

KOE

JDI Group



Display Excellence

Contents

| | |
|-------------------------------|----|
| Contents | 2 |
| Introduction | 3 |
| Evolving LCD technology | 4 |
| Product Features | 5 |
| Rugged+ TFT Displays | 6 |
| IPS TFT Displays | 8 |
| Lite+ TFT Displays | 8 |
| Added Value Display Solutions | 9 |
| Wide Format TFT Displays | 10 |
| Standard TFT Displays | 12 |
| QVGA STN Displays | 14 |
| Standard STN Displays | 15 |



Introduction

KOE (Kaohsiung Opto-Electronics), a wholly owned subsidiary of Japan Displays Inc (JDI), was established in 2012 as a specialist industrial display supplier with the goal of developing and expanding business with high performance industrial displays designed for high reliability applications.

Operating as an autonomous business KOE maintains strong relationships and co-operation with its larger, consumer focused parent organisation that provides support for material sourcing, technology transfer and manufacturing expertise.

KOE inherited a strong industrial LCD heritage from Japanese manufacturers Hitachi, Toshiba and Sony and will utilise the technical resources of the three integrated companies to aid and assist efforts in research and development to ensure KOE remains at the forefront of evolving LCD technology.

As a result, KOE is able to supply displays manufactured with the ethos of Japanese quality and efficient Taiwanese engineering and design. KOE has its own dedicated manufacturing and production facilities in Taiwan which supports design, development and procurement.

This methodology enables KOE to continually develop and enhance an extensive range of high quality, performance optimised display solutions.

KOE also supports value added services such as custom and semi-custom display development, glass bonding, projected capacitive touch and high brightness solutions. KOE's design and development engineers can manage the use of locally sourced components and utilise the services of local suppliers for display sub-assemblies.

Global sales and marketing operations are supported by KOE Europe, KOE Americas and KOE Asia. Each regional business will focus on sales and marketing enterprise, and support a local customer base with regional sales teams, design focused distributors and representative sales channels.



Kaohsiung Opto-Electronics Ltd

Evolving LCD technology

Developing cost effective display solutions, enhancing mature technology with new and compatible products, improving LCD optical design, introducing high reliability modules for industrial applications are just some of the challenges that KOE are

undertaking to continually evolve and develop LCD technology in the 21st century. KOE's established knowledge and experience of LCD design and development are enabling LCD technologies to progress and migrate to new and exciting display modules.

RUGGED+

Developed using automotive display experience, KOE's Rugged+ display modules are intended for use in demanding industrial and harsh environmental conditions. KOE Rugged+ modules are capable of providing reliable and consistent operation under the severe and rigorous conditions found in some industrial applications while still providing exceptional optical performance. The entire range of Rugged+ displays feature industrial environment operating specifications with high brightness, long-life LED backlights and will provide dependable operation between -30°C and +80°C.

Rugged+

- Strong optical performance
- Highly resistant to ESD, mechanical shock and vibration
- WTR -30°C to +80°C

Lite+

The new range of Lite+ display panels offer cost effective LCD solutions that feature industry standard screen sizes, display resolutions and data interfaces but without any compromise in display optical performance. KOE's Lite+ TFT display modules feature high brightness, long-life LED backlights and high contrast ratios to provide strong optical performance and display images that are bright, colourful and concise.

Lite+

- High brightness and contrast
- Industry standard sizes and resolutions
- Cost effective



IPS was the first LCD technology to provide exceptional colour saturation and colour stability, excellent contrast and deep black levels with a 176° wide vertical and horizontal viewing angles.

IPS has been further developed and evolved with Advanced-Super IPS, IPS Pro and most recently IPS NP (New Process). IPS NP has a much higher and more stable image performance over viewing angle than any other TFT technology. KOE will continue to develop and improve IPS technology to provide the best wide angle viewing TFT display solution.

IPS

- Cutting-edge optical performance
- Exceptional colour stability and saturation
- 176° wide viewing angle



KOE introduces Full HD TFT display for industrial applications

KOE are one of the first LCD manufacturers to introduce a compact, Full HD (1920 x 1080) display module developed specifically for industrial applications.

The TX18D200VM0EAA features a pixel pitch of 0.081mm (w) x 0.081mm (h), equivalent to 314ppi (pixels per inch), Advanced IPS, 20-pin LVDS data interface, long-life LED backlight and wide operating temperature range.

The 7.0-inch Full HD display module is the first in a series of high resolution displays to be introduced by KOE (see page 11).

