement.

5.2. Options Offered

PRN Service has four options to select depending the number of talk groups required based on customer's operational needs: 1 to 4 talk groups.

5.3. Advantages

- Digital Mobile Radio system offers superior voice quality and coverage through the entire airport campus.
- Private voice communication, as one talk group cannot be interfered by another talk group.
- Easy to use, as with a single push of a button you can talk to an individual or an entire group.
- No customer's personnel involvement, as PRN infrastructure is managed and administered by specialized FG personnel.
- Robust infrastructure in terms of design, redundancy and security according to standards.
- Free of charge Technical Support Services as these described in Technical Support Services (see §9).
- 24x7x365 monitoring of FG systems to ensure their uninterrupted operation.
- No need for the customer to maintain and support own equipment within airport campus.
- Under the hardware repair and replacement Service the radio devices replacement is performed by FG also in case of damaged equipment due to customer's fault.

5.4. Radio Devices

FG has selected Motorola for radio devices, which is a leading company in this type of equipment and specifically the MOTOTRBO series, which is a family of ETSI DMR standards compliant digital radios that

delivers operation critical voice and data communications. Options exist for both handheld radio devices and mobile radio devices, which can be installed in a vehicle, to fulfill customer's business needs.

In case the customer prefers instead of purchasing the radio device, to use the radio device and have a monthly cost, it is possible by leasing the radio device. The leasing period is mandatory for 3 years, after which the ownership of the radio device is transferred to the customer.

Only for the handheld devices, in case the customer does not require owning the handheld radio device or wants to use it for a limited period, it is possible by renting the handheld radio device; nevertheless, this option is subject of equipment availability. The minimum renting period is 3 months. Upon completion of the renting period, the rented handheld radio device is returned to FG.

The radio device to be used for the PRN Service requires an initial configuration. This configuration is performed by FG designated personnel and is included in the purchase / lease / rent of the radio device.

In order to connect a radio device to the centralized management infrastructure, a license is required. This license is included in the purchase / lease / rent of the radio device and is installed at the centralized management infrastructure, from where it cannot be revoked.

5.4.1. Handheld Radio Devices



Figure 2: Motorola DP4401e



Figure 3: Motorola DP4601e

The **Motorola DP4401e** and **DP4601e** belong to the DP4000e Series, which are rugged radio devices with robust, versatile infrastructure ideal for professionals in demanding environments offering:

- push-to-talk technology,
- integrated Wi-Fi,
- loud, clear speech, with industrial noise cancellation for better intelligibility through a powerful audio amplifier,
- up to 28 hours of battery life for 3-shift working,
- one-touch access to call help through the prominent orange emergency button by using transmit interruption to clear a channel when necessary,
- IP68 waterproofness,
- integrated accelerometer for optional Man Down.

The difference between DP4401e and DP4601e models is that the DP4401e does not have display and keypad.

For more details on Motorola DP4000e Series please see the relevant data sheet “Motorola DP4000e Series” ([Annex II](#)).

Depending the customer's needs, the below accessories can also be purchased:

- Handheld radio device battery.
- Handheld radio device single battery charger.
- Ear receiver with in-line microphone and PTT.
- Noise cancellation heavy duty headset.

5.4.2. Mobile Radio Devices



Figure 4: Motorola DM4601e

The **Motorola DM4601e** belongs to the DM4000e Series, which have a rugged, durable design for everyday use, offering:

- push-to-talk technology,
- integrated Wi-Fi,
- loud, clear speech, with background noise cancellation for better intelligibility through a high powerful audio amplifier,
- one-touch access to call help through quick access buttons by using transmit interruption to clear a channel when necessary.

For more details on Motorola DM4601e please see the relevant data sheet "Motorola DM4000e Series" (see [Annex III](#)).

The works required for the installation of the mobile radio device in a vehicle are subject for agreement under the Cabling Service.

5.5. Billing Policy

The billing policy for the PRN Service is a monthly fee for the Service dependent to the option chosen.

For more information on the charges, please see the "IT&T Services Pricelist", send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

5.6. Terms and Conditions

- PRN Service is only offered to customers having business operation within the airport campus.
- All the necessary works regarding installation, configuration, and operation of the equipment needed to provide the PRN Service are performed by FG designated personnel.
- The radio device always comes with a single battery charger.
- In case of radio device leasing, the radio device provided is a new one.
- In case of handheld radio device renting, the rented handheld radio device provided may be new or reused.
- The radio device lease option is offered with an obligatory period of provided service of 3 years. In case the customer terminates the Service earlier than 3 years, then an early termination fee is charged.

- The handheld radio device rent option is offered with an obligatory minimum period of provided service of 3 months. In case the customer terminates the Service earlier than 3 months, then an early termination fee is charged.
- In case the customer loses the leased handheld or mobile radio device or the rented handheld radio device, then a penalty fee is charged.
- The estimated PRN Service delivery date is 30-45 working days.

6. Flight Information Display System (FIDS) Service

Fraport Greece is able to provide flight information either to displays and customer's Personal Computers located within the campus of the airports operated by FG, either to customer's portable devices such as laptops and tablets, through the Flight Information Display System. FIDS is a system, which utilizes data from the Airport Operational Database (AODB) and formats it for real-time delivery on displays. FIDS Service gives the customer's users a single, reliable source of flight information in an easy to understand format.

6.1. Options Offered

FIDS Service has two options to select depending the audience the service is addressed to, passengers or aviation business professionals:

- **Public content**, which includes all important arrival and departure flight information, such as flight number, airline, departure / arrival times, destination, boarding gate, baggage claim area, notifications of flight delays / cancellations, etc. This content can be filtered according to customer's needs and is available to the public through standard displays at the customer's premises within airport campus.

This option is ideal for business lounges, retail and food and beverages shops where passengers can spend their time calmly following up their flight information as often as they want and be reassured they will arrive at the correct place at the correct time.

In case there is no cabling to provide network connectivity at the customer's premises where the display is to be installed, then the relevant works are subject for agreement under the Cabling Service.

- **Staff pages**, which includes all the information provided by the AODB and required for the airport operation, indicatively such as aircraft type, registration and call sign, the flight type, parking stand etc. Staff pages is available through a Personal Computer, laptop or tablet and is accessed through a secured way which requires the installation of an authentication software to the customer's access device. This content can be adjusted according to customer's needs.

This option is ideal for the airlines and the ground handling companies as the real-time flight information provided is crucial for their smooth operation.

6.2. Advantages

- No customer's personnel involvement, as FIDS infrastructure is managed and administered by specialized FG personnel.
- Free of charge Technical Support Services as these described in Technical Support Services (see §9).
- 24x7x365 monitoring of FG systems to ensure their uninterrupted operation.

6.3. Displays

The display is obligatory to be provided by FG due to the following reasons.

- Ensure no compatibility issues exist with the displays centralized management infrastructure.
- Ensure no compatibility issues exist with the format of the content to be displayed.
- Provisioning of the Technical Support Services.

FG has selected LG Electronics, which is a global leader and technology innovator in consumer electronics and specifically the professional displays of UH5F series, which can meet the needs of the airport environment and business. The available options are those of 43" and 55" inches.

For more details on LG UH5F Series displays please see the relevant data sheet “LG UH5F Series” (see [Annex IV](#)).

In case the customer prefers instead of purchasing the display, to use the display and have a monthly cost, it is possible by leasing the display. The leasing period is mandatory for 3 years, after which the ownership of the display is transferred to the customer.

In order to connect a display to the displays centralized management infrastructure, a license is required. This license is included in the purchase or lease of the display and is installed at the displays centralized management infrastructure, from where it cannot be revoked.

6.4. Billing Policy

The billing policy for the FIDS Service is a monthly fee for the Service dependent to the option chosen.

For more information on the charges, please see the “IT&T Services Pricelist”, send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

6.5. Terms and Conditions

- FIDS Service can not be provided to mobile phones, as the content to be displayed will not be viewable.
- For better visibility FIDS Service is provided to tablets having at least 10” display.
- All the necessary works regarding installation, configuration, and operation of the equipment needed to provide the FIDS Service are performed by FG designated personnel.
- Relevant to the FIDS Service “Staff pages” option, the proper operation in terms of configuration and security of the end user access device is sole responsibility of the customer.
- Relevant to the FIDS Service “Staff pages” option, each customer user authorized to have access to FG infrastructure / resources is mandatory to sign the FG “VPN Access Request Form” and to comply with all the terms and responsibilities included in the form.
- Relevant to the FIDS Service “Staff pages” option, for security and compliance reasons, it is strongly recommended the provided accounts to be personalized. If this is not feasible for operational reasons then all users that are accessing FG infrastructure through a generic account need to sign the FG “VPN access request form” and to comply with all the terms and responsibilities included in the form. All remote access forms will be reviewed and renewed on an annual basis.
- In case of display leasing, the display provided is a new one.
- The display lease option is offered with an obligatory period of provided service of 3 years. In case the customer terminates the Service earlier than 3 years, then an early termination fee is charged.
- The estimated FIDS Service public content option delivery date is 3 working days, if there is available display. In case there is no available display, then the estimated delivery date is 45 working days.
- The estimated FIDS Service staff pages option delivery date is 5 working days.

7. Dedicated Common Use Terminal Equipment (CUTE) Service

Fraport Greece is able to provide the infrastructure that is used for the passengers check-in and boarding, also to customer’s office within the campus of the airports operated by FG, through its Common Use Terminal Equipment system, which is a shared platform from where all customer’s applications required for passengers processing can be accessed.

Dedicated CUTE Service is primarily addressed to the airlines and the ground handling companies who would like to have the flexibility of the exclusive use of CUTE platform at its office, i.e. operation office, load control, sales desk, and not only at the common use designated airport locations.

In case there is no cabling to provide network connectivity at the customer’s premises where the CUTE equipment is to be installed, then the relevant works are subject for agreement under the Cabling Service.

7.1. Advantages

- No customer’s personnel involvement, as CUTE system is managed and administered by specialized FG personnel.
- Free of charge Technical Support Services as these described in Technical Support Services (see §9).
- 24x7x365 monitoring of FG systems to ensure their uninterrupted operation.

7.2. CUTE Equipment

The minimum CUTE equipment necessary for the Dedicated CUTE Service is a Personal Computer. FG has selected HP for Personal Computers, which is a leading company in business desktops. Specifically the Elite Desk 800 model, which is a compact powerful solution, along with a 20,7” monitor, V213a model, for clear views in every day use, are provided.

For more details on the Personal Computer please see the relevant datasheets “HP Elite Desk 800 G2” and “HP V213a” (see [Annex V](#)).



Figure 5: HP Elite Desk 800



Figure 6: HP V213a

Depending the customer’s needs, the below peripherals can be rent.

- **Boarding pass printer**
 FG has selected the IER 401-01 boarding pass reader, which is a multi-functional, direct thermal printer and is configured according to the need (boarding pass or bag tag). It prints all 1D and 2D barcodes including PDF417, Datamatrix, Aztec and QR code.
 For more details on IER 401 model please see the relevant data sheet “IER 401” (see [Annex VI](#)).



Figure 7: IER 401

- **Bag tag printer**

FG has selected the IER 401-03 bag tag reader, which is a multi-functional, direct thermal printer and is configured according to the need (boarding pass or bag tag). It prints all 1D and 2D barcodes including PDF417, Datamatrix, Aztec and QR code.

For more details on IER 401 model please see the relevant data sheet “IER 401” (see [Annex VI](#)).

- **Document printer**

FG has selected the OKI ML3320eco document printer, which is ideal for demanding environments due to its outstanding reliability, ease-of-use and barcoding facilities. It is a dot matrix printer with a high durability 9-pin printhead, quick print speed and multi-part paper-handling capability (original + 4 copies).

For more details on OKI ML3320eco document printer please see the relevant data sheet “OKI ML3320eco” (see [Annex VII](#)).



Figure 8: OKI ML3320eco

- **Boarding pass gate reader**

FG has selected the Access IS BGR750 boarding pass gate reader, which is a modern boarding pass gate reader for all barcoded boarding passes (BCBPs), designed specifically to allow intuitive use with all media types including the latest smart phones, tablets and smart watches. It reads IATA-recommended PDF417, QR, Aztec and other 2D and linear barcode symbologies.

For more details on Access IS BGR750 boarding pass gate reader please see the relevant data sheet “Access IS BGR750” (see [Annex VIII](#)).



Figure 9: Access IS BGR750

- **Document reader**

FG has selected the Access IS LSR130 document reader, which is able to read barcodes, magnetic swipes and machine readable travel documents like passports and visas through different media types such as airline and home-printed documents, smart phones and PDAs. It reads IATA-recommended linear, PDF417, Aztec, DataMatrix and QR symbologies, while the magnetic swipe reader complies with IATA ATB2 722C format, T1, T2, T3 and T4.

For more details on Access IS LSR130 document reader please see the relevant data sheet “Access IS LSR130” (see [Annex IX](#)).



Figure 10: Access IS LSR130

7.3. Billing Policy

The billing policy for the Dedicated CUTE Service is a monthly fee which includes the Personal Computer rent and the access to the CUTE system.

For more information on the charges, please see the “IT&T Services Pricelist”, send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

7.4. Terms and Conditions

- All the necessary works regarding installation, configuration, and commissioning of the equipment needed to provide the Dedicated CUTE Service are performed by FG designated personnel.
- The Dedicated CUTE Service is offered with an obligatory minimum period of provided service of 5 years. In case the customer terminates the Dedicated CUTE Service earlier than 5 years, then an early termination fee is charged.

- The equipment provided for the Dedicated CUTE Service can be either new or reused and its ownership remains to FG.
- In case the customer loses any of the devices used for the Dedicated CUTE Service, then a penalty fee is charged.
- Each customer user authorized to use equipment under the Dedicated CUTE Service is mandatory to comply with all the terms and responsibilities mentioned in FG “Airport User Regulations Manual”.
- The estimated Dedicated CUTE Service delivery date is 3 working days, if there is available CUTE equipment. In case there is no available CUTE equipment, then the estimated delivery date is 45 working days.

8. Cabling Service

Fraport Greece as operator of 14 regional airports is responsible for the installation, maintenance and improvement of the cable infrastructure of the entire campus of each airport operated by FG. As such, FG is able to provide network cabling infrastructure works between any two points across the airport's campus. Cabling Service gives the customer the ability to obtain network connectivity at its premises within the airport's campus for both landside and airside.

All airports' cable infrastructure and future extensions:

- are based on a star topology which provides a local area network for all nodes individually connected to a central connection point, i.e. switch,
- are certified according to international standards,
- are SFTP Cat6.

8.1. Billing Policy

The billing policy for the Cabling Service is a one time fee for the Service connected to the works required to be performed and includes all materials needed.

For more information on the charges, please send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000315.

8.2. Terms and Conditions

- Cabling Service is only offered to customers having a physical location within the airport campus.
- Cabling Service is offered upon agreement of what works are required to be performed and is mutually scheduled between the parties.

9. Technical Support Services

Fraport Greece for all its IT&T Services provides to its customers free of charge the below Technical Support Services:

- Customer support request registration and technical assistance
- Troubleshooting and incident resolution
- Hardware repair and replacement

All incidents are handled taking into account their announcement date and time and their priority. In addition, FG personnel perform necessary actions for the as quickly as possible incident resolution or a temporary solution until the permanent one is provided.

Incident Prioritization

Incidents are assigned a priority used to identify the relative importance of each incident. The prioritization is determined by the incident’s impact. In the table below the incident prioritization is depicted.

