

TL Electronic: Product Overview



IT Industriale Perfetto – dal 1983

Il mercato offre qualità, affidabilità e buoni servizi

PC industriali e altro

Raramente un segmento di mercato dell'automazione industriale si è sviluppato così velocemente come i PC industriali. Spinti da brevi tempi d'innovazione dello sviluppo dei processori, anche in questo settore una generazione di computer soppianta quella precedente. È stato determinato all'inizio lo sviluppo di alcune imprese e intanto si è stabilito un settore che realizza una serie di applicazioni, di soluzioni e di apparecchiature personalizzate. La flessibile industria dei PC è uno strumento indispensabile per il controllo e la visualizzazione dei processi più complessi.

TL Electronic di Garching è un'impresa che ha autorevolmente dominato lo sviluppo dell'industria dei PC sin dall'inizio. Quando questa azienda, nell'aprile di 25 anni fa iniziò la distribuzione di strumenti indicatori, riforniva soprattutto i costruttori di macchine e di impianti con monitor industriali a raggi catodici. Grazie alle sfide crescenti di un settore industriale sempre in espansione, l'impresa di Stefan Götz e Michael Mohr è oggi una specialista nei campi display e PC industriali.

Richieste in base al settore

Gli andamenti dei PC industriali e dei pannelli di controllo è guidata dai bisogni e dalle richieste attuali dei clienti. I cicli di investimento e i tempi di ammortamento, considerati come i motivi per i chiari cicli di vita più lunghi

PRATICA PLUS

L'IPC Embedded EL1035 è senza ventola. Il raffreddamento avviene tramite una tubatura per il calore che lo espelle dal case tramite il grande termodispersore. Il computer è disponibile a scelta con processore Celeron M-370 (1,5 GHz) o Pentium-M (1,8 GHz). Il sistema è dotato di un disco fisso da 40 Gbyte in alternativa alla versione Automotive che si trova fuori dall'effettivo case del PC e che è protetto dalla forte produzione di calore.

di hardware e processori, presuppongono una rapida disponibilità dei PC industriali e dei sistemi di impresa. Oltre all'elevata qualità ed affidabilità del prodotto viene fornito un efficiente assistenza.

Le esigenze dei PC industriali vengono definite da vari parametri. L'idea di una tecnologia robusta per i computer è qualcosa che viene inteso diversamente da settore a settore. In un sistema di controllo per un robot di saldatura di un'industria automobilistica vengono richieste altre competenze rispetto da un calcolatore di controllo in un percorso di verniciatura o in un PC per la tecnica medica. Anche se alla base sono sempre gli stessi IPC standard con processore, set di chip e interfacce standard definite, l'utente ha bisogno di un computer specifico per le sue esigenze applicative. Ciò può essere ad esempio il grado di protezione IP65 per gli aspri ambienti industriali oppure la protezione da un solvente corrosivo o da spruzzi d'acqua e così via.

L'azienda realizza, in base alle informazioni di entrambi gli amministratori, una vasta gamma di computer da quelli in DOS a quelli dual core, tutti con prestazioni diverse. Il campo di utilizzo dei PC dell'industria moderna va da controlli semplici fino ad applicazioni complesse di video e fototocco, laddove il mercato segue, con lenti e considerevoli ritardi, gli sviluppi del mercato dei consumatori. La più grande espansione si ha per i computer Pentium M con sistema operativo

PC Embedded senza ventola integrato nei quadri elettrici o per l'automazione dei punti vendita

Windows 2000 e XP. La TL Electronic, da poco anche partner ufficiale di Microsoft, informa i suoi clienti riguardo una strategia sempre più duratura per i processori. Si promette all'utente di fornire Windows 2000 fino al 2015, Windows XP addirittura fino al 2019. Nel futuro ci sarà anche la disponibilità di sistemi operativi più potenti per i processori di nuova generazione con CPU multi core.

Ciò è particolarmente importante perchè nelle industrie, i macchinari e gli impianti con oltre 15 anni di età sono tutt'altro che una rarità. Spesso nelle macchine molto vecchie i monitor a raggi catodici sono difettosi e devono essere sostituiti con moderni display TFT. La sostituzione di monitor a raggi catodici nel settore dell'industria meccanica, che in passato ha generato per TL Electronic la più grande parte di fatturato, non svolge per l'azienda più un ruolo decisivo, sebbene vi siano ancora oggi macchinari vecchi da sottoporre a retrofit. I dispositivi indicatori sono i componenti principali per la comunicazione fra l'uomo e la macchina. Le strutture di montaggio, sviluppate appositamente e i controller speciali facilitano la modernizzazione dei controlli dei macchinari. Per il cosiddetto





replacement gli amministratori si aspettano tuttavia una diminuzione del fatturato: "Perchè negli ultimi 5 anni sono state modernizzate anche le macchine più remote."

Stefan Götz, Michael Mohr (da sinistra): In futuro ci saranno molti affari con l'Europa

Produzione: l'80 % dei computer sono assemblati secondo le esigenze specifiche del cliente



Soluzioni orientate specificamente per il cliente

Il catalogo e la homepage mostrano alcuni dispositivi standard, ma solo una piccola parte dei PC industriali e dei pannelli della TL Electronic lasciano la produzione in qualità di dispositivi standard; infatti l'80% dei calcolatori sono assemblati su esigenze del cliente. Indipendentemente dalle condizioni quadro e dell'incarico, così come per l'avvenuta autorizzazione del cliente, il produttore sceglie i componenti adatti per i dispositivi.

„Il nostro know-how sta anche nel fatto di poter produrre una scala da 1 fino a 100 e più unità di prodotto in base al profilo specifico desiderato dal cliente. Ciò ci permette anche di reagire alle sfide provenienti da tutt'altri settori“, spiegano Stefan Götz e Michael Mohr. A parte i macchinari e gli impianti ci si propone intanto anche in settori più ampi con i propri computer e si riescono a coprire le molteplici esigenze relative alle prestazioni delle CPU, della dotazione hardware, compresi fattori come lo spessore dei case. Nella produzione è possibile principalmente un andamento cadenzato, poiché per i collaboratori è indifferente se si produce un pezzo, 10 pezzi o 100 pezzi. Alla fine della creazione della soluzione per il cliente, viene anche reso disponibile un ampio pacchetto di servizi. I dispositivi possono essere etichettati, provvisti della documentazione del cliente e spediti per conto suo. I tipi-

ci cicli di produzione vanno dalle piccole serie fino a 1000 IPC e Panel PC. In caso di numero maggiore di pezzi, in termini di migliaia, la partnership con la TL Electronic non è più tanto adatta. Trattando pezzature simili, l'alta qualità e la fedeltà di fornitura non vengono più tanto richiesti. Mentre il rimpiazzo dei monitor a raggi catodici nei controlli delle macchine gioca ancora un ruolo subordinato, i display, i PC industriali e i Panel PC costituiscono la gran parte della quota degli affari. Proprio con IPC e nelle particolarità dei Panel PC sorsero ogni giorno nuove applicazioni anche al di fuori della clientela o dal settore di provenienza. L'economia energetica, compresa l'energia eolica o la tecnologia militare e dei veicoli, necessitano di potenti Panel PC per l'automazione e la visualizzazione dei processi aziendali. Nell'industria automobilistica vengono superate delle grandi sfide logistiche con l'aiuto di Panel PC, il che avrebbe necessitato di grosse forniture di strumentazione. Per le applicazioni relative ai punti vendita, come distributori di biglietti, sono necessari dei dispositivi migliori e più affidabili. Un mercato crescente è rap-

presentato inoltre dall'automazione degli edifici; TL Electronic fornisce ad esempio Panel PC da incorporare nella tecnologia centrale degli edifici. Tali applicazioni si estendono all'industria del legno, alimentare e, affermano gli amministratori Götz e Mohr, a tanti altri ancora.

Strategia per il futuro

„Da noi avviene una trasformazione delle risorse“ spiegano Stefan Götz e Michael Mohr: „Ci siamo specializzati negli anni passati in monitor e display fino a diventare dei fornitori di soluzioni di visualizzazione e oggi siamo dei

Controllore Panel PC in IP 65



veri fornitori di PC industriali. I display sono sempre degli elementi essenziali della nostra gamma di prodotti e in primo piano ci sono IPC e Panel PC di nostra produzione.”

Come fornitori di OEM ci siamo tenuti in retroscena con la propria marca e si produceva solo in nome del cliente. In futuro il logo TL Electronic è diventato una marca indipendente, visibile su ogni PC. „Anche se il cliente in futuro otterrà il suo dispositivo individuale, sarà riconoscibile il fatto che si tratta di un prodotto della TL Electronic.”

Dopo una gestione Buy-Out nel 2001, Stefan Götz e Michael Mohr sono gli unici dirigenti dell'impresa fondata nel 1983. Con 40 collaboratori a Monaco - Garching, un collaboratore alla distribuzione ad Essen e una s.r.l per la distribuzione in Austria con 2 collaboratori, l'impresa ha realizzato l'anno scorso un fatturato di 5,5 milioni di euro. Attualmente vengono prodotti da 450 a 500 PC al mese. Per potersi espandere ulteriormente in futuro, la TL Electronic cerca sempre nuovi locali. Le capacità di produzione non sono le sole a determinare la pianificazione di un cambiamento. „Vogliamo piuttosto trasformare l'impresa anche dal punto di vista fisico dei locali”, dichiarano gli

amministratori. Le necessità di produzione devono di certo essere considerate in modo particolare, il nuovo sito deve anche promuovere un'ulteriore crescita dal punto di vista del marketing e della distribuzione. La ricerca di un nuovo sito adatto e rappresentativo non è ancora del tutto decisa.

Espansione in Europa

„Siamo sicuri che riusciremo ad aumentare la nostra crescita degli affari all'estero” spiegano Stefan Götz e Michael Mohr. A medio termine, gli amministratori pianificano quindi un fatturato che va da 7 a 9 milioni di euro.

„È un nostro chiaro obiettivo riuscire a crescere nella vicina Europa con dei punti di distribuzione tutti nostri.” Dopo che lo sviluppo positivo in Austria ha spianato la strada dell'Europa per l'impresa, l'attenzione di entrambi gli amministratori si rivolge all'Inghilterra e alla Francia. In caso di produzione altamente individuale e specifica per il cliente, non avrebbe senso un trasferimento dei posti di lavoro in paesi con salari più bassi. „Intanto per i nostri siti di produzione poniamo l'accento sul valore della qualificazione dei nostri collaboratori”, argomentano Stefan

Götz e Michael Mohr. Poiché i prodotti complessi necessitano di una consulenza sempre maggiore e di un'assistenza sempre più efficiente, “abbiamo bisogno di persone specializzate”, affermano gli amministratori. Per questo l'azienda offre una formazione professionale per periti elettronici per sistemi e apparecchiature.

INFORMAZIONI-SUGGERIMENTI

L'IPC Embedded EL1035 è senza ventola. Il raffreddamento avviene tramite una tubatura per il calore che lo espelle dal case tramite il grande termodispersore. Il computer è disponibile a scelta con processore Celeron M-370 (1,5 GHz) o Pentium- M (1,8 GHz). Il sistema è dotato di un disco fisso da 40 Gbyte in alternativa alla versione Automotive che si trova fuori dall'effettivo case del PC e che è protetto dalla forte produzione di calore.



