

Non-Proprietary Elevator Controls

MCE non-proprietary philosophy

- Universally maintainable
- Universally serviceable
- Serviceable and maintainable
- No proprietary service tools required

Regardless of the term used to describe them, non-proprietary elevator controls have had a significant impact on the elevator industry. They are at the core of MCE's product development philosophy and unique product differentiation.

MCE's success has prompted well-established proprietary manufacturers to compete in the non-proprietary product space — but, in most cases, these competitive products are not completely non-proprietary, and don't provide the complete freedom of choice offered by MCE.

MCE's non-proprietary vision dates to the early 1980s — and has served to counter the constraints of proprietary controller systems that have limited the choice of building owners.

"Non-proprietary" defined

It is the commitment, not the equipment that differentiates non-proprietary from proprietary. Contractors, manufacturers and elevator professionals suggest that all elevator control systems are basically proprietary in nature, by virtue of their design.

The degree of proprietary restraint can be measured by the ability of service companies other than the original control manufacturer to maintain the equipment — and the degree of proprietary restraint within distribution and support channels.

Freedom of choice is the reason most often mentioned by building owners when specifying non-proprietary elevator control equipment. The ability to select from among competitive maintenance providers, if necessary, ensures the sound financial future increasingly in demand by decision makers. The MCE Building Owner's Bill of Rights establishes performance standards against which all equipment can be measured for freedom from proprietary restraint.

Building Owner's Bill of Rights

1. Equipment shall be universally maintainable
2. Diagnostics shall be built in
3. A proprietary tool shall not be required for adjustment or maintenance
4. Parts shall be available for inventory... not just exchange
5. Technical training shall be available to all
6. Engineering and technical support shall be available to all
7. All manuals and drawings shall be provided
8. The control manufacturer shall provide direct support to the "end user" and their designated maintenance company

Non-Proprietary Elevator Controls

The genesis of proprietary restraint

Before 1975, hundreds of relays were assembled on panels to provide logic processing. With development of the first “solid state” silicon devices, transistors began to replace electro-mechanical relay systems. Without moving parts, these devices improved reliability by eliminating the need for relay replacement. While old technology allowed a qualified elevator mechanic to trace the source of a problem by following wires from relay to relay, new dispatching logic and other operations were now hidden inside microchips.

As the elevator industry adopted this technology, an increasing amount of new equipment required the use of special electronic service tools to adjust, troubleshoot and maintain equipment, or reconfigure system operation. This limited the building owner’s choice for all future maintenance and repair to the original manufacturer.

Today, high quality, proprietary elevator control equipment is available from respected companies like Fujitec, KONE, Mitsubishi, Otis, Schindler and ThyssenKrupp. Branch offices install this equipment, with “Factory/IUEC trained” technicians ensuring that every project meets demanding standards for quality and performance. Long-term maintenance agreements further extend the manufacturer’s reliability commitment to the building owner. These systems usually require the use of a proprietary electronic service tool. Restricted access prevents unauthorized or untrained personnel from servicing, maintaining or adjusting this equipment.

The emergence of non-proprietary equipment

To meet changing customer demand, Javad and Majid Rahimian, along with Don Alley, founded Motion Control Engineering in 1983, pioneering third-party “Universally Maintainable” control systems in the footsteps of CEC’s Swift and O. Thompson.

Building owners embraced this new generation of non-proprietary equipment. Elevator consultants tailored non-proprietary project specifications to match growing client preference. It became increasingly common to see equipment specified as, “Serviceable and Maintainable by any qualified elevator maintenance provider capable of maintaining apparatus of similar design and complexity.”

With MCE non-proprietary elevator controls, diagnostics are built in, so no external tool is required. The building owner is assured of the right to select and retain maintenance providers based on customer satisfaction, not access to a service tool. MCE offers high-quality factory technical training to all, creating a large pool of qualified, experienced factory trained installation and maintenance technicians. In most cities, many independent contractor and OEM branch employees routinely install and maintain MCE non-proprietary equipment.

Extensive customer care and support is another differentiating characteristic of MCE non-proprietary equipment. MCE’s industry leading technical support team provides a seamless line of support — from telephone hotline support to field support at the customer’s site as needed. Since non-proprietary equipment is characterized by the notable absence of constraints, spare and replacement manuals and job drawings are always available.

MCE is committed to providing direct support to the “end user” and their designated maintenance company. The Building Owner’s Bill of Rights is the centerpiece of this commitment. Looking to the future, MCE will continue to provide independent, non-proprietary elevator control solutions. Along the way, we will seek to define, create and implement new levels of support that raise industry expectations and standards.

Writing a Non-Proprietary Specification

A variety of approaches have been used when writing specifications in order to ensure that the equipment provided is non-proprietary. Some of these include:

Non-Exclusive Language

- Elevator control system shall be non-proprietary
- Elevator control system shall not require any external proprietary service tool
- Elevator control system shall be serviceable and maintainable by any qualified elevator maintenance provider capable of maintaining apparatus of similar design and complexity
- Elevator control system shall be MCE or equal

Exclusive Language

- Elevator control system shall be manufactured by MCE
- Elevator control system shall be MCE, no known equal
- Elevator control system bids that include utilization of a diagnostic tool shall be considered non-responsive

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800.444.7442

916.463.9200



Motion Control Engineering®

A Kinetek Company®

The leader in non-proprietary controllers, technical services and repair solutions for elevator modernization.

IMC: Intelligent Motion Control

Performa | SCR | AC | MG

Digital, integrated controls for premium elevator performance

Intelligent Motion Control leads the industry in digital elevator control technology. Highly integrated digital logic and motor control provide premium performance for mid- and high-rise applications. Powerful processing algorithms eliminate the need for trim pots. All parameters are set and adjusted digitally via the system's computer keyboard.

IMC controls continually create an idealized velocity profile. Exact car position and speed are tracked using a sophisticated distance and velocity feedback system. The result: not only a high-quality ride, but the fastest possible floor-to-floor time.

IMC Performa

Top 12-pulse technology performance with simpler, faster adjustment for prestige projects

IMC-SCR

Proven 12-pulse reliability and lower harmonics for DC-SCR applications

IMC-AC

Flux vector technology for AC geared and gearless applications

IMC-MG

Ward Leonard technology for elevators with motor generators



IMC-AC

Advantages

- Superior ride quality
- Easy startup and adjustment
- Integrated drive and control
- Modular design

Applications

- Modernization or new construction
- High-rise or mid-rise
- Gearless or geared
- Groups to 12 cars or simplex
- 1800 fpm, 9.15 mps

Benefits

- Non-proprietary
- Superior technology
- 12-pulse drive designed for elevators
- Field-proven performance
- Lifetime technical support

Features/options

- SmarTraq™ door operator
- CMS remote monitoring system
- SmartLink™ communication
- M3 group dispatching
- Load weighing
- Choice of landing systems
- TLS terminal limit switches
- Factory matched motors
- ASME A17.1-2000/B44-00 compliant
- Seismic sensor
- Counter weight displacement kit