Table 2: Incident Prioritization

Incident Priority	Incident Type	Incident Impact
1	High	Service has halted completely
2	Medium	Service has partially stopped or it is in intermittent state
3	Low	Some components of the service do not function

9.1. Customer Support Request Registration and Technical Assistance Service

Customer support request registration and technical assistance Service is provided on a 24x7x365 basis, remotely through the dedicated function within IT&T Department, the IT&T Service Desk. Under this Technical Support Service FG provides to FG customers the below:

- Incident registration in the IT Service Management (ITSM) tool
- Basic technical information and clarifications
- In case of simple technical issues, incident resolution through telephone communication with the customer responsible person for the incident
- Escalation actions

9.1.1. Terms and Conditions

- Customer support request registration and technical assistance Service is only offered to FG customers for the IT&T Service purchased.
- Customer support request registration and technical assistance Service is activated by contacting the FG IT&T Service Desk with any of the following means:
 - by the Self Service Portal: <https://itt.fraport-greece.com>
 - by e-mail to ITT-ServiceDesk@fraport-greece.com
 - by phone to +30 21440 88888

9.2. Troubleshooting and Incident Resolution Service

Technical assistance and incident resolution is provided during airport operating hours* through the IT&T Department experienced personnel on different technologies. Under this Technical Support Service FG provides to FG customers the below:

- Incident investigation and analysis
- If required for the incident investigation and resolution, involvement of the provider / manufacturer of the IT&T system affected by the incident
- Incident resolution either through telephone communication with the customer responsible person for the incident either through an on-site visit
- All the necessary works for implementing the incident resolution such as de-installation, installation, configuration and commissioning of equipment and software updates

In case troubleshooting and incident resolution is required outside airport operating hours, then this will be evaluated on an ad hoc basis.

*For more information on the airport operating hours, please see at <https://www.fraport-greece.com/eng/our-expertise-and-services/aviation/operating-hours>.

9.2.1. Terms and Conditions

- Troubleshooting and incident resolution Service is activated automatically by the IT&T Service Desk in case the incident reported can not be resolved by the IT&T Service Desk.

9.3. Hardware Repair and Replacement Service

Hardware repair and replacement is provided only for the hardware purchased, leased or rented by FG, specifically for telephone devices, radio devices, displays and CUTE equipment. Under this Technical Support Service FG provides to FG customers the below:

- Incident registration in the IT Service Management (ITSM) tool
- Receive and deliver equipment on-site
- All the necessary works for the de-installation of the faulty equipment and the installation of the repaired or replaced equipment
- All the necessary works for the repair or replacement of the faulty equipment

9.3.1. Terms and Conditions for Telephone Devices

- The hardware repair and replacement Service for the telephone devices is provided for 3 years from the date of the hardware delivery to the customer.
- The hardware repair and replacement Service for the telephone devices is not applied for the below cases:
 - The device has been altered by a non authorized FG personnel.
 - The device has not been operated, repaired or maintained in accordance with the manufacturer's instructions.
 - The device has been subjected to abnormal physical or electrical stress, abnormal environmental conditions, misuse, negligence or accident.

9.3.2. Terms and Conditions for Radio Devices

- In case of purchased radio devices, the hardware repair and replacement Service is provided for 5 years from the date of the hardware delivery to the customer.
- In case of leased radio devices, the hardware repair and replacement Service is provided for the entire leasing period, 3 years from the date of the hardware delivery to the Customer.

- In case of rented radio devices, the hardware repair and replacement Service is provided for the entire renting period.
- Radio devices replacement is performed by FG also in case of damaged equipment due to customer's fault.
- Radio devices batteries replacement is not included in the hardware replacement service.

9.3.3. Terms and Conditions for Displays

- In case of purchased displays, the hardware repair and replacement Service is provided for 5 years from the date of the hardware delivery to the customer.
- In case of leased displays, the hardware repair and replacement Service is provided for the entire leasing period, 3 years from the date of the hardware delivery to the Customer.
- The hardware repair and replacement Service for the displays is not applied for the below cases.
 - The display has been altered by a non authorized FG personnel.
 - The serial number of the display has been altered or removed.
 - The display has been damaged due to external and unforeseen causes such as accident or lightning.
 - Damages of the glass, plastics, batteries and other consumables components due to normal use.

9.3.4. Terms and Conditions for CUTE Equipment

- The hardware repair and replacement Service for the CUTE equipment is provided for the entire period the Dedicated CUTE service is provided.

10. Remote Hands Service

Fraport Greece IT&T Department experienced personnel located at the 14 regional airports can assist customer on IT&T matters by collaborating with the customer's IT personnel which is not possible to be present on site. Remote Hands Service gives the customer, that has its IT personnel located in a different geographical location than its infrastructure, the ability to have at its disposal local IT&T technology savvy personnel to perform under its guidance support tasks without having to travel.

Remote Hands Service is based on the communication between the on-site FG IT&T personnel and the remote authorized customer's IT personnel that is specialized in the tasks to be performed. During the Remote Hands Service provision, remote hands field engineer strictly follows the instructions given and performs only the actions indicated by the remote authorized customer's IT personnel.

Remote Hands Service can be used to provide support for communication and networking equipment, personal computing equipment and peripherals. Under Remote Hands Service tasks such as the below can be performed:

- **Assist in troubleshooting**, i.e. visual verification of equipment status, swapping equipment, plug-in console/serial cable for remote connection, resetting/rebooting or power cycling the equipment at the request of the customer, capturing equipment status with photos, performing PC diagnostic hardware and software checks, installing additional software with default settings, until the equipment is reachable remotely.
- **Rack and stack**, i.e. installing or de-installing equipment, installing or removing hardware components.
- **Cabling**, i.e. cable termination and moving, securing, swapping or auditing existing cabling, labeling, tracing cross connects, patching equipment to a patch panel based on a supplied patching schedule.
- **Asset management**, i.e. inventory of equipment, recording serial number, capturing equipment status with photos, equipment labeling.
- **Scheduled maintenance**, i.e. equipment inspection, perform PC basic diagnostic hardware and software checks with PC's build in tools.

The Remote Hands Service is initiated by contacting the FG IT&T Service Desk, allowing a single point of contact for all customers' requests. Before proceeding to the implementation of the request, the FG Customer Care representative will agree with the customer as to what actions the customer wishes the remote hands field engineer to perform and record them within the registered request performed by the FG IT&T Service Desk.

Remote Hands Service is provided through the IT&T Department experienced personnel located at the 14 regional airports within airport's IT&T field engineer working hours.

10.1. Advantages

- Reduction of customer's costs to employ IT personnel, even temporary one, within airport campus.
- No need for the customer's IT personnel to travel to remote offices for support.
- No need for the customer to rely on local non-technical staff for assistance and distract them from their core activities by handling issues out of their objective.
- Availability of on-site IT&T experienced personnel on demand.
- Immediate assistance and quicker issues resolution.
- 24x7x365 customer support request registration.

10.2. Billing Policy

The billing policy for the Remote Hands Service is a fee connected to the actual time FG personnel occupied by the customer, which varies based on the hour of the day. The minimum charge for the Remote Hands Service is 30 minutes.

For more information on the charges, please see the "IT&T Services Pricelist", send an e-mail to ITTCustomerCare@fraport-greece.com, or phone on +30214-4000314.

10.3. Terms and Conditions

- Remote Hands Service is only offered to customers having a physical location within the airport campus.
- Remote Hands Service is offered upon agreement of what actions the customer wishes the remote hands field engineer to perform and is scheduled upon availability of the remote hands field engineer.
- Remote Hands Service is requested by contacting the FG IT&T Service Desk with any of the following means:
 - by the Self Service Portal: <https://itt.fraport-greece.com>
 - by e-mail to ITT-ServiceDesk@fraport-greece.com
 - by phone to +30 21440 88888
- The responsibility of the actions performed by the remote hands field engineer remains with the remote authorized customer's IT personnel.
- In relation to the remote connection to the customer's equipment, the customer will provide the device (i.e. laptop, tablet etc.) installed with the suitable software (i.e. teamviewer, putty etc.) to enable the remote hands field engineer to provide the remote connection.
- Remote hands field engineer reserves the right not to perform the actions agreed with the customer under the request for reasons exceeding the service terms and conditions and/or in other cases like, but not limited to, the following:
 - when the requested actions may cause additional damage to equipment or people,
 - when equipment removal might affect other services and/or cause additional equipment damage,
 - in case of broken AC cables that might cause electrocution etc.,
 - when additional works need to be completed before offering the service.
- Remote hands field engineer reserves the right to suspend the remote hands works in case he/she must be involved in an important incident that impacts the airport's operation and is not scheduled.

Annex I Cisco IP Phone 7800 Series



Data Sheet

Cisco IP Phone 7800 Series

The Cisco® IP Phone 7800 Series is a cost-effective, high-fidelity voice communications portfolio designed to improve your organization's people-centric communications, while reducing your operating costs.

It combines an attractive new ergonomic design with "always-on" reliability and secure encrypted communications. The Cisco® IP Phone 7800 Series delivers advanced IP Telephony features and crystal clear wideband audio performance to deliver an easy-to-use, full-featured voice communications experience on Cisco on-premises and hosted infrastructure platforms and third party hosted call control.

The Cisco® IP Phone 7800 Series introduces four models to the Cisco IP Phone portfolio. From left-to-right (Figure 1), they are:

- Cisco IP Phone 7811 supporting one line (available in charcoal only)
- Cisco IP Phone 7821 supporting two lines (available in charcoal and white)
- Cisco IP Phone 7841 supporting four lines (available in charcoal and white)
- Cisco IP Phone 7861 supporting sixteen lines (available in charcoal and white)

Figure 1. Cisco IP Phone 7800 Series





The line keys on each model are fully programmable. You can set up keys to support either lines, such as directory numbers, or call features like speed dialing. You can also boost productivity by handling multiple calls for each directory number, using the multi-call per-line appearance feature. Tri-color LEDs on the line keys support this feature and make the phone simpler and easy to use.

Fixed function keys on all models give you one-touch access to service, messaging, directory, hold/resume, transfer, and conference features. A full-duplex speakerphone lets you set up clear multi-party conferences for flexible, productive collaboration.

The Cisco IP Phone 7800 Series sets a new standard in usability and delivers a context-sensitive user experience. It features a high-resolution 3.5" (396x162) greyscale display with white backlighting on the IP Phone 7821, 7841 and 7861, and a 3.2" (384 x106) display without backlighting on IP Phone 7811, for easy reading. Localized language support, including right-to-left onscreen text, meets the needs of global users.

The Cisco IP Phone 7800 Series is also more energy-efficient and eco-friendly, to support your green initiatives. Each phone supports Power-over-Ethernet (PoE) Class 1 and Cisco's EnergyWise™, and is Energy Star certified. A standard power-save option is available on the IP Phone 7821, 7841 and 7861 to reduce power consumption during off-hours, save money and maximize energy efficiency.

The IP Phone 7800 Series portfolio is ideal for any mid-sized to large enterprise company that wants to update its phone system from a traditional analog or digital-based system to an IP Communications system. It's also an excellent choice if you're seeking to expand your voice communications support with your current Cisco Unified Communications solution. Small businesses who have interest in the Cisco IP Phone 7800 Series, but have investment in or are considering third party hosted call control services, are also candidates for the IP Phone 7800 Series.

Features and Benefits

Table 1 lists features and benefits of the Cisco® IP Phone 7800 Series.

Table 1. Features and Benefits

Features	Benefits
Hardware Features	
Ergonomic design	<ul style="list-style-type: none"> The phone offers an easy-to-use interface and provides a traditional telephony-like user experience.
Graphical display	<ul style="list-style-type: none"> White backlit, greyscale, 3.5" 396×162 pixel-based display on the IP Phone 7821, 7841 and 7861. Non-backlit, greyscale, 3.28" 384×106 pixel-based display on the IP Phone 7811. Provide scrollable access to calling features and text-based XML applications.
Handset	<ul style="list-style-type: none"> The handset is a standard wideband-capable audio handset (connects through an RJ-9 port) for the IP Phone 7821, 7841 and 7861. The default handset is a standard narrowband-capable audio handset (connects through an RJ-9 port) for the IP Phone 7811, and wideband on handset is available with purchase of additional wideband handset. The handset is hearing aid-compatible (HAC) and meets Federal Communications Commission (FCC) loudness requirements for the Americans with Disabilities Act (ADA). You can achieve Section 508 loudness requirements by using industry-standard inline handset amplifiers such as Walker Equipment W-10 or CE-100 amplifiers. The dial pad is also ADA-compliant. The narrowband handset (for the IP Phone 7811) produces a magnetic field that attracts small metallic objects such as pins and staples. To avoid possible injuries do not keep small metallic objects close to the handset.
Headset	<ul style="list-style-type: none"> The analog headset jack is a standard wideband-capable RJ-9 audio port for the IP Phone 7821, 7841, and 7861.
Backlit Indicator	<ul style="list-style-type: none"> The phone supports backlit indicators for the audio path keys (handset, headset and speakerphone), select key, line keys, and message waiting. Headset key is not available on the IP Phone 7811.
Volume control	<ul style="list-style-type: none"> A volume-control toggle provides easy decibel-level adjustments of the handset, monitor speaker, and ringer.
Full duplex speakerphone	<ul style="list-style-type: none"> Full-duplex speakerphone allows gives you flexibility in placing and receiving calls. For added security, the audible dual tone multifrequency (DTMF) tones are masked when the speakerphone mode is used.
Bezel	<ul style="list-style-type: none"> The IP Phone 7821, 7841 and 7861 include a default black bezel (replaceable), and an optional silver bezel is also available separately. The IP Phone 7811 is available with a black bezel.
Dual-position foot stand	<ul style="list-style-type: none"> The display is easy to view and the buttons and keys are easy to use. The two-position foot stand supports viewing angles of 30 degrees and 45 degrees; you can remove the foot stand for wall mounting, with mounting holes located on the base of the phone. (IP Phone 7821, 7841 and 7861) Only 1 foot-stand position (45 degrees) is supported on the IP Phone 7811.
Wall-mountable	<ul style="list-style-type: none"> The phone can be installed on a wall using optional wall-mount kit (available separately).
Electronic hook switch	<ul style="list-style-type: none"> The hookswitch can be controlled electronically with a third party headset connected to the auxiliary port for the IP Phone 7821, 7841, and 7861.
Keys	<ul style="list-style-type: none"> The phone has the following keys <ul style="list-style-type: none"> Line keys Soft-keys Two-way navigation and select keys Hold/Resume, Transfer and Conference keys Messaging, Service and Directory keys Standard key pads Volume control toggle key Speakerphone, headset and mute keys (Headset key is not available on the IP Phone 7811)
Ethernet cables	<ul style="list-style-type: none"> The IP Phone 7811, 7821, 7841, and 7861 <ul style="list-style-type: none"> Category 3/5/5e/6 for 10-Mbps cables with 4 pairs Category 5/5e/6 for 100-Mbps cables with 4 pairs The IP Phone 7841 <ul style="list-style-type: none"> Category 5/5e/6 for 1000-Mbps cables with 4 pairs

Features	Benefits
Power Features	
IEEE PoE class 1	<ul style="list-style-type: none"> The phone supports IEEE 802.3af PoE (Class 1); power consumption does not exceed 3.84 watts.
AC Power Adapter	<ul style="list-style-type: none"> Cisco power cube 3 (CP-PWR-CUBE-3=) and Cisco power adapter 3 (CP-PWR-ADPT-3) are used as standard Cisco IP Phone Power Supplies for non-PoE deployments.
Cisco power injector	<ul style="list-style-type: none"> The IP Phone 7811, 7821 and 7861 are compatible with Cisco Unified IP Phone Power Injector (CP-PWR-INJ), and 7841 is compatible with Cisco Aironet Power Injector (AIR-PWRINJ5=).
Call-Control Support	
Cisco Unified Communications Manager	<ul style="list-style-type: none"> 8.5.1 8.6.2 9.1.2 10.x and later
Cisco Business Edition 6000	<ul style="list-style-type: none"> 8.6.2 9.1.2 10.x and later
Cisco Hosted Collaboration Solution	<ul style="list-style-type: none"> 8.6.2 and later (using supported UCM versions above)
Cisco Unified Survivable Remote Site Telephony	<ul style="list-style-type: none"> 8.x and later

Licensing

The Cisco IP Phone 7811 and 7821 require a Basic User Connect License (UCL) in order to connect to Cisco Unified Communications Manager. The Cisco IP Phone 7841 and 7861 require an Enhanced User Connect License (UCL) in order to connect to Cisco Unified Communications Manager.