Product features

| Product Type | Screen size | Resolution | IPS | IPS NP | IPS Like | TN TFT | STN | FHD | Rugged+ | Lite+ | Standard format (4:3) | Wide format | CFL backlight | LED backlight | Super High Bright | CMOS interface | LVDS interface | 262K colours | 16M colours | -20° +70° | -30° +80° | Transmissive | Transflective | Touchpanel option |
|------------------------|-------------|-------------|-----|--------|----------|--------|-----|-----|---------|-------|-----------------------|-------------|---------------|---------------|-------------------|----------------|----------------|--------------|-------------|-----------|-----------|--------------|---------------|-------------------|
| Wide Format TFT | | | | | | | | | | | | | | | | | | | | | | | | |
| TX11 | 4.3" | 480 x 272 | | | | ■ | | | | | | ■ | | ■ | | ■ | | | ■ | ■ | | ■ | | ■ |
| TX13 | 5" | 800 x 480 | | | | ■ | | | | ■ | | ■ | | ■ | ■ | ■ | | ■ | | ■ | | ■ | | ■ |
| TX15 | 5.8" | 400 x 240 | ■ | | | | | | ■ | | | ■ | | ■ | | ■ | | ■ | | | ■ | | ■ | ■ |
| TX16 | 6.2" | 640 x 240 | | | ■ | ■ | | | | | | ■ | | ■ | | ■ | ■ | ■ | | ■ | | ■ | | ■ |
| TX17 | 6.5" | 800 x 480 | ■ | | | | | | ■ | | | ■ | | ■ | ■ | | ■ | ■ | | ■ | | ■ | | ■ |
| TX18 | 7" | 800 x 480 | ■ | | ■ | ■ | | | ■ | | | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | ■ | | ■ |
| TX18D200 | 7" | 1920 x 1080 | ■ | | | | | ■ | | | | ■ | | ■ | | | ■ | | ■ | ■ | | ■ | | ■ |
| TX20 | 8" | 800 x 480 | ■ | | ■ | ■ | | | ■ | ■ | | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | ■ | | ■ |
| TX23D201 | 9" | 800 x 480 | ■ | | | | | | ■ | | | ■ | | ■ | ■ | | ■ | | ■ | | ■ | | ■ | ■ |
| TX23D86 | 9" | 1280 x 768 | | ■ | | | | | | | | ■ | | ■ | | | ■ | | ■ | ■ | | ■ | | ■ |
| TX26D25 | 10.2" | 800 x 256 | | | | ■ | | | | | | ■ | | ■ | | ■ | | ■ | | ■ | | ■ | | ■ |
| TX31 | 12.3" | 1280 x 480 | ■ | | | ■ | | | ■ | | | ■ | | ■ | ■ | | ■ | ■ | | ■ | | ■ | | ■ |
| TX38D25 | 14.9" | 1280 x 242 | | ■ | | | | | | | | ■ | | ■ | | | ■ | ■ | | ■ | | ■ | | ■ |
| Standard TFT | | | | | | | | | | | | | | | | | | | | | | | | |
| TX09 | 3.5" | 320 x 240 | ■ | | | ■ | | | | | ■ | | | ■ | | ■ | | ■ | | ■ | | ■ | | ■ |
| TX13 | 5.0" | 640 x 480 | | | ■ | ■ | | | | | ■ | | | ■ | | ■ | ■ | ■ | | ■ | | ■ | | ■ |
| TX14 (QVGA) | 5.7" | 320 x 240 | | | | ■ | | | ■ | | ■ | | ■ | ■ | ■ | ■ | | ■ | | ■ | | ■ | | ■ |
| TX14 (VGA) | 5.7" | 640 x 480 | | | ■ | ■ | | | ■ | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | ■ | | ■ |
| TX17 | 6.5" | 640 x 480 | | | ■ | ■ | | | | | ■ | | | ■ | ■ | ■ | ■ | ■ | | ■ | | ■ | | ■ |
| TX26 | 10.4" | 800 x 600 | ■ | | ■ | ■ | | | ■ | | ■ | | | ■ | ■ | | ■ | | ■ | ■ | | ■ | | ■ |
| TX26D14 | 10.4" | 640 x 480 | | | | ■ | | | | | ■ | | | ■ | ■ | | ■ | | ■ | ■ | | ■ | | ■ |
| TX31D37 | 12.1" | 800 x 600 | ■ | | | | | | | | ■ | | | ■ | | | ■ | | ■ | ■ | | ■ | | ■ |
| TX38 | 15" | 1024 x 768 | | | | ■ | | | ■ | | ■ | | | ■ | ■ | | ■ | | ■ | | ■ | | ■ | ■ |
| QVGA STN | | | | | | | | | | | | | | | | | | | | | | | | |
| SP10Q | 3.8" | 320 x 240 | | | | | ■ | | | | ■ | | | ■ | | ■ | | | | ■ | | ■ | ■ | ■ |
| SP12Q | 4.7" | 320 x 240 | | | | | ■ | | | | ■ | | | ■ | | ■ | | | | ■ | | ■ | ■ | ■ |
| SP14Q | 5.7" | 320 x 240 | | | | | ■ | | | | ■ | | ■ | ■ | | ■ | | | | ■ | | ■ | ■ | ■ |
| Standard STN | | | | | | | | | | | | | | | | | | | | | | | | |
| SP12N01 | 4.8" | 256 x 64 | | | | | ■ | | | | | ■ | | ■ | | ■ | | | | | | ■ | | ■ |
| SP14N02 | 5.1" | 240 x 128 | | | | | ■ | | | | | ■ | | ■ | | ■ | | | | | | ■ | | ■ |
| SP24V01 | 9.4" | 640 x 480 | | | | | ■ | | | | ■ | | | ■ | | ■ | | | | | | ■ | | ■ |



RUGGED+



Rugged⁺ TFT Displays for Extreme Environmental Conditions

All of KOE's Rugged⁺ displays are designed to function in challenging and harsh environmental conditions. The entire range of Rugged⁺ displays feature industrial environment operating specifications with high brightness, long-life LED backlights and will ensure reliable operation between -30°C and +80°C.

Exceptional optical performance is ensured as many Rugged⁺ displays utilise KOE's IPS Pro technology, which

RUGGED⁺

delivers exceptional colour saturation, colour stability, contrast and black levels with a 176° wide vertical and horizontal viewing angle.

KOE's Rugged⁺ TFT displays are targeted for use in high reliability industrial, medical, marine, automotive and aerospace applications where consistent and guaranteed operation under extreme temperature, mechanical shock and vibration is a necessity.