Industrial PCs



19" / 4U, mainboard version (ATX), 7 slots
 Intel® Celeron® to Core™ i7



PERFORMANCE

CPU (Intel® Embedded)	Core™ i3 / i5 / i7 Core™2 Duo / Quad Pentium® 4 / Dual Core Celeron®
System memory	1–32 GB
Power supply	400 Watt ATX, PFC optional: redundant

SYSTEM

Board system	ATX mainboard (Industrial Grade)
Chipset	Intel® Embedded Chipset
Expansion slots	max. 7 PCIe / PCI / ISA
Watchdog timer	on board
RAID	on board (0/1/5/10)
Ethernet	Gigabit Ethernet or 10/100 Mbit/s
Graphic	on board
Audio	on board

INTERFACES

RS-232	2–4 (min. 1 × external)
RS-422/485	optional
USB	front 2 rear 2–8
RJ-45 Ethernet	1–2
Parallel	optional
PS/2	2
Graphic	VGA (optional DVI)
Audio I/O	Mic/Line-in/Line-out

DRIVES

Harddisk	min. 250 GB, 3.5" S-ATA
Solid State Drive	optional: 2.5" SSD
Raid system	optional
CD/DVD ROM	optional
CD/DVD writer	optional
Drive bays	internal optional external 2 × 3.5" 3 × 5.25"

CONSTRUCTION

Dimensions (W × D × H)	483 × 450 × 177 mm
Material	heavy-duty steel sheet
Front	aluminium, lockable
Color	RAL 7035 (light grey) RAL 9005 (jet black)
Weight	ca. 15 kg
Cooling	front 120 × 120 mm fan exchangable filter rear optional: 60 × 60 mm
Controls	power, reset, control LEDs

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

19" / 4U, slot CPU card + backplane, 14 slots
 Intel® Celeron® to Core™ i7



PERFORMANCE

CPU (Intel® Embedded)	Core™ i3 / i5 / i7 Core™2 Duo / Quad Pentium® 4 / Dual Core Celeron®
System memory	1–4 GB
Power supply	400 Watt ATX, PFC

SLOT CPU CARD

Board system	PICMG slot CPU card (Industrial Grade)
Chipset	Intel® Embedded Chipset
Watchdog timer	on board
RAID	on board (0/1/5/10)
Ethernet	Gigabit Ethernet or 10/100 Mbit/s
Graphic	on board
Audio	on board

BACKPLANE

Expansion slots	max. 14 ISA / PCI / PCIe PICMG 1.0 / 1.3
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INTERFACES

RS-232	2–4
RS-422/485	optional
USB	front 2 rear optional
RJ-45 Ethernet	1–2
Parallel	optional
PS/2	2
Graphic	VGA
Audio I/O	optional

DRIVES

Harddisk	min. 250 GB, 3.5" S-ATA
Solid State Drive	optional: 2.5" SSD
Raid system	optional
CD/DVD ROM	optional
CD/DVD writer	optional
Drive bays	internal optional external 2 x 3.5" 3 x 5.25"

CONSTRUCTION

Dimensions (W x D x H)	483 x 450 x 177 mm
Material	heavy-duty steel sheet
Front	aluminium, lockable
Color	RAL 7035 (light grey) RAL 9005 (jet black)
Weight	ca. 15 kg
Cooling	front 120 x 120 mm fan exchangable filter rear optional: 60 x 60 mm
Controls	power, reset, control LEDs

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

19" / 4U, mainboard version (ATX), 7 slots

Intel® Celeron® to Core™ i7
with **IP54 protection** (front)



PERFORMANCE

CPU (Intel® Embedded)	Core™ i3 / i5 / i7 Core™2 Duo / Quad Pentium® 4 / Dual Core Celeron®
System memory	1–32 GB
Power supply	400 Watt ATX, PFC optional: redundant

SYSTEM

Board system	ATX mainboard (Industrial Grade)
Chipset	Intel® Embedded Chipset
Expansion slots	max. 7 PCIe / PCI / ISA
Watchdog timer	on board
RAID	on board (0/1/5/10)
Ethernet	Gigabit Ethernet or 10/100 Mbit/s
Graphic	on board
Audio	on board

INTERFACES

RS-232	2–4 (min. 1 × external)
RS-422/485	optional
USB	front 2 rear 2–8
RJ-45 Ethernet	1–2
Parallel	optional
PS/2	2
Graphic	VGA (optional DVI)
Audio I/O	Mic/Line-in/Line-out

DRIVES

Harddisk	min. 250 GB, 3.5" S-ATA
Solid State Drive	optional: 2.5" SSD
Raid system	optional
CD/DVD ROM	optional
CD/DVD writer	optional
Drive bays	internal optional external 2 × 3.5" 3 × 5.25"

CONSTRUCTION

Dimensions (W × D × H)	483 × 450 × 177 mm
Material	heavy-duty steel sheet
Front	aluminium, lockable
Color	RAL 7035 (light grey) RAL 9005 (jet black)
Weight	ca. 15 kg
Cooling	front 120 × 120 mm fan exchangable filter rear optional: 60 × 60 mm
Controls	power, reset, control LEDs

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

19" / 4U, slot CPU card + backplane, 14 slots
 Intel® Celeron® to Core™ i7
 with **IP54 protection** (front)



PERFORMANCE

CPU (Intel® Embedded)	Core™ i3 / i5 / i7 Core™2 Duo / Quad Pentium® 4 / Dual Core Celeron®
System memory	1–4 GB
Power supply	400 Watt ATX, PFC

SLOT CPU CARD

Board system	PICMG slot CPU card (Industrial Grade)
Chipset	Intel® Embedded Chipset
Watchdog timer	on board
RAID	on board (0/1/5/10)
Ethernet	Gigabit Ethernet or 10/100 Mbit/s
Graphic	on board
Audio	on board

BACKPLANE

Expansion slots	max. 14 ISA / PCI / PCIe PICMG 1.0 / 1.3
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INTERFACES

RS-232	2–4
RS-422/485	optional
USB	front 2 rear optional
RJ-45 Ethernet	1–2
Parallel	optional
PS/2	2
Graphic	VGA
Audio I/O	optional

DRIVES

Harddisk	min. 250 GB, 3.5" S-ATA
Solid State Drive	optional: 2.5" SSD
Raid system	optional
CD/DVD ROM	optional
CD/DVD writer	optional
Drive bays	internal optional external 2 x 3.5" 3 x 5.25"

CONSTRUCTION

Dimensions (W x D x H)	483 x 450 x 177 mm
Material	heavy-duty steel sheet
Front	aluminium, lockable
Color	RAL 7035 (light grey) RAL 9005 (jet black)
Weight	ca. 15 kg
Cooling	front 120 x 120 mm fan exchangable filter rear optional: 60 x 60 mm
Controls	power, reset, control LEDs

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

19" / 2U, mainboard version (ATX), 6 slots (low profile)



PERFORMANCE

CPU (Intel® Embedded)	Core™ i3 / i5 / i7 Core™2 Duo / Quad Pentium® 4 / Dual Core Celeron®
System memory	1–32 GB
Power supply	400 Watt ATX, PFC

SYSTEM

Board system	ATX mainboard (Industrial Grade)
Chipset	Intel® Embedded Chipset
Expansion slots	max. 6 (Low Profile) PCIe / PCI / ISA
Watchdog timer	on board
RAID	on board (0/1/5/10)
Ethernet	Gigabit Ethernet or 10/100 Mbit/s
Graphic	on board
Audio	on board

INTERFACES

RS-232	2 to 4 (min. 1 × external)
RS-422/485	optional
USB	front 2 rear 2 to 8
RJ-45 Ethernet	1 or 2
Parallel	optional
PS/2	2
Graphic	VGA (optional DVI)
Audio I/O	Mic/Line-in/Line-out

DRIVES

Harddisk	min. 160 GB, 3.5" S-ATA
Solid State Drive	optional: 2.5" SSD
Raid system	optional
CD/DVD ROM	optional
DVD writer	optional
Drive bays	internal 4 × 3.5" external 1 × 3.5" 1 × 5.25"

CONSTRUCTION

Dimensions (W × D × H)	481 × 471 × 88 mm
Material	heavy-duty steel sheet
Front	heavy-duty steel sheet, lockable
Color	RAL7032 (pebble grey) RAL9011 (graphite black)
Weight	12 kg approx.
Cooling	2 × 80 mm front ventilation exchangeable filter
Controls	power, reset, control LEDs

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



Mainboard version (ATX), 7 slots
 Intel® Celeron® to Core™ i7



PERFORMANCE

CPU (Intel® Embedded)	Core™ i3 / i5 / i7 Core™2 Duo / Quad Pentium® 4 / Dual Core Celeron®
System memory	1–32 GB
Power supply	400 Watt ATX, PFC optional: redundant

SYSTEM

Board system	ATX mainboard (Industrial Grade)
Chipset	Intel® Embedded Chipset
Expansion slots	max. 7 PCIe / PCI / ISA
Watchdog timer	on board
RAID	on board (0/1/5/10)
Ethernet	Gigabit Ethernet or 10/100 Mbit/s
Graphic	on board
Audio	on board

INTERFACES

RS-232	2–4 (min. 1 × external)
RS-422/485	optional
USB	front 2 rear 2–8
RJ-45 Ethernet	1–2
Parallel	optional
PS/2	2
Graphic	VGA (optional DVI)
Audio I/O	front Line-in/Line-out rear Mic/Line-in/Line-out

DRIVES

Harddisk	min. 250 GB, 3.5" S-ATA
Solid State Drive	optional: 2.5" SSD
Raid system	optional
CD/DVD ROM	optional
CD/DVD writer	optional
Drive bays	internal 2 × 3.5" external 3 × 5.25" 2 × 3,5"

CONSTRUCTION

Dimensions (W × D × H)	180 × 435 × 490 mm
Material	heavy-duty steel sheet
Color	RAL 9005 (jet black)
Weight	ca. 9 kg
Cooling	front 120 × 120 mm fan rear optional: 80 × 80 mm
Controls	power on/off

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

Mainboard version (ATX), 7 slots
Intel® Celeron® to Core™ i7



general example



PERFORMANCE

CPU (Intel® Embedded)	Core™ i3 / i5 / i7 Core™2 Duo / Quad Pentium® 4 / Dual Core Celeron®
System memory	1–32 GB
Power supply	400 Watt ATX, PFC optional: redundant

SYSTEM

Board system	ATX mainboard (Industrial Grade)
Chipset	Intel® Embedded Chipset
Expansion slots	max. 7 PCIe / PCI / ISA
Watchdog timer	on board
RAID	on board (0/1/5/10)
Ethernet	Gigabit Ethernet or 10/100 Mbit/s
Graphic	on board
Audio	on board

INTERFACES

RS-232	2–4 (min. 1 × external)
RS-422/485	optional
USB	2–8
RJ-45 Ethernet	1–2
Parallel	optional
PS/2	2
Graphic	VGA (optional DVI)
Audio I/O	Mic/Line-in/Line-out

DRIVES

Harddisk	min. 250 GB, 3.5" or 2.5" S-ATA max. 2 harddisks
Removable harddisk	optional: 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD
Raid system	optional
CD/DVD ROM	optional: slim type
CD/DVD writer	optional: slim type

CONSTRUCTION

Dimensions (W × D × H)	360 × 370 × 160 mm
Material	heavy-duty steel sheet
Color	RAL 7035 (light grey)
Weight	ca. 10 kg
Mounting	mounting bars (incl.) optional: 30 mm spacer
Cooling	1 × 120 mm fan 2 × 60 mm fan
Controls	power, reset, on/off, control LEDs

