

"PC CENTRAL ACCESS CONTROL

Metasys[®]

N2 Integration Link

Features • Specifications • Programming



- ☐ CARD ACCESS
 - ☐ PARKING MANAGEMENT
 - ☐ ALARM MONITORING
 - ☐ ELEVATOR CONTROL

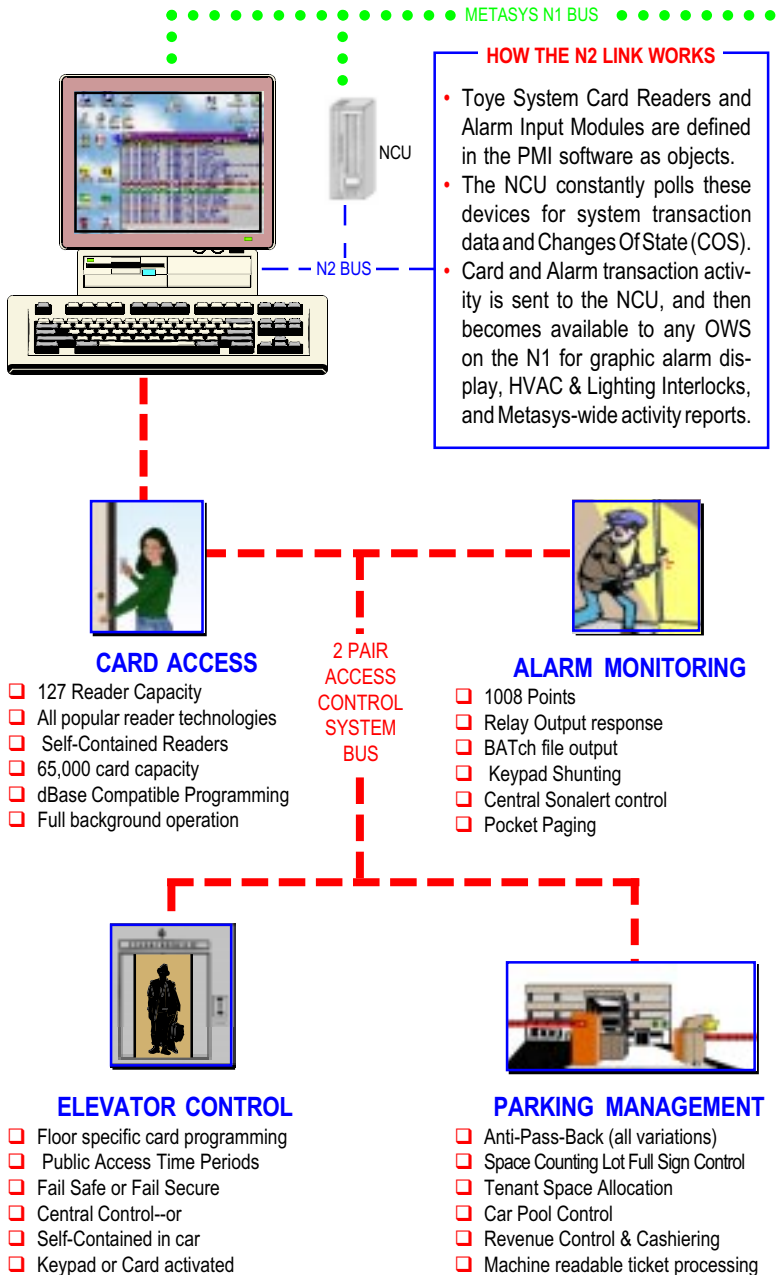
METASYS & "PC" CENTRAL

A POWERFUL CONNECTION

TOY E^{CORPORATION}
ACCESS CONTROL SYSTEMS

"PC" CENTRAL ACCESS CONTROL

ON A METASYS WORK STATION WITH N2 LINK



An Interface Designed Just For Metasys

For twenty years, Toye Corporation has been finding ways to help JCI Sales Engineers win access control jobs and satisfied customers. The message on the back page tells all about this long-standing relationship.

The Metasys N2 Link software is our latest effort to combine the proven reliability of our technology with Johnson's. It offers functionality no other access control system has, and does it without complex and costly field panels.

Our Self-Contained Readers connect directly to a common system bus, and we support most standard card technologies and encoding formats.

You can run the "PC" Central Access Control software on a Metasys Work Station, or you can run the system on an independent "PC" connected to the Metasys N2 bus. In either case, all the access control and alarm data becomes available to Metasys.