Product Specifications

Table 2 lists the features and specifications of The Cisco® IP Phone 7800 Series.

Table 2. Features and Specifications

Features	Specifications
Signaling protocol support	<ul style="list-style-type: none"> Session Initiation Protocol (SIP)
Codec support	<ul style="list-style-type: none"> G.711a/μ, G.722, G.729a, iLBC
Key call features support	<ul style="list-style-type: none"> + Dialing (E.164) Abbreviated dial Adjustable ringing and volume levels Adjustable display contrast Agent greeting Auto-answer Auto-detection of headset (Not available on the IP Phone 7811) Busy Lamp Field (BLF) (Not available on the IP Phone 7811) Call back Call forward Call history Call park Call Pickup Call timer Call waiting Caller ID cBarge Corporate directory Conference Cross Cluster Extension Mobility (EMCC)

Features	Specifications
	<ul style="list-style-type: none"> • Dial from the list • Direct transfer • Do not disturb • Extension Mobility (EM) • Forced access codes and client matter codes • Group call pickup • Hold/resume • Immediate divert • Intercom (Not available on the IP Phone 7811) • Join (Not available on the IP Phone 7811) • Message-waiting indicator • Meet me conference • Mobility • Music on hold • Mute • Network profiles (automatic) • On- and off-network distinctive ringing • Personal directory • Privacy • Private Line Automated Ringdown (PLAR) • Redial • Ring tone per line appearance • Shared line • Silent monitoring and recording • Speed dial • Time and date display • Transfer • Voicemail • Whisper coaching
<p>Language support</p>	<ul style="list-style-type: none"> • Arabic (Arabic Area) • Bulgarian (Bulgaria) • Catalan (Spain) • Chinese (China) • Chinese (Hong Kong) • Chinese (Taiwan) • Croatian (Croatia) • Czech (Czech Republic) • Danish (Denmark) • Dutch (Netherlands) • English (United Kingdom) • Estonian (Estonia) • French (France) • Finnish (Finland) • German (Germany) • Greek (Greece) • Hebrew (Israel) • Hungarian (Hungary) • Italian (Italy) • Japanese (Japan) • Latvian (Latvia) • Lithuanian (Lithuania) • Korean (Korea Republic) • Norwegian (Norway) • Polish (Poland) • Portuguese (Portugal) • Portuguese (Brazil)

Features	Specifications
	<ul style="list-style-type: none"> • Romanian (Romania) • Russian (Russian Federation) • Spanish (Columbia) • Spanish (Spain) • Slovak (Slovakia) • Swedish (Sweden) • Serbian (Republic of Serbia) • Serbian (Republic of Montenegro) • Slovenian (Slovenia) • Thai (Thailand) • Turkish (Turkey)
Multiple ring tones	<ul style="list-style-type: none"> • The phone supports user-adjustable ring tones.
Directories	<ul style="list-style-type: none"> • The phone identifies incoming messages and categorizes them for users on the screen. This makes it fast and easy to return calls using direct dial-back capability. The corporate directory integrates with the Lightweight Directory Access Protocol (LDAP) standard directory.
Quality-of-service (QoS) options	<ul style="list-style-type: none"> • The phone supports CDP and 802.1Q/p standards, and can be configured with an 801.1Q VLAN header containing the VLAN ID overrides configured by the Admin VLAN ID.
Security	<ul style="list-style-type: none"> • Certificates • Image authentication • Device authentication • File authentication • Signaling authentication • Media encryption using Secure Real-Time Transfer Protocol (SRTP) using AES-128 • Signaling encryption using Transport Layer Security (TLS) Protocol using AES-128 or AES-256 • Encrypted configuration files • 802.1X authentication • Cryptography
Configuration options	<ul style="list-style-type: none"> • The user can configure IP address assignment statically or through the DHCP client.
Physical dimensions (H×W×D)	<ul style="list-style-type: none"> • IP Phone 7811: 207 x 195 x 33mm (exclude foot stand) • IP Phone 7821: 207 x 206 x 28mm (exclude foot stand) • IP Phone 7841: 207 x 206 x 28mm (exclude foot stand) • IP Phone 7861: 207 x 265 x 28mm (exclude foot stand)
Weight	<ul style="list-style-type: none"> • IP Phone 7811: 806g • IP Phone 7821: 867g • IP Phone 7841: 868g • IP Phone 7861: 1053g
Display	<ul style="list-style-type: none"> • IP Phone 7821, 7841, 7861: 3.5" 396×162 pixels • IP Phone 7811: 3.28" 384×106 pixels
Ethernet switch	<ul style="list-style-type: none"> • The phone has a 10/100BASE-T (The Cisco® IP Phone 7811, 7821 & 7861) or a10/100/1000BASE-T (The Cisco® IP Phone 7841) Ethernet connection through two RJ-45 ports, one for the LAN connection and the other for a downstream Ethernet device connection like a PC.
Phone casing composition	<ul style="list-style-type: none"> • Polycarbonate acrylonitrile butadiene styrene (ABS) textured plastic.
Power requirements	<ul style="list-style-type: none"> • The phone is an interoperable IEEE 802.3af PoE (Class 1 device); 48 VDC is required; it can be supplied locally at the desktop using an optional AC-to-DC power supply (CP-PWR-CUBE-3=). Use of the power supply also requires the use of one of the corresponding AC country cords.
Operational temperature	<ul style="list-style-type: none"> • 32 to 104°F (0 to 40°C)
Nonoperational temperature shock	<ul style="list-style-type: none"> • 14 to 140°F (-10 to 60°C)
Humidity	<ul style="list-style-type: none"> • Operating 10% to 90%, non-condensing • Non-operating 10% to 95%, non-condensing
Cosmetic	<ul style="list-style-type: none"> • Cisco cosmetic class A

Features	Specifications
Certification and compliance	<ul style="list-style-type: none"> • Regulatory Compliance <ul style="list-style-type: none"> ◦ CE Markings per directives 2004/108/EC and 2006/95/EC • Safety <ul style="list-style-type: none"> ◦ UL 60950 Second Edition ◦ CAN/CSA-C22.2 No. 60950 Second Edition ◦ EN 60950 Second Edition (including A11 & A12) ◦ IEC 60950 Second Edition (including A11 & A12) ◦ AS/NZS 60950 ◦ GB4943 • EMC - Emissions <ul style="list-style-type: none"> ◦ 47CFR Part 15 (CFR 47) Class B ◦ AS/NZS CISPR22 Class B ◦ CISPR22: 2005 w/Amendment 1: 2005 Class B ◦ EN55022: 2006 w/Amendment 1: 2007 Class B ◦ ICES003 Class B ◦ VCCI Class B ◦ EN61000-3-2 ◦ EN61000-3-3 ◦ KN22 Class B • EMC - Immunity <ul style="list-style-type: none"> ◦ EN55024 ◦ CISPR24 ◦ EN60601-1-2 ◦ KN24 ◦ Armadillo Light • Telecom <ul style="list-style-type: none"> ◦ FCC Part 68 HAC ◦ CS-03-HAC ◦ AS/ACIF S004 ◦ AS/ACIF S040 ◦ NZ PTC 220 ◦ Industry Standards: TIA 810 and TIA 920 ◦ Industry Standards: IEEE 802.3 Ethernet, IEEE 802.3af and 802.3at

Product Specifications

Table 3 gives ordering information for the phone and its accessories.

Table 3. Ordering Information

Product Number	Description
CP-7811-K9=	• Cisco IP Phone 7811
CP-7821-K9=	• Cisco IP Phone 7821
CP-7841-K9=	• Cisco IP Phone 7841
CP-7861-K9=	• Cisco IP Phone 7861
CP-7821-W-K9=	• Cisco IP Phone 7821, White
CP-7841-W-K9=	• Cisco IP Phone 7841, White
CP-7861-W-K9=	• Cisco IP Phone 7861, White
CP-DX-HS-NB=	• Spare Narrowband Handset for Cisco IP Phone 7811
CP-DX-HS=	• Spare Wideband Handset for Cisco IP Phone 7800 Series
CP-DX-W-HS=	• Spare White Wideband Handset for Cisco IP Phone 7800 Series
CP-7800-HS-CORD=	• Spare Handset Cord for Cisco IP Phone 7800 Series
CP-DX-W-CORD=	• Spare White Handset Cord for Cisco IP Phone 7800 Series

Product Number	Description
CP-7800-HS-HOOK=	• Spare Handset Hook for Cisco IP Phone 7800 Series, 20 Pieces
CP-7811-WMK=	• Spare Wallmount Kit for Cisco IP Phone 7811
CP-7800-WMK=	• Spare Wallmount Kit for Cisco IP Phone 7800 Series
CP-7861-WMK=	• Spare Wallmount Kit for Cisco IP Phone 7861
CP-7811-FS=	• Spare Foot stand for Cisco IP Phone 7811
CP-7800-FS=	• Spare Foot stand for Cisco IP Phone 7800 Series
CP-7861-FS=	• Spare Foot stand for Cisco IP Phone 7861
CP-7821-B-BEZEL=	• Spare Black Bezel for Cisco IP Phone 7821
CP-7821-S-BEZEL=	• Spare Silver Bezel for Cisco IP Phone 7821
CP-7841-B-BEZEL=	• Spare Black Bezel for Cisco IP Phone 7841
CP-7841-S-BEZEL=	• Spare Silver Bezel for Cisco IP Phone 7841
CP-7861-B-BEZEL=	• Spare Black Bezel for Cisco IP Phone 7861
CP-7861-S-BEZEL=	• Spare Silver Bezel for Cisco IP Phone 7861
CP-PWR-CUBE-3	• Cisco Power Cube 3
CP-PWR-CORD-AP=	• Power Cord Asia Pacific
CP-PWR-CORD-AR=	• Power Cord Argentina
CP-PWR-CORD-AU=	• Power Cord Australia
CP-PWR-CORD-BZ=	• Power cord for Brazil
CP-PWR-CORD-CE=	• Power Cord European
CP-PWR-CORD-CN=	• Power Cord China
CP-PWR-CORD-JP=	• Power Cord Japan
CP-PWR-CORD-NA=	• Power Cord North America
CP-PWR-CORD-SW=	• Power Cord Switzerland
CP-PWR-CORD-UK=	• Power Cord United Kingdom
CP-PWR-ADPT-3-AR=	• Cisco Power Adapter 3 with Argentina Clip
CP-PWR-ADPT-3-AU=	• Cisco Power Adapter 3 with Australia Clip
CP-PWR-ADPT-3-BZ=	• Cisco Power Adapter 3 with Brazil Clip
CP-PWR-ADPT-3-CN=	• Cisco Power Adapter 3 with China Clip
CP-PWR-ADPT-3-EU=	• Cisco Power Adapter 3 with European Clip
CP-PWR-ADPT-3-IN=	• Cisco Power Adapter 3 with India Clip
CP-PWR-ADPT-3-KR=	• Cisco Power Adapter 3 with Korea Clip
CP-PWR-ADPT-3-NA=	• Cisco Power Adapter 3 with North America Clip
CP-PWR-ADPT-3-UK=	• Cisco Power Adapter 3 with United Kingdom Clip

Warranty

The Cisco® IP Phone 7800 Series are covered by a Cisco standard 1-year replacement warranty.

Cisco Unified Communications Services

Cisco and our certified partners can help you set up a secure, dependable Cisco Unified Communications solution, meeting aggressive deployment schedules and accelerating business advantage. Cisco's portfolio of services is based on proven methodologies for unifying voice, video, data, and mobile applications on fixed and mobile networks.

Our unique lifecycle approach to services defines what's needed at each phase of the solution lifecycle. Customized planning and design services help you create a solution that meets your business needs. Award-winning technical support helps you boost your operational efficiency. Remote management services simplify day-to-day operations. And optimization services let you modify and improve your network solution when business needs change.

Cisco Capital

Flexible Payment Solutions to Help you Achieve your Objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more.](#)

More Information

For additional details on the Cisco® IP Phone 7800 Series, go to <https://www.cisco.com/go/ipphones/7800>.




Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

 Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Printed in USA

C78-729488-12 04/19

© 2019 Cisco and/or its affiliates. All rights reserved. This document is Cisco Public Information.

Page 9 of 9

Annex II Motorola DP4000e Series

PRODUCT DATA SHEET
MOTOTRBO™ DP4000e SERIES
DIGITAL TWO-WAY RADIOS



MOTOTRBO™ DP4000e SERIES

YOU'RE COMPLETELY CONNECTED

With this dynamic evolution of MOTOTRBO digital two-way radios, you're better connected, safer and more productive. The DP4000e Series is designed for the skilled professional who refuses to compromise. With high performance integrated voice and data, and advanced features for efficient operation, these next-generation radios deliver complete connectivity to your organisation.

CONNECTED

The MOTOTRBO DP4000e Series is a family of ETSI DMR Standards compliant digital radios that delivers operation-critical voice and data communications. Bluetooth® audio lets you talk without wires, integrated Wi-Fi® enables remote software updates, and indoor and outdoor location-tracking capabilities give you total visibility of your resources. With support for trunking as well as legacy analogue technology, you can keep your organisation connected as it grows.

SAFE

Safeguard your staff with responsive push-to-talk technology. The prominent orange emergency button on DP4000e Series radios summons help with one touch, using Transmit Interrupt to clear a channel when necessary. An integrated accelerometer senses if you've fallen, and can initiate a call for assistance. The radio is tested tough to military standards and is waterproof to IP68. It won't let you down.

PRODUCTIVE

Text messaging and Work Order Ticketing simplify complex communications, and data capabilities support advanced applications. Featuring a powerful audio amplifier, these radios deliver loud, clear speech, with industrial noise cancellation for better intelligibility. The latest energy technology delivers up to 28 hours of battery life for 3-shift working, and an improved receiver boosts range by up to 8% compared to previous models.