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping





Embedded IPCs



Embedded PC EmbeddedLine EL211x

Compact wallmount IPC, 1 or 2 PCI slots
Intel® Core™ i5 / i7 / Celeron



QM57
Intel® Chipset



- long term available
- customer specific adjustments in mechanics and design
- 1 or 2 PCI slots
- 0–50° C operating temperature
- 210 × 220 mm base area only



available mounting bars

PERFORMANCE

CPU (Intel® Embedded)	Core™ i5-520M (2 × 2,4 GHz) Core™ i7-620M (2 × 2,66 GHz) Celeron® P4500 (2 × 1,86 GHz)
System memory	1–8 GB DDR3
Power input	12–25 V _{DC}
Power supply	optional external, 100–240 V _{AC}

SYSTEM

Chipset	Intel® QM57
Expansion slots	EL2111 1 × PCI EL2112 2 × PCI
Watchdog Timer	on board
Ethernet	2 × Gigabit Ethernet Intel® 82577LM / Realtek® RTL8111C
WiFi (W-LAN)	optional
Graphic	integrated in CPU
Audio	on board Realtek® ALC262

INTERFACES

COM 1	external RS-232
COM 2	external RS-232
COM 3	(internal RS-232/422/485)
COM 4	(internal RS-232)
USB	4 (+ 4 internal)
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA, DVI-D
Other	Audio I/O

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA max. 2 Harddisks
Solid State Drive	optional: 2.5" SSD

CONSTRUCTION

Dimensions (w/d/h)	EL2111 210 × 220 × 105 mm EL2112 210 × 220 × 126 mm
Material	heavy-duty steel sheet
Color	RAL7035 others on request
Mounting	mounting bars plain or distant (optional)
Cooling	70 mm fan
Controls	power, reset, LEDs

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



Config. QM57 1.0

Errors and changes excepted

Embedded PC EmbeddedLine EL211x

Compact wallmount IPC, 1 or 2 PCI slots Intel® Atom™ D525



ICH8M
Intel® Chipset



- long term available
- customer specific adjustments in mechanics and design
- 1 or 2 PCI slots
- 0–50° C operating temperature
- 210 × 220 mm base area only



available mounting bars

PERFORMANCE

CPU	Intel® Atom D525 (2 × 1.8 GHz)
System memory	1–4 GB DDR3
Power input	12 V _{DC}
Power supply	optional external, 100–240 V _{AC}

SYSTEM

Chipset	Intel® ICH8M
Expansion slots	EL2111 1 × PCI EL2112 2 × PCI
Watchdog Timer	on board
Ethernet	2 × Gigabit Ethernet Intel® 82567V / 82583V
WiFi (W-LAN)	optional
Graphic	on board
Audio	on board

INTERFACES

COM 1	external RS-232
COM 2	external RS-232/422/485
COM 3	external RS-232
COM 4	(internal RS-232)
USB	4 (+ 4 internal)
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA
Other	Audio I/O

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA max. 2 Harddisks
Solid State Drive	optional: 2.5" SSD

CONSTRUCTION

Dimensions (w/d/h)	EL2111 210 × 220 × 105 mm EL2112 210 × 220 × 126 mm
Material	heavy-duty steel sheet
Color	RAL7035 others on request
Mounting	mounting bars plain or distant (optional)
Cooling	70 mm fan
Controls	power, reset, LEDs

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



Config. ICH8M 1.0

Errors and changes excepted

Compact wallmount IPC, 1 or 2 PCI slots
Intel® Atom™ N270



945GSE
Intel® Chipset



- long term available
- customer specific adjustments in mechanics and design
- 1 or 2 PCI slots
- 0–50° C operating temperature
- 210 × 220 mm base area only



available mounting bars

PERFORMANCE

CPU	Intel® Atom N270 (1.6 GHz)
System memory	1–2 GB DDR2
Power input	12–25 V _{DC}
Power supply	optional external, 100–240 V _{AC}

SYSTEM

Chipset	Intel® 945GSE, ICH7M
Expansion slots	EL2111 1 × PCI EL2112 2 × PCI
Watchdog Timer	on board
Ethernet	2 × Gigabit Ethernet
WiFi (W-LAN)	optional
Graphic	on board
Audio	on board

INTERFACES

COM 1	external RS-232
COM 2	external RS-232
COM 3	(internal RS-232/422/485)
COM 4	(internal RS-232)
USB	4 (+ 2 internal)
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out, DVI out
Other	Audio I/O

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA max. 2 Harddisks
Solid State Drive	optional: 2.5" SSD

CONSTRUCTION

Dimensions (w/d/h)	EL2111 210 × 220 × 105 mm EL2112 210 × 220 × 126 mm
Material	heavy-duty steel sheet
Color	RAL7035 others on request
Mounting	mounting bars plain or distant (optional)
Cooling	70 mm fan
Controls	power, reset, LEDs

QUALITY / TESTS

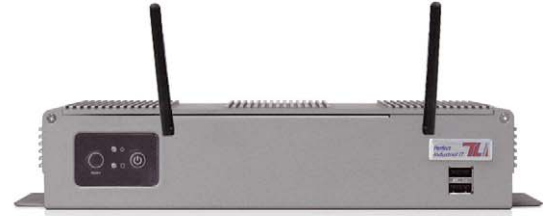
Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



Intel® **Atom™ D2550** (Dual Core)



Front view

- Optional:
- Wi-Fi (W-LAN) module
 - 3G module
 - 2 x antenna



NM10
Intel® Chipset

PERFORMANCE

CPU (Intel® Mobile)	Atom® D2550 (2 x 1.86 GHz)
System memory	1–4 GB DDR3
Power input	12 V _{DC}
	optional 9–36 V _{DC}
Power supply	extern, 100–240 V _{AC} (inkl.)

SYSTEM

Chipset	Intel® NM10
Ethernet	2 x Gigabit Ethernet, Broadcom® BCM57780
Wi-Fi (W-LAN)	optional Mini PCIe module
3G	optional Mini PCIe module
Graphic	on board
Audio	Realtek® ALC886

INTERFACES FRONT

USB	2
-----	---

INTERFACES REAR

RS 232	2 x external (1 x internal)
	optional 3 x external
RS 232/422/485	1 x external
USB	4
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out
Other	Audio I/O

DRIVES

Harddisk	min. 160 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

CONSTRUCTION

Maße (B x T x H)	264 x 192 x 57 mm
Material	aluminium
Mounting	wall-mount
Cooling	fanless
Kontrollelemente	power on/off, reset, control LEDs

QUALITY / TESTS

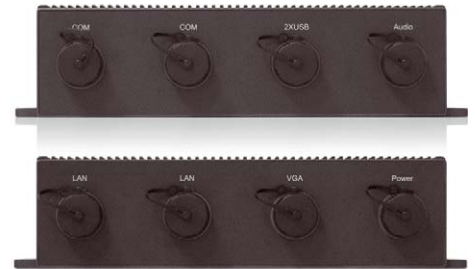
Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–45° C
Warranty	24 months

“READY-TO-RUN” OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



IP65 all around (incl. interfaces)
Intel® Atom™ D2550



NM10
Intel® Chipset



- rugged aluminium housing
- full IP65 protection
- IP65 protected interfaces and cables
- shock and vibration resistant
- Dual Gigabit Ethernet
- 9–36 V_{DC} power input
- isolation resistance 1500 V_{DC}

PERFORMANCE

CPU (Intel® Mobile)	Atom® D2550 (2 x 1.86 GHz)
System memory	1–4 GB DDR3
Power input	9–36 V _{DC}
Isolation resistance	1500 V _{DC}
Power supply	external 100–240 V _{AC} / 12 V _{DC} out (incl)
Power consumption	typ. 30 W

SYSTEM

Chipset	Intel® NM10
Ethernet	2 x Gigabit Ethernet, Broadcom® BCM57780
Graphic	on board
Audio	Realtek® ALC886

INTERFACES FRONT

(incl. cables with IP65-protected connectors)

RS 232	2
USB	2 (Y cable)
Audio	Mic / Line-in / Line-out
CAN-Bus	on request

INTERFACES REAR

(incl. cables with IP65-protected connectors)

RJ-45 Ethernet	2
Graphic	VGA out
Power	9–36 V _{DC} input

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

CONSTRUCTION

Maße (B x T x H)	256 x 223 x 63 mm
Material	aluminium
Color	black
Mounting	wall-mount
Cooling	fanless

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–45° C
Vibration (operating)	1 G rms / 5~500 Hz / X/Y/Z
Shock (operating)	15 G / 11 ms
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping





Panel IPCs



15" to 21.5" SlimLine WM xx-IC70-...
Intel® Core™ i5 / i7 / Celeron

HM55
Intel® Chipset



"-OF"
Openframe

"-PMA"
Panelmount
5 mm aluminium
RAL7035
incl. safety glass
IP65

"-PME"
Panelmount
3 mm stainless
satin stainless steel
incl. safety glass
IP65
(15"-19")

"-19"
19" / 8-9 U
3 mm steel
RAL7035
incl. safety glass
IP65
(15"-19")

PERFORMANCE

CPU (Intel® Mobile)	Celeron® P4500 (1.86 GHz) Core™ i5-520M (2 x 2.4 GHz) Core™ i7-620M (2 x 2.66 GHz)
System memory	1–8 GB DDR3
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (inkl.)

SYSTEM

Chipset	Intel® HM55
Expansion slots	1 x Mini PCIe (full size, USB interface) 1 x Mini PCIe (half size, USB interface)
Ethernet	2 x Gigabit Ethernet, Broadcom® BCM57780
Graphic	integrated in CPU
Audio	Realtek® ALC886, internal speaker

INTERFACES

RS-232	2 x external (1 x internal)
RS-232/422/485	1 x external
USB	4
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out
Other	Audio I/O

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

LCDs

15" (38,1 cm) 4:3	1024 x 768 (250 cd/m ² , 500:1)
17" (43,2 cm) 4:3	1280 x 1024 (350 cd/m ² , 1000:1)
19" (48,3 cm) 4:3	1280 x 1024 (400 cd/m ² , 1000:1)
21.5" (54,6 cm) 16:9, LED	1920 x 1080 (250 cd/m ² , 1000:1)
Touchscreen	optional resistive

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (galvanized)
Mounting	Openframe optional Panelmount Front (IP65) optional 19" Rackmount Front (IP65)
Cooling	CPU fan, chassis fan
Controls	Power on/off, reset, brightness adjust

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



Panel PC SlimLine (chassis)

15" to 21.5" SlimLine WM xx-IC70-CH Intel® Core™ i5 / i7 / Celeron

HM55
Intel® Chipset



Compact design,
rugged steel-sheet housing,
mounting with rear VESA
connector
(Fig. 15" and 19")

PERFORMANCE

CPU (Intel® Mobile)	Celeron® P4500 (1.86 GHz) Core™ i5-520M (2 x 2.4 GHz) Core™ i7-620M (2 x 2.66 GHz)
System memory	1–8 GB DDR3
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (inkl.)