TX17D200VM0BAA

- 6.5" WVGA 800 x 480
- IPS
- 700 cd/m²
- WTR -30°C to +80°C

TX23D201VM0BAA

- 9.0" WVGA 800 x 480
- IPS
- 1000 cd/m²
- WTR -30°C to +80°C

TX31D200VM0BAA

- 12.3" HSXGA 1280 x 480
- IPS
- 1000 cd/m²
- WTR -30°C to +80°C



Rugged⁺ TFT Displays

| Size | Resolution | Part Number | Technology | Mode | Dimensions | Backlight | Touchscreen Version | Brightness cd/m ² | Contrast | Features |
|-------|------------|----------------|------------|--------------|---------------------|-----------|---------------------|------------------------------|----------|---|
| 5.8" | 400 x 240 | TX15D02VM0CAA | IPS Pro | Transmissive | 145 x 90 x 11.5 | LED | TX15D02VM0CPA | 450 | 800:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 6.5" | 800 x 480 | TX17D200VM0BAA | IPS | Transmissive | 154.8 x 92.7 x 10.2 | LED | n/a | 700 | 600:1 | IPS, WTR -30 +80, 70Khr LED |
| 7.0" | 800 x 480 | TX18D35VM0AAA | IPS Pro | Transmissive | 165 x 104 x 12.8 | LED | TX18D35VM0APA | 450 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 7.0" | 800 x 480 | TX18D35VM0AAB | IPS Pro | Transmissive | 165 x 104 x 12.8 | LED | TX18D35VM0APB | 800 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 High Bright |
| 7.0" | 800 x 480 | TX18D37VM0AAA | IPS Pro | Transmissive | 165 x 104 x 12.8 | LED | TX18D37VM0APA | 450 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 7.0" | 800 x 480 | TX18D37VM0AAB | IPS Pro | Transmissive | 165 x 104 x 12.8 | LED | TX18D37VM0APB | 800 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 8.0" | 800 x 480 | TX20D26VM0AAA | IPS Pro | Transmissive | 190 x 120 x 12.8 | LED | TX20D26VM0AQA | 600 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 9.0" | 800 x 480 | TX23D201VM0BAA | IPS | Transmissive | 218 x 135 x 11.15 | LED | TX23D201VM0BPA | 1000 | 800:1 | IPS, WTR -30 +80, 70Khr LED |
| 12.3" | 1280 x 480 | TX31D200VM0BAA | IPS | Transmissive | 320 x 130 x 12.1 | LED | n/a | 1000 | 800:1 | WTR -30 +80, 50Khr LED, High Brightness |

New for 2014

| | | | | | | | | | | |
|------|-----------|----------------|-----|--------------|----------------------|-----|-----|-----|-------|------------------------------|
| 3.5" | 240 x 320 | TX09DxxxVMXXXX | IPS | Transmissive | 73.2 x 89.4 x (10.8) | LED | n/a | 600 | 900:1 | IPS, WTR -30 +80, 24-bit I/F |
|------|-----------|----------------|-----|--------------|----------------------|-----|-----|-----|-------|------------------------------|



Lite+ TFT Displays for High Brightness

KOE's Lite+ modules offer cost effective LCD solutions that feature industry standard screen sizes, display resolutions and data interfaces but without any compromise in display optical performance. Lite+ display modules offer high brightness display characteristics and are suitable for use in high brightness environments.

Applications such as ticketing machines, point of sale terminals and public information kiosks are often found in high brightness outdoor environments. The Lite+ product line-up feature high brightness, long-life LED backlights and high contrast ratios to provide strong optical performance and display images that are clear, concise and able to be viewed under bright ambient light conditions.

KOE's Lite+ TFT displays are also suitable for medical, marine, process control, gaming and industrial applications.



Lite+ TFT Displays

| Size | Resolution | Part Number | Technology | Mode | Dimensions | Backlight | Touchscreen Version | Brightness cd/m ² | Contrast | Features |
|-------|------------|----------------|------------|--------------|----------------------|-----------|---------------------|------------------------------|----------|---|
| 5.0" | 800 x 480 | TX13D06VM2BAA | TN | Transmissive | 120 x 80.7 x 8 | LED | TX13D06VM2BPA | 1000 | 600:1 | Lite+, 50Khr LED, Compact outline |
| 5.7" | 320 x 240 | TX14D26VM1BAA | TN | Transmissive | 131 x 102.2 x 7.1 | LED | TX14D26VM1BPA | 800 | 800:1 | Lite+, 40Khr LED, Super slim design |
| 5.7" | 640 x 480 | TX14D23VM5BAA | TN | Transmissive | 131 x 102.2 x 7.6 | LED | TX14D23VM5BPA | 800 | 400:1 | Lite+ & IPS Like, 40Khr LED, SWVA |
| 8.0" | 800 x 480 | TX20D34VM2BAB | TN | Transmissive | 189 x 120 x 7.5 | LED | TX20D34VM2BPA | 600 | 600:1 | Lite+, Slim design, 50Khr LED B/L, LVDS, Over drive to achieve 1000 cd/m ² |
| 8.0" | 800 x 480 | TX20D200VM5BAA | TN | Transmissive | 189 x 122 x 10.2 | LED | TX20D200VM2BPA | 1000 | 400:1 | Lite+, IPS Like, 70Khr LED B/L, LVDS |
| 10.4" | 640 x 480 | TX26D14VM2EAA | TN | Transmissive | 243 x 185.1 x 11 | LED | TX26D14VM2BPA | 1000 | 800:1 | 70Khr LED, super high brightness & contrast |
| 10.4" | 800 x 600 | TX26D19VM2BAA | TN | Transmissive | 243 x 185.1 x 10 | LED | TX26D19VM2BPA | 550 | 800:1 | Lite+, 50Khr LED, Over drive to achieve 1000 cd/m ² |
| 10.4" | 800 x 600 | TX26D200VM5BAA | TN | Transmissive | 230 x 180.2 x 10.1 | LED | TX26D200VM5BPA | 1000 | 400:1 | Lite+, IPS Like, 70Khr LED B/L, LVDS |
| 15.0" | 1024 x 768 | TX38D18VM2BAA | TN | Transmissive | 326.5 x 253.5 x 11.5 | LED | n/a | 1200 | 700:1 | Lite+, 50Khr LED, WTR -30 +80 |

| New for 2014 | | | | | | | | | | |
|--------------|-----------|---------------|----|--------------|----------------------|-----|-----|------|-------|---------------------------------|
| 8.0" | 800 x 480 | TX20DxxxVMXXX | TN | Transmissive | 189.0 x 122.0 x 10.2 | LED | n/a | 1500 | 800:1 | Lite+, WTR, 70Khr LED B/L, LVDS |
| 10.4" | 800 x 600 | TX26DxxxVMXXX | TN | Transmissive | 230.0 x 180.2 x 10.1 | LED | n/a | 1500 | 800:1 | Lite+, WTR, 70Khr LED B/L, LVDS |