WHAT'S NEW IN THESE NEXT GENERATION RADIOS

- Integrated accelerometer for optional Man Down
- Bluetooth® 4.0
- Indoor location tracking
- Multi-constellation GNSS for increased location accuracy¹
- Integrated Wi-Fi¹
- Over-the-air software updates
- Enhanced audio quality
- Improved expandability
- Better battery life (up to 28 hrs)
- Better range (up to 8%)
- Better waterproofing (IP68)

PRODUCT DATA SHEET
MOTOTRBO™ DP4000e SERIES
DIGITAL TWO-WAY RADIOS



	Full Keypad (FKP) Model			Limited Keypad (LKP) Model			No Keypad (NKP) Model		
Model Number	DP4801e, DP4800e ¹			DP4601e, DP4600e ¹			DP4401e, DP4400e ¹		
Band	VHF	300MHz	UHF	VHF	300MHz	UHF	VHF	300MHz	UHF
GENERAL SPECIFICATIONS									
Frequency	136-174 MHz	300-360 MHz 350-400 MHz	403-527 MHz	136-174 MHz	300-360 MHz 350-400 MHz	403-527 MHz	136-174 MHz	300-360 MHz 350-400 MHz	403-527 MHz
High Power Output	5 W	4 W	4 W	5 W	4 W	4 W	5 W	4 W	4 W
Low Power Output	1 W	1 W	1 W	1 W	1 W	1 W	1 W	1 W	1 W
Channel Spacing	12.5, 20 ² , 25 kHz								
Channel Capacity	1000			1000			32		
NiMH 1400mAh IP67 Battery									
Dimensions with Radio (H x W x D)	130 x 55 x 39 mm			130 x 55 x 39 mm			130 x 55 x 37 mm		
Weight with Radio	405 g			405 g			380 g		
Digital / Analogue Battery Life ³	13.0 / 10.0 hrs	12.0 / 9.5 hrs		13.0 / 10.0 hrs	12.0 / 9.5 hrs		13.0 / 10.0 hrs	12.0 / 9.5 hrs	
Li-ion 1400mAh Low Temp IP57 Battery									
Dimensions with Radio (H x W x D)	130 x 55 x 41 mm			130 x 55 x 41 mm			130 x 55 x 40 mm		
Weight with Radio	345 g			345 g			320 g		
Digital / Analogue Battery Life ³	13.0 / 10.0 hrs	12.0 / 9.5 hrs		13.0 / 10.0 hrs	12.0 / 9.5 hrs		13.0 / 10.0 hrs	12.0 / 9.5 hrs	
Slim IMPRES Li-ion 1650mAh IP67 Battery									
Dimensions with Radio (H x W x D)	130 x 55 x 36 mm			130 x 55 x 36 mm			130 x 55 x 34 mm		
Weight with Radio	330 g			330 g			295 g		
Digital / Analogue Battery Life ³	16.0 / 12.0 hrs	15.5 / 11.5 hrs		16.0 / 12.0 hrs	15.5 / 11.5 hrs		16.0 / 12.0 hrs	15.5 / 11.5 hrs	
IMPRES Li-ion 2100mAh IP68 Battery									
Dimensions with Radio (H x W x D)	130 x 55 x 36 mm			130 x 55 x 36 mm			130 x 55 x 34 mm		
Weight with Radio	330 g			330 g			295 g		
Digital / Analogue Battery Life ³	20.0 / 15.0 hrs	19.0 / 14.5 hrs		20.0 / 15.0 hrs	19.0 / 14.5 hrs		20.0 / 15.0 hrs	19.0 / 14.5 hrs	
IMPRES Li-ion 2250mAh IP67 Battery									
Dimensions with Radio (H x W x D)	130 x 55 x 41 mm			130 x 55 x 41 mm			130 x 55 x 40 mm		
Weight with Radio	345 g			345 g			320 g		
Digital / Analogue Battery Life ³	21.5 / 16.5 hrs	21.0 / 16.0 hrs		21.5 / 16.5 hrs	21.0 / 16.0 hrs		21.5 / 16.5 hrs	21.0 / 16.0 hrs	
IMPRES TIA4950 Li-ion 2900mAh IP68 Battery									
Dimensions with Radio (H x W x D)	130 x 55 x 41 mm			130 x 55 x 41 mm			130 x 55 x 40 mm		
Weight with Radio	405 g			405 g			380 g		
Digital / Analogue Battery Life ³	28.0 / 21.0 hrs	27.0 / 20.5 hrs		28.0 / 21.0 hrs	27.0 / 20.5 hrs		28.0 / 21.0 hrs	27.0 / 20.5 hrs	
IMPRES Li-ion 3000mAh LV IP68 Battery									
Dimensions with Radio (H x W x D)	130 x 55 x 41 mm			130 x 55 x 41 mm			130 x 55 x 40 mm		
Weight with Radio	350 g			350 g			325 g		
Digital / Analogue Battery Life ³	29.0 / 21.5 hrs	28.0 / 21.5 hrs		29.0 / 21.5 hrs	28.0 / 21.5 hrs		29.0 / 21.5 hrs	28.0 / 21.5 hrs	
IMPRES Li-ion 3000mAh LV IP68 Battery w/Vibrator									
Dimensions with Radio (H x W x D)	130 x 55 x 41 mm			130 x 55 x 41 mm			130 x 55 x 40 mm		
Weight with Radio	350 g			350 g			325 g		
Digital / Analogue Battery Life ³	29.0 / 21.5 hrs	28.0 / 21.5 hrs		29.0 / 21.5 hrs	28.0 / 21.5 hrs		29.0 / 21.5 hrs	28.0 / 21.5 hrs	

PRODUCT DATA SHEET
MOTOTRBO™ DP4000e SERIES
DIGITAL TWO-WAY RADIOS

ALL MODELS

TRANSMITTER SPECIFICATIONS	
Channel Spacing	12.5, 20, 25 kHz
4FSK Digital Modulation	12.5 kHz Data: 7K60F1D and 7K60FXD, 12.5 kHz Voice: 7K60F1E and 7K60FXE, Combination of 12.5 kHz Voice and Data: 7K60F1W
Digital Protocol	ETSI TS 102 361-1, -2, -3
Conducted/Radiated Emissions (TIA603D)	-36 dBm < 1GHz, -30 dBm > 1GHz
Adjacent Channel Power	60dB (12.5 kHz) 70dB (20 ² / 25 kHz)
Frequency Stability	± 0.5 ppm
RECEIVER SPECIFICATIONS	
Analogue Sensitivity (12dB SINAD)	0.16 µV
Digital Sensitivity (5% BER)	0.14 µV
Intermodulation (TIA603D)	70 dB
Adjacent Channel Selectivity, (TIA603A)-1T	60 dB (12.5 kHz) 70 dB (20 ² / 25 kHz channel)
Adjacent Channel Selectivity, (TIA603D)-2T & (TIA603C)-2T	45 dB (12.5 kHz) 70 dB (20 ² / 25 kHz)
Spurious Rejection (TIA603D)	70 dB
AUDIO SPECIFICATIONS	
Digital Vocoder Type	AMBE+2™
Audio Response	TIA603D
Rated Audio	0.5 W
Audio Distortion at Rated Audio	3%
Hum and Noise	-40 dB (12.5 kHz) -45 dB (20 ² / 25 kHz)
Conducted Spurious Emissions (TIA603D)	-57 dBm

NOTES
1: Bluetooth, GNSS and Wi-Fi only included on DP4401e, DP4601e and DP4801e.
2: 20 kHz channel not available for 300MHz models.
3: Typical battery life, 5/5/90 profile at maximum transmitter power with GNSS, Bluetooth, Wi-Fi and Option Board applications disabled. Actual observed runtimes may vary.
4: Radio only. Specialised low-temperature battery required for operation below -10 °C.

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G	
	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II	500.5	II
High Temp	501.1	I, II	501.2	I/A1, II/A1	501.3	I/A1, II/A1	501.4	I/Hot, II/Hot	501.5	I/A1, II/A1
Low Temp	502.1	I	502.2	I/C3, II/C1	502.3	I/C3, II/C1	502.4	I/C3, II/C1	502.5	I/C3, II/C1
Temp Shock	503.1	I	503.2	A1/C3	503.3	A1/C3	503.4	I	503.5	I-C
Solar Radiation	505.1	II	505.2	I/Hot-Dry	505.3	I/Hot-Dry	505.4	I/Hot-Dry	505.5	I/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.5	I, III
Humidity	507.1	II	507.2	II/Hot-Humid	507.3	II/Hot-Humid	507.4	-	507.5	II/Hot-Humid
Salt Fog	509.1	I	509.2	I	509.3	I	509.4	-	509.5	-
Dust	510.1	I, II	510.2	I, II	510.3	I, II	510.4	I, II	510.5	I, II
Vibration	514.2	VIII/F, W, XI	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24, II/5	514.6	I/24, II/5
Shock	516.2	II	516.3	I, IV	516.4	I, IV	516.5	I, IV	516.6	I, IV

BLUETOOTH SPECIFICATIONS	
Version	4.0
Range	Class 2, 10 m
Supported Profiles	Bluetooth Headset Profile (HSP), Serial Port Profile (SPP), Motorola fast push-to-talk.
Simultaneous Connections	1 x audio accessory and 1 x data device
Permanent Discoverable Mode	Optional
GNSS SPECIFICATIONS	
Constellation Support	GPS, GLONASS
Time To First Fix, Cold Start	< 60 s
Time To First Fix, Hot Start	< 10 s
Horizontal Accuracy	< 5 m
WI-FI SPECIFICATIONS	
Standards Supported	IEEE 802.11b, 802.11g, 802.11n
Security Protocol Supported	WPA, WPA-2, WEP
Maximum Number of SSIDs	128 (64 for LKP and NKP models)
ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature ⁴	-30 °C to +60 °C
Storage Temperature	-40 °C to +85 °C
Electrostatic Discharge	IEC 61000-4-2 Level 4
Dust and Water Intrusion	IEC 60529 - IP68, 2 m for 2 hrs
Packaging Test	MIL-STD 810D and E
HAZLOC CERTIFICATION	
When properly equipped with Motorola UL-Approved battery, UL-Approved to TIA-4950 for use in Hazardous Locations, Division 1, Class I, II, III, Groups C, D, E, F, G; Division 2, Class 1, Groups A, B, C, D, T3C. Tamb = -25°C to +60°C.	

- CONNECTION**
- VHF Band, 5 W
 - UHF Band, 4 W
 - 300 MHz Band, 4 W
 - FKP Models: Colour screen, full keypad, 1000 channels
 - LKP Models: Colour screen, limited keypad, 1000 channels
 - NKP models: No screen or keypad, 32 channels
 - Analogue and Digital
 - Voice and Data
 - Integrated Wi-Fi
 - Canned Text Messaging
 - Freeform Text Messaging (FKP models)
 - Work Order Ticketing
 - Multi-constellation GNSS
 - High Efficiency GNSS
 - Event-Driven Location Update
 - Bluetooth Audio
 - Bluetooth Data
 - Bluetooth Permanent Discoverable Mode
 - Bluetooth Indoor Location Tracking
 - Voice Announcement
 - Text to Speech
 - Option Board
 - Vibrate Alert
 - Home Channel Reminder

- AUDIO**
- Intelligent Audio
 - IMPRES Audio
 - SINC+ Noise Cancellation
 - Acoustic Feedback Suppressor
 - Microphone Distortion Control
 - User-Selectable Audio Profiles
 - Switch Speaker
 - Trill Enhancement

- PERSONALISATION**
- Wide Range of Accessories
 - Multi-Button PTT
 - 5 Programmable Buttons (3 for DP4400e/DP4401e)
 - Emergency Button

- MANAGEMENT**
- Radio Management
 - Over-the-Air Programming
 - Over-the-Air Software Update
 - IMPRES Energy
 - IMPRES Battery Management
 - Over-the-Air Battery Management

- SAFETY**
- Integrated Accelerometer
 - Man Down
 - Lone Worker
 - Basic Privacy
 - Enhanced Privacy
 - AES256 Encryption
 - Transmit Interrupt (decode)
 - Transmit Interrupt (encode)
 - Emergency
 - Emergency Search Tone
 - Remote Monitor
 - Radio Disable / Enable
 - TIA4950 Hazloc Certification
 - Waterproof to IP68
 - Rugged to MIL-STD 810

- SYSTEMS**
- Direct Mode (including Dual Capacity Direct Mode)
 - IP Site Connect (Single and Multi-Site)
 - Capacity Plus (Single and Multi-Site)
 - Capacity Max
 - Connect Plus
 - Standard feature
 - Optional feature

PRODUCT DATA SHEET
 MOTOTRBO™ DP4000e SERIES
 DIGITAL TWO-WAY RADIOS

BLUETOOTH

Connect to your radio without wires, for extra comfort and safety. A full portfolio of Bluetooth headsets and earpieces is available.



REMOTE SPEAKER MICROPHONE

Improve usability with a Remote Speaker Microphone (RSM). Choose from standard, heavy duty and noise-cancelling models, with or without secondary earpiece connector.



SMART ENERGY

Motorola's patented IMPRES™ Energy technology gives you smart batteries to keep your radio powered for longer. Choose from a range of batteries, chargers, and management tools.



EARPIECES

For all-day comfort, choose from our range of earpieces. Lightweight or heavy duty, discreet or rugged, with or without built-in hearing protection.



CARRY SOLUTIONS

However you choose to wear or carry your radio, we have a solution for you. From leather cases to belts and belt clips to bags, straps and pouches.



HEADSETS

In a noisy workplace, you need to protect your workers' hearing. Whether it's heavy duty noise reduction or innovative temple transducer technology, our headsets can help.



VIBRATING BELTCLIP

When it's unacceptable to miss calls in a noisy environment, equip your radios with a powerful vibrating belt clip for an extra physical alert.



To get connected with MOTOTRBO, visit www.motorolasolutions.com/mototrbo or find your closest Motorola representative or authorised Partner at www.motorolasolutions.com/contactus

MOTOTRBO™
 DIGITAL REMASTERED.

Distributed by: _____

Motorola Solutions Ltd. Jays Close, Viablos Industrial Estate, Basingstoke, Hampshire, RG22 4PD, UK.

Availability is subject to individual country law and regulations. All specifications shown are typical unless otherwise stated and are subject to change without notice.

MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. Wi-Fi is a registered trademark of the Wi-Fi Alliance®. All other trademarks are the property of their respective owners. © 2016 Motorola Solutions, Inc. All rights reserved.

EAv1 (05/16)



Annex III Motorola DM4000e Series

PRODUCT DATA SHEET
MOTOTRBO™ DM4000e SERIES
DIGITAL TWO-WAY RADIOS



MOTOTRBO™ DM4000e SERIES

YOU'RE COMPLETELY CONNECTED



With this dynamic evolution of MOTOTRBO digital two-way radios, you're better connected, safer and more productive. The DM4000e Series is designed for the skilled professional who refuses to compromise. With high performance integrated voice and data, and advanced features for efficient operation, these next-generation radios deliver complete connectivity to your organisation.

CONNECTED

The MOTOTRBO DM4000e Series is a family of ETSI DMR Standards compliant digital radios that delivers operation critical voice and data communications. Bluetooth® audio lets you talk without wires, integrated Wi-Fi® enables remote software updates, and indoor and outdoor location-tracking capabilities give you total visibility of your resources. With support for trunking as well as legacy analogue technology, you can keep your organisation connected as it grows.

SAFE

Safeguard your staff with responsive push-to-talk technology. The quick access buttons on DM4000e Series radios can summon help with one touch, using

Transmit Interrupt to clear a channel when necessary. A range of safe driving accessories allow your workers to communicate hands-free, and Text-to-Speech technology helps your drivers keep their eyes on the road.

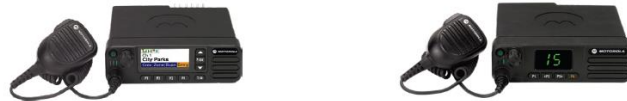
PRODUCTIVE

Text messaging and Work Order Ticketing simplify complex communications, and data capabilities support advanced applications. Featuring a high power audio amplifier, these radios deliver loud, clear speech, with background noise cancellation for better intelligibility. DM4000e Series radios are also ideal as a dispatcher solution, with desktop microphones and a rugged, durable design for everyday use.

