



FEATURES

- Increased contrast and viewing angle
- Bonding of sizes up to 75"
- UV protection / UV resistance
- Extended temperature
- Improved visual quality
- Fully re-workable
- No water condensation / contamination
- Better impact resistance
- Eliminates the wash-out effect
- Waterproof

OPTICAL BONDING HI-RELIABILITY OPTICAL SOLUTIONS

Optical bonding is a process used in applications where a premium solution is required

Why use **Optical Bonding**?



Waterproof



Bonding sizes



UV resistance



Sunlight readable

Increase Viewing Angle



Viewing angle



UV protection



Impact resistance



-50~105°C

Extended temp range

TYPICAL MARKETS INCLUDE

Military

Avionics

Industrial HMI

Marine

Kiosk

Transportation

Medical

Vehicle

Optically bonding - the optimum choice for HI-REL applications

Why is CDS's optical bonding different?

MATERIALS AND PROCESS ARE KEY

With propriety materials and a unique re-workable process, CDS provide solutions that enhance sunlight readability and provide additional ruggedness / vandal resistance. Optical Bonding will never be a commodity solution – **choose the correct material and process.**

PROJECT MANAGED SOLUTIONS

Almost every OB solution requires a detailed project management approach to ensure that all aspects of the design are taken into consideration and to maximise the benefits of the technology. **CDS have many years of expertise and experience in this field.**

This result is a optically premium engineered solution designed to give a superior solution

Bespoke touch screen or filter

As optical bonding is the application of an optical gel between two layers the selection process of the cover 'substrate' is as critical as the process itself. At CDS we have the experience and knowledge to guide through the glass selection process where every requirement is treated as individual.

With a premium optical bonded solution, we would always propose a premium glass.

With the glass choice, CDS always consider a number of characteristics, including:

Thickness

Toughening method

Edge finish

Custom shape

EMC protection (mesh/ITO)