SYSTEM

Chipset	Intel® HM55
Expansion slots	1 x Mini PCIe (full size, USB interface) 1 x Mini PCIe (half size, USB interface)
Ethernet	2 x Gigabit Ethernet, Broadcom® BCM57780
Graphic	integrated in CPU
Audio	Realtek® ALC886, internal speaker

INTERFACES

RS-232	2 x external (1 x internal)
RS-232/422/485	1 x external
USB	4
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out
Other	Audio I/O

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

LCDs

15" (38,1 cm) 4:3	1024 x 768 (250 cd/m ² , 500:1)
17" (43,2 cm) 4:3	1280 x 1024 (350 cd/m ² , 1000:1)
19" (48,3 cm) 4:3	1280 x 1024 (400 cd/m ² , 1000:1)
21.5" (54,6 cm) 16:9, LED	1920 x 1080 (250 cd/m ² , 1000:1)
Touchscreen	optional resistive

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (black coated)
Mounting	75 x 75 and 100 x 100 mm VESA connector
Cooling	CPU fan, chassis fan
Controls	Power on/off, reset, brightness adjust

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



10.4" to 19" SlimLine WM xx-ID70-..., fanless

Intel® Atom™ D2550

NM10
Intel® Chipset



“-OF”
Openframe



“-PMA” Panelmount	“-PMA” Panelmount	“-PME” Panelmount	“-19” 19" / 6-9 U
5 mm Aluminium RAL7035	10 mm Aluminium black	3 mm stainless steel	3 mm steel
incl. safety glass	incl. safety glass	satin stainless steel	incl. safety glass
IP65 (from 12")	IP65 (10.4")	IP65 (from 15")	IP65 (from 12")

PERFORMANCE

CPU (Intel® Mobile)	Atom® D2550 (2 x 1.86 GHz)
System memory	1-4 GB DDR3
Power input	12 V _{DC}
Power supply	external, 100-240 V _{AC} (inkl.)

SYSTEM

Chipset	Intel® NM10
Ethernet	2 x Gigabit Ethernet, Broadcom® BCM57780
WiFi (W-LAN)	optional
3G	optional
Graphic	on board
Audio	Realtek® ALC886, internal speaker

INTERFACES

RS-232	2 x external (1 x internal)
RS-232/422/485	1 x external
USB	4 x USB 2.0
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out
Other	Audio I/O

DRIVES

Harddisk	min. 160 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

LCDs (4:3)

10.4" (26,4 cm)	800 x 600 (350 cd/m ² , 500:1)
12.1" (30,7 cm)	800 x 600 (400 cd/m ² , 500:1)
15" (38,1 cm)	1024 x 768 (250 cd/m ² , 500:1)
17" (43,2 cm)	1280 x 1024 (300 cd/m ² , 800:1)
19" (48,3 cm)	1280 x 1024 (300 cd/m ² , 800:1)
Backlight	CCFL
Touchscreen	optional: resistive

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (galvanized)
Mounting	Openframe
	optional Panelmount Front (IP65)
	optional 19" Rackmount Front (IP65)
Cooling	fanless
Controls	Power on/off, reset, brightness adjust

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0-45° C
Warranty	24 months

“READY-TO-RUN” OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

Panel PC

SlimLine with PCI expansion slot (built-in)

15" to 19" SLWM xx-ID70-PCI-...

Intel® Atom™ D2550

1 x PCI

NM10
Intel® Chipset



"-OF"
Openframe

"-PMA"
Panelmount
5 mm Aluminium
RAL7035
incl. safety glass
IP65

"-PME"
Panelmount
3 mm stainless
satin stainless steel
incl. safety glass
IP65

"-19"
19" / 6-9 U
3 mm steel
RAL7035
incl. safety glass
IP65

PERFORMANCE

CPU (Intel® Mobile)	Atom® D2550 (2 x 1.86 GHz)
System memory	1-4 GB DDR3
Power input	12 V _{DC}
Power supply	external, 100-240 V _{AC} (incl.)

SYSTEM

Chipset	Intel® NM10
Expansion slots	1 x PCI
Ethernet	2 x Gigabit Ethernet, Broadcom® BCM57780
WiFi (W-LAN)	optional
3G	optional
Graphic	on board
Audio	Realtek® ALC886, internal speaker

INTERFACES

RS-232	2 x external (1 x internal)
RS-232/422/485	1 x external
USB	4
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out
Other	Audio I/O

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

LCDs (4:3)

15" (38,1 cm)	1024 x 768 (250 cd/m ² , 500:1)
17" (43,2 cm)	1280 x 1024 (300 cd/m ² , 800:1)
19" (48,3 cm)	1280 x 1024 (300 cd/m ² , 800:1)
Touchscreen	optional: resistive

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (galvanized)
Mounting	Openframe optional Panelmount Front (IP65) optional 19" Rackmount Front (IP65)
Cooling	fanless
Controls	Power on/off, reset, brightness adjust

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0-45° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

10.4" to 19" SlimLine WM xx-ID70-CH, fanless
Intel® Atom™ D2550

NM10
Intel® Chipset



Compact design, rugged steel-sheet housing, mounting with rear VESA connector (Fig. 15")

Display sizes from 10.4" to 19"

PERFORMANCE

CPU (Intel® Mobile)	Atom® D2550 (2 x 1.86 GHz)
System memory	1–4 GB DDR3
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (inkl.)

SYSTEM

Chipset	Intel® NM10
Ethernet	2 x Gigabit Ethernet, Broadcom® BCM57780
WiFi (W-LAN)	optional
3G	optional
Graphic	on board
Audio	Realtek® ALC886, internal speaker

INTERFACES

RS-232	2 x external (1 x internal)
RS-232/422/485	1 x external
USB	4 x USB 2.0
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out
Other	Audio I/O

DRIVES

Harddisk	min. 160 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

LCDs (4:3)

10.4" (26,4 cm)	800 x 600 (350 cd/m ² , 500:1)
12.1" (30,7 cm)	800 x 600 (400 cd/m ² , 500:1)
15" (38,1 cm)	1024 x 768 (250 cd/m ² , 500:1)
17" (43,2 cm)	1280 x 1024 (300 cd/m ² , 800:1)
19" (48,3 cm)	1280 x 1024 (300 cd/m ² , 800:1)
Backlight	CCFL
Touchscreen	optional: resistive

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (black coated)
Mounting	75 x 75 and 100 x 100 mm VESA connector
Cooling	fanless
Controls	Power on/off, reset, brightness adjust

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–45° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



10" to 22" (16:9 / 16:10) SlimLine WM xxW-ID70-CH, fanless
Intel® Atom™ D2550

NM10
Intel® Chipset



Compact design,
rugged steel-sheet housing,
mounting with rear VESA
connector
(Similar picture)

PERFORMANCE

CPU (Intel® Mobile)	Atom® D2550 (2 x 1.86 GHz)
System memory	1–4 GB DDR3
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (inkl.)

SYSTEM

Chipset	Intel® NM10
Ethernet	2 x Gigabit Ethernet, Broadcom® BCM57780
WiFi (W-LAN)	optional
3G	optional
Graphic	on board
Audio	Realtek® ALC886, internal speaker

INTERFACES

RS-232	10.1" 1 x external (2 x internal) ≥ 15.6" 2 x external (1 x internal)
RS-232/422/485	1 x external
USB	10.1" 2 ≥ 15.6" 4
RJ-45 Ethernet	2
PS/2	≥ 15.6" 2
Graphic	VGA out
Other	≥ 15.6" Audio I/O

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

LCDs

10.1" (25,7 cm) 16:9	1024 x 600 (250 cd/m ² , 500:1)
15.6" (39,5 cm) 16:9	1366 x 768 (300 cd/m ² , 500:1)
17" (43,2 cm) 16:10	1440 x 900 (250 cd/m ² , 800:1)
19" (48,3 cm) 16:10	1440 x 900 (300 cd/m ² , 1000:1)
21.5" (54,6 cm) 16:9, LED	1920 x 1080 (250 cd/m ² , 1000:1)
Touchscreen	optional resistive

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (black coated)
Mounting	10.1" 75 x 75 mm ≥ 15.6" 75 x 75 and 100 x 100 mm VESA connector
Cooling	CPU fan, chassis fan
Controls	Power on/off, reset, brightness adjust

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

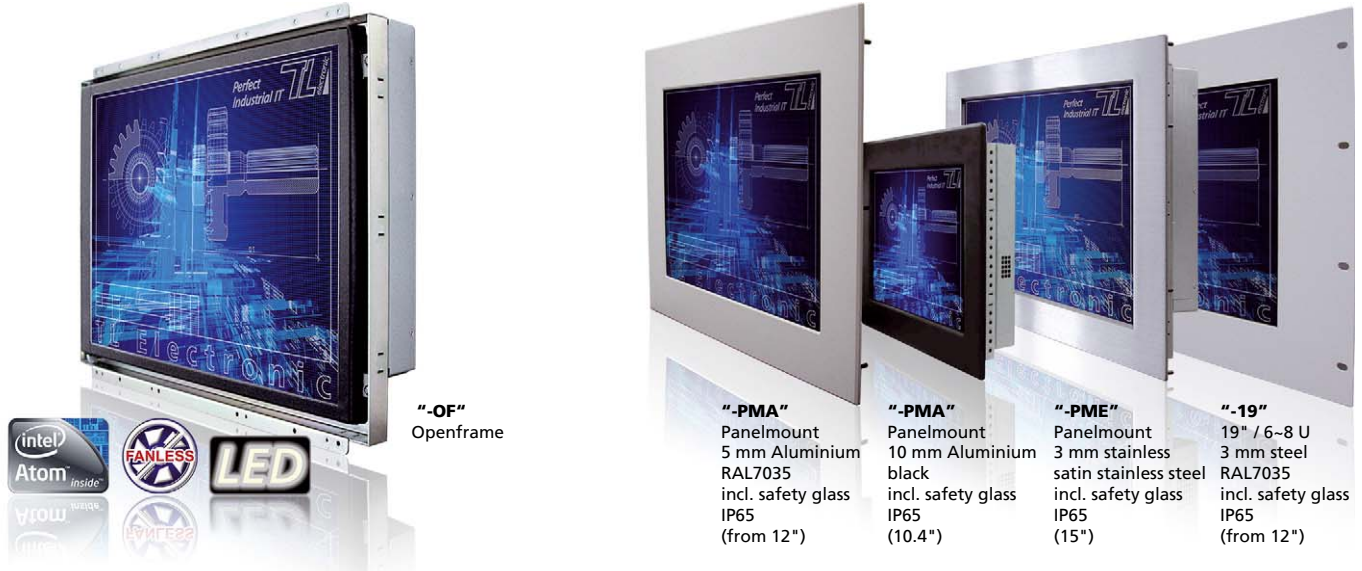
- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



Panel PC

SlimLine WM Atom Z + LED Backlight (built-in)

8.4" to 15" SlimLine WM xxL-I930-...



"-OF"
Openframe

"-PMA"
Panelmount
5 mm Aluminium
RAL7035
incl. safety glass
IP65
(from 12")

"-PMA"
Panelmount
10 mm Aluminium
black
incl. safety glass
IP65
(10.4")

"-PME"
Panelmount
3 mm stainless steel
satin stainless steel
incl. safety glass
IP65
(15")

"-19"
19" / 6~8 U
3 mm steel
RAL7035
incl. safety glass
IP65
(from 12")

Atom Z + LED Backlight

- brighter LCDs
- slim design: e.g. 52 instead of 78 mm (15")
- lower heat development
- lower power consumption ...

Power consumption (CPU + Chip, LCD)

Atom N270 + 945GSE	Atom Z530 + US15W
12.5 W	4.5 W
CCFL Backlight (15")	LED Backlight (15")
25 W	15 W

PERFORMANCE

CPU	Intel® Atom Z530 (1.6 GHz)
System memory	1 GB DDR2 SO-DIMM
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (incl.)