WHAT'S NEW IN THESE NEXT GENERATION RADIOS

- Bluetooth 4.0
- Indoor location tracking
- Multi-constellation GNSS for increased location accuracy
- Integrated Wi-Fi
- Over-the-air software updates

PRODUCT DATA SHEET
 MOTOTRBO™ DM4000e SERIES
 DIGITAL TWO-WAY RADIOS



	Alphanumeric Model				Numeric Model			
Model Number	DM4601e / DM4600e ¹				DM4401e / DM4400e ¹			
Band	VHF	300MHz	UHF Band 1	UHF Band 2	VHF	300MHz	UHF Band 1	UHF Band 2
GENERAL SPECIFICATIONS								
Frequency	136-174 MHz	300-360 MHz, 350-400 MHz	403-470 MHz	450-527 MHz	136-174 MHz	300-360 MHz, 350-400 MHz	403-470 MHz	450-527 MHz
Low Power Output	1-25 W	-	1-25 W	-	1-25 W	-	1-25 W	-
High Power Output	25-45 W	1-40W	25-40 W	1-40W	25-45 W	1-40W	25-40 W	1-40W
Channel Spacing	12.5, 20 ² , 25 kHz							
Channel Capacity	1000				32			
Dimensions (H x W x D)	53 x 175 x 206 mm							
Weight	1.8 kg							
Power Supply (Nominal)	12 V							
Max Current Drain, Standby	0.8 A							
Max Current Drain, Receive	2 A							
Max Current Drain, Transmit (Low Power)	11 A	-	11 A	-	11 A	-	11 A	-
Max Current Drain, Transmit (High Power)	14.5 A	14.5 A	14.5 A	12 A	14.5 A	14.5 A	14.5 A	12 A



PRODUCT DATA SHEET
MOTOTRBO™ DM4000e SERIES
DIGITAL TWO-WAY RADIOS

ALL MODELS

TRANSMITTER SPECIFICATIONS

4FSK Digital Modulation	12.5 kHz Data: 7K60F1D and 7K60FXD, 12.5 kHz Voice: 7K60F1E and 7K60FXE, Combination of 12.5 kHz Voice and Data: 7K60F1W
Digital Protocol	ETSI TS 102 361-1, -2, -3
Conducted/Radiated Emissions (TIA603D)	-36 dBm < 1GHz, -30 dBm > 1GHz
Adjacent Channel Power	60dB (12.5 kHz) 70dB (20° / 25 kHz)
Frequency Stability	± 0.5 ppm

RECEIVER SPECIFICATIONS

Analogue Sensitivity (12dB SINAD)	0.18 µV
Digital Sensitivity (5% BER)	0.16 µV
Intermodulation (TIA603D)	70 dB
Adjacent Channel Selectivity, (TIA603A)-1T	60 dB (12.5 kHz) 70 dB (20° / 25 kHz)
Adjacent Channel Selectivity, (TIA603D)+2T	45 dB (12.5 kHz) 70 dB (20° / 25 kHz)
Spurious Rejection (TIA603D)	70 dB

AUDIO SPECIFICATIONS

Digital Vocoder Type	AMBE+2™
Audio Response	TIA603D
Rated Audio	3 W (internal speaker) 7.5 W (external 8 ohm speaker) 13 W (external 4 ohm speaker)
Audio Distortion at Rated Audio	3%
Hum and Noise	-40 dB (12.5 kHz) -45 dB (20° / 25 kHz)
Conducted Spurious Emissions (TIA603D)	-57 dBm

NOTES
 1: DM4601e and DM4801e models include GNSS and Bluetooth as standard.
 2: 20 kHz channel not available for 300MHz models.

BLUETOOTH SPECIFICATIONS

Version	4.0
Range	Class 2, 10 m
Supported Profiles	Bluetooth Headset Profile (HSP), Serial Port Profile (SPP), Motorola fast push-to-talk
Simultaneous Connections	1 x audio accessory and 1 x data device
Permanent Discoverable Mode	Optional

GNSS SPECIFICATIONS

Constellation Support	GPS, GLONASS
Time To First Fix, Cold Start	< 60 s
Time To First Fix, Hot Start	< 10 s
Horizontal Accuracy	< 5 m

WI-FI SPECIFICATIONS

Standards Supported	IEEE 802.11b, 802.11g, 802.11n
Security Protocol Supported	WPA, WPA-2, WEP
Maximum Number of SSIDs	128 (64 for Numeric Models)

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-30 °C to +60 °C
Storage Temperature	-40 °C to +85 °C
Electrostatic Discharge	IEC 61000-4-2 Level 4
Dust and Water Intrusion	IEC 60529 - IP54
Packaging Test	MIL-STD 810C, D, E, F and G

CONNECTION

- VHF Band, 45 W
- 300MHz Band, 40 W
- UHF Band, 40 W
- Alphanumeric Model: Colour Screen, 1000 Channels
- Numeric Model: Numeric Display, 32 Channels
- Analogue and Digital
- Voice and Data
- Integrated Wi-Fi
- Canned Text Messaging
- Freeform Text Messaging (Requires Keypad Mic)
- Work Order Ticketing
- Multi-Constellation GNSS for outdoor location tracking
- High Efficiency GNSS
- Event-Driven Location Update
- Bluetooth Audio
- Bluetooth Data
- Bluetooth Permanent Discoverable Mode
- Bluetooth Indoor Location Tracking
- Voice Announcement
- Text to Speech
- Option Board
- Home Channel Reminder

AUDIO

- Intelligent Audio
- IMPRES Audio
- SINC+ Noise Cancellation
- Acoustic Feedback Suppressor
- Microphone Distortion Control
- User-Selectable Audio Profiles
- Trill Enhancement

PERSONALISATION

- Wide Range of Accessories
- 4 Programmable Buttons

MANAGEMENT

- Radio Management
- Over-the-Air Programming
- Over-the-Air Software Update

SAFETY

- Lone Worker
- Basic Privacy
- Enhanced Privacy
- AES256 Encryption
- Transmit Interrupt (decode)
- Transmit Interrupt (encode)
- Digital Emergency
- Emergency Search Tone
- Remote Monitor
- Radio Disable / Enable
- Rated IP54
- Rugged to MIL-STD 810

SYSTEMS

- Direct Mode (including Dual Capacity Direct Mode)
- IP Site Connect (Single and Multi-Site)
- Capacity Plus (Single and Multi-Site)
- Capacity Max
- Connect Plus

- Standard feature
- Optional feature

MILITARY STANDARDS

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G	
	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II	500.5	II
High Temp	501.1	I, II	501.2	I/A1, II/A1	501.3	I/A1, II/A1	501.4	I/Hot, II/Hot	501.5	I/A1, II/A1
Low Temp	502.1	I	502.2	I/C3, II/C1	502.3	I/C3, II/C1	502.4	I/C3, II/C1	502.5	I/C3, II/C1
Temp Shock	503.1	I	503.2	A1/C3	503.3	A1/C3	503.4	I	503.5	I-C
Solar Radiation	505.1	II	505.2	I/Hot-Dry	505.3	I/Hot-Dry	505.4	I/Hot-Dry	505.5	I/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.5	I, III
Humidity	507.1	II	507.2	II/Hot-Humid	507.3	II/Hot-Humid	507.4	-	507.5	I/Hot-Humid
Salt Fog	508.1	I	508.2	I	508.3	I	508.4	-	508.5	-
Dust	510.1	I, II	510.2	I, II	510.3	I, II	510.4	I, II	510.5	I, II
Vibration	514.2	VIII/CatF/ CurveW, XI	514.3	I/Cat10, II/ Cat3	514.4	I/Cat10, III/ Cat3	514.5	I/Cat24, II/ Cat5	514.6	I/Cat24, II/ Cat5
Shock	516.2	I, II	516.3	I, IV	516.4	I, IV	516.5	I, IV	516.6	I, V, VI

PRODUCT DATA SHEET
MOTOTRBO™ DM4000e SERIES
DIGITAL TWO-WAY RADIOS

LONG RANGE WIRELESS MOBILE MICROPHONE

Designed for customers who depend on their high power mobile radio but must work outside of their vehicle, the Long Range Wireless Mobile Microphone keeps you connected and communicating up to 100m (330 ft) from your vehicle. With instant touch pairing and in-vehicle charging cradles, you can maintain critical communications even on remote job sites.



HANDHELD CONTROL HEAD

When space is tight, and you need the flexibility to operate your radio from anywhere in the vehicle, opt for the Handheld Control Head. Its colour screen, full keypad and extendable cord gives you complete control within 8 m (26 ft) of the radio.



BLUETOOTH AUDIO

Improve the mobility of your work teams without wires getting tangled. Your delivery driver can sort through packages on the back of the delivery truck, your bus driver can check students in the back of the bus, and your limousine driver can open the door for their passengers and stay connected.



CONNECT AND COORDINATE EFFORTLESSLY

IMPRES™ Smart Audio accessories communicate with the radio to suppress ambient noise, improve voice intelligibility and amplify loudness. Choose from a range of standard and heavy duty microphones, with or without keypads and navigation buttons.



INTERACT SAFELY WITHOUT DISTRACTIONS

To help your drivers keep their eyes on the road, you can customise your installation with the IMPRES Visor Microphone and Remote Push-to-Talk.



To get connected with MOTOTRBO, visit www.motorolasolutions.com/mototrbo or find your closest Motorola representative or authorised Partner at www.motorolasolutions.com/contactus

MOTOTRBO™
 DIGITAL REMASTERED.

Distributed by: _____

Motorola Solutions Ltd. Jays Close, Viabes Industrial Estate, Basingstoke, Hampshire, RG22 4PD, UK.
 Availability is subject to individual country law and regulations. All specifications shown are typical unless otherwise stated and are subject to change without notice.
 MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. Wi-Fi is a registered trademark of the Wi-Fi Alliance®. All other trademarks are the property of their respective owners. © 2016 Motorola Solutions, Inc. All rights reserved.
 EAv1 (05/16)



Annex IV LG UH5F Series

UHD Signage | UH5F Series

LG UHD Signage Captures Customer's Attention

The UH5F series is a UHD signage that has been optimized for various indoor environments. It features superior UHD quality, slim design, external dust protection, and various convenience for users.



Superb Picture Quality



Sleek and Practical Design



Product Reliability



Easy Installation



*All images are for illustrative purposes only.

SUPERB PICTURE QUALITY

UHD Signage | UH5F Series

ULTRA HD Resolution

With the resolution that is 4 times higher than FHD, it makes the color and details of the contents more vivid and realistic. In addition, the wide viewing angle applied with LG IPS Panel, provides clear contents with no distortion.



High Efficiency Video Coding

The UH5F series supports HEVC* which efficiently compresses/ decompresses high-capacity UHD contents, playing ultra-high quality videos with half the network traffic when compared to the existing H.264 codec.



H.264



HEVC

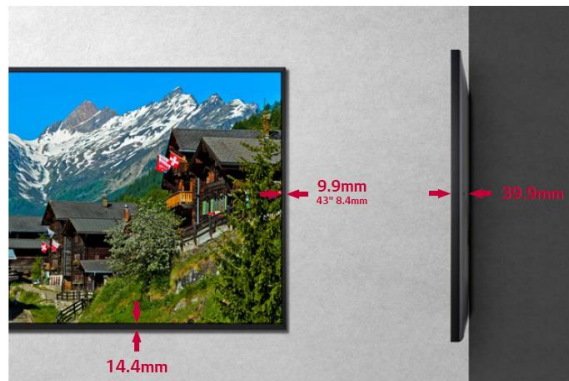
* HEVC : High Efficiency Video Coding

SLEEK AND PRACTICAL DESIGN

UHD Signage | UH5F Series

Narrow Bezel & Slim Depth

The UH5F series has a smaller bezel size and thickness, which saves space and enables easy installation. In addition, it increases the immersive experience from the screen and provides a sophisticated design, improving the décor of the space where the product is installed.



Detachable Logo and Built-in Speaker

The UH5F series is equipped with a new transparent logo which is well organized with surroundings. Also, its removable feature gives users flexibility for installation. Contents will be enriched with sound effects from built-in speakers, without the need for purchasing or installing external speakers.



PRODUCT RELIABILITY

UHD Signage | UH5F Series

IP5x Certified Design

The IP5x Dust-Proof Certification ensures that the product is completely protected from dust, eliminating the risk of performance degradation.



30° Tilting Installation

When a display is installed at high places, it is usually tilted for the user's comfort viewing. In consideration of this, the UH5F series supports the installation with 30 degrees of tilt*.



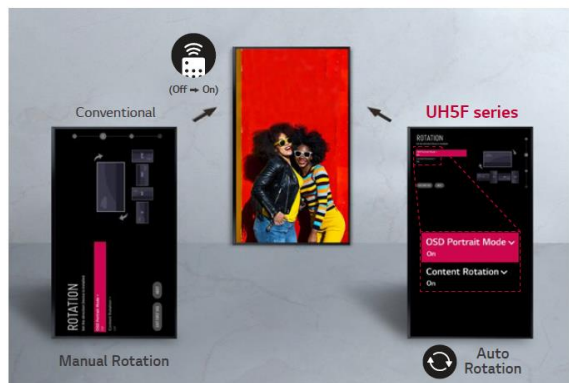
* Tilt installation of up to 30 degrees facedown is supported. (in conditions within 30°C temperature, 50% humidity)

EASY INSTALLATION

UHD Signage | UHSF Series

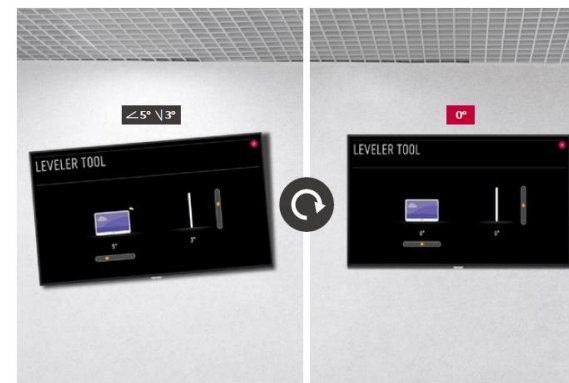
Auto Screen Rotation

The UHSF series automatically detects its orientation (landscape or portrait mode) in the initial installation step, so manual rotation set-up process isn't required. The direction of OSD and background contents will be already set when you turn on a display at first.



Fine Adjustment

The UHSF series is equipped with a "horizontal sensor" which shows users how the device is tilt, so that it can be precisely installed.



USER CONVENIENCE

UHD Signage | UH5F Series

Remote Monitoring

The UH5F series can email notifications to users when there is a problem, such as tilting of the product by external impact, so users can operate the product in a safer manner as they can get the information about the problem right away.



Simple Accessibility

Unlike previous models where various buttons have to be pressed for control, the UH5F series provides a single joystick to easily facilitate power on/off, input/setting operation, volume control, etc.



SMART FUNCTION

UHD Signage | UH5F Series

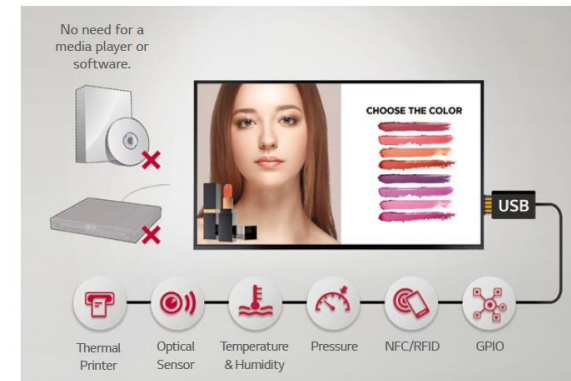
High-Performance with webOS

Built-in Quad Core SoC can execute several tasks at once while providing smooth content playback without the need for a media player. Also LG webOS platform enhances user convenience with intuitive GUI and simple app development tools.



Various Sensor Applications

LG webOS smart signage platform easily supports connections with external sensors such as GPIO, NFC/RFID, temperature sensors, etc, via USB plug-in. The overall cost for maintenance is reduced as there's no need to purchase additional software or media players for creating value-added solutions.



SMART FUNCTION

UHD Signage | UH5F Series

Compatibility with AV Control System

The UH5F series has been certified Crestron Connected® for high compatibility with professional AV controls to achieve seamless integration and automated control*, boosting business management efficiency.



* Network based control

Compatibility with Video Conference System

For the optimum visual meeting, the UH5F series has certified its compatibility with Cisco System that offers powerful and integrated control* for a smarter video conference, eliminating a waste of time for setting up the picture quality or changing input on incoming calls.

