

NORTH

"All-Relay"...Automatic

TELEPHONE SYSTEMS

The Company — Since 1884 the North Electric Manufacturing Company has been continuously engaged in the production of precision built telephone equipment.

The company, its engineering services, and its products are identified throughout the field of public communications with telephone equipment of the highest quality.

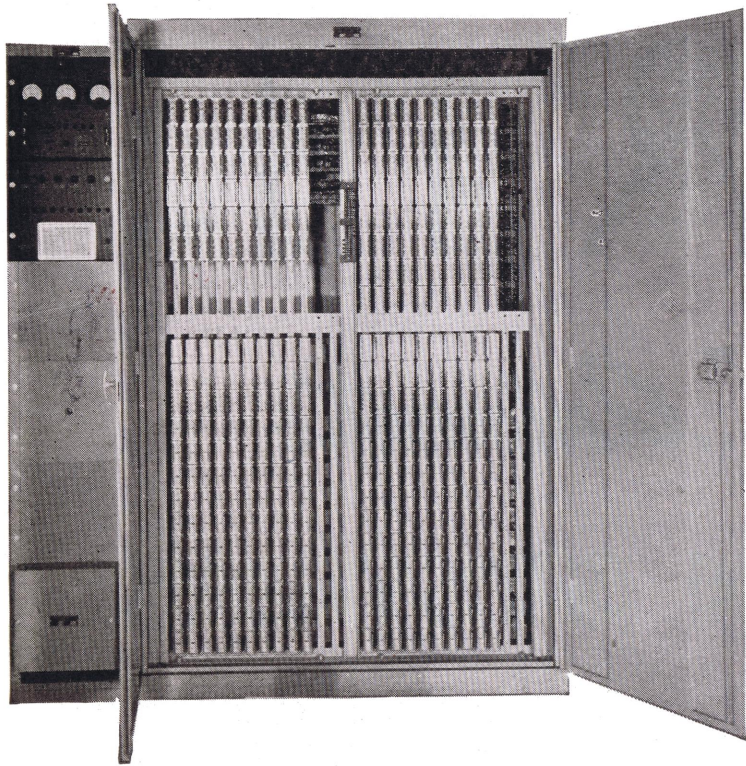
Services—We offer the assistance of our Engineering Organization without obligation to you in planning your requirements.

A complete sample specification will be furnished on request together with our recommendations for the equipment necessary to meet your conditions.

THE NORTH ELECTRIC MANUFACTURING COMPANY

GALION, OHIO

Intercommunicating Telephone Systems



"All-Relay" Automatic Exchange

The North "All-Relay" Private Automatic Exchange is an intercommunicating telephone system designed for installation in business offices, factories, hospitals, schools, etc. It renders rapid, reliable and secret service 24 hours a day without an operator. It is a private system which has no connection with the public telephone system.

Standard dial type telephones are used, which are available in all types and many colors. The wiring system is very simple. A single pair of wires only is required from each telephone to the central exchange equipment, thereby making an economical distribution system capable of easy change and expansion at low cost.

A dial type telephone within easy reach places your organization at your finger tips, saves steps, lightens routine, speeds production.

Install a private automatic exchange for all interdepartmental services, renting such telephones as are needed for city and long distance service.

The North "All-Relay" Automatic Telephone System utilizes simple electrical relays throughout as a basis for operation. These sturdy, single-motion relays, once assembled, adjusted, and correctly installed, will, throughout years of operation, retain their adjustment and will insure uninterrupted service with no maintenance problem. Systems of all types are available in size from 10 to 10,000 lines.

Savings Effected

- (1) Relieves the switchboard operator of all internal telephone service.
- (2) Holds operator or attendant expense at a minimum.

- (3) Outside telephone service can be given unquestioned priority.
- (4) The number of extensions for outside service can be held at a minimum.
- (5) Non-business usage of outside telephone can be better controlled.

Operation—To make a call, simply lift the receiver and dial the required number—the exchange does the rest. The called party's bell is rung instantly and intermittently until the call is answered or abandoned. The ring is indicated to the calling party by a distinct signal in the receiver. When a call is answered, ringing is immediately stopped and the line cleared for conversation.

Available Features

Code Call—A complete automatic paging service. A call is originated at any telephone on the system by dialing a special number. A code is then transmitted through the plant or office by means of a series of audible or visual signals so arranged as to be within sight or hearing at any location. The coded party upon recognizing his code can answer from any convenient telephone by dialing the code answer number and immediate connection is established with the calling party. This equipment can be furnished in sizes capable of sending out six, thirty-six, or one hundred codes.

Executive Service—Provided at no additional cost. Permits an executive's line so equipped to connect to the party called regardless of whether or not the called station is busy.

Conference Service—Furnished at a slight additional cost enables a number of parties, by dialing the conference number, to confer with each other over the telephone system as easily as if they were face to face.

Watchman's Service—A complete supervisory night watchman's service feature is available making a printed record of the watchman's calls, time and location. This service is furnished over the Private Automatic Exchange telephones without additional house wiring.

Emergency Alarm Service—Can be included if desired.

Fire Reporting and Recording Systems.

NORTH Telephones

Supplied in all standard types—handset wall, handset desk, and flush, equipped with North dials; in colors at extra cost. These telephones are identical with those furnished by the North Company for use in public communications systems. They are of the most advanced technical design and are modern and pleasing in appearance.