SYSTEM

Chipset	Intel® US15W XL
Watchdog timer	256 Level
Ethernet	2 x Gigabit Ethernet, Realtek® RTL8111B
Graphic	Intel® GMA 500
Audio	VIA VT1708A, internal speaker

INTERFACES

RS-232	from 10.4" optional: 1 x external from 12.1" optional: 2 x external
USB	2
RJ-45 Ethernet	2
Graphic	VGA out
Other	optional: SD Card Slot

DRIVES

Solid State Drive	Mini PCIe SSD 4 / 8 / 16 GB
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LCDs (4:3)

8.4" (21,3 cm)	800 × 600 (400 cd/m ² , 500:1)
10.4" (26,4 cm)	800 × 600 (400 cd/m ² , 500:1)
12.1" (30,7 cm)	800 × 600 (450 cd/m ² , 700:1)
15" (38,1 cm)	1024 × 768 (350 cd/m ² , 750:1)
Backlight	LED
Touchscreen	optional: resistive ELO or Premier

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (galvanized)
Mounting	Openframe optional Panelmount Front (IP65) optional 19" Rackmount Front (IP65)
IP65 protection	optional
Cooling	fanless

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–45° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

Panel PC

SlimLine WM Atom Z + LED Backlight (Chassis)

8.4" to 15" SlimLine WM xxL-I930-CH

Atom Z + LED Backlight

- brighter LCDs
- slim design: e.g. 69 instead of 79 mm (15")
- lower heat development
- lower power consumption ...

Power consumption (CPU + Chip, LCD)

Atom N270 + 945GSE	Atom Z530 + US15W
12.5 W	4.5 W
CCFL Backlight (15")	LED Backlight (15")
25 W	15 W



Compact design, rugged steel-sheet housing, mounting with rear VESA connector

PERFORMANCE

CPU	Intel® Atom Z530 (1.6 GHz)
System memory	1 GB DDR2 SO-DIMM
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (incl.)

SYSTEM

Chipset	Intel® US15W XL
Watchdog timer	256 Level
Ethernet	2 × Gigabit Ethernet, Realtek® RTL8111B
Graphic	Intel® GMA 500
Audio	VIA VT1708A, internal speaker

INTERFACES

RS-232	from 10.4" optional: 1 × external from 12.1" optional: 2 × external
USB	2
RJ-45 Ethernet	2
Graphic	VGA out
Other	optional: SD Card Slot

DRIVES

Solid State Drive	Mini PCIe SSD 4 / 8 / 16 GB
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LCDs (4:3)

8.4" (21,3 cm)	800 × 600 (400 cd/m ² , 500:1)
10.4" (26,4 cm)	800 × 600 (400 cd/m ² , 500:1)
12.1" (30,7 cm)	800 × 600 (450 cd/m ² , 700:1)
15" (38,1 cm)	1024 × 768 (350 cd/m ² , 700:1)
Backlight	LED
Touchscreen	optional: resistive ELO or Premier

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (black coated)
Mounting	75 × 75 mm VESA connector from 15" 100 × 100 mm additional
Cooling	fanless

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–45° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

Panel PC

SlimLine WM with Core 2 Technology (built-in)

8.4" to 19" SlimLine WM xx-I771-...



"-OF"
Openframe



"-PMA"
Panelmount
5 mm Aluminium
RAL7035
incl. safety glass
IP65
(from 12")

"-PMA"
Panelmount
10 mm Aluminium
black
incl. safety glass
IP65
(to 10.4")

"-PME"
Panelmount
3 mm stainless
satin stainless steel
incl. safety glass
IP65
(from 15")

"-19"
19" / 6-9 U
3 mm steel
RAL7035
incl. safety glass
IP65
(from 12")

PERFORMANCE

CPU (Intel® Mobile)	Celeron M 575 (2 GHz) Core 2 Duo T6500 (2 x 2.1 GHz) Core 2 Duo P8400 (2 x 2.26 GHz)
System memory	1-4 GB DDR2
Power input	12 V _{DC}
Power supply	external, 100-240 V _{AC} (incl.)

SYSTEM

Chipset	Intel® GM45 / ICH9M-E
Ethernet	2 x Gigabit Ethernet, Intel® 82574L + 82567LM
Graphic	Intel® GMA4500 MHD
Audio	VIA® VT1708A, internal speaker

INTERFACES

RS-232	2 x external (1 x internal)
RS-232/422/485	1 x external
USB	4
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out
Other	from 10.4" Audio I/O

DRIVES

Harddisk	min. 160 GB, 2.5" 5-ATA
Solid State Drive	optional: 2.5" SSD

LCDs (4:3)

8.4" (21,3 cm)	800 x 600 (350 cd/m ² , 250:1)
10.4" (26,4 cm)	800 x 600 (350 cd/m ² , 500:1)
12.1" (30,7 cm)	800 x 600 (300 cd/m ² , 800:1)
15" (38,1 cm)	1024 x 768 (250 cd/m ² , 700:1)
17" (43,2 cm)	1280 x 1024 (300 cd/m ² , 800:1)
19" (48,3 cm)	1280 x 1024 (300 cd/m ² , 800:1)
Backlight	CCFL
Touchscreen	optional: resistive ELO or Premier

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (galvanized)
Mounting	Openframe optional Panelmount Front (IP65) optional 19" Rackmount Front (IP65)
Cooling	CPU fan, chassis fan
Controls	Power on/off, reset, brightness adjust

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0-50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping



Panel PC

SlimLine WM with Core 2 Technology (Chassis)

8.4" to 19" SlimLine WM xx-I771-CH



Compact design, rugged steel-sheet housing, mounting with rear VESA connector (Fig. 15")

Display sizes from 8.4" to 20"

PERFORMANCE

CPU (Intel® Mobile)	Celeron M 575 (2 GHz) Core 2 Duo T6500 (2 x 2.1 GHz) Core 2 Duo P8400 (2 x 2.26 GHz)
System memory	1–4 GB DDR2
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (incl.)

SYSTEM

Chipset	Intel® GM45 / ICH9M-E
Ethernet	2 x Gigabit Ethernet, Intel® 82574L + 82567LM
Graphic	Intel® GMA4500 MHD
Audio	VIA® VT1708A, internal speaker

INTERFACES

RS-232	2 x external (1 x internal)
RS-232/422/485	1 x external
USB	4
RJ-45 Ethernet	2
PS/2	2
Graphic	VGA out
Other	from 10.4" Audio I/O

DRIVES

Harddisk	min. 160 GB, 2.5" 5-ATA
Solid State Drive	optional: 2.5" SSD

LCDs (4:3)

8.4" (21,3 cm)	800 x 600 (350 cd/m ² , 250:1)
10.4" (26,4 cm)	800 x 600 (350 cd/m ² , 500:1)
12.1" (30,7 cm)	800 x 600 (300 cd/m ² , 800:1)
15" (38,1 cm)	1024 x 768 (250 cd/m ² , 700:1)
17" (43,2 cm)	1280 x 1024 (300 cd/m ² , 800:1)
19" (48,3 cm)	1280 x 1024 (300 cd/m ² , 800:1)
Backlight	CCFL
Touchscreen	optional: resistive ELO or Premier

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (black coated)
Mounting	75 x 75 mm VESA connector from 15" 100 x 100 mm additional
Cooling	CPU fan, chassis fan
Controls	Power on/off, reset, brightness adjust

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

Panel PC

SLWM with PC Module (OPS Standard)

21.5" to 46" (16:9) SLWM xxW-OPS-QM67 (Core™ i5 / i3)



Full industrial grade in big screen format: rugged steel sheet chassis with optional touchscreen or non-reflecting protective glass.



The PC module extends the TFT-LCD industrial monitor to a panel PC and complies with Intel's OPS standard (Open Pluggable Specification) to provide multi-vendor capability. OPS PC modules are also compatible with other manufacturers' monitors.

TFT-LCD (16:9)

21.5" (54,6 cm), LED	1920 × 1080 (250 cd/m ² , 1000:1)
24" (61 cm), LED	1920 × 1080 (300 cd/m ² , 3000:1)
42" (107 cm)	1920 × 1080 (450 cd/m ² , 4000:1)
46" (117 cm)	1920 × 1080 (400 cd/m ² , 4000:1)
Touchscreen	21.5" optional resistive ≥ 42" optional SAW
Protection glass	optional (non-reflecting)

PC MODULE

System Specification	see datasheet following pages
Interface	Intel® OPS (Open Pluggable Specification) OPS connector JAE 80-Pin

INTERFACES (TFT-LCD MONITOR)

VGA	1 × in ≥ 42" 1 × out
DVI-D	1 × in
HDMI	≥ 42" 1 × in
Video	≥ 42" Component (Pr / Pb / Y) in ≥ 42" Composite (PAL / NTSC) in + out ≥ 42" S-Video in
Audio	internal speakers 1 × TRS (3,5 mm) in ≥ 42" 2 × RCA (L / R) in ≥ 42" 1 × RCA (L / R) out ≥ 42" speakers (L / R) out
Remote control	≥ 42" RS-232 in + out ≥ 42" RJ-45

POWER

Power input	21.5" 12 V _{DC} 24" 24 V _{DC} ≥ 42" 110–230 V _{AC}
Power supply	≤ 24" external, 100–240 V _{AC} (incl.) ≥ 42" internal
Power cons. (typ.)	21.5" 86 W 24" 95 W 42" 182 W 46" 187 W

CONSTRUCTION

Dimensions and weight	see datasheet following pages
Material	heavy-duty steel (black coated)
Mounting	VESA connector optional: wall mount kit
Cooling	active ventilation

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

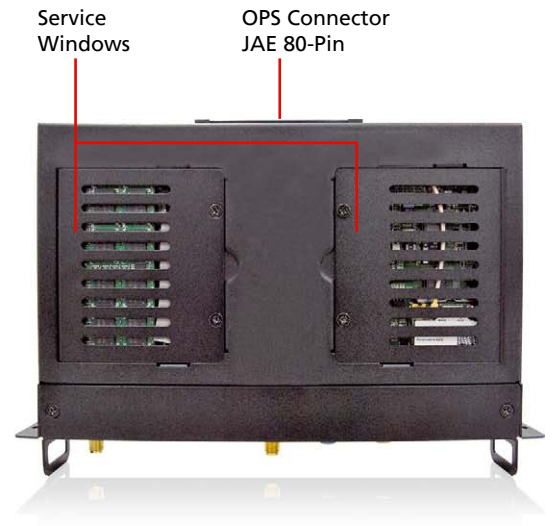
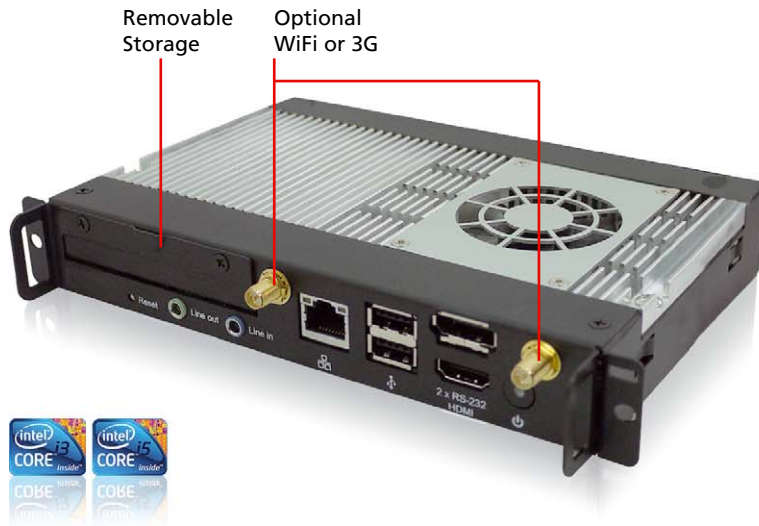
"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

Panel PC

SLWM with PC Module (OPS Standard)

PC Module: OPS-QM67 (Core™ i5 / i3)



Easy maintenance: The OPS PC module allows quick installation and removal without dismounting the whole LCD monitor. System components such as harddisk and memory can be accessed quick and easily.