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IMC: Intelligent Motion Control

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IMC specifications

	IMC Performa	IMC-SCR	IMC-AC	IMC-MG
Maximum car speed	1800 fpm 9.14 mps	1800 fpm 9.14 mps	700 fpm 3.56 mps	1800 fpm 9.14 mps
Landings/group size	64/12	64/12	64/12	64/12
Drive type	12-pulse fully regenerative	12-pulse fully regenerative	AC 16K pulse width modulation	Ward Leonard
Harmonic distortion	THD 1/2 that of six-pulse	THD 1/2 that of six-pulse	Industry standard	N/A
Motor control	Digital quad closed loop	Digital dual closed loop	Digital dual closed loop	Digital dual closed loop
Dispatching	M3 group system utilizing ETA scheme and three minimization algorithms to optimize performance			
Monitoring	Central or remote; CMS or iMonitor			
Security options	Access control for elevators, keyboard control for elevators, card reader interface, basic security			
Field connections	SmartLink serial communication, conventional wiring or a combination of both			
Choke/filter	Included internal to control cabinet — no external cabinet required for drives to 180 amps			
Environment	32–104°F, 0–40°C, humidity non-condensing up to 95%; harsh environment rugged service options available			
Standard enclosure	39" w x 82 3/8" h x 16" d, 990.6 x 2092.33 x 406.4 mm; custom configurations available			

IMC controller family

IMC Performa

- Takes MCE 12-pulse technology to a new level. Sophisticated software simplifies system setup and operation.
- Interactive automation reduces calibration from hours to minutes.
- Embedded coaching and context-based help make parameter adjustment intuitive.
- Precise velocity control is achieved using advanced Digital Signal Processing (DSP) and MCE's sophisticated velocity control software algorithm.
- Powerful Performa microprocessors work in tandem with high-resolution digital components, using software optimization to provide tighter tracking and greater position and leveling accuracy.

IMC-SCR

- With the System 12 drive, it is the ideal solution for DC modernization and new installations worldwide.
- Designed specifically for elevator applications, the System 12 drive uses high-resolution 12-pulse technology to provide an exceptional elevator ride.
- Cuts current harmonic distortion in half (when compared to controls with conventional six-pulse drives). Audible noise is also significantly reduced.

IMC-AC

- Combines digital control and tight integration to deliver premium AC elevator performance.
- A powerful 32-bit processor provides smooth, continuous pattern generation.
- MCE TorQmax™ AC drive virtually eliminates takeoff lag and raises the bar for AC performance.
- The optional MCE PowerBack™ AC regeneration system recaptures energy for other uses. Eliminates unnecessary heat dissipation in the machine room while reducing cooling capacity required.

IMC-MG

- The control of choice for motor generator applications. The drive, microprocessor and controller are combined into one fully integrated system.
- A single user interface provides access to all parameter adjustments and diagnostics.
- Status of rotating equipment — including armature voltage and current, brake, motor field and generator shunt field voltage — is continuously displayed.

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IMC-DS-03-0507

iControl™

iControl AC | iControl DC

Integrated, intelligent, intuitive: the next generation in elevator control technology

Designed from the ground up using next-generation technology, **iControl** is the revolutionary platform that outperforms today's industry-standard controllers. How? Through integration: A system of components that work together, smoothly and automatically, to deliver the best possible performance.

iControl delivers processing performance through the intelligent iBox processor and motion performance through closed-loop-control, 16K PWM AC or 12-Pulse DC drives.

Configuration, diagnostics, and adjustments are handled through iControlware, a user-friendly software suite designed specifically for iControl. iCue software, running on a centralized dispatcher or an iBox in an elevator group, uses artificial intelligence to make optimal dispatching decisions.

An innovative, maintenance-free landing system uses sensors and magnetic encoding to ensure absolute hoistway position — without tape or switches. iControl's cartop station converts discrete car signals to serial communication for transmission to the iBox, reducing traveler cable bulk and expense.

Through high-tech electronic integration, intelligent buildings maximize efficiency, respond faster to changing user needs, and control resources at the lowest possible cost. It's precisely this kind of building-sensitive, forward-thinking integration that can maximize elevator return on investment and maintenance value — with iControl.



iControl AC

Applications

- Modernization or new construction
- Low-rise through high-rise — up to 150 stops, as little as one inch between floors
- Gearless or geared, induction or permanent magnet (AC only)
- Groups up to 15 cars
- 1,800 fpm, 9.14 mps

Benefits

- Intelligent — automated calibration, dispatching and traffic-handling allow iControl to learn and optimize for specific building requirements, increasing owner and tenant satisfaction.
- System self-configures for standard commissioning tests — you select the test, iControl sets up for it.
- Intuitive — Windows-based user interface is easy to learn and use, reducing installation time and maintenance cost.
- Safe — the most direct, advanced solution available, designed for ASME A17.1-2004/CSA B44-04 code compliance, with robust engineering that anticipates updates.
- Cost-effective — streamlined, field-configurable hardware design. Fewer components to install, maintain or replace.
- Flexible — modular software and hardware layers accommodate changing system needs, gracefully and economically.
- Responsive — robust Ethernet interface facilitates secure remote monitoring, remote equipment control, remote diagnostics, even real time remote troubleshooting and adjustment.
- Create and configure complex car and group installations off site — then upload, remotely or from the machine room. Create and re-use a “golden” file with minor adjustments from job to job.

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iControl specifications

	iControl AC	iControl DC
Maximum car speed	1,800 fpm, 9.14 mps	1,800 fpm, 9.14 mps
Configuration	Simplex and group	Simplex and group
Landings	150	150
Drive type	16K pulse width modulation flux vector, with optional regenerative drive	12-pulse, fully regenerative
Motor control	Velocity feedback	Velocity feedback
Landing system	Sensors and magnetic encoding ensure absolute hoistway position	
Configuration, monitoring and reporting	iControlware suite for monitoring and changing state of controllers/dispatchers. Includes iView, iMonitor and iReport	
Dispatching	PC-based or embedded microcontroller software intuitively assigns hall calls to controllers	
Environment	32–104°F, 0–40°C, humidity non-condensing up to 95%; harsh environment rugged service options available	
Standard enclosure	42" w x 72" h x 16" d, 914.4 x 1,447.8 x 304.8 mm Enclosure size may increase per specific application	

iControl features

Powered by intelligent iBox processor and closed-loop 16K PWM AC Drive, or 12-Pulse DC Drive, and supported by integrated system components:

Intelligent dispatching software

- Powerful, software-based dispatching engine uses artificial intelligence to continually optimize dispatching decisions.
- Easily modify, refine and scale configuration to meet changing traffic patterns.
- Modular upgrades ensure long-term performance, flexibility and return on investment.
- Real-time car status information delivered via high-speed, high bandwidth network for optimized response.

iControlware suite

- Windows-based interface enables on-site or remote analysis, diagnosis and parameter adjustment.
- Easily set up and adjust controller configuration.
- Conveniently and flexibly manage multiple elevators and locations from a single PC.
- Client-server system gathers, archives and reports elevator performance data for on-site or remote access.
- Flexible programming options for on-demand or scheduled reporting of performance criteria.