The System Can Run On A Dedicated "PC"
Or
A Metasys Operator Work Station

The N2 Integration Link is designed to bring "PC" Central Access Control data into the Metasys environment for such purposes as:

- ☐ Card Access Lighting And HVAC Interlocking
- ☐ Process Group Programming
- ☐ Graphic Mapping Of "PC" Central Alarms Within Metasys
- ☐ OWS Access To All System Transaction Activity.

Heretofore, Metasys users desiring card access have been limited to one or two products that can provide only the features supported by the Metasys PMI software.

Any access system designed for 100% compatibility with Metasys would be limited to that exact functionality. There could be no deviations unless the PMI Software and N2 protocol were amended to support them.

The "PC" Central Access Control System has many features and capabilities not specifically supported by Metasys, so our design philosophy was to create an integration link that would provide Metasys with the key data it needs over the N2 bus, yet provide Host Operator Work Station control of all the "PC" Central features not available through the PMI software. The "PC" Central software is a TSR that runs in the background so ongoing Metasys activity is undisturbed.

Unique features include custom card and reader formats that allow end users with existing card systems to use them in Metasys. Virtually every reader technology is supported including Time & Attendance formats that no other access control system can recognize.

All "PC" Central entry points are stand-alone requiring no central panels or D600's. There are extensive elevator control functions, plus high end parking control which includes tenant specific space allocation, car pool, space counting, lot full sign control, forced nesting, and automatic transient ticket reading and fee calculations. These are just a few of the vast features that can add uniqueness and power to the total Metasys package. Some "PC" Central features are available only to the Host PC running the software such as elevator control and V.I.P. tracking. Nevertheless, activity generated by these features are available to Metasys on a network wide basis. See the "PC" Central/Metasys support section later in this Handbook.

How It Works

The Toye Corporation "PC" Central system consists of three basic software components.

1. A TSR machine language program called SR.COM that runs the entire access control system in background memory while the computer performs other tasks. SR handles access request in less than 70 milliseconds, and contains the D600 emulation necessary to send system activity onto the N2 bus for Metasys handling.
2. A foreground program called P2.EXE that provides operator access to all programming operations, redundant event monitoring, devices status, and extensive filtered search reports.
3. A dBase III table containing cardholder names, personal data, and security level assignments. This table is normally accessed through the "PC" Central foreground program but can be managed by other programs such as Mi-

Microsoft Access or Superbase. This dBase file can be managed at a Metasys OWS by using the full version of Superbase, and creating a simple export macro. Changes made to the cardholder database would then go to "PC" Central automatically. If the full version of superbase is not used, Metasys reports would not show cardholder names unless they are also entered into Metasys.

COM 1 of the "PC" is dedicated to the access control system bus, COM 2 provides the link to the N2 bus. When the NCU polls the N2 bus for access control events, SR.COM responds just as if it were a real D600, but of course D600's are not used.

All software components of the "PC" Central system will run on a Metasys Operator Work Station under Windows 3.1 or Windows 95, or on a separate dedicated access control computer. When the "PC" Central host is a separate dedicated "PC", its internal CMOS clock is periodically synchronized to the Metasys master time code via N2 bus messages.

Since the N2 Integration Link emulates the D600/N2 protocol, the PMI software can receive "PC" Central event data, and map the resulting transactions in accordance with any Metasys supported activity and is available to any Operator Work Station connected to the N1 bus. "PC" Central Access Control System activity that can be managed by Metasys includes: alarm reporting and graphics, cardholder transactions and reports, cardholder initiated HVAC and Lighting, and device supervision.

Important Notes On "PC" Central/Metasys Card Programming

As noted above, both Metasys and "PC" Central require separate and independent databases. The minimum data required by "PC" Central are the card number and security level assignments. The cardholder's names must also be included if they are to be displayed on the dynamic transaction activity screen and the "PC" Central log.

Transactions sent from "PC" Central to Metasys do not include the cardholder's names, so they must be entered into PMI separately as a second operation in order to appear on Metasys activity reports.

If the full version of Superbase is used at the OWS running "PC" Central, then cardholder data need only be entered one time in PMI. Superbase includes a simple macro builder utility that can be defined to automatically export the data needed by "PC" Central.

If card records are entered directly into Metasys, the Metasys limitations on card

records will need to be observed. If card records are defined only in "PC" Central or the full version of Superbase, fewer limitations exist.

Metasys access control features that require card records to be defined to Metasys separately from the "PC" Central definition include: Use of Process Groups for features like lighting and HVAC interlocking; and Real Time printing/recording of cardholder names in the access control reports generated by Metasys Report Router.