PERFORMANCE

CPU (Intel® Mobile)	Core™ i5-2515E (2 x 2,5 GHz) Core™ i3-2310E (2 x 2,1 GHz)
System memory	2–4 GB DDR3
Power input	12–19 V _{DC} (via OPS connector)

SYSTEM

Chipset	Intel® QM67
Ethernet	1 x Gigabit Ethernet, Intel® 82579 LM
WiFi (W-LAN)	optional 802.11b/g/n
3G	optional (no WiFi)
Audio	Realtek® ALC886
PC module specification	Intel® OPS (Open Pluggable Specification)

DRIVES

Harddisk	min. 160 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

INTERFACES

RS-232	optional 2 x (via DisplayPort to RS-232 connector)
USB 2.0	2 x
RJ-45 Ethernet	1 x
HDMI	1 x out
Audio	1 x TRS (3,5 mm) in 1 x TRS (3,5 mm) out
OPS connector	JAE 80-Pin

Panel PC

SLWM with PC Module (OPS Standard)

21.5" to 46" (16:9) SLWM xxW-OPS-NM10 (Atom D2550)



Full industrial grade in big screen format: rugged steel sheet chassis with optional touchscreen or non-reflecting protective glass.



The PC module extends the TFT-LCD industrial monitor to a panel PC and complies with Intel's OPS standard (Open Pluggable Specification) to provide multi-vendor capability. OPS PC modules are also compatible with other manufacturers' monitors.

TFT-LCD (16:9)

21.5" (54,6 cm), LED	1920 × 1080 (250 cd/m ² , 1000:1)
24" (61 cm), LED	1920 × 1080 (300 cd/m ² , 3000:1)
42" (107 cm)	1920 × 1080 (450 cd/m ² , 4000:1)
46" (117 cm)	1920 × 1080 (400 cd/m ² , 4000:1)
Touchscreen	21.5" optional resistive ≥ 42" optional SAW
Protection glass	optional (non-reflecting)

PC MODULE

System Specification	see datasheet following pages
Interface	Intel® OPS (Open Pluggable Specification) OPS connector JAE 80-Pin

INTERFACES (TFT-LCD MONITOR)

VGA	1 × in ≥ 42" 1 × out
DVI-D	1 × in
HDMI	≥ 42" 1 × in
Video	≥ 42" Component (Pr / Pb / Y) in ≥ 42" Composite (PAL / NTSC) in + out ≥ 42" S-Video in
Audio	internal speakers 1 × TRS (3,5 mm) in ≥ 42" 2 × RCA (L / R) in ≥ 42" 1 × RCA (L / R) out ≥ 42" speakers (L / R) out
Remote control	≥ 42" RS-232 in + out ≥ 42" RJ-45

POWER

Power input	21.5" 12 V _{DC} 24" 24 V _{DC} ≥ 42" 110–230 V _{AC}
Power supply	≤ 24" external, 100–240 V _{AC} (incl.) ≥ 42" internal
Power cons. (typ.)	21.5" 77 W 24" 86 W 42" 173 W 46" 178 W

CONSTRUCTION

Dimensions and weight	see datasheet following pages
Material	heavy-duty steel (black coated)
Mounting	VESA connector optional: wall mount kit
Cooling	active ventilation

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

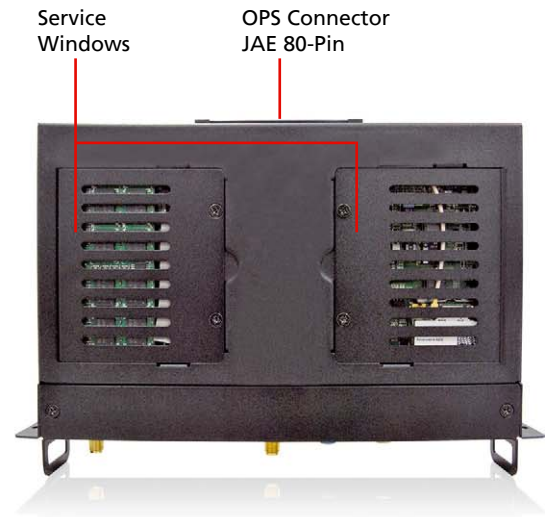
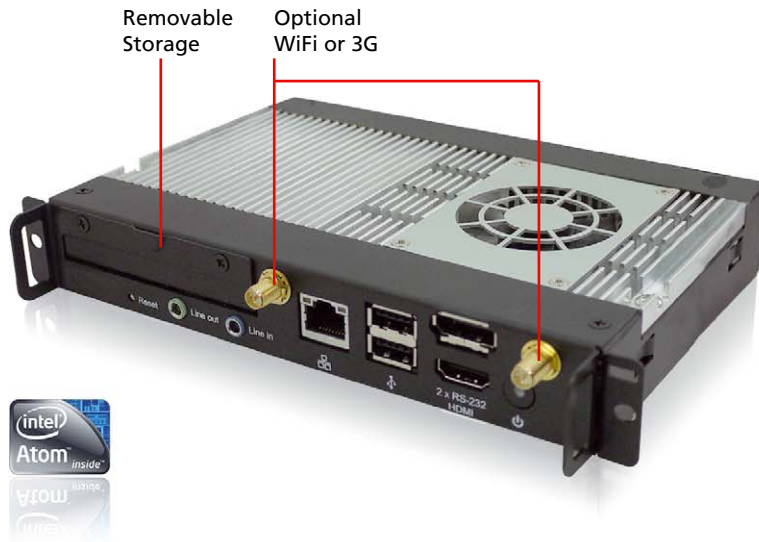
"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping

Panel PC

SLWM with PC Module (OPS Standard)

PC Module: OPS-NM10 (Atom D2550)



Easy maintenance: The OPS PC module allows quick installation and removal without dismounting the whole LCD monitor. System components such as harddisk and memory can be accessed quick and easily.

PERFORMANCE

CPU (Intel® Mobile)	Atom® D2550 (2 x 1.86 GHz)
System memory	1–4 GB DDR3
Power input	12–19 V _{DC} (via OPS connector)

SYSTEM

Chipset	Intel® NM10
Ethernet	1 x Gigabit Ethernet, Broadcom® BCM57780
WiFi (W-LAN)	optional 802.11b/g/n
3G	optional (no WiFi)
Audio	Realtek® ALC886
PC module specification	Intel® OPS (Open Pluggable Specification)

DRIVES

Harddisk	min. 160 GB, 2.5" S-ATA
Solid State Drive	optional: 2.5" SSD

INTERFACES

RS-232	optional 2 x (via DisplayPort to RS-232 connector)
USB 2.0	2 x
RJ-45 Ethernet	1 x
HDMI	1 x out
Audio	1 x TRS (3,5 mm) in 1 x TRS (3,5 mm) out
OPS connector	JAE 80-Pin

5.7" (14,5 cm) to 10.4" (26,4 cm) Touchscreen LCD



Panel mount front (incl.)
6 mm aluminium (black)
fixed by rear clamp screws:



Industrial Panel PC for HMI applications:

- Touchscreen incl.
- LED backlight (except 7")
- fanless low-power system
- Solid State Drive

PERFORMANCE

CPU	Intel® Atom Z510 (1.1 GHz)
System memory	512–2048 MB DDR2 SO-DIMM
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (incl.)
Power consumption	5.7" 18 W max.
	7" 21 W max.
	10.4" 26 W max.
	10" 19 W max.

SYSTEM

Chipset	Intel® US15W XL
Ethernet	2 × Gigabit Ethernet, Realtek® RTL8111B

INTERFACES

RS-232	1
RS-232/422/485	1 (RS-485 default)
USB	2
RJ-45 Ethernet	2
Graphic	VGA out
CAN BUS	optional

DRIVES

Solid State Drive	min. 4 GB Mini PCIe SSD
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OPERATING SYSTEM (OPTIONAL)

Windows CE / XP / XP Embedded / 7 / 7 Embedded, LINUX 2.6.24 (Ubuntu)

LCDs

5.7" (14,5 cm) 4:3	640 × 480 (220 cd/m ² , 300:1)
7" (17,8 cm) 16:9	800 × 480 (300 cd/m ² , 300:1)
10.4" (26,4 cm) 4:3	800 × 600 (500 cd/m ² , 500:1)
10" (25,4 cm) 16:9	1024 × 600 (250 cd/m ² , 500:1)
Backlight	LED (5.7", 10", 10.4") CCFL (7")
Touchscreen	resistive 4-wire (incl.)

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (galvanized)
Front	6 mm aluminium (black coated)
Mounting	panel mount
Cooling	fanless

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months

Panel PC for HMI applications

HMI xx-SA20 ARM11 architecture

5.7" (14,5 cm) and 7" (17,8 cm) Touchscreen LCD



Panel mount front (incl.)
6 mm aluminium (black)
fixed by rear clamp screws:



Industrial Panel PC for HMI applications:

- Touchscreen incl.
- LED backlight (except 7")
- fanless low-power system
- Solid State Drive

PERFORMANCE

CPU	SAMSUNG® ARM 11 Series S3C6410 (667 MHz) on board
System memory	128 MB DDR-266 on board
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (incl.)
Power consumption	5.7" 9 W max. 7" 12 W max.

SYSTEM

Chipset	ARM 11 Series (1176)
Ethernet	10/100 Mbit/s Ethernet, DAVICOM® DM9000B

INTERFACES

RS-232	1
RS-232/485	1
USB	2 × type A 1.1 (Host) 1 × Mini USB (Client)
RJ-45 Ethernet	1

DRIVES

Solid State Drive	256 MB NAND-Flash on board SD Card Slot
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OPERATING SYSTEM (OPTIONAL)

Windows CE 6.0, LINUX 2.6.24 (Ubuntu)

LCDs

5.7" (14,5 cm) 4:3	640 × 480 (220 cd/m ² , 300:1)
7" (17,8 cm) 16:9	800 × 480 (350 cd/m ² , 300:1)
Backlight	LED (5.7") CCFL (7")
Touchscreen	resistive 4-wire (incl.)

CONSTRUCTION

Dimensions	see datasheet page 2
Material	heavy-duty steel (galvanized)
Front	6 mm aluminium (black coated)
Mounting	panel mount
Cooling	fanless

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–50° C
Warranty	24 months



15" to 21.5" SLWM xx-ID32-ES
Intel® Atom™ D2550

NM10
Intel® Chipset



- 15" to 21.5" TFT-LCD
- Touchscreen optional
- extremely rugged stainless steel housing
- fanless design, IP65 protected all around incl. interfaces



The extremely rugged, easy to clean stainless steel housing is protected against dirt and water, all interfaces included, according to IP65. (Cables with IP65-protected connectors are included)

Perfect for applications in: food industry, process engineering, pharmaceutical industry, medical technology, plant construction etc.