Precision landing system

- Innovative system uses sensors and magnetic encoding to ensure absolute hoistway position.
- Maintenance-free operation with fast, easy cartop installation and adjustment.

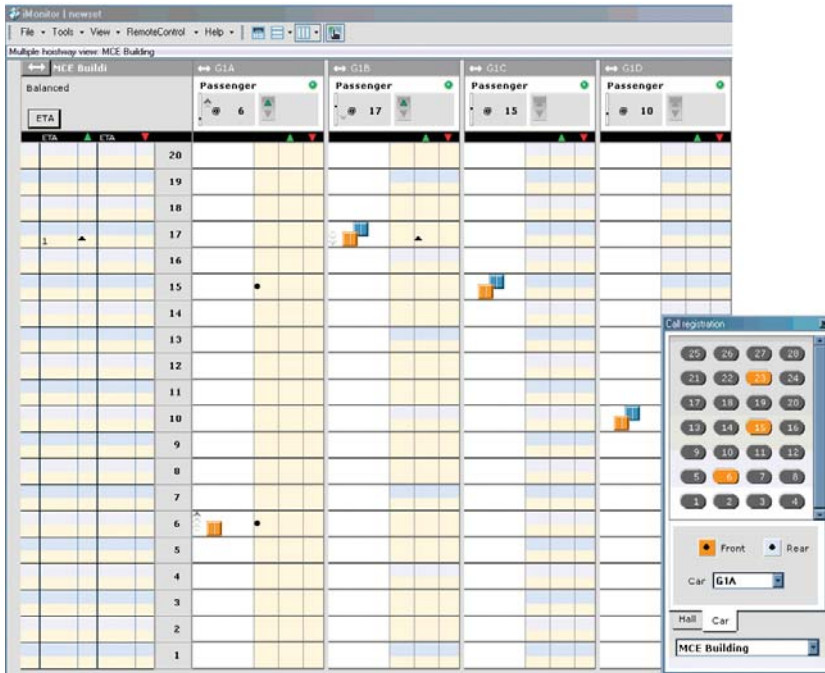
Cartop wiring connection box

- Reduces traveling cable wires for labor and material savings. Plug-and-play installation reduces setup time.
- Traveler and hoistway cable tailored for iControl. All conductors clearly labeled and color-coded. Eliminate connection errors and save installation time.
- Prevents doors from opening unless car speed is within acceptable limits.
- Maintains absolute position of the car during a power failure.

iMonitor™

Monitor and control elevators in real time — across the campus or across the country

Monitor elevators in real time with **iMonitor** from **MCE**. For elevators just across the hall, in multiple buildings across a campus, even multiple sites across the country, iMonitor provides real-time viewing and access. iMonitor's sharp graphical presentation and real-time connectivity provide you up-to-the-minute information and allow you to take control if needed.



iMonitor provides general views of multiple elevator groups, hoistway views of multiple cars within a group, or detailed views of selected cars. You create “connection sets” to display — each connection set consists of up to fifty connections to elevator group dispatchers, each of which may be at a different physical site.

In addition to monitoring and dispatching control, iMonitor allows you to configure hall and car call security, enable or disable special group modes of operation (i.e., lobby peak operation, flood operation, etc.), recall a car to a floor you specify and control its door operation at that floor, and enable or disable individual car operating modes including swing operation and auto-stop behavior. (Auto-stop pauses a car at a specified floor and momentarily opens its doors for content inspection before allowing it to continue its run.)

Monitor

- Group status
- iMonitor connection status
- Group/car connection status
- Car operating mode
- Current travel direction
- Next (preferred) travel direction
- Live front and rear door activity
- Current floor
- Call type
- Next destination
- ETA information
- Emergency power status
- Seismic status
- Load weigher indication
- Swing operation status
- Security settings

Control

- Place car calls
- Place hall calls
- Set hall call security
- Set car call security
- Enable/disable lobby peak
- Enable/disable flood operation
- Configure and initiate car recall
- Enable/disable auto-stop
- Enable/disable swing operation

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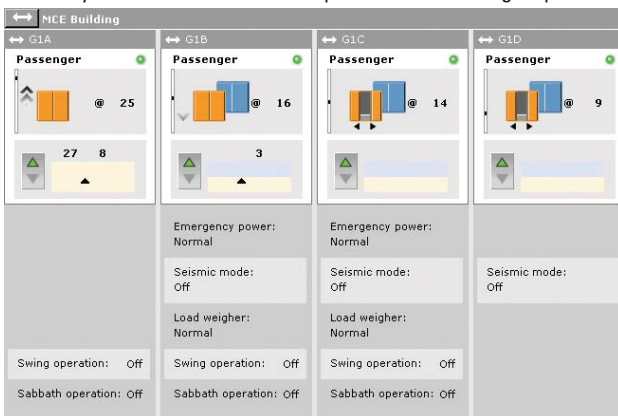
High level multi-group view

Use iMonitor's high-level views to keep a broad eye on many groups simultaneously.



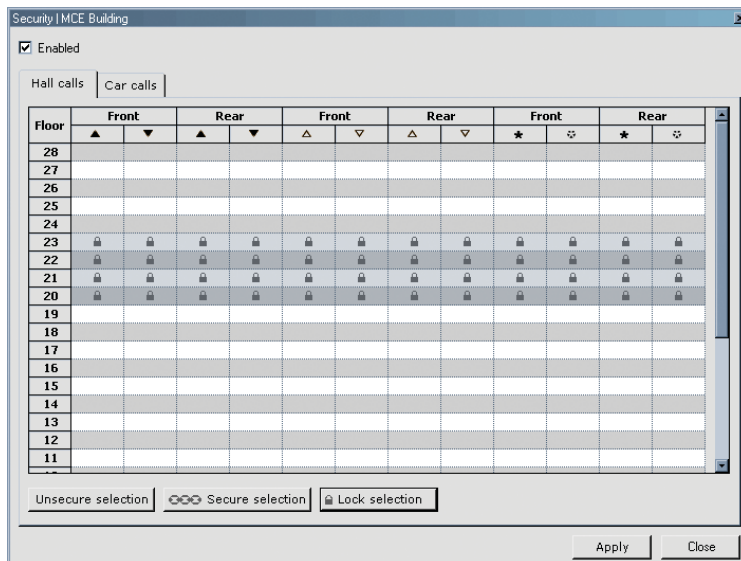
Detailed single-group view

Narrow your attention to cars in a particular elevator group with a click of the mouse.



Security control view

Block floor and/or hall calls easily in emergency situations. Simply drag across the block of calls you want restricted, click Lock, then Apply to immediately place the restriction.



