Mobile screen compatible model
QK20 NEW

Stationary scanner capable of reading QR codes from the LCD screen of a mobile phone

BARCODE 2DCODE SQRC Mobile QRcode Area sensor RS-232C USB-HID USB-COM

Model	Wireless Communication
QK20-R	-
QK20-U	-
QK21-R	-
QK21-U	-

Each region has different availability of sales product.

Features : **Scanning**

High-speed reading of Mobile QR Codes

Ability to read QR codes displayed on the LCD screens of mobile phones at high speed, no matter whether the backlight is on or dimmed.

Increased scanning area

従来サイズ
38×50mm

38mm

70mm

Even wide codes used on airline tickets are read with ease.

DENSO AIRLINE TICKET
BA1325
30G

Because a wider field of view was achieved, the device reads a variety of barcodes more conveniently, including PDF417 and GS1-128 (EAN-128)(1).

Compatible with various codes

A1234567890A

| Barcode | QR Code | PDF417 | Aztec code |

The scanner can of course read various paper-based barcodes and two-dimensional (2D) codes, but it also reads 2D codes such as SQRC(2) and Aztec.

Reading of high-resolution codes

Resolution
2D code : 0.25mm
Barcode : 0.18mm
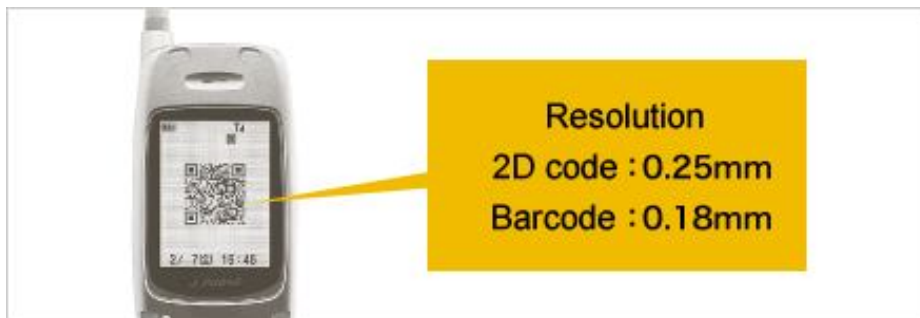
A resolution of 0.25mm was achieved through the use of a megapixel sensor.
The scanner even reads extremely small codes displayed on mobile phones.

Reading of a SQRC (Security QR Code)

Application example: Store membership services

1. Issuing membership certification

You may issue paperless, eco-friendly SQRC membership certification by encoding the membership data then sending the code to a mobile phone screen – this way also cutting costs.

2. Membership authentication

Membership is authenticated based on the encoded personal data.The customer type can also be verified instantly.

3. As a marketing tool

Measures the effectiveness of sales promotions from sales history and membership data.

Personal data can be verified in a standalone environment, without data being leaked

Feature 2: Lineup/durability

1. Field when reading a paper-based code from a position 7mm above the dust-proof plate.
2. SQRC is a new QR code complete with a security functionality developed by Denso Wave Incorporated.
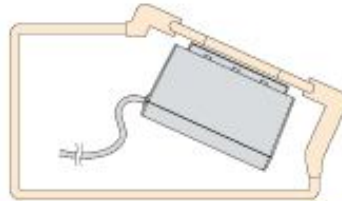
Features : **Lineup/durability**

Lineup

A new built-in model (QK21) is offered in addition to the previous stationary scanner.
This model can be easily incorporated in multimedia devices, entry gates, etc.

Stationary type	Built-in type

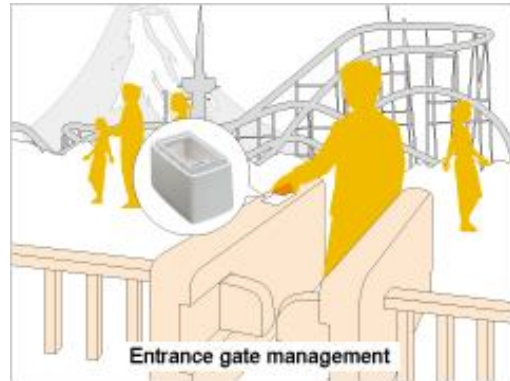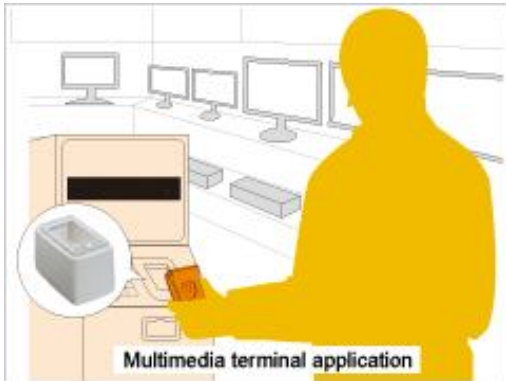|				
Model	RS-232C model	USB model	RS-232C model	USB model
Model	QK20-R	QK20-U	QK21-R	QK21-U

Features of built-in model QK21

Improved ease of incorporation in host device

Screw hole	Screw holes are proved in 2 locations on the inside
LED for scanning confirmation	None
Buzzer	None

Application example

Multimedia terminal application

Entrance gate management

Emvironmental resistance/Extra features

Environmental resistance

Includes LEDs/speaker to confirm read operation (QK20 only)

Best-in-class "IPX2" protection structure, operating temperature of -5°C to 50°CCan be reliably incorporated into entry gates, etc.

