IDEC

Think Automation and beyond...

S³ CONNECT Push-in Solutions

Let's get started with Push-in.

IDEC CORPORATION

Push-In Terminals makes wiring quicker and easier

Improve productivity by streamlining Wiring Process.

Push-In wiring allows workers with less experience to learn wiring methods efficiently.
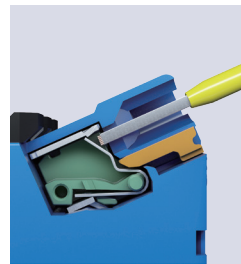
Makes wiring easy

Ferrules and solid wires can be connected simply by push-in insertion, without a screwdriver. (*1)
To remove, a flat-blade screwdriver is inserted in a simple-to-activate pusher.
Since wiring can be performed regardless of operators' skill level, wiring time is reduced.

*1) When connecting stranded wire, insert the wire while holding down the pusher with a flat-blade screwdriver.

Prevents errors

The color of the pusher and the main body can be clearly distinguished, preventing incorrect insertion of the wire.

Terminal are clearly marked with a contrasting color. Black Sockets are marked with white terminal numbers.

Reduces length of process

Work can be performed without tools and regardless of operators' skill level.
*2) When ferrule is used.

When connecting

Insert the electric wire into the connection port straight until it stops.
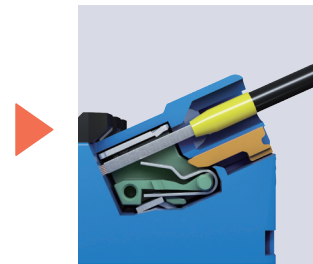
Wiring completed. Pull lightly to make sure the wire is secure.

When removing

Press pusher with a flat-blade screwdriver.
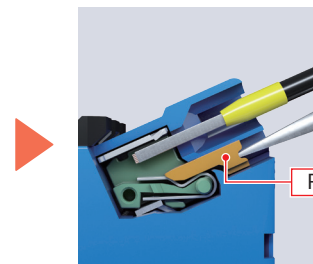
Pusher

With the pusher pushed in, with a flat-blade screwdriver pull out the wire.

Conventional screw terminal

| Loosen screw | Insert wire under screw | Tighten screw | Check installation |

Push-in terminal (*2)

| Insert the wire | Simple one-step operation | Pull lightly to confirm |

Push-in terminal ·············· APPROX. 14 MINUTES

Screw terminal ·············· APPROX. 33 MINUTES

PUSH-IN TERMINAL

SCREW TERMINAL
(ELECTRIC SCREWDRIVER)
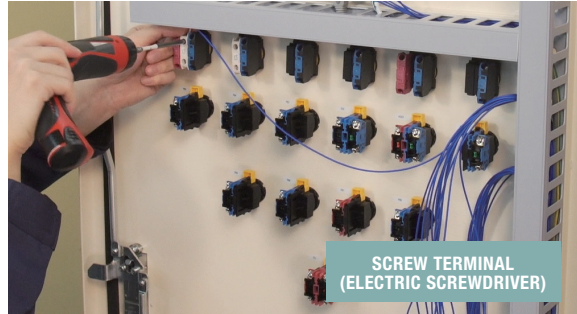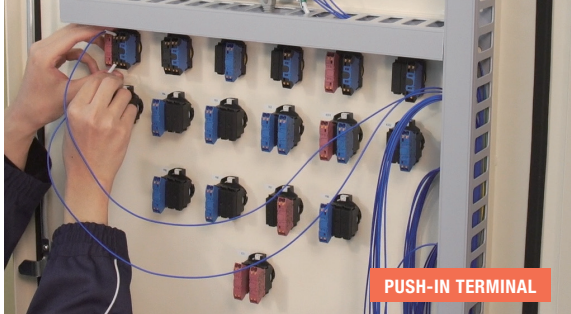
[Conditions]
Push-in: Insert the ferrule terminal wire.
Screw: Insert the wire and tighten the screw with an electric screwdriver.

APPROX.
55%

Reduces wiring time by about 55%.*
*IDEC research, February 2020.