Operating modes displayed

- Inspection
- Construction inspection
- Cartop inspection
- Car panel inspection
- Hoistway access
- Machine room inspection
- Test mode
- Fire recall main
- Fire recall alternate
- Fire service in-car
- Independent service
- Attendant service
- Capture mode
- Passenger mode
- EMS recall
- EMS in-car
- Special service recall
- Special service at-floor
- Special service in-car

Per car modes displayed

- Emergency power status
- Seismic mode status
- Load weigher status
- Swing operation status
- Sabbath operation status
- Flood operation status
- Auto-stop status

Dispatching information

- Traffic mode
 - Balanced
 - Lobby peak
 - Demand up peak
 - Demand down peak
 - Automatic
- ETA
 - Hall call
 - Non-directional call

iReport

Capture, log, report and notify with just one tool

iReport from **MCE** takes advantage of the intelligence and communicating power designed into iControl elevator controls to automatically collect detailed information about minute-to-minute operation, system events, faults, and operating status. More than just a passive database tool, iReport is easily configured to automatically contact those maintenance and administrative personnel who need to be advised whenever specific events occur. You can even choose days and times when contact should be initiated.

iReport is a Windows XP native program running on a powerful Server that communicates with elevators and group dispatchers through Ethernet and TCP/IP. The Server resides on the Local Area Network with the elevator equipment. You can log on to the Server using any Windows XP PC running the iReport Client application. Your PC can be on the Local Area Network or in a remote location communicating with the Server through the Internet.

Once you are connected, all information in the current log is immediately available. Select from nine pre-configured reports, pick start and end times, and the Server instantly pulls the desired information from the database and presents it in an easily understood, graphically simple format.

Periodically, you'll want to save collected data to a file on your PC hard drive. Simply select the Export command and save all data in the current log as an XML file. If you want to review that data later, iReport easily imports the stored file and you again have report-generating capability from that data.

iReport also allows you to log maintenance activity, providing valuable information that, when correlated to event log data, may provide a predictively useful picture of system status just prior to a failure or fault.

Applications

- MCE iControl
- MCE IMC (reduced function set)
- MCE PHC (reduced function set)

Benefits

- Collect, store, recall system information for performance analysis or other need
- Automatically alert maintenance and other selected personnel when required
- Retain records of building elevator traffic
- View or print report screens
- Save historical data to XML files
- Log maintenance activity



iReport by MCE

iReport automatically collects and puts at your fingertips the kind of data you need to track the performance of your elevator systems and to monitor elevator traffic over historical periods. Samples of some iReport screens are shown below.

Hall Call Log

Dispatcher: 10.10.11.56 Start date: Jul 26, 2006 00:00 End date: Aug 02, 2006 00:00 [Get data]

Date	Time	Car	Floor	Hallway	Direction	Door	Wait time
7/31/2006	10:01:24 AM	1	6	Main	Up	Front	37
7/31/2006	10:01:26 AM	3	9	Main	Up	Front	40
7/31/2006	10:01:32 AM	4	20	Main	Down	Front	39
7/31/2006	10:01:38 AM	1	7	Main	Up	Front	52
7/31/2006	10:01:42 AM	3	11	Main	Up	Front	56
7/31/2006	10:01:47 AM	4	19	Main	Down	Front	54
7/31/2006	10:01:53 AM	1	8	Main	Up	Front	70
7/31/2006	10:01:59 AM	3	13	Main	Up	Front	73
7/31/2006	10:02:01 AM	4	18	Main	Down	Front	68
7/31/2006	10:02:10 AM	1	10	Main	Up	Front	84
7/31/2006	10:02:15 AM	3	15	Main	Up	Front	91
7/31/2006	10:02:16 AM	4	17	Main	Down	Front	83
7/31/2006	10:02:26 AM	1	12	Main	Up	Front	102
7/31/2006	10:02:30 AM	3	16	Main	Up	Front	105
7/31/2006	10:02:37 AM	4	13	Main	Down	Front	104
7/31/2006	10:02:41 AM	3	16	Main	Down	Front	103
7/31/2006	10:02:43 AM	1	14	Main	Up	Front	119
7/31/2006	10:02:52 AM	3	15	Main	Down	Front	114
7/31/2006	10:02:53 AM	4	11	Main	Down	Front	115
7/31/2006	10:03:01 AM	1	17	Main	Up	Front	117
7/31/2006	10:03:06 AM	3	14	Main	Down	Front	128
7/31/2006	10:03:15 AM	1	18	Main	Up	Front	146
7/31/2006	10:03:16 AM	4	6	Main	Down	Front	138
7/31/2006	10:03:23 AM	3	12	Main	Down	Front	145
7/31/2006	10:03:29 AM	1	19	Main	Up	Front	160
7/31/2006	10:03:30 AM	4	5	Main	Down	Front	157
7/31/2006	10:03:39 AM	3	10	Main	Down	Front	161
7/31/2006	10:03:44 AM	4	4	Main	Down	Front	166

Filters: Car (All), Floor (All), Direction (Up, Down), Door (Front, Rear), Hallway (Main, Aux), Wait time (30 sec), Flag wait time when (60 sec), Sort (Date, Time, Floor)

The Hall call log allows you to analyze hall call wait times with intelligent filtering for detail including date, time, car number, initiating call floor, riser, travel direction, door location, and minimum/maximum wait times. You may elect to flag data meeting selected wait time criteria.

Hall Call Analysis

Dispatcher: 10.10.11.56 Start date: Jul 26, 2006 00:00 End date: Aug 02, 2006 00:00 [Get data]

Wait time interval: 10 Maximum interval: 60

Floor	Up Call Wait Time Interval (secs)							Calls
	0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 - 59	60+	
1	1	0	0	0	0	0	0	1
2	0	0	0	0	0	0	1	1
3	0	1	0	0	0	0	0	1
4	0	1	0	0	0	0	0	1
5	1	0	0	0	0	0	0	1
6	0	0	0	1	0	0	0	1
7	0	0	0	0	0	1	0	1
8	0	1	0	0	0	0	1	2
Total	2	4	1	3	0	3	11	24
%	8	16	4	12	0	12	45	

Floor	Down Call Wait Time Interval (secs)							Calls
	0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 - 59	60+	
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	1	1
3	0	0	0	0	0	0	1	1
4	0	0	0	0	0	0	1	1
5	0	0	0	0	0	0	1	1
6	0	0	0	0	0	0	1	1
7	0	0	0	0	0	0	1	1
8	0	0	0	0	0	0	1	1
Total	0	0	0	1	0	1	17	19
%	0	0	0	5	0	5	89	

Summary								
Total	2	4	1	4	0	4	28	43
%	4	9	2	9	0	9	65	

The Hall call analysis report displays all hall calls placed and groups wait times according to user criteria.

Preconfigured reports

- Hall call performance
- Hall call analysis
- Traffic analysis
- Hall call log
- Car call log
- Event log
- Emergency log
- Maintenance log
- Percent in service

More information

- Please contact MCE for more information about iReport. We will send you the iReport Benefits Paper detailing all reports and screens and providing other useful information.
- Call Sales Support at 916.463.9200.