TX13D06VM2BAA

- 5.0" WVGA 800 x 480
- 1000 cd/m²
- 50K hour LED backlight

TX20D200VM5BAA

- 8.0" WVGA 800 x 480
- 'IPS Like' UWVA
- 1000 cd/m²
- 70K hour LED backlight

TX26D200VM5BAA

- 10.4" SVGA 800 x 600
- 'IPS Like' UWVA
- 1000 cd/m²
- 70K hour LED backlight

Added Value Display Solutions

KOE can offer added value solutions that enhance and improve display performance

'IPS Like' UWVA (Ultra Wide Viewing Angle)

KOE's new ultra wide viewing angle LCD modules are based on traditional TN (twisted nematic) TFT technology with enhancements to the optical design of the LCD cell which provides improved viewing angles and maintains colour stability when compared with standard TN TFT displays. For many applications in the embedded, medical and industrial markets with graphical user interfaces colour homogeneity of the display image is a necessity. KOE's UWVA implementation, gives these TN based TFT displays a wide viewing angle of 80

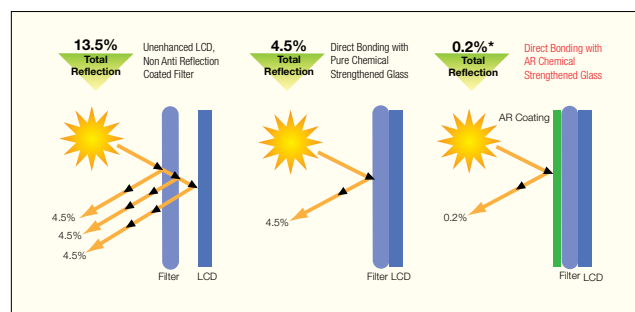


degrees in all directions (up/down, left/right) enabling concise, clear colour images and information to be displayed. KOE's new UWVA display modules offer 'IPS Like' optical performance from a TN based TFT technology providing stable colour uniformity over wide viewing angles but yet remain a viable cost effective display solution.

Sunlight Readability – Glass Bonding

Developments in optical glass bonding techniques have enabled KOE TFT LCD display modules to offer excellent readability in demanding ambient light conditions. The use of optical bonding technology coupled with an anti-reflection (AR) or anti-glare (AG) polariser can significantly improve the optical performance of the display.

A TFT display featuring an optically bonded glass substrate and polariser coatings can reduce reflections to less than 0.2% by scattering and absorbing ambient light. Optical bonding technology has been successfully implemented on TFT displays used in challenging environments such as aerospace, marine, automotive, medical and industrial. It is also being viewed as a key display enhancement technology for facilitating the development of emerging products and designs.



Sunlight Readability – Glass Bonding

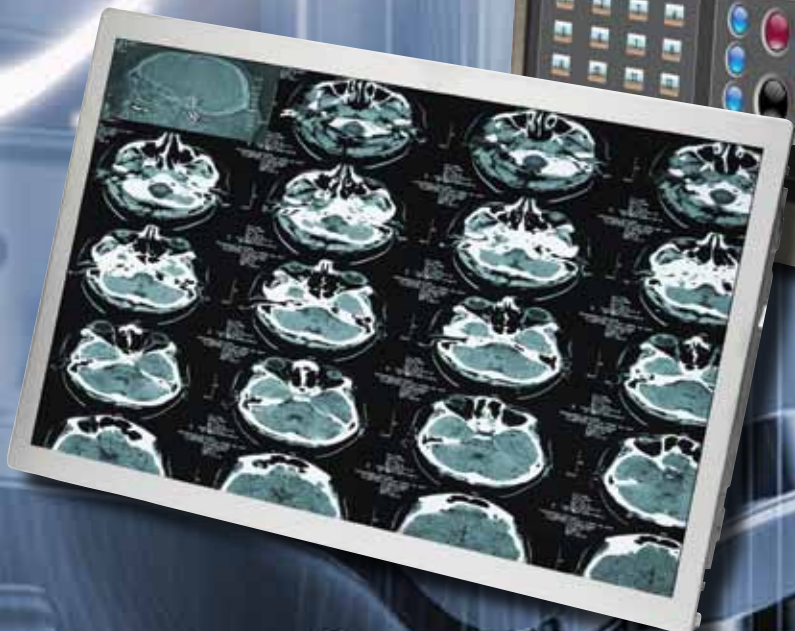
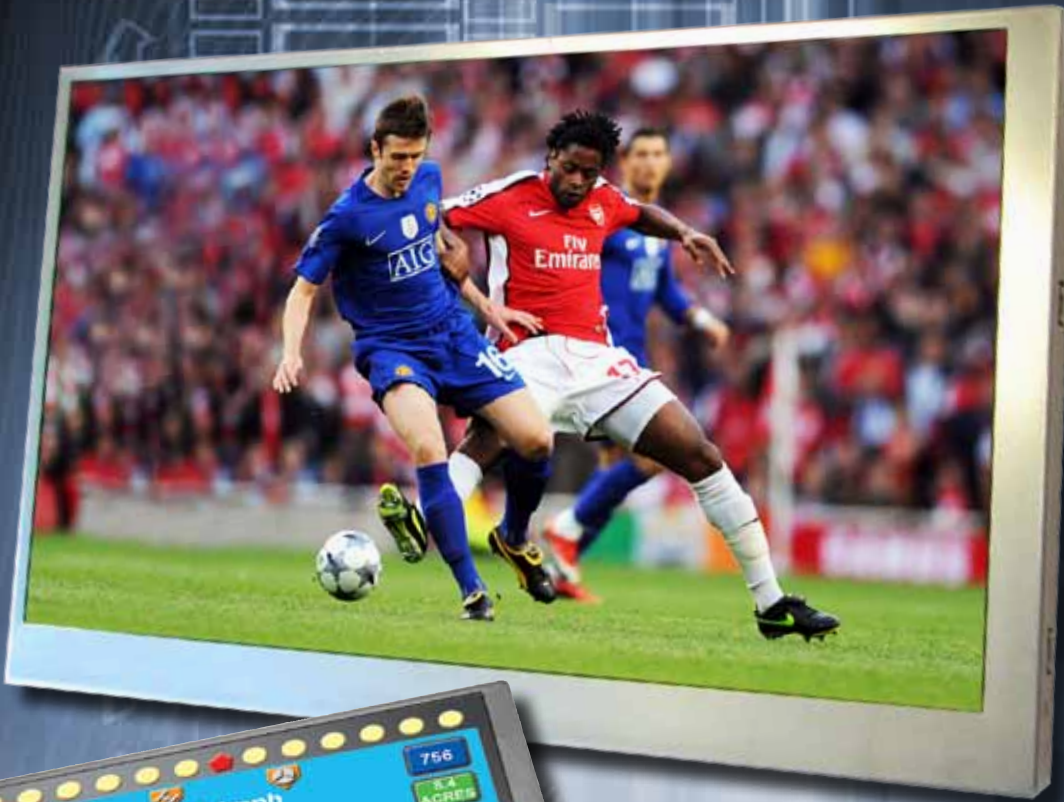
User Interface – Touch Panel