Video now available

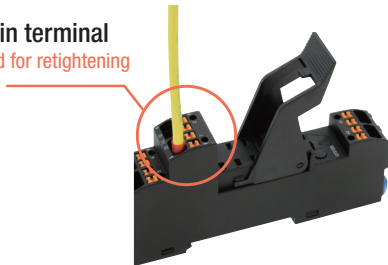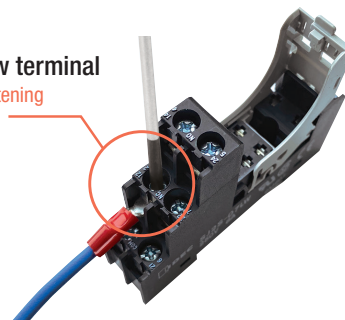# Eliminates need for additional tightening

Because screws are not used in push-in terminals, re-tightening of screws is not required.

Push-in terminal
No need for retightening

Screw terminal
Retightening

Push-In Terminals holds wires securely

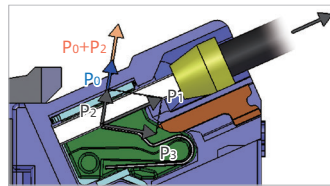Will the wires in a Push-In terminal come loose?

Push-In terminals withstand vibration during long-distance transportation.

Unique structure provides tensile strength and vibration resistance

BASIC STRUCTURE

Why don't the wires fall out?

The more you pull, the more holding force of the wire increases.

P_0+P_2

P_0

P_2

P_1

P_3

P0=Initial spring force
P1=Wire tensile force
P2=»Spring force (wire holding force) is increased by pulling the wire.

DESIGN POINT

Pusher

- Prevents loss of wire holding power due to spring deformation
- Prevents wire insertion errors
- IP20 finger protection structure
- No need to touch the conductive part directly with a screwdriver
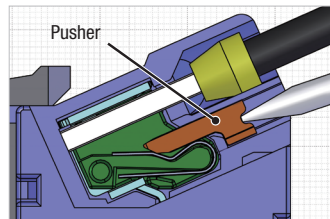
Pusher

With pusher

Wire can be removed without directly touching the spring with a screwdriver.
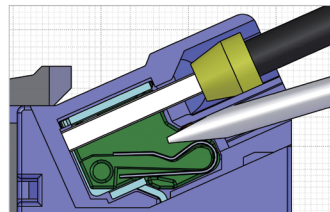
No pusher

Since the driver directly operates the spring, there is a risk of deformation and electric shock.

Test

Vibration test

Wires
DO NOT PULL OUT

The design of the Push-in terminal provides excellent vibration resistance.

Pull-out test

Twisting test · Conducted at 1kg and 2kg

135 rpm

1 kg   2 kg

TERMINAL TENSILE STRENGTH (in accordance with IEC60947-1)

IEC60947-1 standard conditions
Wire: AWG16, Tensile force: 40N
Time: 1 min
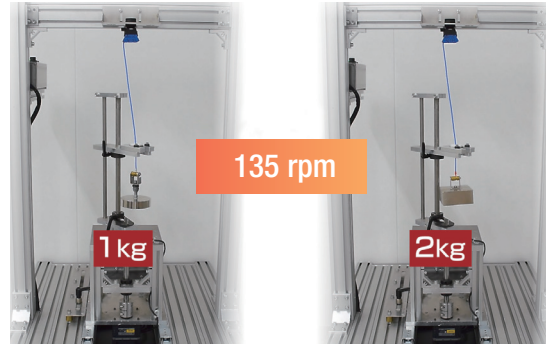
TWISTING TEST (in accordance with IEC60947-1)

IEC60947-1 standard conditions
Wire: AWG16 Weight: 1Kg and 2Kg
Rotation speed: 135 rpm

*In this test, 1kg and 2kg were used.

Wires
**DO NOT
PULL OUT**

The wires do not pull out easily.

S³ CONNECT

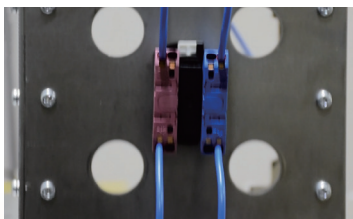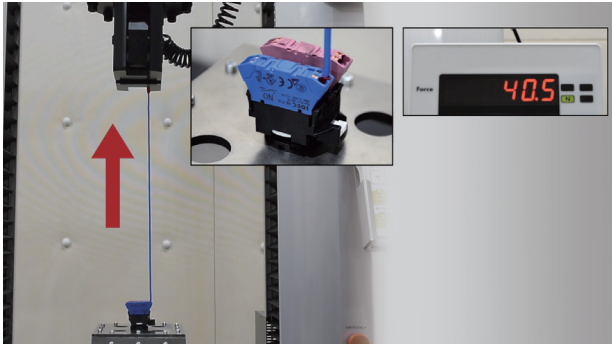## Focused on the same goal