Rear printing

Surface finish AG / AR / AFP

UV / IR protection

Apertures / cut outs / holes

Privacy filters



Displays optimized for Optical Bonding

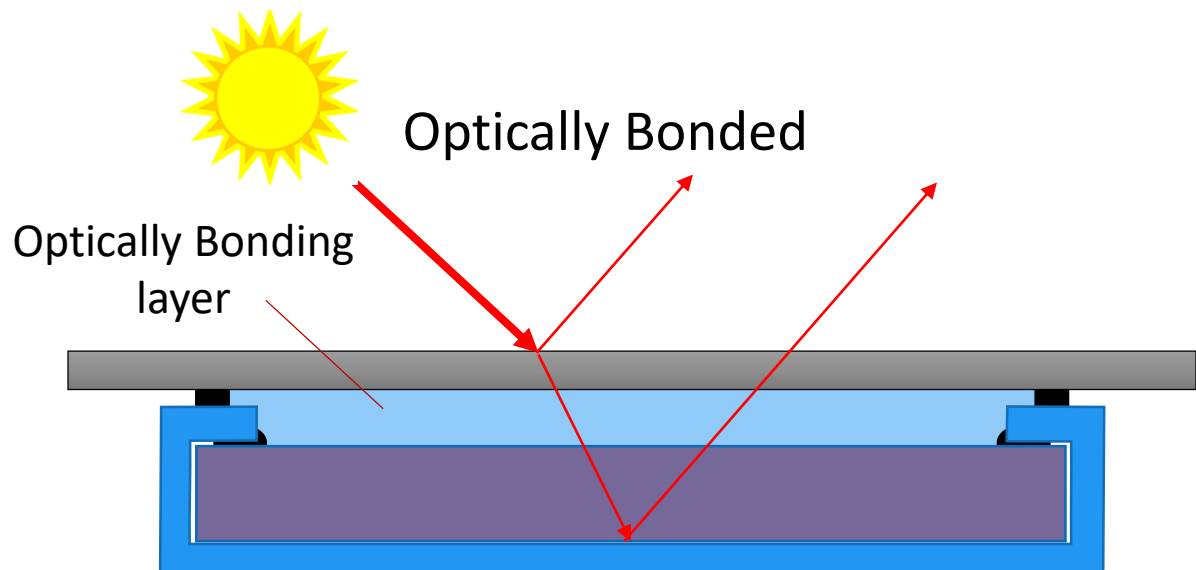
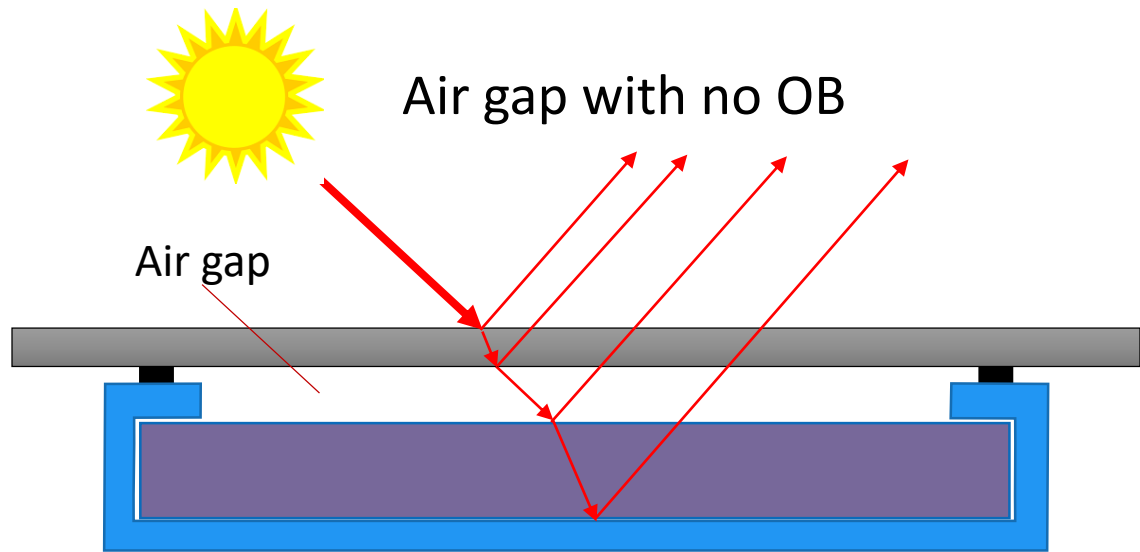
Size	Part number	Resolution	Brightness (cd/m2)	LED half time (hrs)	Operating temp	Interface	Features
5"	CIV-050-005-01-1	800 x 480	1000	50K	-20 ~ 70	TTL	
5.7"	CIV-057-004-02-1	640 x 480	1200	50K	-20 ~ 70	TTL	
5.7"	CIV-057-019-01-1	640 x 480	2200	50K	-20 ~ 70	LVDS	
7"	CIV-070-004-04-1	800 x 480	800	50K	-20 ~ 70	TTL	TMR
7"	CIV-070-010-02-1	800 x 480	1000	70K	-35 ~ 85	LVDS	
7"	CIV-070-010-03-1	800 x 480	1300	70K	-35 ~ 85	LVDS	
7"	CIV-070-031-01-1	800 x 480	2200	50K	-20 ~ 70	LVDS	
10.1"	CIV-101-016-02-1	1280 x 800	1000	70K	-20 ~ 70	LVDS	WV
10.4"	CIV-104-008-02-1	1024 x 768	1200	70K	-30 ~ 70	LVDS	WV
12.1"	CIV-121-024-02-1	1280 x 800	1200	70K	-30 ~ 80	LVDS	
12.1"	CIV-121-025-02-1	1280 x 800	1200	70K	-30 ~ 85	LVDS	WV
12.1"	CIV-121-026-02-1	800 x 600	1200	70K	-30 ~ 85	LVDS	WV
12.1"	CIV-121-029-02-1	1024 x 769	1000	70K	-30 ~ 85	LVDS	WV 2019/Q3 MP
12.8"	CIV-128-001-02-1	1920 x 1080	1000	50K	-30 ~ 85	LVDS	WV NEW
13.3"	CIV-133-004-02-1	1920 x 1080	1000	70K	0 ~ 70	LVDS	WV
15"	CIV-150-019-02-1	1024 x 768	1000	70K	-30 ~ 80	LVDS	WV 2019/Q3 MP
17"	CIV-170-006-02-1	1280 x 1024	1200	70K	-30 ~ 80	LVDS	
17.3"	CIV-173-001-02-1	1920 x 1080	1300	70K	0 ~ 70	LVDS	
18.5"	CIV-185-004-02-1	1920 x 1080	800	70K	-20 ~ 70	LVDS	WV
19"	CIV-190-013-02-1	1280 x 1024	1000	70K	-30 ~ 85	LVDS	very low power consumption
21.5"	CIV-215-007-02-1	1920 x 1080	800	70K	0 ~ 50	LVDS	WV
24"	CIV-150-019-02-1	1920 x 1080	1000	70K	-20 ~ 70	LVDS	WV
27"	CIV-150-019-02-1	1920 x 1080	800	70K	0 ~ 50	LVDS	WV
27"	CIV-150-019-02-1	1920 x 1080	600	70K	0 ~ 50	LVDS	WV