Many applications and systems will require user inputs to be applied directly to the graphical interface via a touch panel. 4-wire resistive touch panels are available on KOE LCD display modules as standard user interface solutions.

For applications requiring greater accuracy and reliability 5-wire resistive touch panel solutions are available.

A more recent and inspiring addition is capacitive touch panel technology. Projected capacitive (P-Cap) touch panel solutions can be considered for applications which require a more robust interface solution offering highly accurate and more flexible gesture interface operations. KOE is able offer a variety of touch panel solutions to meet the needs and demands of specific application requirements.



Wide Format TFT Displays

Traditional TFT technology and the migration of IPS technology to industrial and commercial displays enables KOE to offer an expanding portfolio of wide format aspect ratio TFT display solutions. Market leading optical performance, long term availability and continuity of supply can be ensured.

Applications

Wide format TFT displays will find use in many front panel, instrument console and control system designs and applications. The mechanical footprint of the wide format TFT displays is ideally suited for human machine interface applications. Information, data and graphics can be concisely represented and displayed.

Wide Format TFT Displays

| Size | Resolution | Part Number | Technology | Mode | Dimensions | Backlight | Touchscreen Version | Brightness cd/m ² | Contrast | Features |
|---------------------|-------------|----------------|------------|--------------|------------------------|-----------|---------------------|------------------------------|----------|---|
| 4.3" | 480 x 272 | TX11D06VM2AAA | TN | Transmissive | 105.5 x 67.2 x 2.9 | LED | TX11D06VM2APA | 500 | 500:1 | 24 bit RGB, Low Power Consumption |
| 5.0" | 800 x 480 | TX13D06VM2BAA | TN | Transmissive | 120 x 80.7 x 8 | LED | TX13D06VM2BPA | 1000 | 600:1 | Lite+, 50Khr LED, Compact outline |
| 5.8" | 400 x 240 | TX15D02VM0CAA | IPS Pro | Transmissive | 145 x 90 x 11.5 | LED | TX15D02VM0CPA | 450 | 800:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 6.2" | 640 x 240 | TX16D20VM5BAA | TN | Transmissive | 173 x 70 x 7 | LED | TX16D20VM5BQA | 400 | 400:1 | IPS Like WVA, 40Khr LED, Compact outline |
| 6.5" | 800 x 480 | TX17D200VM0BAA | IPS | Transmissive | 154.8 x 92.7 x 10.2 | LED | n/a | 700 | 600:1 | IPS, WTR -30 +80, 70Khr LED |
| 7.0" | 800 x 480 | TX18D44VM2BAA | TN | Transmissive | 165 x 106 x 8 | LED | TX18D44VM2BPA | 400 | 600:1 | Slim design, 40Khr LED backlight |
| 7.0" | 800 x 480 | TX18D45VM5BAA | TN | Transmissive | 165 x 106 x 8 | LED | TX18D45VM5BPA | 600 | 350:1 | IPS Like, WTR -30 +80, 40Khr LED backlight |
| 7.0" | 800 x 480 | TX18D46VM2BAA | TN | Transmissive | 165 x 106 x 8 | LED | TX18D46VM2BPA | 400 | 600:1 | Slim design, 40Khr LED B/L, LVDS |
| 7.0" | 800 x 480 | TX18D35VM0AAA | IPS Pro | Transmissive | 165 x 104 x 12.8 | LED | TX18D35VM0APA | 450 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 7.0" | 800 x 480 | TX18D35VM0AAB | IPS Pro | Transmissive | 165 x 104 x 12.8 | LED | TX18D35VM0APB | 800 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 High Bright |
| 7.0" | 800 x 480 | TX18D37VM0AAA | IPS Pro | Transmissive | 165 x 104 x 12.8 | LED | TX18D37VM0APA | 450 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 7.0" | 800 x 480 | TX18D37VM0AAB | IPS Pro | Transmissive | 165 x 104 x 12.8 | LED | TX18D37VM0APB | 800 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 8.0" | 800 x 480 | TX20D33VM2BAA | TN | Transmissive | 189 x 120 x 7.5 | LED | TX20D33VM2BPA | 400 | 600:1 | Slim design, 50Khr LED backlight |
| 8.0" | 800 x 480 | TX20D34VM2BAB | TN | Transmissive | 189 x 120 x 7.5 | LED | TX20D34VM2BPA | 600 | 600:1 | Lite+, Slim design, 50Khr LED B/L, LVDS, Over-drive to achieve 1000 cd/m ² |
| 8.0" | 800 x 480 | TX20D200VM5BAA | TN | Transmissive | 189 x 122 x 10.2 | LED | TX20D200VM2BPA | 1000 | 400:1 | Lite+, IPS Like, 70Khr LED B/L, LVDS |
| 8.0" | 800 x 480 | TX20D26VM0AAA | IPS Pro | Transmissive | 190 x 120 x 12.8 | LED | TX20D26VM0AQA | 600 | 600:1 | IPS Pro, 70Khr LED, WTR -30 +80 |
| 9.0" | 800 x 480 | TX23D201VM0BAA | IPS | Transmissive | 218 x 135 x 11.15 | LED | TX23D201VM0BPA | 1000 | 800:1 | IPS, WTR -30 +80, 70Khr LED |
| 9.0" | 1280 x 768 | TX23D86VM0BAA | IPS NP | Transmissive | 216 x 142 x 11.7 | LED | n/a | 350 | 1000:1 | IPS NP, 70Khr LED, LVDS |
| 10.2" | 800 x 256 | TX26D25VM2BAA | TN | Transmissive | 260.2 x 96.2 x 10.55 | LED | n/a | 350 | 500:1 | Slim design, 40Khr LED B/L |
| 12.3" | 1280 x 480 | TX31D200VM0BAA | IPS | Transmissive | 320 x 130 x 12.1 | LED | n/a | 1000 | 800:1 | WTR -30 +80, 50Khr LED, High Brightness |
| 14.9" | 1280 x 242 | TX38D25VM0CAA | IPS NP | Transmissive | 386.82 x 85.57 x 13.06 | LED | n/a | 450 | 800:1 | IPS NP, 16:3 Wide Format, 70Khr LED |
| FHD | | | | | | | | | | |
| 7.0" | 1920 x 1080 | TX18D200VM0EAA | IPS | Transmissive | 169 x 104 x 10 | LED | TBC | 700 | 800:1 | IPS, Full HD resolution |
| New for 2014 | | | | | | | | | | |
| 8.0" | 800 x 480 | TX20DxxxVMXXXX | TN | Transmissive | 189.0 x 122.0 x 10.2 | LED | n/a | 1500 | 800:1 | Lite+, WTR, 70Khr LED B/L, LVDS |
| 10.1" | 1920 x 1200 | TX26DxxxVMXXXX | IPS | Transmissive | TBD | LED | n/a | 900 | 1000:1 | IPS, WUXGA resolution, LVDS I/F |