As noted above, if card records are only defined to "PC" Central, Metasys access control reports will only contain the card number, not the holder's name. Their number can be related to cardholder names and other information when reports are generated at the computer running "PC" Central either from internal "PC" Central reports or through the use of the full version of Superbase. Such reports are created on operator command and are not available at other OWS's on the N1.

If some card records are defined to Metasys, but not all, the card numbers defined should be in a block of contiguous numbers rather than randomly chosen. This is because the Metasys NCM card database is allocated for blocks of contiguous numbers. Not all numbers within the block need to be used. If random numbers are used, the card capacity of the Metasys NCM will be severely restricted. The blocks chosen for different AC Objects do not have to be the same.

If cards containing nine digit numbers are used in "PC" Central, they must be assigned a related index number in order to be transmitted to Metasys. This is because the N2 and NCM can only handle numbers in the range from 1 to 65,536. Metasys will see the assigned index number as the card number, however "PC" Central will log and display the actual nine digit number for meaningful reports. If the full version of Superbase (or Microsoft Access) is used, reports can be generated showing the assigned index number and the nine digit social security number together. A table within "PC" Central contains this information. An OWS operator would need to know the related index number in order to apply cardholder text in Metasys, or map cards to Process Groups.

It should be noted that dBase or Superbase programming is not available for nine digit numbers. Each nine digit number must be manually entered directly into "PC" Central, and cannot be exported from an external sources like normal four or five digit numbering systems can.

System Capacity

Metasys documentation limits NCU polling to only two port addresses. This means only two D600's per NCU. Since each D600 can handle 16 readers and 160

binary inputs, the "PC" Central N2 Interface Link technically can handle only 32 card readers and 320 binary inputs. This limitation is arbitrary, and was based only on the assumption that additional D600's would burden the bus because of the time consuming downloads that a D600 would require. Since this problem could not occur on a "PC" Central N2 Integration Link, buffers for 8 NCU port address have been provided so that any address that can be defined in the PMI software can be polled over the Integration Link. This provides for the maximum capability of polling 127 readers, and 1,008 binary inputs.

Once the NCU is programmed, it constantly polls the access control system for changes of state. These changes include card reader, cardholder, or binary input events. If any changes have occurred since the last poll, the access control systems transmits them to Metasys via the N2 bus.

Object Definitions

The PMI software supports object mapping of activity assumed to originate from the D600. Since the D600 was designed by another manufacturer, certain additional data not supported by the D600 is available to Metasys users originating from the "PC" Central System. This is made possible by substituting unneeded D600 polled objects for "PC" Central objects that add power to the system. For example the "PC" Central System has two code flags to indicate anti-pass-back violations. One to indicate a "Hard" anti-pass-back violation, and another to indicate a "Soft" violation. "Hard" means the cardholder was denied, and "Soft" means that the violator was permitted access.

Another Code Flag indicates a Card Use Debiting error. The "PC" Central System allows restrictions of specific cards to a defined number of uses, and when those uses have been exhausted, the card will be denied.

Other "PC" Central features such as Nesting, Car Pool, and Tenant Specific Space Allocation have become very popular where parking control is involved. Each of these unique features are available and can be annunciated with violation flags through Metasys.

For a complete explanation of object definitions and programming, see Programming Instructions later in this booklet. Be aware that each substitute change of state will be reported to Metasys using the violation flags that exist for the D600, and may not reflect exact corresponding "PC" Central flag language. For the most part, the flag descriptions are very close.

"PC" Central Field Components

A common two twisted pair cable is used to connect all devices. There are no field

panels, as each entry point is completely independent. A reader consists of two components, the Read Head, and the Command Module. The Command Module Board may be placed inside the reader housing, or mounted remotely such as above a door. The functions performed by the Command Module are illustrated in the center fold.

Other field components include 16 Zone Binary Input Modules, Dual Input/Output Modules, and 16 Relay Modules. Binary Inputs can be mapped to relay outputs for sustained or pulsed activation.

Remote sites may be tied to the main truck using fiber optics, phone wires, short haul modems, or leased lines connected through the phone system.

Maximum System Support Parameters

System capacity and support for all listed features is a function of the combined capabilities of both the PC Central system, and Metasys, each operating independently, but linked by data passed via the N2 Link software. PC Central contains fully functional features (such as elevator control) not supported by Metasys. Nevertheless, Metasys can log events from these unsupported features, and utilize GPL Process Interlocks for other supported Metasys features.