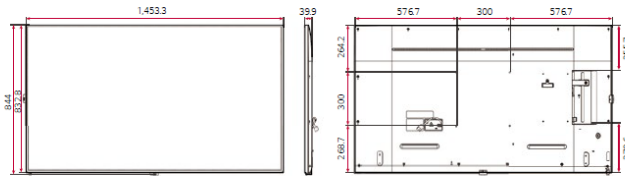


* Using an HDMI cable connection

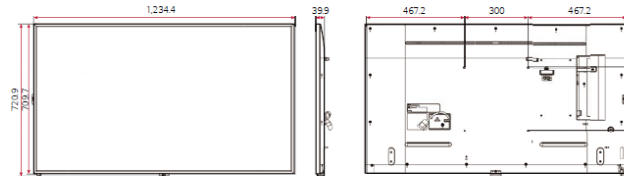
DIMENSION (unit: mm)

UHD Signage | UH5F Series

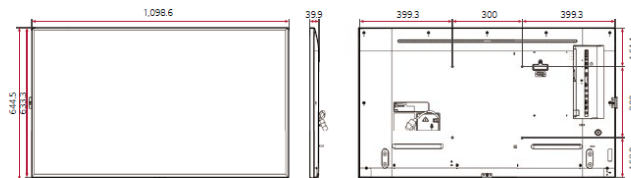
65"



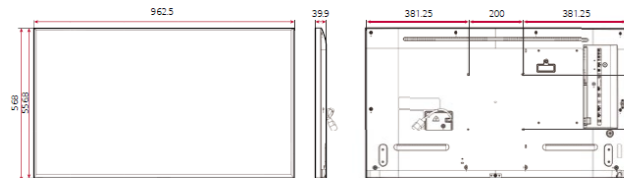
55"



49"

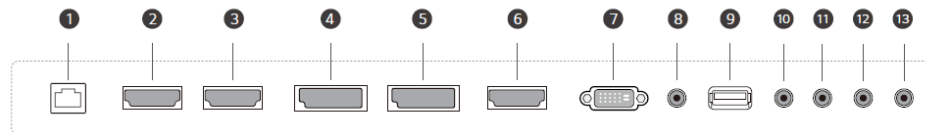


43"



CONNECTIVITY

65" | 55" | 49" | 43"



- 1 LAN
- 2 HDMI IN1
- 3 HDMI IN2
- 4 DP IN
- 5 DP OUT
- 6 HDMI IN3
- 7 DVI-D IN
- 8 IR & LIGHT SENSOR
- 9 USB IN
- 10 AUDIO IN
- 11 AUDIO OUT
- 12 RS-232C IN
- 13 RS-232C OUT

* Dimensions & Jack Panels (Read/Side) may differ from the above image, so please contact LG sales team to verify before ordering.

SPECIFICATIONS

UHD Signage | UH5F Series

		65UH5F	55UH5F	49UH5F	43UH5F
Panel	Screen Size	65"	55"	49"	43"
	Panel Technology	IPS	IPS	IPS	IPS
	Aspect Ratio	16:9	16:9	16:9	16:9
	Native Resolution	3,840 x 2,160 (UHD, RGB)	3,840 x 2,160 (UHD, RGB)	3,840 x 2,160 (UHD, RGB)	3,840 x 2,160 (UHD, RGB)
	Brightness (Typ.)	500 cd/m ²	500 cd/m ²	500 cd/m ²	500 cd/m ²
	Contrast Ratio	1,100:1	1,100:1	1,100:1	1,100:1
	Viewing Angle (H x V)	178 x 178	178 x 178	178 x 178	178 x 178
	Response Time	8ms (G to G)	8ms (G to G)	8ms (G to G)	8ms (G to G)
	Surface Treatment (Haze)	Haze 3%	Haze 3%	Haze 3%	Haze 3%
	Life Time (Typ.)	50,000 Hrs	50,000 Hrs	50,000 Hrs	50,000 Hrs
	Operation Hours	24 Hrs	24 Hrs	24 Hrs	24 Hrs
Orientation	Portrait & Landscape	Portrait & Landscape	Portrait & Landscape	Portrait & Landscape	
Connectivity	Input	HDMI (3), DP, DVI-D, Audio, USB 2.0			
	Output	DP, Audio (Off/Fixed/Variable)			
	External Control	RS232C In/Out, RJ45 (LAN) In, IR In			
Mechanical Specification	Bezel Color	Black	Black	Black	Black
	Bezel Width	9.9mm(T/R/L), 14.4mm(B)	9.9mm(T/R/L), 14.4mm(B)	9.9mm(T/R/L), 14.4mm(B)	8.4mm(T/R/L), 14.4mm(B)
	Monitor Dimension (W x H x D)	1,453.3mm x 844mm x 39.9mm	1,234.4mm x 720.9mm x 39.9mm	1,098.6mm x 644.5mm x 39.9mm	962.5mm x 568mm x 39.9mm
	Weight (Head)	28.2 kg	19.0 kg	15.4 kg	11.2 kg
	Carton Dimensions (W x H x D)	1,600mm x 970mm x 175mm	1,360mm x 810mm x 175mm	1,197mm x 740mm x 162mm	1,052mm x 660mm x 152mm
	Packed Weight	35.0 kg	24.2 kg	18.8 kg	13.7 kg
	Handle	No	No	No	No
VESA™ standard Mount Interface	300 x 300	300 x 300	300 x 300	200 x 200	
Key Feature	Internal Memory 8GB (System 4GB + Available 3.6GB), Built-in Wi-Fi, Built-in Speaker, Temperature Sensor, Auto Brightness Sensor, Acceleration Sensor, Local Key Operation, Embedded CMS (USB Auto Playback, Local Contents Scheduling, Group Manager), Fail over, Image Customization (Booting Logo, No Signal), Content Sync (RS232C, Local Network), PIP/PPR(4), Screen Share, Video Tag(4), Play via URL, OSD Rotation, Tile Mode Setting (Max. 15 x 15), Setting Data Cloning, Firmware Update by Network, SHMP 2.0, ISM Mode, Crestron Connected®, DPM, Smart Energy Saving, Wake on LAN, Bezel, HDMI-CEC ¹⁾ , S/ Server Setting				
Special Feature	Tilt (Facedown) ²⁾	Max. 30°	Max. 30°	Max. 30°	Max. 30°
Environmental Conditions	IP Rating	IP5x	IP5x	IP5x	IP5x
	Operation Temperature	0°C to 40°C	0°C to 40°C	0°C to 40°C	0°C to 40°C
Power	Operation Humidity	10% to 80%	10% to 80%	10% to 80%	10% to 80%
	Power Supply	100-240V~, 50/60Hz	100-240V~, 50/60Hz	100-240V~, 50/60Hz	100-240V~, 50/60Hz
	Power Type	Built-In Power	Built-In Power	Built-In Power	Built-In Power
	Power Consumption	Typ. / Max. 90W (TBD) / 165W (TBD) Smart Energy Saving	105W (TBD) / 145W (TBD)	95W (TBD) / 130W (TBD)	75W / 110W
Certification	Safety	IEC 60950-1 / EN 60950-1 / UL 60950-1	IEC 60950-1 / EN 60950-1 / UL 60950-1	IEC 60950-1 / EN 60950-1 / UL 60950-1	IEC 60950-1 / EN 60950-1 / UL 60950-1
	EMC	FCC Class "A" / CE / KC	FCC Class "A" / CE / KC	FCC Class "A" / CE / KC	FCC Class "A" / CE / KC
	ErP / Energy Star	Yes / Yes (Energy Star 7.0)	Yes / Yes (Energy Star 7.0)	Yes / Yes (Energy Star 7.0)	Yes / Yes (Energy Star 7.0)
Media player Compatibility	OPS Type Compatible	Yes	Yes	Yes	Yes
	External Media Player Attachable	Yes	Yes	Yes	Yes
Software Compatibility	Content Management Software	SuperSign CMS	SuperSign CMS	SuperSign CMS	SuperSign CMS
	Control and Monitoring Software	SuperSign Control/Control+	SuperSign Control/Control+	SuperSign Control/Control+	SuperSign Control/Control+
Accessories	Signage365Care	Yes	Yes	Yes	Yes
	Basic	Remote Controller, Power Cord, QSG, HDMI Cable, Regulation Book, Phone to RS232C Gender			
Optional	Stand(ST-653T), Media Player, Wall Bracket(65", 55", 49":LSW350B / 43":LSW240B), VESA Adapter(65", 55", 49":AM-B3305 / 43":AM-B2205), OPS Kit(KT-OPSH)				

1) Network based control 2) Compatibility may differ by equipment 3) In conditions within 30°C temperature, 50% humidity



- www.lg.com/b2b
- www.youtube.com/c/LGCommercialDisplay
- www.facebook.com/LGInformationDisplay
- www.linkedin.com/company/LGInformationDisplay

LG may make changes to specifications and product descriptions without notice.
Copyright © 2019 LG Electronics Inc. All rights reserved. "LG Life's Good" is a registered trademark of LG Corp.
The names of products and brands mentioned here may be the trademarks of their respective owners.



Annex V HP Elite Desk 800 G2 and HP V213a

Datasheet

HP EliteDesk 800 G2 Small Form Factor PC



Pack a performance punch in a small footprint

Experience top-notch productivity plus industry-leading reliability, security, and manageability, plus a unique portfolio of solutions in a compact, space-saving design with the powerful HP EliteDesk 800 SFF.



- Windows 10 Pro¹
- 6th Gen Intel® Core™ Processors²

Designed for every demand

- Blast through your most demanding challenges with the uncompromising performance of 6th Gen Intel® Core™ processors,² Intel® HD 530 Graphics, and optional high-end discrete graphics and HP Turbo Drive.³

Seriously secure

- Help protect your PC and maintain maximum uptime with a suite of solutions that help stop security breaches, including HP BIOSphere⁴ with SureStart.

Make durability a reality

- Get the reassurance of a PC that goes through 120,000 hours of HP Total Test Process and is designed to pass MIL-STD testing.⁵ Add an optional Dust Management Solution for enhanced reliability in dusty environments.

Expand with ease

- Extend the life of your investment with a tool-less chassis and a range of expansion slots, bays, ports, and connectors for the most demanding business needs.

Featuring

- Help secure the future of your modern business. Modern PCs from HP make the most of Windows 10 Pro¹ to help protect you from today's security threats and maximize management and productivity features for business.
- Enjoy easy world-class manageability with integrated solutions that include Intel® vPro™⁶ and Windows 10 Pro¹ plus HP Common Core BIOS, which enables easy management of your entire fleet of HP devices.
- Simplify IT rollouts and stagger deployments with an 18-month lifecycle and global availability in more than 180 countries where HP conducts business.
- Make conferencing from your PC as simple as the touch of a button with the optional HP Conferencing Keyboard and HP Wired Headset.³
- Keep everything in plain sight and be up to 35%⁹ more productive with support for up to three external HP EliteDisplays.³
- Support your environmental initiatives with energy-efficient PCs that are ENERGY STAR® certified and EPEAT® Gold⁸ registered.
- Increase storage and performance with an optional powerful HP Turbo Drive³ that handles your growing and complex workloads.

Datasheet

HP EliteDesk 800 G2 Small Form Factor PC Specifications Table



Form Factor	Small Form Factor
Available Operating System	Windows 10 Pro 64 ¹ Windows 10 Home 64 ¹ Windows 8.1 Pro 64 ¹ Windows 8.1 64 ¹ Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro) ² Windows 7 Professional 32 (available through downgrade rights from Windows 10 Pro) ² Windows 7 Professional 64 ¹ Windows 7 Professional 32 ¹ FreeDOS 2.0
Available Processors³	Intel® Core™ i7-6700 with Intel HD Graphics 530 (3.4 GHz, up to 4 GHz with Intel Turbo Boost, 8 MB cache, 4 cores), Intel® Core™ i5-6600 with Intel HD Graphics 530 (3.3 GHz, up to 3.9 GHz with Intel Turbo Boost, 6 MB cache, 4 cores), Intel® Core™ i5-6500 with Intel HD Graphics 530 (3.2 GHz, up to 3.6 GHz with Intel Turbo Boost, 6 MB cache, 4 cores), Intel® Core™ i3-6320 with Intel HD Graphics 530 (3.9 GHz, 4 MB cache, 2 cores), Intel® Core™ i3-6300 with Intel HD Graphics 530 (3.8 GHz, 4 MB cache, 2 cores), Intel® Core™ i3-6100 with Intel HD Graphics 530 (3.7 GHz, 3 MB cache, 2 cores), Intel® Pentium® G4500 with Intel HD Graphics 530 (3.5 GHz, 3 MB cache, 2 cores), Intel® Pentium® G4400 with Intel HD Graphics 510 (3.3 GHz, 3 MB cache, 2 cores)
Chipset	Intel® Q170
Maximum Memory	Up to 64 GB DDR4-2133 SDRAM Standard memory note: Transfer rates up to 2133 MT/s
Memory slots	4 DIMM
Internal Storage	120 GB up to 500 GB SATA SSD ⁴ 120 GB up to 256 GB SATA SED SSD ⁴ 500 GB up to 1 TB SATA SSHD ⁴ 128 GB up to 512 GB Turbo Drive G2 (M.2 PCIe SSD) ⁴ 500 GB up to 2 TB SATA (7200 rpm) 128 GB up to 256 GB SATA 3D SSD ⁴
Optical Storage	Slim SATA BDXL Blu-ray writer; Slim SATA SuperMulti DVD-RW; Slim SATA DVD-ROM ⁶
Available Graphics	Integrated: Intel® HD Graphics ⁸ Discrete: NVIDIA® GeForce® GT 730 (2 GB) (Integrated graphics will depend on processor)
Audio	DTS Studio Sound™ audio management technology, HD audio with Realtek ALC221 codec, microphone and headphone front ports (3.5 mm), line-out and line-in rear ports (3.5 mm), multi-streaming capable, internal speaker (standard)
Communications	LAN: Intel® I219LM Gigabit Network Connection LOM, Intel® I210-T1 PCIe GbE (optional) Wi-Fi: Broadcom® BCM94322 802.11n Wireless PCIe with optional Bluetooth® (optional); Intel® 7265 802.11ac Wireless PCIe with Bluetooth® (optional); Intel® 7265 802.11n Wireless PCIe (optional); Intel® 8260 802.11ac Wireless PCIe with optional Bluetooth® (optional) ⁷
Expansion Slots	1 PCIe x16; 1 PCIe x4 (x16); 2 PCIe x1
Ports and Connectors	Front: 2 USB 3.0; 2 USB 2.0 (1 fast charging); 1 audio line in; 1 audio line out Back: 6 USB 3.0; 1 serial; 1 serial (optional); 1 parallel (optional); 2 PS/2 (keyboard and mouse); 1 VGA; 2 DisplayPort; 1 audio line in; 1 audio line out; 1 RJ-45
Internal Drive Bays	Two 8.9 cm (3.5"); One 6.35 cm (2.5")
External Drive Bays	1 slim ODD; One SD 4 reader (optional)
Available Software	HP business PCs are shipped with a variety of software titles including: HP Drive Encryption (FIPS 140-2), HP Client Security, HP Security Manager, Microsoft Security Essentials, CyberLink Power2Go DVD BD, Native Miracast Support, HP ePrint Driver, HP Recovery Manager, Foxit PhantomPDF Express. Please refer to this product's quick spec document for a full list of preinstalled software. ^{10,11,12}
Security Management	HP BIOSphere with Sure Start, Trusted Platform Module (TPM) 1.2/2.0 (Common Criteria EAL4+ certified), SATA port disablement (via BIOS), DriveLock and Automatic DriveLock, RAID (available as a configurable option), Serial, parallel, USB enable/disable (via BIOS), Optional USB port disable at factory (user configurable via BIOS), Removable media write/boot control, Power-on password (via BIOS), Setup password (via BIOS), HP Solenoid Hood Lock/Sensor; Support for chassis padlocks and cable lock devices ^{13,14}
Management Features	Intel® vPro™
Power	200 W, up to 92% efficient, active PFC
Weight	Starting at 7.6 kg (Exact weight depends on configuration)
Environmental	Low halogen
Energy Efficiency Compliance	ENERGY STAR® certified and EPEAT® Gold registered configurations available ¹⁵
Warranty	3-year limited warranty including 3 years of parts, labour, and next-business-day onsite service. Terms and conditions vary by country. Certain restrictions and exclusions apply.