Since the late 1970s, IDEC has continued to instill and pursue "Save and Safe" as part of its corporate DNA. Along with the rapid advancement in machine intelligence and demands for environmental resistance and high reliability in recent years, we need to face societal issues including labor shortages in the workforce. To solve these issues, we have set as our goals "Safe, Simple & Smart=S3 (S cube)" aiming to provide society with products and services that will bring about greater innovation and lasting quality.

Safe
Products anyone can use safely with assurance from a company seeking to be number one in safety.

Simple
Products appreciated for their ease of connection.

Smart
Products that make labor-saving and space-saving a reality.

Push-In Terminals Save Control Panel space

⬇% Push-In Terminals make effective use of the space in the control panel.

Smaller switches and pilot lights

Push-in contact blocks, which are shorter than the screw terminal types, contribute to the downsizing of equipment and panels.

HW Series			
	Screw terminal Switches & Pilot Lights	Push-in terminal Switches & Pilot Lights	Panel depth
Pilot lights Full voltage type			APPROX. 50% REDUCED
Illuminated pushbuttons 6V, 12V, 24V AC/DC			APPROX. 30% REDUCED
Illuminated pushbuttons 100/120V AC/DC 200/220V AC 230/240V AC			APPROX. 40% REDUCED

*No transformers required for high voltage types

Push-In Terminals are easy to test for correct wiring

💡 Push-in terminals are easy to use.

Easy continuity check

The push-in terminal allows for an easy continuity check with the wiring in place. A separate test port allows easy testing of continuity or voltage.

The color of the pusher and the main body can be clearly distinguished, preventing incorrect insertion of the wire.

The color contrast between the body color and the printed color makes it easy to check the terminal number even in dark places, which helps prevent incorrect wiring.

The relay release lever* enables smooth mounting and removal of the relay.

*Release lever
SJ series: Standard Installation, SU series: Accessory compatible

SJ Series Relay sockets

contact terminal

Wire insertion slot
Terminal number (white)
Pusher (orange)
Test Point

Release lever attachment protrusion

Coil terminal

Marking plate insertion port
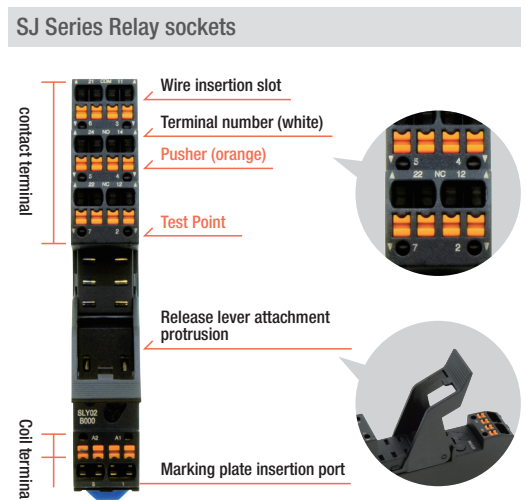
IDEC OFFERS A WIDE RANGE OF PUSH-IN TERMINAL PRODUCTS FOR CONTROL PANELS

ø22 Switches and Pilot Lights

HW series and CW series with push-in terminals.

HW

Pushbuttons

Illuminated pushbutton switches

Selector switches

Key selector switches

Selector pushbuttons

Illuminated selector switches

Mono-lever switch

Pilot lights

Emergency stop switches

Illuminated/non-illuminated buzzers

CW

Pushbuttons

Illuminated pushbuttons

Pilot lights

Selector switches

Key selector switches
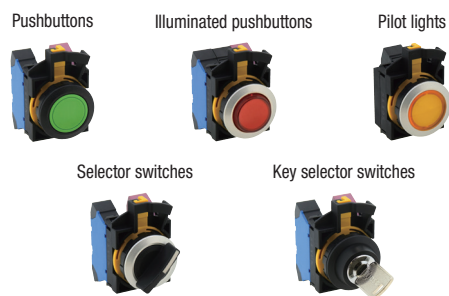
Relay Sockets

SU/SJ

The SU/SJ sockets fit RU/RJ relays, timers, and RF2 force guided relays.