Destination Based Dispatching

Greater efficiency with less passenger stress in high traffic conditions

MCE, the market leader in nonproprietary elevator controls, provides a scale-to-fit destination based dispatching system precisely suited to your buildings unique requirements. The MCE system features touch screens for call registration and car assignment allowing the maximum degree of panel customization. Our system is completely scalable; you may start with lobby boost alone and proceed through a mixed traditional and destination based implementation on to full destination based dispatching on all floors. Choose just the system you want. If you choose to expand later, the MCE implementation allows seamless, easy addition or change to your initial installation.



MCE touch-screen technology provides highly visible, on-screen operating panels and allows unique customer options to be easily implemented. After a destination selection is entered, the screen displays a map for easy elevator location. Entry screens can switch to conventional up/down button entry for conventional operation on a timed or user input basis.

Applications

- Building modernization
- New installations

Benefits

- Reduces passenger stress in high traffic conditions.
- Improves elevator trip efficiency by assigning passengers with like destinations to the same elevator — resulting in fewer stops and improved transit time.
- Superior dispatching logic: The dispatcher has more information about passengers, destinations, predicted load per elevator, and number of stops — the result is more effective dispatching.
- Total scalability. Choose any level of mixed destination based and traditional hall-call dispatching or a full destination based system.
- Logical, stepped implementation for modernizations.

Features

- Complete touch-screen implementation for easiest possible customization or re-purposing (Hardware button per code for ADA compliance).
- Integration with building security.
- ADA voice instructions and tone guidance features.
- Seamless addition, enhancement, or re-structuring at any point.

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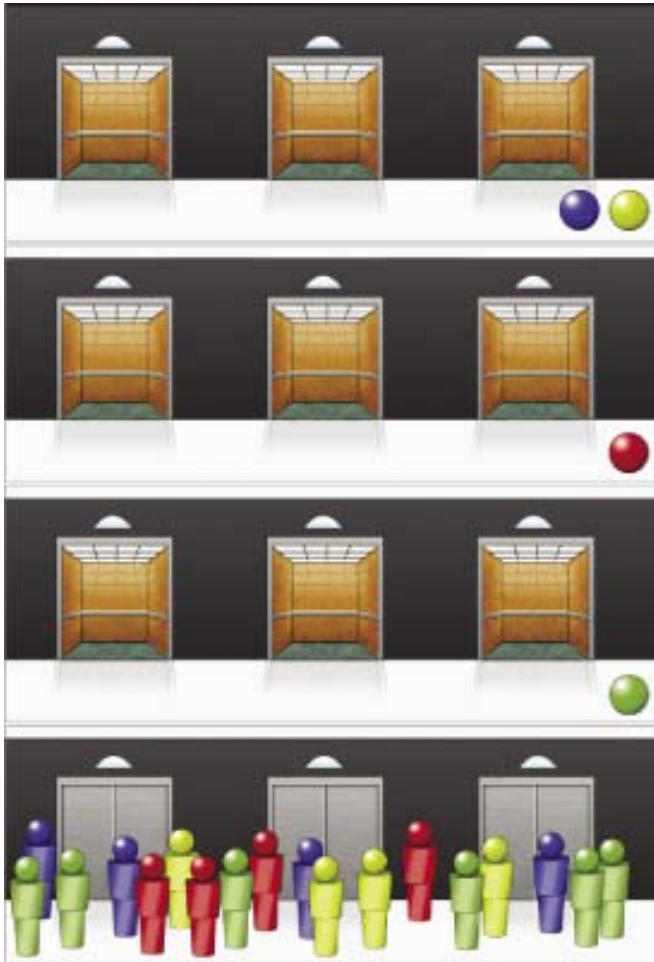
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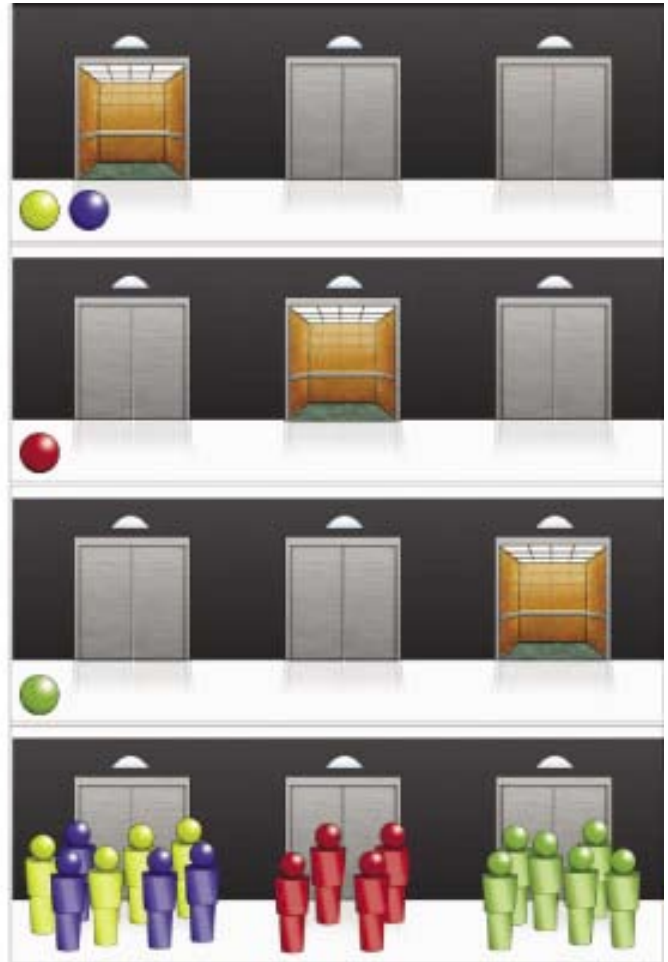
Destination Based Dispatching

Traffic handling benefits

Traditional dispatching results in a high mix of destinations per car, requiring more stops and taking more time.



Destination dispatching results in a low mix of destinations per car, requiring fewer stops and taking far less time.



ADA compliance

Activation of the Accessibility Function button enables a speaker that verbally requests the button be pressed and held until the desired floor is called out. When the correct floor is called and the button released, the speaker announces the car designation and provides directions. A unique tone is also played.

The assigned elevator annunciator repeats the unique tone to further assist car location. Arriving car annunciators announce the car label and floors serviced. Passenger boarding time is extended.



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The leader in non-proprietary controllers, technical services and repair solutions for elevator modernization.

Motion 2000™ Hydraulic Control

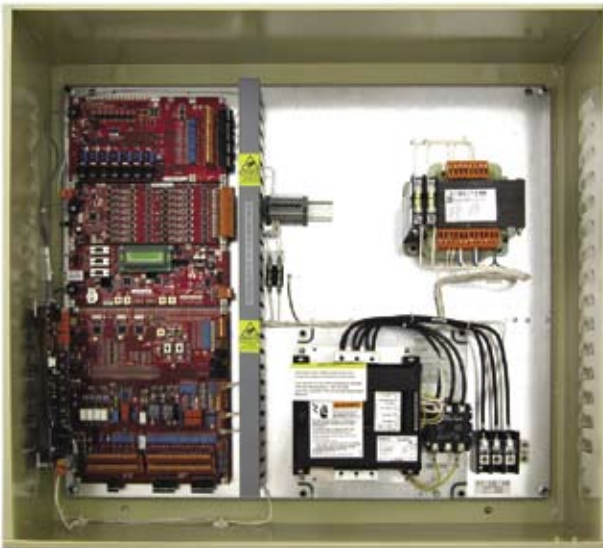
The simple, solid, dependable hydraulic elevator control

The all new **Motion 2000** hydraulic elevator control from MCE is built solidly upon the experience of our customers. Before we began designing, we analyzed years of comments and suggestions. Then made certain we were building the controller that both installers and building owners wanted us to build.