PERFORMANCE

CPU (Intel® Mobile)	Atom® D2550 (2 x 1.86 GHz)
System memory	1–4 GB DDR3
Power input	12 V _{DC}
Power supply	external, 100–240 V _{AC} (inkl.)

SYSTEM

Chipset	Intel® NM10
Ethernet	1 x Gigabit Ethernet
Graphic	integrated

INTERFACES (incl. cables with IP65-protected connectors)

RS-232	1
USB	2 (via Y-cable)
RJ-45 Ethernet	1
Power	12 V _{DC} input

DRIVES

Harddisk	min. 250 GB, 2.5" S-ATA
Solid State Drive	min. 16 GB, 2.5" SSD

LCDs

15" (38,1 cm) 4:3	1024 x 768 (250 cd/m ² , 700:1)
17" (43,2 cm) 4:3	1280 x 1024 (350 cd/m ² , 1000:1)
19" (48,3 cm) 4:3	1280 x 1024 (400 cd/m ² , 1000:1)
21.5" (54,6 cm) 16:9, LED	1920 x 1080 (250 cd/m ² , 1000:1)
Touchscreen	optional resistive

CONSTRUCTION

Dimensions	see datasheet page 2
Material	stainless steel
Mounting	VESA connector
Cooling	fanless
Controls	rear: power, reset

QUALITY / TESTS

Burn-in stress test	min. 24 hours
Production	ESD protected
Quality management	according to ISO 9001:2008
Environmental management	according to ISO 14001:2004
Operating temperature	0–45° C
Warranty	24 months

"READY-TO-RUN" OPTIONS

- Installation of operating systems, supplied software or images
- Integration of supplied components
- Customer specific tests procedures, labeling and shipping





Industrial LCDs



TL Electronic GmbH – since 1983

TFT LCD Industrial Monitor

WM xx-... (built-in)



10.4" to 19" (4:3)



"-OF"
Openframe

"-PMA"
Panelmount
5 mm Aluminium
RAL7035
incl. safety glass
IP65
(12"-19")

"-19"
19" / 6-9 U
3 mm steel
RAL7035
incl. safety glass
(opt. w/o holes)
(12"-19")

LCDs	10.4" (26,4 cm) 4:3	12.1" (30,7 cm) 4:3	15" (38,1 cm) 4:3
Model Name	WM 10-V-OF	WM 12-V-OF	WM 15-VDP-OF
Resolution	800 × 600	800 × 600	1024 × 768
Brightness (typ.)	400 cd/m ²	400 cd/m ²	250 cd/m ²
Contrast Ratio (typ.)	500 : 1	500 : 1	500 : 1
Display Color	260k	262k	16.2M
Viewing Angle H / V (typ.)	-70°~70° / -55°~65°	-70°~70° / -50°~60°	-70°~70° / -60°~60°
Power Consumption (typ.)	18 W	15 W	25 W
Dimensions (W × H × D)	260 × 215 × 38 mm	300 × 250 × 38 mm	358 × 292 × 48 mm

	17" (43,2 cm) 4:3	19" (48,3 cm) 4:3
Model Name	WM 17-VDP-OF	WM 19-VDP-OF
Resolution	1280 × 1024	1280 × 1024
Brightness (typ.)	350 cd/m ²	400 cd/m ²
Contrast Ratio (typ.)	1000 : 1	1000 : 1
Display Color	16.7M	16.7M
Viewing Angle H / V (typ.)	-85°~85° / -80°~80°	-80°~80° / -80°~80°
Power Consumption (typ.)	32 W	35 W
Dimensions (W × H × D)	410 × 330 × 58 mm	445 × 355 × 55 mm

GENERAL DATA

Touchscreen	optional	ELO resistive (RS-232C or USB)
	optional	Premier resistive (RS-232C or USB)
Backlight		CCFL
Power input		12 V _{DC}
Power supply		external, 100–240 V _{AC} (incl.)
Power management		VESA DPMS compliant
Plug and Play		VESA DDC 1/2B
Operating temperature		0°–50° C

SIGNAL INPUT

VGA		15-pin D-sub
DVI		incl.
Composite (PAL/NTSC)	≥ 15"	optional
	≤ 12"	incl.
	≥ 15"	incl.
S-Video		optional

CONSTRUCTION

Drawings		see datasheet page 2
Material		heavy-duty steel (galvanized)
Mounting		Openframe
	optional	Panelmount Front (IP65)
	optional	19" Rackmount Front

Version 1.1

Errors and changes excepted



TL Electronic GmbH – since 1983

TFT LCD Industrial Monitor

WM xxL-... (built-in)



15" to 19" (4:3) with LED backlight



"-OF"
Openframe

"-PMA"
Panelmount
5 mm Aluminium
RAL7035
incl. safety glass
IP65
(12"-19")

"-19"
19" / 6-9 U
3 mm steel
RAL7035
incl. safety glass
(opt. w/o holes)
(12"-19")

LCDs	10.4" (26,4 cm) 4:3	12.1" (30,7 cm) 4:3	15" (38,1 cm) 4:3
Model Name	WM 10L-V-OF	WM 12L-V-OF	WM 15L-VDP-OF
Resolution	800 × 600	800 × 600	1024 × 768
Brightness (typ.)	400 cd/m ²	450 cd/m ²	350 cd/m ²
Contrast Ratio (typ.)	500 : 1	700 : 1	700 : 1
Display Color	16.2M	16.2M	16.2M
Viewing Angle H / V (typ.)	-80°~80° / -60°~80°	-80°~80° / -65°~75°	-80°~80° / -80°~60°
Power Consumption (typ.)	15 W	15 W	15 W
Dimensions (W × H × D)	260 × 215 × 38 mm	300 × 250 × 38 mm	358 × 292 × 51 mm

	17" (43,2 cm) 4:3	19" (48,3 cm) 4:3
Model Name	WM 17L-VDP-OF	WM 19L-VDP-OF
Resolution	1280 × 1024	1280 × 1024
Brightness (typ.)	950 cd/m ²	1000 cd/m ²
Contrast Ratio (typ.)	1000 : 1	1000 : 1
Display Color	16.7M	16.7M
Viewing Angle H / V (typ.)	-85°~85° / -80°~80°	-80°~80° / -80°~80°
Power Consumption (typ.)	30 W	37 W
Dimensions (W × H × D)	410 × 330 × 58 mm	445 × 355 × 55 mm

GENERAL DATA

Touchscreen	optional	ELO resistive (RS-232C or USB)
	optional	Premier resistive (RS-232C or USB)
Backlight		LED
Power input		12 V _{DC}
Power supply		external, 100-240 V _{AC} (incl.)
Power management		VESA DPMS compliant
Plug and Play		VESA DDC 1/2B
Operating temperature		0°-50° C

SIGNAL INPUT

VGA		15-pin D-sub
DVI	≥ 15"	incl.
Composite (PAL/NTSC)	≤ 12"	optional
	≥ 15"	incl.
S-Video		optional

CONSTRUCTION

Drawings		see datasheet page 2
Material		heavy-duty steel (galvanized)
Mounting		Openframe
	optional	Panelmount Front (IP65)
	optional	19" Rackmount Front

Version 1.1

Errors and changes excepted



TL Electronic GmbH – since 1983

TFT LCD Industrial Monitor

WM xxW... (built-in)

15.6" to 21.5" (Wide Screen)



"-OF"
Openframe

"-PMA"
Panelmount
5 mm Aluminium
RAL7035
incl. safety glass
IP65
(15.6"-21.5")

LCDs	15.6" (39,5 cm) 16:9	18.5" (47 cm) 16:10	21.5" (54,6 cm) 16:9
Model Name	WM 15W-V-OF	WM 18W-V-OF	WM 22WL-VD-OF
Resolution	1366 x 768	1366 x 768	1920 x 1080
Brightness (typ.)	300 cd/m ²	300 cd/m ²	250 cd/m ²
Contrast Ratio (typ.)	500 : 1	1000 : 1	1000 : 1
Display Color	16.7M	16.7M	16.7M
Viewing Angle H / V (typ.)	-85°~85° / -80°~80°	-85°~85° / -80°~80°	-85°~85° / -80°~80°
Backlight	CCFL	CCFL	LED
Power Consumption (typ.)	25 W	40 W	50 W
Dimensions (W x H x D)	366 x 248 x 40 mm	449 x 278 x 48 mm	504 x 318 x 60 mm

GENERAL DATA

Touchscreen	optional	Resistive (RS-232C or USB)
Power input		12 V _{DC}
Power supply		external, 100-240 V _{AC} (incl.)
Power management		VESA DPMS compliant
Plug and Play		VESA DDC 1/2B
Operating temperature		0°-50° C

SIGNAL INPUT

VGA		15-pin D-sub
Video	optional	Composite (PAL / NTSC)
	optional	S-Video
DVI	optional	15.6", 18.5"
	inclusive	21.5"

CONSTRUCTION

Drawings		see datasheet page 2
Material		heavy-duty steel (galvanized)
Mounting		Openframe
	optional	Panelmount Front (IP65)

TFT LCD Industrial Monitor WM xxWx-VD-OF (built-in)

24" to 42" (16:9)



LCDs	24" (61 cm) 16:9	27" (69 cm) 16:9	32" (81 cm) 16:9	42" (107 cm) 16:9
Model Name	WM 24WL-VD-OF	WM 27WL-VD-OF	WM 32WL-VD-OF	WM 42W-VD-OF
Resolution	1920 × 1080	1920 × 1080	1920 × 1080	1920 × 1080
Brightness (typ.)	300 cd/m ²	300 cd/m ²	350 cd/m ²	500 cd/m ²
Contrast Ratio (typ.)	3000 : 1	5000 : 1	3000 : 1	1400 : 1
Display Color	16.7M	16.7M	16.7M	16.7M
Viewing Angle H / V (typ.)	-89°~89° / -89°~89°	-89°~89° / -89°~89°	-89°~89° / -89°~89°	-89°~89° / -89°~89°
Backlight	LED	LED	LED	CCFL
Power Consumption (typ.)	45 W	45 W	75 W	220 W
Dimensions (W × H × D)	576 × 344 × 58 mm	673 × 411 × 56 mm	800 × 480 × 68 mm	1024 × 617 × 130 mm

GENERAL DATA

Touchscreen	24" optional resistive (RS-232C or USB) ≥ 32" optional SAW (RS-232C or USB)
Power input	≤ 27" 12 V _{DC} ≥ 32" 100–240 V _{AC}
Power supply	≤ 27" external, 110–240 V _{AC} (incl.) ≥ 32" internal
Power management	VESA DPMS compliant
Plug and Play	VESA DDC 1/2B
Operating temperature	0°–50° C

SIGNAL INPUT

VGA	15-pin D-sub
Video	optional Composite (PAL / NTSC) optional S-Video
DVI	incl. DVI-D connector

CONSTRUCTION

Drawings	see datasheet page 2
Material	heavy-duty steel (galvanized)
Mounting	Openframe

TL Electronic GmbH – since 1983

TFT LCD Industrial Monitor

WM xx-...-CH (Chassis)



10.4" to 19" (4:3)