Includes LEDs arranged at the corners and a high-volume speaker to confirm read operation.This notifies the user that the code has been read.
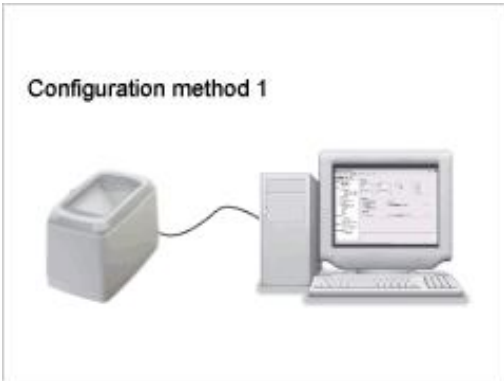
Features : Other functions

Superior operability

Dedicated "Scanner Setting2D" software is provided.This allows you to easily configure settings including the codes to be read and the lighting.

Significantly reduces the man-hours required for installation.

Configuration method 1
Parameters can be conveniently set from a PC using the configuration software
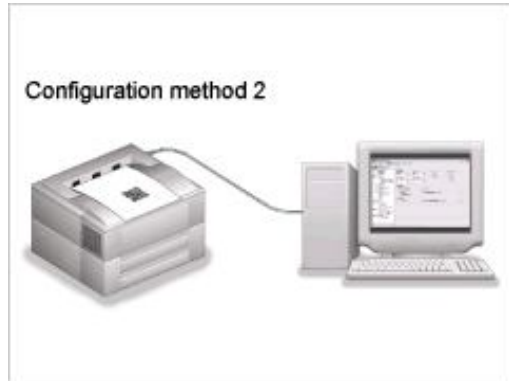
Configuration method 2
QR codes for batch configuration are output using the configuration software, and can be read and configured in the QK20/21

Control of various commands is possible

You can control the QK20/21 models by sending commands from a host device such as a PC or POS register.

Auto sense mode

Standby → Scan

The code is automatically read as soon as it is detected within the reading field of vision.

Provide a wide variety of functions by dedicated sofutware

Various additional functions can be configured in the QK20/21 with the dedicated "Scanner Setting 2D" software.

Simple programming functionality

1. Data extraction
-Only the required parts of the barcode data are output
0123456789 → 789
(Barcode data)   (output)

2. Adding data
-Add an optional character string at the biginning andend of the data
0123456 → AAA 0123456 BBB

3. Data sorting
-Data is output after sorting
0123456789 → 7890123456

4. Other functions
-Four arithmetic operations (incl. remainder calculations, such as unit conversion)
-Character string comparison
-Display LED, beeper, vibrator, control

Simple programming functionality (ADF script) is supported, allowing you to control various operations.

Now scanners can be used for more purposes than ever.

Specification/Dimensions

Specifications : **Specifications**

Specifications

Type	Stationary type	Built-in type

Model				(RS-232C model)	(USB model)	(RS-232C model)	(USB model)
Model name				QK20-R	QK20-U	QK21-R	QK21-U
Scanner	Readable code	LCD screen	2D code	QR code, micro QR code, SQRC, Aztec			
			Barcode	EAN-13/8, UPC-A/E			
		Paper	2D code	QR code, micro QR code, SQRC, iQR, PDF417, micro PDF, DataMatrix, Aztec, EAN/UPC Composite (GS1 DataBar Composite), MaxiCode			
			Barcode	EAN-13/8, UPC-A/E, Interleaved 2 of 5 (ITF), CODABAR (NW-7), CODE39, CODE128, GS1-128 (EAN-128), RSS(GS1 DataBar), UPC/EAN with add-on, CODE93			
	Min. resolution		2D code	0.25mm			
			Barcode	0.18mm (0.26mm for EAN, UPC)			
	Scanning area		Mobile LCD code (with backlight on)	38mm×56mm			
			Paper code	38mm×70mm			
	Focusing point			7mm(1)			
	Scanning confirmation			Blue/red/green LEDs / speaker		-	
Communication interface	System			RS-232C	USB 1.1-compliant (2) (virtual COM, HID)	RS-232C	USB 1.1-compliant (2) (virtual COM, HID)
	Connector			D-sub 9 pin (female)	USB type A	D-sub 9 pin (female)	USB type A
	Cable length			1.5m	1.5m	1m	1.5m
Power source	Power supply			AC adaptor	Supply from host device (3)	Supply from host device (3)	Supply from host device (3)
Environmental performance	IP rating			IPX2			
	Operating temperature			-5～50°C			
	Operating humidity			10-90% RH (non-condensing/non-freezing)			
Weight (excl. cable)				335g	340g	300g	305g

1. Height from dust-proof plate

2. Two systems are supported: USB keyboard interface and USB-COM interface.When using in USB-COM interface mode, please download the USB driver from the DENSO WAVE website (free of charge).Supported operating systems are Windows XP/Vista (32-bit)/7 (32-bit).