TX13D06VM2BAA

- 5.0" WVGA 800 x 480
- 1000 cd/m²
- 50K hour LED backlight

TX23D86VM0BAA

- 9.0" WXGA 1280 x 768
- IPS NP
- 70K hour LED backlight

TX20D34VM2BAB

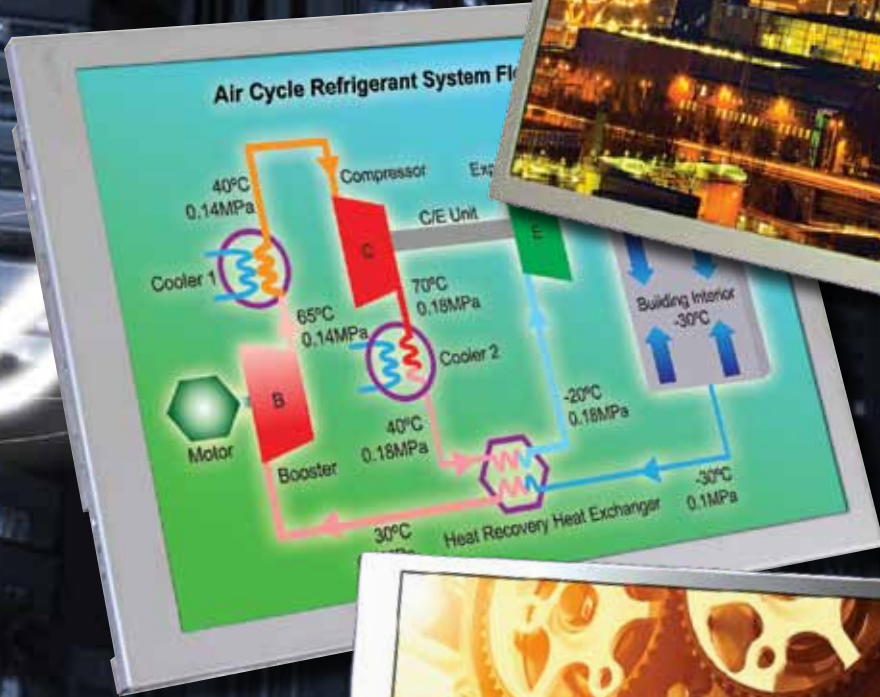
- 8.0" WVGA 800 x 480
- 1000 cd/m² (@20mA)
- 50K hour LED backlight

TX38D25VM0CAA

- 14.9" HSXGA 1280 x 242
- IPS NP
- 70K hour LED backlight

Applications

- passenger infotainment terminals
- building management systems
- measurement and monitoring
- industrial control
- instrumentation
- automotive
- marine



Standard Format TFT Displays

As a proven TFT technology leader KOE has been a major developer and manufacturer of colour TFT displays for almost 20 years. A wide range of standard colour TFTs from 3.5" to 15" provide inherent quality and exceptional optical performance. Specifications and interfaces are optimised for industrial markets and ease of integration.

Applications

A vast and wide range of applications are particularly suited to the use of KOE colour TFT displays. Small, low power displays are particularly suitable for compact, portable, battery powered equipment, media players and mobile navigation systems. Medium size colour TFTs provide ideal choices for security monitoring, portable terminals and process control while larger sizes are particularly suited for online terminals, monitors and epos applications.