These display have been used within optical bonding projects

If the size, resolution, brightness or interface you need for you project is not listed, please contact our sales team who will be able to support this further

All solutions are available as a kit panel alone, kit of parts, open frame or finished monitor solution

Advantages of Optical Bonding – reduction of internal reflections

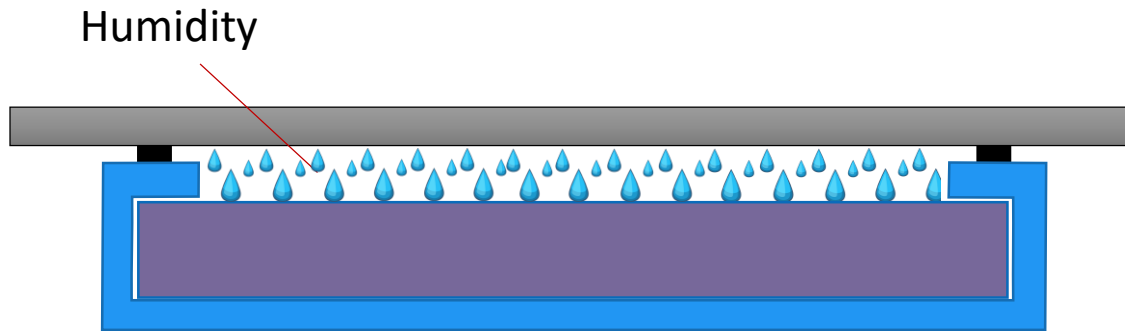


- When light passes from one material to another which has a different refraction index, typically 4% of the light will get reflected
- The top images shows 4 reflection points giving a total reflection of 18.5%
- By introducing an optical bonding layer, the number of reflection points reduce to 2, giving a total reflection of only 11.5%

Optically bonding reduces reflections by 38% giving a DRAMATICALLY higher contrast display without increasing power consumption

Advantages of **Optical Bonding** – Anti-fogging

Air gap



Optically Bonded

Optically Bonding compound



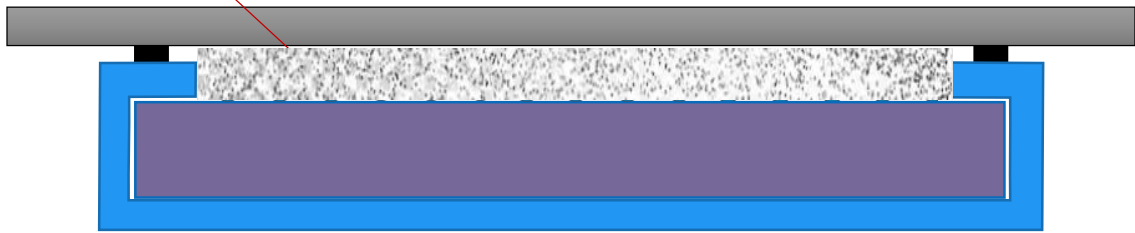
- The amount of water in the air can vary from 10% to 100% relative humidity (RH) depending on location and season
- With an airgap this humidity will also be contained in the void
- Changing temperatures can cause trapped moisture and fogging
- The bonding layer eliminates this void

Optically bonding eliminates the airgap, thus eliminating the moisture / condensation / fogging phenomenon