Datasheet

HP EliteDesk 800 G2 Small Form Factor PC

Accessories and services (not included)

HP 5 year Next business day
Onsite Desktop Only
Hardware Support



With high-quality remote assistance or convenient onsite support available 24x7, help is there when you need it—so you can get back to work.

Product number: U7899E

Datasheet

HP EliteDesk 800 G2 Small Form Factor PC

Messaging Footnotes

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.microsoft.com>.
- ² Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing system required. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ Sold separately or available as a configurable option.
- ⁴ HP BIOSphere features may vary depending on the PC platform & configuration.
- ⁵ MIL-STD testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Accidental damage or damage under the MIL-STD test conditions requires an optional HP Accidental Damage Protection Care Pack.
- ⁶ Some functionality of vPro, such as Intel® Active Management Technology and Intel Virtualization Technology, requires additional third party software in order to run. Availability of future "virtual appliances" applications for Intel vPro technology is dependent on third party software providers. Microsoft Windows required.
- ⁸ "Observed Productivity, Efficiency and User Satisfaction when Using Multiple or Large Displays." Koala LLC Ergonomics Consulting, November 6, 2012.
- ⁹ EPEAT® Gold registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.

Technical specifications disclaimers

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.microsoft.com>.
- ² This system is preinstalled with Windows 7 Professional software and also comes with a license and media for Windows 10 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.
- ³ Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ⁴ For storage drives, GB = 1 billion bytes, TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and up to 36 GB (for Windows 8.1 and 10) of system disk is reserved for system recovery software.
- ⁵ Duplication of copyrighted material is strictly prohibited. Actual speeds may vary. Double Layer media compatibility will widely vary with some home DVD players and DVD-ROM drives. Note that DVD-RAM cannot read or write to 2.6GB Single Sided/5.2 Double Sided/Version 1.0 Media.
- ⁶ With Blu-Ray drive XL, certain disc, digital connection, compatibility and performance issues may arise, and do not constitute defects in the product. Flawless playback on all systems is not guaranteed. In order for some Blu-ray titles to play, they may require an HDCP path and HDCP display. HD-DVD movies cannot be played on this BDXL Drive.
- ⁷ Wireless cards are optional or add-on features and requires separately purchased wireless access point and Internet service. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of this desktop PC to communicate with other 802.11ac WLAN devices.
- ⁸ HD content required to view HD images.
- ⁹ Optional or add-on feature.
- ¹⁰ HP ePrint requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/businessmobileprinting). HP PageLife requires Windows 7 or higher.
- ¹¹ Microsoft Security Essentials requires Windows 7 and Internet access.
- ¹² Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. Miracast is available for Windows 8 and Windows 10. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>.
- ¹³ HP BIOSphere with Sure Start available only on business PCs with HP BIOS.
- ¹⁴ This product ships with TPM 1.2 with option to upgrade to TPM 2.0. Upgrade utility is expected to be available by the end of 2015 via HP Customer Support.
- ¹⁵ EPEAT® registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.
- ¹⁶ External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.

Learn more at
www.hp.eu/desktops

Engage HP Financial Services
Explore monthly payment options and technology refresh plans that can provide more flexibility to help you meet your IT goals. More information on www.hp.com/go/hpfs.

Sign up for updates
www.hp.com/go/getupdated

© Copyright 2015 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein. ENERGY STAR and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency. Bluetooth is a trademark of its proprietor used by Hewlett-Packard Company under license. Microsoft and Windows are U.S. trademarks of the Microsoft group of companies. Intel and Core are trademarks of Intel Corporation in the U.S. and other countries. Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries. For DTS patents, see <http://patents.dts.com>. Manufactured under license from DTS Licensing Limited. DTS, the Symbol, & DTS and the Symbol together are registered trademarks, and DTS Studio Sound is a trademark of DTS, Inc. © DTS, Inc. All Rights Reserved. All other trademarks are the property of their respective owners.

4AA6-1495EEE, November 2015



Datasheet

HP V213a 52.57 cm (20.7") Monitor



Business-class affordability in a large screen.

Enjoy stunning Full HD presentation of your visuals and quality, integrated speakers with the stylish HP V213a 52.57 cm (20.7") diagonal monitor, a budget-friendly display that's just right for everyday business.



Spectacular world of color

- Enjoy crisp, clear views with Full HD[1] 1920 x 1080 resolution and 5 ms response time² on an ample 20.7-inch diagonal screen.

Create an efficient workspace

- Attach your HP Desktop Mini or select Thing Client directly behind the display for an affordable, compact, integrated workspace that's perfect for small spaces. Or, use the integrated VESA mount to place the display on a wall or stand.³

Easy connectivity

- Get legacy compatibility with a VGA connector, or use DVI to connect to your newer technology.

Featuring

- Reduce power consumption and help lower your costs with an intelligent, energy-efficient design that is ENERGY STAR[®] certified and EPEAT[®] Silver registered.⁴ The display also includes mercury-free display backlights and arsenic-free display glass.
- Rest assured that your IT investment is supported by a one-year standard limited warranty. To extend your protection, select optional HP Care Pack Services.⁵

Datasheet

HP V213a 52.57 cm (20.7") Monitor Specifications Table



Product Color	Black
Display size (diagonal)	52.57 cm (20.7")
Display Type	TN w/LED backlight
Panel Active Area	457.92 x 257.58 mm;
Viewing Angle	90° horizontal; 65° vertical
Brightness	200 cd/m ²
Contrast Ratio	600:1 static; 5000000:1 dynamic ¹
Response Ratio	5 ms on/off ¹
Aspect Ratio	16:9
Native Resolution	1920 x 1080 @ 60 Hz
Resolutions Supported	1920 x 1080; 1680 x 1050; 1600 x 900; 1440 x 900; 1280 x 1024; 1280 x 800; 1280 x 720; 1024 x 768; 800 x 600; 640 x 480
Display Features	Anti-glare; Language selection; LED Backlights; On-screen controls; Plug and Play; User programmable
User Controls	Power; 4-button OSD (Auto, Minus, Plus, Menu)
Input signal	1 VGA; 1 DVI-D (with HDCP support)
Ports and Connectors	1 audio input ¹
Input power	Input voltage: 100 to 240 VAC
Power consumption	Panel Active Area: 457.92 x 257.58 mm; Power consumption Description: 28 W (maximum), 23 W (typical), 0.5 W (standby); Screen resolution: 1920 x 1080 @ 60 Hz
Dimensions with Stand (W x D x H)	48.94 x 4.8 x 30.06 cm
Dimensions without Stand (W x D x H)	48.94 x 19.76 x 36.27 cm
Weight	3 kg (With stand)
Ergonomic features	Tilt: -5 to +11
Multimedia	Audio input with integrated 1 W per channel speakers
Certification and Compliance	CE; CB; ICE; TUV-GS; ISO 9241-307; EAC; CCC; CEL; VCCI; FCC; WEEE
Environmental	Arsenic-free display glass; Mercury-free display backlights
Energy Efficiency Compliance	ENERGY STAR® certified
What's in the box	AC power cable; VGA cable; Audio cable; CD (includes User Guide, warranty, drivers)
Warranty	1-year limited warranty including 1 year of parts and labour. Certain restrictions and exclusions apply.

Datasheet

HP V213a 52.57 cm (20.7") Monitor

Accessories and services (not included)

HP Single Monitor Arm



The HP Single Monitor Arm is the perfect desk accessory for your work life. Sleek and streamlined, the HP Single Monitor Arm is designed to complement the way you work.
Product number: BT861AA

HP Quick Release



A secure and easy-to-use mounting solution for your VESA-compliant HP thin clients, compatible HP flat panel monitors and other HP desktop products. Attach to any a compatible stand, bracket or wall mount and make the most of your workspace.
Product number: EM870AA

HP Integrated Work Center 3 for Small Form Factor



Maximize your work space with the HP Integrated Work Center for Small Form Factors v3. Customize an "all-in-one" solution by combining an HP Small Form Factor or Workstation with an LED monitor up to 24 diagonal inches.¹
Product number: F2P06AA

HP Integrated Work Center for Desktop Mini and Thin Client



Make the most of small work spaces with an HP IWC Desktop Mini/Thin Client that lets you create a compact desktop solution by combining a display¹ with an HP Desktop Mini, HP Thin Client or HP Chromebox¹ and giving you convenient front access to all of its inputs.
Product number: G1V61AA

HP UHD USB Graphics Adapter



Boost your productivity by extending or mirroring your desktop to a UHD display with the HP UHD USB Graphics Adapter.
Product number: N2U81AA

HP 3 year Next business day Onsite Standard Monitor Hardware Support



Receive 3 years of next business day onsite repair from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.
Product number: UD950E

Learn more at
www.hp.eu/hpoptions

Datasheet

HP V213a 52.57 cm (20.7") Monitor

Messaging Footnotes

- ¹ High-definition (HD) content required to view HD images.
- ² All performance specifications represent the typical specifications provided by HP's component manufacturers, actual performance may vary either higher or lower.
- ³ See product QuickSpecs for exact PC and thin client compatibility. HP Quick Release required and sold separately. Mounting hardware sold separately. Options sold separately.
- ⁴ EPEAT® registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status in your country.
- ⁵ HP Care Pack Services are sold separately. Service levels and response times for HP Care Pack Services may vary depending on your geographic location. Service starts from date of hardware purchase. Restrictions and limitations apply. See www.hp.com/go/cpc for details.

Technical specifications disclaimers

- ¹ All specifications represent the typical specifications provided by HP's component manufacturers, actual performance may vary either higher or lower.

Learn more at
www.hp.eu/monitors

Engage HP Financial Services
Explore monthly payment options and technology refresh plans that can provide more flexibility to help you meet your IT goals. More information on www.hp.com/go/hpfs.

Sign up for updates
www.hp.com/go/getupdated

© Copyright 2016 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.
ENERGY STAR® and the ENERGY STAR® mark are registered trademarks of the U.S. Environmental Protection Agency.

4AA6-6096EEE, June 2016



Annex VI IER 401



High Availability Check-in Counter Printer



IER 401

BAG TAG AND BOARDING PASS PRINTER
MAXIMUM OPERATIONAL EFFECTIVENESS WITH CENTRALLY
MANAGED SOFTWARE DISTRIBUTION



BENEFITS

- Versatile single feed printer for boarding pass and bag tag
- Compact, simple and robust design
- Fast paper supply change
- Automatic set up of printing mode
- Centralized software management: AEA software upgrade and reconfiguration based on standard Windows remote management tools
- Configuration, diagnostics and monitoring via web browser
- CUPPS and CUSS compliant with all existing platforms
- AEA 2011 compliant
- Single paper roll holder
- Boarding pass stacker
- USB device



DESCRIPTION

The IER 401 is a multi-functional, direct thermal printer that facilitates the check-in process. It is specifically designed to be configured for both airlines' host systems and shared-use platforms. Based on standard Windows remote management tools, AEA applications can be very easily upgraded and reconfigured, ensuring 100% up-to-date printers in all locations at no extra cost. This unique capability avoids inconsistent versions, service disruptions and costly human on-site interventions.

PRODUCT SPECIFICATIONS

Print method	Thermal direct
Print density	203 dpi
Supported protocol	AEA 2011
Barcode printing	All 1D and 2D barcodes including PDF417, Datamatrix, Aztec and QR code
Graphical user interface (optional)	4 lines LCD display (20 characters per line)
Connectivity	1 x USB device
Print speed	Selectable: 3 to 6 inches / second
Paper separation	Tear-off (standard), cutter (optional)
Paper loading	Automatic loading mechanism on paper detection
Paper feed	1 feed
Boarding pass paper & large receipt	Width: 24.5 to 83 mm (0.96" to 3.27") Length: 100 to 203 mm (3.94" to 8") Weight: 80 g/m ² to 200 g/m ²
Bag tag paper	Width: 24.5 to 83 mm (0.96" to 3.27") Length: 30 to 600 mm (1.18" to 23.62") Weight: 80 g/m ² to 200 g/m ²
Roll paper dimension (optional)	Diameter 150 mm maximum (5.91")
Dimensions (w x d x h)	206 x 278 x 191 mm (8.11" x 10.94" x 7.52") 206 x 510 x 230 mm with optional roll holder and roll (8.11" x 20.1" x 9")
Weight	8 kg (17.6 lbs)
Power	100V-240V, 50Hz/60Hz
Operating temperature	5°C to 45°C (41°F to 113°F) (20% to 80%, non condensing) Storage -20°C to +60°C (-4°F to 140°F)
Reliability	
Printer life	10 years (excluding consumables)
MTBF	27,000 hours
MCCBF	350,000 cycles
Printhead	100 km or 100 million dots
Agency approvals	CE, CB, cTUVus, FCC, ICES, GOST, CCC, IRAM, KCC
Warranty	1 year standard

PRODUCT ACCESSORIES

Designation		Single bag tag roll holder		Boarding pass ATB stacker
Dimensions (w x d x h) (printer + accessories)		206 x 510 x 230 mm (8.11" x 20.1" x 9")		206 x 498 x 191 mm (8.11 x 19.61" x 7.52")
Reference		S54091B		S59908A

www.ier.com



IER 401/ENW 1/07-2013

Specifications are subject to change without prior notice and are not contractual.

Annex VII OKI ML3320eco

ML3320eco/ML3321eco Specifications



The versatile, eco-friendly 9-pin printers for dedicated forms printing

High speed, high volume, outstanding reliability

The ML3320eco and wide carriage ML3321eco printers are suited to high speed, high volume data and word processing applications, where fast throughput and flexible paper management are required.

These 9-pin, impact printers are engineered to be tough enough for dedicated printing in the most demanding environments. With outstanding reliability, ease-of-use and barcoding facilities as well as the ability to run twice as long as most printers in their class, they are ideal for customer service points in wholesale and service environments.

Precision, Flexibility and Resilience

The ML3320eco/ML3321eco can accommodate multipart forms and stock that are up to twice as thick as those that fit our nearest competitor. Their relentless performance comes from OKI's unique, high durability printhead design; and a light, strong, efficient motor. The long-last rack-and-pinion drive system and a protective, impact-resistance chassis, make it resilient even in the toughest environments

With a patented optical sensor that places the printhead for precise output, and the auto-tear feature that accurately positions your continuous forms for a clean tear, right at the perforation - eliminating wasted forms and facilitating your day-to-day forms printing.

Eco-friendly and cost effective

The ML3320eco/ML3321eco have been developed to be eco-friendly. With power consumption at just 1.5W in sleep mode, your running costs and energy consumption are kept to a minimum, as well as reducing your carbon footprint.

OKI's commitment to customers

The OKI brand is one of proven reliability and value. We provide printers that increase our customers' long-term business performance without impacting their budget.

With almost half a century of experience in the impact printer industry, with OKI you are guaranteed a best-in-class, low cost, reliable and easy to use printer.