For RJ

RJ

For RU

RU
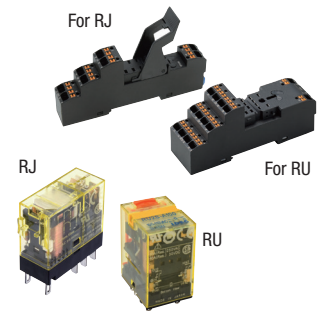
Switching Power Supplies

PS3V

Compact and highly efficient switching power supply.

Safety Relay Modules

HR6S

Advanced diagnostic and output functions improve productivity with predictive maintenance of safety systems.

HR5S

Category 2 safety relay modules with safety measures for low risk machines.

Smart RFID Reader

KW2D

Smart RFID Reader enables management of machines and equipment by controlling and tracking access to production sites.

Programmable Controllers

FC6A
MICRO**Smart**

Allows for controlling large-size machines, as well as small-size production lines.

Push-in Terminals installation

Push-in terminals can be used with stranded wire and wire ferrules

Required parts and tools

Ferrule	Stripping tool	Crimping tool	Flat screwdriver

STEP 1

Wire processing procedure

1

Strip the wire insulation
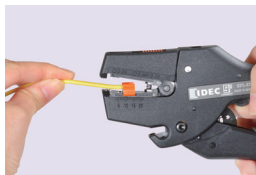
Stripping tool

Strip the wire insulation

2

Attaching the ferrule
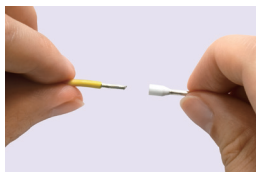
Ferrule

Insert stranded wire to the ferrule

Ferrule

3

Crimping (swaging)

Crimping tool

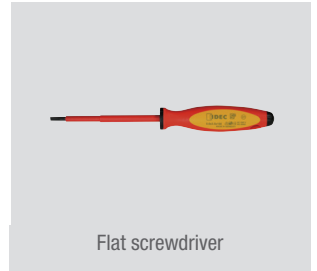Crimp with a dedicated tool

Crimped part

Wiring process example

Complete	Incorrect example				
0 to 0.5mm	Ferrule is not fully inserted	Insufficient stripping	Crimp location is not correct	Ferrule is damaged.	Loose wiring

STEP 2

Wiring

Simple wiring steps

Wiring using ferrule or solid wire

1
Test point
Pusher
Wire port
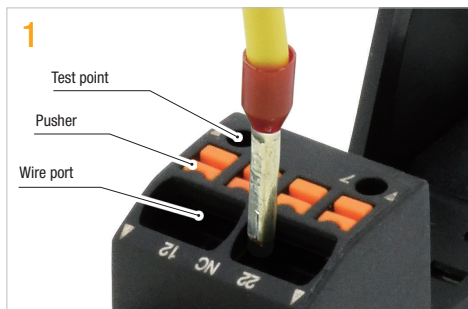
Push the wire straight in as far as it will go.

2

Wiring is complete.
Pull lightly to make sure it is firmly in place.

Simple wiring steps

Wiring using stranded wire

1
Hold down the pusher with a flat-blade screwdriver.
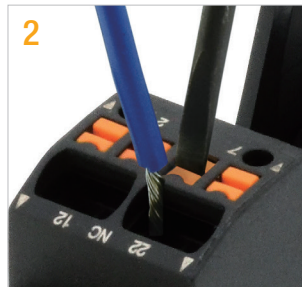
2
While holding down the pusher, insert the wire to the back of the wire port.