Applications

- navigation systems
- portable terminals
- home automation
- security systems
- online terminals
- process control
- feature phones
- media players
- epos

Standard Format TFT Displays

| Size | Resolution | Part Number | Technology | Mode | Dimensions | Backlight | Touchscreen Version | Brightness cd/m ² | Contrast | Features |
|-------|------------|----------------|------------|--------------|----------------------|-----------|---------------------|------------------------------|----------|---|
| 3.5 | 240 x 320 | TX09D40VM3CBA | TN | Transmissive | 86 x 64 x 3.12 | LED | TX09D40VM3CAA | 430 | 300:1 | High brightness, TMR, Timing Controller built in |
| 3.5" | 240 x 320 | TX09D30VM1CDA | TN | Transmissive | 64 x 86 x 6.7 | LED | TX09D30VM1CCA | 320 | 300:1 | TMR, Timing Controller built in, On board voltage generation, 40Khr LED B/L |
| 5.0" | 640 x 480 | TX13D200VM5BAA | TN | Transmissive | 119.4 x 89.1 x 9.3 | LED | TX13D200VM5BPA | 600 | 370:1 | WTR -30 +80, 70Khr LED, IPS Like |
| 5.0" | 640 x 480 | TX13D202VM5BAA | TN | Transmissive | 119.4 x 89.1 x 9.3 | LED | TX13D202VM5BPA | 600 | 370:1 | LVDS, WTR -30 +80, 70Khr LED, IPS Like |
| 5.7" | 320 x 240 | TX14D24VM1BAA | TN | Transmissive | 167 x 109 x 9.2 | LED | TX14D24VM1BPA | 450 | 600:1 | 50Khr LED, SP/SX14Q compatible |
| 5.7" | 320 x 240 | TX14D25VM1BAA | TN | Transmissive | 131 x 102.2 x 10.9 | LED | TX14D25VM1BPA | 400 | 600:1 | 50Khr LED, Compact mechanical outline |
| 5.7" | 320 x 240 | TX14D26VM1BAA | TN | Transmissive | 131 x 102.2 x 7.1 | LED | TX14D26VM1BPA | 800 | 800:1 | Lite+, 40Khr LED, Super slim design |
| 5.7" | 640 x 480 | TX14D23VM5BAA | TN | Transmissive | 131 x 102.2 x 7.6 | LED | TX14D23VM5BPA | 800 | 400:1 | Lite+ & IPS Like, 40Khr LED, UWVA |
| 5.7" | 640 x 480 | TX14D28VM5BAA | TN | Transmissive | 131 x 102.2 x 7.6 | LED | TX14D28VM5BPA | 800 | 400:1 | LVDS, Lite+ & IPS Like UWVA, 40Khr LED |
| 6.5" | 640 x 480 | TX17D01VM2CAA | TN | Transmissive | 153 x 118 x 9.1 | LED | TX17D01VM2CPA | 600 | 600:1 | 70Khr LED, Compact mechanical outline, |
| 6.5" | 640 x 480 | TX17D01VM2EAB | TN | Transmissive | 153 x 118 x 9.1 | LED | TX17D01VM2CPB | 1000 | 600:1 | 70Khr LED, Compact mechanical outline, super high brightness, AR polariser |
| 6.5" | 640 x 480 | TX17D01VM5BAA | TN | Transmissive | 153 x 118 x 9.1 | LED | TX17D01VM5BPA | 800 | 350:1 | IPS Like UWVA, 70Khr LED, Compact outline |
| 6.5" | 640 x 480 | TX17D02VM2CAA | TN | Transmissive | 153 x 118 x 9.1 | LED | TX17D02VM2CPA | 600 | 600:1 | 70Khr LED, Compact mechanical outline, LVDS |
| 10.4" | 640 x 480 | TX26D14VM2EAA | TN | Transmissive | 243 x 185.1 x 11 | LED | TX26D14VM2BPA | 1000 | 800:1 | 70Khr LED, super high brightness & contrast |
| 10.4" | 800 x 600 | TX26D12VM0AAA | IPS Pro | Transmissive | 243 x 185.1 x 11 | LED | TX26D12VM0APA | 450 | 800:1 | IPS Pro, 70Khr LED |
| 10.4" | 800 x 600 | TX26D19VM2BAA | TN | Transmissive | 243 x 185.1 x 10 | LED | TX26D19VM2BPA | 550 | 800:1 | Lite+, 50Khr LED, Over-drive to achieve 1000 cd/m ² |
| 10.4" | 800 x 600 | TX26D200VM5BAA | TN | Transmissive | 230 x 180.2 x 10.1 | LED | TX26D200VM5BPA | 1000 | 400:1 | Lite+, IPS Like, 70Khr LED B/L, LVDS |
| 12.1" | 800 x 600 | TX31D37VM0CAA | IPS Pro | Transmissive | 280 x 210 x 12.58 | LED | TX31D37VM0CPA | 600 | 1000:1 | IPS Pro, 70Khr LED |
| 15.0" | 1024 x 768 | TX38D18VM2BAA | TN | Transmissive | 326.5 x 253.5 x 11.5 | LED | n/a | 1200 | 700:1 | Lite+, 50Khr LED, WTR -30 +80 |

New for 2014

| | | | | | | | | | | |
|-------|-----------|----------------|----|--------------|----------------------|-----|-----|------|-------|---------------------------------|
| 10.4" | 800 x 600 | TX26DxxxVMXXXX | TN | Transmissive | 230.0 x 180.2 x 10.1 | LED | n/a | 1500 | 800:1 | Lite+, WTR, 70Khr LED B/L, LVDS |
|-------|-----------|----------------|----|--------------|----------------------|-----|-----|------|-------|---------------------------------|

TX14D26VM1BAA

- 5.7" QVGA 320 x 240
- 800 cd/m²
- 50K hour LED backlight

TX17D02VM2CAA

- 6.5" VGA 640 x 480
- 70K hour LED backlight
- LVDS interface

TX26D12VM0AAA

- 10.4" SVGA 800 x 60
- IPS
- 70K hour LED backlight

TX31D37VM0CAA

- 12.1" SVGA 800 x 600
- IPS
- 70K hour LED backlight

Standard Industrial STN Products

QVGA STN Displays

KOE's QVGA product families have been designed, developed and manufactured for over 20 years. Now a de-facto industry standard the KOE QVGA product line up is comprehensive and varied. Continuous and ongoing product enhancement ensures full backward compatibility, improved optical performance and reduced power requirements.