The Motion 2000 supports simplex, duplex, or group control for up to eight cars serving up to thirty-two landings. Motion 2000 design achieves simple interconnectivity and easy field expansion through CAN Bus technology, phone-style connectors and optimized field connection locations.

MCE's Motion 2000 offers the same straight-forward user interface, switch programming, and LCD display as previous generation MCE controllers; no learning curve required. To make field programming even easier you can use the hand-held user interface plugged into a controller, COP or cartop CAN connection to access all system parameters. Motion 2000 uses multiple, redundant, self-contained processors for reliable control and constant safety monitoring. Through the CAN Bus, each processor is continuously aware of all system activity.

An optional Ethernet port supports real time connection to MCE iReport for current and historical performance, activity reporting and archival; to MCE iMonitor for remote monitoring and control; to MCE iLobby for eye-pleasing, graphic display of elevator group activity. IDS Lift-Net™ monitoring and control application is available using the optional ethernet connection.



Motion 2000 uses a standard, wall-mount enclosure

Applications

- Modernization or new construction
- Simplex, duplex, or group control
- Groups up to 8 cars
- Service up to 32 landings

Benefits

- Serial COP dramatically reduces traveler wire count
- Solid state control replaces relays
- Universal I/O boards provide 16 independent channels; 24–120V AC or DC with built-in current limiting protection
- Enclosure knock-outs for easy installation
- Optimized customer connection points
- Open architecture and simple phone-style connectors allow easy field expansion
- Programmable using standard MCE switches (no learning curve) or hand-held user interface
- Simplified diagnostics using LED status indicators on most customer connections and an RS232 PC connection for detailed status monitoring
- Redundant, self-contained processors monitor safety, increase control reliability, and enhance noise immunity
- Expandable to four motor/valve combinations using additional interface boards
- Optional ethernet port for iReport or iMonitor connection (automated email notification through monitoring application)
- LiftNet compatible using optional ethernet port

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LiftNet is a trademark of Integrated Display Systems, Inc.

Motion 2000 specifications

Maximum car speed	200 fpm, 1.0 mps
Configuration	Simplex, duplex, group
Landings	Up to 32 with 64 openings
Motor control	Solid state, Wye/Delta or Across the Line
Landing system	LS-QUTE (solid tape/magnets) LS-STAN (vanesswitches)
System access	LCD and switches or hand-held user interface
Dispatching	Distributed control of up to 8 cars
Environment	32–104° F, 0–40° C, humidity non-condensing up to 95%; harsh environment rugged service available (NEMA 4, 4X, 12)
Standard enclosure	34" w x 31.5" h x 9" d (864 x 800 x 280 mm) includes knock-outs
Optional enclosure (Feature dependent)	36" w x 42" h x 9" d (914 x 1067 x 305 mm) includes knock-outs
Input	208–600 VAC, 50/60 Hz, single or 3-phase

Compliance

- ASME A17.1-2004/CSA B44-04
- CSA B44.1-04/ASME A17.5-2004
- BS EN 81
- AS 1735
- EN 12015 and 12016

Motion 4000™ Traction Control

Ideal traction control solution for low-rise to mid-rise projects

The MCE **Motion 4000** traction elevator control is designed to squarely meet the needs of elevator installations requiring speeds to 700 feet per minute, service up to 32 stops, and elevator groups to 8 cars. Motion 4000 makes the jobs of installers, adjusters, and maintenance personnel as straightforward as possible, stressing minimal hardware requirements, “out-of-the-box” job readiness, and simple adjustment.

Installers

- Only final limit switches are required. Slowdown and ETS switches are eliminated.
- No door zone magnets required.
- Hall call fixtures are connected serially along a simple, four-wire drop, providing signal communication and fixture power.
- Additional buttons or key switches can be connected to the hall call bus using a small node board provided by MCE.
- Absolute position/speed feedback uses a lightweight 1/2-inch wide encoded tape. Easy to hang; absolute position at all times — even under power loss.
- Traveler and hoistway cable wire counts reduced to 7 to 12 conductors. Easy to hang and requiring less compensation.
- Universal I/O boards for field connections accept 24 to 120 volt inputs, AC or DC. Standard 24, 48, and 110 volt compatibility with no board changes.

Adjusters

- Factory pre-adjusted per job requirements.
- Easy, hand-held entry device lets you make a single, inspection-speed run through the hoistway, stopping and setting floor levels as you go. Hand-held device connects at the car or in the machine room.
- Selectable, pre-determined performance curves or create your own.
- Simple parameter entry using the basic (LCD display/button entry) or optional (color/touchscreen) entry devices.

Maintenance

- Recommended “spares stock” is two boards; one universal I/O, one hall board.
- Plug the hand-held entry device into any controller or car CAN Bus and diagnose the entire system.
- Components shared across multiple MCE systems means lower component cost.

Benefits

- Flexible component location suits small machine room and machine roomless jobs
- Absolute position/distance feedback
- Low- and mid-rise applications
- Up to 700 fpm (3.5 m/s), 32 stops, simplex/duplex/groups to 8 cars
- Front and rear openings (up to 64)
- No leveling magnets, slowdown, or emergency terminal switches needed
- Simple installation, adjustment, and maintenance
- Minimal traveler and hoistway cable wire counts; minimal compensation requirement
- Universal I/O with electrical protection
- Easy setup and diagnostics