3
Release the flat-blade screwdriver. Connection is completed. Pull lightly to make sure it is firmly in place.

STEP 3

Removing

Removing the wiring

1
Push the pusher using a flat-blade screwdriver.

2
While holding down the pusher, remove the wire.

3
Release the flat-blade screwdriver.

IDEC Push-in Product Line Ferrule Selection Digest

Wire size and recommended ferrule terminals

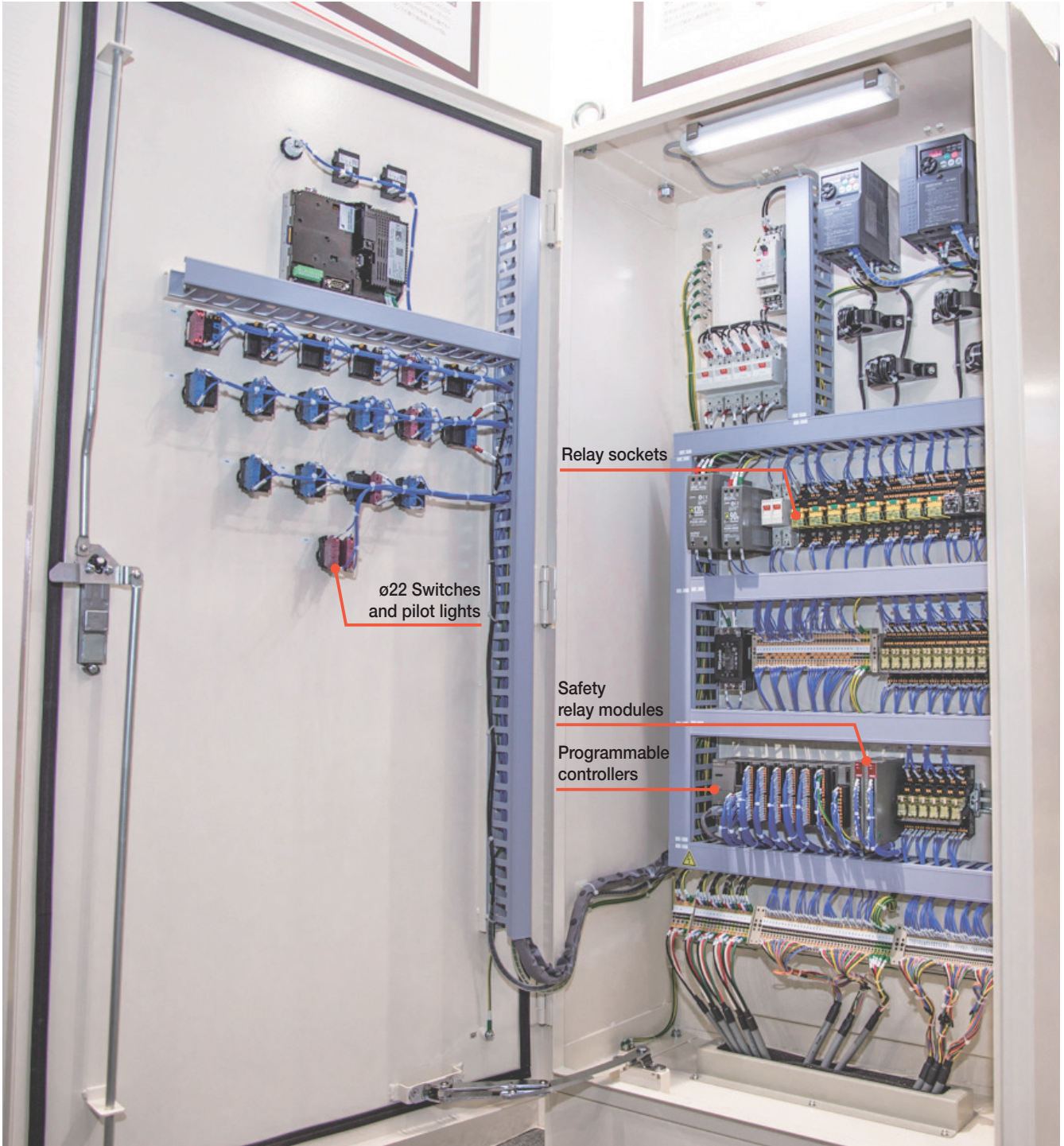| Order form number	Applicable wire cross section	Power cable	ø22 control unit HW/CW	Smart RFID readers KW2D	Relay sockets SU/SJ	Safety relay modules	
						HR5S	HR6S
S3TL-F014-10WC	AWG26 0.14mm²	For 1-wire	–	–	–	–	–
S3TL-F014-12WC			–	–	●	–	–
S3TL-H025-10WJ	AWG24 0.25mm²	For 1-wire	●	–	–	–	–
S3TL-H025-12WJ			(*1)	●	●	●	–
S3TL-H034-10WT	AWG22 0.34mm²	For 1-wire	●	–	–	–	–
S3TL-H034-12WT			(*1)	●	●	●	–
S3TL-J034-14WT		For 2- wire	–	–	–	–	–
S3TL-H05-12WA	AWG20 0.5mm²	For 1-wire	●	–	–	–	–
S3TL-H05-14WA			(*1)	●	●	●	–
S3TL-H05-16WA			●	–	●	–	–
S3TL-H05-18WA			–	–	–	–	●
S3TL-J05-14WA		For 2-wire	–	–	–	–	–
S3TL-J05-16WA			–	–	–	–	–
S3TL-J05-18WA			–	–	–	–	●
S3TL-H075-12WW	AWG18 0.75mm²	For 1-wire	●	–	–	–	–
S3TL-H075-14WW			●	●	●	●	–
S3TL-H075-16WW			●	–	●	–	–
S3TL-H075-18WW			–	–	–	–	●
S3TL-J075-14WW		For two wires	–	–	–	–	–
S3TL-J075-16WW			–	–	–	–	–
S3TL-J075-19WWS			–	–	–	–	●
S3TL-J075-24WW			–	–	–	–	–
S3TL-H10-12WY	AWG17 1.0mm²	For 1-wire	●	–	–	–	–
S3TL-H10-14WY			(*1)	–	●	–	–
S3TL-H10-16WY			●	–	●	–	–
S3TL-H10-18WY			–	–	–	–	●
S3TL-J10-15WY		For two wires	–	–	–	–	–
S3TL-J10-15WYS			–	–	–	–	–
S3TL-J10-19WY			–	–	–	–	●
S3TL-J10-25WY			–	–	–	–	–
S3TL-H15-14WR	AWG16 1.5mm²	For 1-wire	●	–	–	–	–
S3TL-H15-16WR			●	–	–	–	–
S3TL-H15-24WR			–	–	–	–	–
S3TL-J15-16WR		For two wires	–	–	–	–	–
S3TL-J15-20WR			–	–	–	–	●
S3TL-J15-26WR			–	–	–	–	–
S3TL-H25-15DS	AWG14 2.5mm²	For 1-wire	–	–	–	–	–