Compact design,
rugged steel-sheet housing,
mounting with rear VESA
connector



LCDs	10.4" (26,4 cm) 4:3	12.1" (30,7 cm) 4:3	15" (38,1 cm) 4:3
Model Name	WM 10-V-CH	WM 12-V-CH	WM 15-VDP-CH
Resolution	800 × 600	800 × 600	1024 × 768
Brightness (typ.)	350 cd/m ²	400 cd/m ²	250 cd/m ²
Contrast Ratio (typ.)	500 : 1	500 : 1	500 : 1
Display Color	262k	262k	16.2M
Viewing Angle H / V (typ.)	-60°~60° / -60°~40°	-70°~70° / -50°~60°	-70°~70° / -60°~60°
Power Consumption (typ.)	18 W	15 W	25 W
Dimensions (W × H × D)	260 × 200 × 45 mm	290 × 230 × 45 mm	370 × 290 × 47 mm

	17" (43,2 cm) 4:3	19" (48,3 cm) 4:3
Model Name	WM 17-VDP-CH	WM 19-VDP-CH
Resolution	1280 × 1024	1280 × 1024
Brightness (typ.)	350 cd/m ²	400 cd/m ²
Contrast Ratio (typ.)	1000 : 1	1000 : 1
Display Color	16.7M	16.7M
Viewing Angle H / V (typ.)	-80°~80° / -80°~80°	-80°~80° / -80°~80°
Power Consumption (typ.)	32 W	35 W
Dimensions (W × H × D)	400 × 350 × 52 mm	430 × 355 × 50 mm

GENERAL DATA		
Touchscreen	optional	ELO resistive (RS-232C or USB)
	optional	Premier resistive (RS-232C or USB)
Backlight		CCFL
Power input		12 V _{DC}
Power supply		external, 100–240 V _{AC} (incl.)
Power management		VESA DPMS compliant
Plug and Play		VESA DDC 1/2B
Operating temperature		0°–50° C

SIGNAL INPUT	
VGA	15-pin D-sub
DVI	≥ 15" incl.
Composite (PAL/NTSC)	≤ 12" optional
	≥ 15" incl.
S-Video	optional

CONSTRUCTION	
Drawings	see datasheet page 2
Material	heavy-duty steel (black coated)
Mounting	≤ 17" VESA 75 × 75 connector
	19" VESA 100 × 100 connector



Version 1.1

Errors and changes excepted

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TFT LCD Industrial Monitor

WM xxW...-CH (Chassis)



21.5" to 32" (16:9)

all-round bigscreen format industrial display with rugged steelsheet-housing, all-purpose VESA mounting standard on the back; protection glass included.



LCDs	21.5" (54,6 cm) 16:9	27" (69 cm) 16:9	32" (81 cm) 16:9
Model Name	WM 22WL-VD-CH	WM 27WL-VD-CH	WM 32W-VPDH-CH
Resolution	1920 × 1080	1920 × 1080	1920 × 1080
Brightness (typ.)	250 cd/m ²	300 cd/m ²	500 cd/m ²
Contrast Ratio (typ.)	1000 : 1	5000 : 1	1450 : 1
Display Color	24-bit	24-bit	30-bit
Viewing Angle H / V (typ.)	-85°~85° / -80°~80°	-89°~89° / -89°~89°	-89°~89° / -89°~89°
Backlight	LED	LED	CCFL
Power Consumption (typ.)	50 W	45 W	
Dimensions (W × H × D)	507 × 303 × 61 mm	638 × 390 × 63 mm	774 × 468 × 116 mm

GENERAL DATA

Touchscreen	21.5" optional resistive (RS-232C or USB) 32" optional SAW (RS-232C or USB)
Power input	≤ 27" 12 V _{DC} 32" 100–240 V _{AC}
Power supply	≤ 27" external, 110–240 V _{AC} (incl.) 32" internal
Power management	VESA DPMS compliant
Plug and Play	VESA DDC 1/2B
Operating temperature	0°–50° C

SIGNAL INPUT

VGA	15-pin D-sub
Video	≤ 27" optional 32" Component (Pr / Pb / Y) 32" Composite (PAL / NTSC) 32" S-Video
DVI	DVI-D
HDMI	32" yes
Audio	32" TRS (3,5 mm), 2 × RCA
Remote control	32" RS-232 (not with touch), RJ-45

SIGNAL OUTPUT

VGA	32" 15-pin D-sub
Video	32" Composite (PAL / NTSC)
Audio	32" internal speakers 32" RCA, speakers out
Remote control	32" RS-232 (not with touch)

CONSTRUCTION

Drawings	see datasheet page 2
Material	heavy-duty steel (black coated)
Mounting	VESA connector



Version 1.1

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TFT LCD Industrial Monitor

Multitouch TPM (built-in)



15" to 19" Multitouch TPM xx-VAC-OF



Built-in edge for rear installation. LCD-Front with planar surface without dirt-collecting edges.

- capacitive multi-touchscreen (2 finger)
- side mounting brackets
- VESA mounting interface

LCDs	15" (38,1 cm) 4:3	17" (43,2 cm) 4:3	19" (48,3 cm) 4:3
Resolution	1024 × 768	1280 × 1024	1280 × 1024
Active area	304 × 228 mm	338 × 270 mm	376 × 301 mm
Brightness (typ.)	212 cd/m ²	225 cd/m ²	225 cd/m ²
Contrast ratio (typ.)	500 : 1	1000 : 1	800 : 1
Display color	16.2M	16.7M	16.7M
Viewing angle H / V (typ.)	140° / 125°	160° / 160°	160° / 160°
Power consumption (typ.)	22 W	25 W	25 W
Dimensions (W × H × D)	357 × 281 × 49 mm	394 × 330 × 57 mm	433 × 360 × 58 mm

GENERAL DATA

Touchscreen	included	Projected Capacitive (USB) two-finger multi-touch
Backlight		CCFL
Power input		12 V _{DC}
Power supply		external, 100–240 V _{AC} (incl.)
Plug and Play		VESA DDC 1/2B
Operating temperature		0°–40° C

SIGNAL INPUT

VGA	15-pin D-sub
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CONSTRUCTION

Drawings	see datasheet page 2
Material	heavy-duty steel black plastic front frame planar glass front
Mounting	2 × side mounting brackets VESA 75 × 75 mm 17", 19" VESA 100 × 100 mm additional



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TFT LCD Industrial Monitor

Multitouch TPM (Chassis)

21.5" (16:9) Multitouch TPM 22W-VDAC-CH



- capacitive multi-touchscreen (2 finger)
- Full HD resolution
- VGA and DVI-D connector
- VESA mounting interface
- side mounting brackets

LCD	21.5" (54,6 cm) 16:9
Resolution	1920 × 1080
Active area	476 × 268 mm
Brightness (typ.)	270 cd/m ²
Contrast ratio (typ.)	1000 : 1
Display color	16.7M
Viewing angle H / V (typ.)	170° / 160°
Power consumption (typ.)	45 W
Dimensions (W × H × D)	517 × 313 × 46 mm

GENERAL DATA

Touchscreen	included	Projected Capacitive (USB) two-finger multi-touch
Backlight		CCFL
Power input		12 V _{DC}
Power supply		external, 100–240 V _{AC} (incl.)
Plug and Play		VESA DDC 1/2B
Operating temperature		0°–40° C

SIGNAL INPUT

VGA	15-pin D-sub
DVI	DVI-D connector

CONSTRUCTION

Drawings	see datasheet page 2
Material	heavy-duty steel black plastic frame planar glass front
Mounting	VESA 100 × 100 mm 2 × side mounting brackets

Front with absolutely planar surface without dirt-collecting edges.

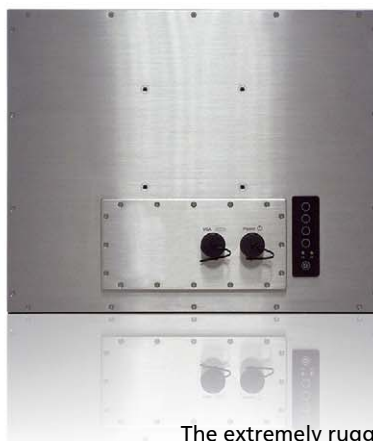
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TFT LCD Industrial Monitor

Stainless IP65



15" to 21.5"



The extremely rugged, easy to clean stainless steel housing is protected against dirt and water, all interfaces included, according to IP65. (Cables with IP65-protected connectors are included)

Perfect for applications in: food industry, process engineering, pharmaceutical industry, medical technology, plant construction etc.

LCDs	15" (38,1 cm) 4:3	17" (43,2 cm) 4:3	19" (48,3 cm) 4:3	21.5" (54,6 cm) 16:9
Model Name	WM 15-V-ES	WM 17-V-ES	WM 19-V-ES	WM 22WL-V-ES
Resolution	1024 x 768	1280 x 1024	1280 x 1024	1920 x 1080
Brightness (typ.)	250 cd/m ²	350 cd/m ²	400 cd/m ²	250 cd/m ²
Contrast Ratio (typ.)	500 : 1	1000 : 1	1000 : 1	1000 : 1
Display Color	16.2M	16.7M	16.7M	16.7M
Backlight	CCFL	CCFL	CCFL	LED
Viewing Angle H / V (typ.)	-80°~80° / -60°~70°	-85°~85° / -80°~80°	-80°~80° / -80°~80°	-85°~85° / -80°~80°
Power Consumption (typ.)	25 W	32 W	41 W	50 W
Dimensions (W x H x D)	384 x 311 x 61	416 x 350 x 61	460 x 385 x 63	550 x 340 x 59

GENERAL DATA

Touchscreen	optional	resistive or capacitive
	optional	rugged touchscreen
Power input		12 V _{DC} (IP65 cable incl.)
Power supply		external, 100–240 V _{AC} (incl.)
Power management		VESA DPMS compliant
Plug and Play		VESA DDC 1/2B
Operating temperature		0°–50° C
	optional	-20° to +55° C wide temperature

SIGNAL INPUT

VGA		15-pin D-sub (IP65 cable incl.)
Video	optional	Composite (PAL / NTSC)

CONSTRUCTION

Drawings		see datasheet page 2
Material		stainless steel
Ingress Protection Rating		IP65
Mounting		VESA 100 x 100 connector



Version 1.0

Errors and changes excepted

Onsite project management

Whether you need a standard, customised or prototype unit – the best solution is usually defined, with you, onsite.

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TL Electronic GmbH Germany

Bgm.-Gradl-Str. 1
85232 Bergkirchen-Feldgeding
Germany
Tel. +49.(0)8131.33204-0
Fax +49.(0)8131.33204-150
E-Mail info@tl-electronic.de
www.tl-electronic.de

TL Electronic GmbH Austria

Grazer Str. 10
8130 Frohnleiten
Austria
Tel. +43.(0)3126.51100-0
Fax +43.(0)3126.51100-50
E-Mail info@tl-electronic.at
www.tl-electronic.at

TL Electronic GmbH Italy

Agency: MEBO srl
via Carso 18
10141 Torino
Italy
Tel. / Fax +39.0173.610561
E-Mail info@tl-electronic.it
www.tl-electronic.it



TL Electronic GmbH Germany

Bgm.-Gradl-Str. 1
85232 Bergkirchen-Feldgeding
Germany
Tel. +49.(0)81 31.33204-0
Fax +49.(0)81 31.33204-150
E-Mail info@tl-electronic.de
www.tl-electronic.de

TL Electronic GmbH Austria

Grazer Str. 10
8130 Frohnleiten
Austria
Tel. +43.(0)31 26.51100-0
Fax +43.(0)31 26.51100-50
E-Mail info@tl-electronic.at
www.tl-electronic.at

TL Electronic GmbH Italy

Agency: MEBO srl
via Carso 18
10141 Torino
Italy
Tel. / Fax +39.0173.610561
E-Mail info@tl-electronic.it
www.tl-electronic.it