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Motion 4000 specifications

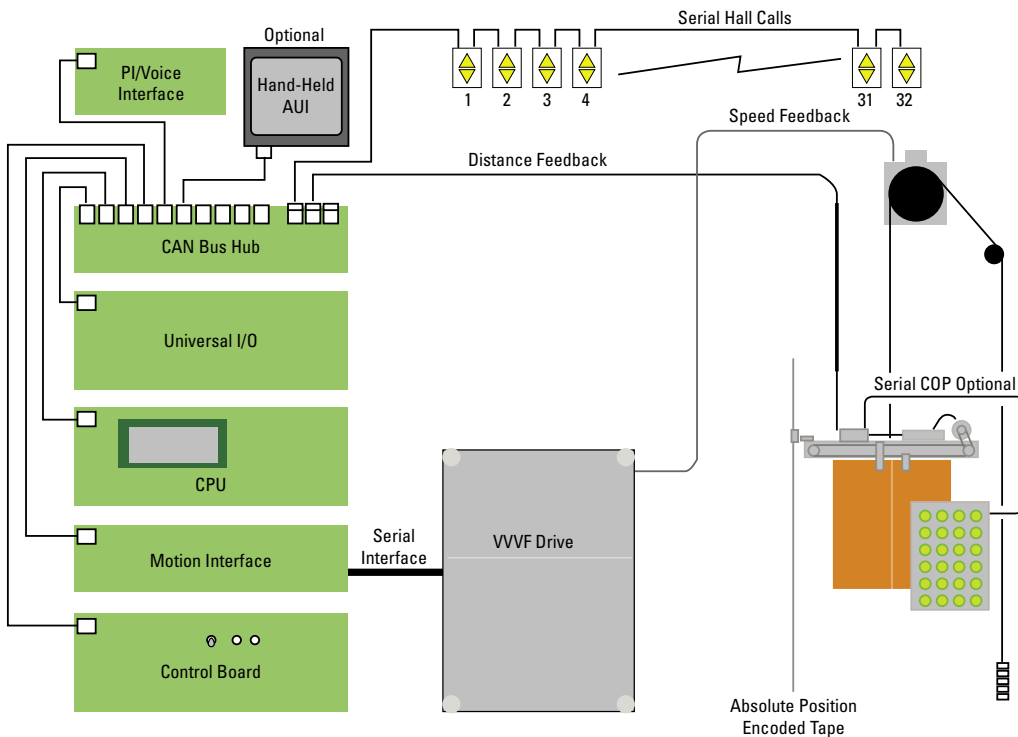
Maximum car speed	700 fpm, 3.5 mps
Configuration	Simplex, duplex, 8 car maximum group
Landings	Up to 32 with 64 openings
Drive type	AC flux vector or DC
Motor control	Closed loop/velocity feedback, PMAC/Induction
Landing systems	Magnetically encoded tape, 1 mm resolution
System access	Hand-held basic or advanced user interface
Monitoring	iMonitor, LiftNet IDS
Report generation	iReport
Lobby display	iLobby
Environment	32–104° F, 0–40° C, relative humidity non-condensing up to 95%; harsh environment rugged service available (NEMA 4, 4X, 12)
Standard enclosures	Enclosure size may vary per specific application

Features

- Serial hall call (optional)
- Serial COP (optional)
- Full distance feedback
- Universal I/O (24 to 120V AC or DC)
- DC, PMAC or AC induction machine compatible
- Serial P/I or voice annunciation interface
- iMonitor, iReport, iLobby, or IDS ready (monitoring, reporting, lobby display)

Compliance

- ASME A17.1-2004/CSA B44-04
- CSA B44.1-04/ASME A17.5-2004
- BS EN 81
- AS 1735
- EN 12015 and 12016



Motion 4000MRL™

A compact solution for limited space and unlimited performance

The MCE **Motion 4000MRL** traction elevator package is the ideal solution when time and space are limited and your bottom line depends on on-time delivery, easy installation, and solid reliability — time after time. The 4000MRL provides service to 32 floors, speeds to 700 feet per minute, and group control of up to 8 cars. Motion 4000MRL makes the jobs of installers, adjusters, and maintenance personnel as straightforward as possible, stressing minimal hardware requirements, simple adjustment, and enduring reliability.

Installers

- Full-featured, Motion 4000 elevator control in a very compact enclosure (remote drive, with serial interface, serial CAN linkage between circuit boards, car components, and hall calls).
- Only final limit switches are required. Slowdown and ETS switches are eliminated.
- No door zone magnets required.
- Hall call fixtures are connected using lightweight, easily connected cables providing signal communication and fixture power.
- Absolute position/speed feedback uses a lightweight 1/2-inch wide encoded tape. Easy to hang; absolute position at all times — even under power loss.
- Traveler and hoistway cable wire counts reduced to 7 to 12 conductors. Easy to hang and requiring less compensation.
- Universal I/O boards for field connections accept 24 to 120 volt inputs, AC or DC. Standard 24, 48, and 110 volt compatibility with no board changes.

Adjusters

- Factory pre-adjusted per job requirements.
- Easy, hand-held entry device lets you make a single, inspection-speed run through the hoistway, stopping and setting floor levels as you go. Hand-held device connects at the car or in the machine room.
- Selectable, pre-determined performance curves or create your own.
- Simple parameter entry using the basic (LCD display/button entry) or optional (color/touchscreen) entry devices.

Maintenance

- Recommended “spares stock” is two boards; one universal I/O, one hall board.
- Plug the hand-held entry device into any controller or car CAN Bus and diagnose the entire system.

Benefits

- Flexible component location for small machine room and machine roomless jobs
- Absolute position/distance feedback
- Up to 700 fpm (3.5 m/s), 32 stops, simplex/duplex/groups to 8 cars
- Front and rear openings (up to 64)
- No leveling magnets, slowdown, or emergency terminal switches needed
- Simple installation, adjustment, and maintenance
- Minimal traveler and hoistway cable wire counts; minimal compensation requirement
- Universal I/O with electrical protection
- Easy setup and diagnostics



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Motion 4000MRL specifications

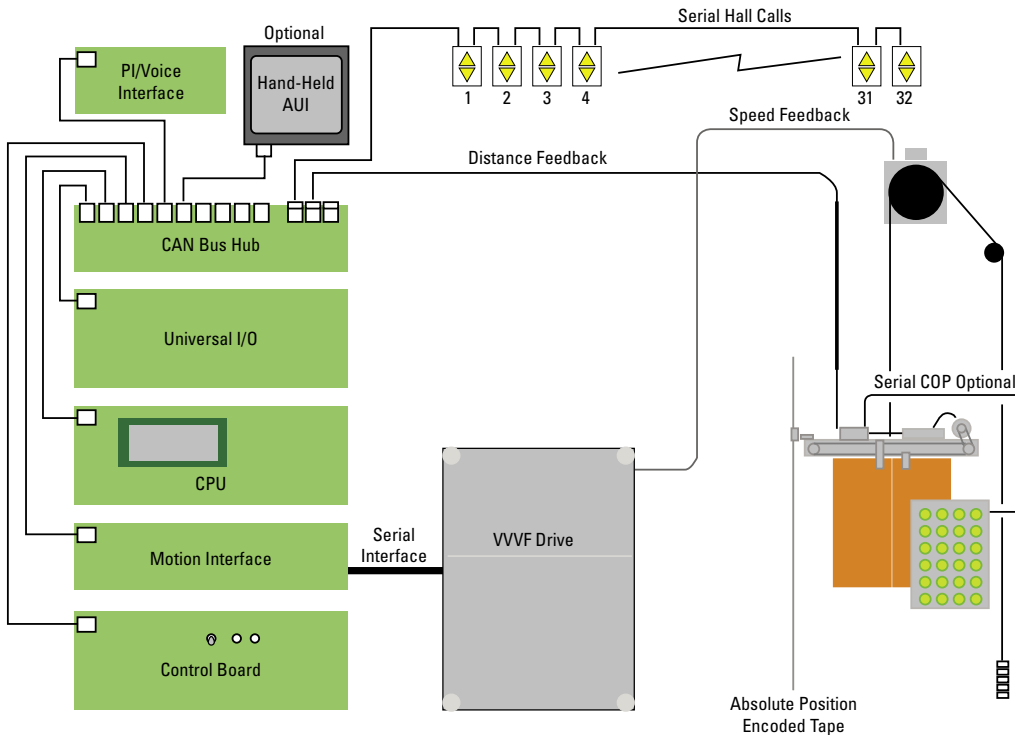
Maximum car speed	700 fpm, 3.5 mps
Configuration	Simplex, duplex, 8 car maximum group
Stops	Up to 32 with 64 openings
Drive type	AC flux vector or DC
Motor control	Closed loop/velocity feedback, PMAC/Induction
Landing systems	Magnetically encoded tape, 1 mm resolution
System access	Hand-held basic or advanced user interface
Monitoring	iMonitor, Lift-Net IDS
Report generation	iReport
Lobby display	iLobby
Environment	32–104° F, 0–40° C, relative humidity non-condensing up to 95%; harsh environment rugged service available (NEMA 4, 4X, 12)
Standard enclosures	Enclosure size may vary per specific application