All "PC" Central features are available on a stand-alone system basis when connected to Metasys, and are fully described in the Access Control Handbook, and specific catalog sheets. For reference, the following is a list of key system parameters and how they are handled in Metasys:

Feature Support Comparison

"PC" Central Feature: 127 Readers per NCM

Metasys Compatibility: 127 Readers

PC Central Feature: Differential Optics, Bar Code, ABA Mag Stripe, Amtron Mag Stripe, Dorado EMPI Mag Stripe, Motorola Prox, HID Prox, 2 wire Wiegand, Sirit Vehicle I.D., Smart Pass Vehicle I.D., .

Metasys Compatibility: All supported

PC Central Feature: Five digit card number range 1-99999

Metasys Compatibility: 1-65,535 range only. NCM programming is not

required for Metasys reports, but if NCM programming is required, NCM capacity is limited according to its configuration.

"PC" Central Feature: Nine digit social security number software
Metasys Compatibility: Supported using 5 digit index number. Full version of Superbase recommended for programming.

"PC" Central Feature: 65,000 Cardholders
Metasys Compatibility: 16,000 (or NCM capacity) if programmed in PMI, 65,000 if programmed in full version of Superbase and not programmed in PMI.

"PC" Central Feature: 2,032 BI Points
Metasys Compatibility: 1,008 BI Points

"PC" Central Feature: 1,262 Programmable Output Relays
Metasys Compatibility: Must be programmed directly in "PC" Central, and cannot be programmed in PMI.

"PC" Central Feature: Global Anti-Pass-Back
Metasys Compatibility: Report only, programmable at PC Central Host Computer

"PC" Central Feature: Timed Anti-Pass-Back
Metasys Compatibility: Report only, programmable at PC Central Host Computer

"PC" Central Feature: Car Pool
Metasys Compatibility: Report only

"PC" Central Feature: Parking lot space counting
Metasys Compatibility: Not supported. Pop-up window on PC Central Host Computer

"PC" Central Feature: Lot full sign control
Metasys Compatibility: Not supported

"PC" Central Feature: V.I.P. Tracking
Metasys Compatibility: Not supported. Pop-up window on PC Central Host Computer

Programming Instructions

The following table shows all the access control system change of state codes (COS) available on the N2 bus, and the corresponding "PC" Central events assigned to them.

COS (change of state) Codes

Metasys Objects	COS	"PC" Central Display & Log Entry	Disposition
Card Events			
ACCESS_GRANTED	04	none (space)	Access granted
INVALID_CARD	06	-	Access not granted
ANTI_PASS-BACK	07	A, C (Hard Apb, Carpool violation)	Access not granted
INVALID_READER	08	s, T (Site code, Tenant violation)	Access not granted
IN_X_IT_ERROR	09	a, c (Soft Apb, Carpool violation)	Access granted
INVALID_TIME_ZONE	0A	N, (Nesting violation)	Access not granted
INVALID_PIN_CODE	0B	k (Keypad violation)	Access not granted
Reader Events			
DURESS	21	* Duress Alarm (Available as binary input) ...	Not an access request
Binary Input Events			
ALARM_SET	1B	* Alarm Opened (Can emulate card transaction, can run BATch file)	
ALARM_RESET	1C	* Alarm Secure	

The default software assumes that COM 1 will be used for the "PC" Central System bus, and COM 2 will be used for the Metasys N2 Integration Link. You will need an RS232-RS-485 converter to connect the N2 bus to COM 2. When ordering software, you may specify different COM ports, but they must be odd pairs. IE: 1&2, 1&4, 3&4, etc.

Object Programming

This section explains how to assign object and device addresses in the "PC" Central System to Metasys PMI software addresses. The actual procedure for programming this information into the Metasys PMI software is explained in detail in the Metasys Network Technical Manuals 636. Johnson Controls order numbers 636-077 and 636-102.

The "PC" Central System identifies Reader/Command Modules with a two digit HEX code. D.I.P. switches on the Module can be set to any code ranging from 01-7F. To monitor these devices in Metasys, they must defined in the PMI software.

Metasys N2 (D600) port address are fixed in software, and cannot be arbitrarily modified.

The following shows each available N2 Port (D600) Address, and the code to use in Metasys for object programming:

Reader Addresses for N2 (D600) ADDRESS 160

Toye Module Code 01-0F = Metasys Reader 01-15 Respectively

Reader Addresses for N2 (D600) ADDRESS 161

Toye Module Code 10 = Metasys Reader 16

Toye Module Code 11-1F = Metasys Reader 01-15 Respectively

Reader Addresses for N2 (D600) ADDRESS 162

Toye Module Code 20 = Metasys Reader 16

Toye Module Code 21-2F = Metasys Reader 01-15 Respectively

Reader Addresses for N2 (D600) ADDRESS 163

Toye Module Code 30 = Metasys Reader 16

Toye Module Code 31-3F = Metasys Reader 01-15 Respectively

Reader Addresses for N2 (D600) ADDRESS 164

Toye Module Code 40 = Metasys Reader 16

Toye Module Code 41-4F = Metasys Reader 01-15 Respectively

etc. etc. etc.