Advantages of **Optical Bonding** – No dust ingress

Air gap

Contamination



Optically Bonded

Optically Bonding layer

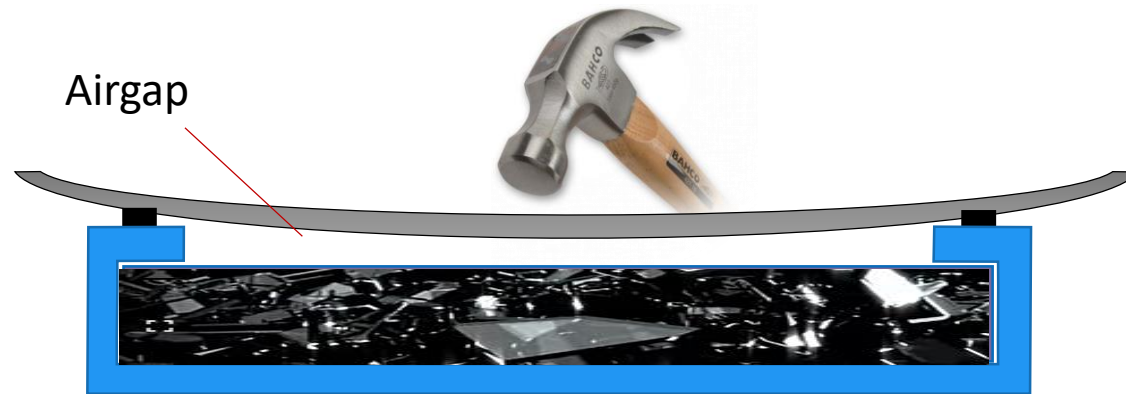


- One method of avoiding fogging is to circulate air between the gap
- This circulation will also allow particles to be visible over time
- This is more prevalent for industrial applications where the monitors are often used on dirty environments

Optically bonding eliminates the air gap giving no possibility for contamination

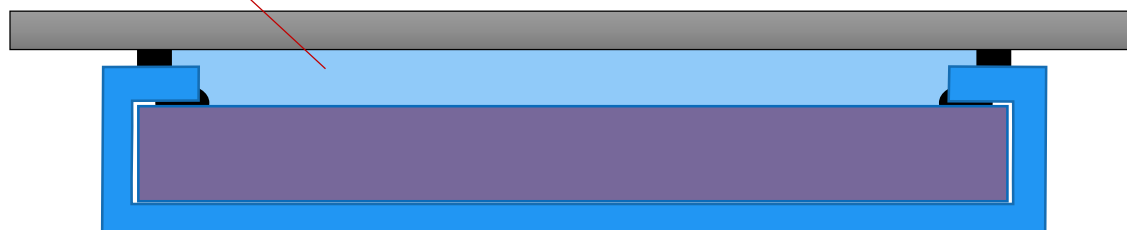
Advantages of **Optical Bonding** – More rugged

Air gap with no OB



Optically Bonded solution

Optically Bonding layer



- Optical bonding eliminates the air gap void and forms the single piece construction via a thicker laminate
- The new construction gives additional strength against the environmental forces which may normally break the glass
- The bonding material elastic properties also help absorb any shock

Optically bonding strengthens the assembly construction and there ruggedizes the end product

Custom monitor builder

We have direct links with OEM factories allowing rapid development, commercially competitive and have scalable production capability. From designing a replacement for a current product through to a complete design CDS has the resource available



DEVELOPMENT

of new products through
out R&D team

AFTER SALES

Support for internal
repairs and full technical
backup

BESPOKE

Touch monitor design



Crystal Display Systems is a leading designer, distributor & value added reseller of flat panel display solutions. Our expertise allows us to offer the best solutions to our clients and partners. We offer Industrial TFT LCDs, Retail Displays, Translucent displays, Touch screens, videowalls & many other digital solutions.

RAPID

Sample production
quicker than most local
suppliers

LEADTIMES

For production excellent
compared to other
manufacturers

QUALITY

ISO9001 approved

EUROPEAN

design with Far Eastern
pricing

GLOBAL

production with factories
in CHINA / TAIWAN /
SOUTH KOREA

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