Features

- Serial hall call (optional)
- Serial COP (optional)
- Full distance feedback
- Universal I/O (24 to 120V AC or DC)
- DC, PMAC or AC induction machine compatible
- Serial P/I or voice annunciation interface
- iMonitor, iReport, iLobby, or IDS ready (monitoring, reporting, lobby display)

Compliance

- ASME A17.1-2004/CSA B44-04
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SmarTraq™ Complete Door Operator

State-of-the-art, limitless “true” closed-loop technology for modernization and repair

MCE applies its expertise in non-proprietary controllers and closed-loop drives to the elevator door operator market with the introduction of **SmarTraq** — an innovative, limitless, closed-loop door operator ideal for new construction or modernization.

Door operation is the most visible aspect of elevator service and the source of the majority of service calls. The SmarTraq universal door operator solution maximizes door performance, reliability, and maintainability — at a fraction of the cost of other system upgrades.

Superior performance, reliability and maintainability

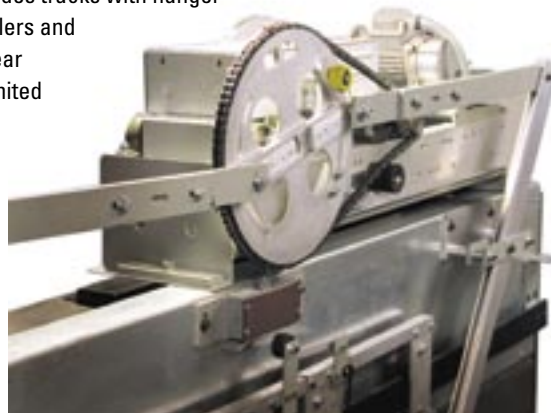
SmarTraq is a closed-loop, limitless door operator. SmarTraq replaces obsolete mechanical circuits, cams, and resistors with digital controls to provide precise door operation and reliable performance.

“Limitless” technology means that limit signals, formerly generated by troublesome switches, are now digital values generated electronically by the drive unit. Limitless technology reduces the need to maintain and adjust mechanical switches and speeds installation and adjustment.

Using the same non-proprietary, closed-loop, drive control philosophy that distinguishes MCE controllers, SmarTraq readily interfaces with most elevator control systems. A powerful permanent magnet, AC brushless motor with integral position encoder and velocity sensor is standard for all applications.

SmarTraq’s continuously computed position profile determines the precise force necessary for optimum door operation, ensuring that the heaviest doors will open and close as efficiently and smoothly as the lightest. Easily-set parameters minimize the effect of external influences such as wind loading, temperature extremes, and track debris accumulation.

The SmarTraq Complete Door Operator includes tracks with hanger rollers, door clutches, interlocks, release rollers and more — and is available for harmonic or linear applications — perfectly accommodating limited space requirements.



SmarTraq harmonic door operator

Applications

- New construction or modernization

Benefits

- Superior reliability reduces downtime
- Easy adjustment — no special tools required
- Safety settings maintained
- Widest adaptability to elevator control systems on the market
- Improved performance
- Adjusts for lobby door mass and wind loading

Features/options

- Permanent magnet, brushless AC motor
- Integrated encoder and motor speed sensors
- Inverter drive-based controller
- Built-in short circuit protection
- Cartop controller mount
- Linear or harmonic operation
- A17.1, CSA-B44.1 compliant
- Independent belt and chain adjustments
- Mechanical limit switches not required
- Resistors, cams, and heavy-duty relays not required
- Hold close and Hold open torque
- 10 Amp rated output contacts
- 5/16" heavy duty crank arm and linkage
- 1" jack shaft, dual bearings, full width of operator
- Selectable input voltage (120, 208, 240 VAC 50/60Hz)

SmarTraq specifications

Door operator drive technical data

Input voltage 120, 208, or 240 VAC, 50/60Hz, single phase

Output voltage 3-phase, 30 VAC, 9A (26A peak)

Power requirement 300 VA

Controller type Closed-loop, distance and velocity feedback, limitless

Door motor technical data

Type Three-phase, synchronous, brushless motor with permanent magnet excitation and built-in digital encoder and motor speed sensors

Motor 0.564 HP, 3-phase AC, 8 pole, 30 volt, 9A (26A peak), 0-2000 RPM, 0-133Hz

Encoder 640 PPR (pulses per motor revolution)

Elevator control interface data

Input signal level Isolated 28 VAC sourced from SmarTraq

Output signals Door close limit

Door open limit

Limit 1 (software adjustable from closed to 50% of door open position)

Limit 2 (software adjustable from open to closed door position)

Output signal level N.O. / N.C. contact (10 Amp 125 VAC)

Q & A

What is the difference between a SmarTraq Complete Door Operator and SmarTraq Upgrade Kit?

A SmarTraq Complete Door Operator package includes the SmarTraq motor, SmarTraq inverter drive and all necessary track, hanger and operator arm assemblies. SmarTraq Upgrade Kits include the SmarTraq motor and SmarTraq inverter drive to replace those in an existing installation.

When is a SmarTraq Complete Door Operator the recommended solution instead of a SmarTraq Upgrade Kit?

When existing operator hardware is worn, parts are obsolete, or the original design is not well-suited to modernization changes, the complete operator should be replaced.

What is the difference between Harmonic and Linear door operators?

Harmonic operators use levers and pivot point fulcrums to mechanically transmit opening and closing force from the motor to the doors. Linear operator motors engage the doors more directly through gears and a cogged belt.

How does closed-loop technology work?

When SmarTraq is calibrated, an ideal door movement profile is established. During operation, SmarTraq constantly monitors actual door position and compares it to the stored ideal. If the door lags, speed is increased. If the door moves ahead of the ideal, speed is decreased. The result is that the doors actual position is constantly matched to the stored ideal position — the loop between control and actual motion is closed.