Highlights:

- 80/136 column dot matrix printers
- OKI's unique, high durability 9-pin printhead
- Multi-part paper-handling (original + 4 copies)
- Up to 435 characters per second (cps) print speed
- ML3321eco is ideal for account applications
- 3 million character ribbon life
- Low-tear and auto-park help eliminate wastage
- Eco-friendly technology, sleep mode consumes just 1.5W
- Manufactured at a CarbonZero facility

Variants available:

- ML3320eco
Narrow carriage
- ML3321eco
Wide carriage



ML3320eco and ML3321eco - Dot Matrix Printers

PRINTER		GENERAL FEATURES	
Number of pins	9	Input buffer	128Kbytes
Columns	ML3320eco: 80 (10cpi); 160 (maximum in compression mode) ML3321eco: 136 (10cpi); 272 (maximum in compression mode)	Power supply	Single phase 220 to 240VAC, +/- 10%, frequency 50/60Hz
Character pitch	10/12/15/17.1/20 pitch and proportional	Power consumption	ISO/IEC 10561 Letter, Draft, Range1: 27.5W; Sleep mode (no options attached): <1.5W
Graphics resolution	Up to 240 x 216dpi	Noise level	57dB(A); 52dB(A) (quiet mode)
Print speed	Super Speed Draft: 435cps (12cpi); High Speed Draft: 387cps (10/12cpi); Utility: 290cps (10/12cpi); Near Letter Quality: 73cps (10/12cpi)	Dimensions (HxWxD)	ML3320eco: 116 x 398 x 345mm; ML3321eco: 116 x 552 x 345mm
INTERFACE AND EMULATIONS		Weight	ML3320eco: 5.8kg approx; ML3321eco: 7.6kg approx
Interfaces	Centronics parallel interface, USB 2.0	Print Head life	200 million characters
Optional interfaces	Serial RS 232C, OKILAN 7120e3 Network Card	Reliability	MTBF: 10,000 hours
Emulations	Epson FX, IBM ProPrinter, Microline	Warranty	Pan European 1 year on-site
Typeface & font	HSD, Utility, NLQ-Courier (Scalable), NLQ-Gothic (Scalable), Barcodes, OCR-B	Product order numbers	ML3320eco: 01308202; ML3321eco: 01308302
Typestyle	Emphasised, Enhanced, Double Width, Double Height, Italics, Bold, Superscript, Subscript, Underline, Overscore	ACCESSORIES (ORDER NUMBERS)	
PAPER HANDLING		Single Bin Cut Sheet Feeder	ML3320eco: 44497402; ML3321eco: 44497502
Continuous paper	ML3320eco: 76 - 254mm; ML3321eco: 76 - 406mm	Pull Tractor	ML3320eco: 09002365; ML3321eco: 09002369
Continuous envelopes	ML3320eco: 165 x 92mm; ML3321eco: 241 x 105mm (Bottom feed only)	Roll Paper Stand	09002332 (ML3320eco only)
First printable line (from top of page)	Continuous (multi-parts): 0.5mm; Cut sheet (single sheet): 0.5mm	Bottom push tractor	ML3320eco: 09002366; ML3321eco: 09002370
Copy capability	Up to 1 original + 4 copies	Serial RS232C	44455102
Paper feeding	Paper parking, Low tear-off, Autoload single sheet, Push tractors, Bottom feed	OKILAN 7120e3 Network Card	44455302
Optional paper feeding	Pull tractor, Single bin cut-sheet feeder, Roll paper stand (ML3320eco only), Bottom push tractor	CONSUMABLES (ORDER NUMBER)	
		Ribbon (3 million characters)	09002303

Consumables Information: Only use genuine OKI Printing Solutions Original consumables to ensure the best quality and performance from your hardware. Non OKI Printing Solutions Original products may damage your printer's performance and invalidate your warranty.

WARNING! This product complies with EN55022 Class B. However when fitted with the optional network interface card or optional cut sheet feeder, compliance to EN55022 is Class A. In a domestic environment this configuration may cause radio interference, in which case the user may be required to take adequate control measures.



© 2011 Oki Europe Ltd. Oki Printing Solutions is the trading name of Oki Europe Ltd. Version 1.1 02/2011. Specification subject to change without notice. All trademarks acknowledged.

Oki Printing Solutions Polska
ul. Domaniewska 42
02-672 Warszawa
Tel: +48 22 44 86 500
Fax: +48 22 44 86 501
www.oki.pl



Annex VIII Access IS BGR750

BGR750 Flatbed 2D BCBP Boarding Gate Reader

Boarding gate solution with optional contactless and MRZ passport reading

Description

The BGR750 is a modern, flatbed boarding gate reader for all barcoded boarding passes (BCBP's), designed specifically to allow intuitive use with all media types including the latest phones, tablets and smart watches.

Barcode tickets are presented, face-down, over the scanning window. The large window, wide viewing angle and depth-of-field creates a large barcode reading area. This makes positioning of a barcode easy and results in fast detection and reading even before the document touches down.

The BGR750 has been designed with a very low profile, making it the ideal solution for desktop or embedded use. Installation flexibility is further extended by the choice of angled, flat or no screen at all (for OEM) to suit the application.

Designed for future-proof operation, the BGR750 can be equipped for contactless operation. Additionally, the BGR's large scanning window has been designed to allow for optional passport MRZ reading – that can be purchased as a software license.

Ease of use by passengers and operators has been paramount in the device's design. The colour screen is utilised to display text and instructional icons to the user to enhance user interaction. Feedback is also given by twin banks of four bright LEDs down each side of the display, plus via a loud audio beeper. Each of the eight multicolour



LED indicators can be illuminated individually, although typically all would be illuminated either green or red to indicate permission to board or not.

A wide range of configurations are available for connection to Common Use Terminal Equipment (CUTE®) or dedicated systems. Additionally, to ensure that the unit is future-proofed, new firmware can be remotely downloaded.

Features

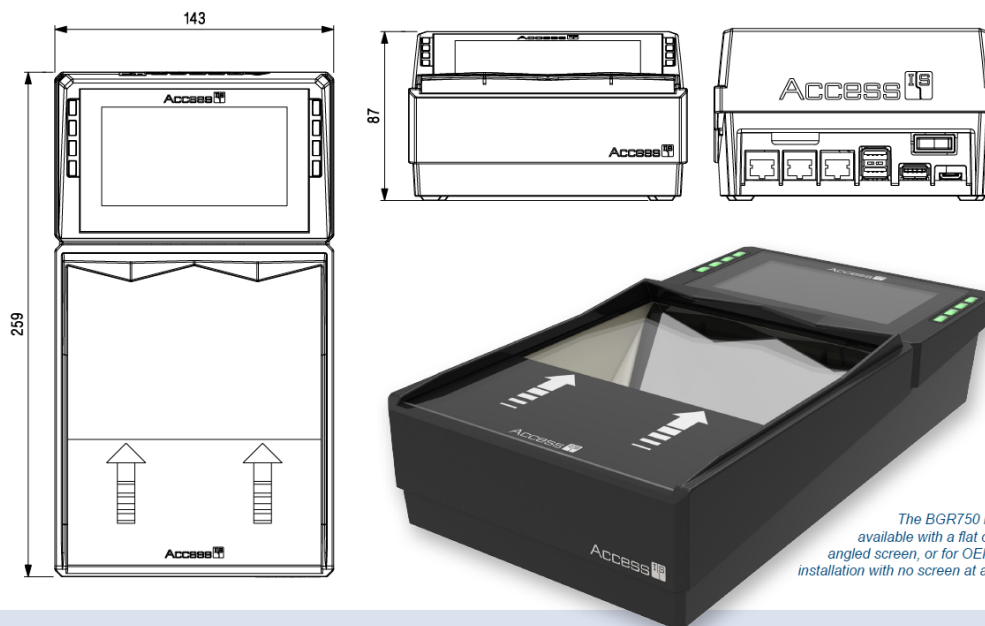
- Fast, powerful, omnidirectional 1D/2D barcode imager
- Angled or flat colour LCD display
- Reads IATA-recommended PDF417, QR, Aztec and other 2D and linear barcode symbologies
- Wide range of emulations available
- RS-232, USB or Ethernet connection to host
- Green and red indicator beacons and audio beeper
- RS-232 serial port for receipt printer functionality, for example seat, flight and passenger data from M1 format bar code documents
- Integrated on/off switch

Options

- Contactless/NFC capability - Available Q1/2017
- MRZ reading - Available Q1/2017
- Podium metal bracket



Dimensions



The BGR750 is available with a flat or angled screen, or for OEM installation with no screen at all

Specifications

Barcode reader

Compliance: AEA2012
 1D symbologies: Code 128, Code 2 of 5, Interleaved 2 of 5, IATA 2 of 5, Code 39, EAN
 2D symbologies: IATA resolution 792, QR, Aztec, PDF417 and Datamatrix codes
 Media types: Will read: smartphone, tablet and smartwatch displays and paper documents and tickets
 Performance: Less than 1 second read capability
 Construction: Robust PC/ABS enclosure with no moving parts

OCR reading (Option)

Standard OCR fonts: OCR-B
 Machine readable passports (MRP): 2 lines of 44 characters
 Machine readable visas (MRV): 2 lines of 44 characters, 2 lines of 36 characters
 Travel documents: 2 lines of 36 characters, 3 lines of 30 characters

Contactless RF reader (Option)

Supported media: ISO14443 type A and

B cards (Java cards); max baud 424K (extendable to 848K)
 Mifare UL, Classic 1K, Classic 4K, Mifare Plus; max baud 106K
 Operating frequency: 13.56 MHz
 Operating distance: 20 mm

Passenger/agent displays

Display: Colour LCD (480x272px)
 Visible/audible: Green (good read) and red (bad read) indicator beacons and audio beeper. Programmable capability.

Interface

USB interface
 Host interface: RS-232C Baud rates 9600, 19200, 38400, 115200; and USB
 Serial port: for optional RP9000 receipt printer or auto access/boarding gate applications
 Ethernet: Available by firmware upgrade

Power supply

Input voltage: 12 VDC; PSU supplied
 Physical characteristics
 Dimensions (mm):

Flat Screen: 259D x 66H x 143W
 Angled Screen: 259D x 87H x 143W
 Active Scan Window: 94D x 130W
 Weight: 1100g
 Cable length: 2m

Protocols supported (* = Pending)

AirIT Ease®*
 Amadeus ACUS®*
 ARINC Muse & iMuse®
 Edge CUPPS-T*
 RESA CREWS®*
 SABRE EGR®*
 SITA Airport Connect®
 Ultra CUSE®*

Environmental

Temperature: Operating 0°C to +50°C; Storage 0°C to +60°C
 Humidity: 0% to 95%, non-condensing
 Approvals: FCC 47CFR Part 15 Subpart B Class A, EN 55022 Class B, EN 55024, FCC 47CFR Part 15 Subpart C, ETSI EN 302 291, EN 60950-1

All trademarks acknowledged. Specifications subject to change without prior notice. This literature is for outline information only. Ver: 1.2 November 2016



Worldwide: +44 (0) 118 966 3333
 Americas: +1 770-645-2771



Worldwide: +44 (0) 118 966 3333
 Americas: +1 703-403-6848



Worldwide: +44 (0) 118 966 3333
 Americas: +44 118-966-3333



email: sales@access-is.com
 18 Suttons Business Park - Reading - RG6 1AZ - UK

Annex IX Access IS LSR130

LSR130 2D Barcode Reader with Integrated MSR

2D barcode imager and manual 4-track MSR, with options for OCR passport reading

Description

The LSR130 combines a 2D barcode imager with a manual four-track magnetic swipe reader, providing a robust and cost-effective solution for check-in areas, duty-free shops and airport lounges that typically handle 2D barcoded boarding passes but have the occasional need to read ATB2 documents, credit cards and frequent flyer cards (FQTV).

The LSR130 has a high-speed omnidirectional 2D barcode imager that reads travel documents face-up, allowing the agent to easily place the barcode in the target zone.

The imager is optimised for high throughput of airline and home-printed documents, and of barcodes on the displays of PDA's and smartphones.

The integrated four-track MSR has no moving parts, maximising reliability and minimising the cost of ownership.



LSR130 integrated 2D BCBP, credit card, debit card, membership card and ATB2 reader

Options

An option exists to integrate OCR swipe reading functionality.



LSR130 OCR option being used to read a passport

Mag Swipe Features

- Bidirectional reading of ATB2 coupons, credit cards, debit cards and frequent flyer cards.
- 4-track manual swipe reader
- IATA ATB2 722C format T1, T2, T3, T4
- Highly serviceable; easy access to major components

2D Barcode Imager Features

- Fast, omnidirectional 1D and 2D barcode imager
- Reads on presentation of a document face up
- Reads IATA-recommended linear, PDF417, Aztec, DataMatrix and QR symbologies
- Large document throat allows barcodes to be read from any position on an A4 page
- Reads 2D barcode images on PDA's and smartphones
- Serial RS232 and USB connection to host interface versions are available.
- Audible and visible indicators

Access IS
18 Suttons Business Park
Reading, Berkshire
RG6 1AZ, United Kingdom
Tel: +44 (0) 118 966 3333
Fax: +44 (0) 118 926 7281

Access (North America) inc
Atlanta
Georgia
USA
Tel: +1-770-645-2771

Access IS
Interfacing Solutions

For further information email: sales@access-is.com or visit our website: www.access-is.com
All trademarks acknowledged. Specifications subject to change without prior notice. This literature is for outline information only.

LSR130 reads smartphones, home printed paper documents and magnetic strip data



Unique imager accurately and reliably reads smartphones and tablets



Large document throat can read barcodes anywhere on A4 home printed documents



Easy-to-use MSR-channel design

LSR130 2D Barcode Reader with Manual 4-Track MSR Optional OCR Reader Specifications

Customer/agent displays

Visible/audible: Bright, green and red indicator beacons and an audio beep

Barcode reader

Linear symbologies: Code 128, Code 2 of 5, Interleaved 2 of 5, IATA 2 of 5, Code 39 enabled as standard. Others can be enabled on request

Stacked-linear and 2D symbologies: IATA resolution 792, PDF417, Aztec, Datamatrix and QR.

Media: All symbologies can be read from paper, including home-printed documents. Linear, Aztec, Datamatrix and QR symbologies can be read from PDA and smartphone displays

Performance: <1 second read capability

Construction: Compact and durable ABS enclosure with no moving parts

Magnetic swipe reader

Compliance: IATA ATB2 722C format, T1, T2, T3 & T4. Three track magnetic

cards complying with ISO7811/ 2-5

Media: ATB2 tickets, 8" and 7 1/2", ATB wallet and ATB2 boarding pass (with or without stubs) and credit cards

Processing time: Manual swipe processing/read less than 1 second

Magnetic head life: 250K reads

OCR swipe reader (optional)

General: Reads machine readable travel documents (MRTDs) to ICAO 9303 standard

Machine readable passports (MRP) : Two lines of 44 characters

Machine readable visas (MRV): Two lines of 44 characters, two lines of 36 characters

Travel documents: Three lines of 36 characters, three lines of 30 characters

Interface Options

RS-232C by 9-way D-type

USB (keyboard or virtual serial)

Dimensions (overall)

218L x 210W x 150H mm

Power supply for Serial Devices

5V DC. Can be powered using either a 'USB Power Stealer' device or an external AC universal power supply (specify preference when ordering)

Environmental

Temperature: Operating 0°C to +50°C; storage 0°C to +60°C

Humidity: 0 to 95%, non-condensing

Approvals: FCC Class B, CE EMC Class B, CE Low Voltage Directive, IEC60825-1 LED Safety: Class 1

® All trademarks acknowledged

Ver: 1.4 November 2012

Access IS
18 Suttons Business Park
Reading, Berkshire
RG6 1AZ, United Kingdom
Tel: +44 (0) 118 966 3333
Fax: +44 (0) 118 926 7281

Access (North America) inc
Atlanta
Georgia
USA
Tel: +1-770-645-2771

Access IS
Interfacing Solutions

For further information email: sales@access-is.com or visit our website: www.access-is.com
All trademarks acknowledged. Specifications subject to change without prior notice. This literature is for outline information only.