S3TL-H25-19DS			–	–	–	–	●
S3TL-H25-25DS			–	–	–	–	–
S3TL-H40-18DC	AWG12 4mm²	For 1-wire	–	–	–	–	–
S3TL-H40-20DC			–	–	–	–	–
S3TL-H40-26DC			–	–	–	–	–
S3TL-H60-20WB	AWG10 6mm²	For 1-wire	–	–	–	–	–
S3TL-H60-26WB			–	–	–	–	–
S3TL-H100-28WD	AWG8 10mm²	For 1-wire	–	–	–	–	–
Crimping Tools	**Crimping range**						
S3TL-CR04T	0.5 to 4mm²		●	●	●	●	●
S3TL-CR06D	0.25 to 6mm²		●	●	●	●	●
S3TL-CR16D	6 to 16mm²		●	●	●	●	●
Stripping tool	**Applicable wire cross section**						
S3TL-ST06	0.08 to 6mm²		●	●	●	●	●
S3TL-ST16	6 to 16mm²		●	●	●	●	●
Insulated Screwdriver							
S3TL-D04-20-60			●	●	–	●	–
S3TL-D04-25-75			●	●	●	●	–
S3TL-D06-35-100			–	–	–	–	●

Left side row labels: Ferrule with insulation cover · Other tools

This selection chart is based on the specifications of the IDEC Push–in product line. For details, refer to the catalog of each product.
*(1) Ferrule for HW1Z illuminated/non-illuminated buzzer

| Programmable controllers FC6A | | | | | | | | Switching power supply PS3V (Scheduled for release in fall 2021) |
| Plus / All-in-One CPU module | | | Expansion module, expansion module integrated, expansion module integrated, expansion module integrated Slave with separate expansion modules for expansion | | Expansion module Separate master | HMI module | Cartridge | |
Power supply terminal	Input/output terminal section Plus	Input/output terminal section All-in-One	3.81mm pitch	5.08mm pitch				
–	–	–	–	–	–	–	–	–
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●	●	●	●	–	●	●	–	–
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●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
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–	●	–	●	–	–	–	●	●
●	–	●	–	●	●	●	–	–

Relay sockets

ø22 Switches and pilot lights

Safety relay modules

Programmable controllers

Scan the QR Code for more information about IDEC Push-in products