For card readers, a total of 8 N2 (D600) addresses (160-167) are used following the above sequence for a total of 127 card readers and 254 BI points (two per reader).

Interpreting Binary Input Objects From Command Modules

Command Module Alarm inputs are reported using only the last digit. Example: xx71 will report as Binary Input 0001, xx72 as 0002.

Interpreting Binary Input Objects From 16 Input Modules

For Alarm Input Module BI points, a total of 8 N2 (D600) addresses (168-175) following the sequence below are used to report 1008 inputs.

For Sixteen-Input Alarm Modules, the Module Address range is restricted to 00 through 3F, only. Module Address Codes 40 through 7F cannot be reported to METASYS, but are available to "PC" Central.

For Alarm Inputs 1 through 8, the N2 Address is equal to 168 plus the module's

1st Address Code digit. The corresponding Binary Inputs Involved will be 0001-0008 for Toye Alarm Inputs 1-8.

For Alarm Inputs 9 through 16, the N2 Address is equal to 172 plus the module's 1st address code digit. The corresponding Binary Inputs Involved will be 0001-0008 for Toye Alarm Inputs 9-16.

The actual READER Number reported to Metasys is equal to the decimal equivalent of the module's 2nd address code HEX digit. >>Exception: Toye Module Code x0h equates to Metasys Reader 16.

Examples:

Toye Alarm Hex Code=1703 (Module Code 17, Alarm Input 03)
N2 Address=169 (168+1), Reader=7
Binary input=0003

Toye Alarm Hex Code=2F14 (Module Code 2F, Alarm Input 14)
N2 Address=174 (172+2), Reader 15
Binary Input=0006

Understanding Alarms Reporting Limitations

When "PC" Central software receives a binary input change of state from one of its own modules, it will transmit the information to Metasys. If Metasys is off-line, the change of state will remain in a memory buffer until Metasys resumes on-line operation and accepts it. If Metasys goes off-line again, and an initialization sequence between Metasys and "PC" Central occurs, and a previously reported alarm is still open, this same open alarm will not be retransmitted to Metasys again because Metasys has already received it.

Therefore, it is always wise to check the "PC" Central alarm status window to verify the true state of all BI points should Metasys go off line and then re-initialize itself with "PC" Central.

A TWENTY YEAR Loyalty To JCI

There was a time when you couldn't buy a Johnson Controls Access Control System if it didn't have Toye readers. Those were the JC/80 days, and believe it or not, most of those systems are still in operation having been upgraded to our "PC" Central head end. JCI branches now have several access control systems from which to offer, and we are proud of the many Toye systems they have chosen in recent years.

A SINGLE SOURCE FOR ALL THE POPULAR TECHNOLOGIES:

In today's world, compatibility with the customer's favorite card technology often makes or breaks a sale. In addition to offering the most competitive prices for all popular technologies, we can interface just about any existing reader or card format to our system.

SUPPORT:

We support our systems. Someone will take your call in minutes. I too am accessible and have been for 33 years. You can call me anytime to discuss applications or problems. Staying in touch has helped us build a reputation nobody can match. Check our reference list, the first is Oakland International Airport. They still have a 22 year old Toye system that we continue to support. We don't know of a single competitor that would ever reveal the name of its first beta site much less use it as a reference. We have more than 100 active systems over 20 years old, and many were installed by JCI such as Dow Chemical, Georgetown University, State of Iowa, and Nestles. There is not a product or part we have ever manufactured that is not supported today.



PROTECTION:

We understand the value of professional sales and engineering of the kind provided by Johnson Control. So we do everything in our power to protect your interests, and thus the interest of your customers.

We are Johnson's oldest and most loyal access control partner. We look forward to continuing our unique personalized approach whenever Johnson calls.

Sincerely,

A stylized, handwritten signature in blue ink that reads "Bud".

Bud Toye



Pop-Up Access Control Window

- ☐ Dynamic Display Of System Events
- ☐ Snap Shot View Of Alarm Status
- ☐ Instant Unlock Of Any Door
- ☐ View The Supervision Status Of Each Device
- ☐ Color Coded Transaction Types
- ☐ Hot Keys To All Functions
- ☐ Single Screen Card Data Base
- ☐ Background Alarm Alert Beeps
- ☐ Instant Filterable Transaction Reports
- ☐ V.I.P. Tracking

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