KOE is also in the enviable position of being able to supply monochrome STN, colour STN and colour TFT displays with the same mechanical footprint.

Applications

Products and applications can be designed and developed with the knowledge and confidence that a KOE QVGA display will be available for the entire product lifetime. An extensive product family providing exceptional optical performance ensure a wide range of varied applications can use a KOE QVGA display solution.

SP14Q011-A1

- 5.7" QVGA 320 x 240
- Monochrome STN
- White LED backlight
- 'Compact' mechanical footprint
- Mechanically compatible with 5.7" 'Compact' TFT range

SP14Q003-A

- 5.7" QVGA 320 x 240
- Blue mode STN
- White LED backlight
- 'Classic' mechanical footprint
- Mechanically compatible with 5.7" 'Classic' TFT range

SP14Q006

- 5.7" QVGA 320 x 240
- Monochrome STN
- White LED backlight
- 'Classic' mechanical footprint
- Mechanically compatible with 5.7" 'Classic' TFT range

Applications

- industrial process control
- measurement equipment
- building automation
- domestic appliance
- epos

QVGA STN Displays

| Size | Resolution | Part Number | Technology | Mode | Dimensions | Backlight | Touchscreen Version | Brightness cd/m ² | Contrast | Features |
|------|------------|---------------|----------------------|---------------|--------------------|-----------|---------------------|------------------------------|----------|---|
| 3.8" | 320 x 240 | SP10Q010 | Black/White Film STN | Transmissive | 94.7 x 73.3 x 5.5 | LED | SP10Q010-ZZA | 110 | 20:1 | White LED, High brightness, WTR, |
| 4.7" | 320 x 240 | SP12Q01L6ALZZ | Black/White Film STN | Transmissive | 129.6 x 92.6 x 7.5 | LED | On request | 200 | 20:1 | LMG7520RPFC compatible |
| 4.7" | 320 x 240 | ST12Q01L6ALZZ | Black/White Film STN | Transflective | 129.6 x 92.6 x 7.5 | LED | On request | 60 | 5:1 | Sunlight readable, LMG7525RPFF compatible |
| 5.7" | 320 x 240 | SP14Q003-A | Blue/White STN | Transmissive | 167 x 109 x 10 | LED | SP14Q003-AZA | 200 | 6:1 | 40hrs White LED, WTR |
| 5.7" | 320 x 240 | SP14Q006 | Black/White Film STN | Transmissive | 167 x 109 x 10 | LED | SP14Q006-ZZA | 150 | 25:1 | 40hrs White LED, High brightness, WTR |
| 5.7" | 320 x 240 | SP14Q006-T | Black/White Film STN | Transflective | 167 x 109 x 10 | LED | SP14Q006-TZA | 60 | 5:1 | White LED, Sunlight readable, WTR |



Standard STN Displays

KOE's LCD heritage has been established on the foundations of providing displays that provide high quality, exceptional reliability and longevity. These traditional values are as true today as they were 35 years ago when the first STN displays were designed and manufactured. Today, KOE STN LCDs provide simple, easy to use and cost effective display solutions.

Applications

The KOE range of standard STN displays is effective and simple to use. Simple graphical user interfaces for instrumentation, process control, security systems and measurement equipment can be designed and implemented. Some displays feature integrated display controllers and memory which allow 8-bit microcontrollers to be used to enable cost effective user interfaces and systems to be designed.

SP12N01L6ALCZ

- 4.8" 256 x 64
- Monochrome STN
- Integrated display controller

SP14N01L6VLCZ

- 5.1" 240 x 128
- White LED backlight
- DC/DC converter on board
- Integrated display controller

SP24V01L0ALZZ

- 9.4" VGA 640 x 480
- Monochrome STN
- White LED backlight
- Industry standard footprint

Applications

- graphical user interface
- information terminals
- ticketing systems
- security systems
- instrumentation
- process control
- data loggers
- front panels
- epos

Standard STN Displays

| Size | Resolution | Part Number | Technology | Mode | Dimensions | Backlight | Touchscreen Version | Brightness cd/m ² | Contrast | Features |
|------|------------|---------------|----------------------|--------------|------------------|-----------|---------------------|------------------------------|----------|---|
| 4.8" | 256 x 64 | SP12N01L6ALCZ | Black/White Film STN | Transmissive | 160 x 68 x 12 | LED | n/a | 90 | 20:1 | RAIO RA6963, SP12N002 replacement |
| 5.1" | 240 x 128 | SP14N02L6ALCZ | Black/White Film STN | Transmissive | 159.4 x 101 x 11 | LED | n/a | 150 | 20:1 | RAIO RA6963, 50Khr LED, LMG7420 replacement |
| 5.1" | 240 x 128 | SP14N01L6ALCZ | Black/White Film STN | Transmissive | 159.4 x 101 x 11 | LED | SP14N01L6ALCA | 150 | 20:1 | RAIO RA6963, LMG7420PLFC-X compatible |
| 5.1" | 240 x 128 | SP14N01L6VLCZ | Black/White Film STN | Transmissive | 159.4 x 101 x 11 | LED | SP14N01L6VLCA | 150 | 20:1 | RAIO RA6963, DC/DC |
| 9.4" | 640 x 480 | SP24V01L0ALZZ | Black/White Film STN | Transmissive | 257.5 x 174 x 7 | LED | n/a | 110 | 20:1 | 50Khr LED, SP24V001 replacement |

Enhanced and versatile STN capability

KOE can offer a highly flexible approach to STN display module customisation. This service affords the application designer greater scope for product differentiation. Whether the requirement is for a simple character or segment display or a more complex graphics display module, KOE is able to design, develop and manufacture bespoke display solutions.



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