Desk Telephone



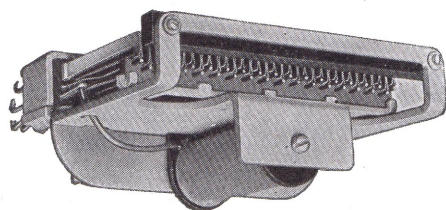
Wall Telephone

NORTH "ALL-RELAY" PRIVATE AUTOMATIC TELEPHONE EXCHANGES

	PX-1	PX-10	PX-30		PX-50	PX-100	PX-500
Capacity	10 to 100 telephones, 1 simultaneous conversation.	10 telephones, 2 simultaneous conversations.	20 or 30 telephones, 4 to 6 simultaneous conversations, equipped as required.		40 to 50 telephones, 5 to 7 simultaneous conversations. Equipped as required.	60, 70, 80, 90 or 100 telephones, 6 to 12 simultaneous conversations, equipped as required. Expansion unlimited.	200-500 telephones, simultaneous conversations equipped as required. Expansion unlimited.
Service	Selective ring, common talking, 2 digit numbers.	Single party, selective ring, secret service, one digit, busy tone.	One or two party, selective ring, secret service, 2 digit numbers, busy tone.		One or two party selective ring, secret service, 3 digit numbers, busy tone.	One or two party selective ring, secret service, 3 digit numbers, busy tone.	One or two party selective ring, secret service, 3 or 4 digit numbers, busy tone.
Special Features	Code call, secret stations, group ringing master dial station with dialless stations.	None.	Code call, watchman's service with or without clock, conference service, executive right-of-way service, direct line service.		Code call, watchman's service with or without clock, conference, direct line service, executive right-of-way.	Same as for Type PX-50.	Same as for Type PX-50.
Power	Operated from 24 volts, d-c., furnished from battery eliminator operating from commercial a-c. Battery eliminator is mounted separately.	Same as for Type PX-1.	Operated from 48 volts d-c., furnished from battery eliminator operating from commercial a-c. eliminator mounted in switchboard cabinet.		Operated from 48 volts d-c., furnished from storage battery with self-regulating dry disc charger operating from commercial a-c.	Same as for Type PX-50.	Same as for Type PX-50.
Cabinet	Maximum dimensions: 24 in. high, 12 in. wide, 9 in. deep for wall mounting, finished in aluminum lacquer.	Same as for Type PX-1.	Maximum dimensions: 80 in. high, 36 in. wide, 18 in. deep. Finished in aluminum lacquer. Doors front and rear.		Maximum dimensions: 80 in. high, 51 in. wide, 18 in. deep, doors front and rear, finished in aluminum lacquer.	Maximum dimensions: 80 in. high, 72 in. wide, 18 in. deep, doors front and rear, finished in aluminum lacquer. Separate power panel. Additional units have same dimensions.	Maximum dimensions per 100 lines: 80 in. high, 72 in. wide, 18 in. deep, doors front and rear, finished in aluminum lacquer. Separate power panel.
Lines	1 individual wire to each station plus 1 common pair.	2 wires from each telephone to switchboard.	2 wires from each telephone to switchboard. 2-party lines require common ground return.		2 wires from each telephone to switchboard. 2-party lines require common ground return.	Same as for Type PX-50.	Same as for Type PX-50.

RELAYS

Multi-Contact Relays



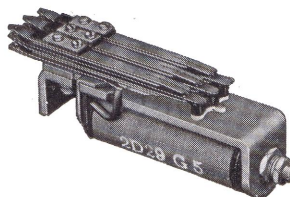
North multi-contact relays are available to close 5, 12, 23, or 33 circuits simultaneously. Contacts have a long, self cleaning knife-switch action between phosphor-bronze reeds and nickel-silver springs. Adapted to corrosive conditions, where low current-carrying contacts are required.

North relays, designed originally to provide unfailing, maintenance-free performance in telephone systems composed entirely of relays, are adapted to wide use in industrial and electronic applications.

All North relays have in common the simple sturdy structure; knife edge bearing; double contacts and long spring flexing ratio which have contributed to the maintenance-free characteristics of North "All-Relay" Telephone Systems.

Relay catalog will be furnished upon request.

Control Relays



North control relays are furnished in a wide variety of contact arrangements. Contacts are normally of gold-silver alloy but can be furnished in most other metals if required. Available in fast or slow operate or release types. North A.C., latching and midget type relays are also available in a number of pileup arrangements.

NORTH SELF-REGULATING BATTERY CHARGER

For Use With Any Storage Battery Installation

Rectification of the alternating current is accomplished by means of dry-plate rectifying elements, without employing bulbs, liquids, relays or moving parts. This construction does away with maintenance and upkeep.

Close control of the system voltage is

automatically maintained regardless of the load. As the load varies, the North charger adjusts itself increasing or decreasing its output, regulating the voltage. The charger carries the load, considerably reducing battery activity and increasing battery life.

NORTH WESTINGHOUSE SUPERVISORY CONTROL SYSTEM

North Westinghouse Supervisory Control Equipment is manufactured for and sold through the Westinghouse Electric and Manufacturing Company. Standard North telephone relays are used throughout.

The chief applications of supervisory control equipment are for remote control and supervision of automatic hydro-electric generating stations; automatic sub-

stations; and transformer switching and distributing stations. These applications vary from small isolated switching stations to large, metropolitan substations in which an unlimited number of operations, including metering and synchronizing, can be performed over a single pair of wires.

For further information consult the nearest Westinghouse Company branch office.

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