3. Please check the connection beforehand because this type of connection may not be possible depending on the model of the PC or USB hub.

External dimensions

QK20 QK21
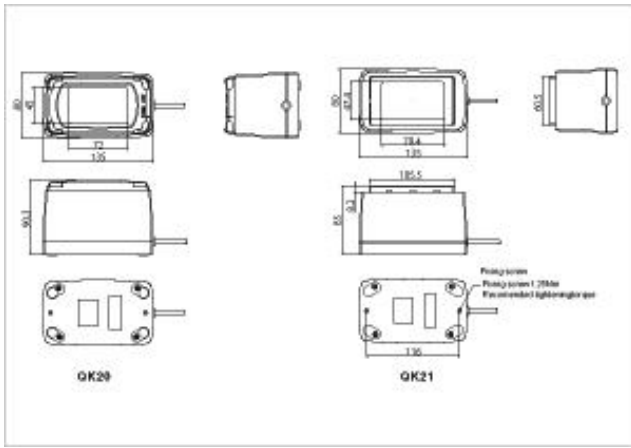
Related Software : **Related Software**

Related Software Lineup

Scanner configuration software	Keyboard interface software	Driver	SQRC configuration software
Software for configuring various parameters of the DENSO WAVE Handy Scanners	Software for converting data from a scanner into the same format as data from a keyboard	Active USB-COM port driver(Free)	SQRC Setting
Scanner Setting 2D(Free)	QRkbif(Free)		Software for generating SQRC encryption keys and configuring model registration from a PC
Software for configuring various parameters of the QK20 from a PC	Software for receiving data read by a scanner and converting it to the same format as data input from a keyboard		

Application : **Application**

Application

Increasing applications for mobile QR codes (1)

E-ticketing

① Apply for tickets by mobile phone.

② Mobile QR Code sent

Promotion company

Event hall

XX Concert
Date:
1.What' New
2.Apply for tickets
3.Specials

Customer

Seat location

③ Mobile QR Code is read at entrance gate. Seating details and other services can also be provided.

Electronic Coupons and Membership Cards

① Access a site that issues electronic coupons

Promotion company

User information

Store

Member information

② Mobile QR Code of coupon/point information sent

XX Store
1.What' New
2.Register
3.Specials
Free Coupons

Customer

③ Mobile QR Code is read to receive discounts, point addition and other services.

Electronic Payment

① Invoice (mobile QR Code) sent by e-mail

Billing company

Billing request

Electricity/gas company,etc

Invoice payment

XX Month
Electricity Bill
1.Make payment
2.Confirm details

Customer

Kiosk
Petrol station
Convenience store
etc.

② Mobile QR Code is read facilitating payment of utilities.

Click here for installation case studies

---

1. A mobile QR code is a QR code displayed on the LCD screen of a device such as a mobile phone.The code can be displayed on any mobile phone equipped with Internet access, regardless of the carrier.

Mobile QR Code : **Mobile QR Code**

QR codes displayed on the LCD screens of various devices , such as mobile phones, are called mobile QR codes. Here, we describe the approach to displaying codes on the screens of mobile phones.

Displaying QR codes on an LCD screen

The QR code image data generated by the server is sent to the mobile phone so that it can be displayed.At this point, a QR code appropriate for the LCD on which it will be displayed needs to be generated.


Display issues

Different mobile phones have different LCD display capabilities (different LCD sizes and numbers of pixels [dots]), but the codes need to be sent so that

they are displayed at a cell size of at least 0.33mm on any phone.

Enlarged image of cell

Approach

The QR code should be sent based on the LCD size and number of pixels, referring to the approach described below:
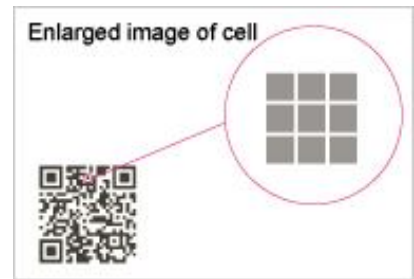
Example: 2.4-inch, QVGA (320x240 dots) LCD
(Size of one LCD pixel) = 0.155mm = 38mm÷240 dots
(Cell size) $\geqq$ 0.33mm = 0.155 × 3 dots or higher

LCD size		Dot size	Inches
Inches	No. of pixels		
48mm×38mm (2.4-inch)	320 dots × 240 dots	0.15mm − 0.16mm	0.45mm (3-dot structure)
38mm × 29mm (1.8-inch)	160 dots × 120 dots	0.23mm − 0.24mm	0.50mm (2-dot structure)

Caution

Note that if the same QR code is sent to different devices without taking display capabilities into consideration, it will not display correctly, as shown on the right.

Key point

An LCD-compatible scanner is required for reliably reading QR codes displayed on LCD screens.

[LCD with a large dot size] [LCD with a large dot size]
The cell is small and difficult to read
The code does not fit on screen